

centuri T.M.
, INC.
HIALEAH . FLORIDA . U . S . A



SERVICE MANUAL

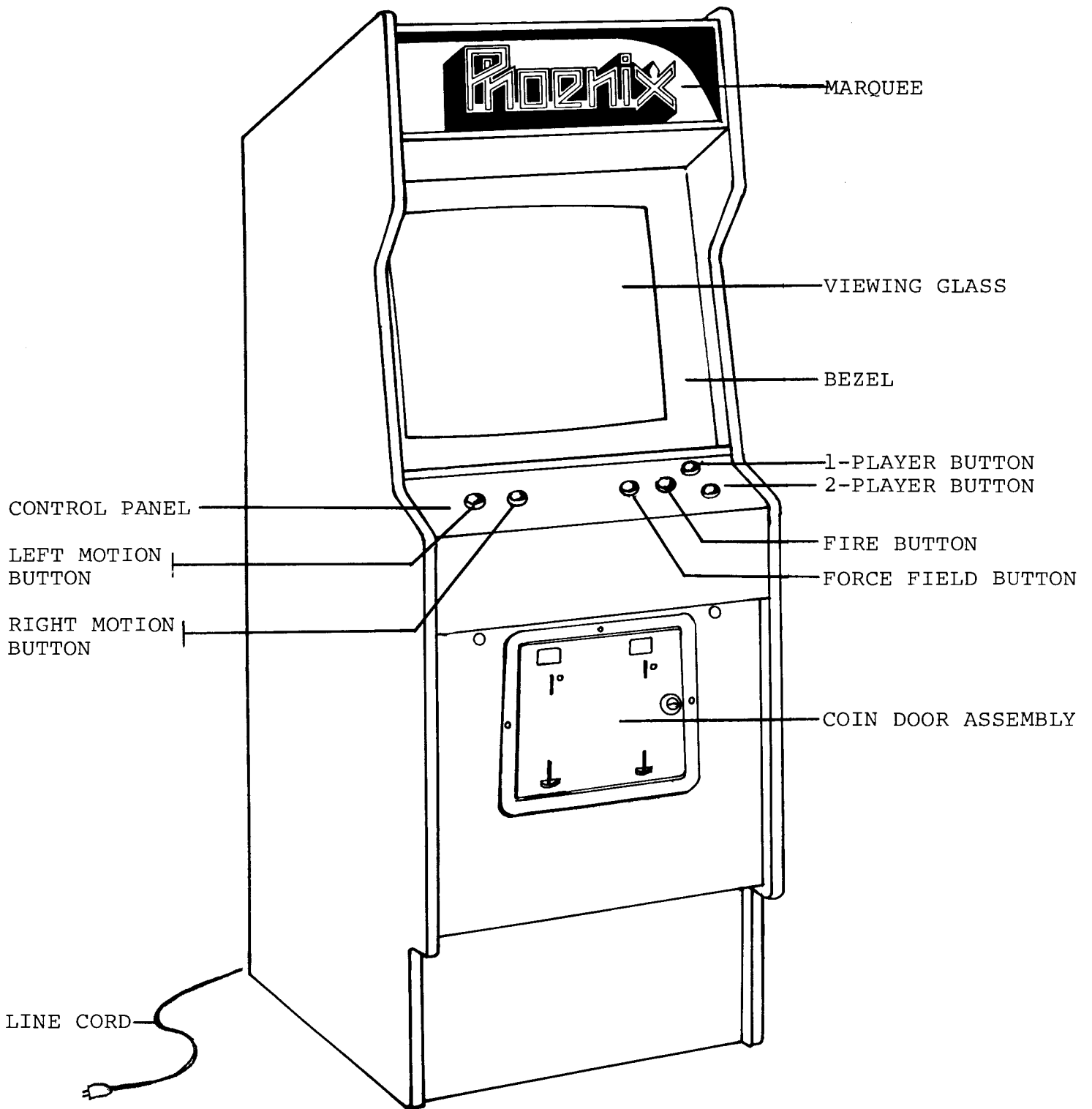
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USER INFORMATION - F.C.C.

WARNING:

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. As temporarily permitted by regulation, it has not been tested for compliance pursuant to Subpart J of Part 15 of F.C.C. 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 may be required to correct the interference.



19" PHOENIX VIDEO UPRIGHT

PHOENIX

PHOENIX is an exciting new space game, with special audio and visual effects, challenging the skills of the most experienced player. Fascinating visual graphics and extraterrestrial sounds add to the intensity of this game.

There are five basic stages to each round of play. After a melodious introduction, the first stage begins with a wave of sixteen (16) small Phoenixes attacking the spaceship. They drop missiles and dive at the spaceship, in an effort to destroy it.

The spaceship maneuvers left and right, evading the missiles and birds, and fires rockets, attempting to destroy the birds.

The spaceship can utilize the "Force Field" as a means of protection from the missiles and birds, and can destroy the Phoenixes by colliding with them while in the Force Field. The Force Field only lasts a few seconds and then cannot be used for approximately five (5) seconds afterward.

After the first wave of Phoenixes are destroyed, a second wave appears, and can be destroyed in the same manner as in the first stage.

The third stage begins with a wave of eight (8) "Eggs" that are transformed into blue Phoenix birds that attack the spaceship. These birds can be destroyed by rocket fire from the spaceship. If the rocket hits the bird on center, the bird is destroyed. If the rocket hits the bird to the left or right of center, only that wing of the bird is destroyed. The wing will regenerate itself in a short time.

After all the blue Phoenixes have been shot down, the fourth stage appears on the screen. Two banks of eggs appear (four eggs in each row), and are transformed into pink Phoenixes, and can be destroyed in the same manner as the blue birds.

The fifth stage is the attack of the spacefortress, which sends down waves of small birds to attack the spaceship, in addition to direct missile fire from the spacefortress. Spaceship rocket fire can penetrate and break down the protective barrier shielding the space creature in the spacefortress. The fifth stage

is completed when the rocket from the spaceship destroys the space creature and the spacefortress with a direct hit.

Good aim and timing are critical to high scoring. Birds destroyed while in flight (with wings flapping), will score 200 points each, and eggs hit in the process of hatching also have higher point values.

Delayed destruction of the spacefortress also gives the player high point values.

When bonus levels are achieved, additional spaceships are added to your game. The bonus level may be adjusted to award bonus spaceships at 3,000 and 30,000 points, 4,000 and 40,000 points, 5,000 and 50,000 points, or 6,000 and 60,000 points.

INSTALLATION

Your game was shipped from the factory in ready-to-play condition. A brief inspection is suggested before the machine is removed from the carton. If there is damage to the shipping carton, contact the freight carrier for claim purposes. External damage could indicate possible damage to the cabinet and/or electronic components.

After the carton has been satisfactorily inspected, remove the machine from the shipping carton.

Examine the interior of the game for disconnected wires, cables or harnesses and make sure electronic devices are securely mounted in their sockets, etc. Record the game serial number, since it will be required for reference and servicing.

ELECTRICAL REQUIREMENTS

Unless otherwise specified, this game is set to operate at 110 Volts A.C. See Figure -1- for 110/220 VAC conversion instructions.

Power Supply Chassis schematic information and parts list are included in this manual.

FIGURE -1-

110/220 VAC CONVERSION INSTRUCTIONS

1. This video arcade game has a harnessing configuration that allows the machine to be operated from either a 110 VAC or 220 VAC @ 50 or 60 H_z power source, with only minor changes. The only items requiring a change are the fuses and the jumper plug on the game power transformer.
2. First, unplug the machine from the wall outlet to completely eliminate shock hazards.
3. Next, remove the two fuses in the A.C. distribution bracket.
4. Then, remove the jumper plug on the game power transformer located on the floor of the machine.
5. Now, depending on what voltage you wish to run the game from, do the following:
 - 110 VAC: Replace the two fuses that go in the bracket with 3-AMP SLOW-BLOW types. Next, plug in the ORANGE jumper plug labeled 110 VAC. The machine can now be operated with an input voltage of 110 Volts AC.
 - 220 VAC: Replace the two fuses that go in the bracket with 1½ AMP SLOW-BLOW types. Next, plug in the RED jumper plug labeled 220 VAC. The machine can now be operated with an input voltage of 220 Volts AC.

NOTE: All games shipped from CENTURI, INC. are in the 110 VAC configuration.

GAME INSTRUCTIONS:

1. INSERT COIN(S) INTO SLOT.
2. SELECT 1 OR 2 PLAYER BUTTON.
3. MOVE THE SPACESHIP RIGHT AND LEFT, DODGING FROM ATTACK OF PHOENIX AND DESTROYING IT BY FIRING BUTTON.
4. SHELTER SPACESHIP BY PRESSING FORCE FIELD BUTTON.
5. ADDITIONAL SPACESHIP IS ADDED WHEN BONUS SCORE IS ACHIEVED.
6. THE GAME IS OVER WHEN ALL THE SPACESHIPS HAVE BEEN DESTROYED.

GAME SCORING:



= 20, 40 and 80 Points.



= 200 Points.



= 50 to 100 Points
(Hatching = 100 to 800 Points).



= 1,000 to 9,000 Points.

ROUTINE MAINTENANCE & SERVICE

Because of the solid state electronic circuitry, this machine should require very little maintenance and only occasional adjustments. However, it is necessary to take measures to insure this.

The volume control is located on the bottom side of the printed circuit board farthest from the side of the cabinet, and can be accessed through the rear door.

The video monitor has been properly adjusted before shipping. Occasionally minor adjustments are necessary, see monitor specifications and schematics for technical information. Adjustment controls for the monitor are located at the rear of the monitor.

This machine should be serviced only by a qualified technician.

Do not make any adjustments on this machine while the power is on.

For service information, contact:

CENTURI, INC.

Customer Service Department

#800-327-7710 (Outside the state of Florida)

#305-556-5888 (In Florida)

OPERATOR OPTIONAL SWITCH SETTINGS

The option switches are located on the CPU board. The option switches and audio control can be reached through the back of the machine.

The following settings will assist you with your selections:

OPTIONAL SWITCH SETTINGS

Switches 1 and 2 control the number of times the player may have his spaceship destroyed before the game is over. The following truth table lists these switch settings:

<u>SWITCH 1:</u>	<u>SWITCH 2:</u>	<u>NUMBER OF SPACESHIPS:</u>
OFF	OFF	6
ON	OFF	5
OFF	ON	4
ON	ON	3

Switches 3 and 4 control the score at which one or two free spaceships are awarded according to the following truth table:

<u>SWITCH 3:</u>	<u>SWITCH 4:</u>	<u>FIRST FREE SHIP SCORE:</u>	<u>SECOND FREE SHIP SCORE:</u>
OFF	OFF	6,000	60,000
ON	OFF	5,000	50,000
OFF	ON	4,000	40,000
ON	ON	3,000	30,000

SWITCH 5: OFF - 25¢ PER GAME.
ON - 50¢ PER GAME.

Switches 6, 7 and 8 are factory adjustments, and must be left in OFF position.

PARTS LIST

<u>NO.</u>	<u>PART NUMBER:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
1	50010249LS	74LS245 I.C.	1
2	50010252LS	74LS374 I.C.	3
3	50010273LS	74LS244 I.C.	2
4	50010275LS	74LS136 I.C.	1
5	50010248LS	74LS138 I.C.	4
6	50010221LS	74LS163 I.C.	3
7	50010045LS	74LS157 I.C.	3
8	50010002LS	74LS00 I.C.	4
9	50010096LS	74LS08 I.C.	3
10	50010141LS	74LS125 I.C.	1
11	50010105LS	74LS32 I.C.	4
12	50010170LS	74LS14 I.C.	1
13	50010019LS	74LS74 I.C.	3
14	50010026LS	74LS107 I.C.	1
15	50010030LS	74LS174 I.C.	1
16	50010276LS	74L470 I.C.	1
17	50010197	7405 I.C.	2
18	50010142	7407 I.C.	1
19	50010277	8085 C.P.U.	1
20	50020003	LM380 I.C.	1
21	50010254	LM324 I.C.	2
22	50010001	555 Timer I.C.	5
23	50010281	4006 I.C.	1
24	50020086	564 Transistor	1
25	50040082	.047 mfd, 25 V. Disc Ceramic Capacitor	13
26	50040001	.1mfd, 25 V. Disc Ceramic Capacitor	2
27	50040141	.001mfd, 50 V. Disc Ceramic Capacitor	7
28	50040151	330pf, 25 V. Disc Ceramic Capacitor	1
29	50040049	.01mfd, 25 V. Disc Ceramic Capacitor	2
30	50040153	.022mfd, 25 V., Disc Ceramic Capacitor	1
31	50060104	47mfd, 50 V. Alum. Lytic Rad. Cap.	4
32	50060031	100mfd, 25 V., Alum. Lytic Rad. Cap.	1
33	50060126	470mfd, 30 V., Alum. Lytic Rad. Cap.	1
34	50060120	10mfd, 16 V., Alum. Lytic Rad. Cap.	1
35	50060165	10 mfd, 25 V., Dipped Tantalum Cap.	9
36	50060166	.47mfd, 35 V., Dipped Tantalum Cap.	1
37	50060163	1mfd, 35 V., Dipped Tantalum Cap.	2
38	50060145	6.8mfd, 25 V., Dipped Tantalum Cap.	2
39	50120004	10K PCB Trimmer Potentiometer	1
40	50360007	5-Pin Resistor, 1K Ohm	1
41	50360006	9-Pin Resistor Pack, 1K Ohm	3
42	50030256	100 Ohm, ¼W., 5% Resistor	8
43	50030051	1K Ohm, ¼ W., Resistor	12
44	50030056	2.7K Ohm, ¼ W., Resistor	2
45	50030063	10K Ohm, ¼W., 5% Resistor	16
46	50030014	270 Ohm, ¼W., 5% Resistor	9
47	50030150	47K Ohm, ¼W., 5% Resistor	9
48	50030095	330 Ohm, ¼W., 5% Resistor	2
49	50030007	100K Ohm, ¼W., 5% Resistor	4
50	50030010	470 Ohm, ¼W., 5% Resistor	2

PARTS LIST

<u>NO.</u>	<u>PART NUMBER:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
51	50030086	33K Ohm, ¼W., 5% Resistor	6
52	50030197	5.1K Ohm, ¼W., 5% Resistor	3
53	50030265	510K Ohm, ¼W., 5% Resistor	2
54	50030266	20K Ohm, ¼W., 5% Resistor	1
55	50100014	1N914 Diode	7
56	50150214	8-Pin Solder Tail Socket, Low Profile	5
57	50150060	40-Pin Solder Tail Socket, Low Prof.	1
58	50150158	20-Pin Solder Tail Socket, Low Prof.	6
59	50150110	14-Pin Solder Tail Socket, Low Prof.	25
60	50150111	16-Pin Solder Tail Socket, Low Prof.	13
61	50150112	18-Pin Solder Tail Socket, Low Prof.	1
62	50040136	.05mf, Mylar Capacitor	1
63	50130034	8-Position Dip Switch	1
64	50150256	50-Pin PCB Header, Ainsley #609-5007ES	2
65	50210217	Printed Circuit Board - CPU	1
66	364-10-0300	P.C.B. Interconnect Cable	2

PARTS LIST

<u>NO.</u>	<u>PART NUMBER:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
1	5001022LS	74LS163 I.C.	4
2	50010022LS	74LS86 I.C.	4
3	50010019LS	74LS74 I.C.	1
4	50010274LS	74LS132 I.C.	1
5	50010262LS	74LS283 I.C.	3
6	50010252LS	74LS374 I.C.	3
7	50010093LS	74LS151 I.C.	4
8	50010030LS	74LS174 I.C.	4
9	50010045LS	74LS157 I.C.	4
10	50010249LS	74LS245 I.C.	2
11	50010005	7404 I.C.	1
12	50010185	2716 I.C.	12
13	50010242	2114 I.C.	8
14	50010273LS	74LS244 I.C.	1
15	50040082	.047mf, 25 V., Disc Ceramic Cap.	7
16	50040141	.001mf, 50 V., Disc Ceramic Cap.	2
17	50040049	.01mf, 25 V., Disc Ceramic Cap.	2
18	50040150	390pf, 25V., Ceramic Disc Cap.	1
19	50040001	.1mf, 25 V., Ceramic Disc Cap.	15
20	50040142	150 pf, 50 V., Disc Ceramic Cap.	1
21	50060028	22mf, Alum. Lytic Radial Cap.	1
22	50070014	11MHz Crystal	1
23	50030004	1.2K, 1/4W., 5% Resistor	2
24	50030111	100 Ohm, 1/2W., 5% Resistor	1
25	50150110	14-Pin Solder Tail Socket, Low Profile	8
26	50150111	16-Pin Solder Tail Socket, Low Profile	19
27	50150112	18-Pin Solder Tail Socket, Low Profile	8
28	50150158	20-Pin Solder Tail Socket, Low Profile	6
29	50150061	24-Pin Solder Tail Socket, Low Profile	12
30	50150256	50-Pin P.C.B. Header, Ansley#609-5007ES	2
31	50210216	P.C. Board, Logic	1

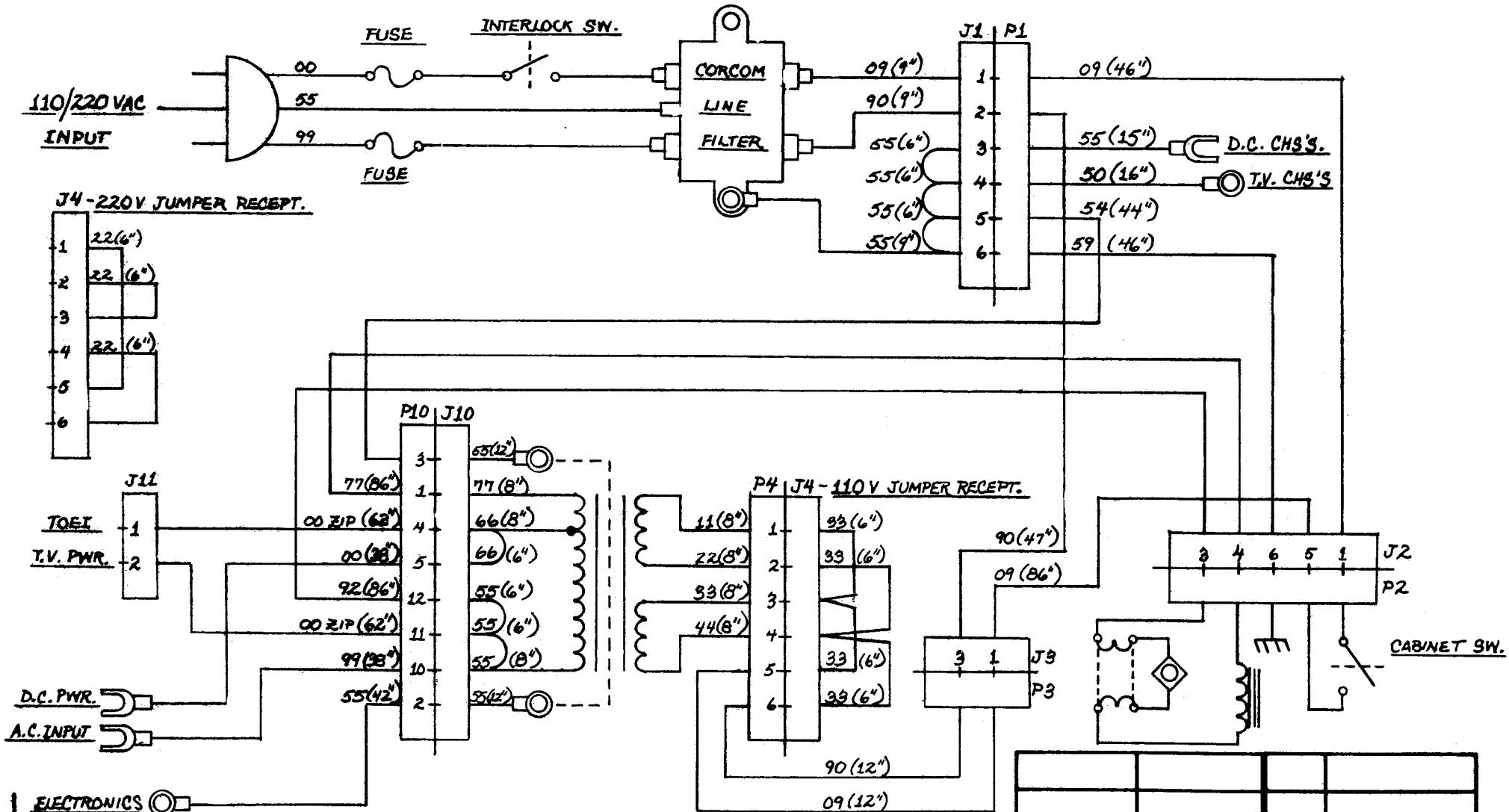
PARTS LIST - SHINDENGEN POWER SUPPLY

<u>SYMBOL:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
T1	Transformer, Single Phase, 24 VA	1
L1	Choking Coil, 1.6 mH, 1.5A	1
L2, L4	Choking Coil, SF-T8-50S-03	2
L3	Choking Coil, SF-HP-2A-03	1
D1	Diode, V19G	1
D2	Diode, V06C	1
D3, D6	Diode, 1S1588	2
D4	Diode, 1S15S3	1
D5, D7	Diode, 5CH1M	2
D12, D13	Diode, F113B	2
D14	Diode, F113B	1
RF1	Diode, S4VB40 (Bridge Type)	1
Q1	Transistor, 2SC2504	1
Q2	Transistor, 2SD467 (B)	1
Q3	Transistor, 2SC460(B)	1
Q4	Transistor, 2SA673(B)	1
IC1	Integrated Circuit, RM723DC or HA17723G-02	1
PC1	Photo Coupler, PS2001	1
R1	Resistor, 2 Watt, 18 Ohm	1
R8, R9	Resistor, 2 Watt, 47K Ohm	2
R3, 1-4	Resistor, 2 Watt, 15 Ohm	4
R4	Resistor, 1 Watt, 56 Ohm	1
R12	Resistor, 1 Watt, 100 Ohm	1
R28	Resistor, 1 Watt, 470 Ohm	1
R7	Resistor, 1 Watt, 0.56 Ohm	1
R26	Resistor, 1 Watt, 0.82 Ohm	1
R23	Resistor, 1/4 Watt, 22 Ohm	1
R10	Resistor, 1/4 Watt, 33 Ohm	1
R27	Resistor, 1/4 Watt, 68 Ohm	1
R2	Resistor, 1/4 Watt, 330 - 470 Ohm	1
R22	Resistor, 1/4 Watt, 220 Ohm	1
R21	Resistor, 1/4 Watt, 270 Ohm	1
R6	Resistor, 1/4 Watt, 330 Ohm	1
R11	Resistor, 1/4 Watt, 68 Ohm	1
R20	Resistor, 1/4 Watt, 470 Ohm	1
R17	Resistor, 1/4 Watt, 680 Ohm	1
R19	Resistor, 1/4 Watt, 800 Ohm	1
R18	Resistor, 1/4 Watt, 1.2K Ohm	1
R5	Resistor, 1/4 Watt, 10K Ohm	1
R16	Resistor, 1/4 Watt, 220K Ohm	1
R29	Resistor, 3 Watt, 27 Ohm	1
R39	Resistor, 1/4 Watt, 4.7K Ohm	1
R38	Resistor, 1/4 Watt, 5.6K Ohm	1
R24	Resistor, 1/4 Watt, 330 Ohm	1
R25	Resistor, 1/4 Watt, 150 Ohm	1
RV1	Variable Resistor, RJ-6P501	1

PARTS LIST - SHINDENGEN POWER SUPPLY

<u>SYMBOL:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
C1, C2	Capacitor, ECK-DAL102E	2
C3-1,-2	Capacitor, 160VSN100	2
C9, C10	Capacitor, SM10VB-2200	2
C11, C23	Capacitor, SM10VB-2200	2
C12, C13,C15	Capacitor, SL25VB-10	3
C27	Capacitor, SL25VB-10	1
C18,C19,C20	Capacitor, SM35VB-1000	3
C26	Capacitor, SM35VB-1000	1
C21,C22,C25	Capacitor, SM16VB-1000	3
C5	Capacitor, DMY21H472K	1
C6	Capacitor, DMY21H104K	1
C14,C16	Capacitor, DMY21H222K	2
C4	Capacitor, CM20XC511K5	1
C8	Capacitor, MDD22G473K	1
C5-2	Capacitor, DMY21H222K	1
F1, F2	Enclosed Type Fuse, 3A	2

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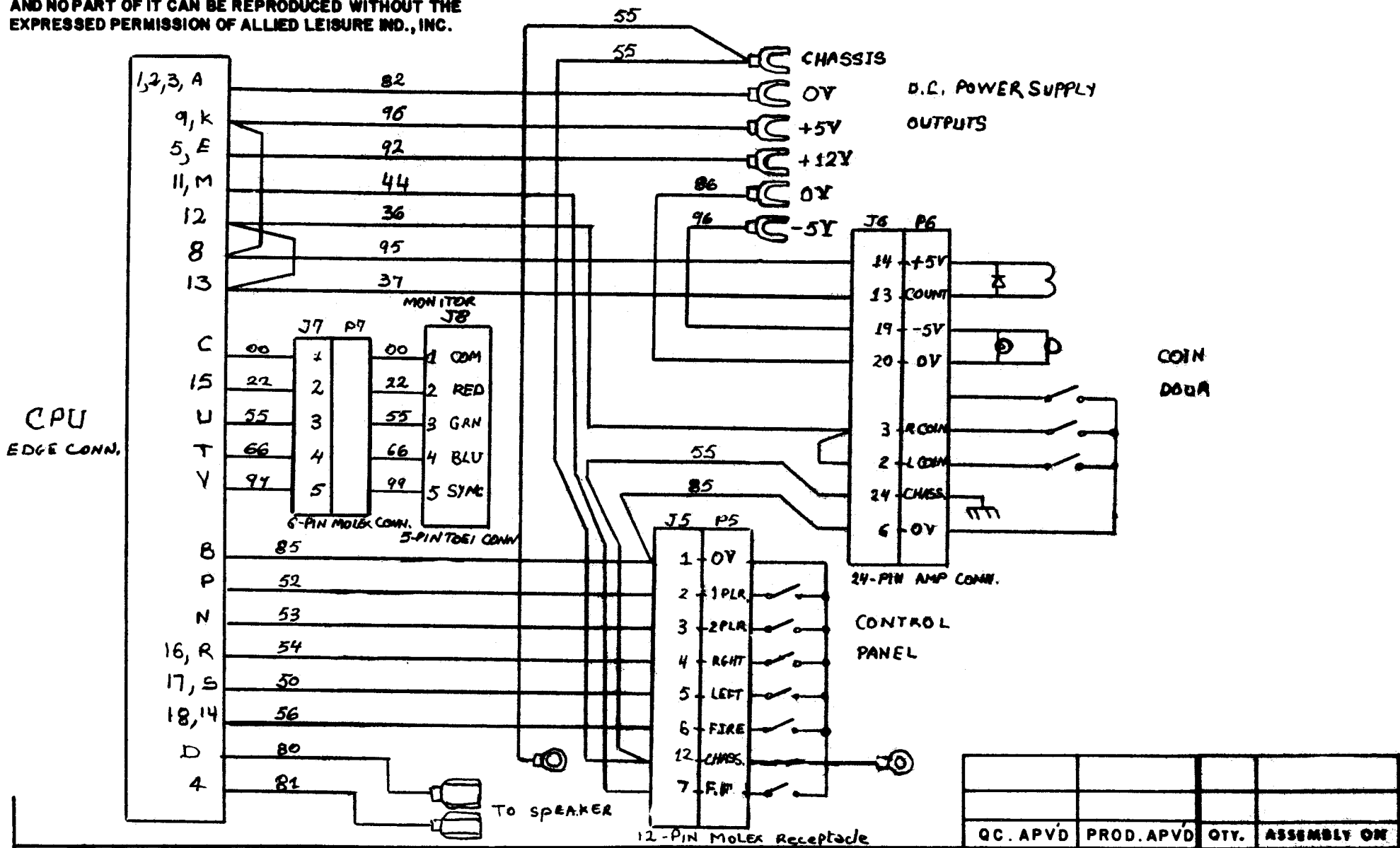


ELECTRONICS CHASSIS

QC. APVD	PROD. APVD	QTY.	ASSEMBLY ON

				TOLERANCES				ALLIED LEISURE INDUSTRIES, INC.			
				Unless Otherwise Specified				HIALEAH, FLORIDA 33014			
				FRACTIONS	±	1/32	NAME				
				DECIMALS 2 PL	±	.015	PHOENIX - 19" : 110/220 V POWER INTERCONNECT DIAG.				
				DECIMALS 3 PL	±	.005	MATERIALS				
				HOLES	±	.003	HEAT TREAT.		FINISH		
				ANGLES	±	1/2°	DWN. ED		APP'D.		
				SHT. MET BENDS	±	2°	DATE		SCALE		
REV. LET.	BY	REVISION	BY			1-14-81		PART NO.		REV.	
								361-10-0900			

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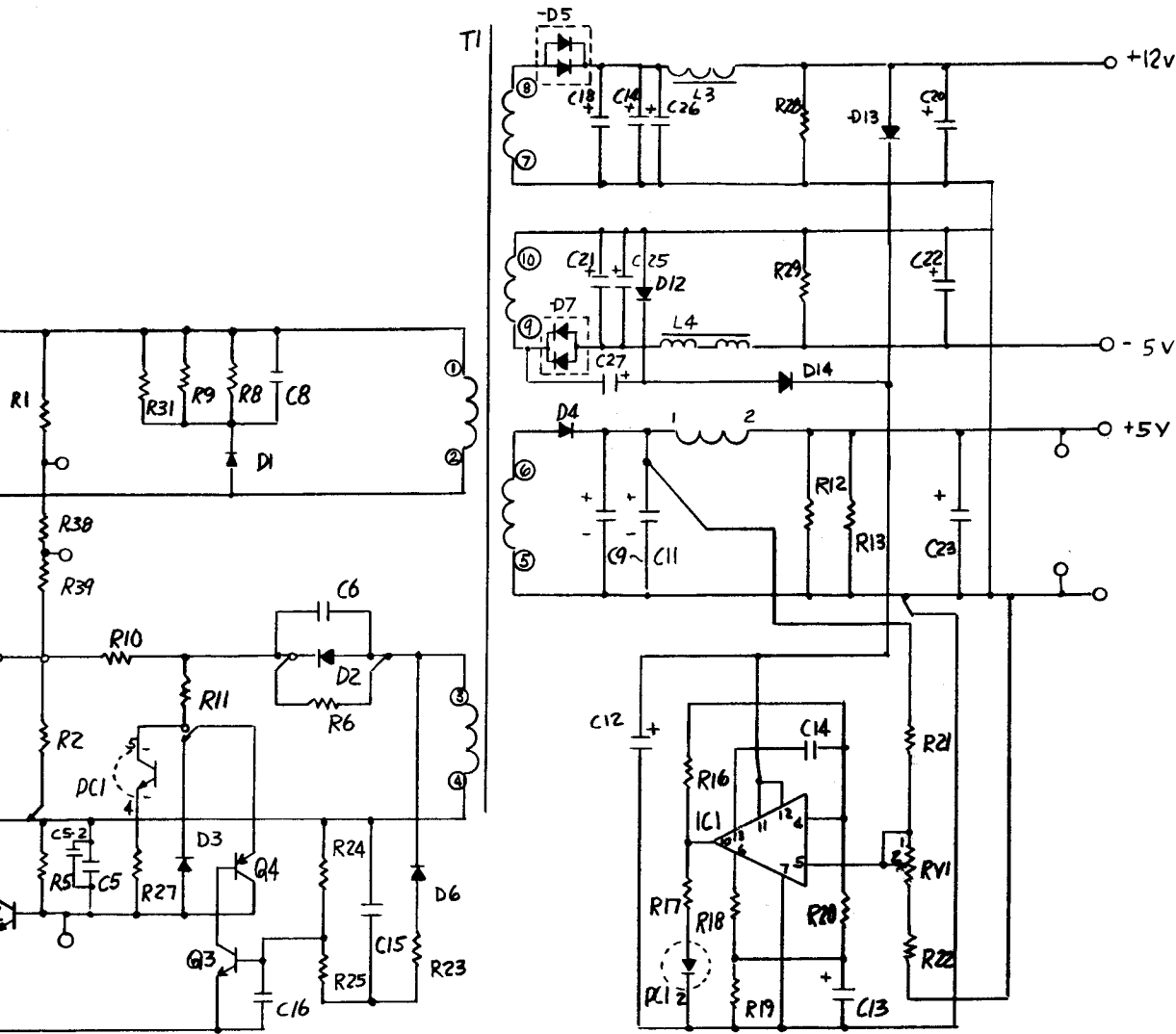


QC. APVD	PROD. APVD	QTY.	ASSEMBLY ON
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				TOLERANCES		ALLIED LEISURE INDUSTRIES, INC.			
				Unless Otherwise Specified		HIALEAH, FLORIDA 33014			
				FRACTIONS	±	1/32	NAME		
				DECIMALS 2 PL	±	.018	CPU HARNESS INTERCONNECT DIAGRAM		
				DECIMALS 3 PL	±	.008	MATERIALS		
				HOLES	±	.003	HEAT TREAT.		FINISH
				ANGLES	±	.001	DWN.		
				SHT. MET BENDS	±	2°	APP'D.	DATE	SCALE
REV. LET.	ECN N	REVISION	BY				PART NO.	364-10-1000	

REVISIONS

REV. LETTER	ITEM NO.	ECN NO.	DESCRIPTION	DISPOSITION OF EXISTING PARTS		ENGR'G APP'D
				RE-WORK	SCRAP	



NEXT ASSEMBLY			

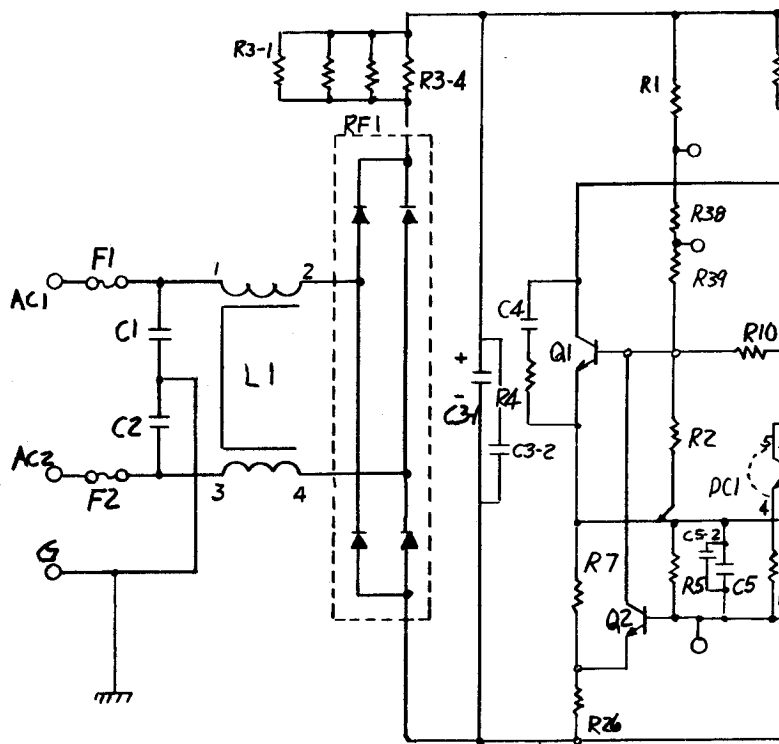
TOLERANCES
UNLESS OTHERWISE SPECIFIED

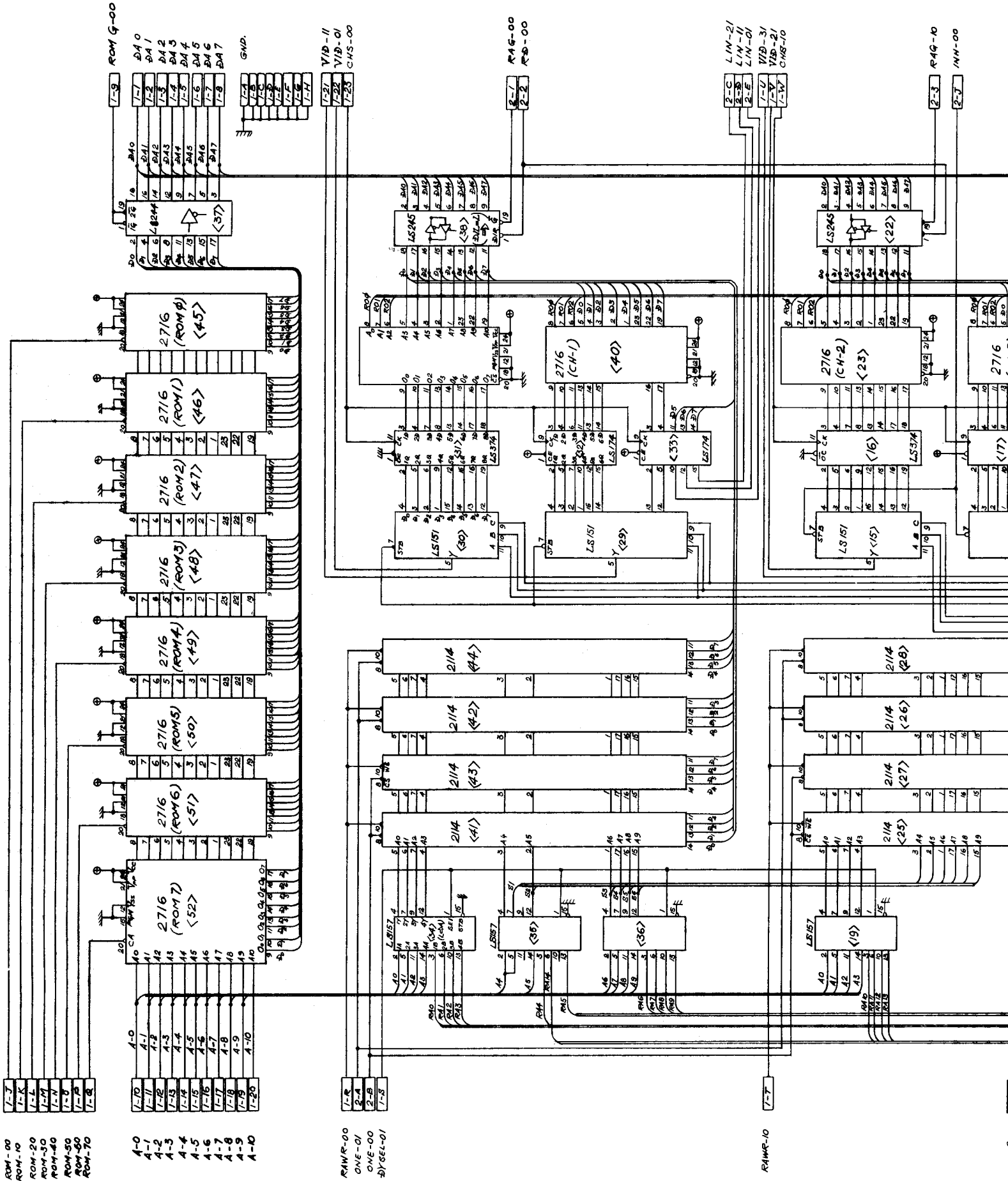
FRACTIONS	± 1/32
DECIMALS	± .03
DECIMALS	± .010
HOLES	± .002
HOLES	± .000
ANGLES	± 1/2°

CENTURI, INC.
1780 W. 4th AVENUE HIALEAH, FLORIDA 33010

TITLE:
SHINDENGEN POWER SUPPLY SCHEMATIC

DWN AAN	APP'D <i>[Signature]</i>	DATE 1-14-81	SCALE 2x	DWG NO. 363-17-0300	REV.
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ROM-00
 ROM-10
 ROM-20
 ROM-30
 ROM-40
 ROM-50
 ROM-60
 ROM-70

A-0
 A-1
 A-2
 A-3
 A-4
 A-5
 A-6
 A-7
 A-8
 A-9
 A-10

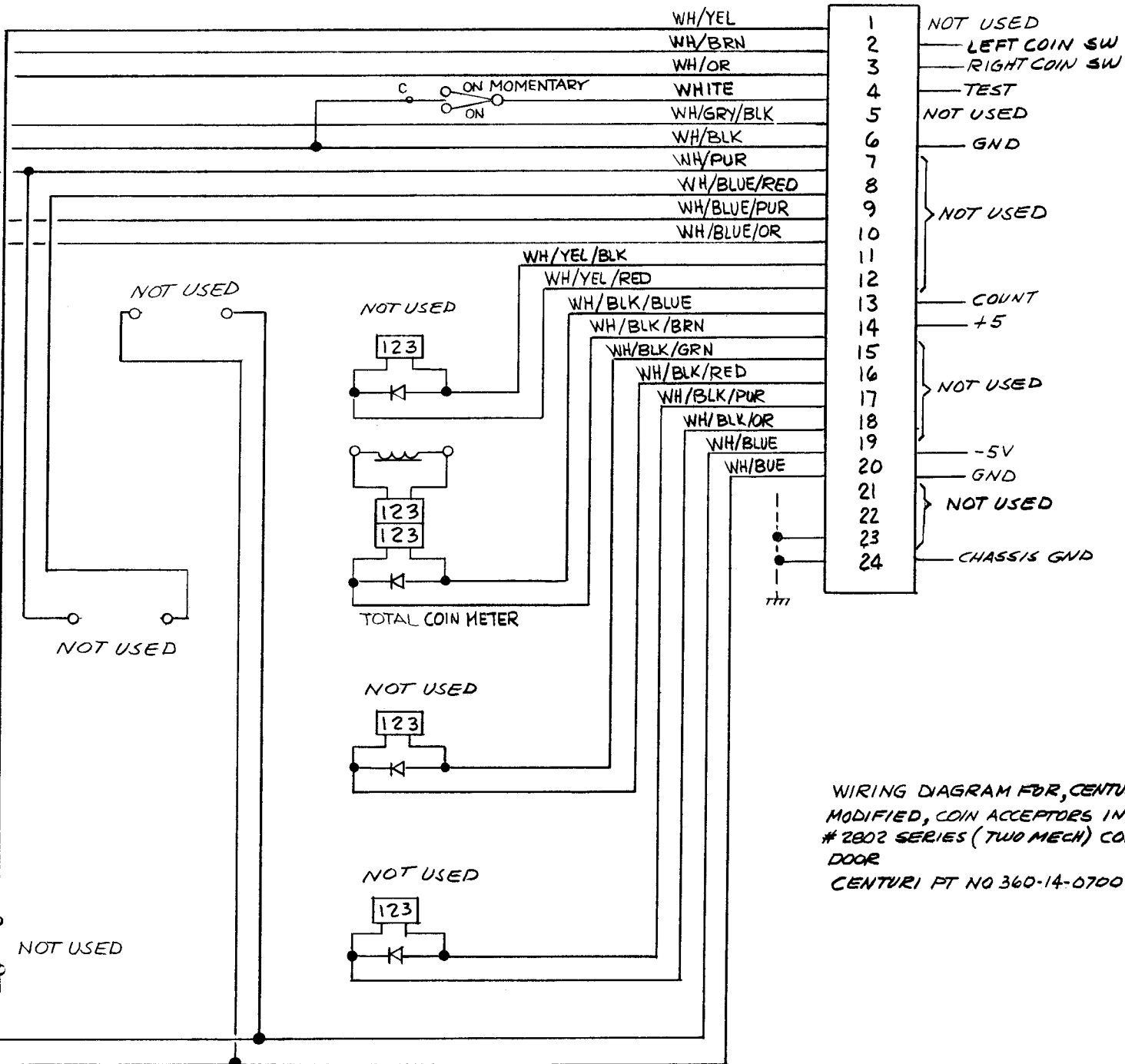
RAMR-00
 ONE-01
 ONE-00
 BYSEL-01

RAMR-10

GND.

REVISIONS

REV. LETTER	ITEM NO.	ECN NO.	DESCRIPTION	DISPOSITION OF EXISTING PARTS		ENGR'G APP'D
				RE-WORK	SCRAP	



WIRING DIAGRAM FOR CENTURI MODIFIED, COIN ACCEPTORS INC., # 2802 SERIES (TWO MECH) COIN DOOR
CENTURI PT NO 360-14-0700

TOLERANCES UNLESS OTHERWISE SPECIFIED				CENTURI, INC.					
				1780 W. 4th AVENUE HIALEAH, FLORIDA 33010					
				TITLE: COIN DOOR WIRING DIAGRAM					
				DWN	APP'D	DATE	SCALE	DWG NO.	REV.
				A.A.V.	L.A.K.	1-22-81		364-62-1000	

NEXT ASSEMBLY

SLAM SWITCH

RIGHT LAMP

LEFT LAMP

NOT USED

RIGHT COIN
LOCKOUT COIL
(MODIFIED)

LEFT COIN
LOCKOUT COIL
(MODIFIED)

NOT USED

N.O.
RIGHT COIN SWITCH

N.O.
LEFT COIN SWITCH

NOT USED

NOT U

123

123

123

TOTAL

NOT

123

NOT

123

NEXT AS