



Service Bulletin

Title: **Q205 Lead Stress**
Bulletin #: RMX0001 Issue Date: May 15, 2002
Models Affected: RMX 2450 Bulletin Revision: B
Production Range: 01/2000–05/2002 (serial # 0100xxxxx–0502xxxxx)

Description

Driver transistor Q205 in the RMX 2450 may have been inserted into the circuit board with the leads too taut, causing one or more of them to break when subjected to vibration and strain caused by handling and other normal usage.

This bulletin describes the procedure for removing the old transistor and replacing it with one whose leads have been prepped to provide a sufficient amount of strain relief. *In this new revision of the bulletin, we also recommend removal of the circuit board mounting screws that are closest to transistors Q105 and Q205, even if the amplifier's transistor leads are not damaged, in order to allow the circuit board to flex more and thus put less stress on the transistor leads.*

Symptoms

After the amplifier is turned on, channel 2's clip LED lights constantly or intermittently, regardless of signal.

Instructions

Replacing transistor Q205 requires removal of the amplifier's top cover and some minor disassembly. No circuit boards need to be removed.

Tools and materials required:

- Soldering iron with fine tip (recommended range 25 to 60 W)
- Rosin-core solder (60/40 or 63/37 eutectic type)
- Long-nose pliers
- #1 and #2 Philips screwdrivers
- Small diagonal cutters
- Desoldering equipment or solder braid
- One prepped MJE15032 transistor (see Figure 1) per RMX 2450 amplifier

Test equipment required:

- Oscilloscope
- 2-ohm resistive load (rated for at least 1200 watts)
- AC ammeter
- Variable AC transformer—e.g., Variac, Powerstat, etc.—rated for 25A (120V) or 12A (230V). Make sure the amplifier and your AC supply are compatible.
- 1 kHz audio sine wave generator
- Digital multimeter
- Trimpot adjustment tool (non-conductive)

Procedure: Removing mounting screws

1. Disconnect the amplifier from AC and wait at least 10 minutes for internal voltages to bleed down. Remove the screws (thirteen #8 screws on the sides and four #4 screws on the top) from the top cover of the chassis. Lift the rear edge of the cover until you can unhook the front edge from the chassis, then remove the cover.
2. Locate transistor Q205. As viewed from the front of the amplifier, Q205 is attached to the left side of the heat sink and is the transistor nearest to the front faceplate.
3. There is a multi-pin connector, J204, joining a ribbon cable to the circuit board next to Q205. Disconnect it from the board to provide better access to the transistor.
4. Remove the mounting screw next to Q205 that fastens the circuit board to the chassis standoff. Also remove the screw next to Q105 on the other channel module. These screws will be left out when you reassemble the amplifier.

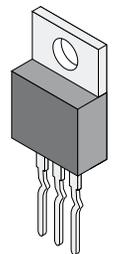


Figure 1. Replacement MJE15032, with leads prepped for strain relief

5. If the amplifier exhibits the symptoms described in this bulletin, continue with the removal and replacement of transistor Q205. If it doesn't exhibit any symptoms, reconnect J204 and check that the amplifier operates correctly, and then procede to **"Finishing the repair."**

Procedure: Removing Q205

1. Unscrew Q205 from the heat sink.
2. Using diagonal cutters, clip Q205's leads and discard the transistor.
3. On each remnant of Q205's three leads, melt the solder and use your long-nose pliers to pull the remnant from the circuit board.
4. Using desoldering equipment or solder braid, remove excess solder from the three circuit board holes.

Procedure: Replacing Q205

1. Insert the strain-relief-prepped MJE15032 transistor into Q205's location, oriented so the metal tab can be affixed to the heat sink.
2. Make sure the transistor's leads are correctly inserted into the solder pad holes in the circuit board, but do not solder them yet.
3. Use the same screw to firmly attach the new transistor to the heat sink. Do not over-torque the screw.
4. Solder the three leads of the new transistor to the circuit board. Soldering from the top side should suffice. Be careful to avoid solder bridges.

There is plenty of clearance under the circuit board, so you don't need to trim the leads on the underside of the board.

6. Reattach the connector at J204.

Procedure: Testing and calibrating

Note: During this test, the amplifier will draw approximately 22 amperes at 120 volts AC, or 11 amperes at 230 volts. Be thorough, but do not take too long to perform this test so you don't trip the amplifier's circuit breaker.

1. Locate trimpot R239 on the circuit board; you may need to adjust it later in the procedure to set the symmetry of the current limiting.
2. Turn down the gain controls of both amp channels fully counterclockwise. Connect the output of channel 2 to the 2-ohm load. Connect the oscilloscope probe across the output terminals of channel 2.
3. Set the audio generator to 1 kHz at 1 V RMS and connect it to the input of channel 2.
4. Turn the variable transformer to 0 volts and plug the amplifier's AC cord into it.
5. Turn the amplifier on.
6. Gradually turn up the transformer to the amplifier's normal operating voltage and make sure the amplifier is functioning correctly.
7. If all is well, turn up channel 2's gain control. On the oscilloscope you should see the amplitude of the sine wave increase.
8. Turn up the gain control until you see the sine wave clip, which should be at about 51 volts RMS or 72 volts peak. If it clips asymmetrically—on either the positive or negative side first—adjust trimpot R239 until the clipping is symmetrical.
9. Turn channel 2's gain control all the way down. Apply a short circuit across the output of channel 2.
10. Turn channel 2's gain control all the way up. The AC current draw should be from 4 to 5.5 amperes for 120V models and 2 to 2.75 amperes for 230V models.

Procedure: Finishing the repair

1. Turn the amplifier off and disconnect all cables.
2. Re-install the top cover. The amplifier can be returned to use.

Contact information

If you need any further information regarding this service procedure, please contact QSC Technical Services at the addresses or numbers below.

Telephone:

800-772-2834 (within USA only)
+1 (714) 957-7150

Fax:

+1 (714) 754-6173

E-mail:

tech_support@qscaudio.com

Postal and parcel address:

QSC Audio Products, Inc.
Technical Services Group
1665 MacArthur Blvd.
Costa Mesa, CA 92626 USA