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MADRIGAL

TECHNICAL BULLETIN



No331 / 332 / 333 Replacing Surge Resistors

Overview

The surge resistors in 300 series amplifiers absorb the turn-on current spike when the amplifier is powered up from a power OFF state to an ON condition, thus protecting the internal fuses. In the event of a major fault condition such as an electrical short in the unit, the resistors will fail/open. 300 series amplifiers built prior to January 1, 1997, used a black epoxy coating on the surge resistors that could potentially combust, smoke, and damage other components in the amplifier if the surge resistors opened due to a rare catastrophic event.

The current surge resistors, implemented after January 1, 1997, will open with far less potential to damage other components in the amplifier. We highly recommend that when an older 300 series amplifier is repaired for any reason, the surge resistors are checked and updated if found to be the original design.

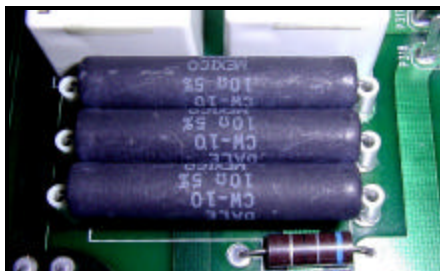
This tech bulletin explains the procedure to change these resistors on the VSMB board in any 300 series amplifier built prior to January 1, 1997. The following procedure will allow a qualified technician to successfully replace surge resistors in any affected Mark Levinson 331, 332, and 333 amplifier. Please read this document completely and understand this procedure before attempting the replacement.

Contacting Technical Support	<i>Phone</i>	860-346-0896	9am to 5pm EST Monday thru Friday
	<i>Fax</i>	860-347-6251	Please allow 24hrs for reply
	<i>Email</i>	madts@harman.com	Please allow 24hrs for reply

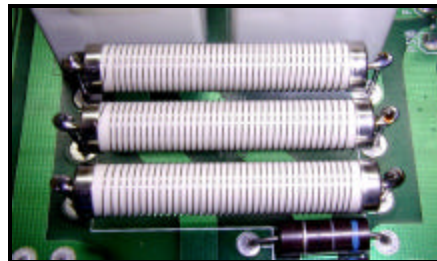
Affected Units

Units manufactured prior to January, 1 1997 use the original black epoxy resistors depicted below on left. The resistors are located on the VSMB board under the VSMB daughter card. The black epoxy resistors should be changed to the current version, part number 11087, depicted below on right.

Original Surge Resistor



Updated Surge Resistor





Cautions! Before Beginning



CAUTION!

Hazardous voltages available inside unit. Before proceeding, remove AC cable from AC outlet.



CAUTION!

Static sensitive parts and subassemblies inside unit. Observe proper grounding procedures before continuing.

WARNING!

Be careful when handling metal as it scratches easily. Place a soft towel under unit while doing repair.

Tools Required

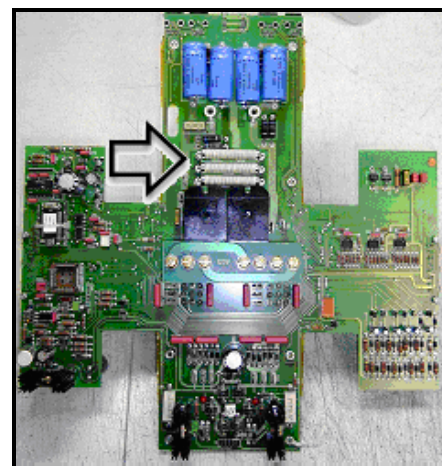
- o Soldering Iron/ Soldier
- o Needle nose wire cutters
- o Alligator clip
- o 5/64" Allen driver
- o 9/64" Allen driver

Procedure

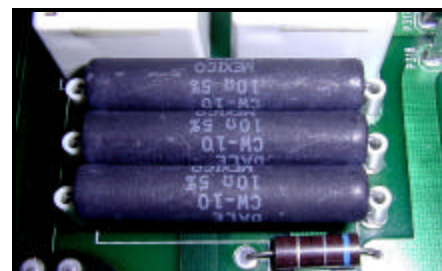
1. Turn Amp on its side with bottom towards you.
2. Remove 4 bottom feet (331) or 2 bottom feet (332,333) with 9/64" Allen wrench and set aside.
3. Remove bottom cover Allen screws on the 331,332, or 333 amplifier with 5/64" Allen driver and remove cover to expose VSMB board.



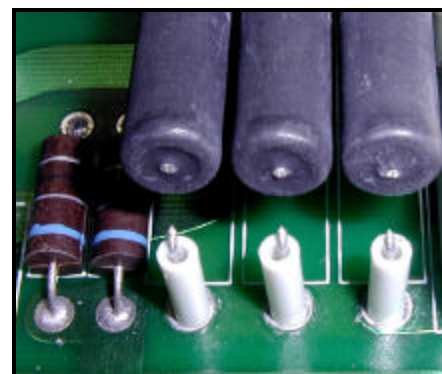
4. Remove VSMB Daughter board on VSMB board exposing the Surge Resistors.



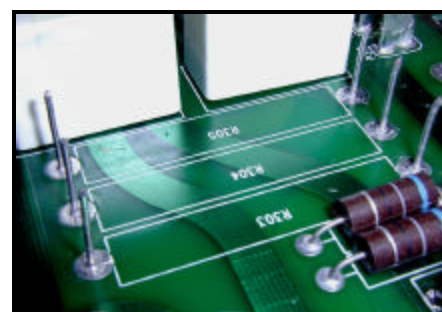
5. Locate R303, R304 and R305 Surge Resistors.



6. Cut the leads of R303, R304 and R305 flush with the body and remove.



7. Straighten the leads and remove the 6 spacers. Note – Spacers will not be re-used.





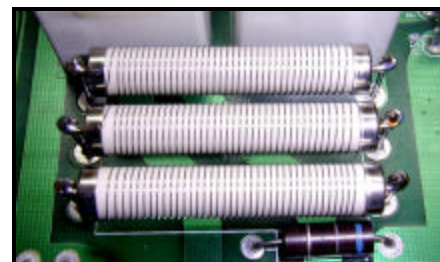
8. Attach a new 100 resistor (part # 110087) at R305.



9. Using an alligator clip or other suitable heatsink, solder the new resistor in place. This prevents reflow of the original lead, possibly causing a high resistance cold solder joint.



10. Repeat for R303 and R304.



11. Replace VSMB Daughter Board on VSMB board over resistors.
12. Replace Bottom Cover on amp.
13. Replace feet on amp.
14. Return amp to normal position and test for proper operation.