

# SERVICE TIPS

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EXCEPT ILLINOIS: 312-981-1000 Ext. 215  
TELEX: 253290



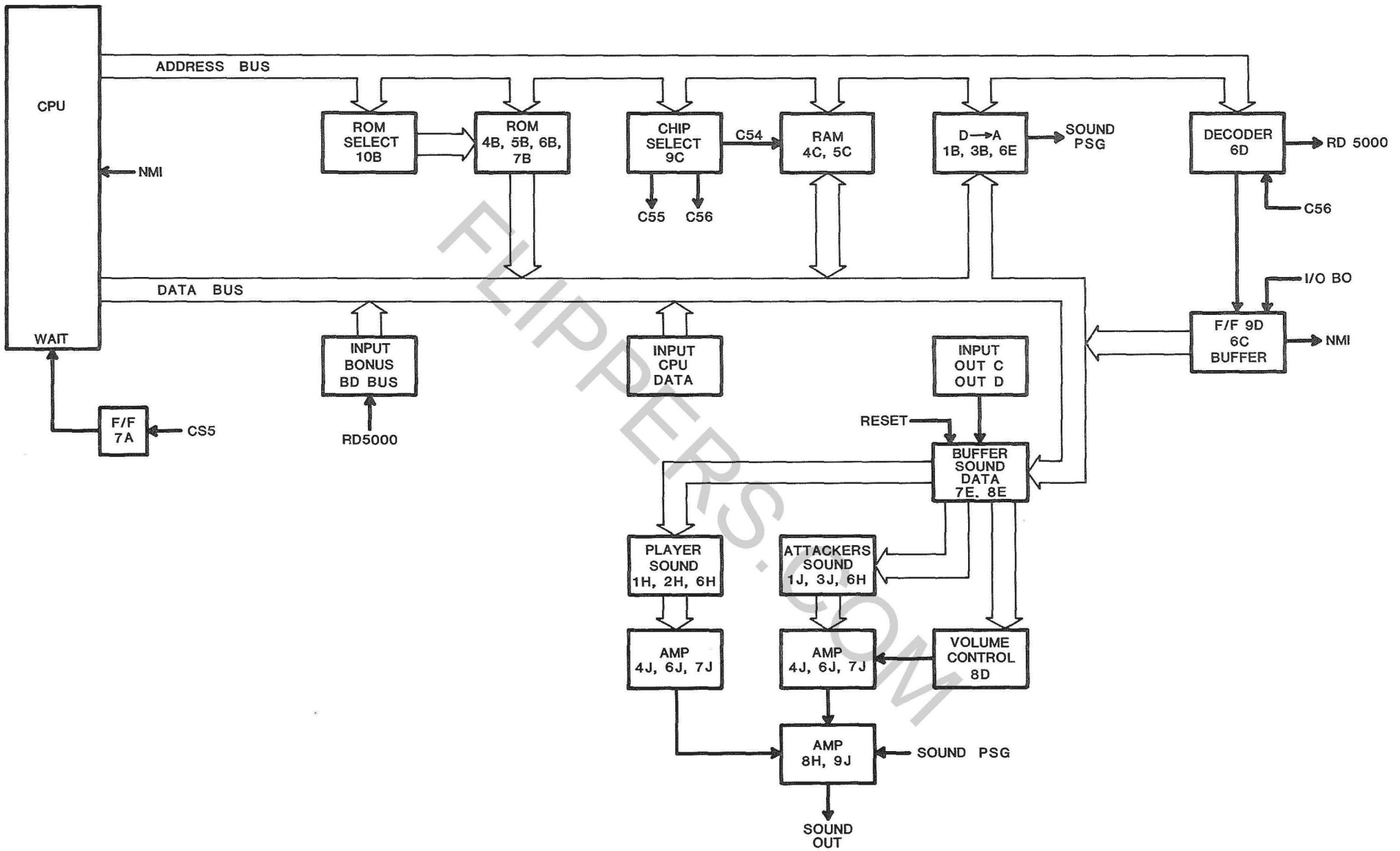
82-8

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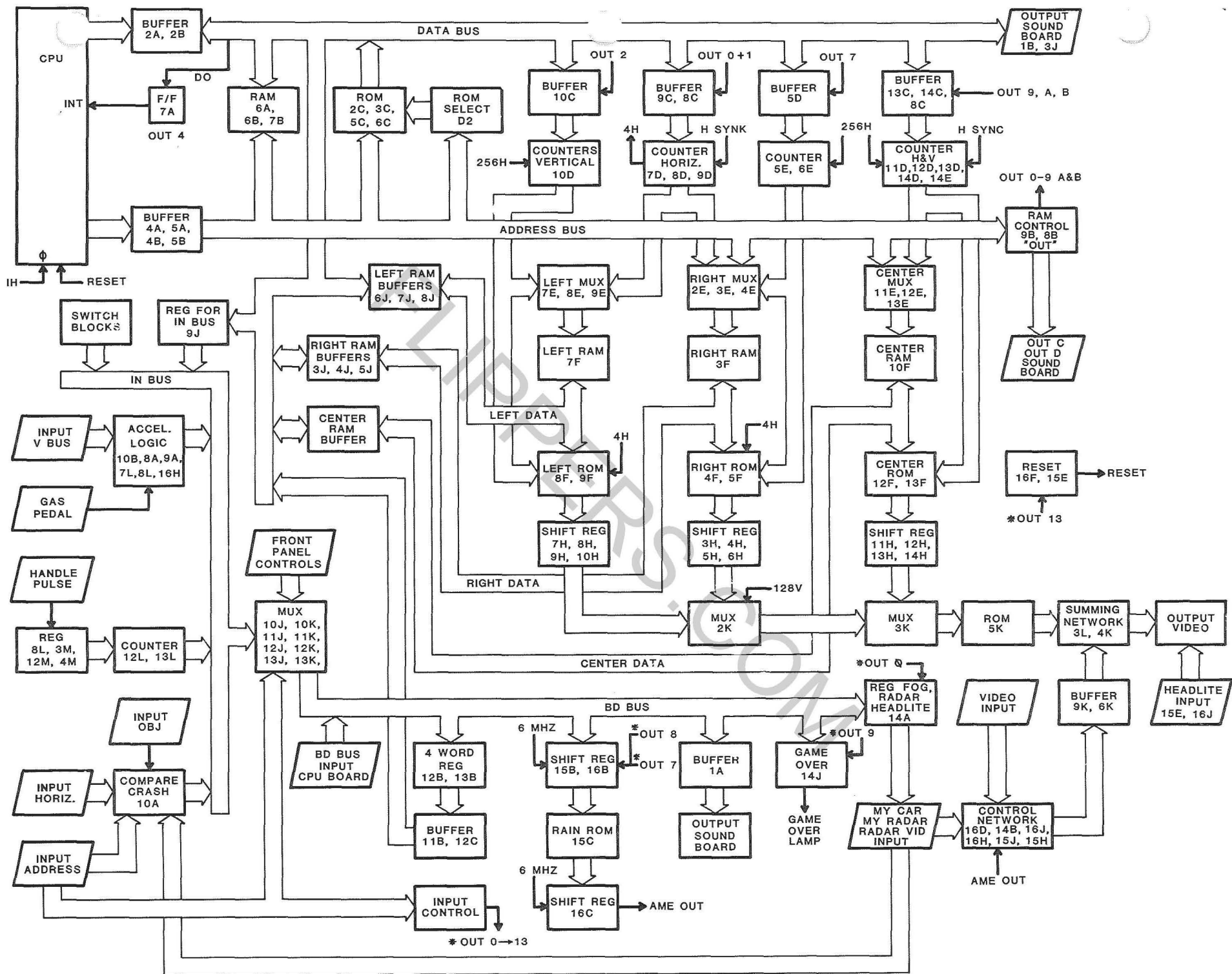
ATTN: SERVICE MANAGERS

GAME: GRAND CHAMPION

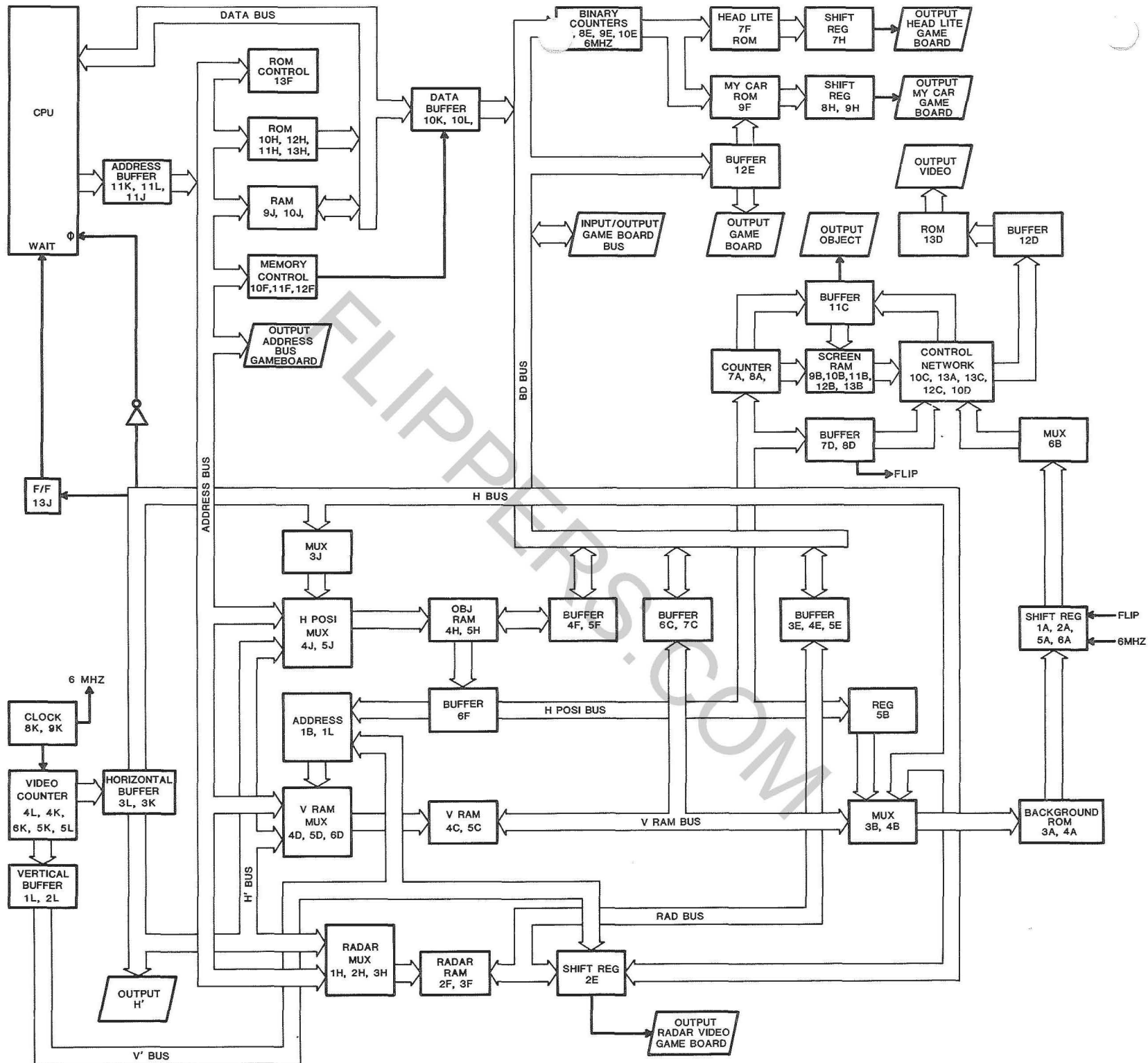
SUBJECT: ATTACHED IS A BLOCK DIAGRAM FOR GRAND CHAMPION UPRIGHT.  
WE HOPE THIS WILL ASSIST YOU IN TROUBLESHOOTING THE GAME.  
IN EACH BOX THERE ARE NUMBERS AND LETTERS WHICH INDICATE  
THE CHIP LOCATION ON THE BOARD.



SOUND BOARD BLOCK DIAGRAM



CPU BOARD BLOCK DIAGRAM



CPU BOARD BLOCK DIAGRAM

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82-9

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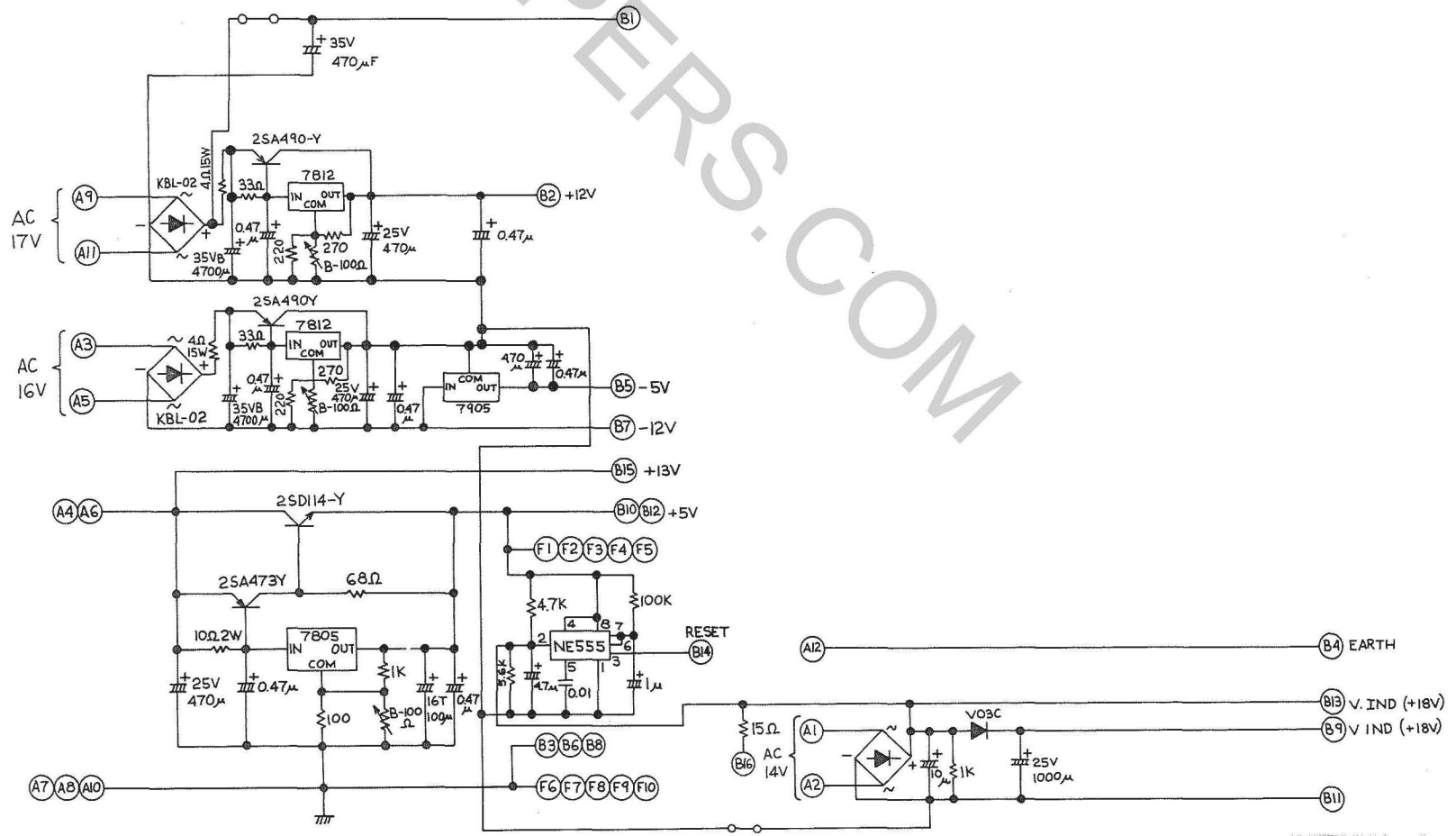
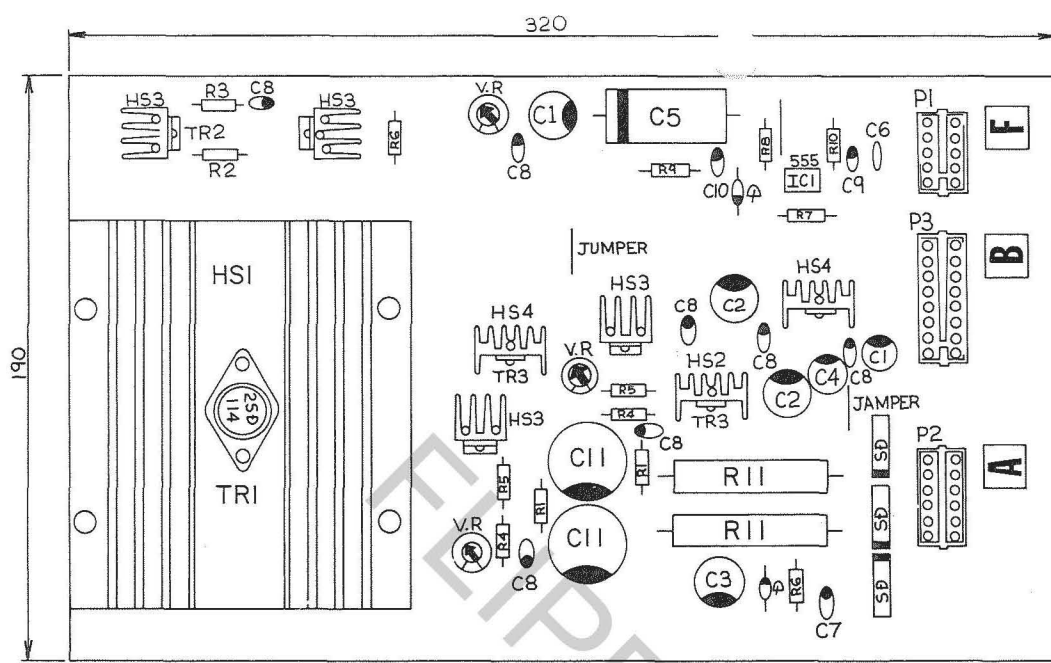
ATTN: SERVICE MANAGERS

GAME: GRAND CHAMPION

SUBJECT: ATTACHED PLEASE FIND A GRAND CHAMPION POWER SUPPLY  
SCHEMATIC, IN HOPES IT WILL WE OF SERVICE TO YOU.

SOLUTION: NONE

PARTS NEEDED: NONE



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82-10

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**ATTN:** SERVICE MANAGERS

**GAME:** GRAND CHAMPION

**SUBJECT:** INTERMITANT RESET

**SOLUTION:** ADD PULL-UP RESISTOR AND FILTER CAP

**PARTS  
NEEDED:** ONE 47 OHM RESISTOR AND ONE .01  $\mu$ F CAPACITOR

**PROCEDURE:** CUT ETCH COMING FROM IC E16 PIN 1 (REFER TO FIGURE 2) ADD A 47 OHM RESISTOR BETWEEN PIN 1 AND THE FEED THROUGH (REFER TO FIGURE 2) ADD THE .01  $\mu$ F CAPACITOR BETWEEN THE FEED THROUGH AND GROUND.

FIGURE 1

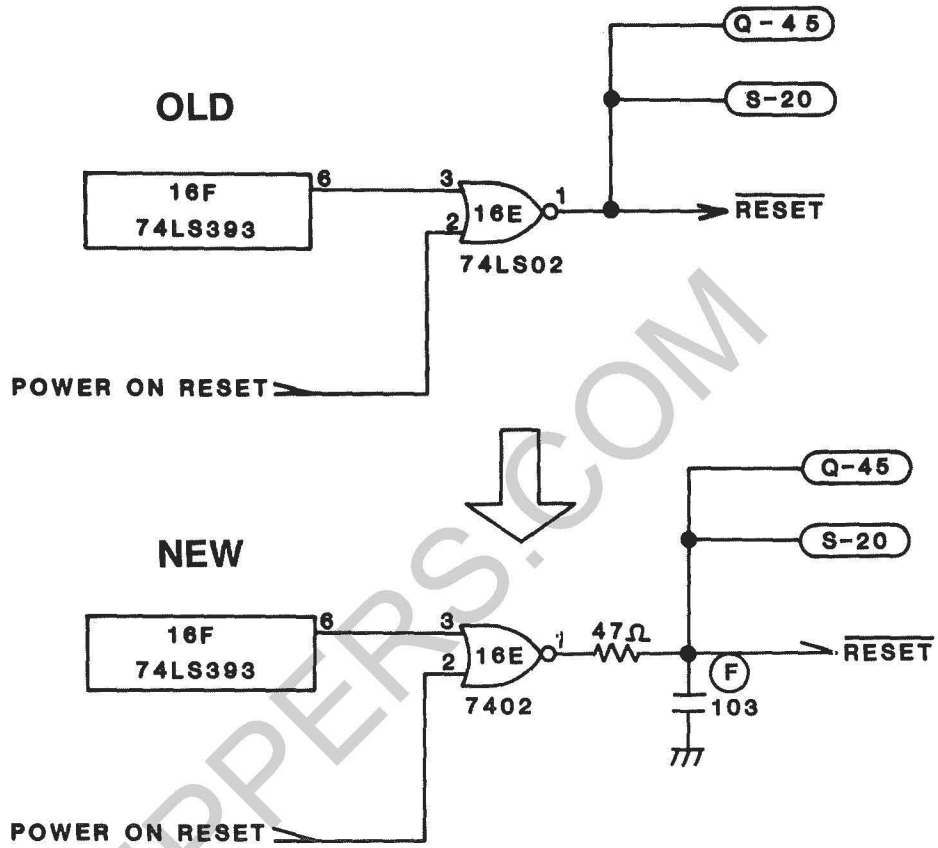
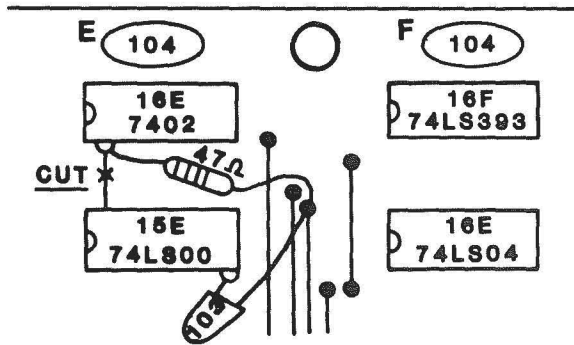


FIGURE 2





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82-11

ATTN: SERVICE MANAGERS

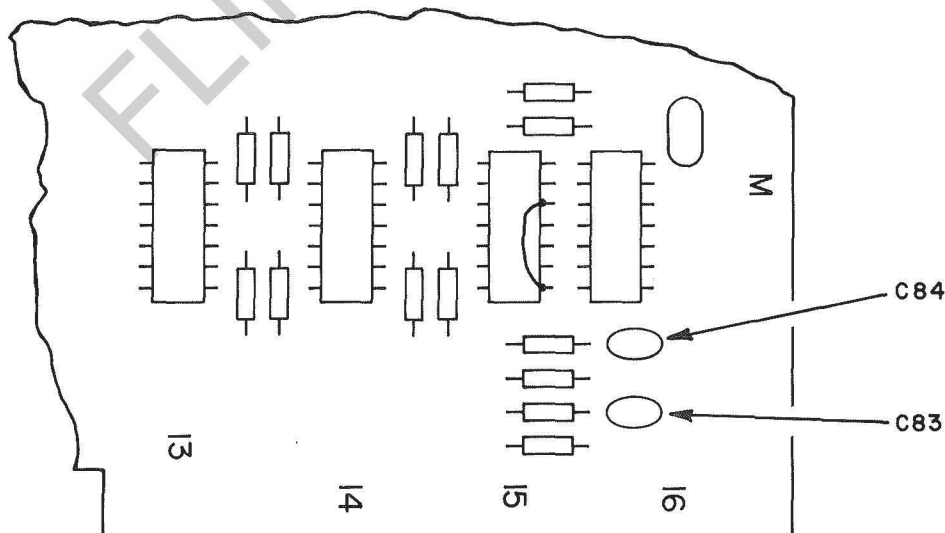
GAME: GRAND CHAMPION

PROBLEM: COIN NOT ALWAYS REGISTERS

SOLUTION: CHANGE VALUE OF CAPACITORS FOR BETTER REACTION.

PARTS NEEDED: TWO 1uf CAPACITORS PART NUMBER 036012

PROCEDURE: REPLACE C83 AND C84 WITH 1uf CAPACITOR (REFER TO FIGURE 1).



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82-21

ATTN: SERVICE MANAGERS

GAME: GRAND CHAMPION

SUBJECT: INTERMITANT LOCK-UPS

SOLUTION: IMPROVE DATA LINES RESPONSE AND IMPROVE CLOCK INPUT TO BOTH CPU'S.

PARTS NEEDED:

<u>QUANTITY</u>	<u>DISCRIPTION</u>	<u>PART NUMBER</u>
2	330pf CAPACITOR 25V	026041
1	330 OHM RESISTOR, 1/4W	11-00001-331

DISPOSITION OF OLD PARTS: SCRAP

PROCEDURE: REMOVE THE RESISTOR BLOCK ON THE CPU BOARD LOCATED AT LOCATION 1.5B (REFER TO FIGURE 1). ADD A 330pf CAPACITOR BETWEEN THE 220 OHM RESISTOR AND GROUND AS SHOWN IN FIGURE 1.

ON THE GAME BOARD, REMOVE THE RESISTOR BLOCK AT LOCATION L10 (REFER TO FIGURE 2). CHANGE THE 1K OHM RESISTOR AT LOCATION 12L (REFER TO FIGURE 2) TO A 330 OHM, 1/4W RESISTOR. ADD A 330pf CAPACITOR TO THE 330 OHM RESISTOR AS SHOWN IN FIGURE 2.

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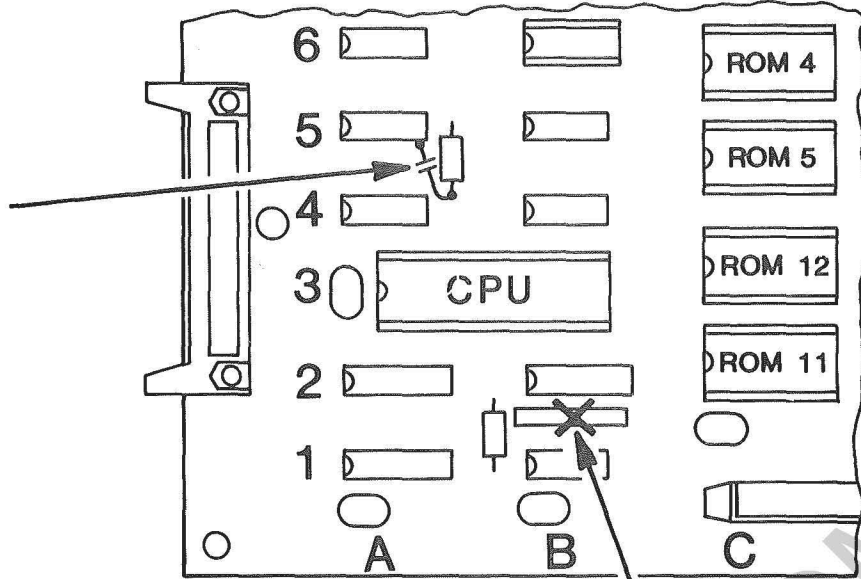


FIGURE 1

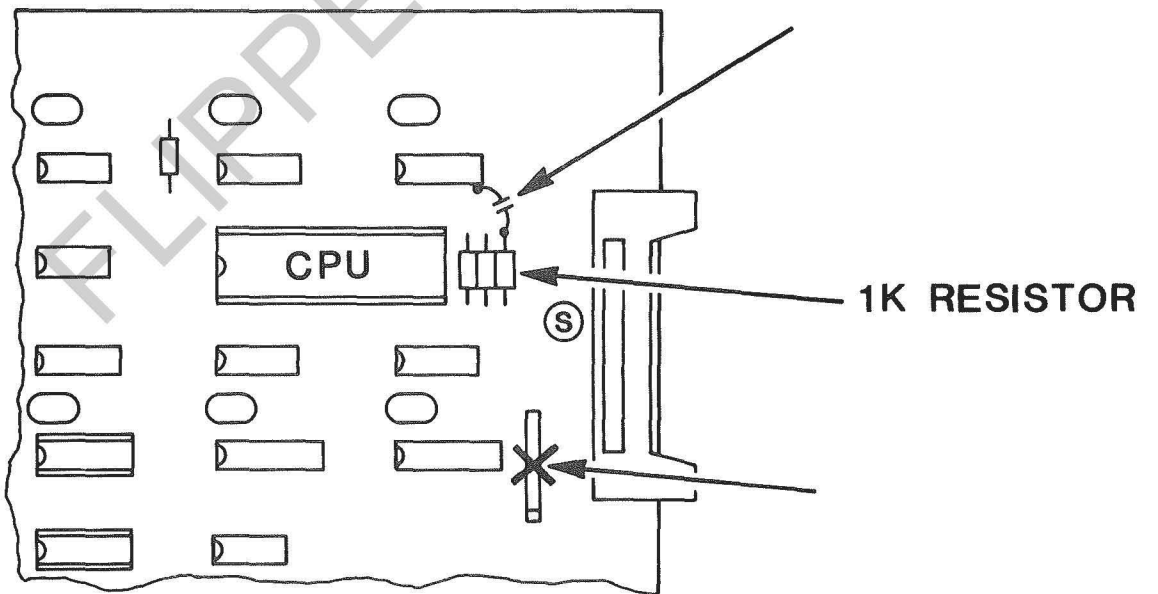


FIGURE 2

# SERVICE TIPS

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82-23

ATTN: SERVICE MANAGERS

GAME: GRAND CHAMPION

SUBJECT: STEERING WHEEL WOBBLER AFTER SOME USE.

SOLUTION: ADD SCREWS TO THE HUB (A).

PARTS NEEDED:

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
3	M4 X 10 SCREW	885
3	STAR LOCK WASHER	8845
1	SPACE WASHER	8822

PROCEDURE:

PLEASE REFER TO FIGURE 1. WHILE READING THE FOLLOWING:

IN ORDER TO DETERMINE IF THIS PROCEDURE IS NECESSARY, REMOVE THE CONTROL PANEL AND TEST TO SEE IF HUB (A) ITEM 11 IS ABLE TO MOVE IN ANY DIRECTION. IF IT DOES MOVE, THE FOLLOWING PROCEDURE NEEDS TO BE USED IN ORDER TO AVOID UNNECESSARY WEAR OF THE SHAFT.

IN ORDER TO INSTALL THE MISSING SCREWS IN HUB A YOU MUST FIRST DISCONNECT THE PHOTO SENSOR PCB PLUG AND MOVE IT OUT OF THE WAY. LOOSEN AND TAKE OFF THE FOUR FLANGE NUTS (ITEM 20) HOLDING DOWN THE SENSOR BOARD BRACKET. UPON REMOVING THE SENSOR BOARD BRACKET, THE PULSE CAM AND GEAR ( ITEMS 13 & 14) SHOULD COME LOOSE ALONG WITH IT.

LOOSEN AND REMOVE THE SELF LOCKING NUT (ITEM 21) HOLDING DOWN THE STEERING SHAFT. AFTER REMOVING THE LOCKING NUT REMOVE THE SPRING WASHER (ITEM 22), THE GEAR (ITEM 23), AND THE SPACE WASHER (ITEM 24). THE STEERING WHEEL AND SHAFT IS LOOSE NOW AND CAN BE PULLED OUT OF THE CONTROL PANEL

NEXT, REMOVE THE FOUR OUTER HUB BASE NUTS WITH THEIR ADJOINING WASHERS. ALSO, REMOVE THE EARTH GROUND STRAP CLOSEST TO THE SHIFTER. LOOSEN AND REMOVE THE FOUR FLANGE NUTS (ITEM 10) ON THE HUB BASE. NOW THE HUB BASE (ITEM 9) AND HUB A (ITEM 11), AND CAN BE REMOVED FROM THE CONTROL PANEL.

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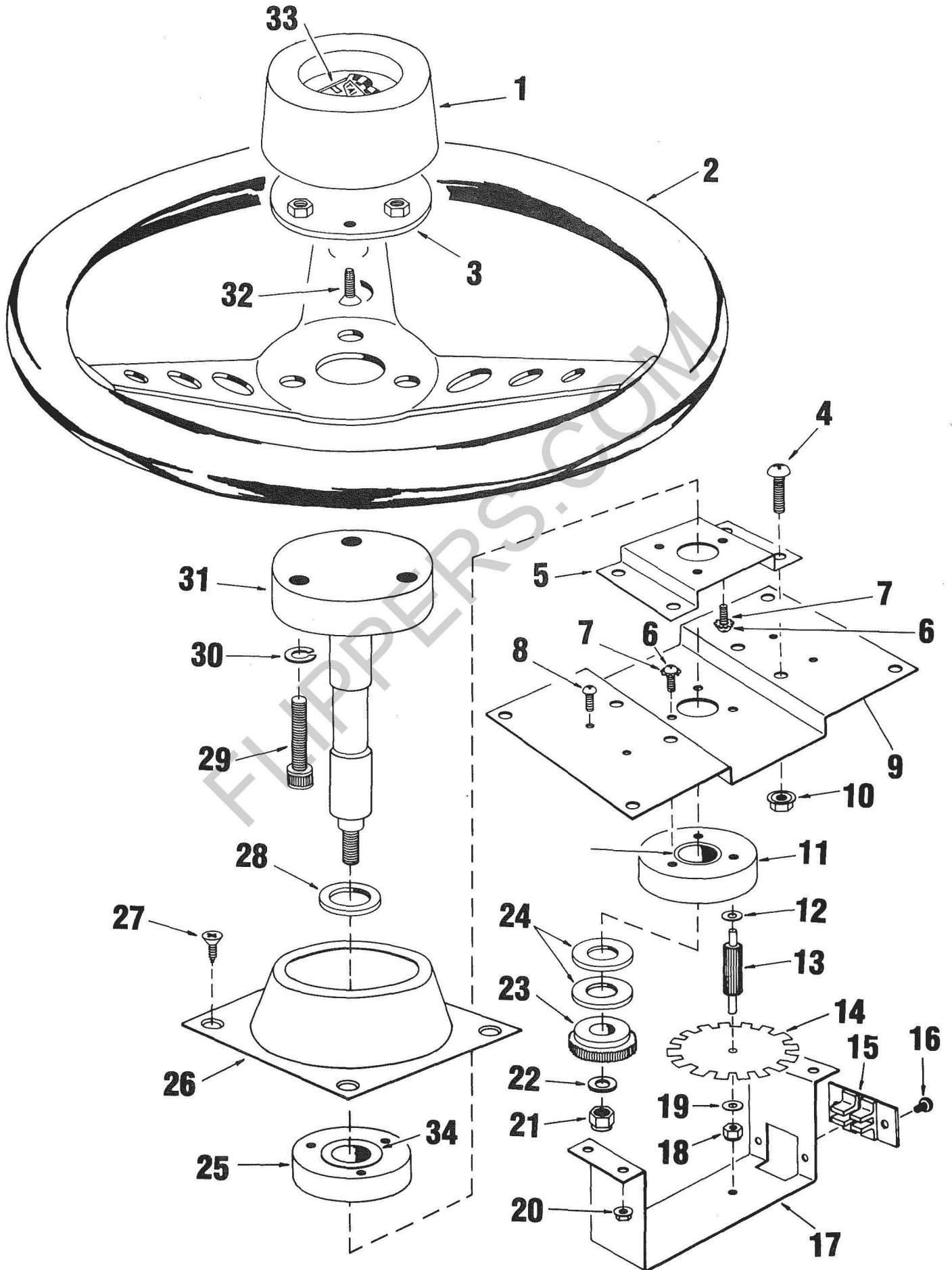
ADJOIN MISSING PAN HEAD SCREWS (ITEM 6) AND STAR WASHER (ITEM 7) TO THE HUB A. A NOTE OF CARE IS ADVISED IN ADJOINING THE HUB BASE TO THE CONTROL PANEL. THE HOLE FOR THE PULSE CAM AND GEAR SHOULD BE PUT CLOSEST TO THE GEAR SHIFTER, AS THE PLUG FOR THE PHOTO SENSOR WILL NOT REACH OTHERWISE.

WHEN REASSEMBLING THE STEERING WHEEL SHAFT TO THE CONTROL PANEL THERE MUST BE TWO SPACER WASHERS (ITEM 28) AFFIXED TO THE FRONT PART OF THE SHAFT. ON THE BACK SIDE OF THE SHAFT THERE SHOULD BE ONE SPACER WASHER (ITEM 24) AFFIXED TO THE BACK OF THE SHAFT. SOMETIMES TWO SPACE WASHERS MUST BE USED. EACH STEERING WHEEL WILL VARY DUE TO THE WEAR. IF TWO WASHERS ARE USED THE STEERING WHEEL MAY SEEM TIGHT AT FIRST, BUT LOOSENING THE SELF LOCKING NUT (ITEM 21) AN 1/8 OF A TURN AT A TIME WILL LOOSEN THE STEERING WHEEL.

WHEN ASSEMBLING THE PULSE CAM AND GEAR IN THE HOLE PROVIDED IN THE HUB A, PROPER CARE SHOULD ALSO BE TAKEN IN THAT THE PULSE CAM IS IN THE MIDDLE OF THE PHOTO SENSOR, NOT TOUCHING EITHER OF THE EDGES. THIS CAN BE DONE BY ADJUSTING THE SENSOR BOARD BRACKET (ITEM 17) AND TIGHENING THE FLANGE NUT (ITEM 20), MAKING SURE THE GEAR IS PERPENDICULAR TO HUB A (ITEM 11).

# STEERING ASSEMBLY

FIGURE 1



## STEERING ASSEMBLY

ITEM	TAITO PART NO.	DESCRIPTION	REFERENCE
1	8814	Steering Cap	EC090003
2	8818	Steering Wheel	SE090004
3	8816	Retaining Plate Assembly	EC030002
4	882	Pan HD Screw M6X25	
5	881	Hub Base (B)	GM0300020
6	390027	Star Washer	
7	885	Pan HD Screw M4X10	
8	305026	Pan HD Screw M4X8	
9	886	Hub Base (A)	GM030032
10	887	Flange Nut M6	
11	888	Hub (A)	GM020004
12	8810	Flange Bushing 80F-0406 (Oilless)	
13	8826	Gear	GM020003
14	8825	Pulse Cam	TE030009
15	8830	Photo Sensor PCB Assembly	TE000004
16	305026	Pan HD Screw M3X6	
17	8829	Sensor Board Bracket	GM030031
18	8828	Self Lock Nut M4	
19	8827	Spring Washer 4M	
20	352053	Flange Nut M4	
21	8824	Self Lock Nut M6	
22	8821	Spring Washer 6M	
23	8823	Gear	GM020002
24	8822	Spacer	JEO20005
25	883	Hub (B)	GM020005
26	8812	Steering Cover	SD090024
27	8813	C-Sink HD Screw 3.50X10	
28	8822	Spacer	JEO20005
29	8820	Cap Bolt M6X30	
30	8821	Spring Washer 6M	
31	8819	Steering Shaft	GM020008
32	8817	C-Sink HD Self Tap M4X10-2	
33	8815	Decoration Plate	EC070008
34	884	Flange Bushing 80F-1512 (Oilless)	

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83-14

ATTN: SERVICE MANAGER

GAME: GRAND CHAMPION

SUBJECT: FREEZE-UP

SOLUTION: UPDATED ROM CHIPS

PARTS NEEDED: ONE GM03-1 PART #88GM03A  
ONE GM04-1 PART #88GM04A

PROCEDURE: FIRST, THE PROCEDURE IN SERVICE TIP #82-21 SHOULD BE COMPLETED. THIS PROCEDURE WILL TAKE CARE OF THE 85% OF THE LOCK-UP PROBLEMS. IF YOU ARE AMONG THE 15% GROUP, YOU WOULD NEED TO REPLACE GM03 AND GM04 WITH GM03-1 AND GM04-1 RESPECTIVELY.