

Replacing The TVA92's Horizontal Output Subbing Transistor

The TVA92 contains many protective measures to assure longevity of the Horizontal Output Subbing Transistor. However, high power and heat combined with unusual failure conditions in the TV's horizontal output stage may cause the transistor to fail prematurely. This Tech Tip covers how to replace the TVA92's horizontal output subbing transistor should it fail.

TVA92 Diagnostic Test

The TVA92 performs a diagnostic test of the internal Horiz Output Device Sub & Drive circuit to detect a shorted horizontal output subbing transistor. If the TVA92's subbing transistor shorted, the digital display will indicate flashing "Sub Bad" in all of the Dynamic Tests (TV ON) positions. If you see this reading, replace the TVA92's internal subbing transistor before using any of the DYNAMIC TESTS.



Fig. 1 A flashing "Sub Bad" display TVA92 in any of the Dynamic Tests (TV ON) positions indicates a shorted horizontal subbing transistor.

WARNING

Do not connect the DYNAMIC TESTS Leads to the TV's Horizontal Output transistor when a "SUB BAD" readout is seen in the TVA92's Digital Displays. The readout indicates an internal circuit failure which will alter TV symptoms and draw higher than normal TV B+ current.

Part	Description	Reference #	Sencore Part #	Part #
Trans,	Horizontal Output	TR24	19G117	BU508A

Table 1. Identification information of the TVA92's horizontal output subbing transistor.

Suitable Replacement Transistors

The TVA92's Horizontal Output subbing transistor can be easily located and replaced in your shop. However, the TVA92's horizontal output subbing transistor is a high quality component: the power dissipation is higher than general replacements and the conduction resistance lower. These characteristics improve its longevity and reduce heat build up. The characteristics of the horizontal output transistor also influence the accuracy of the Device Sub Current LCD readout. For these reasons an exact replacement is recommended. You can obtain an exact replacement transistor from the Sencore Service Department. When ordering, refer to the information on the TVA92's horizontal output subbing transistor in Table 1.

A general replacement horizontal output transistor may be substituted while awaiting an exact replacement. For reliable performance use one of the suggested replacements or equivalent listed below. These replacements offer higher power dissipation, current, gain and switching time characteristics. Other replacements may work but may not provide the tolerance to heat buildup and overload conditions that occur in defective stages.

Acceptable Replacements:

ECG2300,
2SD1402,
SK9476,
NTE2300, or equivalent.

Replacing The Transistor

To replace the sub transistor first remove the top case cover. Removing the cover, reveals the main circuit board. The horizontal subbing transistor is located on the main board just behind the Horiz Output Device Sub & Drive front panel control.

The horizontal subbing transistor (TR24) is the first transistor towards the front and is located on the large metal heatsink frame.

The transistor is held firmly against the metal heatsink by a small metal retainer. The printed circuit board is socketed for easy removal of the transistor. You do not need to remove the circuit board or unsolder parts.

To remove the top case cover:

1. Disconnect Dynamic Tests Leads from chassis, Turn off the VG91 and plug AC Power Cord to the TVA92,
2. Remove the 6 top case screws located to the front and rear.

3. Remove the 4 case screws and moldings on both sides of the case.
4. Gently push back the top of the front & rear edge molding.
5. Lift the top case cover up and remove.

To replace the horizontal Output Subbing Transistor:

1. Remove the screws on the small metal retainer holding the transistor to the metal frame
2. Gently separate the transistor from the heat transfer pad and lift the transistor from the socket.

Note: You may reuse the heat transfer pad. The heat transfer pad does not require heat sink compound.

3. Insert the replacement transistor firmly into the socket.
4. Screw the small metal retainer clip back in place to hold the replacement transistor firmly to the metal frame.

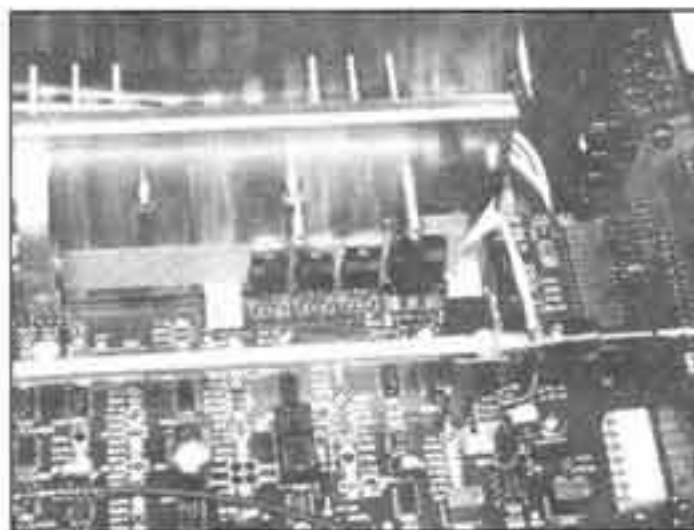
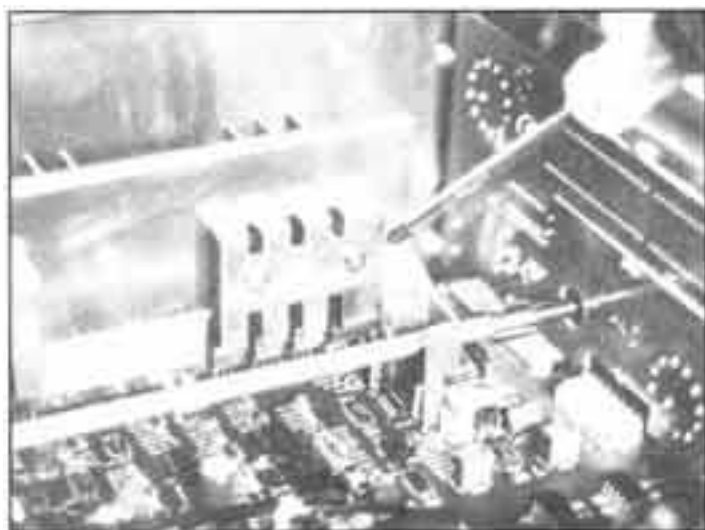


Fig. 2 : The TVA92's Horizontal Output subbing transistor is located at the front of the main board on the large metal heat sink.