

FBI

1988



OWNER MANUAL — DEAD ANGLE®

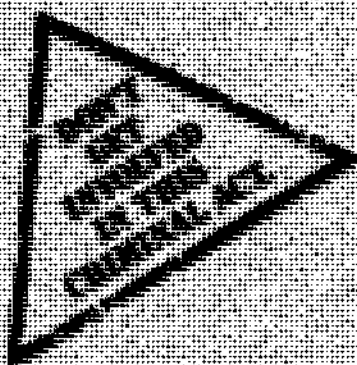
VIDEO GAME OPERATOR:

Don't Get Involved In A Federal Crime. Don't Buy Or Operate Copy Or Unauthorized Boards In Your Games.

Warning



It is the policy of the Federal Bureau of Investigation to advise the public of the consequences of the purchase, sale, or operation of unauthorized video game boards. The purchase, sale, or operation of such boards is a violation of the Copyright Act of 1976, Title 17, U.S.C., and is a Federal Crime. The purchase, sale, or operation of such boards is also a violation of the Copyright Act of 1976, Title 17, U.S.C., and is a Federal Crime.



WARNING
The purchase, sale, or operation of unauthorized video game boards is a violation of the Copyright Act of 1976, Title 17, U.S.C., and is a Federal Crime.

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DEAD ANGLE® by Fabtek®

Fabtek® is dedicated to being the most operator-oriented company in the game industry. In respect to you, the operator, this means several things, such as:

- 1) Having the clearest instructions possible so that you can minimize the time it takes to put the game together;
- 2) Providing useful information to help you produce the best-looking and highest earning game from your Fabtek® Kit;
- 3) Informing you of the proper setting for your game in both street and arcade locations. This is a first for the game industry; we realize that the differentiation between these two types of locations is important, and we want to help you prepare your game so that you can minimize your profits accordingly.
- 4) Continuing to keep the operator informed by publishing all service bulletins in the **Star Tech Journal** and in all the other Trade Magazines.

To accomplish all of this, Fabtek® uses more operator input. Our games are made to be operated by operators such as yourself; you need all the information you can get today in order to make a maximum profit.

We would like to thank you for purchasing your new Fabtek® game. We are sure that the Fabtek® way will bring you back to us, game after game. Happy remunerations!

Dead Angle® is protected by federal copyright laws and is the property of Fabtek®. Any unauthorized versions of this game are illegal by federal law. AAMA protected stickers must be attached to the PCB. Please notify Fabtek® of any boards not having the AAMA seal.

IMPORTANT F.C.C. WARNING

WARNING

THIS EQUIPMENT GENERATES AND CAN RADIATE RADIO FREQUENCY ENERGY; IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, IT MAY CAUSE INTERFERENCE WITH RADIO COMMUNICATIONS. AS TEMPORARILY PERMITTED BY REGULATION, IT HAS NOT BEEN TESTED FOR COMPLIANCE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER, AT HIS OWN EXPENSE, WILL BE REQUIRED TO TAKE WHATEVER MEASURES NECESSARY TO CORRECT THE INTERFERENCE.

DANGER

An isolation transformer must be used with the monitor and power supply.

This game must be equipped with a three wire 110 volt plug for safety. Under no circumstance remove the ground plug.

DANGER

This game is designed with a JAMMA 56 pin connector. This plug is one of the finest operator friendly features in our industry today. What this means to you is that:

- 1) 1, 2, A, B, 27, 28, e and f are grounded
- 2) 3, 4, C and D are +5 volts
- 3) 5 and E are -5 volts
- 4) 6 and F are +12 volts.

Also, all video and joystick functions are always in the same place. Once a cabinet is wired for JAMMA, it is easily changed from game to game.

Many older games such as Pac Man®, etc., have the power supply on the board. This will not work!!! Only a JAMMA connector with proper voltage will work. Fabtek® recommends using an 11 amp switching power supply with Dead Angle®.

SAFETY

The following topics should be carefully studied to insure maximum reliability and safety for both serviceman and customer. **Shock Hazard:** The high voltage present on the monitor may be very dangerous. Extreme caution must be used when working with or around the monitors. Be certain that the grounding strap is attached to the monitor frame. The picture tube in the monitor is also a hazard and should be handled with care. Do not strike, scratch, or subject the tube to more than moderate pressure as it may implode causing serious injury from flying glass. Be certain that the control panel, power supply monitor, and coin door are all properly grounded to the ground wire inside the line cord. Do not remove ground prong off plug end.

PARTS LIST

- 2 - Mounting Blocks
- 4 - 2" Screws
- 4 - 2" Bolts, Nuts, Lock Washers
- 1 - Plex Marquee
- 1 - Control Panel Overlay
- 1 - FCC Cage
- 1 - Graphic Sheet
- 2 - Side Graphics
- 1 - Manual
- 1 - Joystick
- 6 - Buttons
- 1 - Jamma Cable
- 1 - Marquee Art

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MONITORS

Dead Angle® is designed to be operated with a raster scan monitor with negative sync (RGB). This means Dead Angle® will not work with any X-Y (Tempest, Space Dual, Star Trek), etc. An isolation transformer must be used in conjunction with the monitor. This is for your safety. The monitor also utilizes extremely high voltages. The monitor may also retain a charge for an extended period of time. Safety goggles must be worn while removing or replacing the monitor.

It is highly recommended that the monitor is verified good before the new Dead Angle® kit is installed in your new and or rebuilt cabinet.

Dead Angle®, Dynamo® style

Fabtek is concerned that your Fabtek game will out earn the competition by 20 percent. The cabinet your kit is installed in will have major effect on how much money it earns. Installing the game in a used cabinet that has already been kitted several times may not be the best way to maximize profits.

In arcade locations it is recommended installing Dead Angle® in the Dynamo 25 inch cabinet. We feel the game will earn 20 percent more money because of the 25 inch monitor and the creative styling of the Dynamo cabinet. With the JAMMA connector the game can be powered in about five minutes with only the control panel to be wired.

Dynamo® also has a 19 inch game cabinet for smaller street locations.

INSTALLATION OF KIT

To Disassemble:

1. Open back door and remove old board set and power supply, if you are using a new switching power supply.
2. Remove marquee glass and monitor glass.
3. Remove control panel and set aside.
4. Remove old wire harness, leaving 110 volt wiring intact. Also, leave the grounding straps to the monitor, coin door, control panel, and power supply intact.

Installation:

1. Mount the board set on the side panel of the cabinet as close to the middle of the game as possible (approximately 10-12" off bottom).

NOTE: Do not mount board directly below control or any vents or cracks so that liquids may seep on to the board. Do not forget about coins that may drop on to the board. Also, mount the board with edge connector facing up.

2. Mount the power supply on the bottom of the cabinet with connectors facing the rear of the cabinet. An optional mounting might be on the side panel just below the board set, connector to rear.
3. If the game does not have an isolation transformer, you must protect your customers and your game. Install one between the 110 volt line and your monitor/power supply.
4. Place the provided JAMMA wiring harness on the board. Connect the +5, +12, -5, and ground wires to the corresponding lugs on the power supply, connecting all the wires. If you don't, you will probably burn the board connector.
5. Run a wire from -5 volts to the coin door lights. Run a wire from +12 volts to the coin counters. This completes the power requirements.
6. Connect the Audio (+) and Audio (-) to the speaker.
7. Connect the video red, green, blue, ground, and sync to the corresponding wires on the monitor. If the monitor is not a negative composite sync, see sync modifications chart.
8. Cut the marquee to size. Replace the marquee lamp, if needed. Install the marquee panel.
9. Connect the coin 1 and coin 2 wires to the coin switches. Connect the coin counter 1 and coin counter 2 wires to the coin counters.

NOTE: If you only have one coin counter, see coin counter diagram. It will not matter if the coin counters are only rated at 6 volts, as the pulse is not long enough to burn out the counter.

10. Disassemble the control panel of all the hardware. Do not remove the old panel overlay. Determine where to place the new joystick and buttons if they must be repositioned. Then, cut new holes.

NOTE: If you are going to use plexiglass over the control panel, we suggest that you use a good 1/8" polycarbonate with a scratch resistant coating. We recommend GENERAL ELECTRIC LEXAN MR5 with margard or TUFFAK CM-2. These do not crack or break with abuse.

Cut and drill plex as needed. Remove the old control panel overlay carefully and apply the new overlay on top of the old glue. Use an **Exacto** knife to cut out any button or bolt holes. Apply decals for "1 player," "2 player," "fire," and "grenades" over appropriate buttons. Now assemble the control panel.

11. Bolt the control panel to the cabinet. Now connect the 1P up/down, left/right, and weapons/grenade wires to the correct switches. Connect the 1 player and 2 player start wires.

NOTE: The 2P wires need not be connected on upright cabinets, but only on the cocktail tables.

12. Power up the game. Look over your installation for errors, and then apply power, listening for unusual sounds. Check for smoke or sparks. If everything is okay, wire tie all wires to form a nice, neat wiring harness. Clean the cabinet inside and out. Measure the +5 volts on the furthest point from the edge connector and adjust 5 volts to 5.05 volts. Use a tinted plex over the monitor if there are burns in the screen. We suggest bronze or grey tinted plex. Touch up the cabinet with fresh paint, and then repair all cabinet dents or chips, using an auto body product called **Duraglass**. This is similar to bondo. You can consult your local auto body shop or auto parts supplier for this product, as well as advice on how to use it.

DEAD ANGLE
JAMMA EDGE CONNECTOR/CABLE

COMPONENT SIDE			SOLDER SIDE		
FUNCTION	COLOR	POS	POS	COLOR	FUNCTION
✓ GROUND	BLK	1	A	BLK	GROUND
✓ GROUND	BLK	2	B	BLK	GROUND
✓ +5 VOLTS	RED	3	C	RED	+5 VOLTS
✓ +5 VOLTS	RED	4	D	RED	+5 VOLTS
✓ -5 VOLTS	YEL/GRN	5	E	YEL/GRN	-5 VOLTS
✓ +12 VOLTS	ORG/BLK	6	F	ORG/BLK	+12 VOLTS
		7	H		
COIN COUNTER NUMBER 1	WHT/BLK	8	J	GRY/GRN	COIN COUNTER NUMBER 2
		9	K		
✓ AUDIO NEG -	PUR/RED	10	L	PUR/YEL	AUDIO POS +
		11	M		
✓ VIDEO RED	RED	12	N	GRN	VIDEO GRN
✓ VIDEO BLU	BLU	13	P	WHT	VIDEO SYNC
✓ VIDEO GND	BLK	14	R		
		15	S		
COIN INPUT 1	GRY/BLU	16	T	GRY/YEL	COIN INPUT 2
START 1	WHT/GRY	17	U	GRY/RED	START 2
1 P UP	WHT/GRN	18	V	GRY/BRN	2 P UP
1 P DOWN	WHT/BLU	19	W	WHT/YEL	2 P DOWN
1P LEFT	BLU/GRN	20	X	WHT/RED	2P LEFT
1P RIGHT	BRN/YEL	21	Y	YEL/BRN	2P RIGHT
1P WEAPON	YEL/BLK	22	Z	RED/GRY	2P WEAPON
1P GRENADE	BLU/BLK	23	a	RED/WHT	2P GRENADE
		24	b		
		25	c		
		26	d		
GROUND	BLK	27	e	BLK	GROUND
GROUND	BLK	28	f	BLK	GROUND

* Video sync composite negative

Note: 2 Player controls are used only on cocktail table
1 and 2 player games are not Interactive

DEAD ANGLE DIP SWITCH SETTINGS

DIP SWITCH NO. 1		1	2	3	4	5	6	7	8	
COIN SW. 1 COIN/CREDIT	1/1	OFF	OFF	OFF						*
	2/1	ON	OFF	OFF						
	1/3	OFF	ON	OFF						
	4/1	ON	ON	OFF						
	1/2	OFF	OFF	ON						
	3/1	ON	OFF	ON						
	1/5	OFF	ON	ON						
	5/1	ON	ON	ON						
COIN SW. 2 COIN/CREDIT	1/1				OFF	OFF				*
	2/1				ON	OFF				
	1/2				OFF	ON				
	2/3				ON	ON				
TEST MODE	OFF						OFF			*
	ON						ON			
SCREEN INVERSION	OFF							OFF		*
	ON							ON		
GAME STYLE	UPRIGHT								OFF	*
	TABLE								ON	
SETTINGS AT TIME OF SHIPMENT		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

* ORIGINAL FACTORY RECOMMENDED SETTINGS

DEAD ANGLE DIP SWITCH SETTING

DIP SWITCH NO. 2		1	2	3	4	5	6	7	8
DIFFICULTY SETTING	NORMAL	OFF	OFF						
	EASY	ON	OFF						
	HARD	OFF	ON						
	VERY HARD	ON	ON						
EXTRA LIVES 1st/2nd	30000 / 100000			OFF	OFF				
	20000 / 50000			ON	OFF				
	50000 / 150000			OFF	ON				
	100000 / 200000			ON	ON				
NUMBER OF PLAYERS	3					OFF	OFF		
	1					ON	OFF		
	2					OFF	ON		*
	4					ON	ON		
ATTRACT MODE SOUND	ON							OFF	*
	OFF							ON	
COUNTRY	JAPAN								OFF
	OVERSEAS								ON *
SETTING AT TIME OF SHIPMENT		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON

* ORIGINAL FACTORY RECOMMENDED SETTINGS

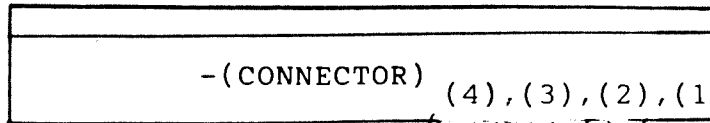
DEAD ANGLE DIP SWITCH SETTING
(JAPAN/OVERSEAS DIP-SW)

	JAPAN	OVERSEAS
NUMBER OF SHOTS PLAYER DEATH	3 SHOTS	2 SHOTS
NUMBER OF BULLETS FOR A MACHINE GUN	300 BULLETS	200 BULLETS
TIMING OF ENEMY APPEARANCE	SLOW	FAST
TIMER	3 MINUTES	2.5 MINUTES

DIFFICULTY DIP-SW

	EASY	NORMAL	HARD	VERY HARD
FREQUENCY OF ENEMY SHOTS	<			
TIMING OF ENEMY SHOOTING ACTION	SLOWER		FASTER	
KIND OF ENEMY	WEAKER		STRONGER	

DEAD ANGLETM DIP SWITCH SETTINGS
 (VOLUME CONTROL SET UP)

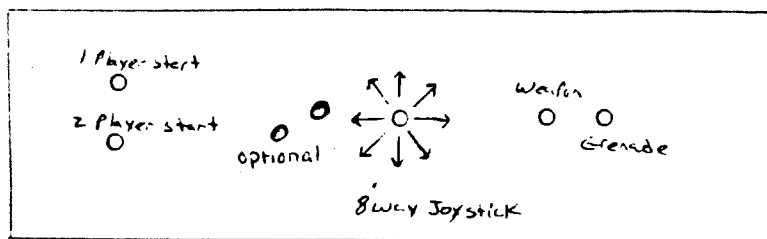


(VOLUMES)

		SETTING AT TIME OF SHIPMENT
(4)	TOTAL VOLUME	←
(3)	SOUND EFFECT (voice) VOLUME	→
(2)	BGM 1 BGM VOLUME 1	↓
(1)	BGM 2 BGM VOLUME 2	↓

MUST BE AT THE SAME LEVEL

TYPICAL CONTROL PANEL LAYOUT.



Star Tech Tips

We are grateful to Star Tech Journal™ for allowing us to publish the following excerpts from their journal.

Monitor Sync

If your monitor does not have dual polarity positions for sync, you may use one of the following methods to get your game going.

CURE 1: Install a simple one I.C. Circuit on your logic board. This I.C. may be "piggy backed" on to another 7404 series chip for power by bending up all but the two power pins so that they are parallel to the top surface of the new I.C. and then connecting the power pins only to the existing chip. (See Fig. 1) Next connect the sync wires as shown in Fig. 2. (Note: Figure 2 shows a hookup for either **composite** or **separate** syncs.)

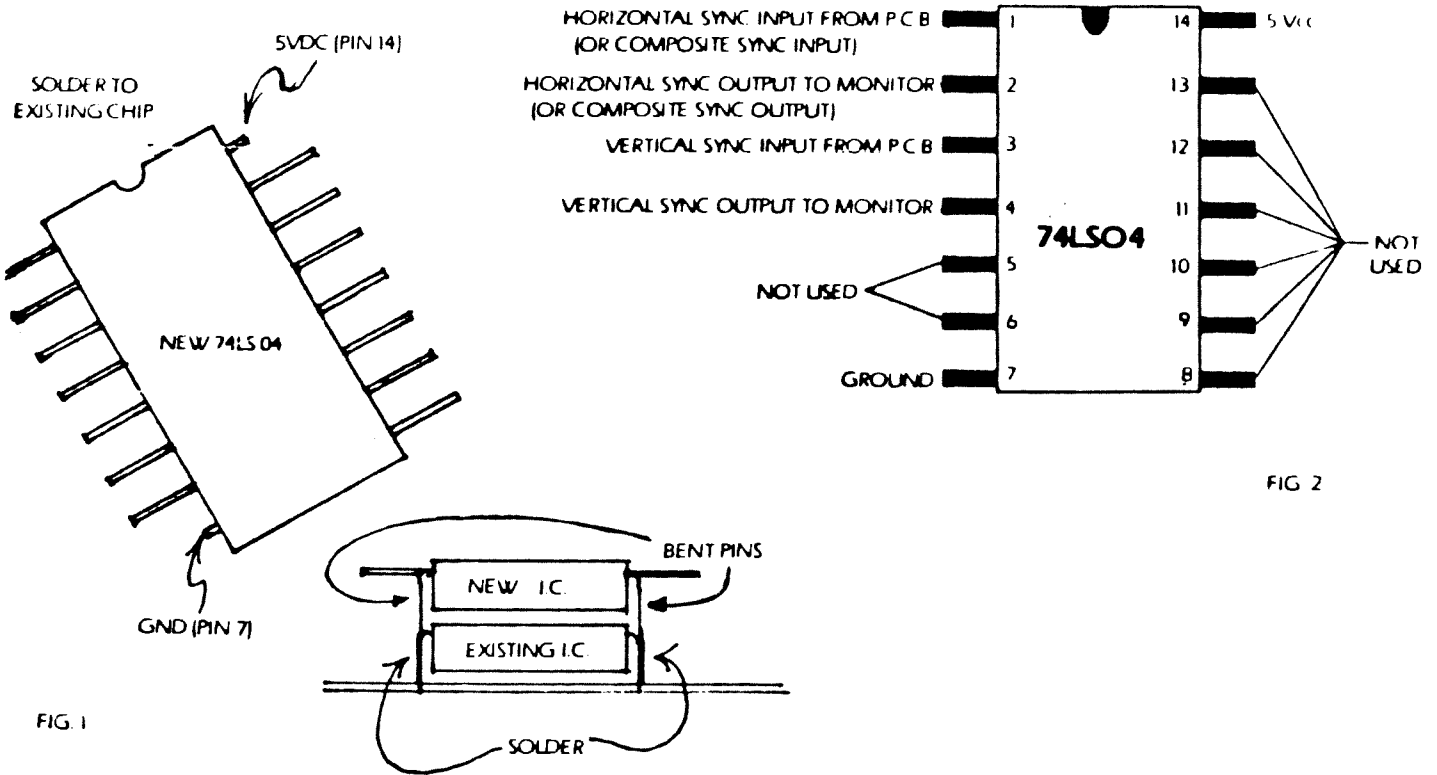


FIG 2

FIG. 1

CURE 2: Used for Wells-Gardner Video-Sync boards with positive sync connections only. (Vertical mount board 85x140B.

Cut the traces on the solder side of the board between input pins 5 & 6 to the unbanded (anode) ends of diodes X201 & X202.

Add MPSA56 transistor as follows:

Collector to anode leads of diodes X201 & X202. Base to pins 5 & 6 of the video input connector.

Emitter to cathode (banded) lead of zener diode ZD201.

Insert a 1N4148 diode - cathode to the emitter of the MPSA56 and anode to the base. (See Fig. 3)

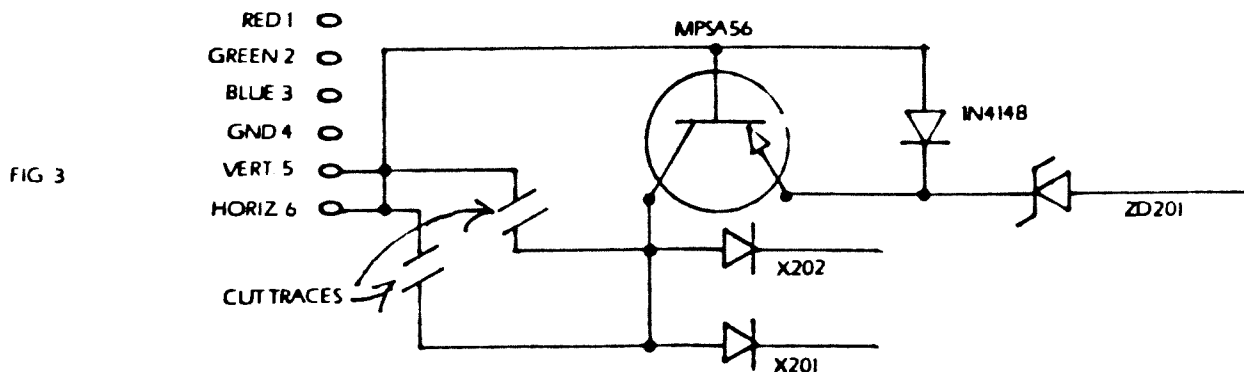


FIG 3

2. Horizontal Tearing

CAUSE: The negative sync signal of most logic sets are slightly different than the GO7-CBO monitor negative sync inputs. The result of this mismatch is a horizontal "wave" or "curl".

CURE 1: On the monitor deflection board, replace C303 with a 10uf 25V radial lead capacitor with the positive lead towards the collector of X305 (CAUTION: be sure to check this step as the original cap is not polarized.) Then replace C501 with the cap removed from the C303 location.

CURE 2: Connect 1N4148 fast-switching diodes across both the positive and negative sync inputs to the monitor. (See Fig. 4) **NOTE:** Both diodes must be installed or you will not have vertical stability.

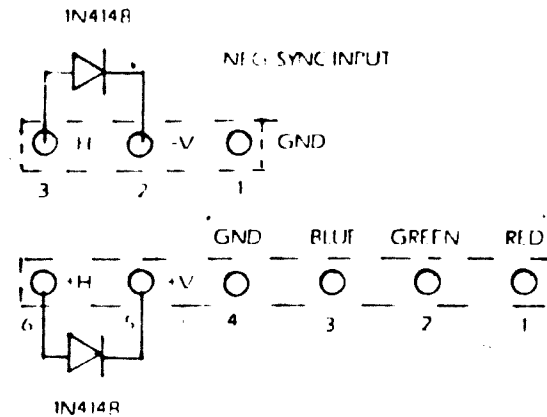


FIG. 4

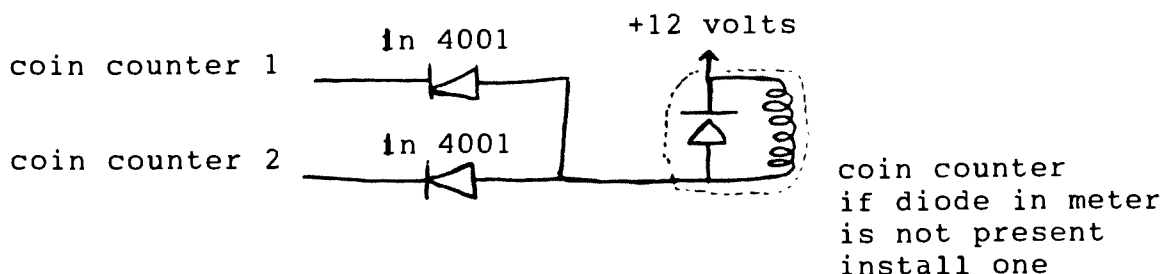
CURE 3: Join negative sync inputs J2 and J3 together with a jumper. Locate W/102 and install a jumper from W/102 to either J2 or J3.

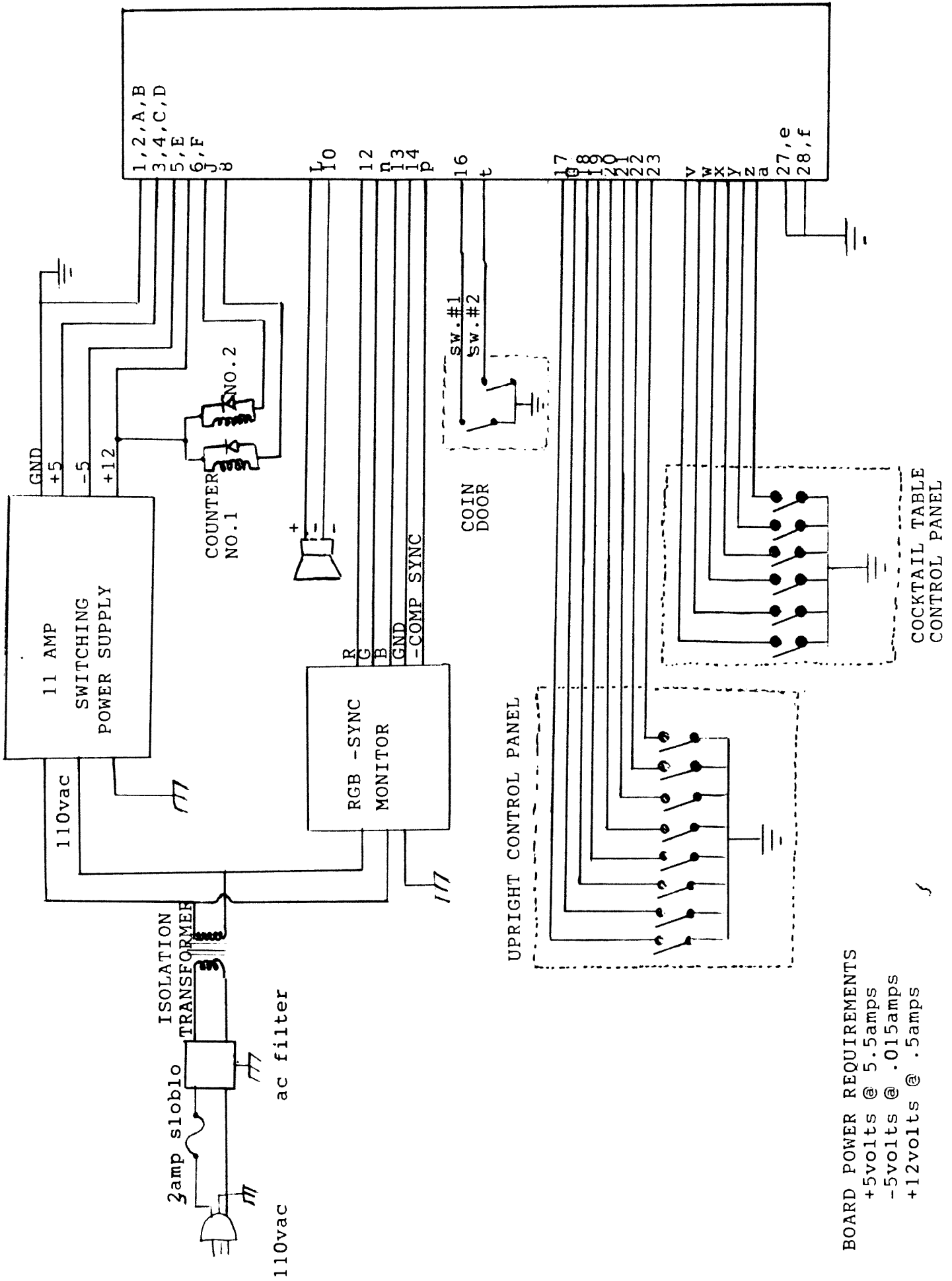
CURE 3: For Wells-Gardner K4600 series monitors

Replace C 356 (4.7uf 25V) on the Horizontal/vertical board (vertically mounted board nearest the flyback transformer) and center the horizontal hold pot. Turn L351 for the best horizontal stability and fine tune with the horizontal width pot.

COIN COUNTER DIAGRAM

If only one coin counter is to be used install two diodes in the following manner:





BOARD POWER REQUIREMENTS
 +5volts @ 5.5amps
 -5volts @ .015amps
 +12volts @ .5amps