

SPACE FURY™

SEGA®/Gremlin®

Preliminary Manual

Part No. 420-0631

SPACE FURY_{TM}

OPERATING INSTRUCTIONS

AND

SERVICE MANUAL

MANUFACTURED BY

SEGA/GREMLIN
TLX 910-335-1621

SPACE FURY OWNER'S MANUAL
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INTRODUCTION

Space Fury is an electronic game that makes extensive use of digital integrated circuitry and television monitor concepts. This manual is designed for the maintenance technician who possesses a general knowledge of solid state circuitry, microprocessor and digital integrated circuitry, and TV monitor concepts. Any individual not knowledgeable in these areas should not attempt repair of the electronic portion of the game.

Gremlin's new G-80 system will make troubleshooting easy. Each board has a separate function and most problems can immediately be isolated to a single board. The individual boards contain less circuitry than if they were combined on one or two boards. This results in faster and easier servicing. The new G-80 system gives Gremlin a lot more flexibility in designing new games. Increased ROM capability and the addition of speech means that new Gremlin games will be more exciting and even more profitable. If you have any questions not answered in this manual, call SEGA/Gremlin Customer Service, (800) 854-1098.

GAME SET-UP AND INSPECTION

Your Space Fury game is ready to play immediately upon arrival. But, before you plug in the game, open the rear access panel and make a general inspection of the interior game. The following items should be checked to insure no shipping damage has occurred.

1. Inspection

a) Are the fuses intact?

There are five fuses (not counting the monitor fuses which are detailed in the monitor manual accompanying this game).

One fuse is located on the AC junction box. The other four are on the power supply PC board.

b) Are the connectors firmly inserted?

Proper connector fittings must be checked before game power is applied. Check all related connectors for good contact. Although disconnected connectors are easily spotted, poor contacts are difficult to locate. The connectors should therefore be pushed in firmly and then loosened to spot poor connections. When testing the PC board connectors, always turn off the power.

c) Cabinet Inspection

Inspect the cabinet interior and exterior to ensure that no damage has occurred during shipping. Check to ensure graphics are in place, monitor is not damaged and that the overall cabinet is in good condition.

2. Voltage Selection

Before plugging in your game, make sure that the game voltage is correct for

your location. Locate the two leads from the AC junction box to the power transformer. For 110 VAC, they should be connected to terminals 1 and 2 on the power transformer. For 100 VAC, connect 1 and 3, and for 220 VAC applications, they should be connected to 1 and 4.

You will also notice on the AC junction box that there is a safety interlock switch. When the rear panel is in place the switch is depressed and the game receives power. Removing the rear panel, the switch returns to its original position and the power is cut off from the game. For servicing, this switch can be pulled out and power will be restored.

3. Game Specifications

Power	100 VAC, 60 HZ (nominal), 175 watts
	110 VAC, 60 HZ (nominal), 175 watts
	220 VAC, 60 HZ (nominal), 175 watts
Dimensions	25½ inches wide X 28 inches depth (64.77 cm wide X 71.12 cm depth) 67 inches height (170.18 cm height)

4. Important Notes

a) The following note is included in compliance with FCC rules:

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. As temporarily permitted by regulations, it has not been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

b) Miscellaneous

Never remove circuit board connections while power is on.

Never replace any components with anything other than exact replacement parts.

DO NOT replace fuses with anything other than the proper value. A blown fuse indicates an overload condition within the game. Replacing the fuse with a higher value can cause severe damage to internal components, if an overload occurs.

Correspondence regarding this game should be addressed to:

SEGA/Gremlin

8401 Aero Drive

San Diego, Cal 92123

(800) 854-1098

Game Concept

Space Fury is a one or two player game in which players try to destroy enemy fleets. There are four types of enemy ships consisting of scouts, cruisers, destroyers, and warships. After each round, players have the opportunity to dock with one of three mother ships. If a player is unsuccessful in docking no extra points are scored.

Docking Maneuver

Purple Ship- Firing power of three shots forward.

Green Ship- Firing power consists of one shot forward and one shot to each side.

Blue Ship- Firing power consists of one shot forward and two shots to the rear.

The first round of play consists of scouts, second round consists of cruisers, third round consists of destroyers, fourth round consists of warships, and the fifth round consists of the entire fleet. The player's ship can be destroyed by either a collision with an alien ship or by contact with a fireball shot by an alien. Only a completed ship can shoot fireballs. As you battle your way through each round, the Commander becomes more and more annoyed, if you are destroying his fleet successfully.

Game Action

Space Fury is equipped with a special thrust feature that thrusts your ship forward very quickly to avoid enemy fleets. When a player docks with one of three mother ships the player gets a three way shooter to make it easier to destroy enemy fleets. After the game is over the Commander rates your skills. Players are rated either easy, adequate, amusing, stimulating, or outstanding. In a two player game players alternate after the destruction of the first player's ship.

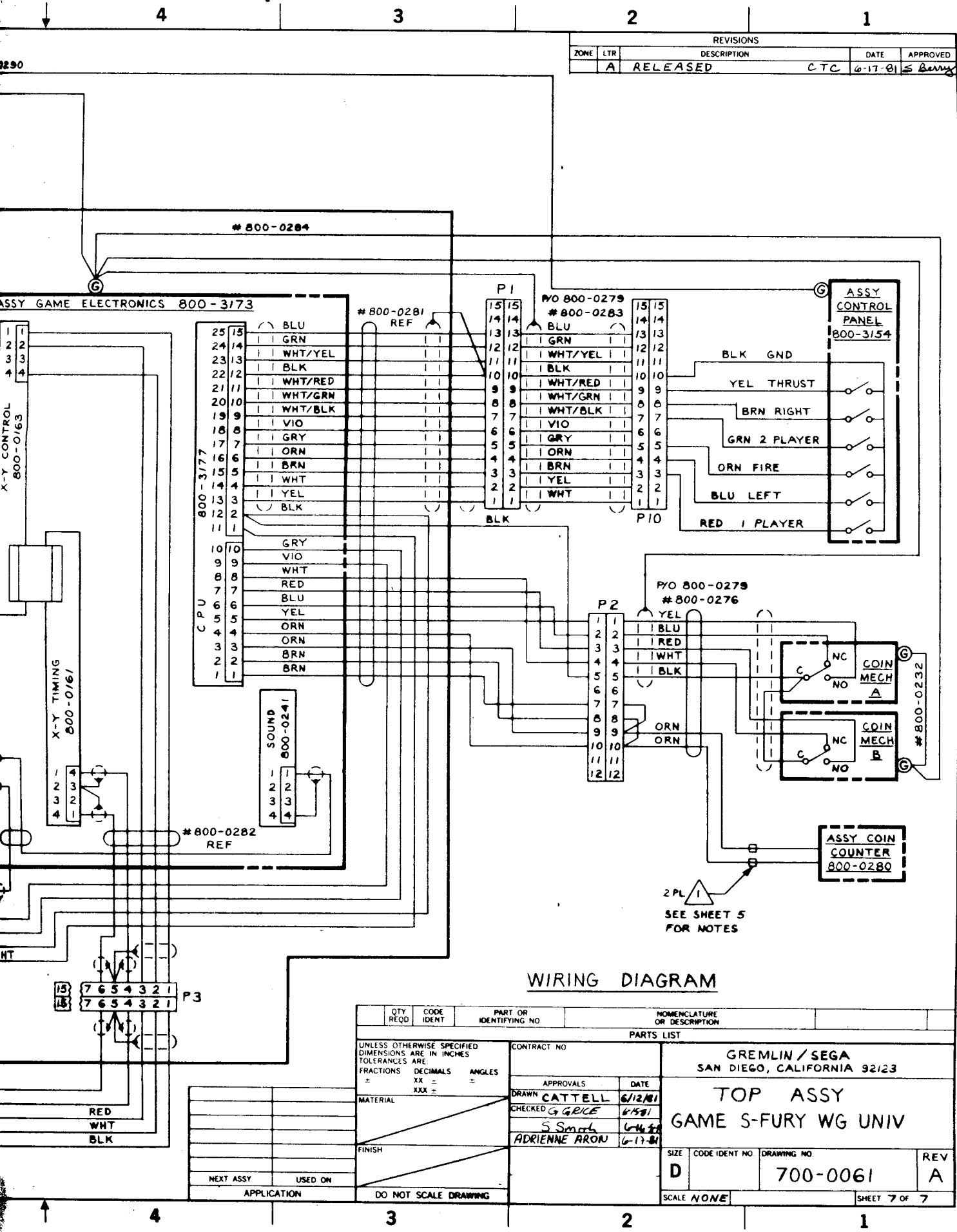
Scoring

Scouts are worth 10 points. When it is a completed ship you obtain 20 points. A partial ship is worth 40 points (shooting forward before it comes together).

Fireballs in the first round are worth 30 points. In the second round cruisers are worth 20 points. Each segment is worth 40 points for a completed ship and 80 points for a partial. Fireballs in the second round are worth 60 points. Destroyers in the third round are worth 30 points for a segment and 80 points for a completed ship, and 150 points for a partial ship. Fireballs in the third round are worth 100 points. Warships in the fourth round are worth 40 points for a segment, 150 points for a completed, and 300 points for a partial ship. Fireballs in the fourth round are worth 200 points. Fifth round scoring is the same as the fourth round. Bonus points are scored during the docking maneuver. The amount of points obtained depends on how long it takes a player to get through the round. The game ends when all player's ships are destroyed.

SPACE FURY - OPTION SWITCH SETTINGS

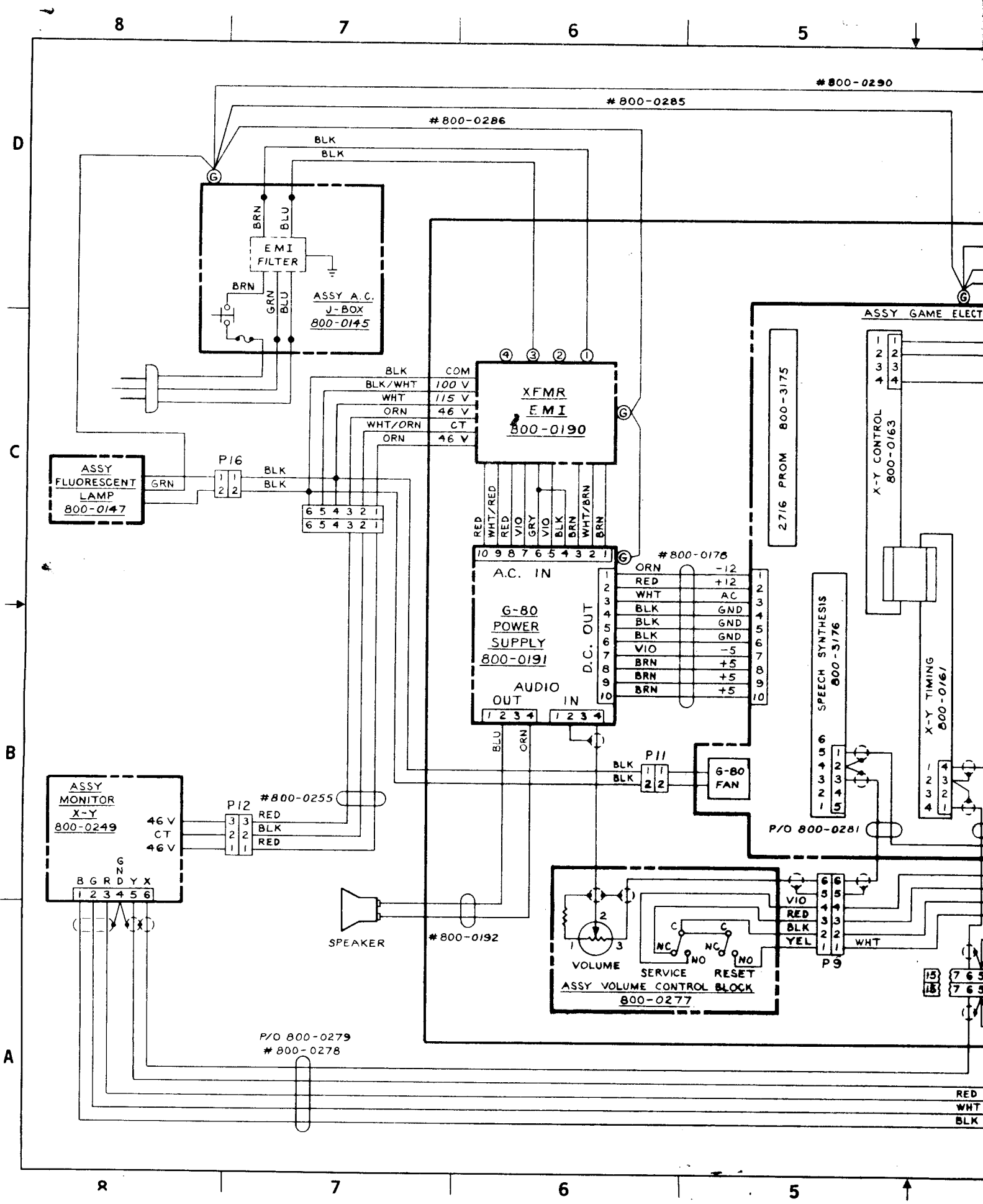
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	1 2 3 4 5 6 7 8
UPRIGHT	X X X X X X X O
COCKTAIL	X X X X X X X C
VOICE DURING ADVERTISING	X X X X X X C X
NO VOICE DURING ADVERTISING	X X X X X X O X
5 SHIP GAME	X X X X O O X X
4 SHIP GAME	X X X X O C X X
3 SHIP GAME	X X X X C O X X
2 SHIP GAME	X X X X C C X X
GAME DIFFICULTY: HARDEST	X X O O X X X X
HARD	X X O C X X X X
MEDIUM	X X C O X X X X
EASY	X X C C X X X X
ONE FREE SHIP AT: 10,000 PTS.	C C X X X X X X
20,000 PTS.	C O X X X X X X
30,000 PTS.	O C X X X X X X
40,000 PTS.	O O X X X X X X



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASED	CTC 6-17-81	S. Berry

WIRING DIAGRAM

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO	
FRACTIONS	DECIMALS	ANGLES	
±	±	±	
±	±	±	
MATERIAL		APPROVALS	
FINISH		DATE	
NEXT ASSY USED ON		DRAWN CATTELL 6/12/81	
APPLICATION		CHECKED G. GRICE 6/15/81	
DO NOT SCALE DRAWING		S. Smith 6/16/81	
		ADRIENNE ARON 6-17-81	
		GREMLIN / SEGA SAN DIEGO, CALIFORNIA 92123 TOP ASSY GAME S-FURY WG UNIV	
SIZE	CODE IDENT NO	DRAWING NO	REV
D		700-0061	A
SCALE NONE			SHEET 7 OF 7



800-0290

800-0285

800-0286

EMI FILTER

ASSY A.C. J-BOX 800-0145

XFMR EMI 800-0190

COM 100 V
 BLK/WHT 115 V
 WHT 46 V
 ORN 46 V
 WHT/ORN CT
 ORN

ASSY FLUORESCENT LAMP 800-0147

P16

G-80 POWER SUPPLY 800-0191

A.C. IN 10 9 8 7 6 5 4 3 2 1

D.C. OUT 1 2 3 4 5 6 7 8 9 10

AUDIO OUT 1 2 3 4 IN 1 2 3 4

800-0176

1	ORN	-12
2	RED	+12
3	WHT	AC
4	BLK	GND
5	BLK	GND
6	VIO	-5
7	BRN	+5
8	BRN	+5
9	BRN	+5
10	BRN	+5

ASSY GAME ELECTRIC

2716 PROM 800-3175

X-Y CONTROL 800-0163

SPEECH SYNTHESIS 800-3176

X-Y TIMING 800-0161

P/O 800-0281

ASSY MONITOR X-Y 800-0249

46 V
 CT
 46 V

B G R D Y X
 1 2 3 4 5 6

P12

800-0255

3	RED
3	BLK
2	RED
1	RED

P11

6-80 FAN

SPEAKER 800-0192

VOLUME SERVICE RESET

ASSY VOLUME CONTROL BLOCK 800-0277

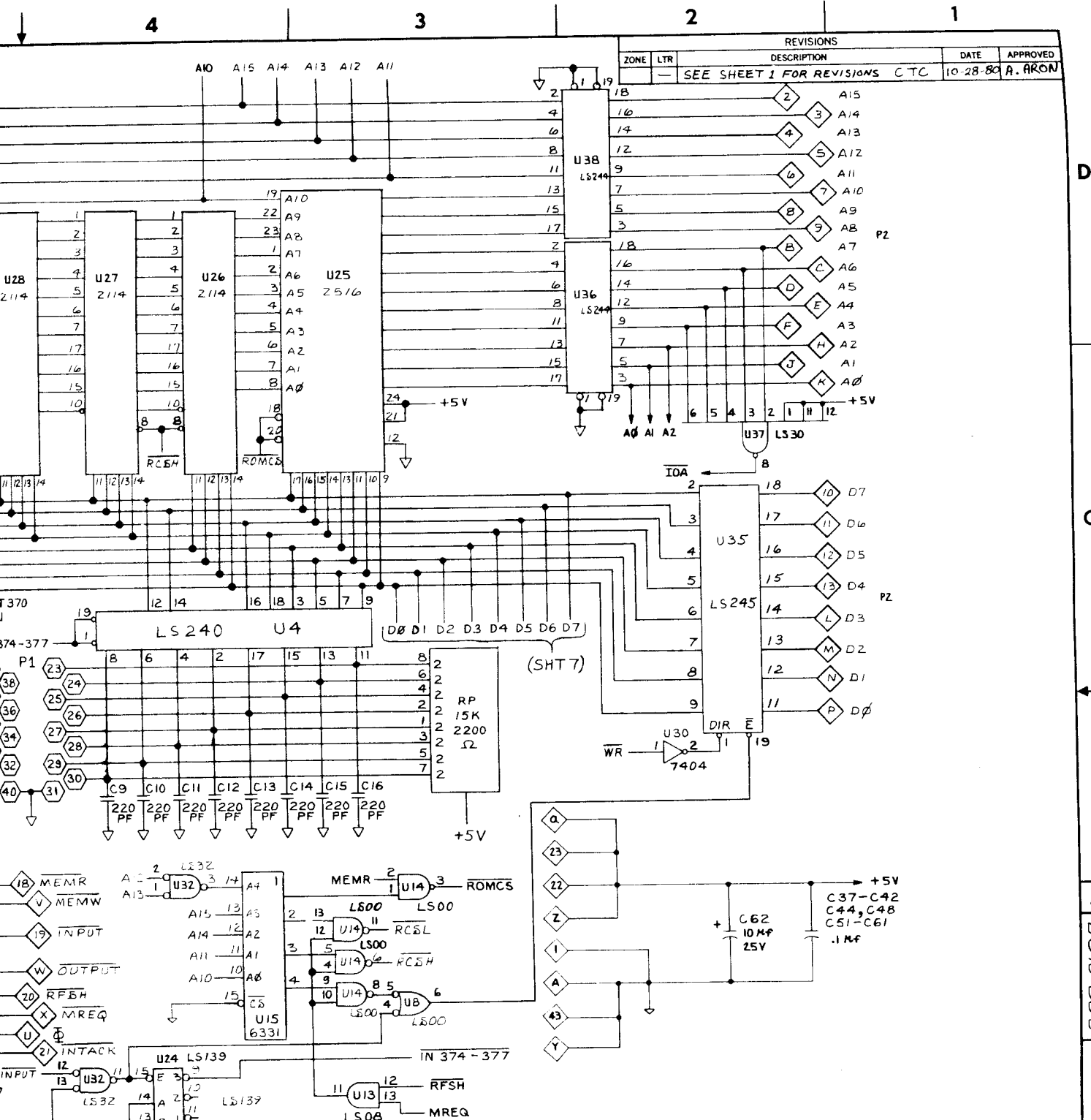
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P9

6	VIO
5	RED
4	BLK
3	BLK
2	YEL
1	WHT

15	7	6	5
15	7	6	5

RED
 WHT
 BLK



ZONE		LTR		DESCRIPTION	DATE	APPROVED
				SEE SHEET 1 FOR REVISIONS CTC	10-28-80	A. ARON

REVISIONS

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3	A14		
4	A13		
5	A12		
6	A11		
7	A10		
8	A9		
9	AB		
10	A7		
11	A6		
12	A5		
13	A4		
14	A3		
15	A2		
16	A1		
17	A0		

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11	D6		
12	D5		
13	D4		
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15	D2		
16	D1		
17	D0		

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USED ON		<i>P.R.M.</i>	DATE <i>10-29-80</i>
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800-0107 D

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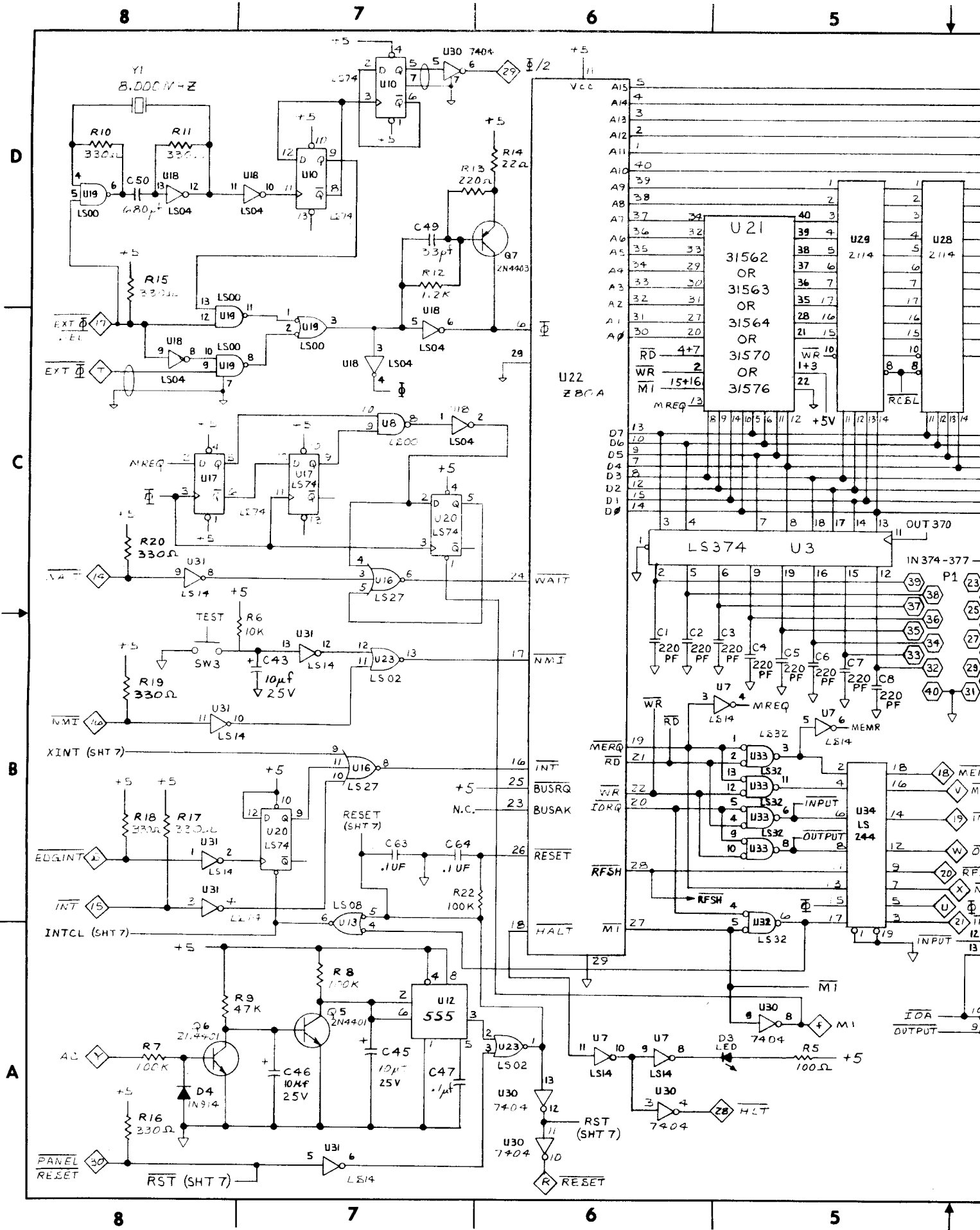
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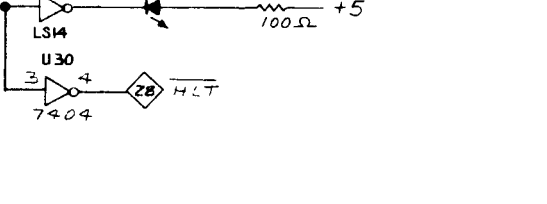
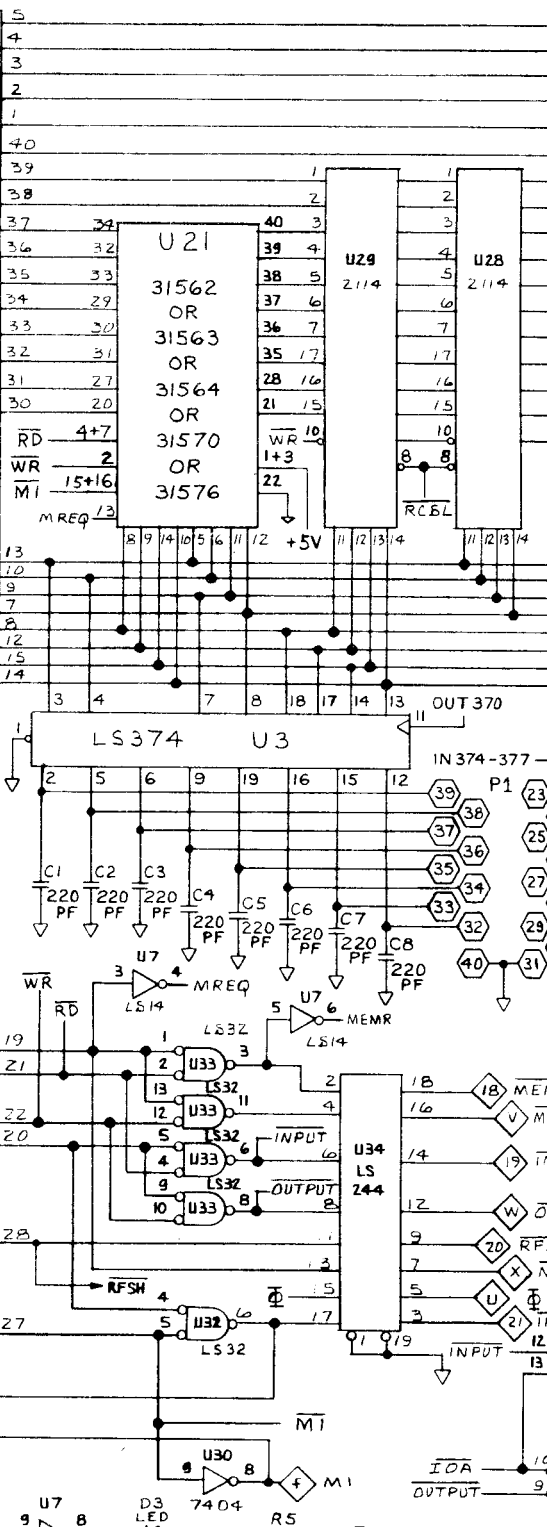
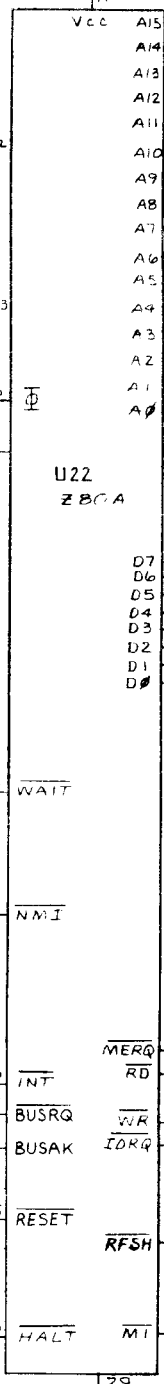
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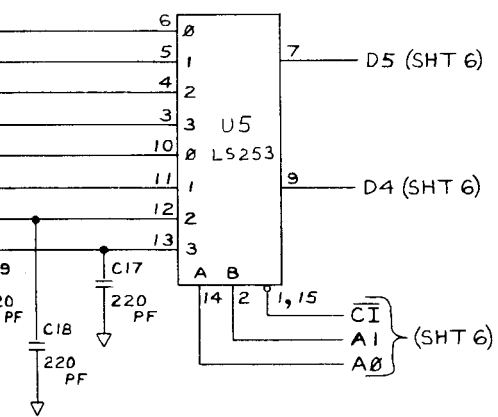
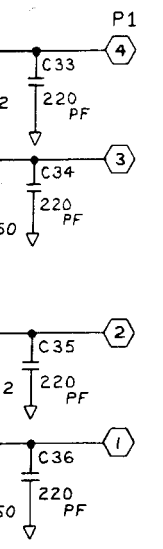
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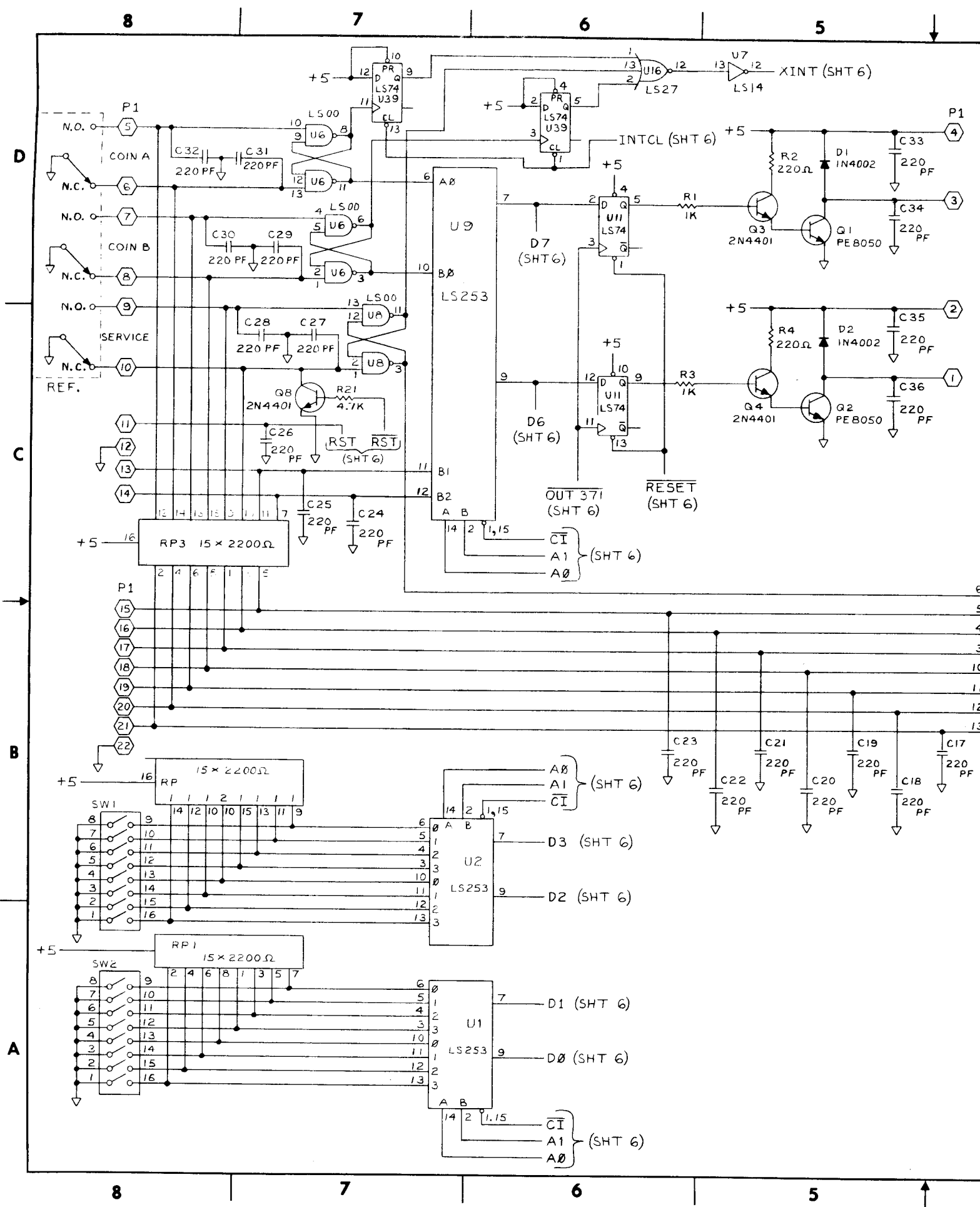
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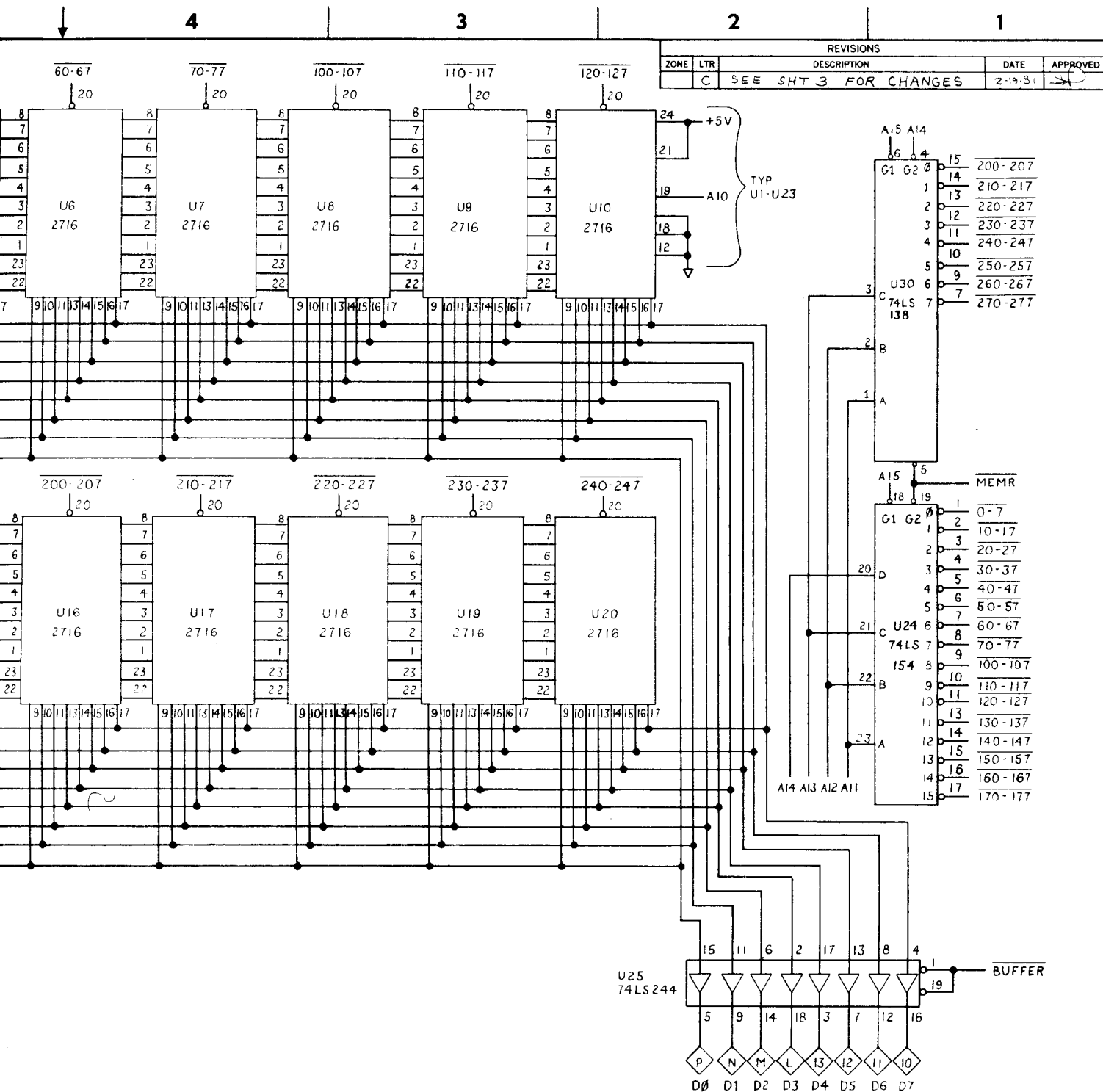
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APPLICATION			ARM 10-29-80	
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Gremlin Industries, Inc.
San Diego, California 92123

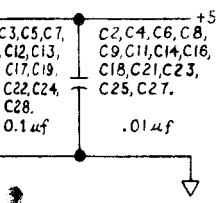
SCHMATIC
CPU BOARD

4 3 2 1





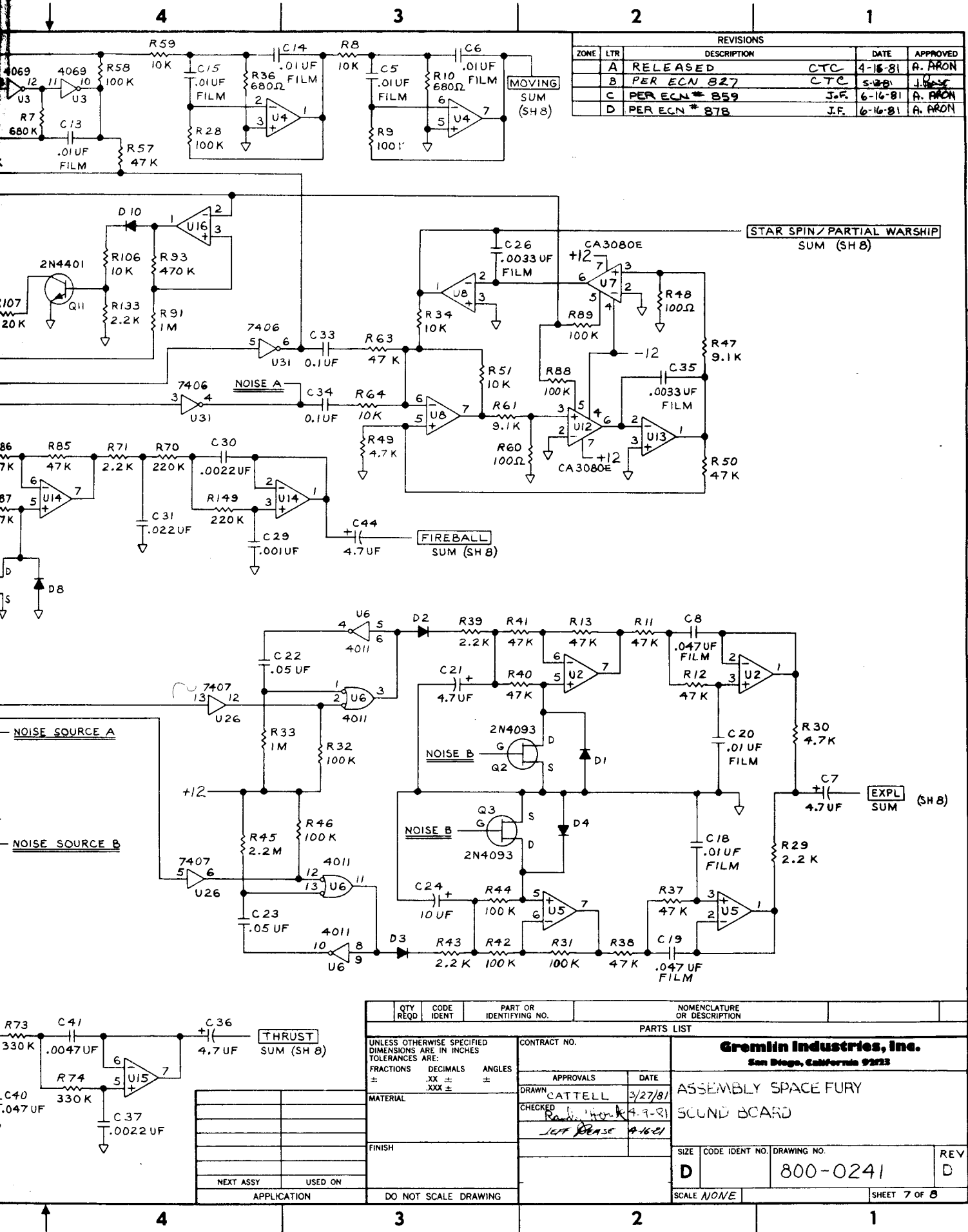
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USED ON		Grenlin Industries, Inc. San Diego, California 92123	
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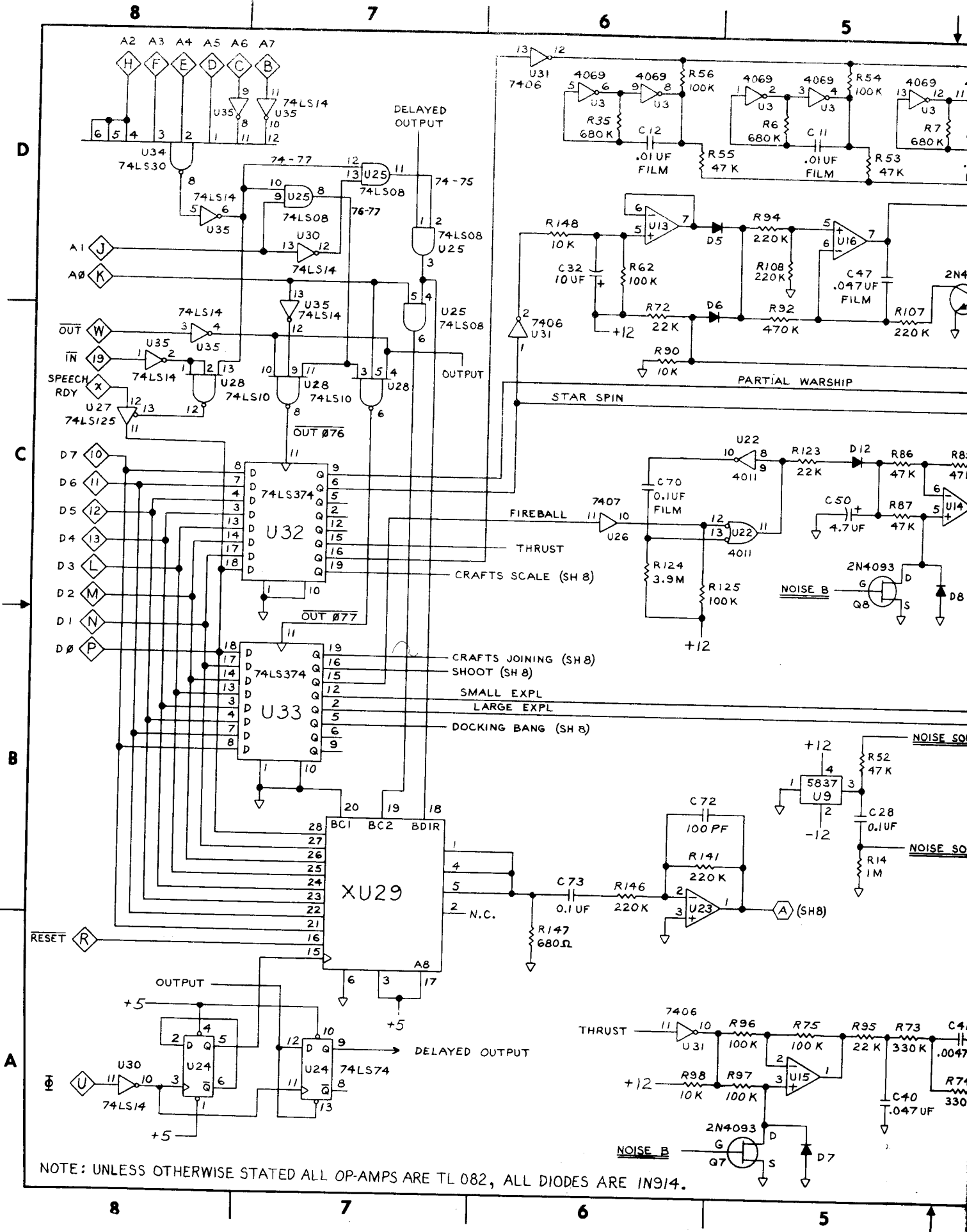
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B		PER ECN 827	CTC 5-20-81	J. F. JONES
C		PER ECN # 859	J.F. 6-16-81	A. ARON
D		PER ECN # 878	J.F. 6-16-81	A. ARON

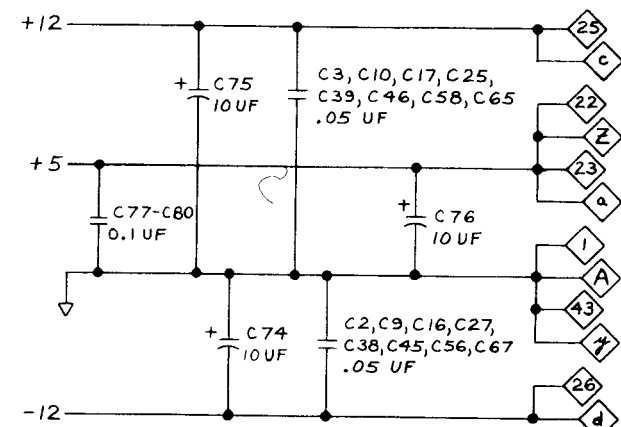
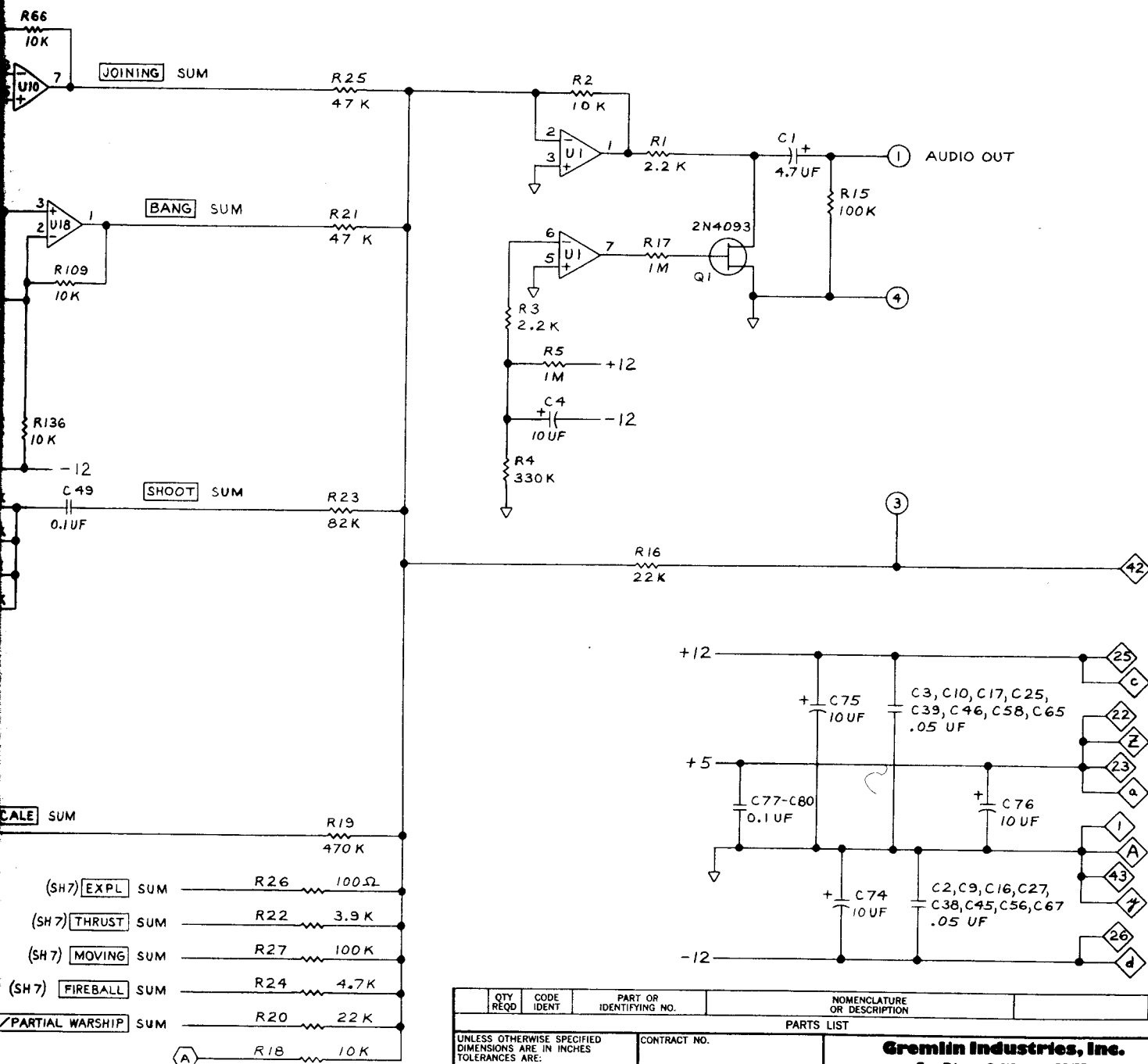
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		CHECKED <i>Rad...</i> 4-9-81	
		JCF DEASE 4-16-81	
NEXT ASSY USED ON		SIZE CODE IDENT NO. DRAWING NO.	
APPLICATION		D 800-0241	
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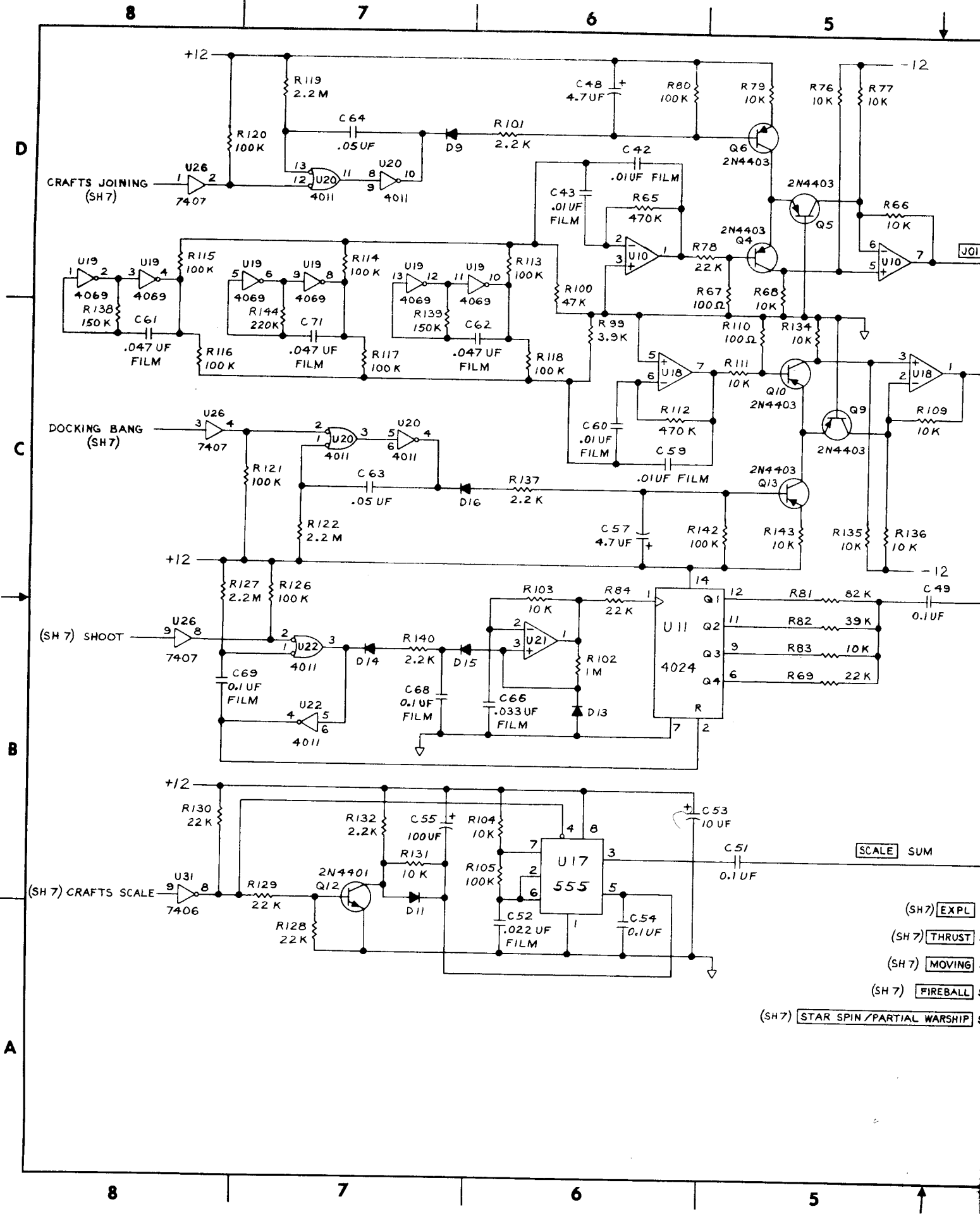
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QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
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MATERIAL		APPROVALS	DATE
FINISH		DRAWN CATTELL	4/1/81
NEXT ASSY USED ON		CHECKED <i>Bobbie Hank</i>	9-7-81
APPLICATION		JEFF PEASE	4-16-81
DO NOT SCALE DRAWING		Gremlin Industries, Inc. San Diego, California 92123	
		ASSEMBLY SPACE FURY SCUND BOARD	
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SCALE			SHEET 8 OF 8

800-0241



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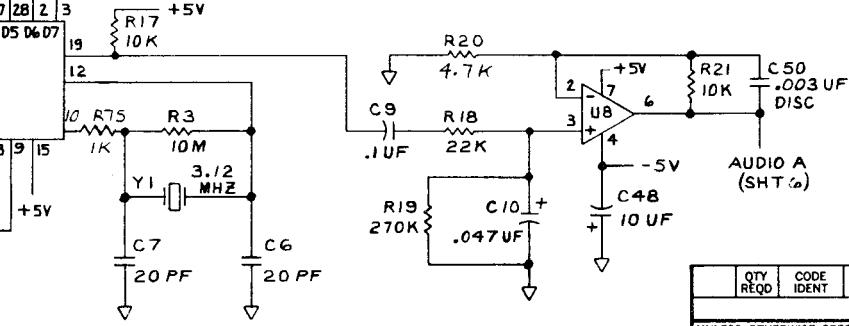
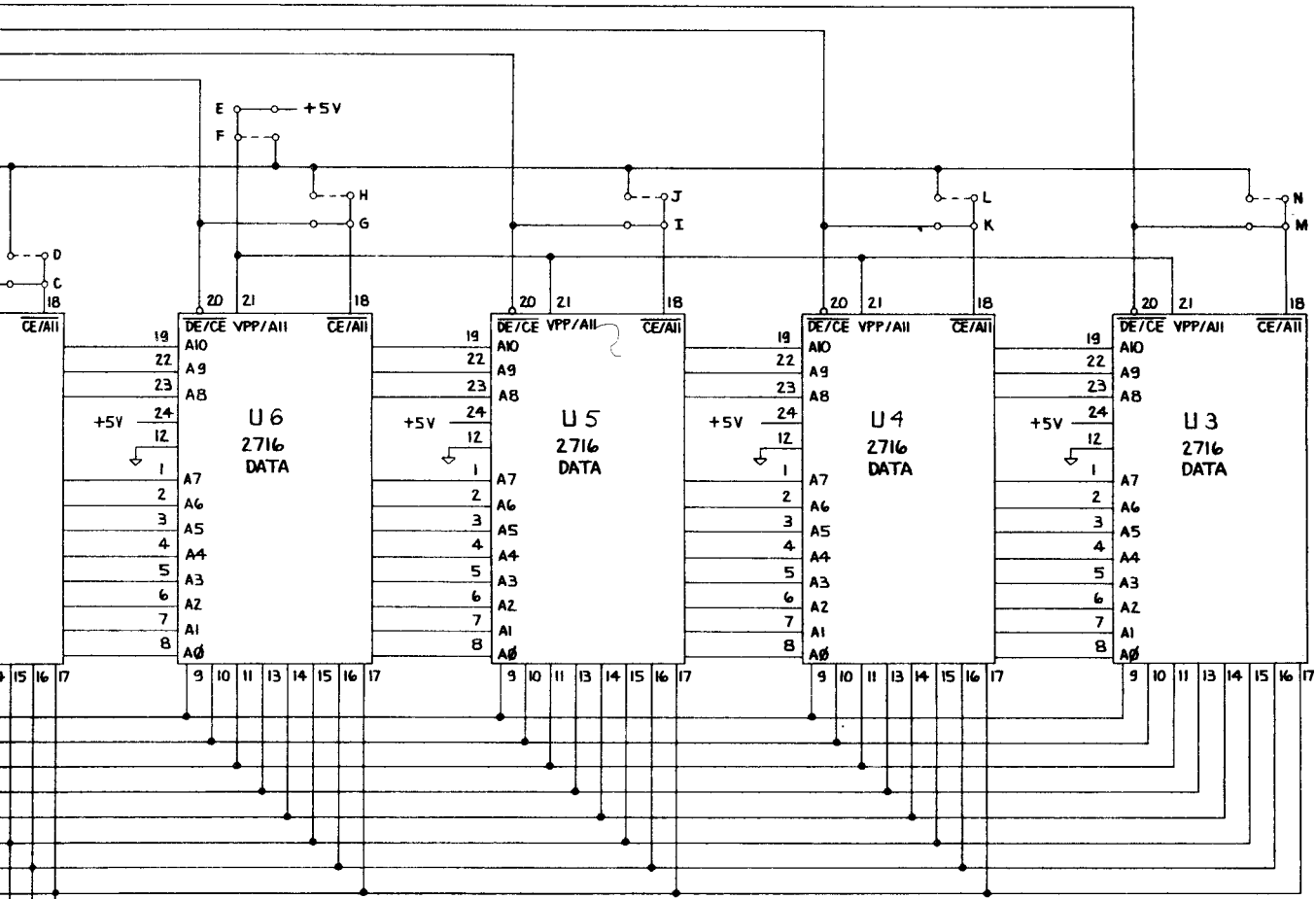
(SH7) THRUST S

(SH7) MOVING S

(SH7) FIREBALL S

(SH7) STAR SPIN/PARTIAL WARSHIP S

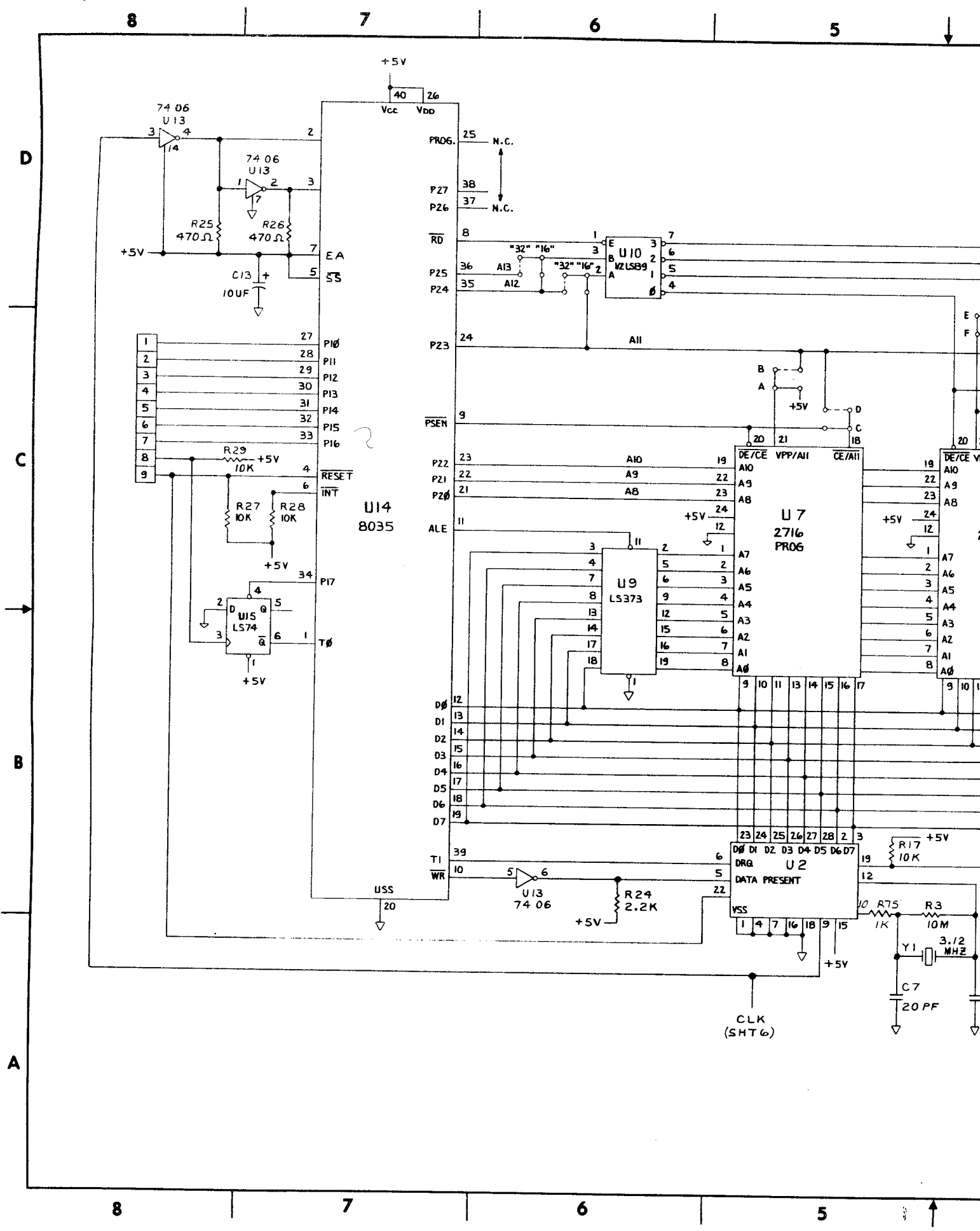
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C		PER ECN 593	J.P. 01-08-80	<i>[Signature]</i>
D		PER ECN 623	J.P. 1-27-81	<i>[Signature]</i>
E		PER ECN 709	WJB 3-3-81	<i>[Signature]</i>

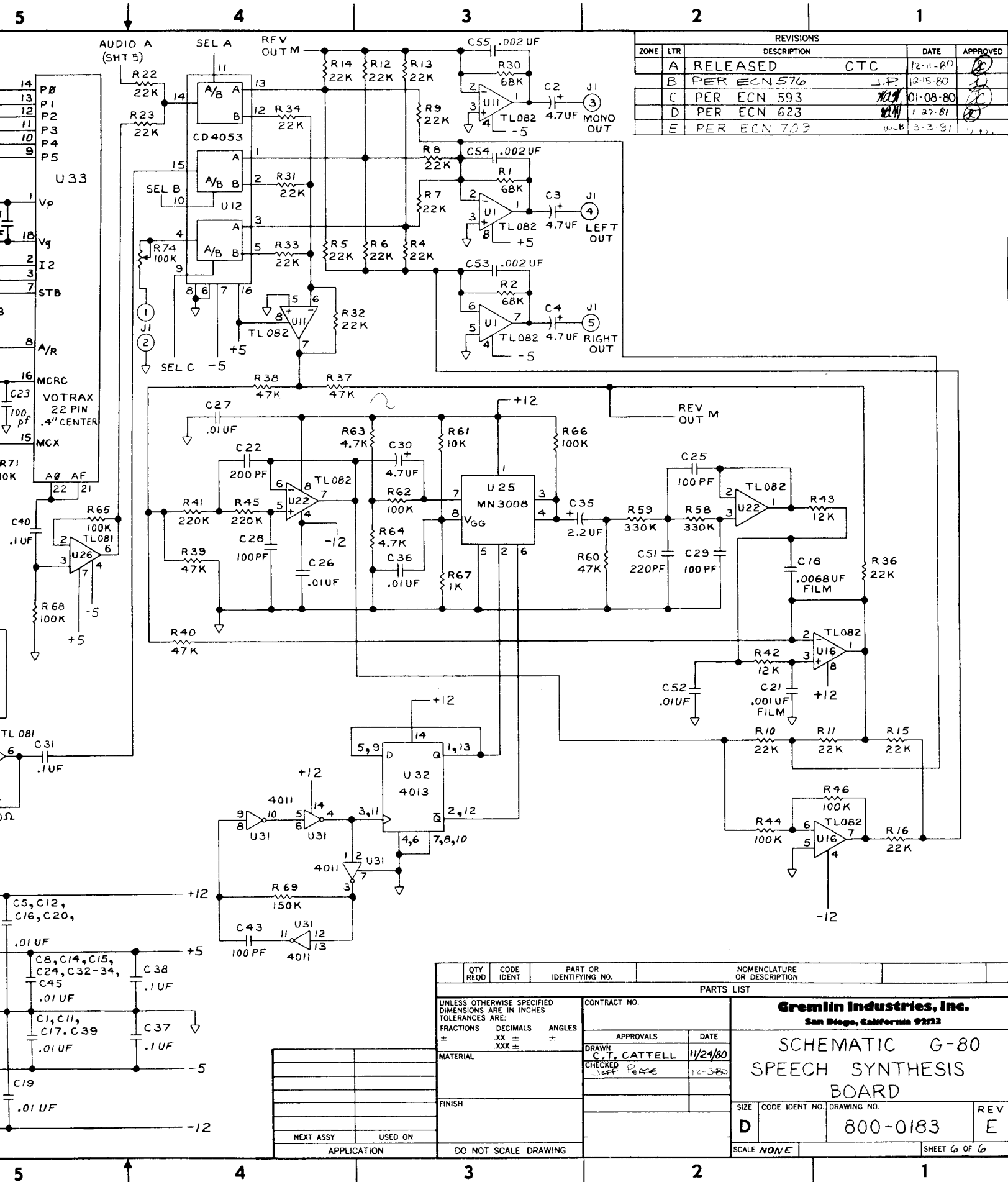


INSTALL JUMPERS

	PROG	DATA
2716	A,C	E;G/I/K/M; "16"
2732	B,C	F;G/I/K/M; "32"
TMS2532	A,D	E;H/J/L/N; "32"

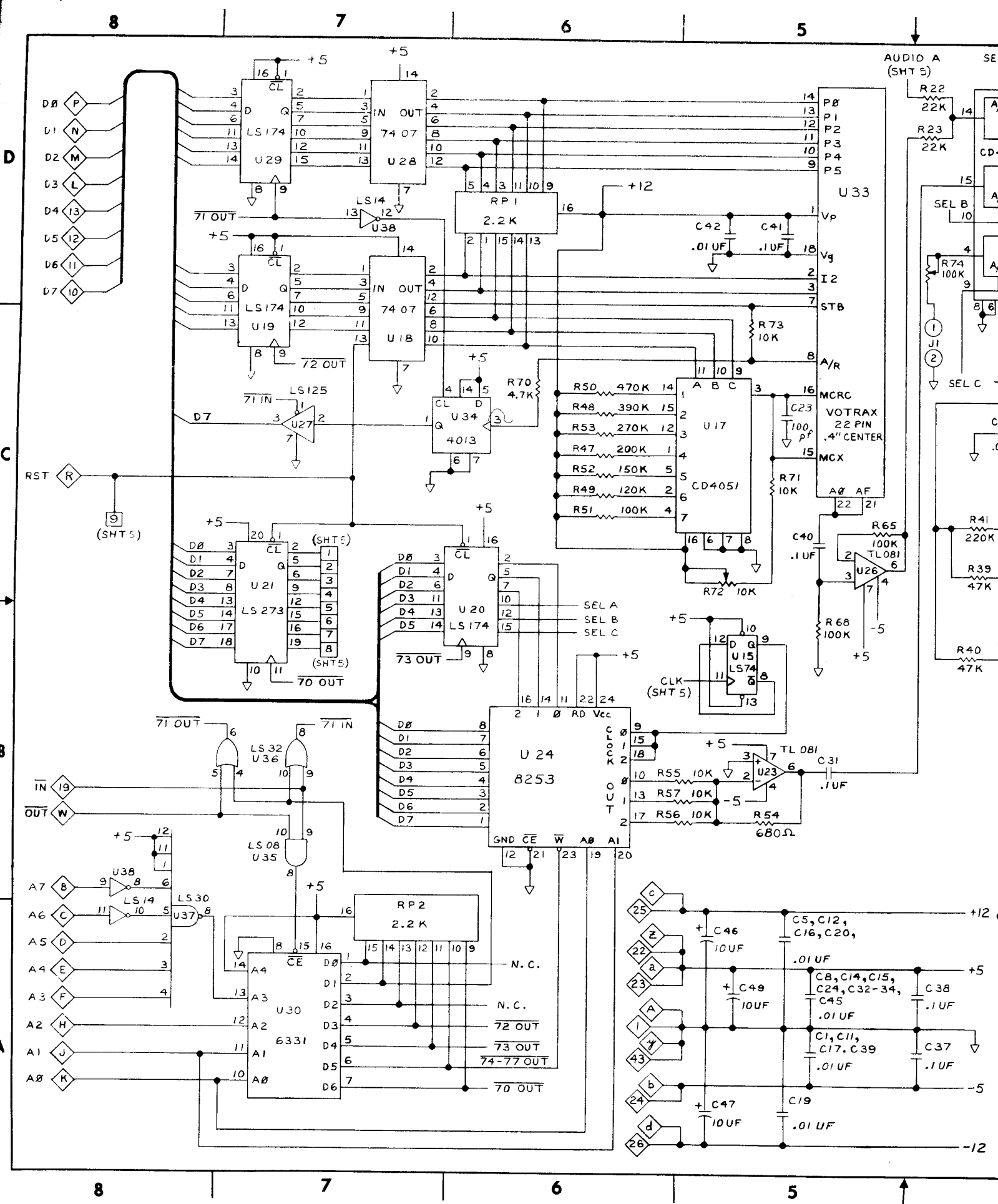
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FRACTIONS	DECIMALS	ANGLES	Gremlin Industries, Inc. San Diego, California 92123
±	.XX ±	±	
	.XXX ±		
MATERIAL		APPROVALS	DATE
FINISH		DRAWN SON DUONG	10-25-80
NEXT ASSY USED ON		CHECKED <i>[Signature]</i>	10-28-80
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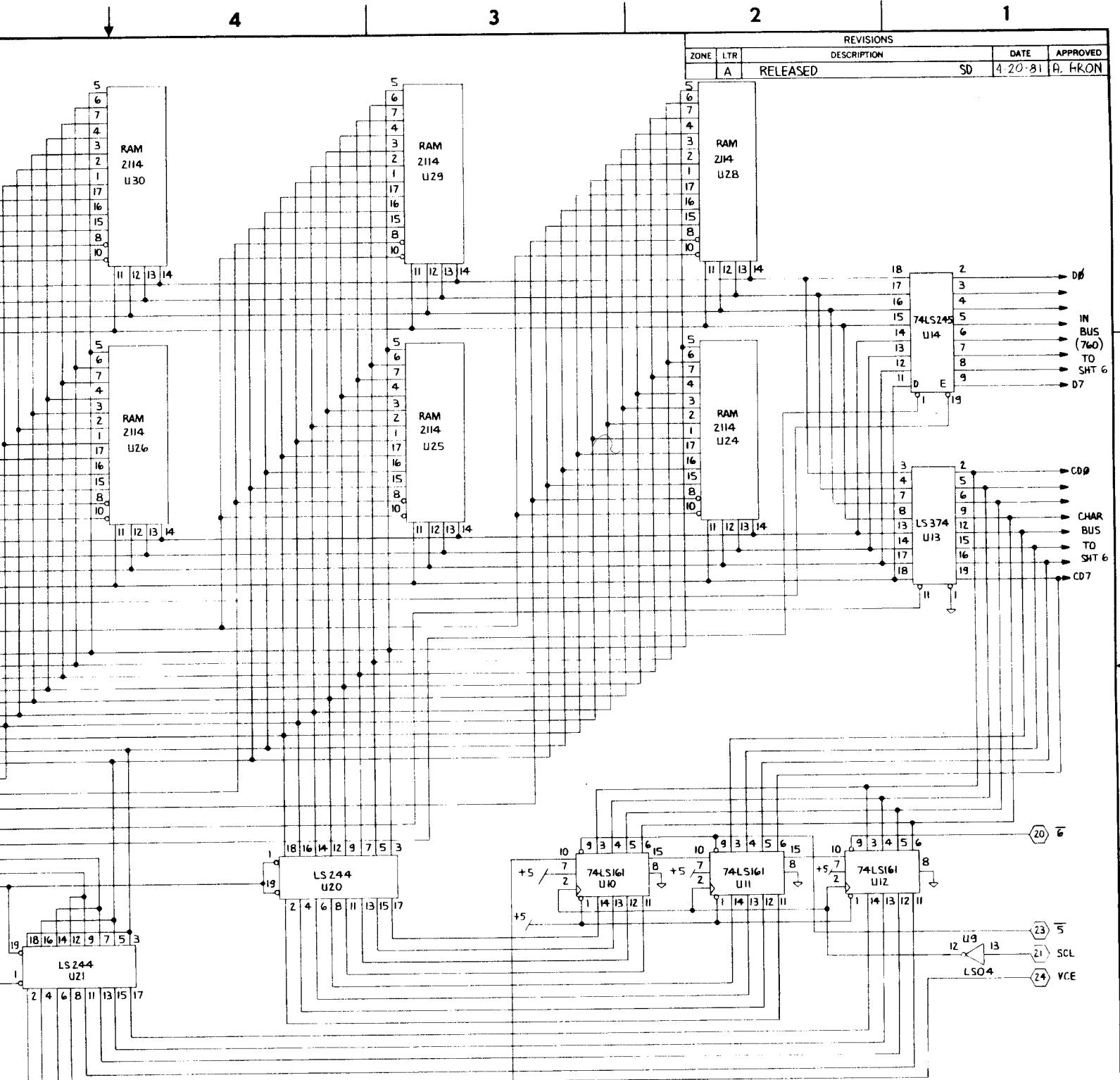




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C		PER ECN 593	J.P.	01-08-80
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E		PER ECN 703	J.P.	3-3-91

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±	.XX ±	±	DATE
±	.XXX ±	±	
MATERIAL		DRAWN C.T. CATTELL 11/24/80	
FINISH		CHECKED JEFF PEREE 12-3-80	
NEXT ASSY USED ON		Gremlin Industries, Inc. San Diego, California 92123 SCHEMATIC G-80 SPEECH SYNTHESIS BOARD	
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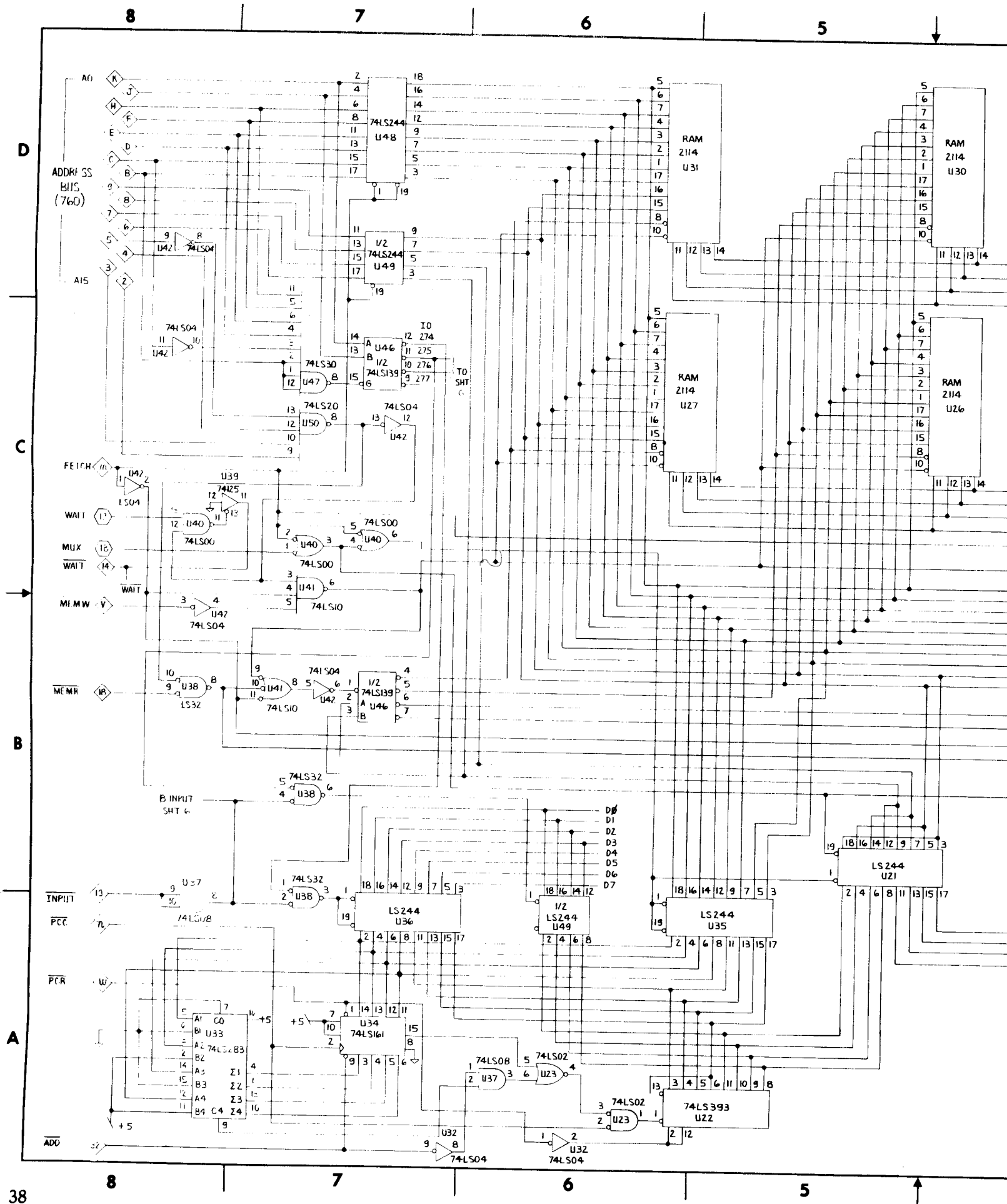




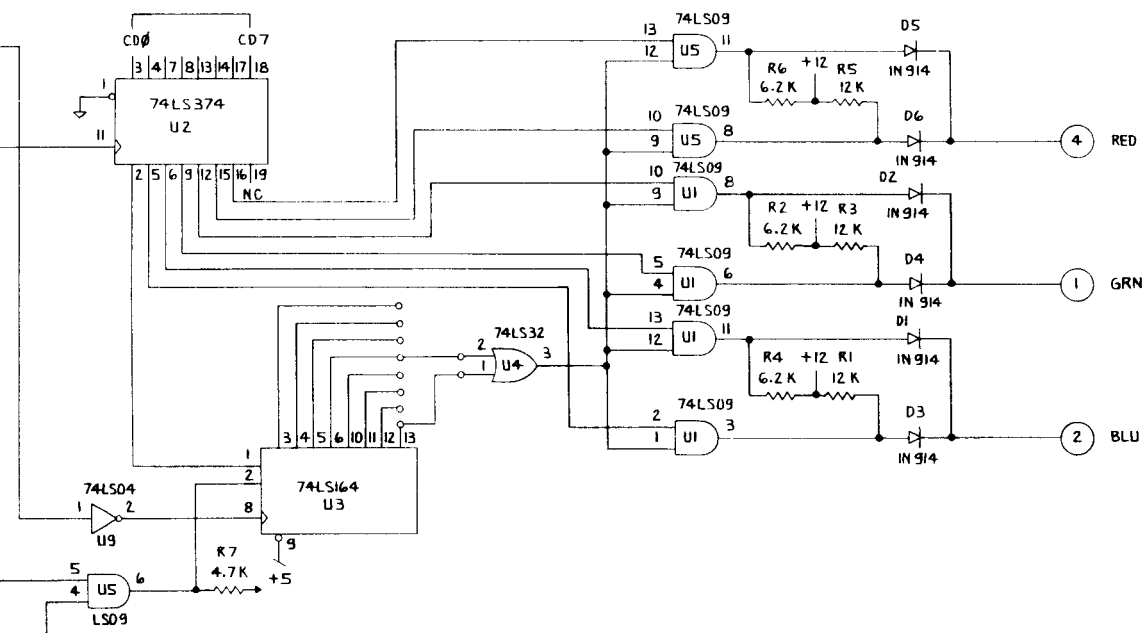
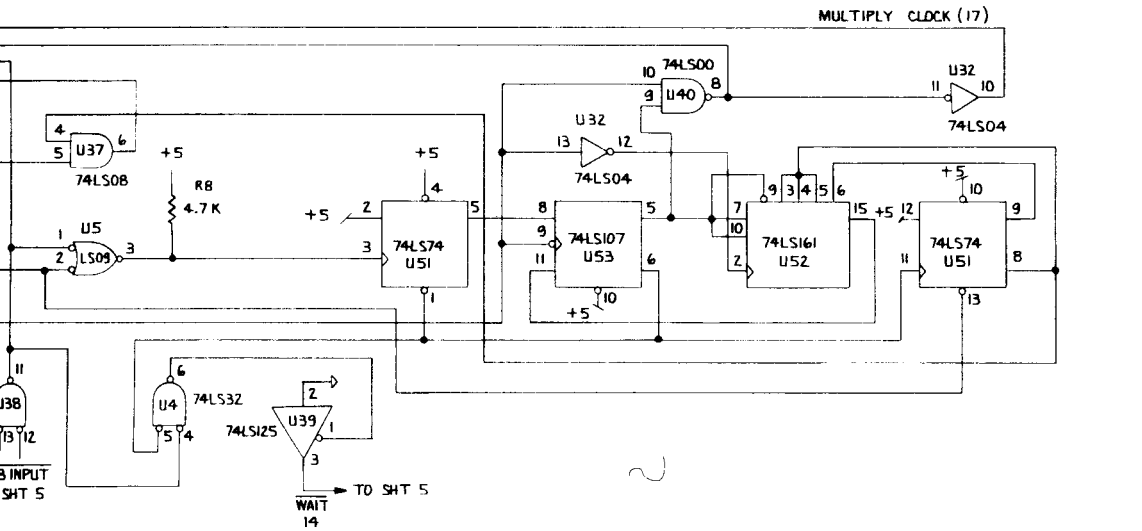
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FRACTIONS	DECIMALS	ANGLES	Gremlin Industries, Inc.
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±	.XXX ±		
MATERIAL		APPROVALS	DATE
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800-3155 700-0054		CHECKED JEFF PEASE	11-2-80
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APPLICATION		D 800-0163 A	
DO NOT SCALE DRAWING		SHEET 5 OF 6	

800-0163

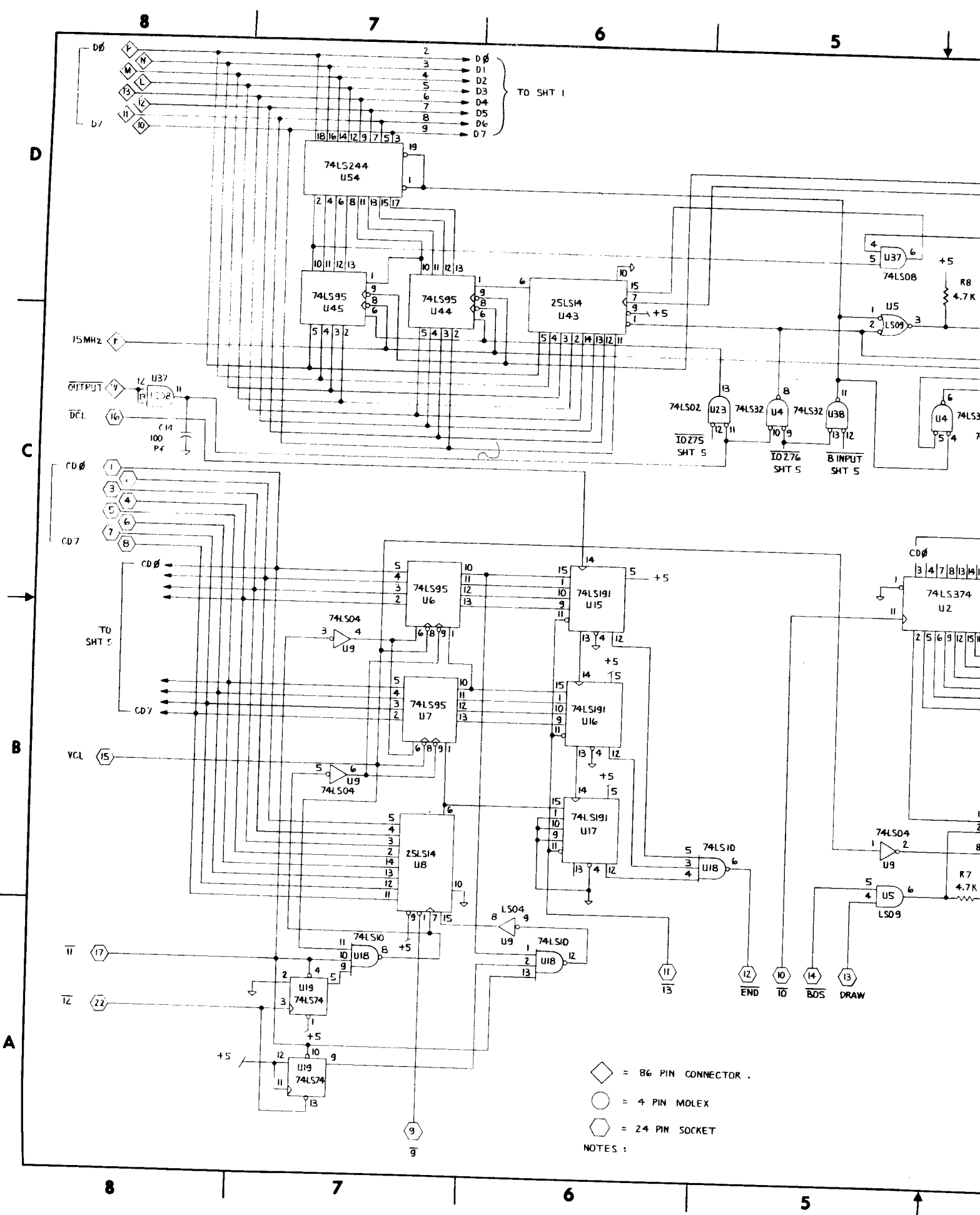


REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		RELEASED	SD	4.20.81 A. PR. JN



QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.	
FRACTIONS	DECIMALS	ANGLES	Gremlin Industries, Inc. San Diego, California 92123
±	.XX ±	±	
MATERIAL		APPROVALS	DATE
FINISH		DRAWN SON DUONG	10-8-80
800-3155 700-0054		CHECKED JEFF PEASE	11-3-80
NEXT ASSY USED ON		SCALE NONE	12/11
APPLICATION		SIZE CODE IDENT NO. DRAWING NO. REV D 800-0163 A	
DO NOT SCALE DRAWING		SHEET 6 OF 6	

D
 C
 B
 A
 800-0163
 A
 39



TO SHT 1

15MHz

OUTPUT

DCFL

TO SHT 5

VCL

11

12

- ◇ = 86 PIN CONNECTOR .
 - = 4 PIN MOLEX
 - ⬡ = 24 PIN SOCKET
- NOTES :

74LS02

74LS32

74LS32

74LS32

74LS244

74LS95

74LS95

25LS14

74LS95

74LS95

25LS14

74LS191

74LS191

74LS191

74LS374

74LS04

74LS09

74LS04

74LS74

74LS74

74LS08

74LS09

74LS32

74LS32

74LS32

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74LS32

74LS32

74LS10

74LS10

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74LS10

74LS10

TO SHT 1

74LS08

74LS09

74LS32

74LS32

74LS32

74LS32

74LS32

74LS32

74LS10

74LS10

74LS10

74LS10

74LS10

TO SHT 1

74LS08

74LS09

74LS32

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TO SHT 1

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74LS10

TO SHT 1

74LS08

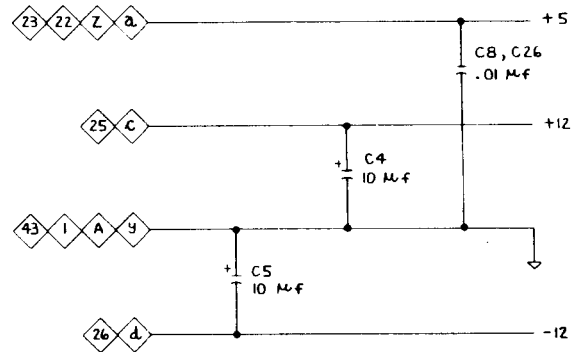
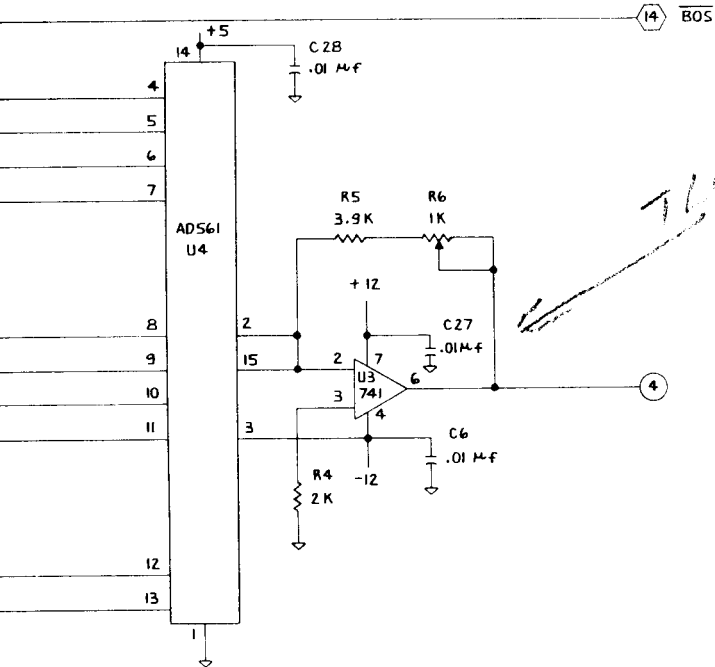
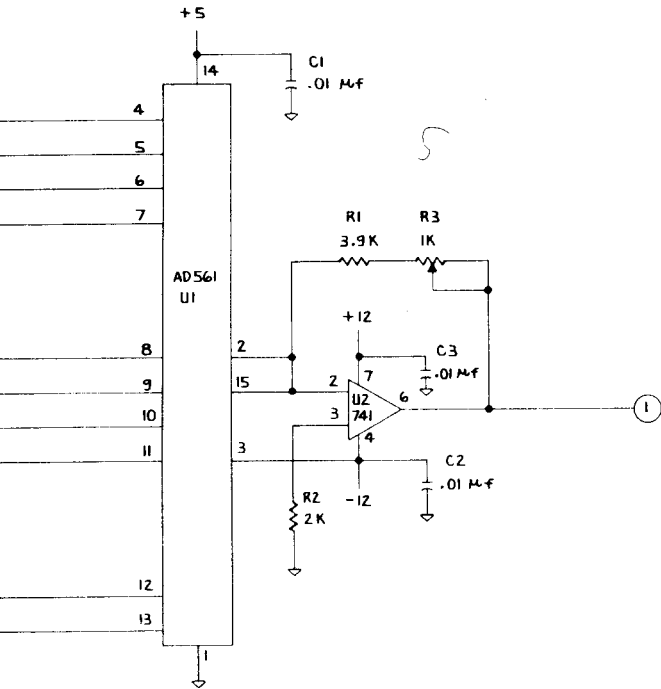
74LS09

74LS32

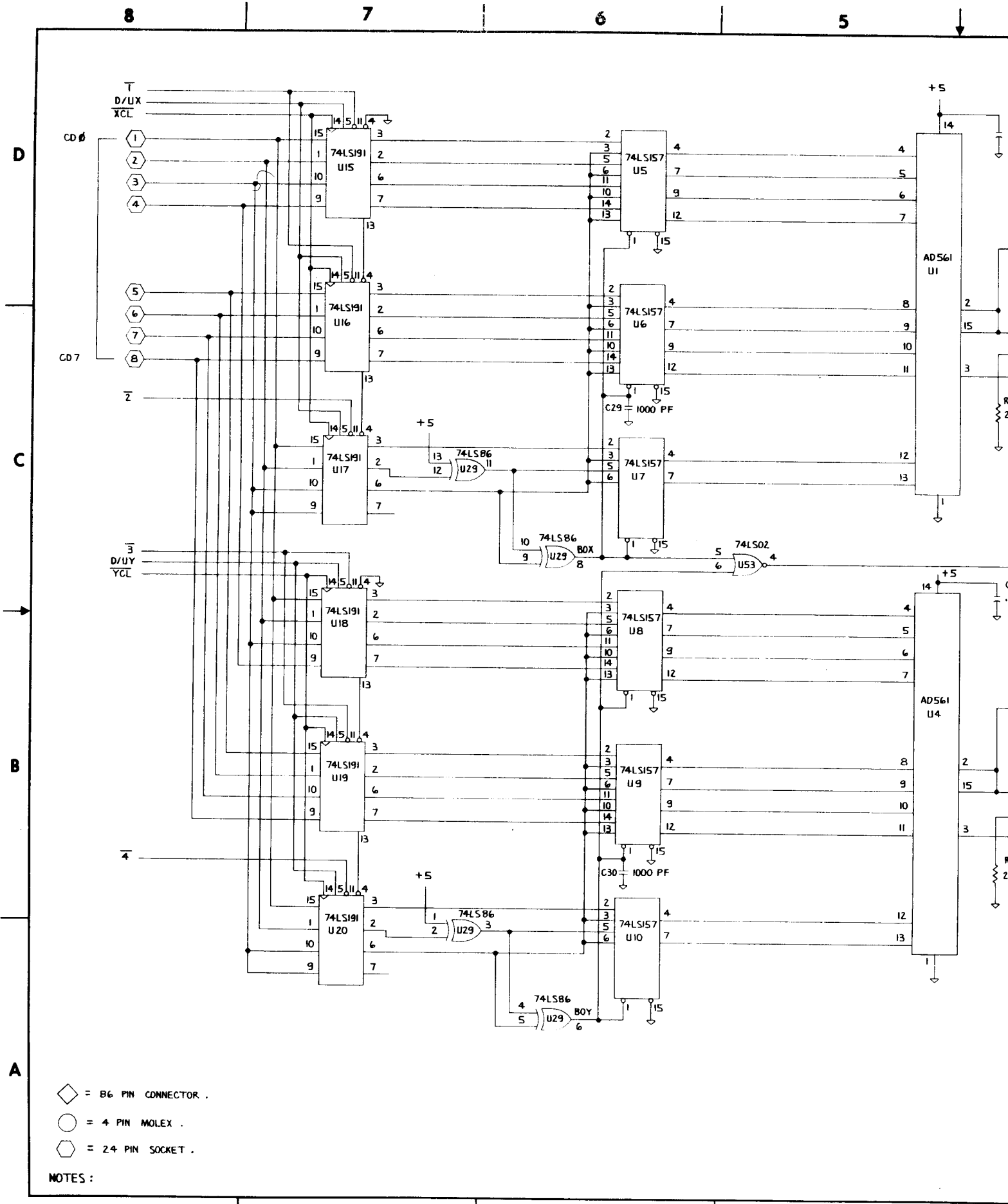
74LS32

74LS32

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		RELEASED	SD	4-20-81 H. ARON

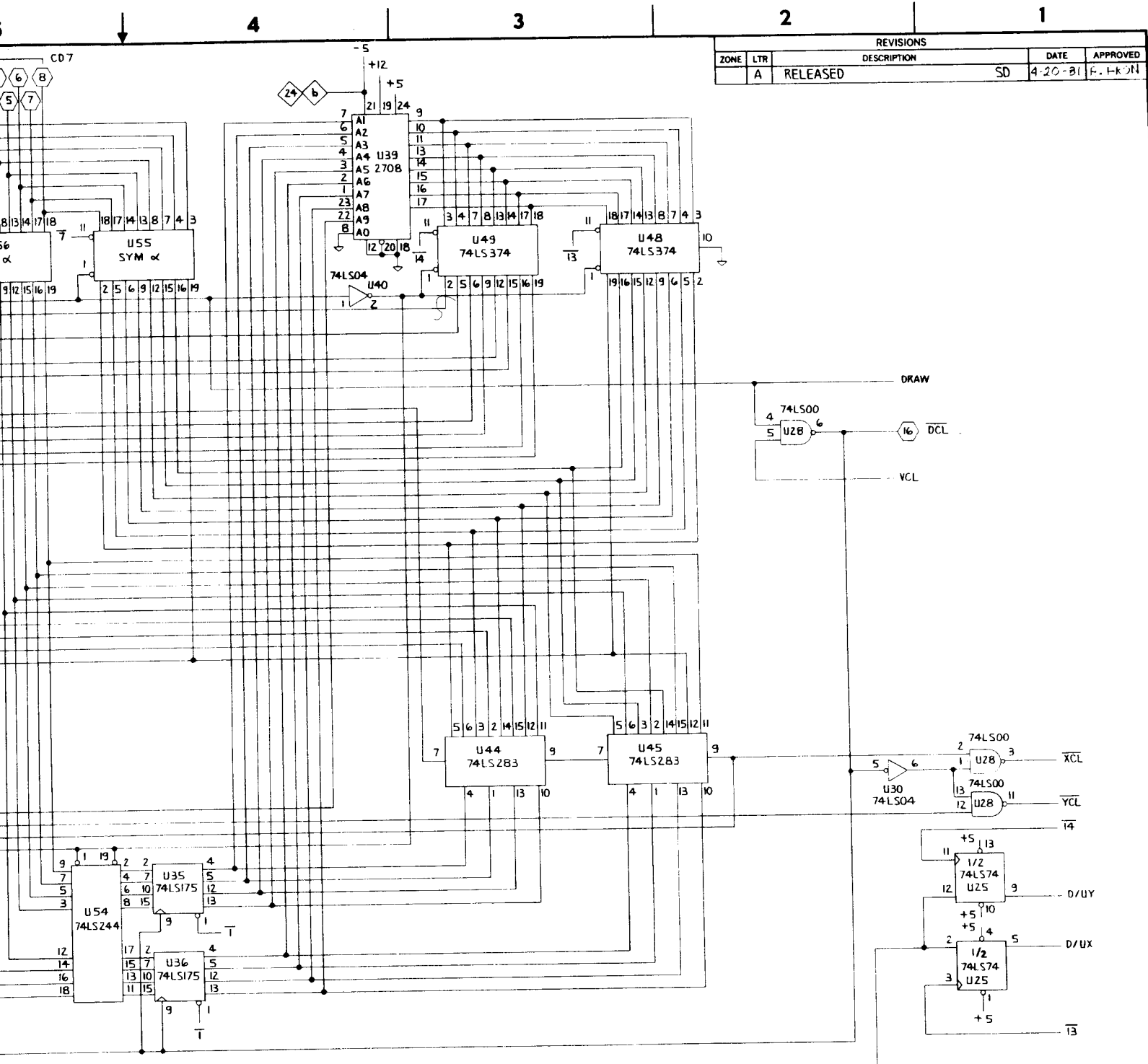


QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.		Gremlin Industries, Inc. San Diego, California 92123 X-Y Timing Board
FRACTIONS ±	DECIMALS .XX ±	ANGLES XXX ±	APPROVALS	
			DATE	
			DRAWN SON DUONG 3-12-81	
MATERIAL		CHECKED <i>John Rose</i> 4-20-81		SIZE CODE IDENT NO. DRAWING NO. D 800-0161
FINISH		APPROVED <i>[Signature]</i> 4-20-81		
800-3155 700-0054		NEXT ASSY USED ON		RE A
APPLICATION		DO NOT SCALE DRAWING		SHEET 5 OF 7



- ◇ = 86 PIN CONNECTOR .
- = 4 PIN MOLEX .
- ⬡ = 24 PIN SOCKET .

NOTES :



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		RELEASED	SD	4-20-81 F. H. DON

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.	
FRACTIONS	DECIMALS	ANGLES	APPROVALS
±	.XX ±	±	DATE
	.XXX ±		DRAWN SON DUONG 3-16-81
MATERIAL		CHECKED <i>[Signature]</i> 4-20-81	
FINISH		DATE 4-20-81	
800-3155	700-0054	SIZE CODE IDENT NO. DRAWING NO.	
NEXT ASSY	USED ON	D	800-0161
APPLICATION		DO NOT SCALE DRAWING	
		SCALE NONE	
		SHEET 6 OF 7	

Gremlin Industries, Inc.
San Diego, California 92123

X-Y Timing Board

REV A

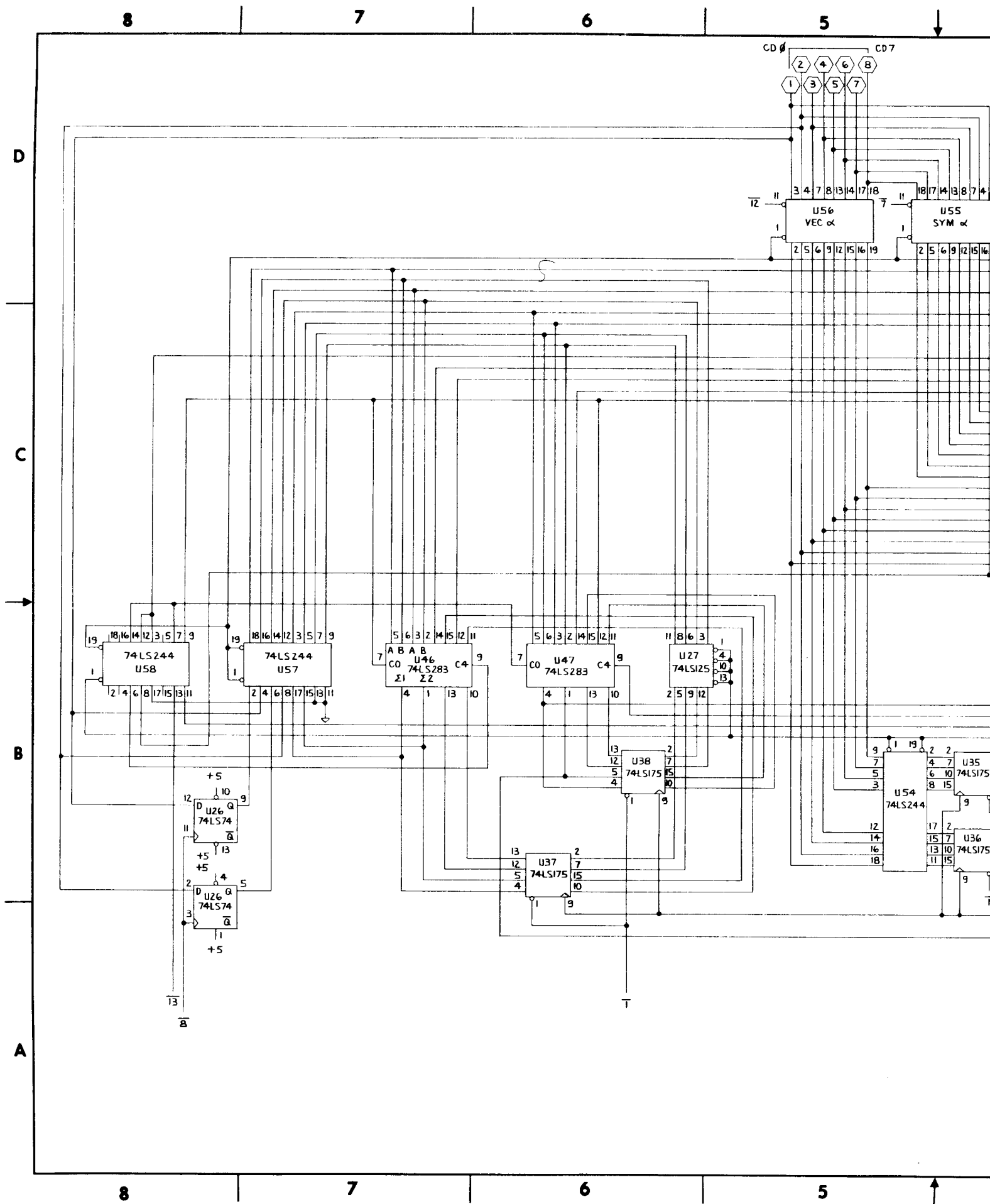
D

C

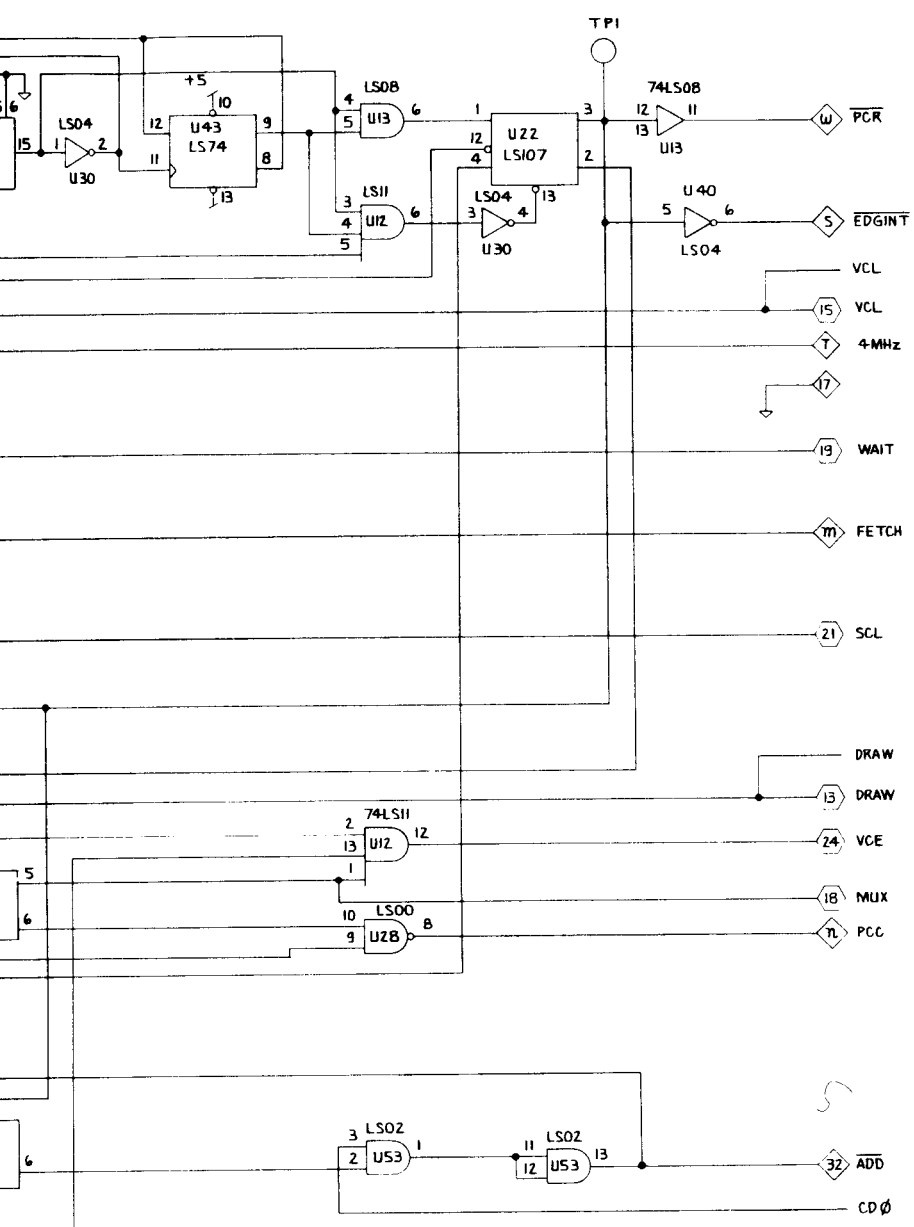
A

COO

4



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		RELEASED	SD 4-20-81	A. AKON



QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.	
FRACTIONS	DECIMALS	ANGLES	
±	.XX ±	±	
	.XXX ±		
MATERIAL		APPROVALS	
		DATE	
		DRAWN SON DUONG 10-14-80	
		CHECKED JEFF FEASE 11-6-80	
FINISH		DATE	
		1/20/81	
NEXT ASSY USED ON		SIZE CODE IDENT NO. DRAWING NO.	
800-3.55 700-0059		D 800-0161	
APPLICATION		SCALE NONE	
DO NOT SCALE DRAWING		SHEET 7 OF 7	

Gremlin Industries, Inc.
San Diego, California 92123

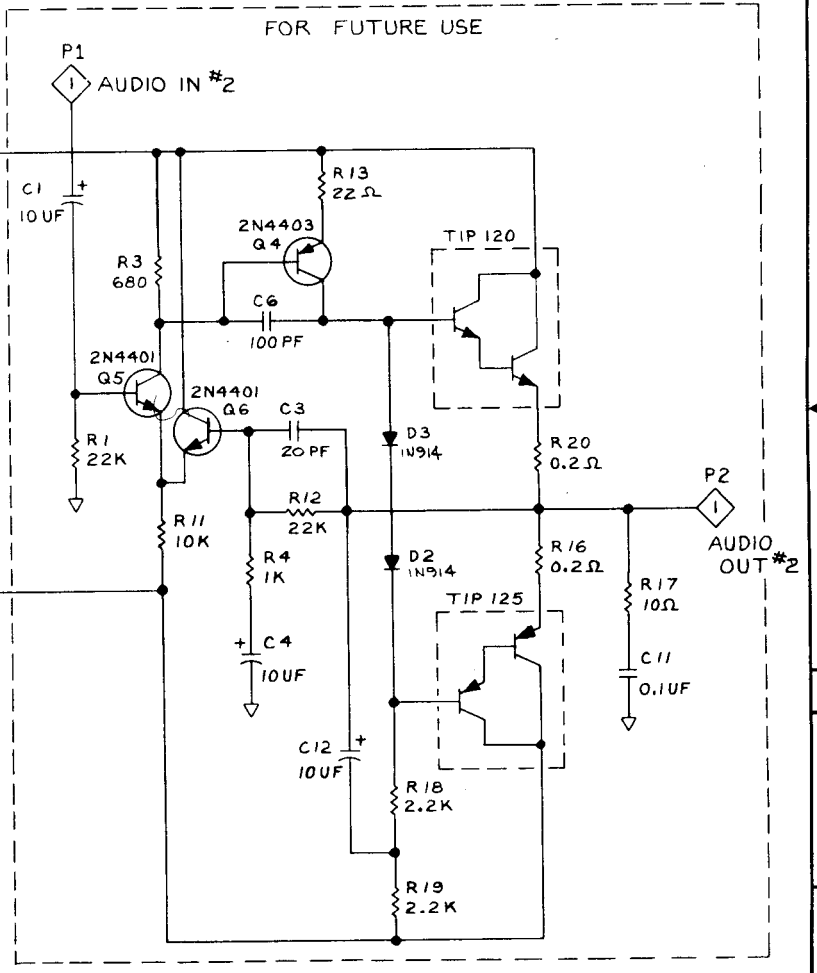
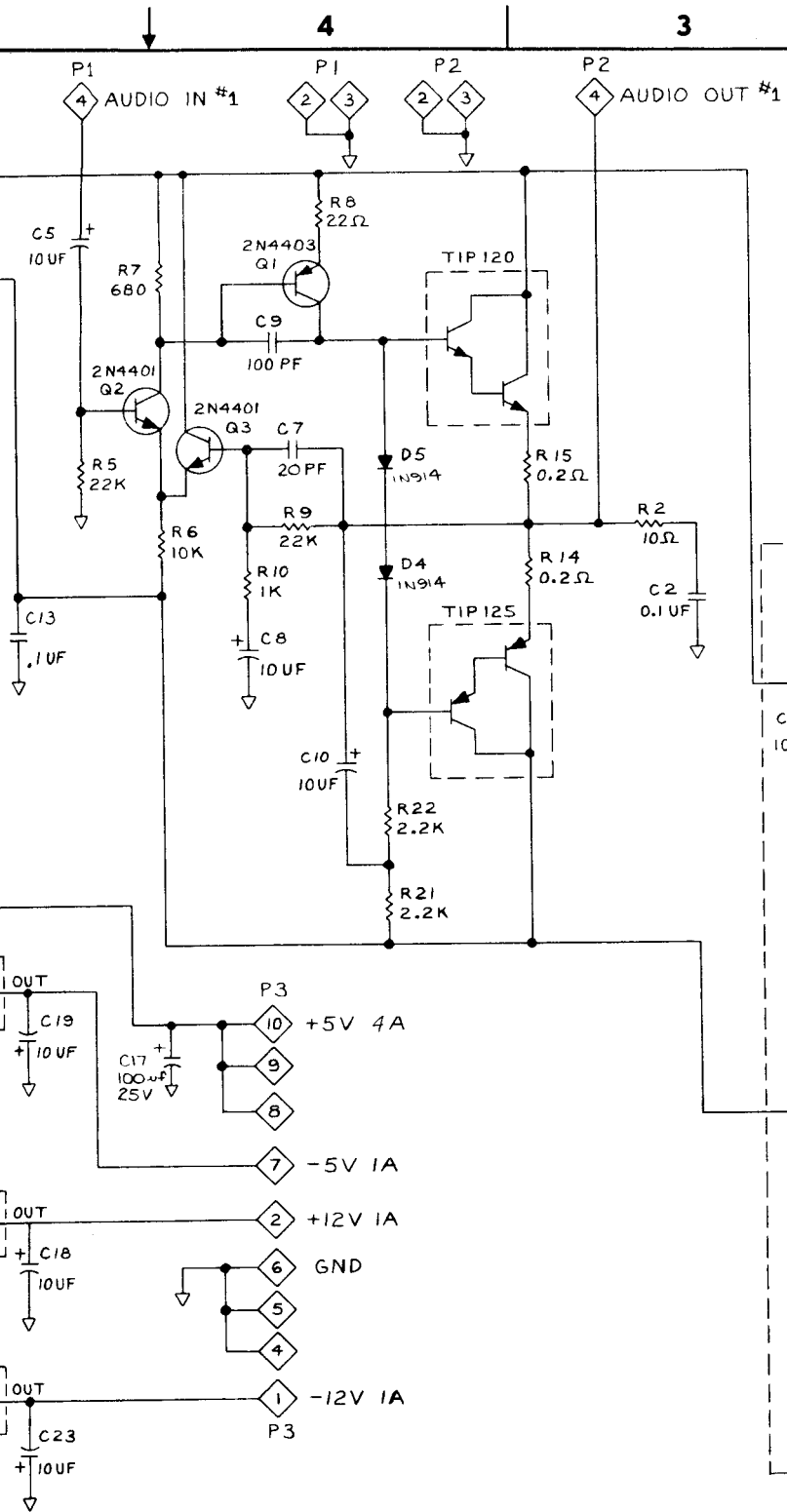
X-Y Timing Board

800-3.55 700-0059

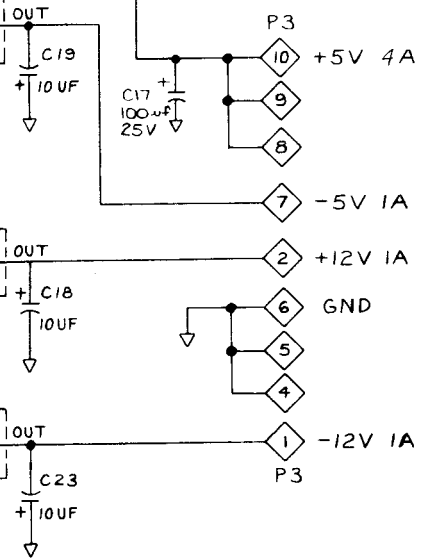
800-0161

SHEET 7 OF 7

D
C
B
A
800-0161



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		RELEASED	CTC	12-16-80
B		PER ECN 579	CTC	12-23-80
C		PER ECN 597	SD	1-27-81
D		PER ECN 741	SD	4-3-81
E		PER ECN 791	CTC	4-15-81
F		PER ECN 804	CTC	4-24-81



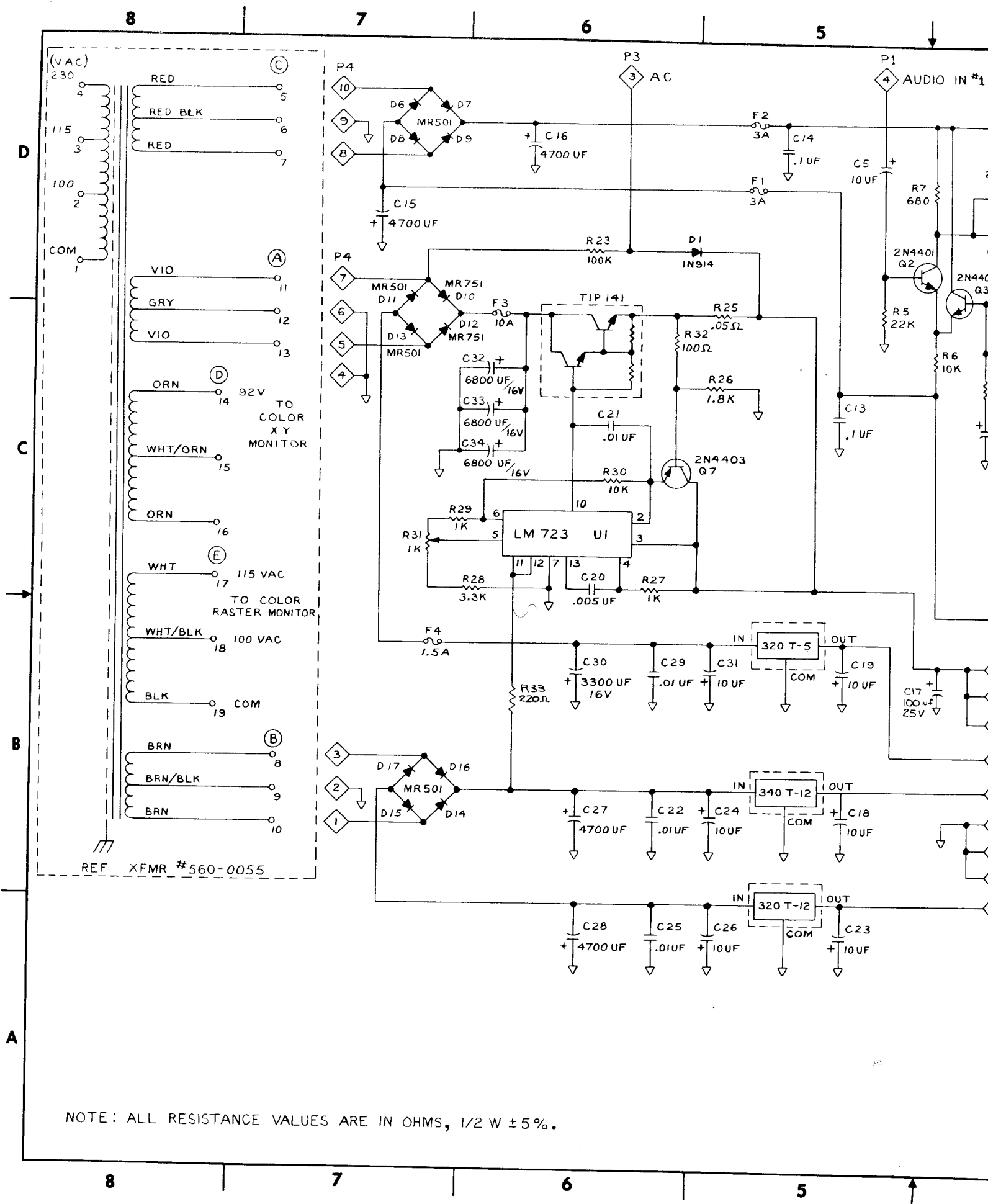
QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.	
FRACTIONS	DECIMALS	ANGLES	
±	.XX ±	±	
	.XXX ±		
MATERIAL		APPROVALS	
		DATE	
		DRAWN CATTELL 12/11/80	
		CHECKED JEFF PEARSE 12-16-80	
		APPROVED [Signature] 12-17-80	
FINISH		SIZE CODE IDENT NO. DRAWING NO. REV	
		D 800-0191 F	
NEXT ASSY USED ON		SCALE NONE SHEET 3 OF 3	
APPLICATION		DO NOT SCALE DRAWING	

Gremlin Industries, Inc.
San Diego, California 92123

ASSY G-80
POWER SUPPLY

D
C
B
F
800-0191

A



NOTE: ALL RESISTANCE VALUES ARE IN OHMS, 1/2 W ± 5%.