

Figure 10. Taking voltage measurement on power supply.

TABLE 2  
Lamp Drivers — 14 Volt Lamps

LAMP	DRIVEN BY	DRIVER TURNED ON By:	
		U	B
Dart	B1	U11	U4
Round	B2	U11	U4
Game1	B3	U11	U8
Game2	B4	U11	U8
Game3	B5	U11	U8
Game4	B6	u14	U8
Bust	B7, B8	u14	U8
Remove Darts	B9, B10	U14	U8
Throw Darts	B11, B12	U14	U8
Game Over	B13, B14	U14	U8
Select & 50¢	B15, B16	u14	U8
Game & 25¢	B17, B18	u14	U8
Player Change	B19, B20	U11	U8
Player 1	B23	U20	U9
Player 1 Win	B24	U20	U9
Player 2	B25	U20	U9
Player 2 Win	B26	U20	U9
Player 3	B27	U20	U9
Player 3 Win	B28	U20	U9
Player 4	B29	U20	U9
Player 4 Win	B30	U20	U9

Temporary Score: B21, B22 - Hard Wired to +13 volts.

## SECTION 6. PARTS LISTING

### TARGET INTERFACE BOARD

00-4500-02

FIG. #	ITEM #	PART #	DESCRIPTION
12	1	10-0020	Connector - 9 Pin
12	2	1 O-0022	Connector - 13 Pin
12	3	10-0021	Connector - 11 Pin
12	4	15-0033	Ribbon Cable - 16 Wire

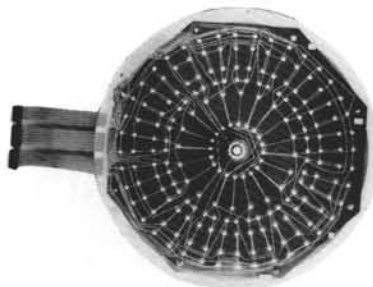
### COIN DOOR

00-4500-04

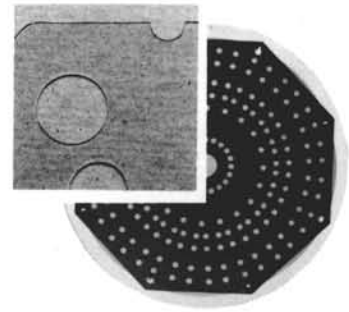
FIG. #	ITEM #	PART #	DESCRIPTION
13	5	13-0043	Coin Mechanism - U.S.
13	5	13-0044	Coin Mechanism - Canadian
13	6	03-0005	Capacitor .1 mfd 16V (2)
13	7	18-0014	Cash Box
13	8	00-4500-10	Coin Door Harness



A. Complete assembly from back.



B. Matrix, on top of dart head assembly.



C. .020 gasket.



D. Silicone Rubber Damper.



E. Spider Assembly.

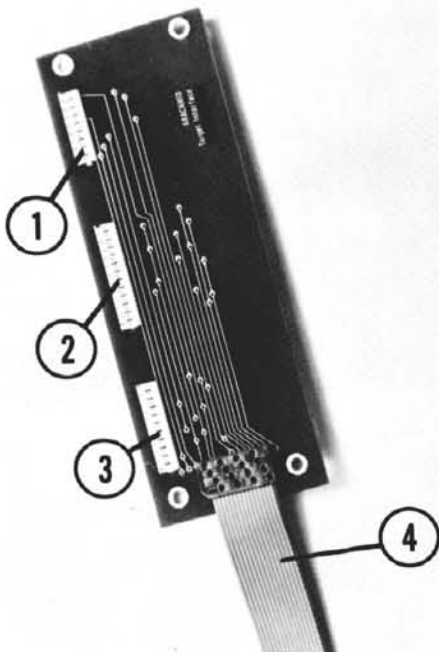
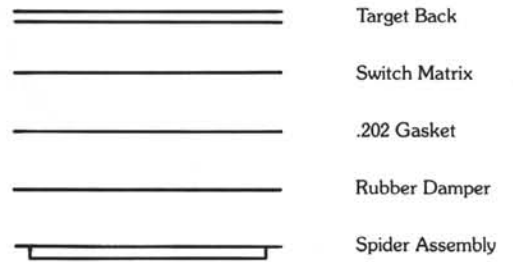


Figure 12. Target Interface Board

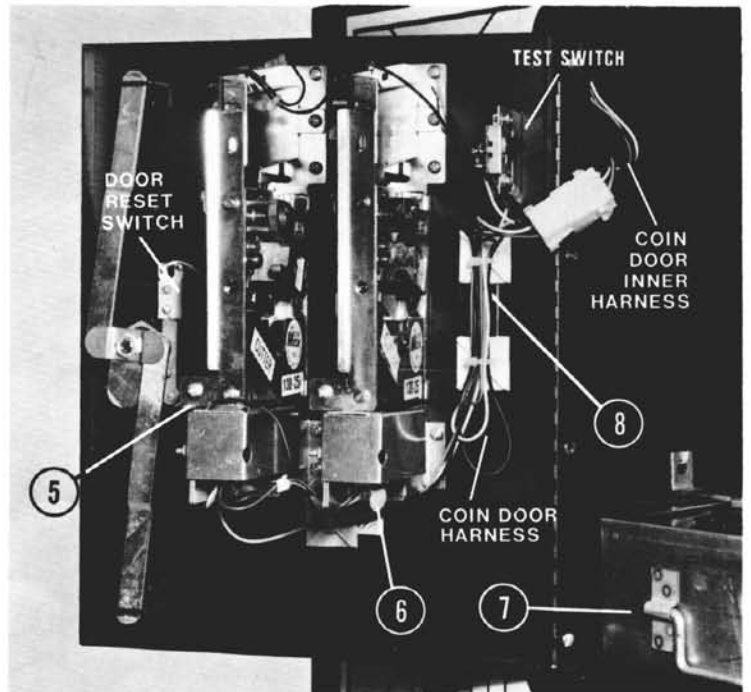
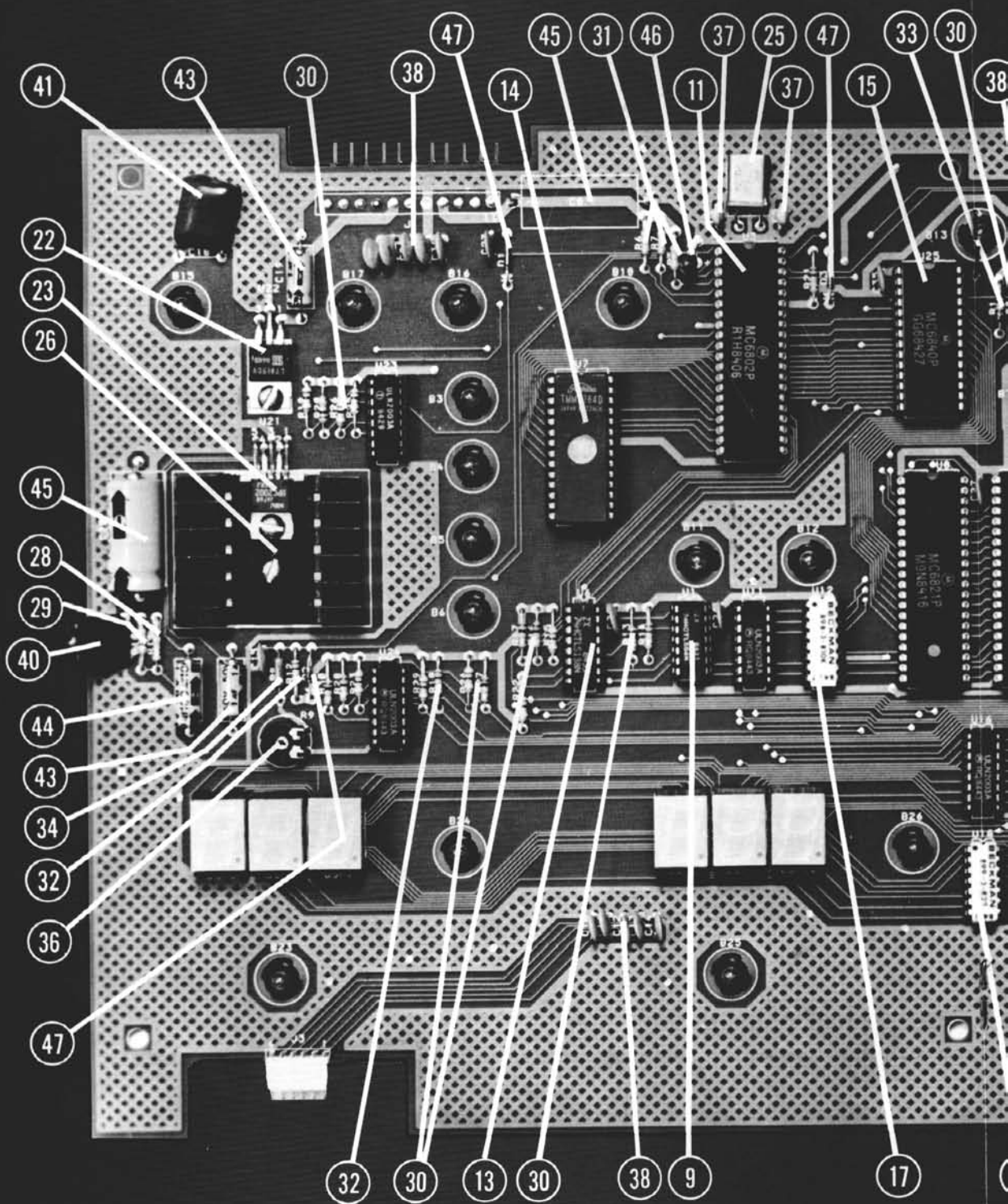


Figure 13. Coin Door



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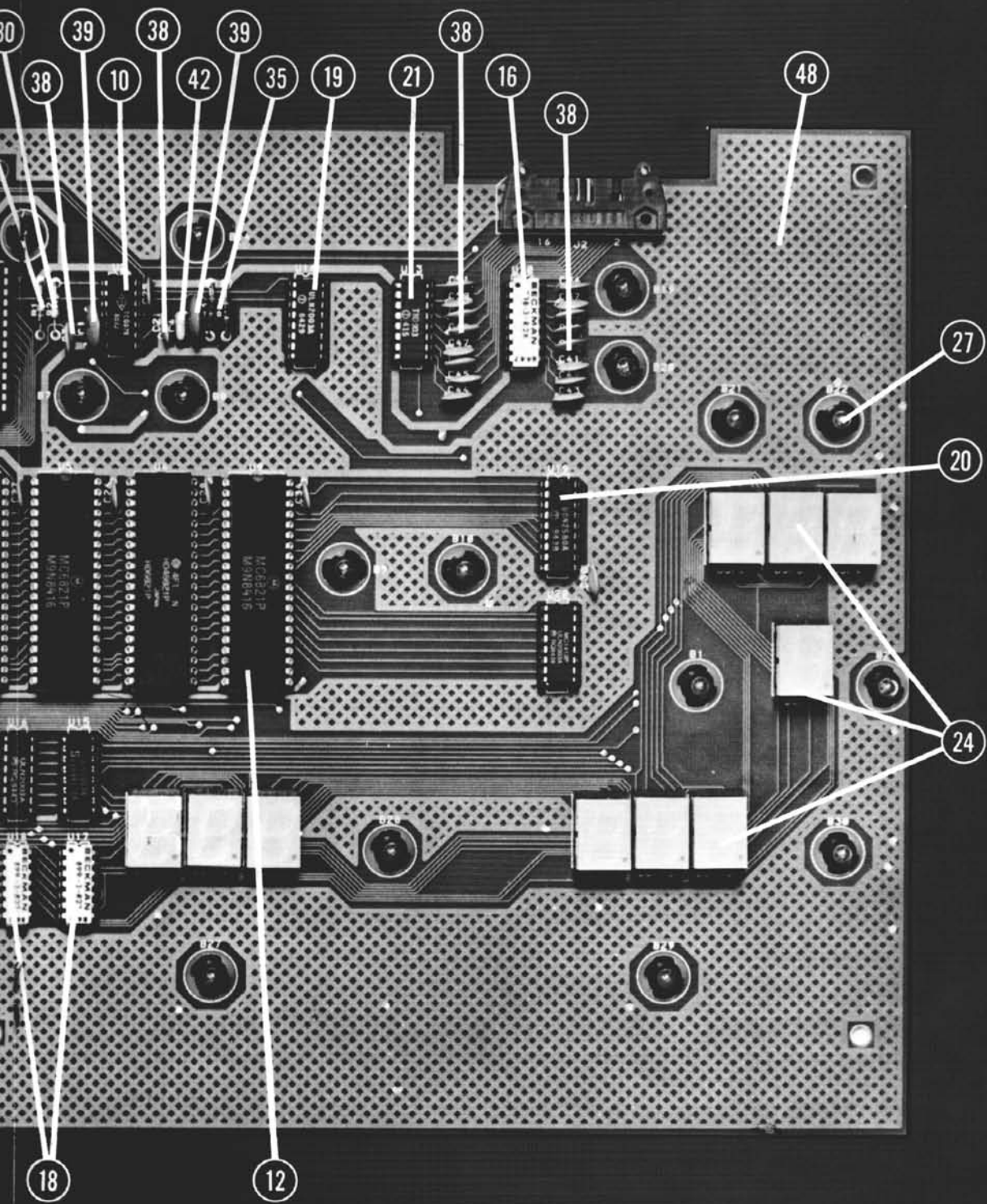
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# MAIN P.C. BOARD ASSEMBLY

**00-4500-01**

FIG. #	ITEM #	PART #	DESCRIPTION
14	9	01-0014	<b>74LS04</b>
14	10	01-0035	556
14	11	01-0036	6802
14	12	01-0037	6821 (4)
14	13	01-0015	<b>74LS138</b>
14	14	01-0038	2764 — <i>25856 EPROM v1.5</i>
14	15	01-0039	6840
14	16	02-0045	Resistor Network - 2K ohm
14	17	02-0001	Resistor Network - 10K ohm
14	18	02-0046	Resistor Network - 10 ohm (2)
14	19	19-0018	Transistor Network - <b>HLN2003A</b> (7)
14	20	19-0019	Transistor Network - <b>UDN2580A</b>
14	21	1 <b>9-0020</b>	Diode Network - TND903
14	22	01-0033	MC781 5CT
14	23	01-0027	<b>LM383T</b>
14	24	11-0002	Seven Segment Display (16)
14	25	06-0003	Crystal 3.5795 MHz
14	26	13-0020	Heat Sink
14	27	11-0013	Lamp With Socket (30)
14	28	02-0003	Resistor - 2.2 ohm 1/4 W
14	29	02-0011	Resistor - 220 ohm 1/4 W
14	30	02-0017	Resistor - 1 K ohm 1/4 W (19)
14	31	02-0047	Resistor - <b>3.3K</b> ohm 1/4 W (3)
14	32	02-0021	Resistor - <b>10K</b> ohm 1/4 W (2)
14	33	02-0048	Resistor - 12K ohm 1/4 W
14	34	02-0049	Resistor - 510K ohm 1/4 W
14	35	02-0036	Resistor - 1 MEG ohm 1/4 W (2)
14	36	02-0041	Resistor - <b>10K</b> ohm Variable
14	37	03-0030	Capacitor 27pf 16V (2)
14	38	03-0002	Capacitor .01 mfd 50V (39)
14	39	03-0005	Capacitor .1mfd 16V (2)
14	40	03-0007	Capacitor .22 mfd 16V
14	41	03-0008	Capacitor .33 mfd <b>100V</b>
14	42	03-0009	Capacitor .47 mfd 16V
14	43	03-0012	Capacitor 1 mfd 50V (2)
14	44	03-0021	Capacitor 100 mfd <b>25V</b>
14	45	03-0031	Capacitor 1000 mfd 25V (2)
14	46	03-0032	Capacitor 4.7 mfd 25V Tantalum
14	47	<b>19-0007</b>	Diode 1N41 48 (3)
14	48	00-4500-01	Main P.C. Board Complete

# MAIN CABINET ASSEMBLY

FIG. ITEM

#	#	PART #	DESCRIPTION
15	49	04-0015	Receptacle
16	50	16-0016	Bottom Decal - Lexan
16	51	00-4500-04	Coin Door Assembly With Cash Box
16	52	05-0013	Instruction Panel
16	53	00-4500-25	Touch Panel Assembly
16	54	00-4500-18	Top Light Assembly
16	55	18-0001	Top Cabinet - Unassembled
16	56	16-0017	Top Decal - Lexan
16	57	17-0001	Competitor Strip
16	58	18-0004	Cabinet Bottom - Unassembled
17	59	13-0009	Lock - Back Door
18	60	16-0013	Warning Decal - Dart Head Bolts
18	61	16-0007	Warning Decal - Receptacle
19	62	00-4500-08	Main Harness
19	63	00-4500-11	Inner Coin Door Harness
19	64	00-4500-14	Receptacle Harness
20	65	11-0009	Lamp - 40 W High Intensity
20	66	04-0018	Socket - Porcelain
20	67	15-0003	3 Prong Cord - 2½'
20	68	05-0004	Panel - Marquee
21	69	20-0004	Ballast With Built In Starter
21	70	04-0017	Socket - Fluorescent (2)
21	71	11-0008	Fluorescent Lamp F15T8/CW
21	72	18-0009	Reflector For Target Lamp
22	73	00-4500-12	Speaker & Harness

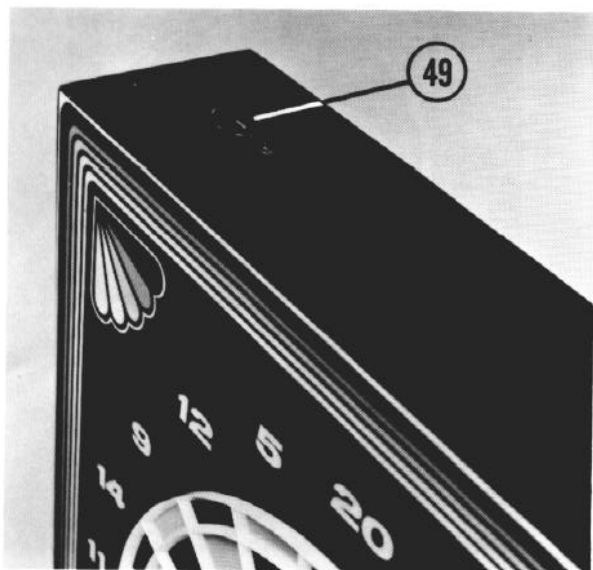


Figure 15.

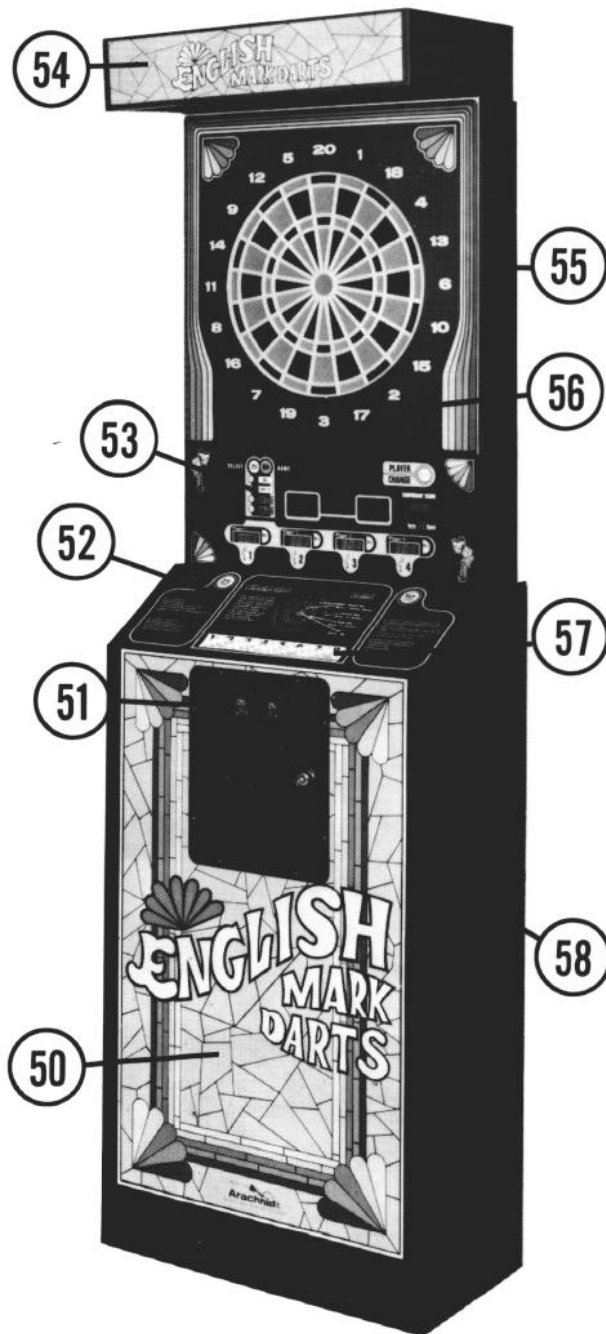


Figure 16.

—NOTE—

The part numbers listed are the Arachnid part numbers. Please use these numbers when placing your order. Some descriptions are followed by a number in parentheses. This number is the quantity used in that assembly.



Figure 17.

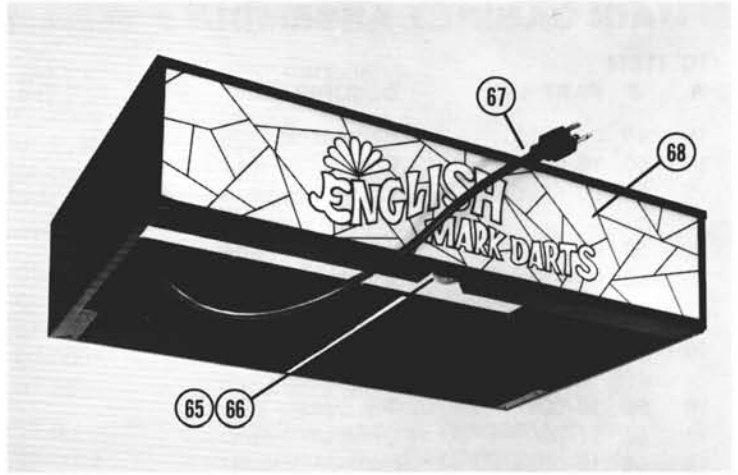


Figure 20.

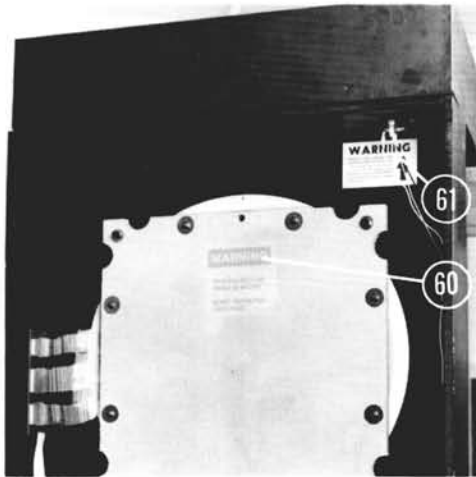


Figure 18.

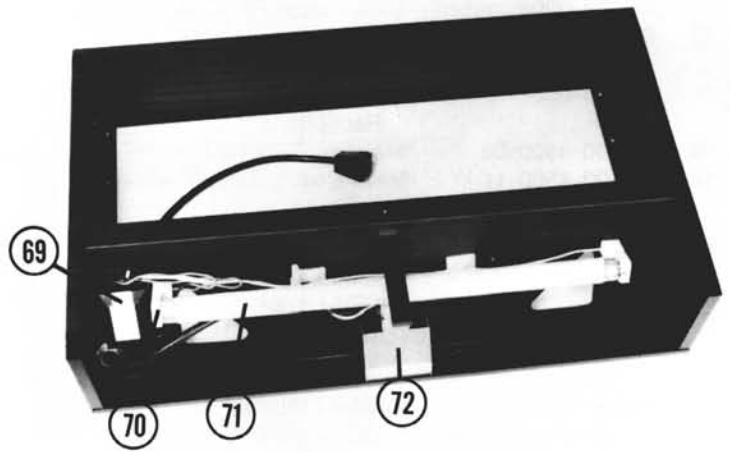


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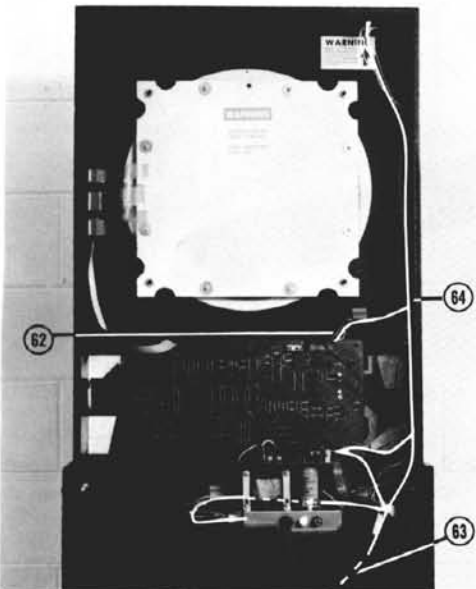


Figure 19.

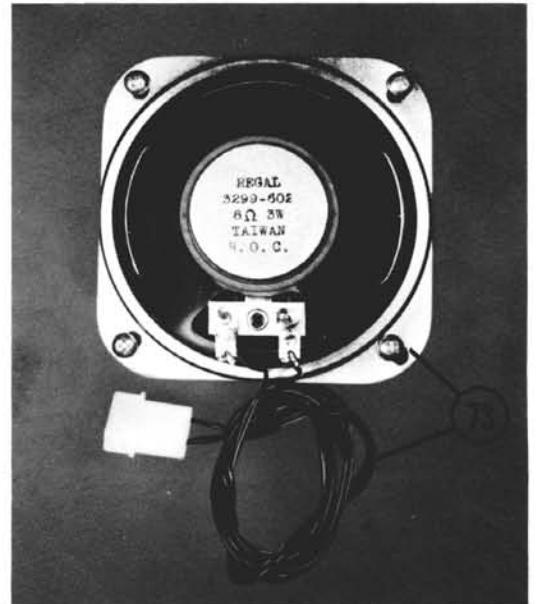


Figure 22.

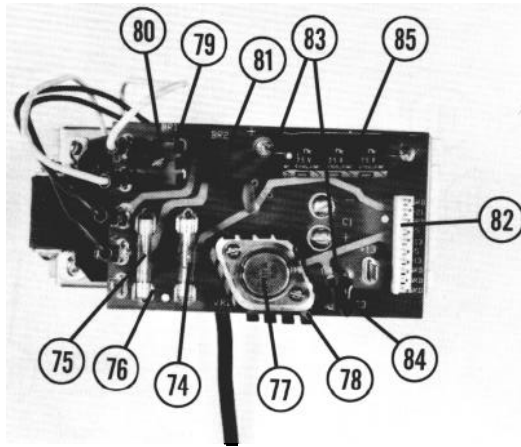


Figure 23.

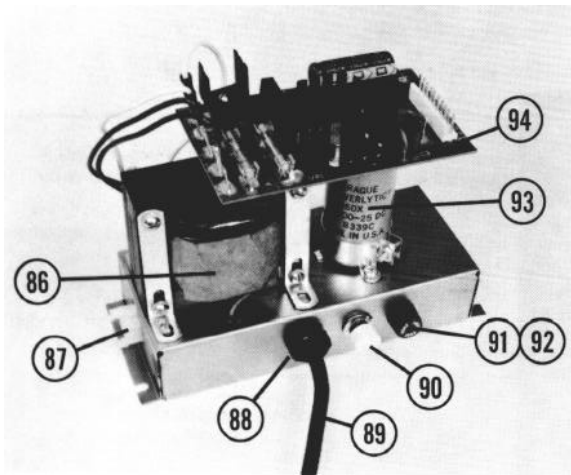


Figure 24

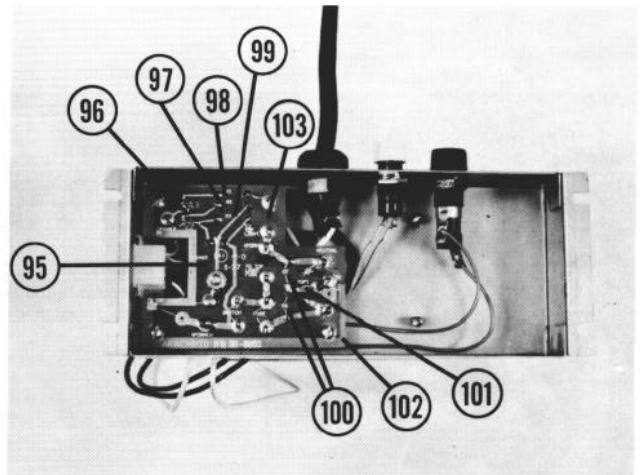


Figure 25.

## POWER SUPPLY CHASSIS ASSEMBLY

**00-4500-17**

FIG. ITEM

#	#	PART #	DESCRIPTION
23	74	07-0007	Fuse - WA 250V Slow Blow
23	75	07-0003	Fuse - 5A 250V Slow Blow
23	76	13-0003	Fuse Clips - P.C. Mount (4)
23	77	01-0032	Regulator - 5V
23	78	13-0040	Heat Sink - TO3
23	79	13-0041	Heat Sink - Square
23	80	19-0021	Bridge Rectifier 8A 200 PIV
23	81	19-0022	Bridge Rectifier 2A 200 PIV
23	82	10-0035	Connector - 10 PIN
23	83	03-0002	Capacitor .01 mfd 50V (2)
23	84	03-0008	Capacitor .33 mfd 1 OOV
23	85	03-0026	Capacitor 4700 mfd 35V
24	86	20-0001	Transformer - 115V Primary
24	87	10-0009	Connector - 6 Pin Chassis Mount
24	88	13-0034	Strain Relief

FIG. ITEM

#	#	PART #	DESCRIPTION
24	89	15-0002	Power Cord - 12'
24	90	08-0004	Switch - On/Off
24	91	13-0039	Fuse Holder - Chassis Mount
24	92	07-0008	Fuse - 1.5A 250V Slow Blow
24	93	03-0033	Capacitor 8900 mfd 25V
24	94	00-4500-05	Printed Circuit Assy. - TOP
25	95	19-0015	Triac - SC 1460
25	96	01-0025	Opto Isolator - MOC 3030
25	97	02-0010	Resistor - 180 ohm 1/4 W
25	98	02-0007	Resistor - 120 ohm 1/4 W
25	99	02-0017	Resistor - 1 K ohm 1/4 W
25	100	03-0034	Capacitor .022 mfd 600V (2)
25	101	19-0014	Varsistor V150LA20A
25	102	13-0042	Standoffs 5/8" (3)
25	103	00-4500-24	Printed Circuit Assy. - BOTTOM

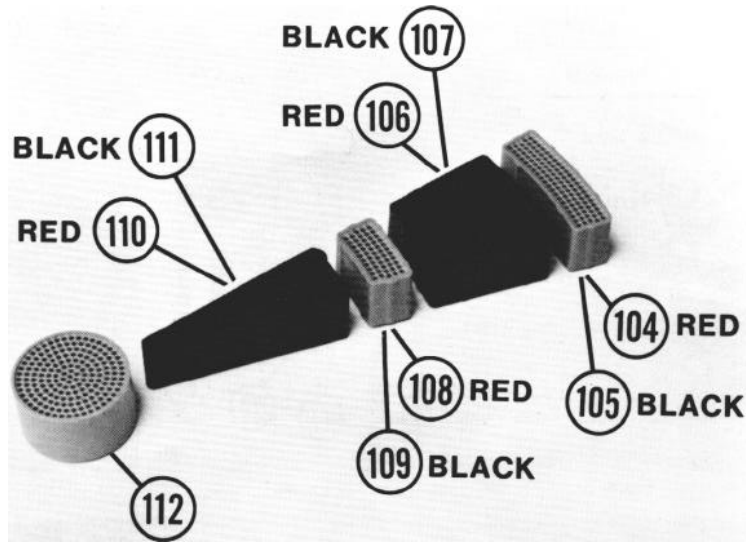


Figure 26.

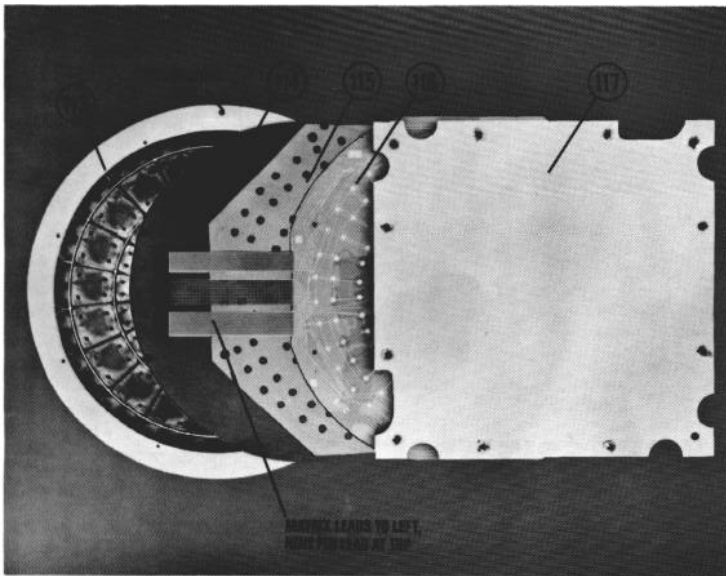


Figure 27.

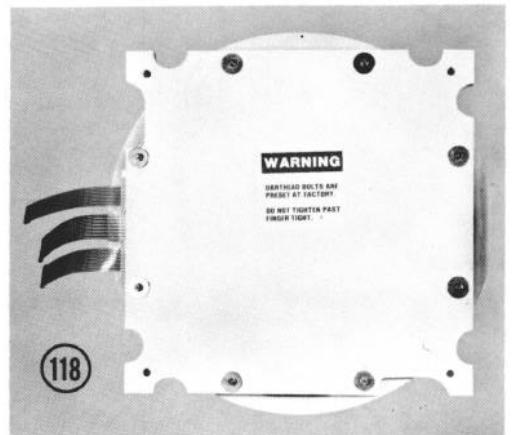


Figure 28.

## BOARD SEGMENTS

FIG. #	ITEM #	PART #	DESCRIPTION
26	104	17-0003	A Segment - Red - Double
26	105	17-0008	A Segment - Black - Double
26	106	17-0005	C Segment - Red - Single
26	107	17-0009	C Segment - Black - Single
26	108	17-0006	D Segment - Red - Triple
26	109	17-0010	D Segment - Black - Triple
26	110	17-0007	E. Segment - Red - Pie - Single
26	111	17-0011	E Segment - Black - Pie - Single
26	112	17-0004	B Segment - Red - Bullseye

## TARGET ASSEMBLY

FIG. #	ITEM #	PART #	DESCRIPTION
		00-4500-06	
27	113	17-0002	Spider Without Segments
27	114	12-0001	Rubber Damper
27	115	12-0004	Gasket - .020"
27	116	08-0001	Switch Matrix - 6" Leads
27	117	18-0003	Target Back
28	118	00-4500-06	Dart Head Assy. - Complete

## SECTION 7. TROUBLESHOOTING

WARNING — UNPLUG POWER TO GAME BEFORE WORKING ON MACHINE

Problem	Probable Cause	Procedure
Nothing lit on game.	<ul style="list-style-type: none"> <li>a. Blown fuse.</li> <li>b. No power at outlet.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace fuse in power supply chassis with 1.5A 250V slow blow fuse.</li> <li>b. Check main breaker in building.</li> </ul>
Marquee lit but nothing else (possibly the temporary score lamps)	<ul style="list-style-type: none"> <li>a. Fuse FS1 on top of power supply blown.</li> <li>b. 5 volt regulator bad.</li> <li>c. <b>Game</b> not turned on.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace fuse with 5A 250V slow blow.</li> <li>b. check for lamp voltage and +5V. If lamp voltage is OK but +5V is not present, replace 5V regulator LM 323K.</li> <li>c. Turn on switch located on power supply</li> </ul>
Two 7 segment displays light up very bright with "88"	<ul style="list-style-type: none"> <li>a. U2 556 timer not putting out 1000 Hz interrupt signal.</li> <li>b. One segment of U19 shorted, causing 2 digits to always be on.</li> <li>c. One output line of U9 latched on.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace 556 IC U2</li> <li>b. Replace UDN2580 U19</li> <li>c. Try resetting game (slam switch in coin door) or replace U9 (6821).</li> </ul>
A single segment is out on every other display.	<ul style="list-style-type: none"> <li>a. A driver transistor is bad (U15 for odd # displays, U16 for even # displays).</li> <li>b. Bad current limit resistor (U17 for odd # displays, U18 for even # displays).</li> <li>c. If only one segment in one display is bad, then the display itself is bad.</li> </ul>	<ul style="list-style-type: none"> <li>a. Swap U15 and U16 to see if problem switches from even to odd (or vice-versa). If so, replace U15 or U16.</li> <li>b. Swap U17 and U18 as above. If problem switches, replace U17 or U18.</li> <li>c. Replace the seven segment display.</li> </ul>
Player change and/or game select switches not functioning.	<ul style="list-style-type: none"> <li>a. Bad U8 6821</li> <li>b. Front touch panel not plugged in or broken connector.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace</li> <li>b. Plug in or replace front panel.</li> </ul>
Coin switch and/or test mode not functioning.	<ul style="list-style-type: none"> <li>a. If both are not working, plus lamps on coin door are not lighting, there may be a bad ground to the coin door.</li> <li>b. If both are not working, but the lamps on the coin door are lit, the problem could be U4 6821.</li> <li>c. If just one switch isn't working, check buffer IC's: U23 for the coin switch, U24 for the test mode.</li> </ul>	<ul style="list-style-type: none"> <li>a. Repair ground NOTE: System ground is floating (not connected to power supply chassis) and is connected only to the PC board on top of the power supply.</li> <li>b. Swap U4 with U8 to see if the problem goes away; if so, replace 6821.</li> <li>c. Swap U23 and U24 to see if the problem changes. If so, replace the bad ULN2003.</li> </ul>
Small lamps on printed circuit board not lighting.	<ul style="list-style-type: none"> <li>a. Lamp burned out.</li> <li>b. Transistor driver for lamp bad.</li> <li>c. Peripheral interface adapter (PIA) bad.</li> </ul>	<ul style="list-style-type: none"> <li>il. Replace lamp.</li> <li>b. Replace drive see Table 2</li> <li>c. Replace PIA see Table 2.</li> </ul>

## SECTION 7. TROUBLESHOOTING (continued)

WARNING — UNPLUG POWER TO GAME BEFORE WORKING ON MACHINE

Problem	Probable Cause	Procedure
Target lamp not lighting.	<ul style="list-style-type: none"> <li>a. Lamp burned out.</li> <li>b. Triac bad (if triac were shorted the lamp would be on all the time).</li> <li>c. Opto isolator (MOC3030) bad.</li> <li>d. Buffer U24 bad.</li> <li>e. PIA U9 bad (6821).</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace lamp.</li> <li>b. Replace triac located under power supply chassis.</li> <li>c. Replace located under power supply chassis.</li> <li>d. Replace U24 (ULN2003)</li> <li>e. Swap with U4, 5, or U8 to check. If problem moves, then replace bad PIA.</li> </ul>
Sound problems	<ul style="list-style-type: none"> <li>a. Blown fuse FS2 on top of power supply.</li> <li>b. 15V regulator (LM7815CT) faulty on main board.</li> <li>c. Amplifier faulty (LM383T).</li> <li>d. Timer IC U25 (6840)</li> <li>e. Sound is fuzzy or garbled bad 4700 mfd 35V capacitor (C2) on power supply board.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace with ¼ A 250V slow blow.</li> <li>b. Check for +24V on pin 1 and +15V on pin 3. If +15V is not present on pin 3, replace regulator. If +24V is zero, replace fuse (FS2 on power supply) or check wiring from power supply to main board.</li> <li>c. Check input (pin 1) with an oscilloscope to see if square waves are coming in (make sure volume is turned up R9). If no square waves present, see "D" below. If square waves are present, but not coming out of pin 4, replace U21 LM383T amplifier.</li> <li>d. If no square wave is present on pin 27 of U25 (during the time that sound is supposed to be present), replace either U25 or U6 (74LS138 address decoder).</li> <li>e. Resolder connections first to make sure that the problem is not a cold solder joint. If no improvement, replace C2.</li> </ul>
Top marquee light doesn't light.	<ul style="list-style-type: none"> <li>a. Bulb burned out.</li> <li>b. If game also is not working, fuse FS1 bad.</li> <li>c. Ballast bad.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace bulb (F15T8/CW)</li> <li>b. Replace FS1 in power supply chassis with 1.5A 250V slow blow.</li> <li>c. Check for 115VAC on input to ballast. If present, then replace ballast. If not, check wiring from power supply (NOTE: starter for lamp is internal to ballast and is replaced as a unit).</li> </ul>
No score.	<ul style="list-style-type: none"> <li>a. Dirt or broken tips in dart head holding a switch in the switch matrix closed (game won't score until switch in the matrix opens).</li> <li>b. If the problem is not in the dart head, may be U4 (6821) on the main board.</li> </ul>	<ul style="list-style-type: none"> <li>a. Clean dart head assembly by disassembling/reassembling and removing any foreign material. When reassembling, make sure to tighten the 8 screws and nuts that hold the target head together only finger tight.</li> <li>b. Swap U4 with U5, U8 or U9 to see if problem changes. If it does, replace bad 6821.</li> </ul>



**Arachnid** <sup>INC</sup> <sup>TM</sup>

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**WARNING:** This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. 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 measure may be required to correct the interference. NOTE: Proper grounding through power cord is necessary for compliance.