

## Service Bulletin No. 54



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# Technical Support

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TO: Service Managers  
DATE: March 23, 1994  
RE: Jurassic Park, Last Action Hero & Tales from the Crypt  
**FLIPPER / END OF STROKE FAILURES**

**Symptom:** Lower Flipper not working, or working intermittently when flippers are used.

**Problem:** End of stroke switches are failing. This is due to the switch blade cracking. The cracks are known to be occurring between the baka-lite wafers, which in turn isolate the switch blades from each other; therefore, not making the switch failure visible to the eye. The failure can be diagnosed by attaching a jumper wire across the switch lugs and retesting the flippers under power.

**Solution 1:** **Replace** with E.O.S. Power Switch Update Kit, 500-5821-00 (Kit includes or, E.O.S. Switch, 180-5124-01, Spacer and instructions).

**Solution 2:** **Replace** Solid State Flipper Board part #520-5033-03 with the new updated Solid State Flipper Board, part #520-5076-00. The new Flipper Board has a modified circuit, which prevents the failure of the flippers if the End of Stroke Switch fails.

or, << Note: Solution 2 is an **option**, not a warranty item! >>

**Solution 3:** **Modify** existing Flipper Board, part #520-5033-03. This update to the old board modifies the circuitry which prevents the failure of the flippers if the End of Stroke Switch fails.

See next page for step-by-step procedures if Solution 3 is chosen.

The following is the step by step procedure for Solution 3:

Parts Required: Two (2) each 1MFD 50V Electrolytic Cap.  
Two (2) each 1N4148 Diode  
Two (2) 4.7K 1/4w Carbon Resistor  
One (1) 1" Solid Wire, 22 Gauge or smaller.

Tools Recommended: Exacto Knife  
Soldering Iron (25w)  
Solder 60/40 Rosin Core  
Flush Cutters  
Long Nose Pliers

Modification Procedure:

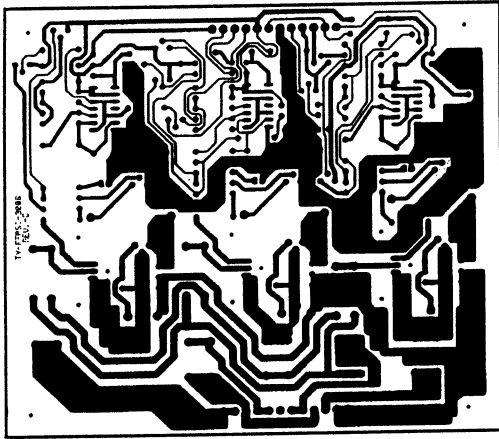
- Step 1
- A) Remove flipper bd. # 520-5033-03 from game cabinet.
  - B) Cut the trace (bottom side) that connects R23 & R25. (See Fig. 1)
  - C) Add jumper (bottom side) from cut side of R23 Ground. (See Fig. 1)
- Step 2
- A) Right Flipper: Take the 1MFD 50V Capacitors and attach 1 cap. to CN1, {+} (positive) side to Pin 2 and {-} (negative) side to Pin 1. (See Fig. 1)
  - B) Left Flipper: Attach the second cap. to CN1, {+} side to Pin 9 and {-} side to Pin 11. (See Fig. 1).
- Step 3
- A) Add resistors and diodes to the topside. (See Fig. 2)
  - B) Attach by twisting and soldering one lead of each resistor to the cathode (banded side) of the diode. Do this to both diodes.
  - C) Attach the resistor / diode set. Cut and solder the anode lead (non banded side) to IC location U1 Pin 4, solder the other end of the resistor / diode to location R1 (See Fig. 2 Left shaded area). This takes care of the right flipper.
  - D) Attach the 2nd resistor / diode set. Cut and solder the anode lead (non banded side) to IC location U2 Pin 4, solder the other end of the resistor /diode to location R23 (See Fig. 2 Right shaded area). This takes care of the left flipper.

**CAUTION:**

**USE EXTREME CARE WHEN HANDLING SOLDERING IRON OR SHARP OBJECTS.**

Any questions or concerns call us at 1-708-345-7700 and ask for Service.

Bottom Side



DATA EAST PINBALL, INC.  
 Solid State 3-Flipper Board  
 520-5033-03 Rev. C  
 compatible to  
 520-5076-00 Rev. A  
 after modifications

Top Side

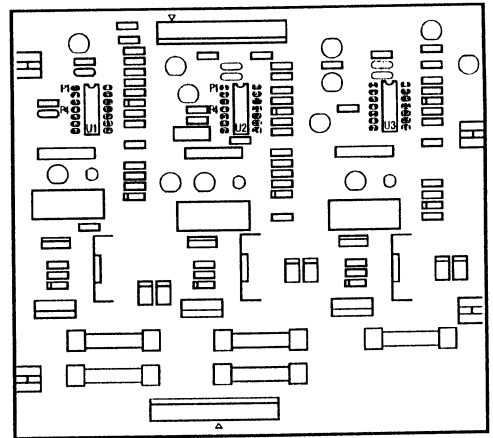


Fig. 1

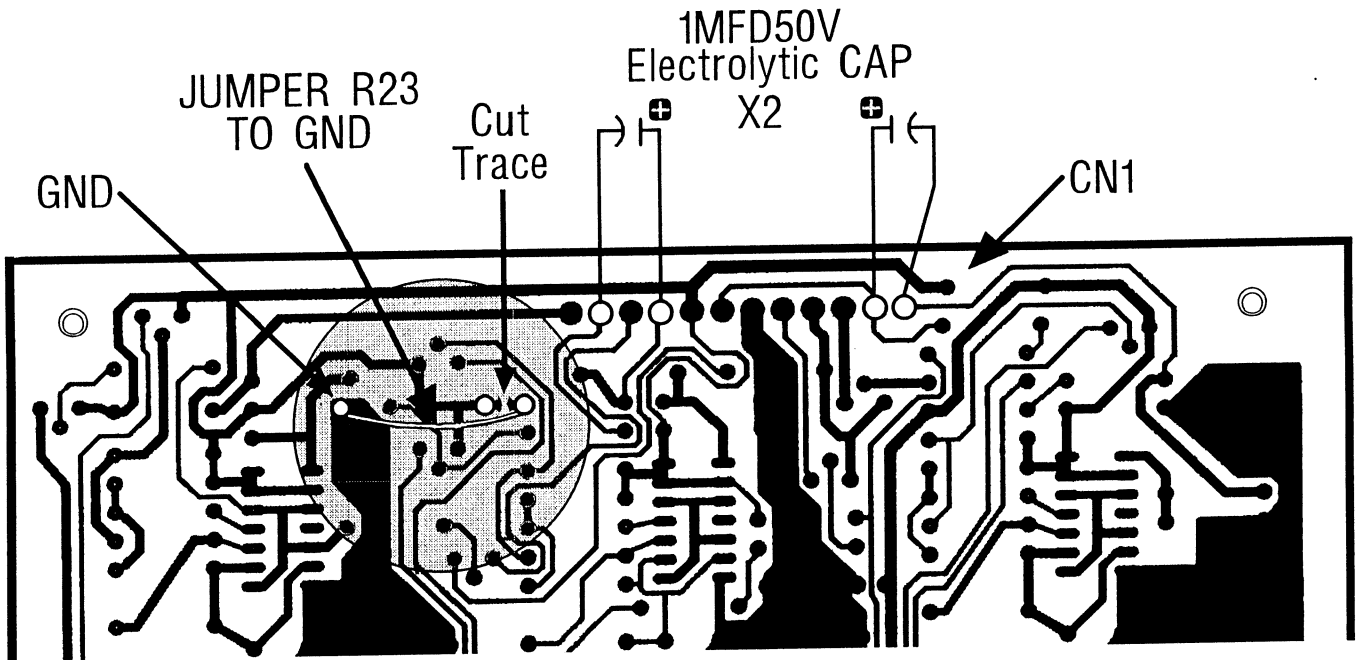
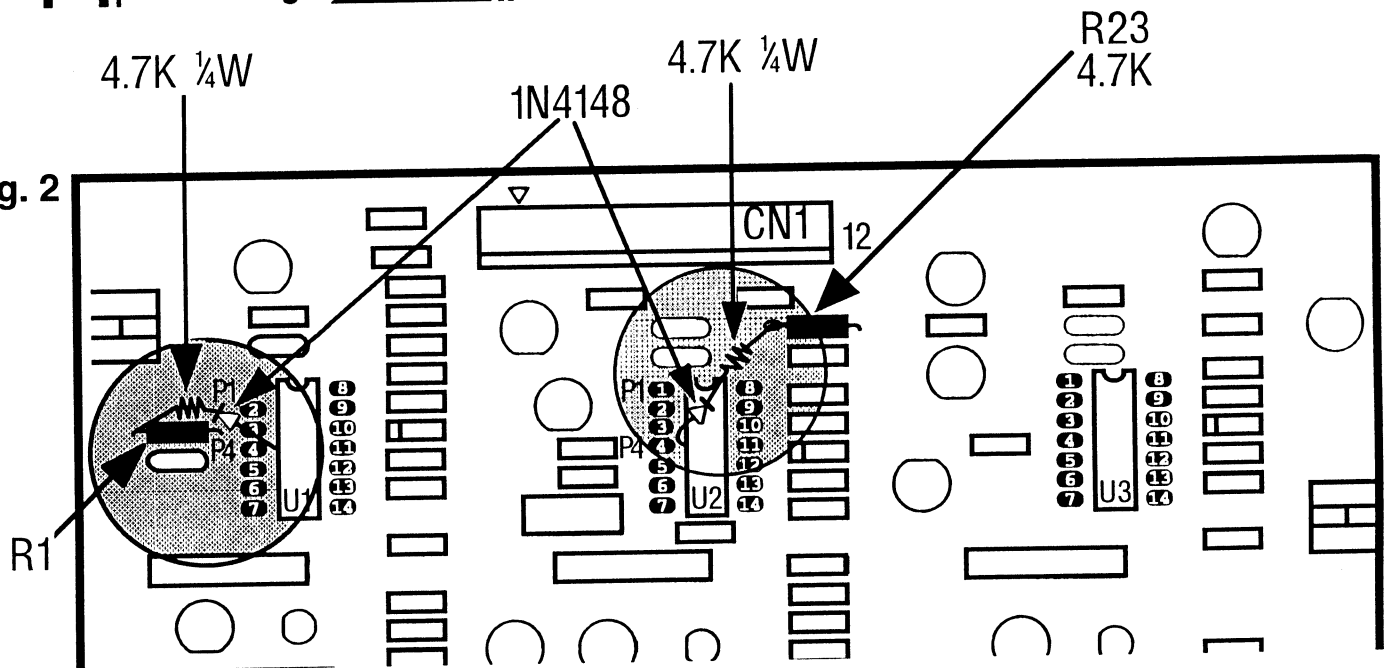
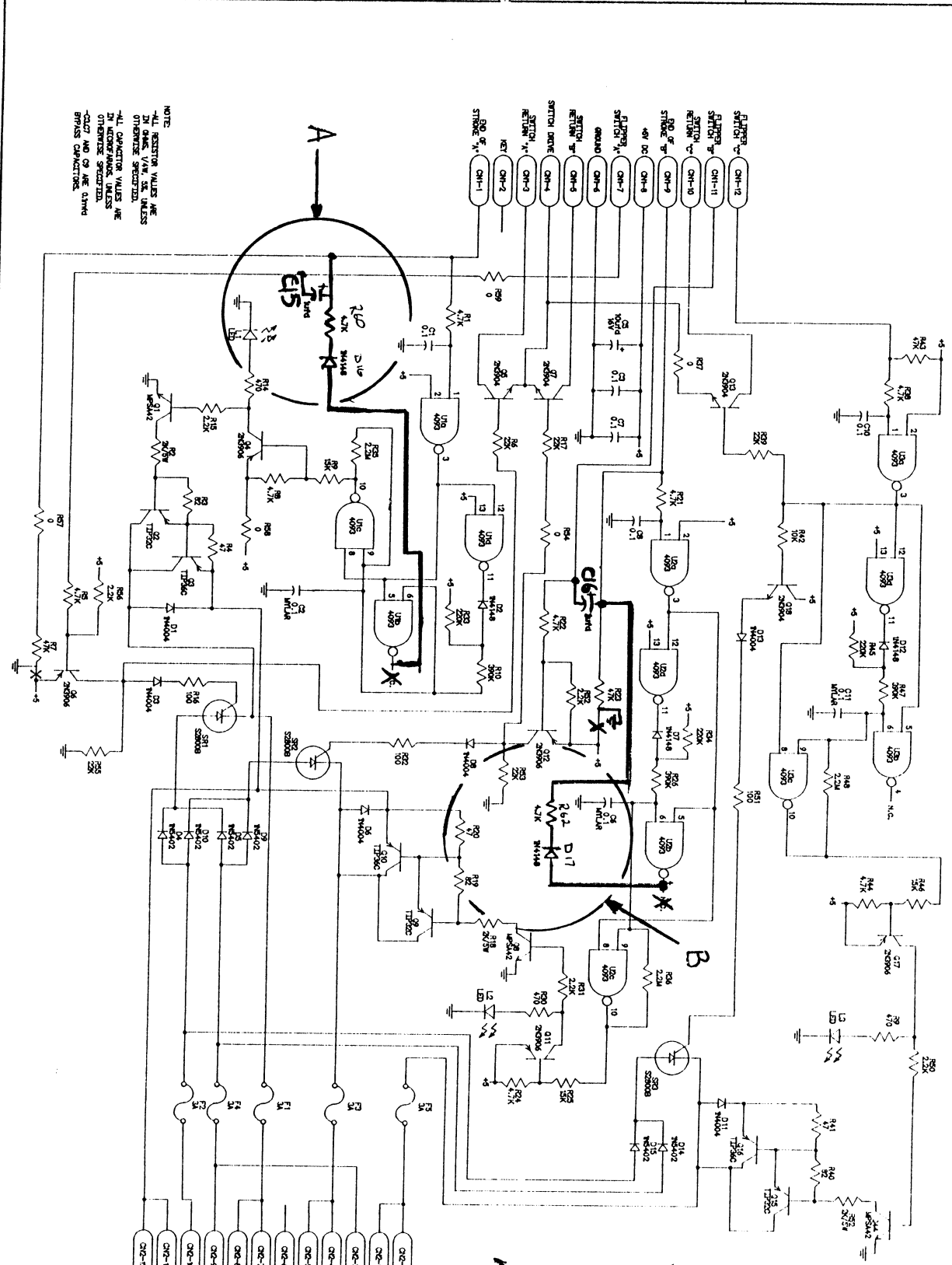


Fig. 2





PART NAME		SOLID STATE FLIPPER BOARD	
REV	DATE	REV	DATE
0	5-20-50	0	5-20-50
DESIGNED BY		CHECKED BY	
E.L.S.		E.L.S.	
DRAWN BY		DRAWN BY	
E.L.S.		E.L.S.	
CIRCUIT		CIRCUIT	
1		1	
REV		REV	
0		0	

**DATA EAST**

A - MW R60 4.7K  
 B - MW R62 4.7K  
 D17 IN4148  
 D16 IN4148

REV	DESCRIPTION	DATE	APPROVED
0	TRAC CHANGE IN PARTS	5-20-50	
0	ADD 00 7 STORE CONTACTS	4-20-50	
0	CHANGE R61, R62 VALUES	5-20-50	