

# Service Bulletin

KENWOOD ELECTRONICS, INC. NATIONAL SERVICE DEPT.

DATE: August 1, 1975

Bulletin SB 2016  
(Same as SB-059)

TO: All Kenwood Authorized Service Centers

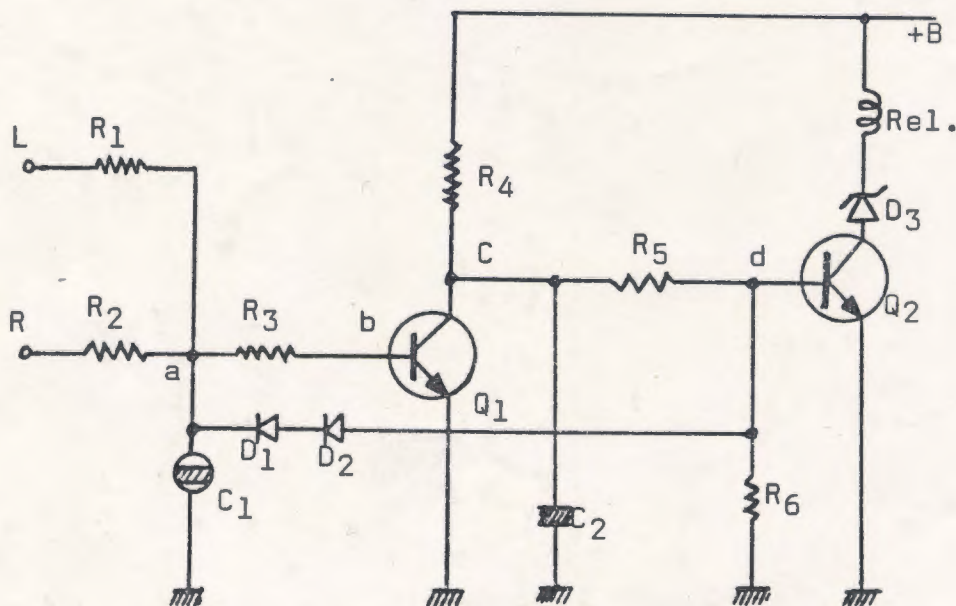
SUBJECT: DC Voltage Protection Circuit for KR-5400, KR-4400, and KA-4006

A production change has resulted in the use of a new DC voltage protection circuit in the KR-5400, KR-4400, and KA-4006. The change applies to those units of the above model whose serial numbers are 06XXXX or higher.

	<u>OLD MAIN AMP UNIT</u>	<u>NEW MAIN AMP UNIT</u>
KR-5400	X07-1280-10	X07-1350-10
KR-4400	X07-1280-11	X07-1350-11
KA-4006	X07-1280-12	X07-1350-12

NOTE: THE NEW BOARDS ARE NOT INTERCHANGEABLE WITH THE OLD BOARDS.

The basic circuit layout for the new protection circuit and a brief description of its operation is provided below:



- 1) Left channel output signal (or R-Ch output signal) is applied to point "a" through R1 (or R2).
- 2) AC output signals are bypassed via C1 to ground and do not activate the circuit.
- 3) If a positive DC voltage appears at "a", this voltage is applied to the base of Q1 (point "b") through R3.  
Because of the increased base voltage Q1 is turned on and the Q1 collector voltage decreases. As a result, the voltage at "d" also decreases and Q2 is turned off.
- 4) If a negative DC voltage appears at "a", this voltage appears at "d" through D1 and D2, so that Q2 is turned off.
- 5) R4 and C2 have a time constant. Therefore, there is a time delay after the power switch is turned on until the relay closes.
- 6) D3 (Zener Diode) improves the switching characteristic of Q2 and allows a quicker release of the relay when the power switch is turned off.

Additional information including schematic and parts list are found on the attached sheet.