

UP'N DOWN FIELD CONVERSION KIT

FROGGER and ZAXXON

Bally

MIDWAY MFG. CO.

10601 W. Belmont Avenue
Franklin Park, Illinois 60131
U.S.A.



Phone: (312) 451-9200 Cable Address: MIDCO Telex No.: 72-1596

WARNING

THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not used in accordance with the instructions 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 measures may be required to correct the interference.

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Bally MIDWAYTM

Invites You To Use

**OUR TOLL FREE NUMBERS FOR
SERVICE INFORMATION CONCERNING THIS GAME, OR ANY
OTHER BALLY MIDWAY GAME YOU NOW HAVE ON LOCATION.**

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ANSWERS TO YOUR PROBLEMS.**

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Bally MIDWAYTM

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UP'N DOWN
FIELD CONVERSION KITS

GENERAL:

The basic purpose of this instruction sheet is to give you some simple guide lines for converting your ZAXXON and FROGGER games to UP'N DOWN games.

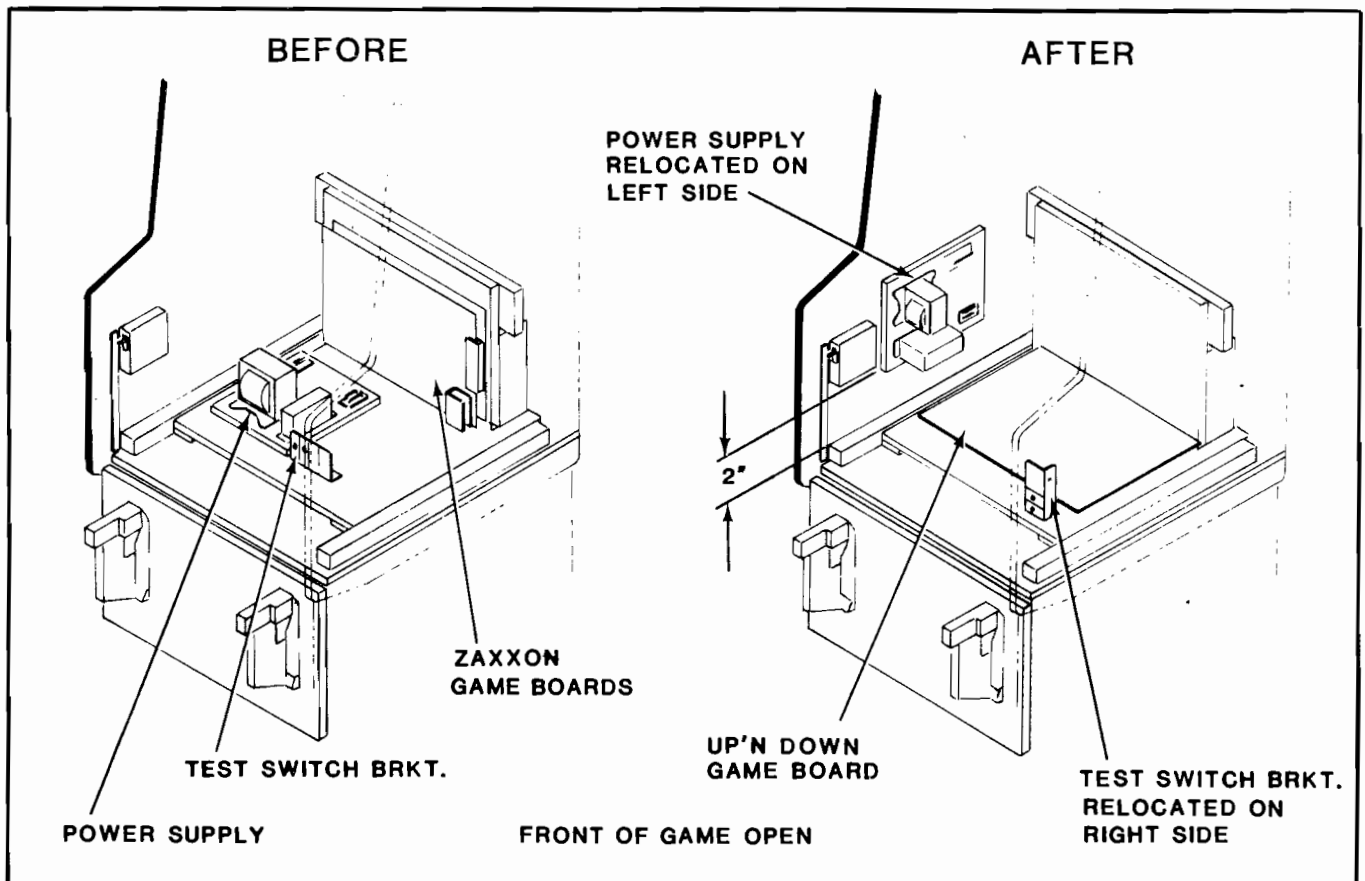
Check the contents of your Conversion Kit against it's packing slip to be sure you have all the required parts before beginning.

Turn your game OFF, unplug it from it's power source, and open all its access doors.

NOTE: Refer to the attached "BEFORE" and "AFTER" drawings to help you identify the various parts talked about in this Instruction Sheet.

ZAXXON TO UP'N DOWN CONVERSION

1. Disconnect and remove the ZAXXON game boards and set them aside.
2. Relocate the games Power Supply as shown, observing the critical measurements pointed out in the **AFTER** drawing.
3. Relocate the game's Self-Test Switch Assembly as shown in the **AFTER** drawing.
4. Install the NEW game board as shown in the **AFTER** drawing and connect it to it's cabling.
5. Remove the screws from the Header Retaining Bracket and replace the Header.
6. Replace any other remaining miscellaneous items with the NEW ones provided in your Conversion Kit.
7. Secure your games access doors, reconnect it to it's power source, turn it ON, and check to see if your picture appears upside down and reversed.
 - A. If it is O.K., run a Self-Test and go on to Step 8 below.
 - B. If the picture is upside down and reversed, (LEFT is RIGHT and RIGHT is LEFT), go to the MONITOR MODIFICATIONS SECTION where it is explained how to correct this condition.
8. When through completing a positive Self-Test (everything checks good), your game is ready for use.

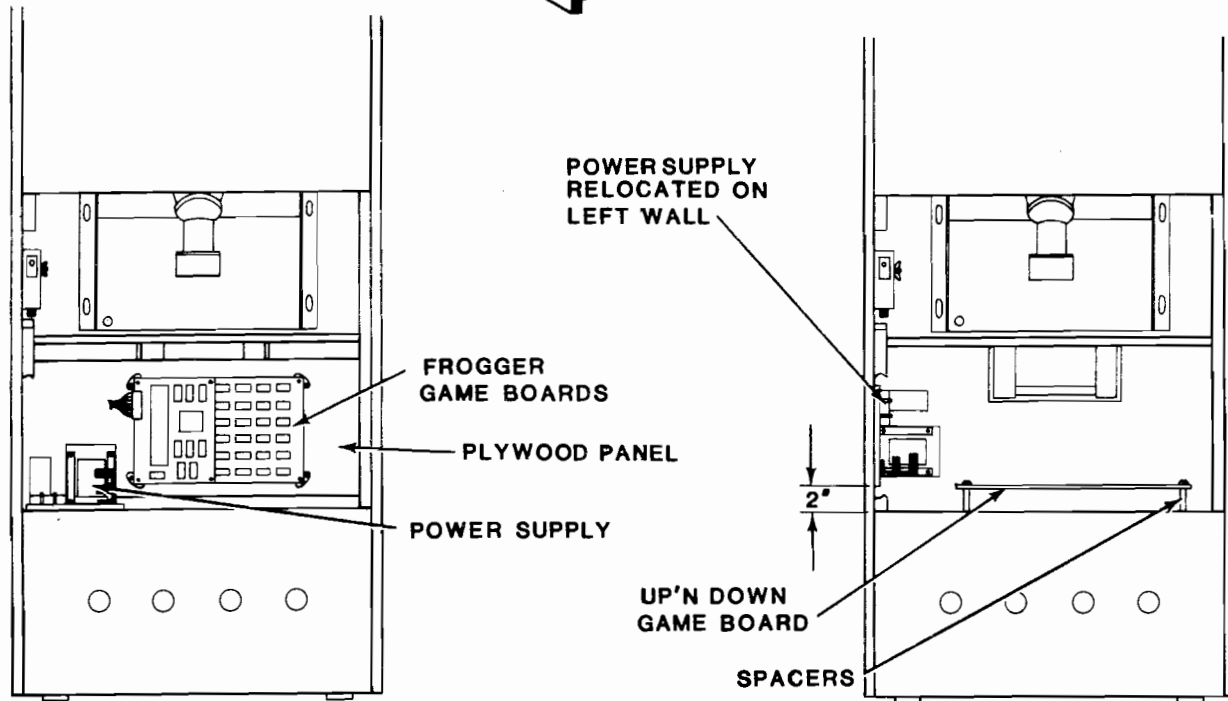
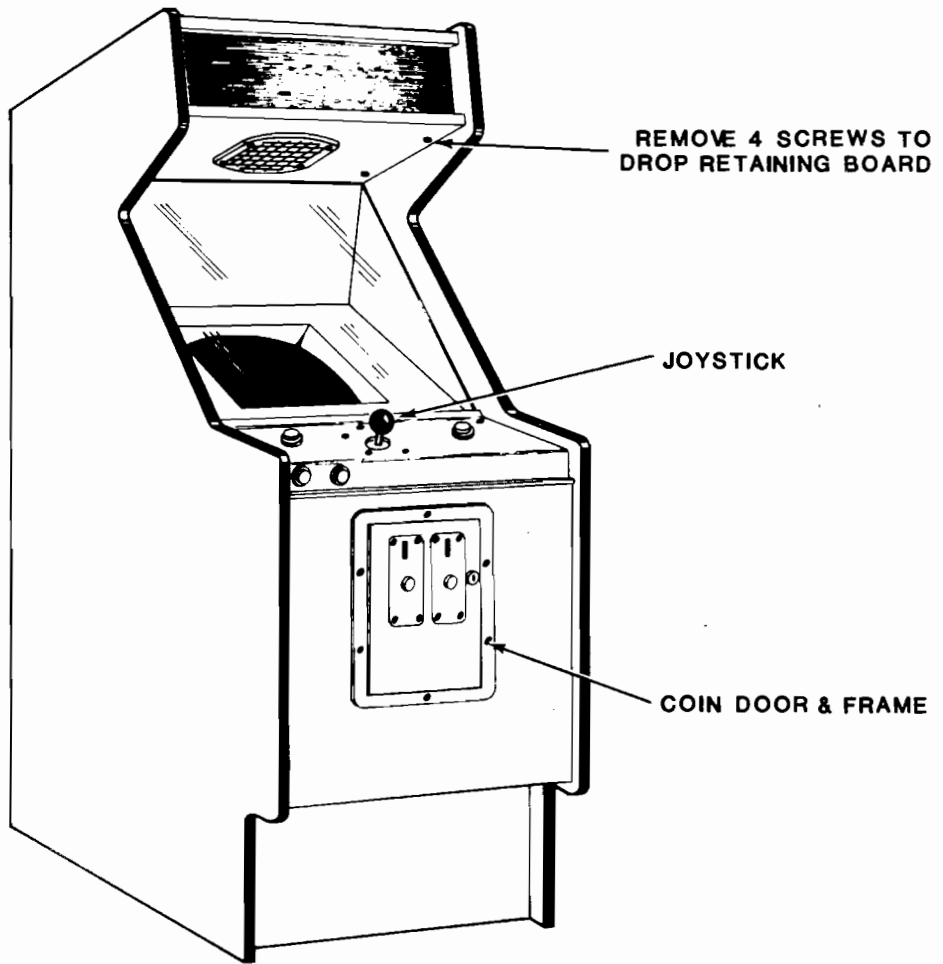


F R O G G E R T O U P ' N D O W N C O N V E R S I O N

1. Disconnect and remove the FROGGER game boards and set them aside.

NOTE: You may also want to remove the games Coin Door and Frame Assembly at this point to give you more room to work on the next several Steps.

2. Disconnect and remove the game's Control Panel (held in place by bolts with wing-nuts from underneath).
3. Remove the plywood panel the FROGGER game boards were mounted on.
4. Relocate the games Power Supply as shown, observing the critical measurements pointed out in the **AFTER** drawing.
5. Install the NEW game board as shown in the **AFTER** drawing and connect it to it's cabling.
6. Disconnect and replace the 4-way Joystick Assembly on the Control Panel with the NEW 8-way Joystick Assembly provided in your Conversion Kit. Reconnect the cabling and re-install the Control Panel.
7. Remove the screws from the Speaker and Header Retaining Board as shown (it will drop down) and replace the Header.
8. Replace any other remaining miscellaneous items with the NEW ones provided in your Conversion Kit.
9. Reinstall the game's Coin Door and Frame Assembly if you removed it previously.
10. Secure your games access doors, reconnect it to it's power source, turn it ON, and check to see if your picture appears upside down and reversed.
 - A. If it is O.K., run a Self-Test and go on to Step 11 below.
 - B. If the picture is upside down and reversed, (LEFT is RIGHT and RIGHT is LEFT), go to the MONITOR MODIFICATIONS SECTION where it is explained how to correct this condition.
11. When through completing a positive Self-Test (everything checks good), your game is ready for use.



BEFORE

AFTER

MONITOR MODIFICATIONS SECTION

If the picture in your modified game is upside down and reversed (LEFT is RIGHT and RIGHT is LEFT); depending on the monitor contained in your game; this condition can be fixed in one of the following ways.

TURN THE POWER TO YOUR GAME OFF!!

MONITOR: ELECTROHOME - YOKE WIRES SOLDERED IN PLACE AT BOTH ENDS. REFER TO DRAWING #1

By the picture tube, cut the 4 yoke wires (RED, WHITE, GRAY, and BROWN). **BE SURE** to leave enough room to strip them and splice them back together as shown in Drawing #1.

MONITOR: ELECTROHOME - YOKE WIRES PLUGGED INTO THE MONITOR'S P.C. BOARD. REFER TO DRAWING #2

You will see the yoke wires (BROWN, WHITE, GRAY, and RED) plugged into the monitor's P.C. Board at it's back right-hand corner, just below the flyback. See Drawing #2 Figure A.

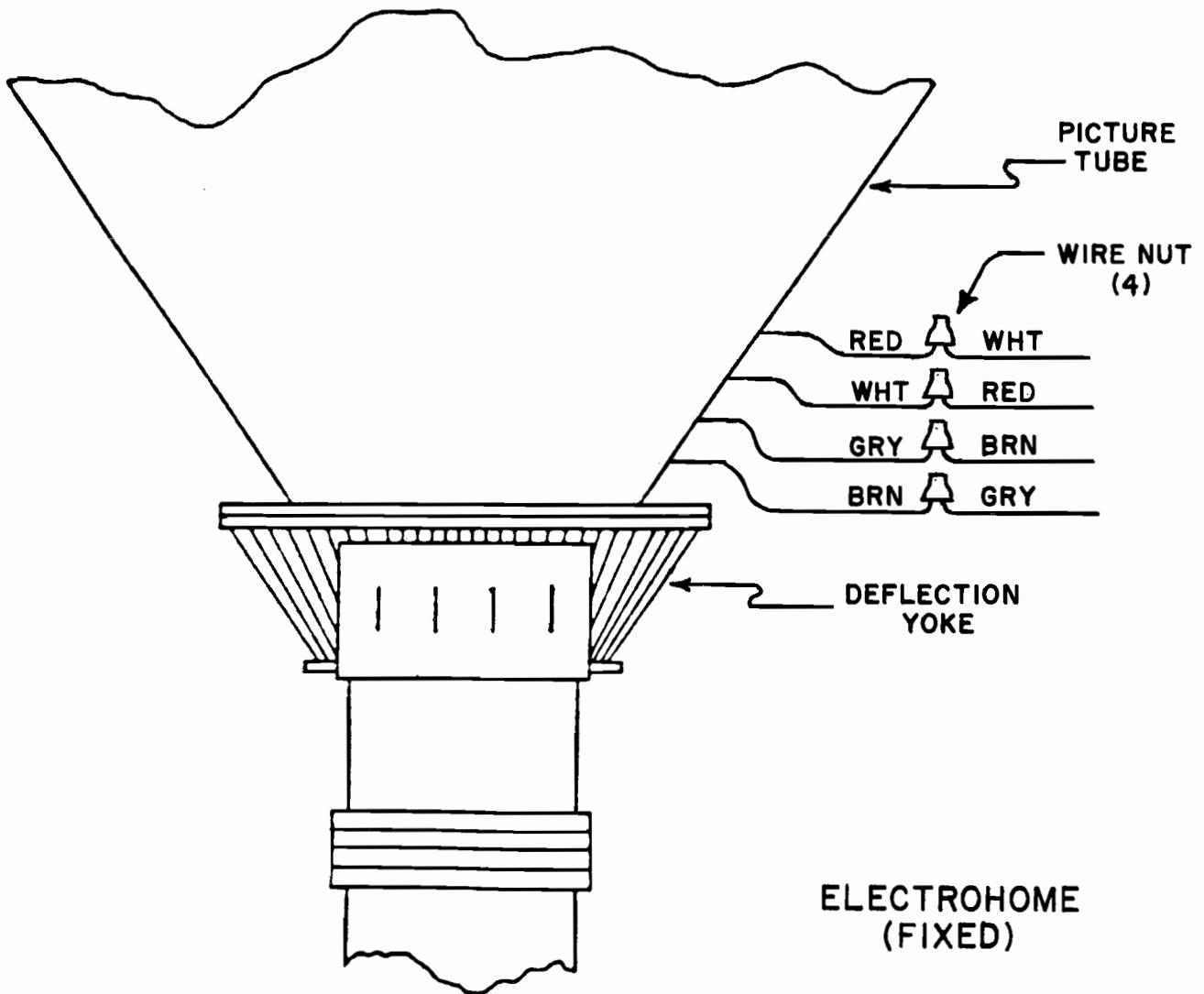
Unplug them and reconnect them as shown in Drawing #2 Figure B.

MONITOR: WELLS GARDNER - YOKE WIRES PLUGGED DIRECTLY INTO THE YOKE. REFER TO DRAWING #3

You will see the yoke wires (YELLOW, BLUE, RED, and GREEN) plugged into the monitor's yoke. Unplug them and switch the pairs indicated in Drawing #3.

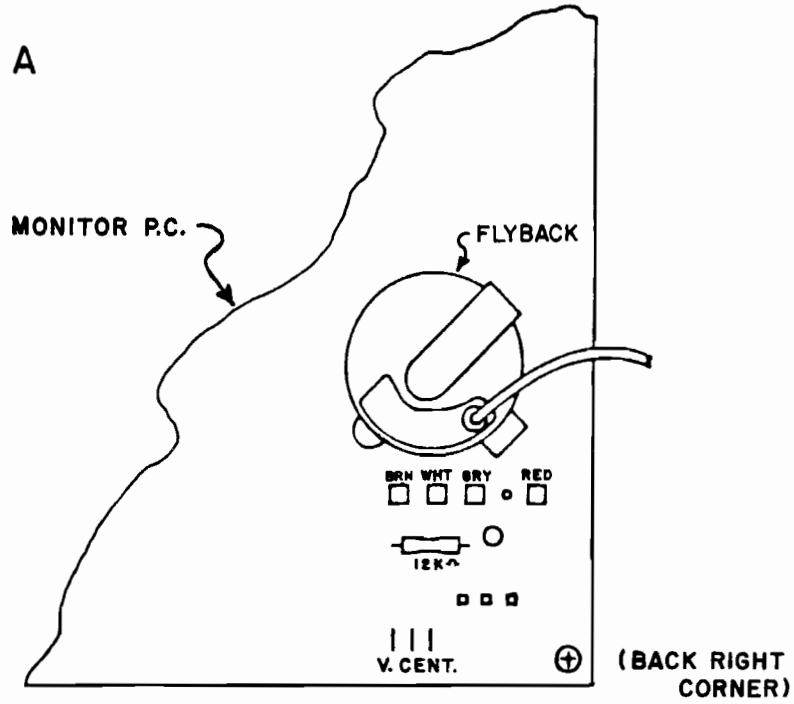
UPON COMPLETION OF MODIFICATIONS:

Return to the procedure you left to come to this section, at the point you left it, and complete that procedure.



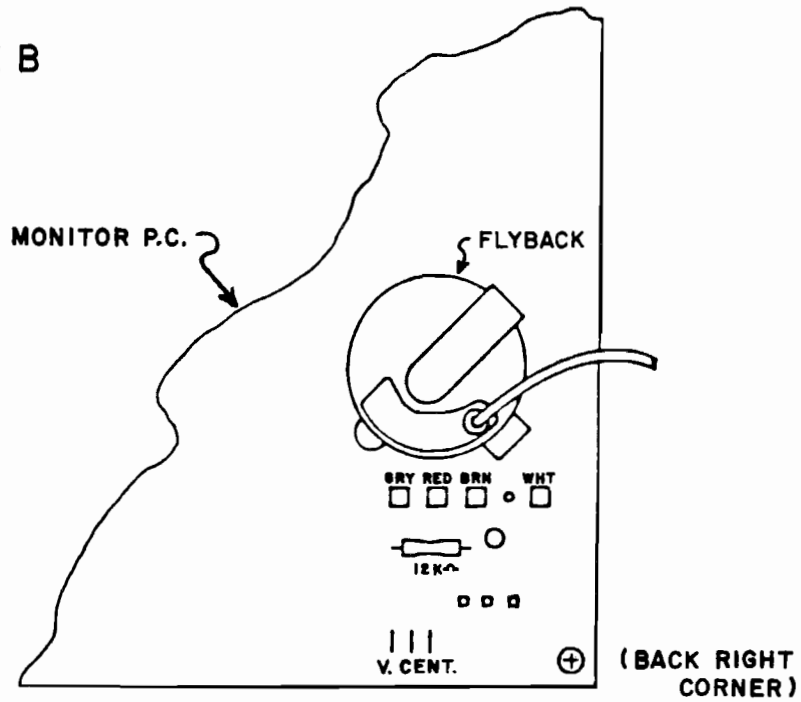
DRAWING 1

FIGURE A



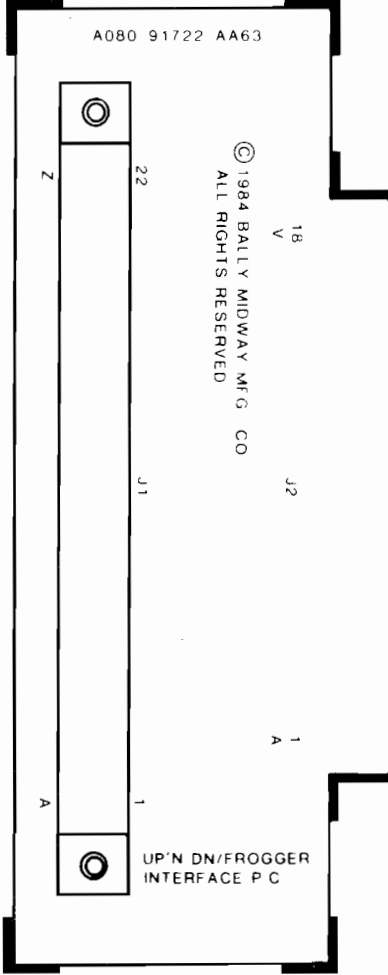
ELECTROHOME
(FIXED)

FIGURE B



ELECTROHOME
(FIXED)

DRAWING 2



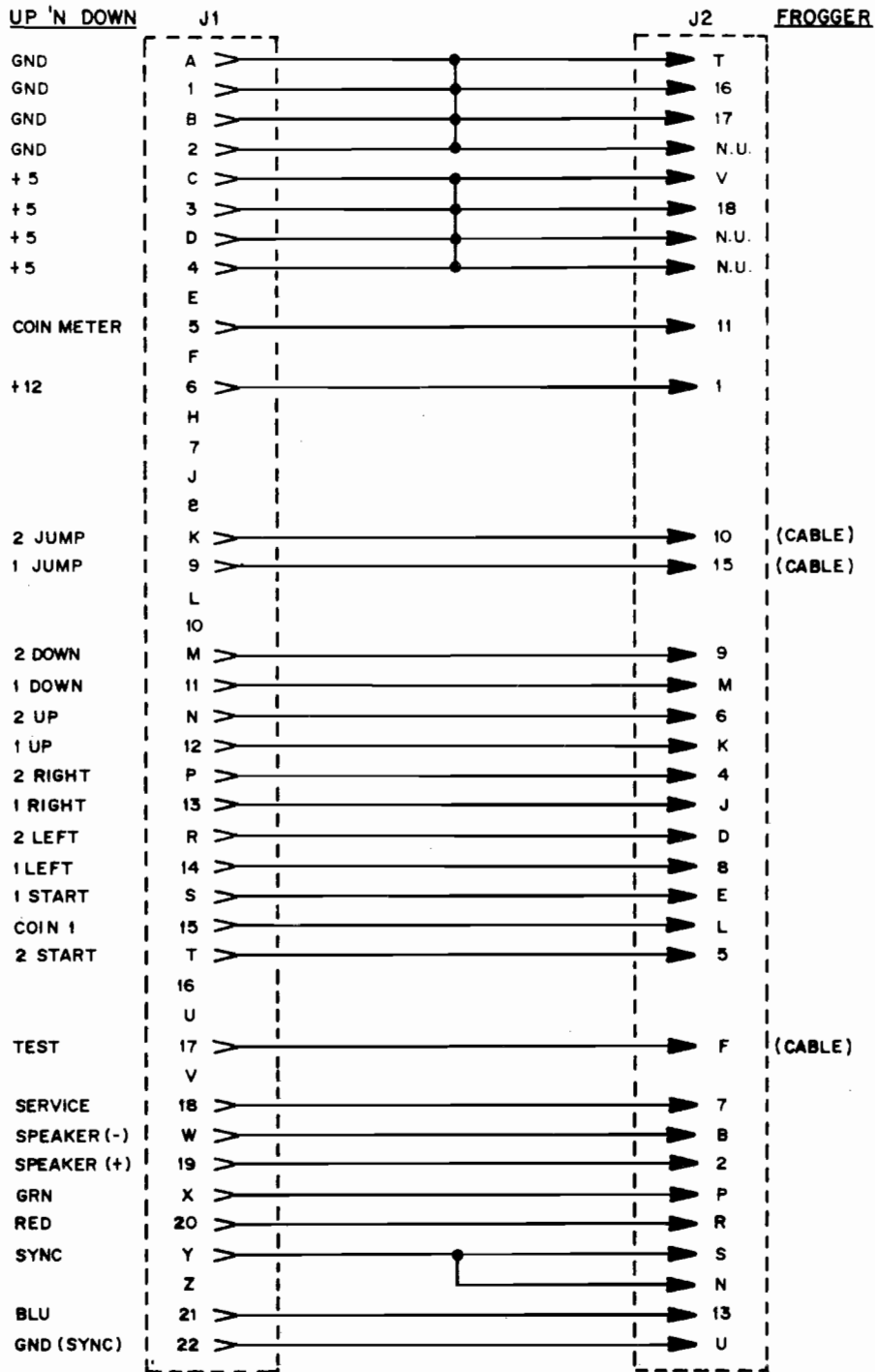
DESIGNATION LIST

CROSS REFERENCE LIST

DESIGNATION	DESCRIPTION	DESCRIPTION	QTY	DESIGNATION	PART NO.
J1	DUAL 22 PIN EDGE CONN.	DUAL 22 PIN EDGE CONN.	1	J1	0017-00021-0395

REVISIONS	

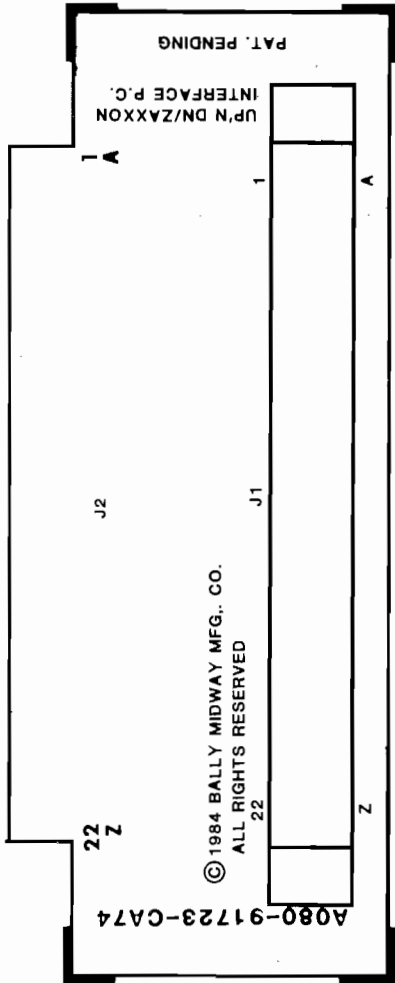
PROJECT ENG: J. SZERSZEN		USED ON UP 'N DOWN		Bally / MIDWAY MFG. CO. FRANKLIN PK	
DO NOT SCALE DWG		SCALE FULL		PART NO.	
HEAT TREAT		NO. REQ'D 1 PER		MO51 - 00A63 - B 010	
MATERIAL		UP 'N DOWN / FROGGER INTERFACE P.C.		ASSY DWG	
FINISH		A084 - 91722 - BA63			
DATE	3 / 27 / 84				
DRW.	tda				
CKD.					
DATE	3 / 27 / 84				



REVISIONS	

PROJECT ENG: J. SZERSZEN		USED ON UP 'N DOWN		Baby / MIDWAY MFG. CO. FRANKLIN PK ILL
DO NOT SCALE DWG		SCALE FULL	NO. REQ'D 1 PER	
DIM TOLERANCES UNLESS SPECIFIED		UP 'N DOWN / FROGGER INTERFACE P.C. SCHEMATIC DWG A080-91722-BA63		PART NO. M051-00A63 - B011
DATE 3/27/84				

111



DESIGNATION LIST

DESIGNATION	DESCRIPTION
J1	DUAL 22 PIN EDGE CONN.

CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION	PART NO.
DUAL 22 PIN EDGE CONN.	1	J1	0017-00021-0395

PROJECT ENG: J. SZERSZEN

THIS DWG. IS CONFIDENTIAL & PROPERTY OF BALLY/MIDWAY MFG. CO.

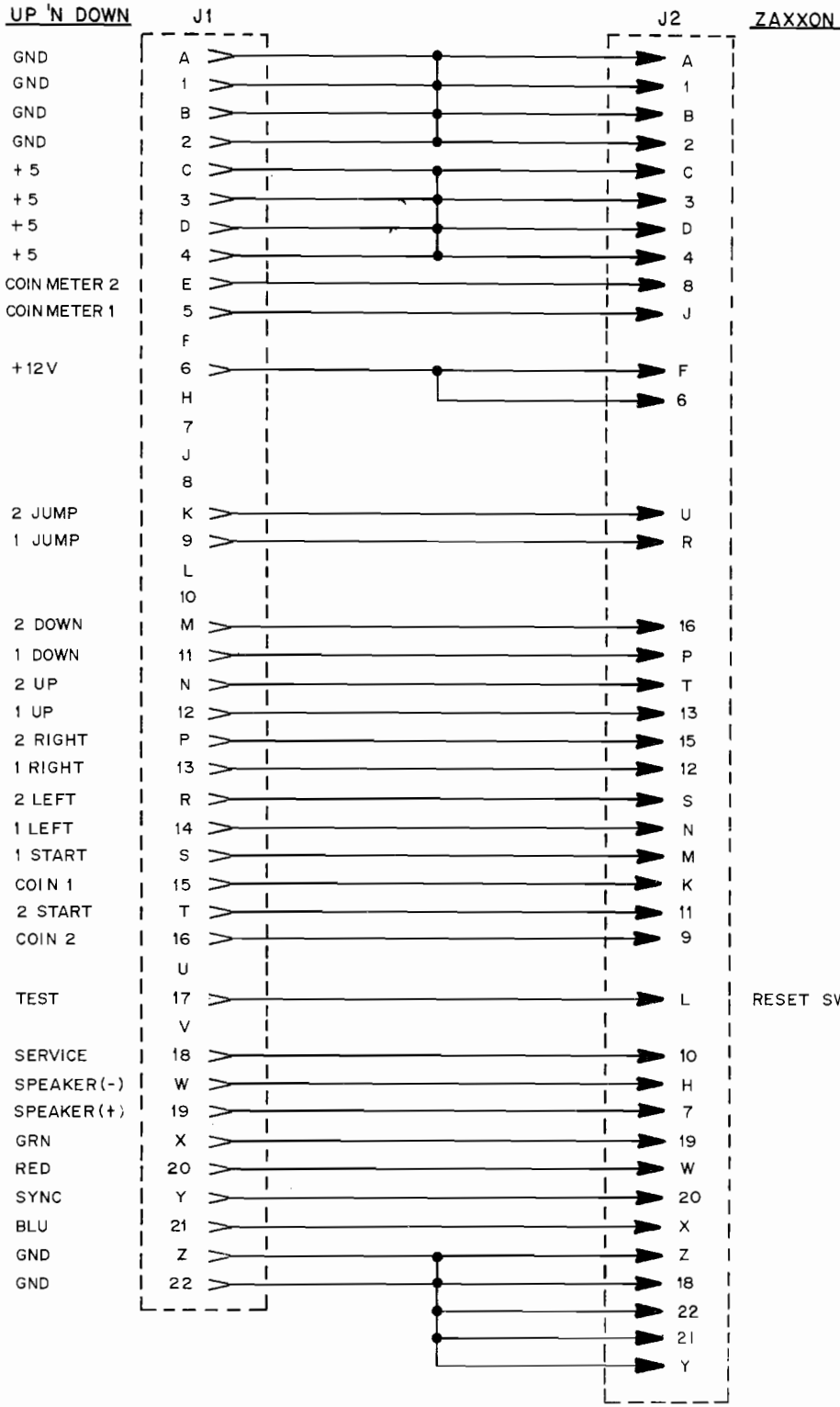
DIM. TOLERANCES
 UNLESS OTHERWISE SPEC.
 CONCENTRICITY T.I.R. .002
 FRACTIONAL ± 1/64
 DECIMAL ± .005
 HOLE DIA + .002 - .000
 ANGLE ± 1/2°
DO NOT SCALE DWG.

FIRST USED ON: UP 'N DOWN
 DRN: M M
 DATE: 4/12/84
 SCALE: FULL
 MECH CHK: M M
 MAT'L: M M
 ELEC CHK: M M
 FINISH: M M

Bally/MIDWAY MFG. CO.
 FRANKLIN PARK, IL 60131
 UP 'N DOWN / ZAXXON INTERFACE
 ASSY DWG
 A080-91723-CA74

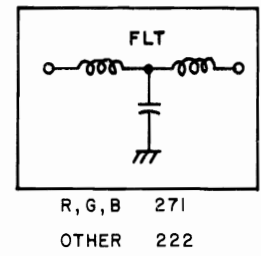
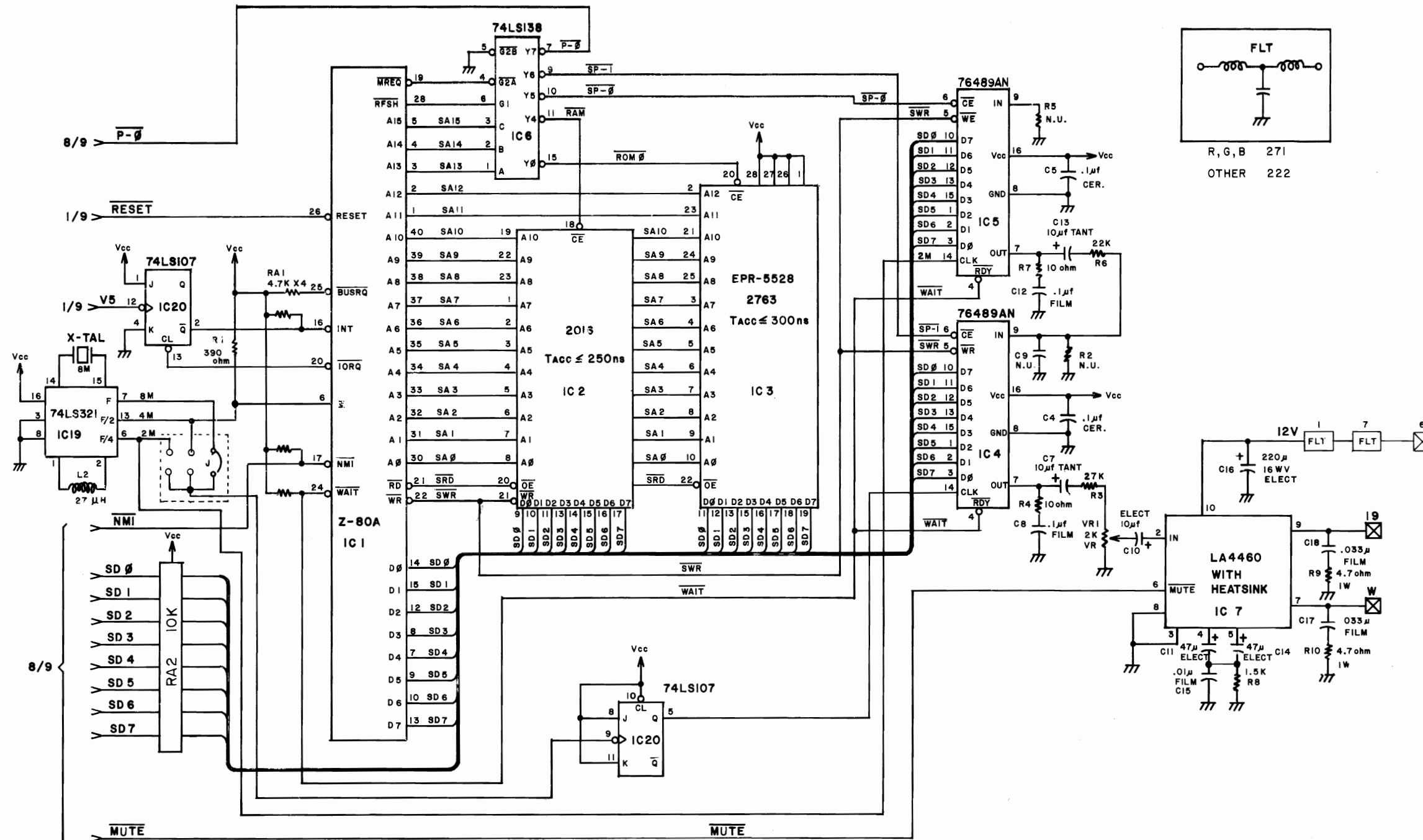
REVISIONS

PART NO.
 .MO 5 | - 00A74 - C009.



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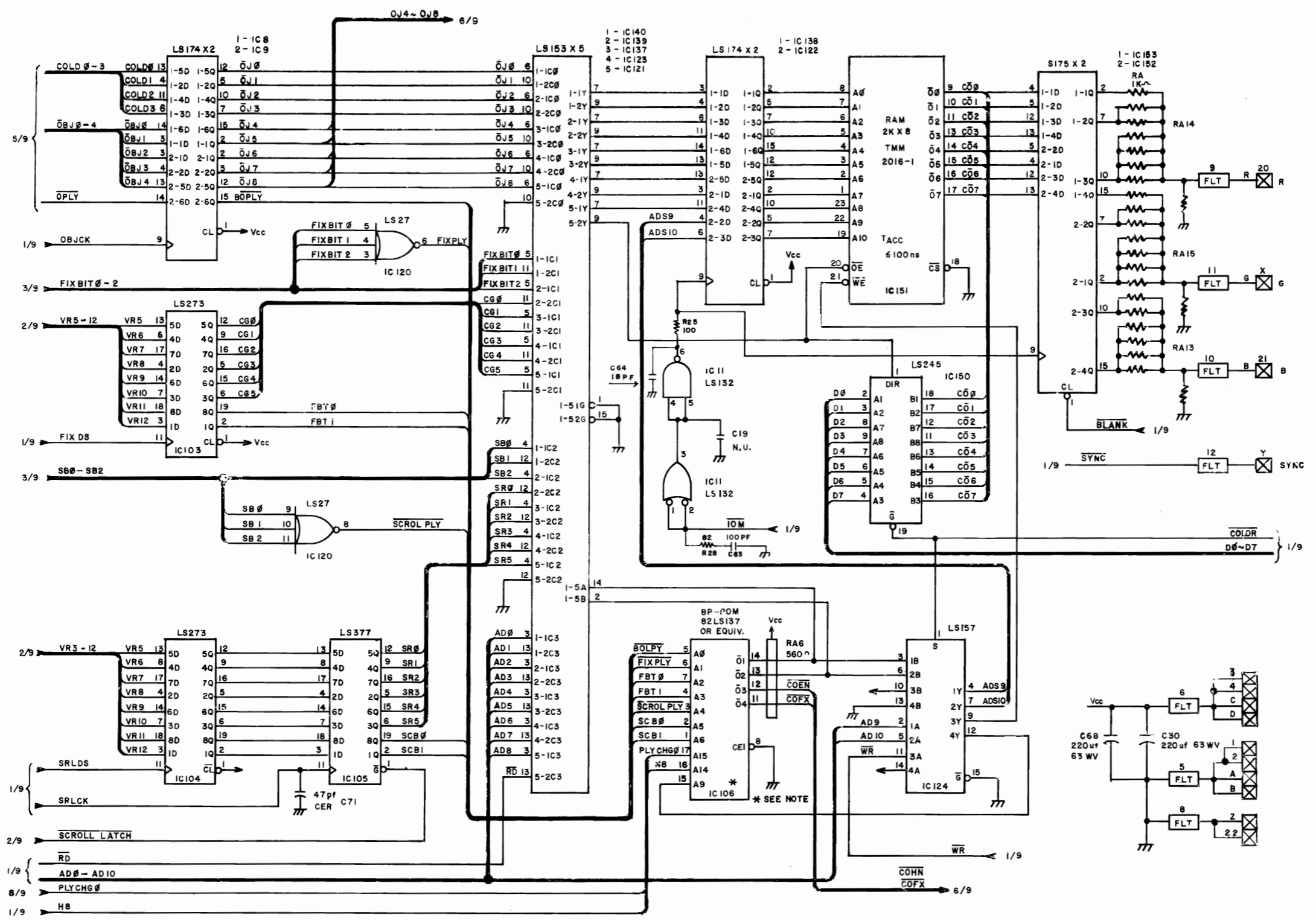
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DO NOT SCALE DWG.		HEAT TREAT	SCALE FULL		NO. REQ'D 1 PER
DIM. TOLERANCES UNLESS SPECIFIED		DRN. <i>ted</i>	UP 'N DOWN/ZAXXON INTERFACE P.C.		PART NO.
CONCENTRICITY TYP .001		CKD.	SCHEMATIC DWG		MO51 - 00A74 - C010
FRACTIONAL .104		DA 4/12/84	A080 - 91723 - CA74		
DECIMAL .005					
HOLE DIA. +.002 .000					



REVISIONS	

PROJECT ENG: J. SZERSZEN		USED ON UP'N DOWN		Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.	
DO NOT SCALE DWG.		HEAT TREAT	SCALE	NO. REQ'D	
DIM. TOLERANCES UNLESS SPECIFIED		DRN. C.L.	MAT'L.	SCHEMATIC DRAWING	
CONCENTRICITY TYP. .005		CKD.	FINISH	UP'N DOWN LOGIC P.C.	
FRACTIONAL 1/64		DATE 3/30/84		A080-91718-DA64 PAGE 9 OF 9	
DECIMAL .005				PART NO. M051 - 00A64 - D010	
HOLE DIA +.002 .000					

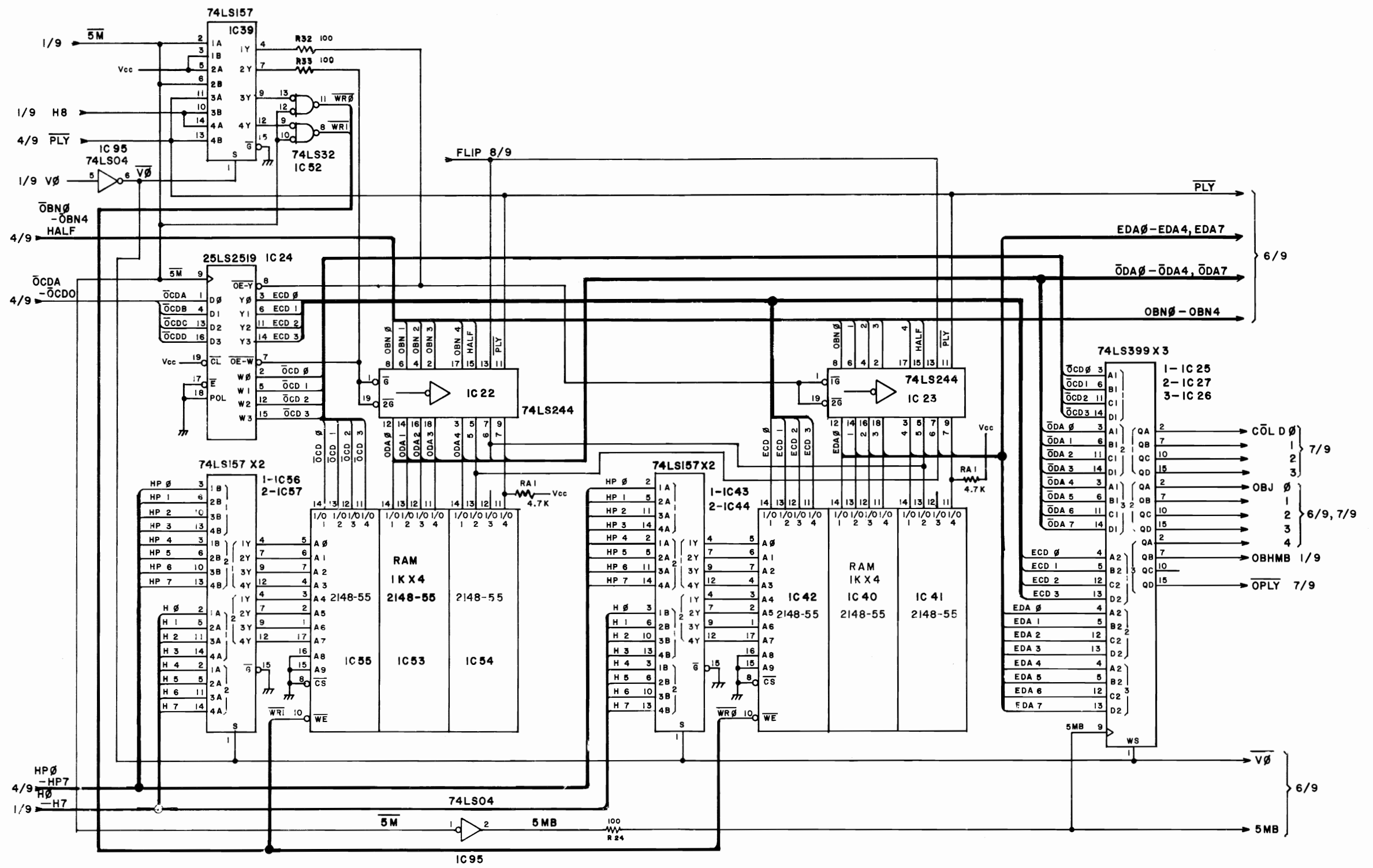
ck



NOTE:
PIN #S FOR IC106 REFER TO PCB SILKSCREEN WHICH IS FOR AN 18 PIN CHIP.

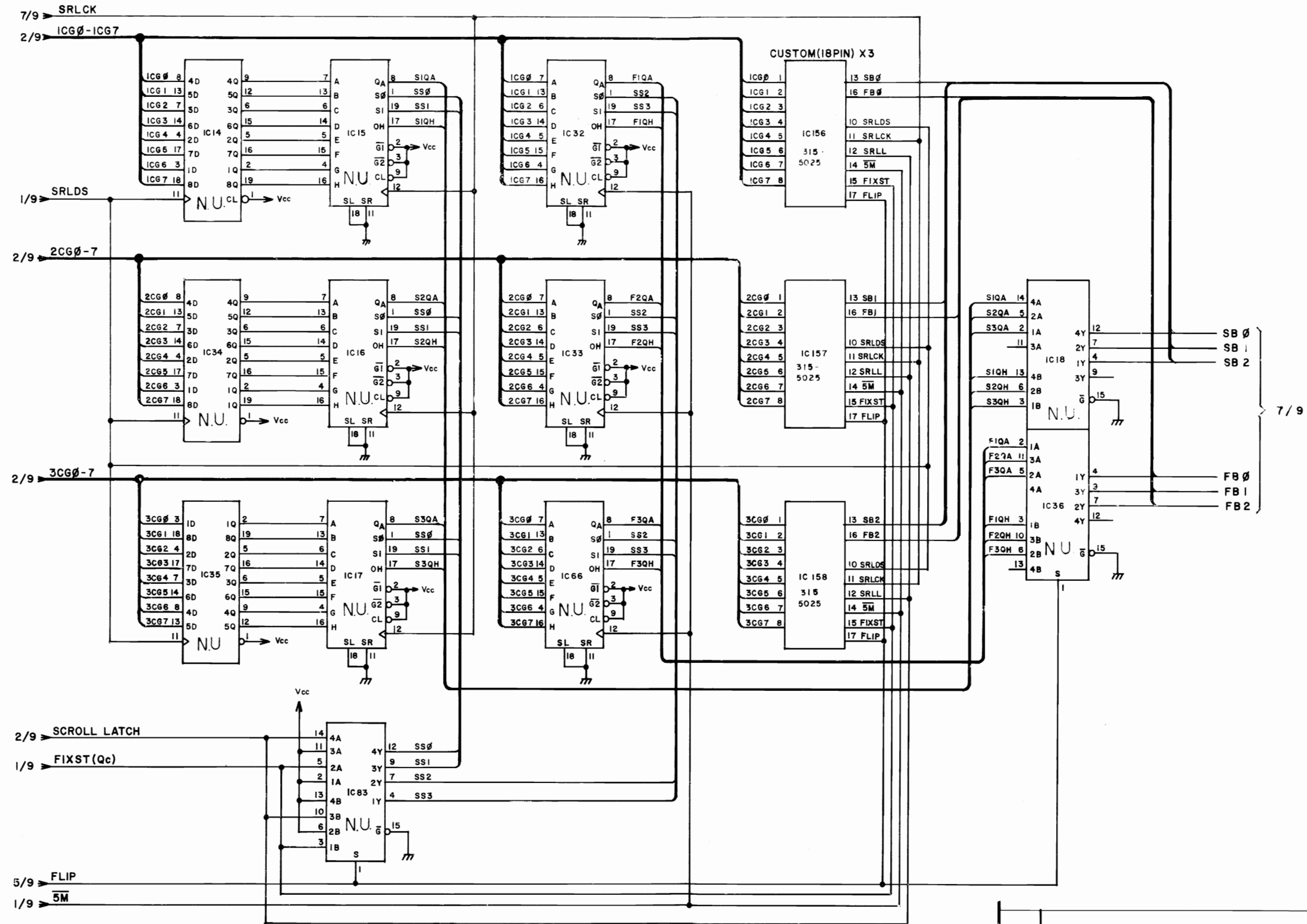
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DO NOT SCALE DWG.		HEAT TREAT	SCALE	
DIM. TOLERANCES UNLESS SPECIFIED		NO. REQ'D		PART NO. M051 - 00A64 - D010
CONCENTRICITY TYP 0.05		SCHEMATIC DWG. UP'N DOWN LOGIC P.C.		
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DECIMAL 0.05		DATE 3/30/84		
HOLE DIA +.002 0.00		DATE		



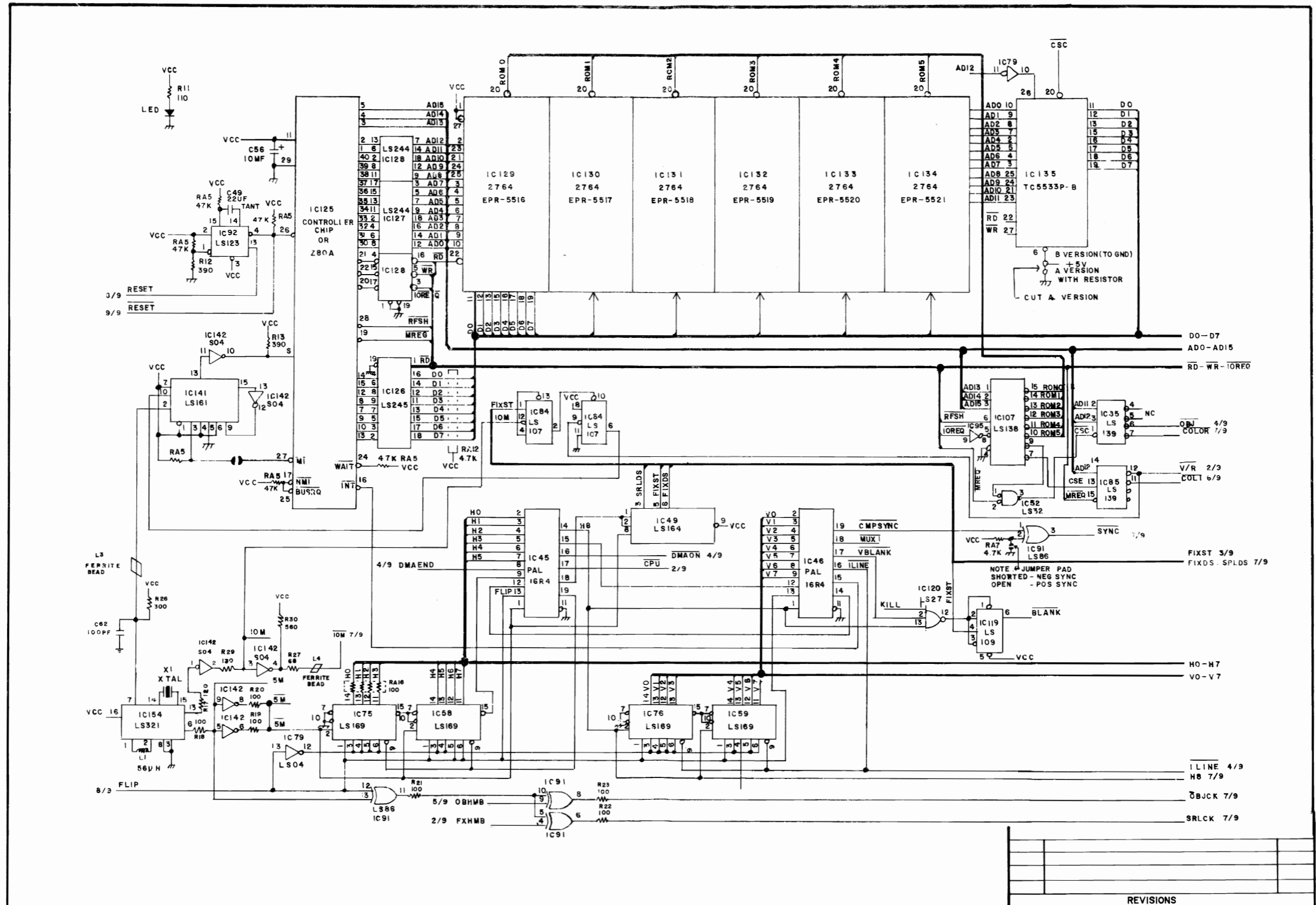
3-3084	ADDED R32 & R33	REV. D	RLW
REVISIONS			

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DO NOT SCALE DWG		HEAT TREAT	SCALE		
DIM TOLERANCES UNLESS SPECIFIED		DRN. <i>CL</i>	MAT'L.	SCHEMATIC DRAWING UP N DOWN LOGIC P.C. A080-91718-DA64	
DATE 3/30/84		CKD.	FINISH		
PAGE 5 OF 9					



REVISIONS	

PROJECT ENG: J. SZERSZEN		USED ON UP'N DOWN		<i>Bally</i> / MIDWAY MFG. CO. FRANKLIN PK. ILL.
DO NOT SCALE DWG.		HEAT TREAT	SCALE	
DIM TOLERANCES UNLESS SPECIFIED		DRW. <i>RLW</i>	MAT'L.	PART NO. M051 - 00A64 - D010
LONGITUDINALITY TYP. 0.03		CD.	FINISH	
FRACTIONAL 1/64		DATE 3/30/84		
DECIMAL 0.005		SCHEMATIC DRAWING		PAGE 3 OF 9
HOLE DIA. +0.02 .000		UP'N DOWN LOGIC P.C.		
		A080 - 91718 - DA64		

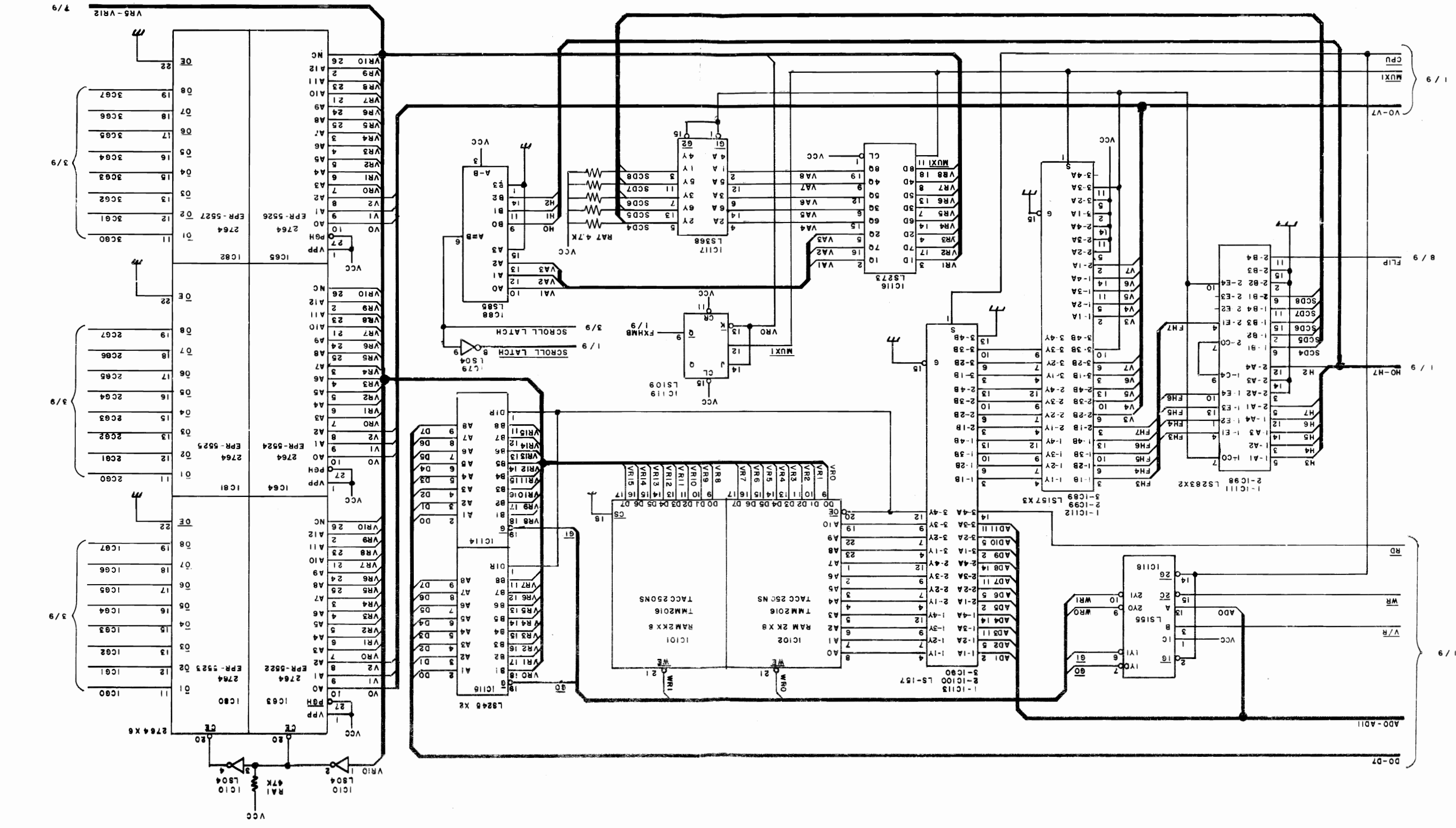


PROJECT ENG: J. SZERSZEN		USED ON UP'N DOWN		Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.	
DO NOT SCALE DWG.		HEAT TREAT	SCALE		
DIM. TOLERANCES UNLESS SPECIFIED		DRW. <i>JMS</i>	MAT'L.	SCHEMATIC DWG. UP'N DOWN LOGIC P.C. A080-91718-DA64 PAGE 1 OF 9	
CONCENTRICITY ± 0.03		CKD.	FINISH		
FRACTIONAL ± 1/64		DATE 3/30/84		M051 - 00A64 - D010	
DECIMAL ± 0.05					
HOLE DIA + 0.02 0.00					

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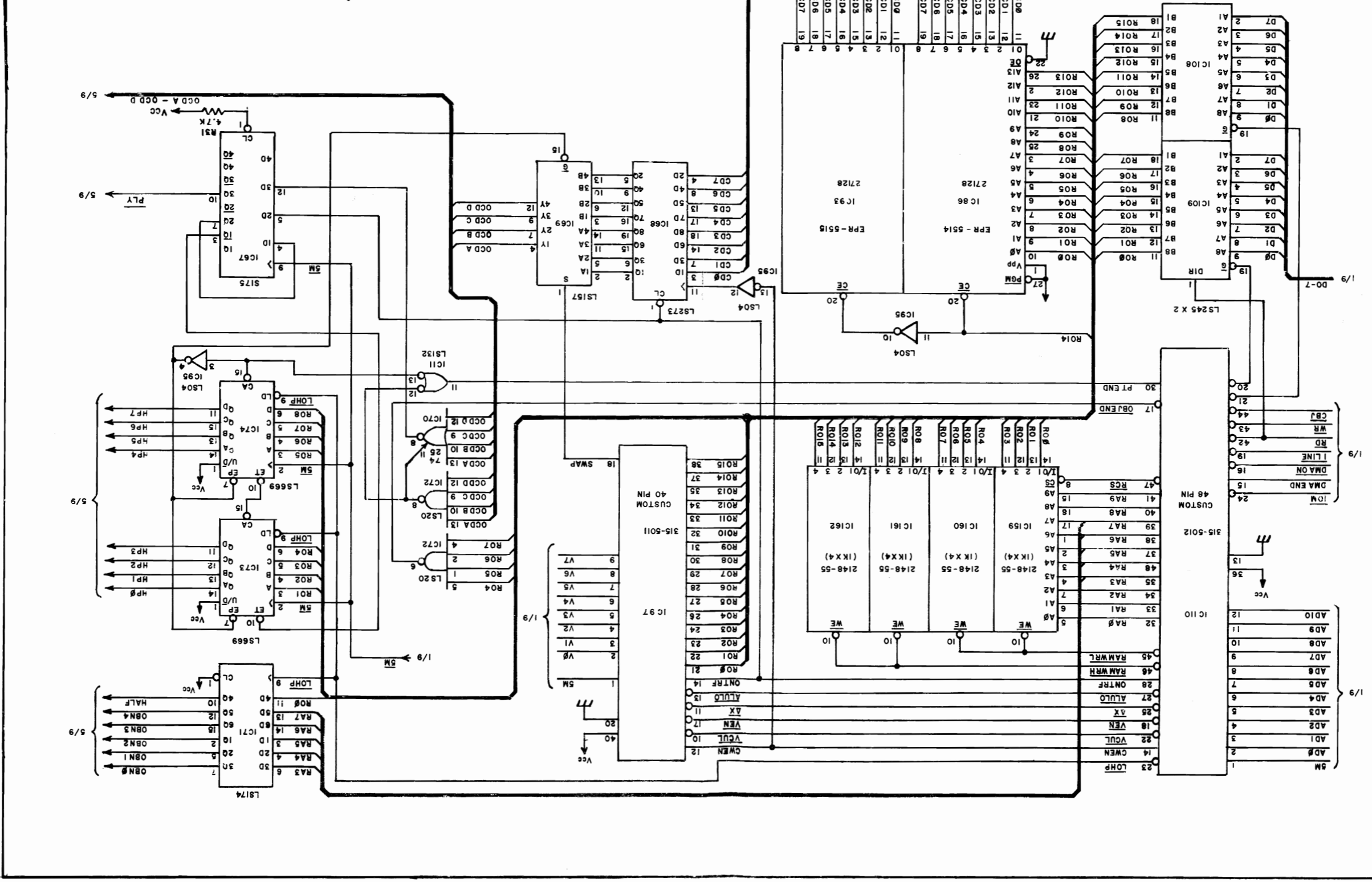
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DO NOT SCALE DWG.				USED ON UP/N DOWN		Baby / MIDWAY MFG. CO.	
DIM. TOLERANCES UNLESS SPECIFIED		MKT. L.		SCHEMATIC DWG. UP/N DOWN LOGIC P.C.		PART NO.	
CONCENTRICITY TYP. 0.03		FINISH		A080-9178-DA64		PAGE 2 OF 9	
FRACTIONAL DECIMAL		DATE		3/30/84		M051-00A64 - D010	
HOLE DIA. ±0.02-0.00							

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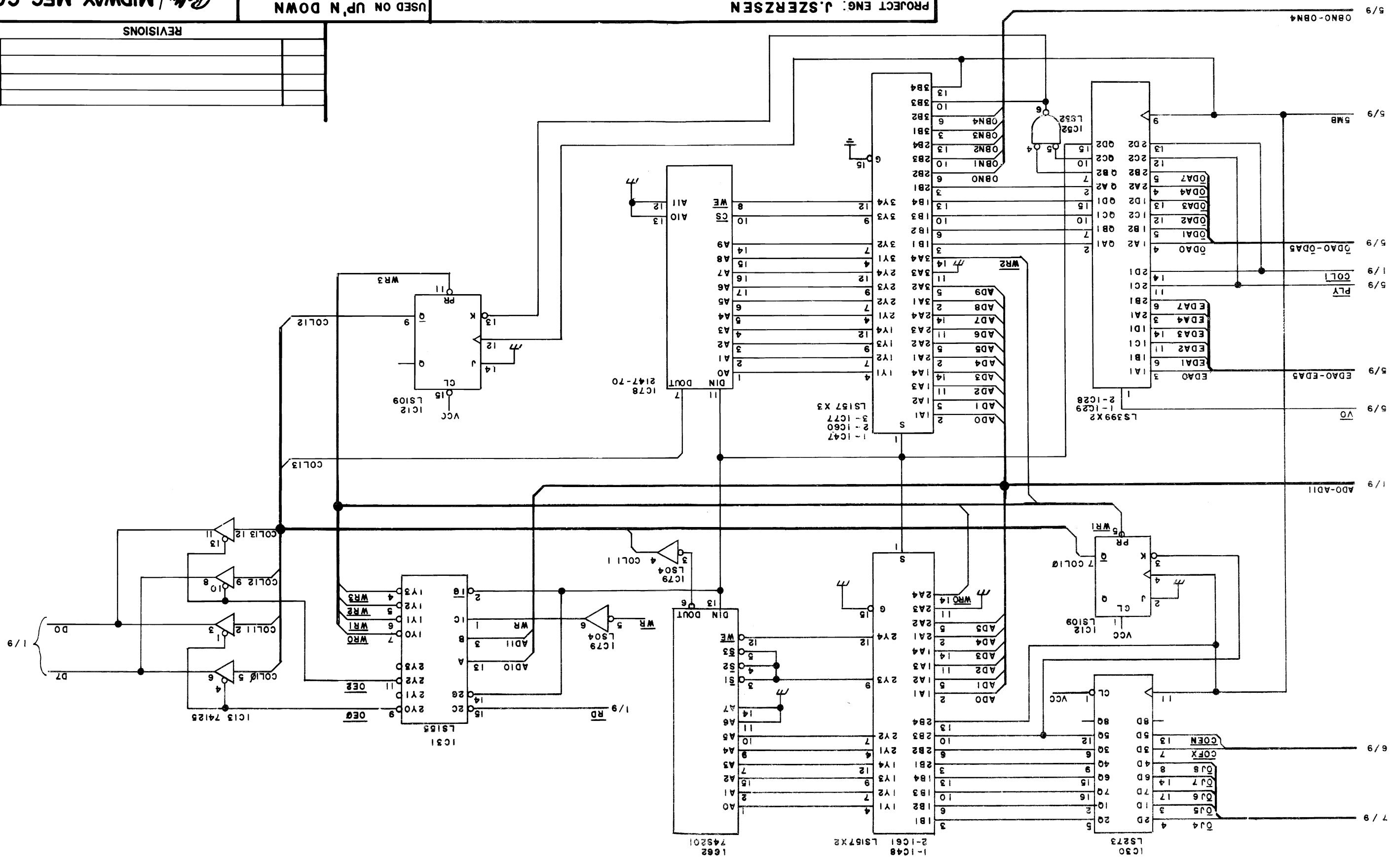
PROJECT ENG: J. SZERSZEN		HEAT TREAT	SCALE	NO. REVD: 1 PER	USED ON UP & DOWN
DO NOT SCALE DWG.		FRANKLIN PK. ILL.			
DIM. TOLERANCES UNLESS SPECIFIED		MATERIAL: <i>RLW</i>		PART NO. MO51 - 00A64 - D010	
CONCENTRICITY ± 0.02		FINISH		SCHEMATIC DWG. UP & DOWN LOGIC PC.	
FRACTIONAL DECIMAL ± 0.015		DATE: 3/30/84		PAGE 4 OF 9	
HOLE DIA. ± 0.02 ± 0.005		DRM.		A080-9178-DA64	

REV	DESCRIPTION



PROJECT ENG: J. SZERZEN		HEAT TREAT		DO NOT SCALE DWG.	
USED ON UP'N DOWN		SCALE FULL		NO. RECD 1 PER	
PART NO. UP'N DOWN LOGIC PC. SCHEMATIC		MATERIAL		DIM. TOLERANCES UNLESS SPECIFIED	
FRANKLIN PK. ILL.		FINISH		CONCENTRICITY TYP. 0.03	
MOSI - 00A64 - D010		A080-91718-DA64		DATE 3/30/84	
PAGE 6 OF 9		HOLE DIA. +0.02 -0.00		DECIMAL FRACTIONAL 1/64	

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7 / 9 QJ4 4 2D
 QJ5 3 1D
 QJ6 17 7D
 QJ7 14 6D
 QJ8 8 4D
 COFX 7 3D
 COEN 13 5D
 6 / 9
 5 / 9 VO
 5 / 9 EDA0-EDA5
 5 / 9 PLY
 1 / 9 COL1
 5 / 9 ODA0-ODAS
 5 / 9 OBN0-OBN4

PROJECT ENG: J. SZERZEN		SCALE FULL		NO. REQ'D. 1 PER		FRANKLIN PK. ILL.		MIDWAY MFG. CO.	
DO NOT SCALE DWG.		HEAT TREAT		MATERIAL		FINISH		DATE 3/30/84	
DIM TOLERANCES UNLESS SPECIFIED		DRN BAK		CKD.		HOT DIA. + .002 .000		UP'N DOWN LOGIC PC. SCHEMATIC	
A080-91718-DA64		PAGE 8 of 9		MOSI - 00A64		- D010		PART NO.	

REVISIONS	

