

SERVICE MANUAL

ROUTE 16

CENTURI, INC.

245 W. 74TH PLACE

HIALEAH, FL. 33014

Tel. #(305) 558-5200

CUSTOMER SERVICE:

Tel. #(305) 558-5200 (In Florida)
Tel. #(800) 327-7710 (Outside Florida)

ROUTE 16

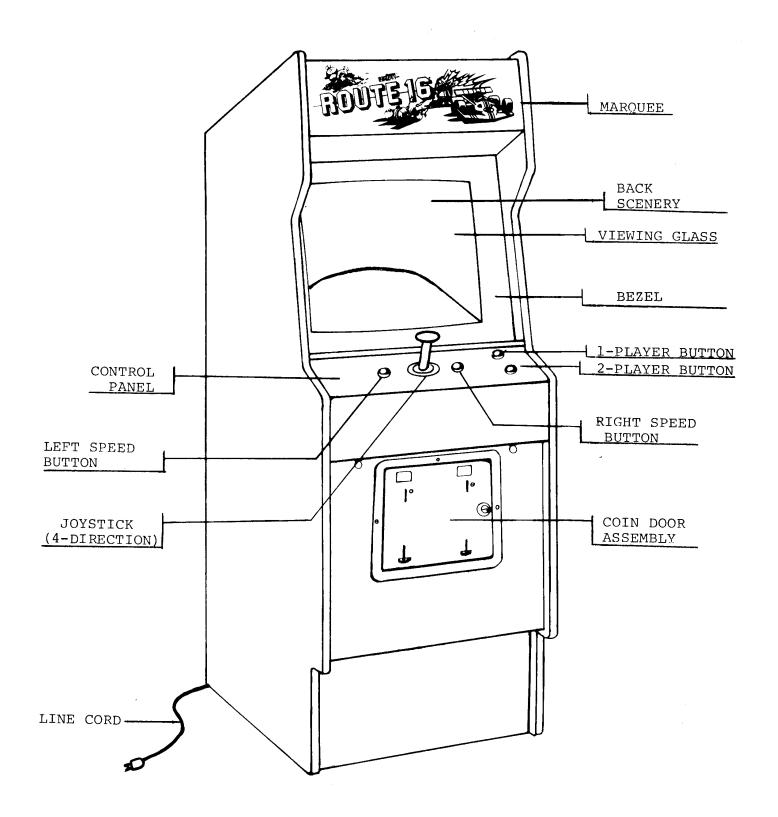
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USER INFORMATION - F.C.C.

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" "ROUTE 16" VIDEO UPRIGHT

ROUTE 16

GAME SUMMARY

Route 16 is a challenging race car game, integrating special features to excite the beginner as well as the seasoned player. The vivid video screen is fascinating, and is complimented by exceptional audio during game play.

The red car is controlled by the joystick feature, and is pursued through 16 different routes (mazes) by three chase cars. The search mode reveals an overview of all 16 routes, and the search mode appears whenever the car exits a route. In the search mode, the player car becomes a red cube, and the chase cars become yellow cubes.

Whenever the player car exits one route, there is a one second delay for a total overview of the game.

Each route has dead-ends, zig-zags, and multiple entrances and exits.

Some routes have the $\underline{\text{dollar}}$ symbol (\$), and the player scores 200 points each time this symbol is cleared. The dollar symbols randomly change to $\underline{\text{oil}}$ slicks, and when encountered, the oil slicks slow down the player car.

The <u>question mark</u> symbol (?), is surrounded by <u>check</u> points (D), and will either reveal a <u>bomb</u> symbol or a <u>bell</u> mark after the player car clears the check point. The bell will add 800 points to the player's score when cléared. Player skill is tested here to avoid the bomb if it appears.

Some routes have a <u>flag</u> symbol, and when the player car clears the symbol, the pursuing cars become dollar symbols, and every effort should be made by the player to chase them down, and add extra points to his score.

One route has a flickering bonus car symbol. When the symbol appears, clear it and earn an additional player car.

One route has an additional game feature. When the player car enters the maze, it is pursued by an attacking monster. The player car cannot clear or collide with the monster, but must avoid it, or be destroyed.

The high-speed button is another feature of Route 16. When pushed, the player car is accelerated to escape the chase cars. Usage of the high-speed button reduces the player car's fuel. At the end of each round, bonus points are added to the player's score for remaining fuel.

After all the symbols are cleared, the round ends. In successive rounds, additional dollar symbols (\$), and additional enemy chase cars are added.

The game is over when all the player cars have crashed.

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 $\rm H_{\rm Z}$ power source, with only minor changes. The only items requiring a change are the fuses and the jumper plug on the game power transformer.
- 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.

ROUTE 16 - GAME INSTRUCTIONS

- 1. INSERT COIN.
- 2. SELECT ONE-PLAYER OR TWO-PLAYER BUTTON.
- 3. JOYSTICK CONTROL MANUEVERS PLAYER CAR IN FOUR DIRECTIONS, ENABLING CAR TO TRAVEL THROUGH EACH "ROUTE" (MAZE), AND ENTER AND EXIT EACH "ROUTE".
- 4. HIGH SPEED BUTTON ACCELERATES PLAYER CAR, BUT DECREASES FUEL.
- 5. POINTS ARE SCORED BY CLEARING SYMBOLS ON EACH ROUTE.
- 6. BONUS POINTS ARE SCORED WHEN ALL SYMBOLS ARE CLEARED BEFORE FUEL IS DEPLETED. BONUS POINTS ARE ADDED AS TEN (10) TIMES FUEL BALANCE.
- 7. BONUS CAR IS ADDED WHEN PLAYER CAR CLEARS FLASHING CAR SYMBOL.
- 8. CLEARING FLAG MARK CHANGES ENEMY CARS TO DOLLARS (\$) POINTS.
- 9. MYSTERY MARK (? MARK) IS REVEALED AS A DOLLAR SYMBOL OR BOMB SYMBOL WHEN PLAYER CAR CROSSES CHECK POINTS SURROUNDING MYSTERY MARK.
- 10. GAME IS OVER WHEN ALL PLAYER CARS HAVE CRASHED.

GAME SCORING

POINT VALUES

	DOLLAR	FLAG	QUESTION MARK	BELL(\$)	вомв	EXTRA CAR	OIL	ENEMY CAR	PLAYER CAR
ONE ROUTE VIEW:			0	*	¢		mad n		盂
	200 points	500 points	? points	800 points	0	_	0		_
ALL ROUTES VIEW:									

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 table will assist your adjustments:

OPTIONAL SWITCH SETTINGS

Switch l controls the number of cars alloted each player per game. The switch settings should be as follows:

SWITCH 1:	NUMBER OF CARS:
OFF	3
ON	5

Switches 2 and 3 are not used.

Switches 4 and 5 control the game fees. These settings can be set for one coin $(25\column{c}{c})$ or two coins $(50\column{c}{c})$ per play as follows:

SWITCH 4:	SWITCH 5:	COIN SETTING:
OFF	OFF	One Coin (25¢) - One Play
ON	OFF	Two Coins(50¢) - One Play

Switch 6 is a preset factory adjustment, and should remain in the "ON" position for the video upright game.

Switch 7 is preset at the factory, and should be set in the "ON" position for the monitor picture adjustment.

Switch 8 allows the operator to regulate the availability of music in the attract mode. The following settings regulate this function:

SWITCH 8:	ATTRACT MODE MUSIC:
ON	Music Available
OFF	Music Not Available

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)

POWER SUPPLY

The Computer Board in this game operates most efficiently and reliably when the power supply is set so that the voltage on the board is 5.0 Volts, $\pm 0.1 \text{ Volts}$. To check this, place a meter across 5 Volts and ground at the edge connector. If necessary, adjust the screwdriver control on the power supply so that the meter reads between 4.9 and 5.1 Volts.

PARTS LIST

$\underline{\text{NO}}$.	PART NUMBER:	DESCRIPTION:	<u>USAGE</u> :
1	50010306	MB8841	1
2	50010264LS	74LS368	3
3	50010105LS	74LS32	1
4	50010139LS	74LS175	1
5	50040002	.1 mfd, 50 Volt Ceramic Disc Cap	. 3
6	50040141	.001mfd, 50 V., Ceramic Disc Cap	. 1
7	50040170	220PF, 50 V., Ceramic Disc Cap.	1
8	50060178	4.7mfd, 10 V. Tantalum Capacitor	1
9	50100014	lN914 Diode	1
10	50030063	10K, 1/4 W., 5% Resistor	1
11	50030147	6.8K Ohm, 1/4 W., 5% Resistor	1
12	50030006	4.7K Ohm, $1/4$ W., 5% Resistor	1
13	50210222	Printed Circuit Board	1.
14	50150297	Square Pin Straight Wafer,	
		(Molex #22-03-2121)	2

PARTS LIST

$\underline{\text{NO}}$.	PART NUMBER:	DESCRIPTION:	USAGE
1 2 3 4 5 6 7 8 9	50010233 50010028LS 50010019LS 50010045LS 50010096LS 50010002LS 50010007LS 50010005LS 50010008LS	74LS04 I.C.	16 8 5 9 2 7 4 4 7
11 12 13 14 15 16 17 18 19 20	50010022LS 50010264LS 50010012LS 50010204LS 50010139LS 50010014LS 50010105LS 50010242 50010195LS 50010305		4 10 1 2 1 3 6 2 10 2
21 22 23 24 25 26 27 28 29 30	50010030LS 50010004LS 50010171 50010187 50010307 50130034 50040002 50040066 50040005 50040168	74LS02 2716 Z-80 C.P.U.	3
31 32 33 34 35 36 37 38 39 40	50040141 50030095 50030063 50030150 50040125 50030310 50030091 50030185 50030051 50030007	0.001mfd, 50 V. Ceramic Disc Ca 330 Ohm, 1/4 W., 5% Resistor 10K Ohm, 1/4 W., 5% Resistor 47K Ohm, 1/4 W., 5% Resistor 220 Ohm 1/4 W., 5% Resistor 560 Ohm, 1/4 W., 5% Resistor 56K Ohm, 1/4W., 5% Resistor 1.8K Ohm, 1/4 W., 5% Resistor 1K Ohm, 1/4 W., 5% Resistor 100K Ohm, 1/4 W., 5% Resistor	ap. 1 2 3 1 2 1 1 1 2
41 42 43 44 45 46 47	50360010 50070016 50020065 50060176 50060177 50060156 50060139	2.2K Ohm, 1/4 W., 9-Pin SIP Resistor 10MH _Z Crystal TIP 120 NPN Darlington Transist 0.47mfd, 16 V., Tantalum Cap. 100mfd, 16V., Radial Lytic Cap. 10mfd, 16V., Radial Lytic Cap. 47mfd, 16V., Radial Lytic Cap.	1

C.P.U. PRINTED CIRCUIT BOARD

PARTS LIST

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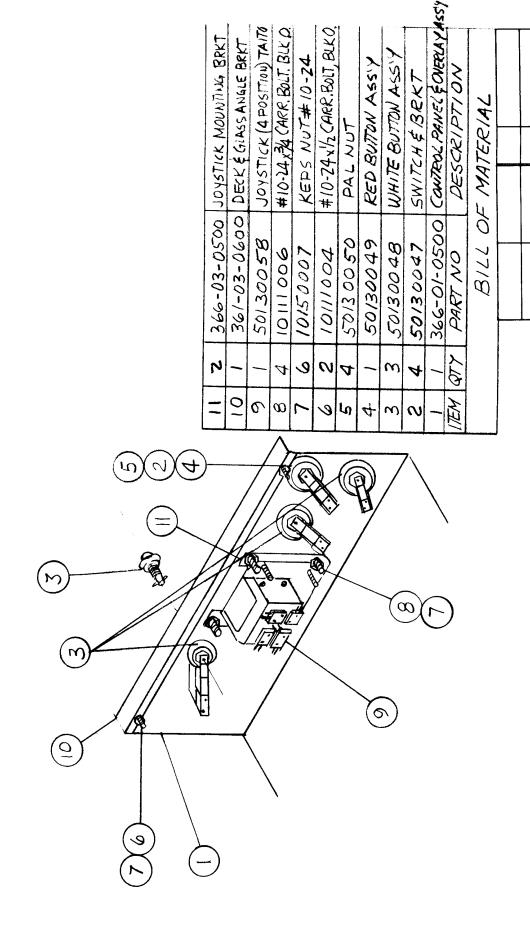
$\overline{\text{NO}}$.	PART NUMBER:	DESCRIPTION:	<u>USAGE</u> :
48	50040169	.lmfd, 50 V. Mylar Capacitor	1
49	50150111	16-Pin I.C. Socket	4
50	50150061	24-Pin I.C. Socket	11
51	50150112	18-Pin I.C. Socket	2
52	50150060	40-Pin I.C. Socket	2
53	50010271	MB3713 Audio Amplifier	1
54	50100014	ln914	1
55	50080034	100K Potentiometer, CTS 375 V.	1
56	50210223	P.C.B. Route 16, C.P.ULogic	1
57	50175506	Jumper, 22GA, insulated Wire	36"

PARTS LIST

SYMBOL:	DESCRIPTION:	<u>USAGE</u> :
Tl	Transformer, Single Phase, 24 VA	1
L1 L2, L4 L3	Coil, 1.6 mH, 1.5A Coil, SF-T8-50S-03 Coil, SF-HP-2A-03	1 2 1
D1 D2 D3, D6 D4 D5, D7 D12, D13 D14 RF1	Diode, V19G Diode, V06C Diode, 1S1588 Diode, S15S3 Diode, 5CH1M Diode, F113B Diode, F113B Diode, S4VB40 (Bridge Type)	1 1 2 1 2 2 2 1
Q1 Q2 Q3 Q4	Transistor, 2SC2504 Transistor, 2SD467 (B) Transistor, 2SC460 (B) Transistor, 2SA673 (B)	1 1 1
ICl	Integrated Circuit, RM723DC or HA17723G-0	2 1
PCl	Photo Coupler, PS2001	1
R1 R8, R9 R3, 1-4 R4 R12 R28 R7 R26 R23 R10 R27 R2 R22 R21 R6 R11 R20 R17 R19 R18 R5 R16 R29 R39 R38 R24 R25	Resistor, 2 Watt, 18 Ohm Resistor, 2 Watt, 47K Ohm Resistor, 2 Watt, 15 Ohm Resistor, 1 Watt, 56 Ohm Resistor, 1 Watt, 100 Ohm Resistor, 1 Watt, 470 Ohm Resistor, 1 Watt, 0.56 Ohm Resistor, 1 Watt, 0.82 Ohm Resistor, 1/4 Watt, 22 Ohm Resistor, 1/4 Watt, 33 Ohm Resistor, 1/4 Watt, 68 Ohm Resistor, 1/4 Watt, 330 - 470 Ohm Resistor, 1/4 Watt, 220 Ohm Resistor, 1/4 Watt, 270 Ohm Resistor, 1/4 Watt, 330 Ohm Resistor, 1/4 Watt, 330 Ohm Resistor, 1/4 Watt, 68 Ohm Resistor, 1/4 Watt, 68 Ohm Resistor, 1/4 Watt, 68 Ohm Resistor, 1/4 Watt, 680 Ohm Resistor, 1/4 Watt, 1.2K Ohm Resistor, 1/4 Watt, 1.2K Ohm Resistor, 1/4 Watt, 1.0K Ohm Resistor, 1/4 Watt, 220K Ohm Resistor, 1/4 Watt, 220K Ohm Resistor, 1/4 Watt, 27 Ohm Resistor, 1/4 Watt, 4.7K Ohm Resistor, 1/4 Watt, 5.6K Ohm Resistor, 1/4 Watt, 330 Ohm	1 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

POWER SUPPLY	#50350001
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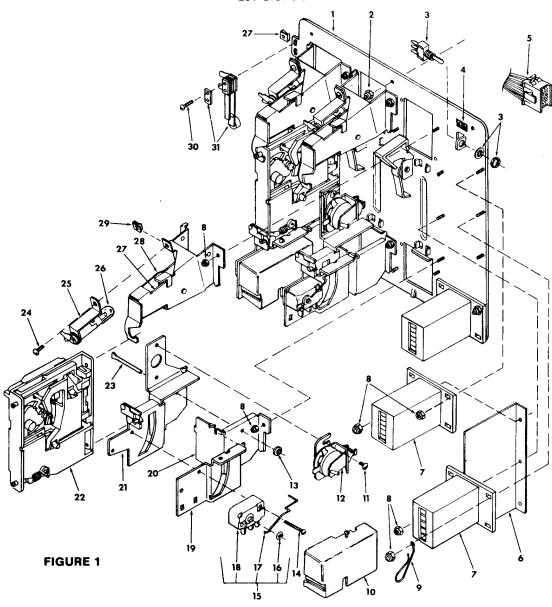
SYMBOL:	DESCRIPTION	<u>1</u> :	USAGE:
Cl, C2	Capacitor,	ECK-DAL102E	2
C3-1,-2	Capacitor,	160VSN100	2
C9, C10	Capacitor,	SM10VB-2200	2
Cll, C23	Capacitor,	SM10VB-2200	2
C12,C13,C	15Capacitor,	SL25VB-10	3
C27	Capacitor,		1
C18,C19,C2	20Capacitor,	SM35VB-1000	3
C26		SM35VB-1000	1
C21,C22,C2	25Capacitor,		3
C5		DMY21H472K	1
C6	Capacitor,	DMY21H104K	1
C14,C16	Capacitor,	DMY21H222K	2
C4	Capacitor,	CM20XC511K5	1
C8	Capacitor,	MDD22G473K	$\bar{1}$
C5-2	Capacitor,	DMY21H222K	1
1, F2	Enclosed Ty	pe Fuse, 3A	2



QC. APV'D PROD. APV'D QTY. ASSEMBLY NO	HIALEAH, FLORIDA 33014			HIALEAH, FLORIDA 33014		777	FINISH		APP'D. DATE SCALE PART NO. 4-6-800 REV.	
PROD. APV'C				BCK A		HEAT TREAT.		SCALE PAI		
QC. APV'D	centura				•	DATE 4-6-81				
				N. A. A. C.)	MATL'S.		DWN. APP'D.	1000
	TOLERANCES	Unless Otherwise Specified	EBACTIONS + 1/32	-1	DECIMALS 2 PL ± .015	DECIMALS 3 PL ± .005	HO! ES + .003	- 001	ANGLES ± 1/2°	מיווי ווורו סבווסט 🕂 ב
									ВУ	
									REVISION	
									ECN SO	
							¥66	8	REV.	

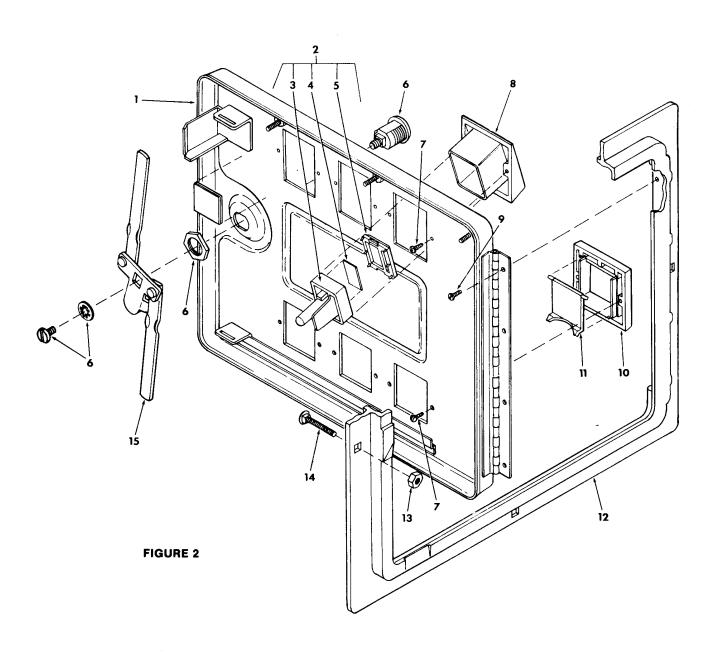
2800 SERIES COIN DOOR EXPLODED VIEW

25¢ U.S. COIN

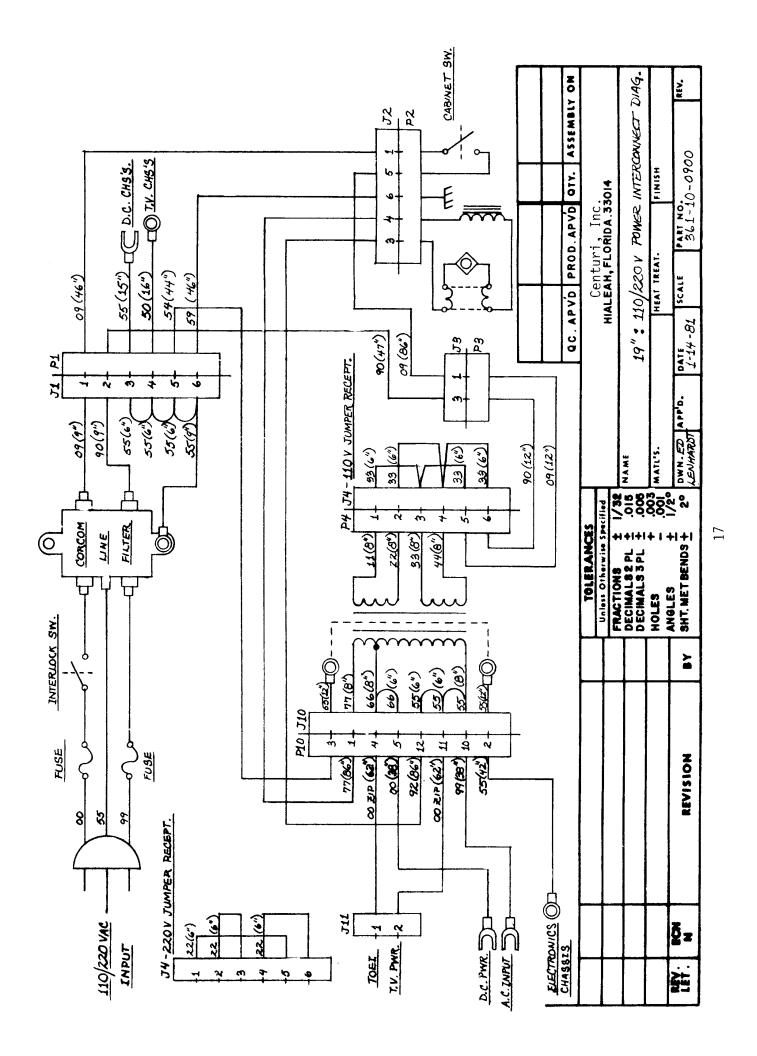


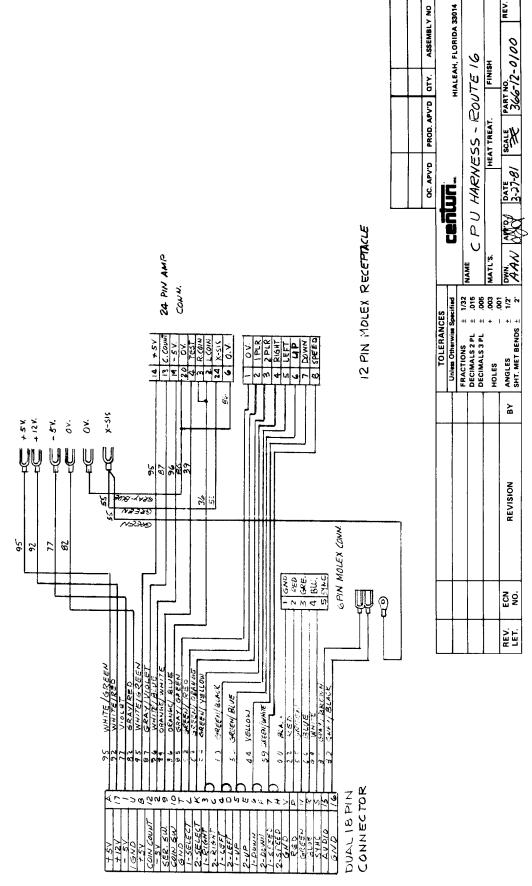
index		.	Index		
No.	No.	Description	No.	No.	Description
1	404429	Inner Panel With Levers Sub-Assembly	17	904710-1	Silver Switch Wire — for U.S. 25¢ Coin
2	400-8	Nut	18	904845	Switch
3	904782	Toggle Switch	19	904701	Coin Chute
4	904706	Test Switch Decal	20	904598	Coin Return Box
5	*	Custom Harness Assembly	21	404428	Switch and C.R.E.M. Coil Bracket
6	904822	Insulation	- -	.020	Assembly
7	404352	Coin Counter Assembly (6 Volt D.C.)	22	5301-10	25¢ Acceptor
8	400-4	Nut	23	905115	Bar
9	904722	Wire Key Holder	24	110-4-6	Screw
10	904762	Switch Cover	25	904717	Miniature Bayonet-Base Lamp
11	100-6-3	Screw		00	Socket
12	404354	C.R.E.M. Coil Assembly.	26	904716	#47 Lamp (6.3 Volt)
		12 Volts D.C.	27	404418	Coin Inlet Chute Sub-Assembly
13	904936	Keeper	28	904594	Right Half of Coin Inlet Chute
14	100-4-12	Screw	29	904712	"U"-Type Fastener
15	404353	Coin Switch Assembly for U.S. 25¢ Coin	30	116-4-8	Screw
16	900651	Retainer	31	904704	Slam Switch Assembly

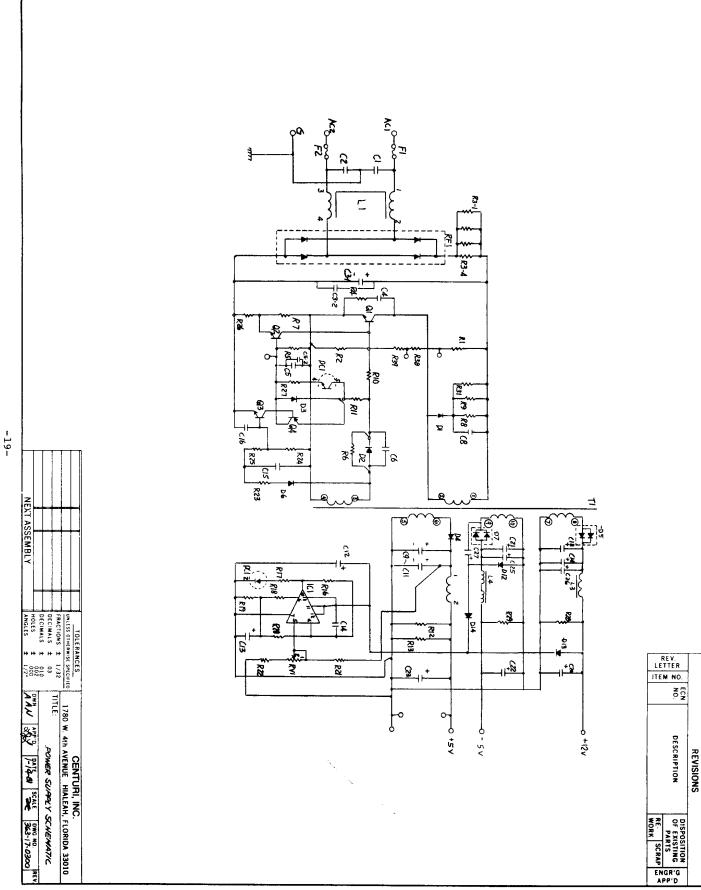
2800 SERIES COIN DOOR EXPLODED VIEW 25¢ U.S. COIN



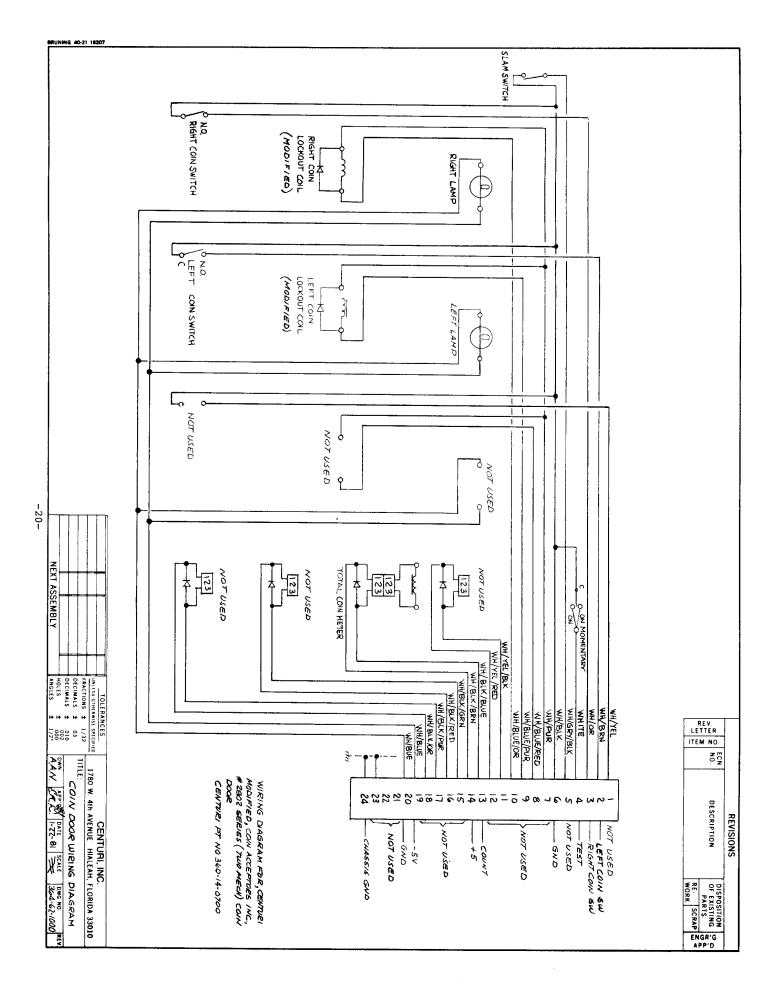
Index No.	Part No.	Description	index No.	Part No.	Description
1	404341	Coin Door Only (2 Coin)	7	345-4-5	Screw
	404341-1	Coin Door Only (3 Coin)	8	904588	Coin Button Housing
2	404348-1	Coin Return Button Assembly for	9	325-4-4	Screw
		U.S. 25¢ Coin	10	904590	Coin Return Bezel
3	904591	Coin Return Button	11	904599	Coin Return Cover
4	904703	U.S. 25¢ Price Decal	12	904581	Coin Door Frame, 11-5/8" x 13-3/8"
5	904589-2	Coin Return Button Cover for U.S. 25¢ Coin			Mounts in a 10-3/8" x 12-3/16" Opening
6	904707-1	Lock Assembly	13	406-416	Hex Nut
		•	14	904734	Carriage Bolt
			15	404357	Locking Arm Assembly

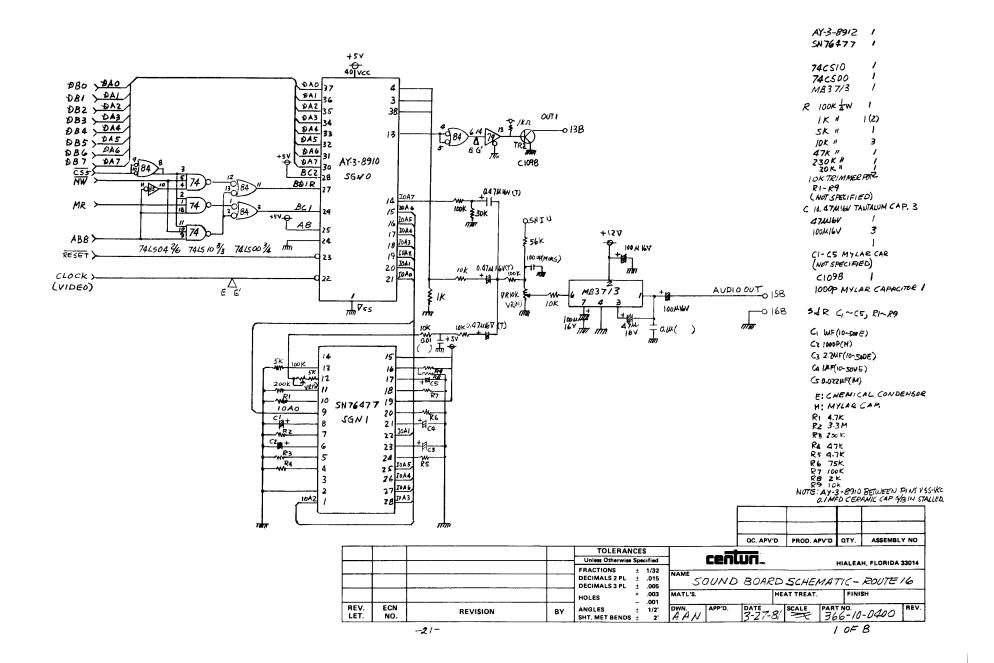


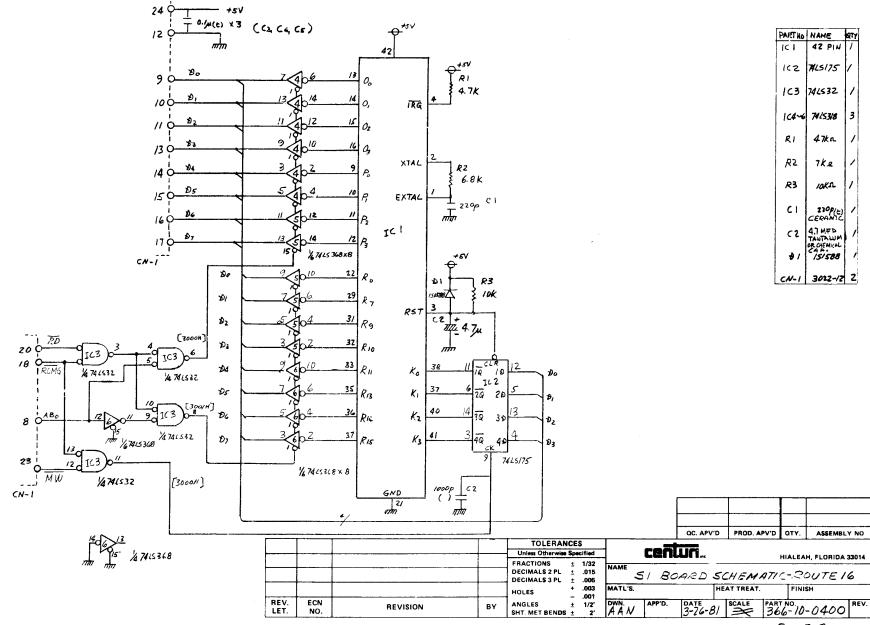




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