

New Input Protection Circuit for Wells-Gardner Color X-Y Display

(Supplement to TM-183)

This display contains an additional small printed-circuit board (PCB) that is not described in the display manual (TM-183). The PCB is mounted in "piggy-back" style on top of the Deflection PCB.

The input protection board was added to protect the fuses in the display from damaging input voltage conditions. Without this board, the display fuses might blow in the event of an intermittent or long-term game PCB failure. With this board, the screen will momentarily go blank if the average X- or Y-axis voltage(s) exceed a certain level. The screen then automatically recovers for normal game play and earning when the voltage(s) return to normal.

If this display is used in a Tempest™ game, be sure to correctly adjust the X and Y SIZE and CTR video pots on the Tempest Analog Vector-Generator (main) PCB. The instructions for these adjustments are printed on the Tempest schematics—Sheet 2, Side B—3rd printing or later. Improper adjustment may cause the screen to go blank during normal game play.

The following are the parts list, assembly drawing and schematic for the Input Protection Circuit PCB:

Input Protection Circuit PCB Parts List

Part No.	Description (Reference Designations in Bold)
24-250107	100 μ f Aluminum Electrolytic Fixed Axial-Lead 25V Capacitor (C1, 2)
31-1N914	75V Type-1N914 Switching Diode (CR2-4)
32-1N751A	5.1V 400mW Type-1N751A Zener Diode (CR1)
33-2N3906	Type-2N3906 PCB Switching and Amplifying Transistor (Q2, 4, 5)
34-2N3904	Type 2N3904 NPN 60V 1-Watt Transistor (Q1, 3)
52-222	22-Gauge Jumper Wire (2 in. required)
110000-223	22K Ohm, $\pm 5\%$, 1/4W Resistor (R1, 8, 11)
110000-273	27K Ohm, $\pm 5\%$, 1/4W Resistor (R5)
110000-393	39K Ohm, $\pm 5\%$, 1/4W Resistor (R4)
110000-682	6.8K Ohm, $\pm 5\%$, 1/4W Resistor (R6, 7)
110001-222	2.2K Ohm, $\pm 5\%$, 1/2W Resistor (R10)
110001-472	4.7K Ohm, $\pm 5\%$, 1/2W Resistor (R9)
110011-122	1.2K Ohm, $\pm 1\%$, 1/4W Metal-Film Resistor (R2, 3)

Input Protection Circuit PCB Assembly
A038088-01 B

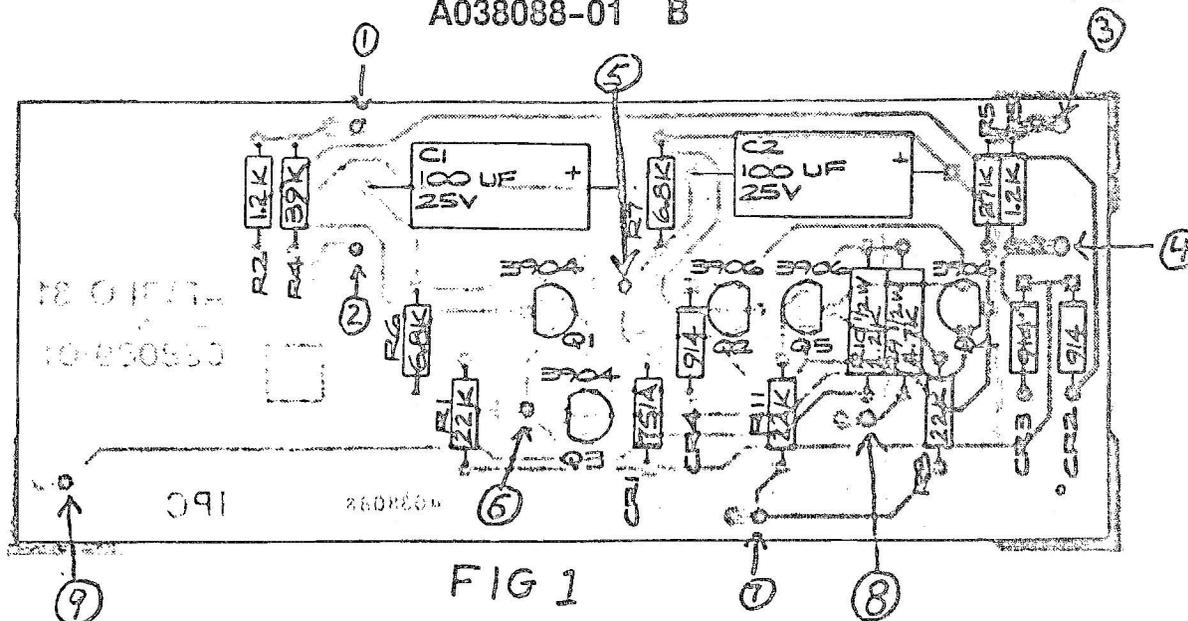
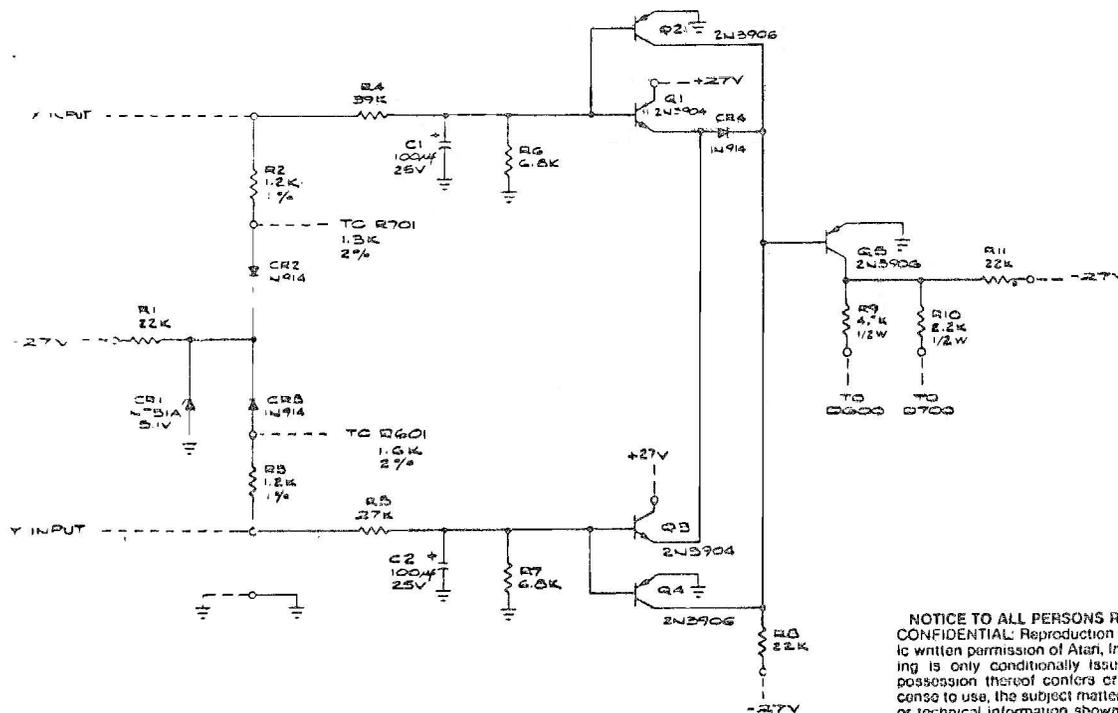


FIG 1
Schematic of
Input Protection Circuit PCB



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COLOR X-Y DISPLAY 92-053
INSTALLATION INSTRUCTIONS
INPUT PROTECTION CIRCUIT PCB
A038088-01

1. Remove R600, R606, R700 and R706.
2. Remove solder from all nine holes indicated in figure 13.
3. Straighten pins of PCB so that they are perpendicular to the board.
4. Match and insert the numbered holes in figure 13 with the numbered pins in figure 1.
5. Solder
6. For more information please call our Technical Assistance Department:
 - o 800 538-1611 - West and Central U.S.A.
 - o 800 526-3849 - East U.S.A.
 - o 201 469-5993 - From New Jersey
 - o 408 745-2900 From California, Alaska, Hawaii

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