



**PART NO.
420-0199**

MANUFACTURED BY



OWNER'S MANUAL

GEE BEE
OPERATING INSTRUCTIONS
AND
SERVICE MANUAL

GEE BEE OWNER'S MANUAL

Copyright © 1979 by GREMLIN INDUSTRIES, INC. All Rights Reserved
All the information contained herein is the exclusive proprietary property
of GREMLIN INDUSTRIES, and is disclosed in confidence and may not be
duplicated nor copied in whole or part nor be used for any purposes other
than that for which disclosed.

TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
IMPORTANT NOTE	2
REPAC KAGING INSTRUCTIONS	3
REPLACEMENT PARTS LIST	4
TRANSFORMER VOLTAGE CONVERSION	6
GAME CONCEPT AND OPERATION	7
ADJUSTMENTS AND OPTIONS	10
MAINTENANCE AND TROUBLESHOOTING PROCEDURES	12
SCHEMATICS	Following Pages

INTRODUCTION

This is an electronic game that makes extensive use of digital integrated circuitry and television monitor circuitry. This manual assumes the maintenance technician possesses a general knowledge of solid state circuitry, microprocessor, TTL digital integrated circuitry and T.V. monitor concepts. Any individual NOT knowledgeable in these areas SHOULD NOT attempt repair of the electronic portion of this game. IT SHOULD BE NOTED THAT ANY ATTEMPT TO REPAIR THE GAME IN THE FIELD WITHOUT EXPRESS CONSENT OF THE FACTORY WILL IMMEDIATELY VOID THE WARRANTY!!!

IMPORTANT NOTES:

NEVER replace any components with anything other than exact replacement parts. (See Parts List located on Service Schematics.

NEVER remove circuit boards/connections while power is on.

DO NOT replace the fuse 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.

ALWAYS consult the manual before attempting repairs.

CORRESPONDENCE regarding this game should be addressed to:

GREMLIN INDUSTRIES, INC.

8401 Aero Drive

San Diego, California 92123

(714) 277-8700

IMPORTANT NOTE

An important service note is posted in this game and is repeated here for emphasis:

IF AT ANY TIME THE T. V. SCREEN SHOWS A MEANINGLESS DISPLAY
OR THE GAME OTHERWISE MALFUNCTIONS, SIMPLY DROP A COIN INTO
THE COIN MECHANISM. THIS SHOULD CORRECT THE PROBLEM. IF
NOT, THE GAME REQUIRES SERVICE.

The circuitry in this game has been arranged so that the insertion of a quarter through the coin mechanism will reset the system. This clears up temporary problems caused by power line disturbances, static, etc.

SERVICE TECHNICIAN NOTE:

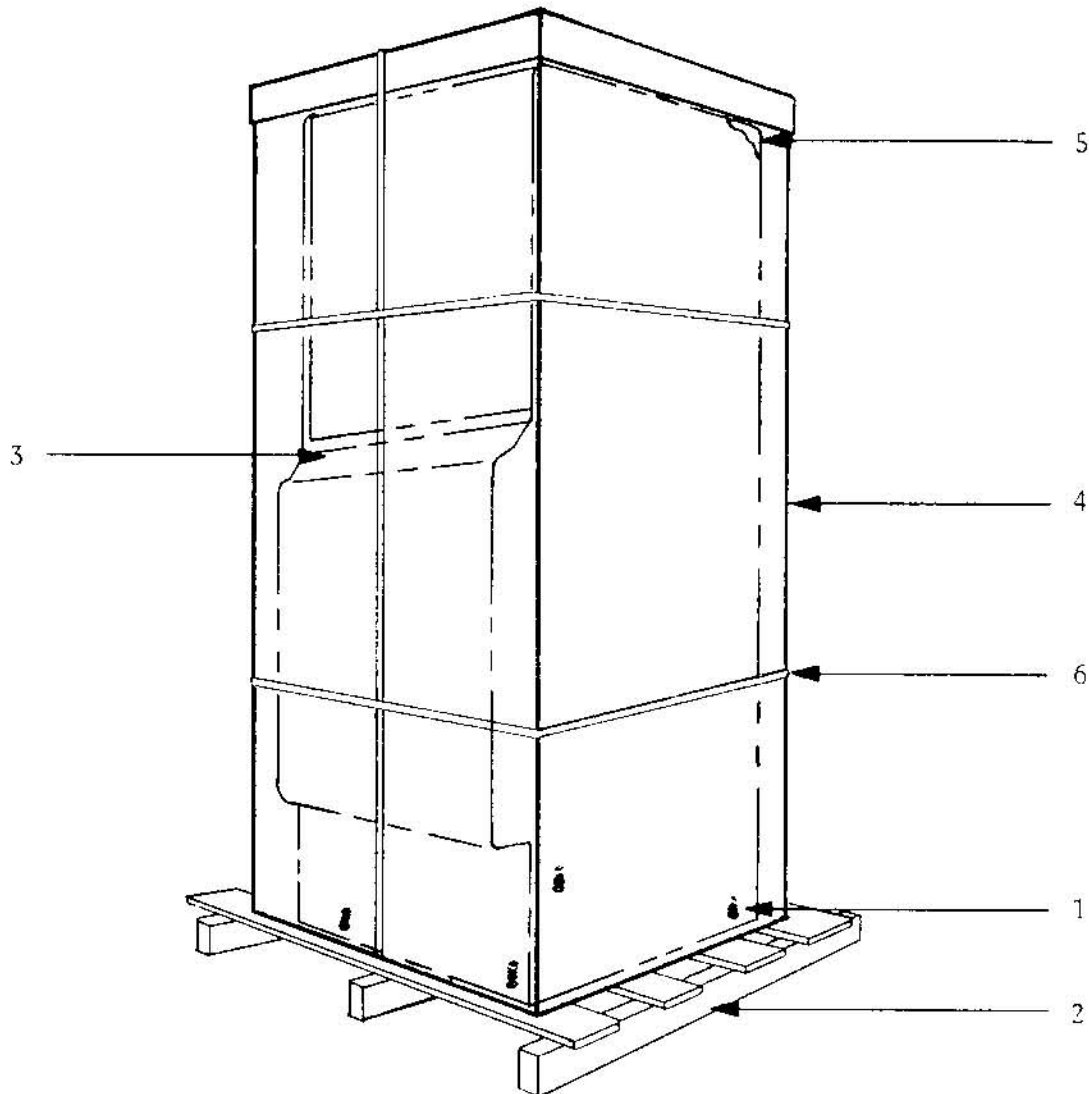
The system reset circuitry described above requires that the coin counter is attached to the system. If there is a coin counter problem and no replacement is available, the game will function properly if a 10K Ohm resistor is connected across the coin counter input pins to the video logic board.

REPACKAGING INSTRUCTIONS

Should it be necessary to ship this game, follow the instructions below for game recrating:

- A) If the original shipping bolts have been discarded (Ref.1), obtain four 5/16-18x1 3/4" hex head bolts with 5/16" flat washers. Carefully lay the game on its side and attach skid (Ref.2).
- B) Place game upright. Tape game keys to upper flange of operator's panel (Ref.3). Crate the game using appropriate shock-absorbent packing material (Ref.4). Include padding on all four corners of the game (Ref.5). After crating is completed, secure package with strapping (Ref.6).

NOTE: If the game is to be shipped to GREMLIN for service or repair, attach a tag identifying the distributor and indicate the service or repair to be made; include the full serial number of the game. GAME MUST BE SHIPPED PREPAID.



REPLACEMENT PARTS LIST- GEE BEE

1. LOGIC BOARD PARTS

GREMLIN PART NUMBER	DESCRIPTION
211-0050	44 PIN EDGE CONNECTOR
230-0023	CRYSTAL, 18.432 MHZ
313-0002	LM311N IC
313-0003	LM340 T5 7805(+5 VOLT REGULATOR)
313-0006	LM380
313-0014	LM340 T12 (+12 VOLT REGULATOR)
313-0023	LM320 T5 (-5 VOLT REGULATOR)
315-0018	2111 RAM IC
315-0019	EPROM 2708 IC
315-0046	2114/2114L RAM IC
316-0137	PROM IC 2332
510-0043	6 POSITION DIP SLIDE SWITCH
530-0008	HEATSINK

2. POWER SUPPLY

211-0042	CONNECTOR SOCKET
211-0045	CONNECTOR PLUG
560-0003	TRANSFORMER, GAME

3. CONTROL PANEL

250-0068	BRACKET (FOR VOLUME CONTROL)
250-0328	BEZEL FOR SERVE SWITCH, TAPERED
240-0092	KNOB FOR PADDLE CONTROL
475-0007	10K POT, VOLUME CONTROL
475-0016	5K POT, PADDLE CONTROL
510-0014	SLIDE SWITCH (ON BRACKET W/VOLUME)
510-0045	SERVE SWITCH, ILLUMINATED (W/BULB)
510-0046	PLAYER 1 START SWITCH (W/ BULB) LEFT
510-0047	PLAYER 2 START SWITCH (W/ BULB) RIGHT

4. COIN MECHANISM

220-0071	COIN REJECT BUTTON W/ SPRING
220-0072	COIN RETURN STOP (U-BOLT W/NUTS)
220-0074	COIN MECHANISM W/LOCKOUT COIL (U.S.B.)
	COIN LOCKOUT COIL

5. MISCELLANEOUS PARTS

130-0001

GAME SPEAKER

200-0009

WELLS GARDNER MONITOR B/W

220-0035

CABINET LOCK

420-0158

MANUAL, WELLS GARDNER MONITOR

420-0199

MANUAL, GEE BEE GAME

GEE BEE TRANSFORMER VOLTAGE CONVERSION

TO CONVERT THE GAME TRANSFORMER (PART NO. 560-0003) TO 100, 115, OR 230 VAC, REFER TO THE FOLLOWING CHART:

FOR 100 VOLTS: CONNECT THE VOLTAGE INPUT LINES TO PINS 1 AND 2 ON THE XFMR.

FOR 115 VOLTS: CONNECT THE VOLTAGE INPUT LINES TO PINS 1 AND 3.

FOR 230 VOLTS: CONNECT THE VOLTAGE INPUT LINES TO PINS 1 AND 4, WITH PIN 3 CONNECTED TO THE LAMP CIRCUIT.

GAME CONCEPT:

GEE BEE is a unique one or two player ball and paddle video game. By controlling a set of paddles, players keep a ball bouncing around the screen to knock out point blocks for high score. There are also bumpers, rollovers and a spinner to aim for, all worth more points. The game accepts up to 9 credits, and each game plays either 3 or 5 balls, depending on which option is set.

GAME START:

When one credit is accepted, the screen displays the number, and only the one-player start button flashes. When two or more credits (up to 9) are displayed, both the one- and two- player start buttons flash. The game is adjustable for the number of coins per credit. (See Adjustments and Options)

GAME PLAY:

If the one-player start button is pushed, the credits count down one; when the two-player button is pushed, the credits decrease by two. Then, the SERVE button flashes and, when pushed, releases the ball onto the playfield. The ball automatically appears after 10 seconds if the serve button is not pushed.

For two-players, GEE BEE features alternate play; that is, when the first player's turn is over, the game resets to allow player two to take his turn. As the alternate action continues, the game remembers each player's score.

The paddle knob causes both paddles to move to the left and right across the screen. The ball bounces off the top side of both paddles, but passes through the upper paddle's bottom side. The ball speed varies, depending on the number of hits made for that turn. When first served, the ball moves at slow speed, then changes to medium speed after the 4th hit with the paddles. On the 8th hit, the ball speed becomes fast. When the high speed ball passes through the spinner, its speed changes to slow, then to medium after the first hit.

SCORING:

There are three kinds of point blocks- top blocks, side blocks, and pocket blocks. When the ball hits a block, that block is erased and the points are added to the score. The point values for the blocks are as follows:

TOP BLOCKS AND LEFT AND RIGHT SIDE BLOCKS:

Row A (outermost row)	1 block = 20 points/1 Bonus (1000 points) for erasing one row.
Row B	1 block = 50 points/1 Bonus (1000 points) for erasing one row.
Row C	1 block = 100 points/1 Bonus (1000 points) for erasing one row.

The points for the left and right pocket blocks are 100, 300, 500, 700, and 900 points, respectively, starting from the bottom of the pocket.

GEE BEE has two bumpers at the top of the screen, which give 10 points when hit. They enlarge momentarily when hit, then return to normal size. When one bank of side blocks is erased, the bumper on that side increases to 100 points. There is also a spinner between the bumpers, which gives points depending on how many times it spins. At slow ball speed, the spinner turns twice; at medium speed, it spins 4 times; and, at fast speed, it spins 6 times. The spinner is normally gray in color, but changes to white when all the top blocks are erased. One revolution is worth 10 points when the spinner is gray, and worth 100 points when it is white.

Five rollovers (circled G's) appear at the bottom of the screen, and are colored gray normally. Each circle changes from gray to white, or white to gray, when a ball passes through it. The change from gray to white is worth 50 points. If all 5 rollovers change to white, the bonus multiplier display becomes X2, and doubles the score for that turn. No further changes occur after all rollovers become white in one turn.

GEE BEE provides a safety gate to prevent the ball from leaving the playfield through either the left or right side exits. The left or right safety gate comes on when all the left or right side blocks, respectively, are knocked out. When the ball hits the safety gate once, the ball rebounds, the safety gate disappears and 500 points plus 1 bonus (1000 points) are added to the score. If the ball leaves the playfield through one of the side exits (no safety gate) 500 points plus the bonus are added to the score.

SCORING (Continued)

Special features in the game include a chance for an extra ball if all left or right pocket blocks are erased. Then, a flashing "EXTRA BALL CHANCE" arrow appears in the playfield exit on the side with the empty pocket. If the ball leaves through the exit where the arrow is flashing, a "SAME PLAYER SHOOTS AGAIN" sign appears and one extra ball is awarded. If a safety gate is displayed in that exit, along with the extra ball signal, the ball is rebounded and an extra ball is awarded. Only one extra ball is given per turn. A free credit is given when all left AND right pocket blocks are erased. In addition, the game gives one free credit if the player's score exceeds a preselectable number. (See Adjustments and Options) The maximum score attainable is 999990; the maximum bonus points are 99000. Finally, GEE BEE produces a number of sounds that vary depending on whether the ball hits a wall, a block, or the paddles.

ADJUSTMENTS AND OPTIONS:

1. SELF TEST

GEE BEE has a built-in self test, which enables the owner to check the game for proper operation quickly. By turning on the slide switch inside the coin door, the game runs through the following test:

Self test switch ON:

1. The ball moves diagonally from the lower left corner to the upper right corner of the screen without disappearing. This indicates normal operation.
2. When the ball reaches the upper right corner, the screen displays the following information:

OK or NG	For game OK, or NG for a malfunction.
2A	Test value of paddle knob - these digits change successively when the paddle knob is turned to the left or right. With the paddles turned to the right, the display indicates a number between 0 and 16. Any number BELOW 10 means normal operation. When the paddles are turned all the way to the left, the display counts 0...1...2...3...4...5...6...7...8...9...A...B...C...D...E...F...10.... If the value is ABOVE A0, but BELOW FF, the game is functioning normally.*
U or T	Indicates whether the game is an upright or table model.
3 or 5	Indicates the number of serve balls per game.
A,B,C, or F	For charge per game (see Chart, following).
04	For replay points (see Chart, following).

* A note on this numbering system: The values A-F represent the DECIMAL numbers 10-15. So, a display of A0 would be a higher value than, say, 70, 80, or 90, but LESS THAN B0, C0, D0, E0, or F0. In this numbering system (called HEXADECIMAL for 16 digits, 0-F, instead of 10 digits, 0-9, in decimal) the highest 2-digit number is FF.

ADJUSTMENTS AND OPTIONS (Continued)

3. If the serve button and the one- and two- player start buttons are lit during test, normal operation is indicated.
4. The game is functioning normally if the game sounds are heard when the serve button, the one- and two- player start buttons, and coin switch are each activated.
5. Turn the self-test switch OFF.
6. The lockout coil de-activates momentarily when the test switch is turned off. The coil re-activates instantly.
7. With the test switch off, the screen displays a cross-hatch pattern for about a second. If it is desired to use this pattern for monitor adjustments, simply turn the test switch on.
8. The game counter advances one step when the self-test is run once.

II. OTHER ADJUSTMENTS:

1. Volume control -- The volume can be adjusted with the control inside the coin door.
2. OPTIONS: (number of balls per game, game charge, and replay points)

The following is a chart of options for GEE BEE, all selectable by means of 6 small slide switches located on the logic board.

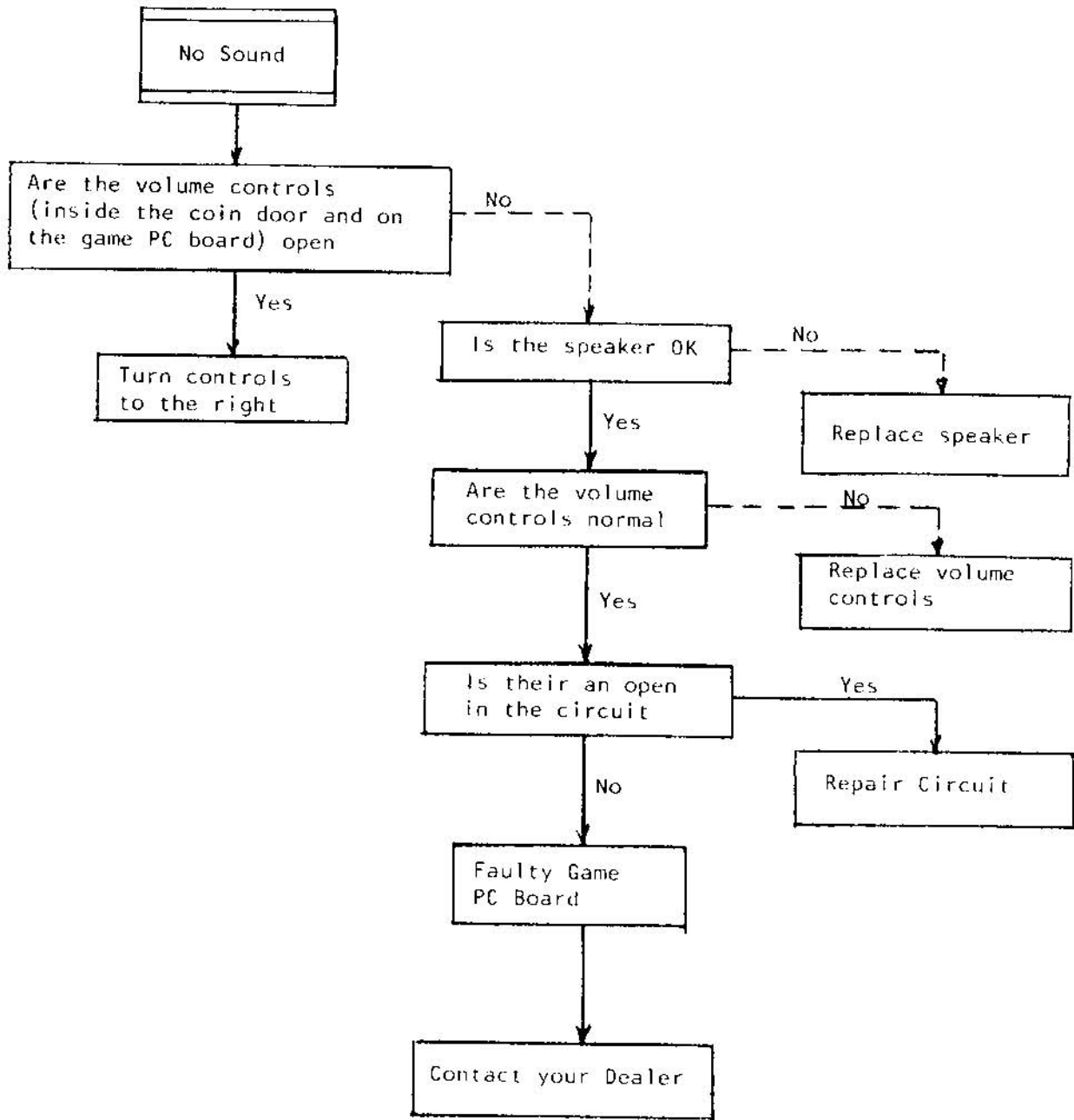
OPTION	SWITCH POSITION						SYMBOL	DETAILS
	1	2	3	4	5	6		
model type	on						U	upright
	off						T	table
number of serve balls		on					3	3 balls per game
		off					5	5 balls " "
game charge			on	on			A	1 coin, 1 play
			off	on			B	1 coin, 2 plays
			on	off			C	2 coins, 1 play
			off	off			F	free game
credit level		on			on	on	00	1 credit up: 2 credits up:
		off			on	on	00	
		on			off	on	04	40000 80000
		off			off	on	06	60000 120000
		on			on	off	07	70000 140000
		off			on	off	10	100000 200000
		on			off	off	10	100000 200000
		off			off	off	15	150000 300000

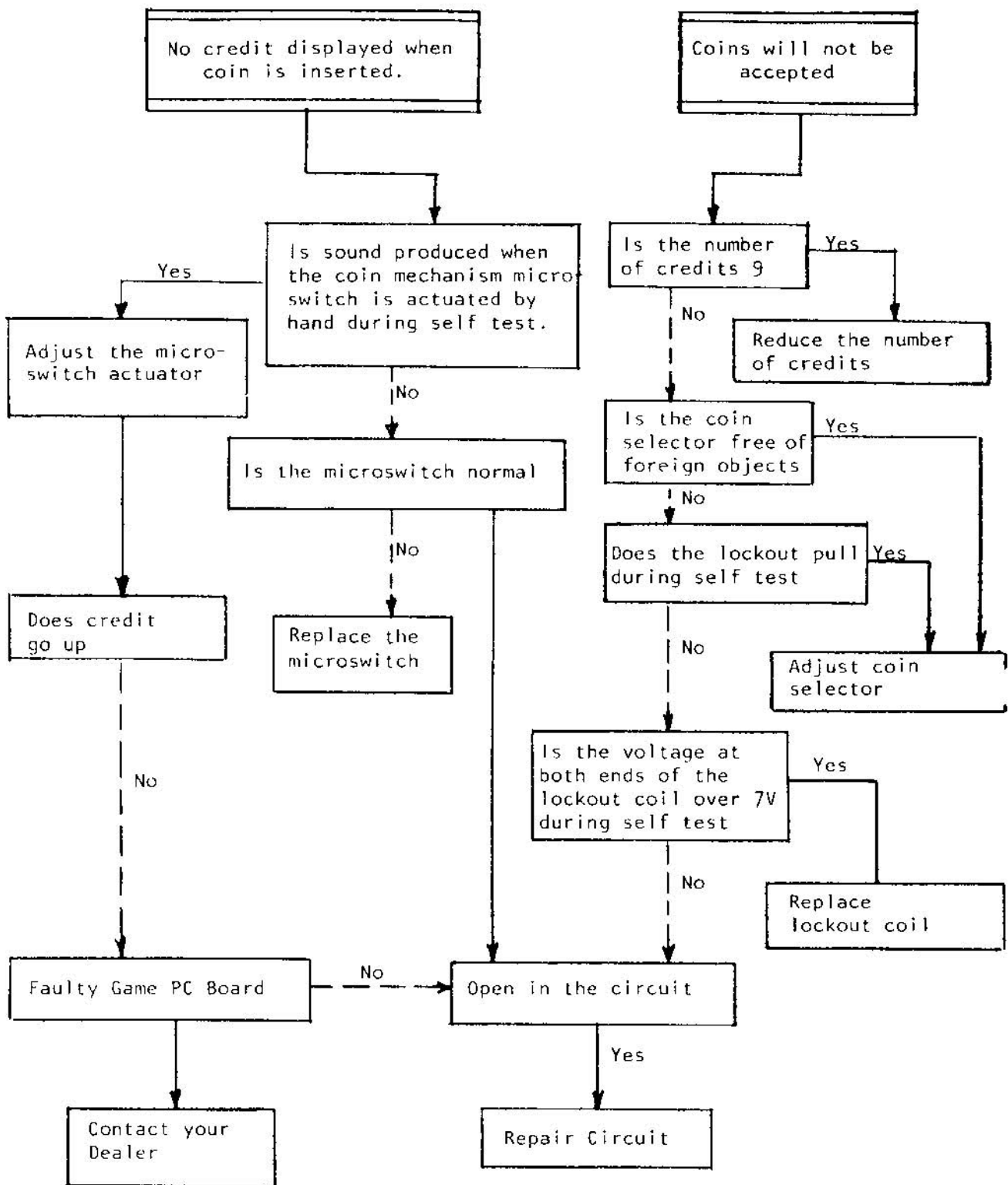
MAINTENANCE & TROUBLESHOOTING PROCEDURES:

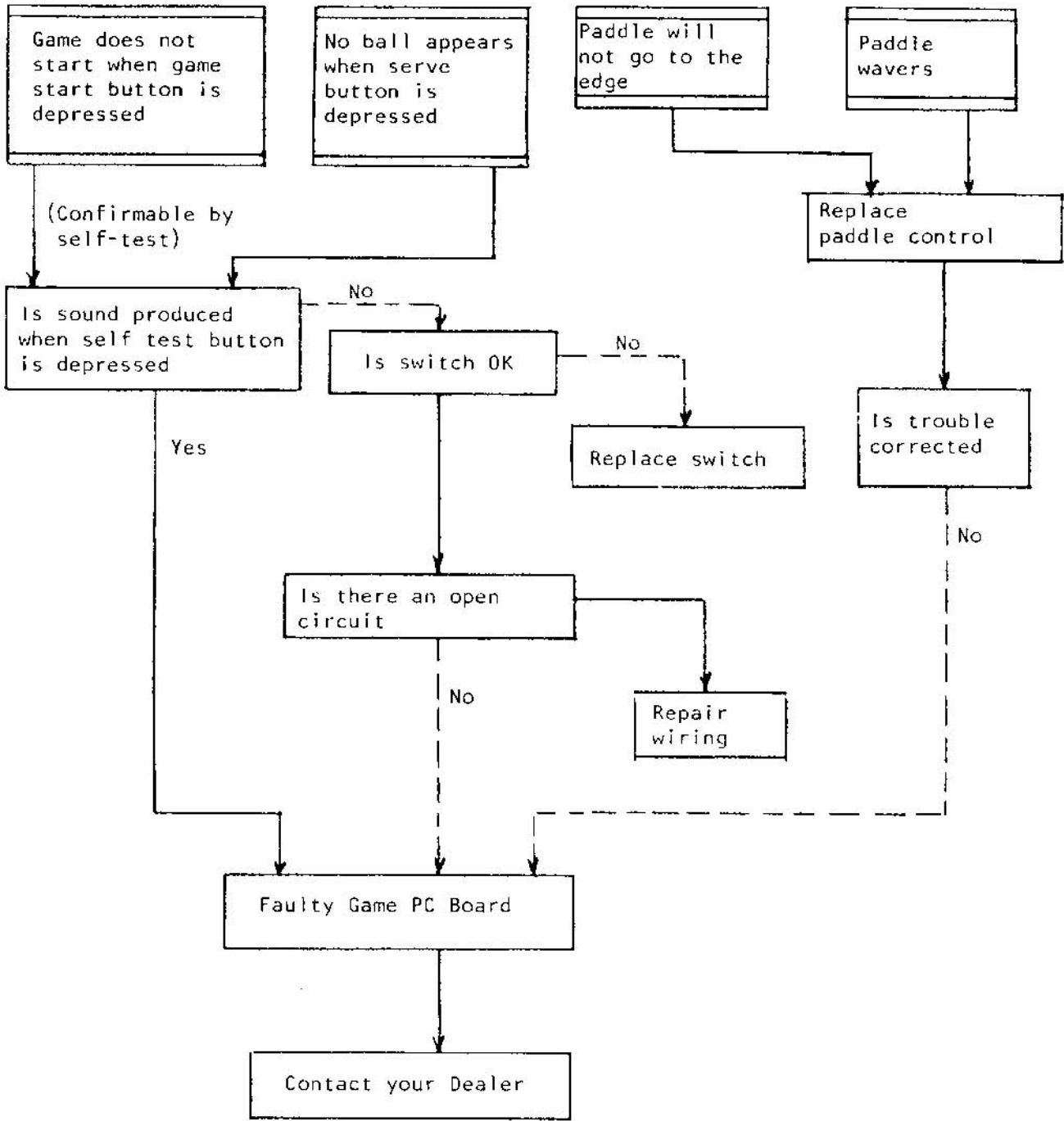
Always check and confirm the following items when it is believed that trouble has occurred.

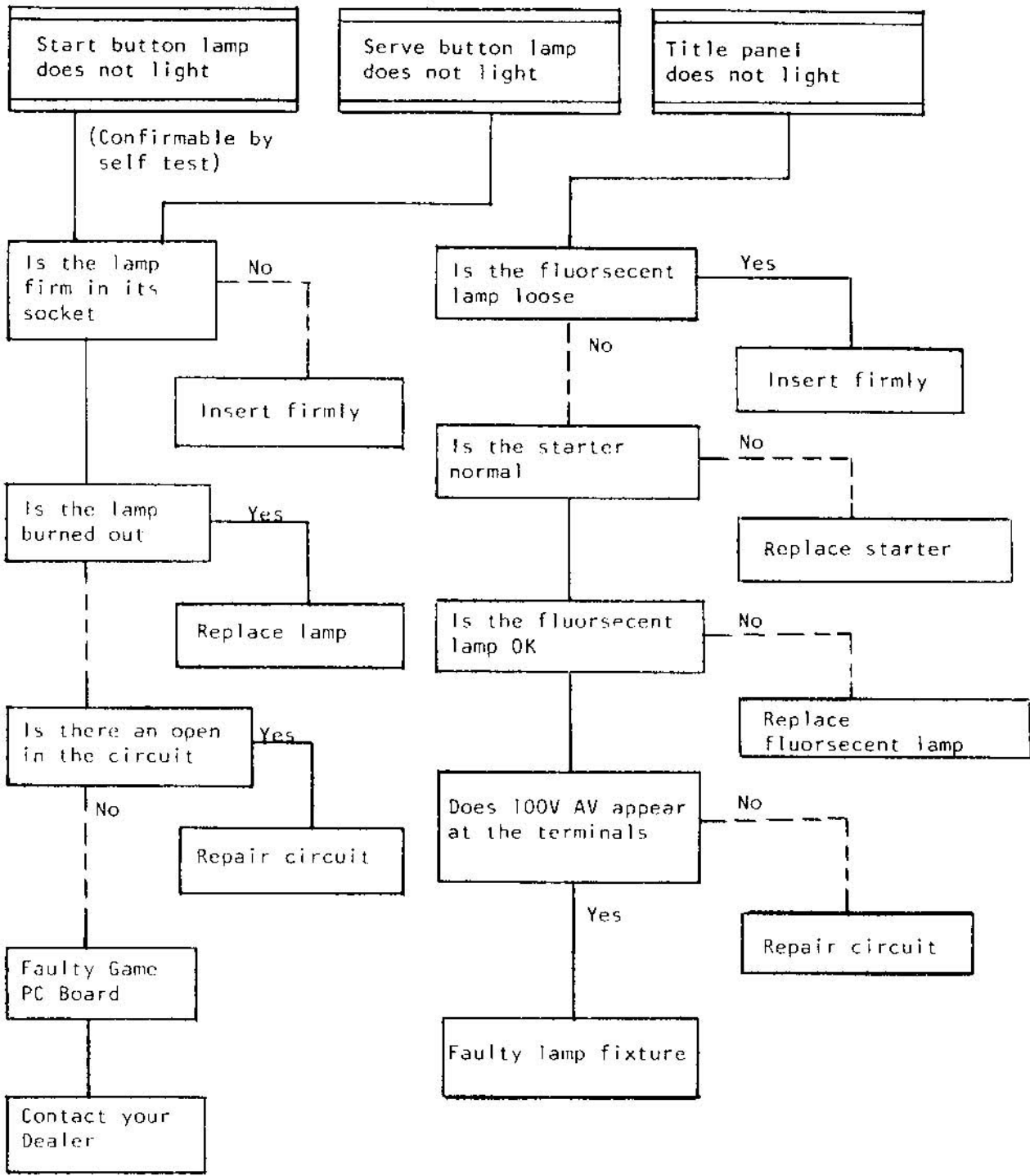
1. Is the power switch on?
Forgetting to turn on the power switch is a comparatively common oversight.
2. Is the fuse intact?
One fuse is provided on the power supply board and on the monitor board. If a fuse blows out after being replaced, it indicates trouble in another component. Always replace with the prescribed capacity fuse, as normal equipment may be damaged if larger fuses are used as a substitute.
3. Are the connectors firmly inserted?
Poor connector connections must be considered for any trouble indication. Check all related connectors for poor 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 supply. Care should also be taken in relation to the power supply on the other connectors.
4. Turn power supply off and on again.
As the unit may return to normal if the control circuit is reset when the game seems abnormal, turn the power off and on to see if the trouble will clear up.
5. Are there any metallic objects on the PC board?
Ensure that there are no metallic objects on the PC board, as this will be the cause of shorts. Also, refrain from putting any other objects inside the cabinet.
6. Care in circuit conductivity tests.
When testing conductivity of the circuit with a tester, always disconnect PC board edge connector J2.

The following flow charts are printed here for a logical, step-by-step approach to trouble-shooting the game, should that be necessary.









Start button lamp does not light

Serve button lamp does not light

Title panel does not light

(Confirmable by self test)

Is the lamp firm in its socket

No

Insert firmly

Is the lamp burned out

Yes

Replace lamp

Is there an open in the circuit

Yes

Repair circuit

No

Faulty Game PC Board

Contact your Dealer

Is the fluorescent lamp loose

Yes

Insert firmly

No

Is the starter normal

No

Replace starter

Is the fluorescent lamp OK

No

Replace fluorescent lamp

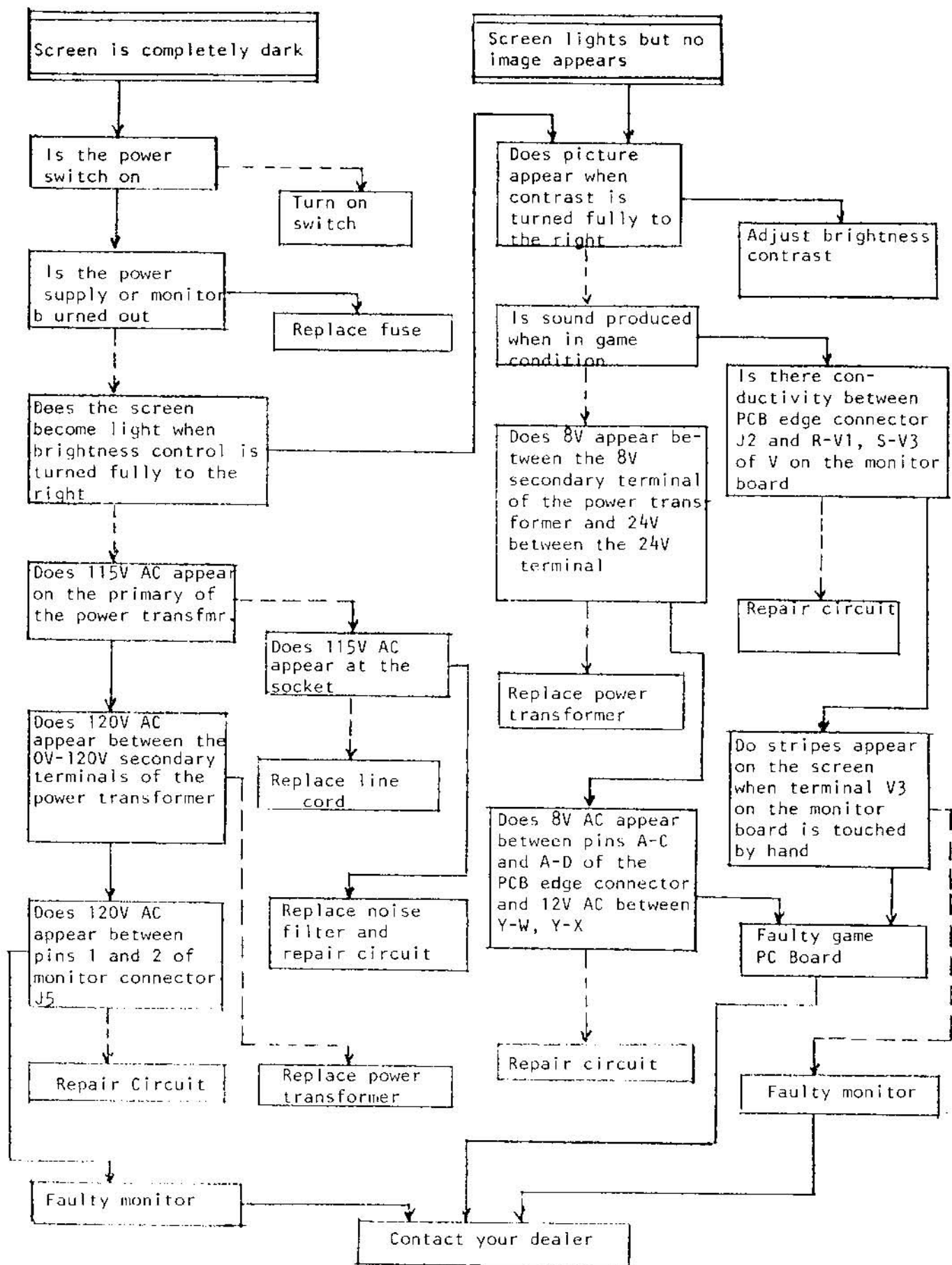
Does 100V AV appear at the terminals

No

Repair circuit

Yes

Faulty lamp fixture



Gremelin Industries, Inc.
San Diego, California 92123

PARTS
LIST

TITLE

TOP ASSEMBLY GEE-BEE

725-0002
DWG NO

SH 1
OF 9

A
REV

SEE FOUR 'D' SIZE SHTS

DRAWN G LLOYD

ENGR

CHECK *H. ...* 1-22-79

APPR

LTR	DATE	REVISION DESCRIPTION	DRAFT	CHECK	APPR
A	1-17-79	INITIAL RELEASE	G. LLOYD	<i>[Signature]</i>	<i>[Signature]</i>

Gremlin Industries, Inc.
San Diego, California 92123

**PARTS
LIST**

TITLE
TOP ASSEMBLY GEE-BEE

725-0002
DWG NO

SH 3
OF 9

A
REV

ITEM NO	PART NO	QTY PER ASSY					DESCRIPTION	REF DES
25	280-0005	10					CABLE TIE	
26	280-0010	6					NUT WIRE	
27	220-0008	1					COUNTER DIGITAL	
28	390-0011	1					LAMP FLOR 18"	
29	390-0012	1					LAMP FIX FLOR 18"	
30	420-0028	1					DECAL S/N	
31	420-0030	1					DECAL CAUTION 115V	
32	420-0038	2					DECAL IMPORTANT NOTICE	
33	420-0040	1					DECAL RECYCLE	
34	420-0041	1					DECAL S/N SMALL	
35	420-0060	1					DECAL TIP N TELL	
36	420-0071	1					INST UNCRATING.	
37	420-0208	1					WRAP AROUND SIDE	
38	420-0209	1					TOP COVER.	
39	420-0124	4					CORNER STRIP.	
40	420-0198	1					SHADOW MASK.	
41	420-0199	1					MANUAL GEE-BEE	
42	420-0200	1					DECAL CARTON GEE-BEE	
43	420-0201	1					GRAPHIC SIDE LEFT	
44	420-0202	1					GRAPHIC SIDE RIGHT	
45	420-0207	1					DECAL SCORE	
46	420-0158	1					MANUAL W.G. 23 INCH	
47	250-0326	1					PLATE MTG XFMR.	
48								
49	807-0009	1					ASSY JUNCTION BOX.	

Gremlin Industries, Inc.
San Diego, California 92123

PARTS LIST

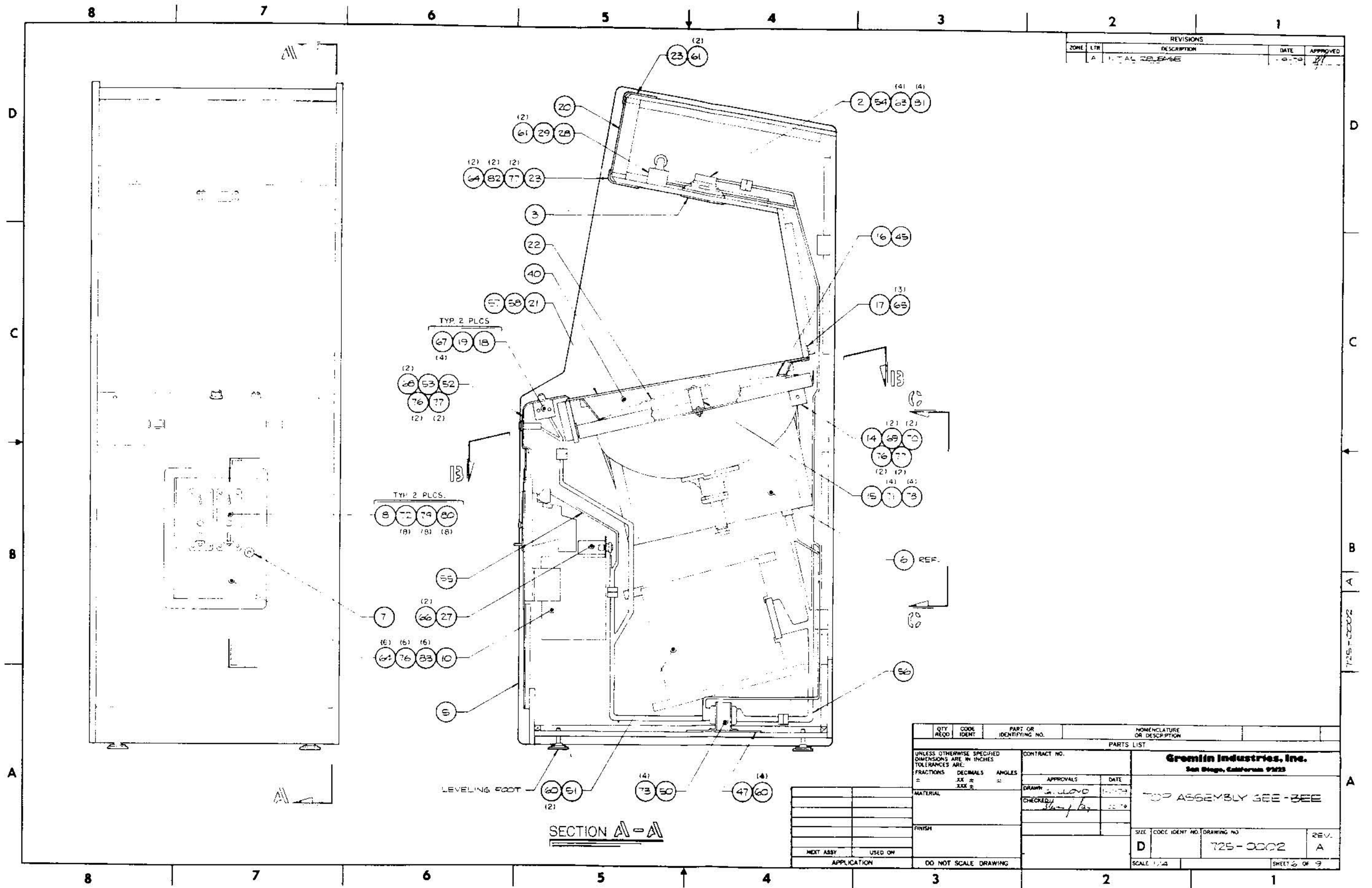
TITLE
TOP ASSEMBLY GEE - BLE

725-0002
DWG NO

SH 4
OF 9

A
REV

ITEM NO	PART NO	QTY PER ASSY					DESCRIPTION	REF DES
50	825-0007	1					ASSEMBLY XFMR.	
51	825-0001	1					VIEDO LOGIC	
52	825-0002	1					CONTROL PNL	
53	825-0003	1					HARNESS CONTROL PNL	
54	825-0004	1					HARNESS SPEAKER	
55	825-0005	1					HARNESS COIN MECH	
56	825-0006	1					HARNESS, MAIN	
57	420-0204	1					COIN DECAL	
58	420-0205	1					PLAYER DECAL	
59		4					SCR. 1/4-20 x 1/2 HEX HD	
60		3					SCREW # 6 x 1/2 PAN HD XREC SHT MTL.	
61		6					SCREW # 10 x 1/2 PAN HD XREC SHT MTL.	
62		4					SCR. 10-24 x 1 PAN HD XREC	
63		4					SCR. 8-32 x 1/2 END. HD XREC BLK OXIDE	
64		3					SCR. 10-24 x 1/2 CARRIAGE	
65		3					SCREW # 6 x 3/8 PAN HD XREC. SHT MTL.	
66		2					SCR. 6-32 x 3/8 PAN HD XREC	
67		4					SCREW # 10 x 3/4 PAN HD XREC SHT MTL.	
68		2					SCR 10-24 x 1 CARRIAGE	
69		2					SCR. 1/4-20 x 3/8 PAN HD XREC.	
70		2					SCR. 10-24 x 1/2 PAN HD XREC	
71		4					SCR 6-32 x 1/2 PAN HD XREC	
72		8					SCR 6-32 x 1/2 TRUSS HD TAMPER PROOF	
73		4					RIVET, POP 3/16 DIA. x 1/2	
74		4					NUT. HEX 1/4-20	



REVISIONS			
ZONE	LTR	DESCRIPTION	DATE
A		INITIAL RELEASE	1-8-79

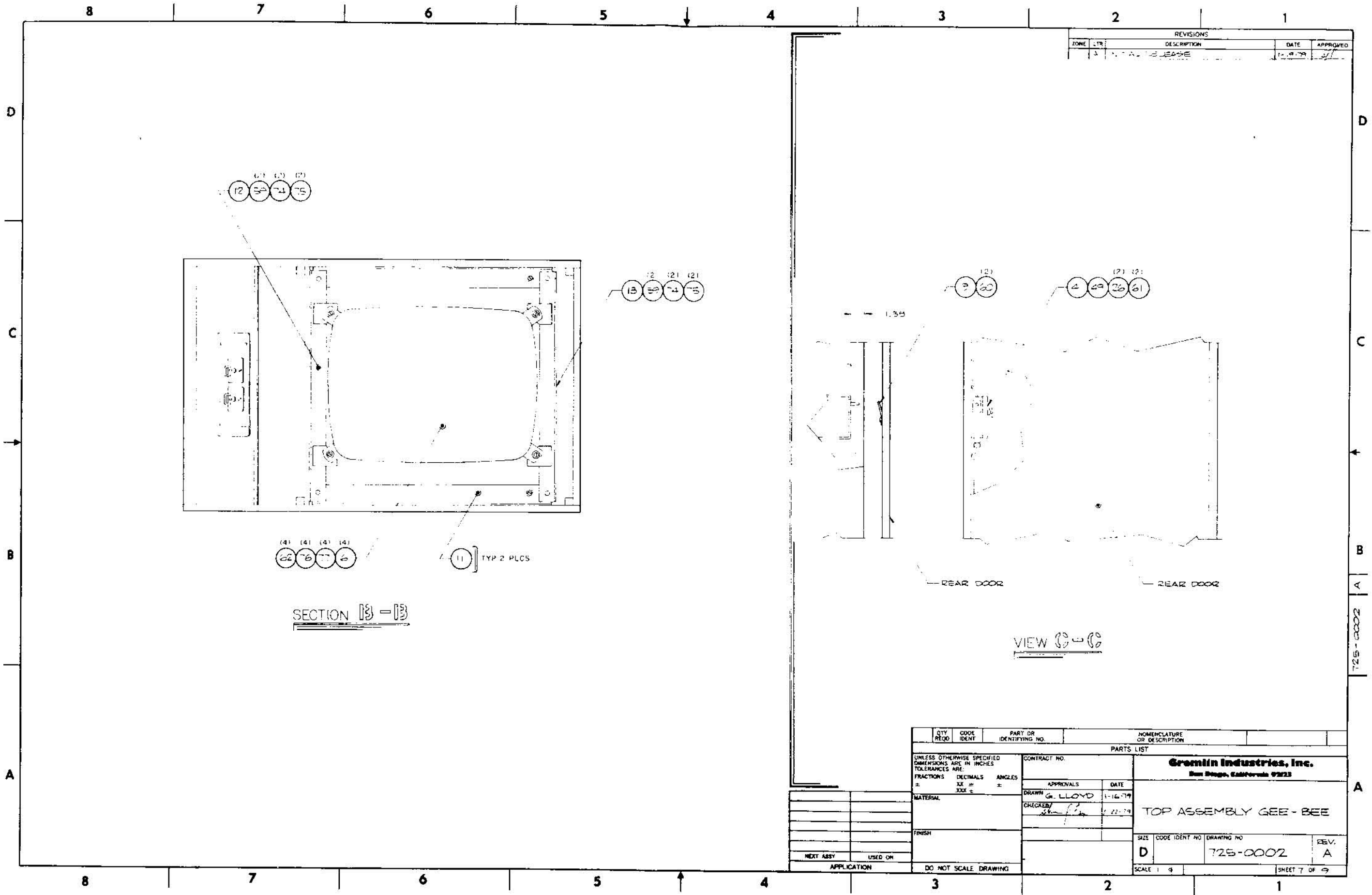
TYP. 2 PLCS
67 19 18

TYP. 2 PLCS
8 72 79 80

SECTION A-A

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 ±		
MATERIAL		DRAWN BY: <i>WLOYD</i>	
FINISH		CHECKED BY: <i>Shirley Kay</i>	
NEXT ASSY		SIZE	
USED ON		CODE IDENT NO. DRAWING NO.	
APPLICATION		D 725-0002	
DO NOT SCALE DRAWING		REV. A	
		SCALE 1/4"	
		SHEET 2 OF 9	

725-0002



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
3		FINAL ASSEMBLY	1-16-79	

SECTION 13-13

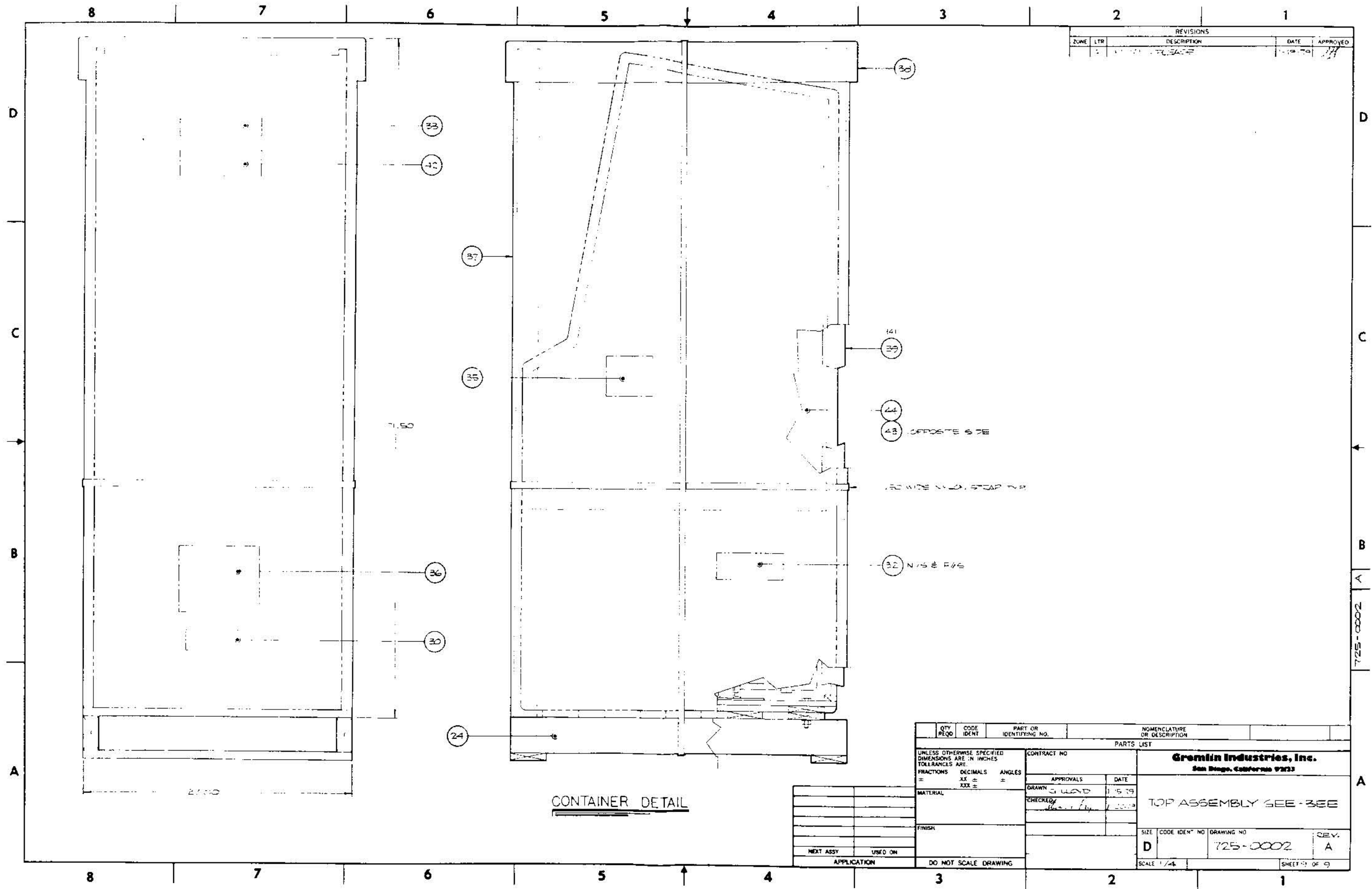
VIEW 60-60

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
MATERIAL		DRAWN G. LLOYD 1-16-79	
FINISH		CHECKED [Signature] 1-22-79	
NEXT ASSY		USED ON	
APPLICATION		DO NOT SCALE DRAWING	
SIZE		CODE IDENT NO	DRAWING NO
D		725-0002	REV. A
SCALE 1/4"		SHEET 7 OF 9	

Gremlin Industries, Inc.
San Diego, California 92123

TOP ASSEMBLY GEE-BEE

725-0002



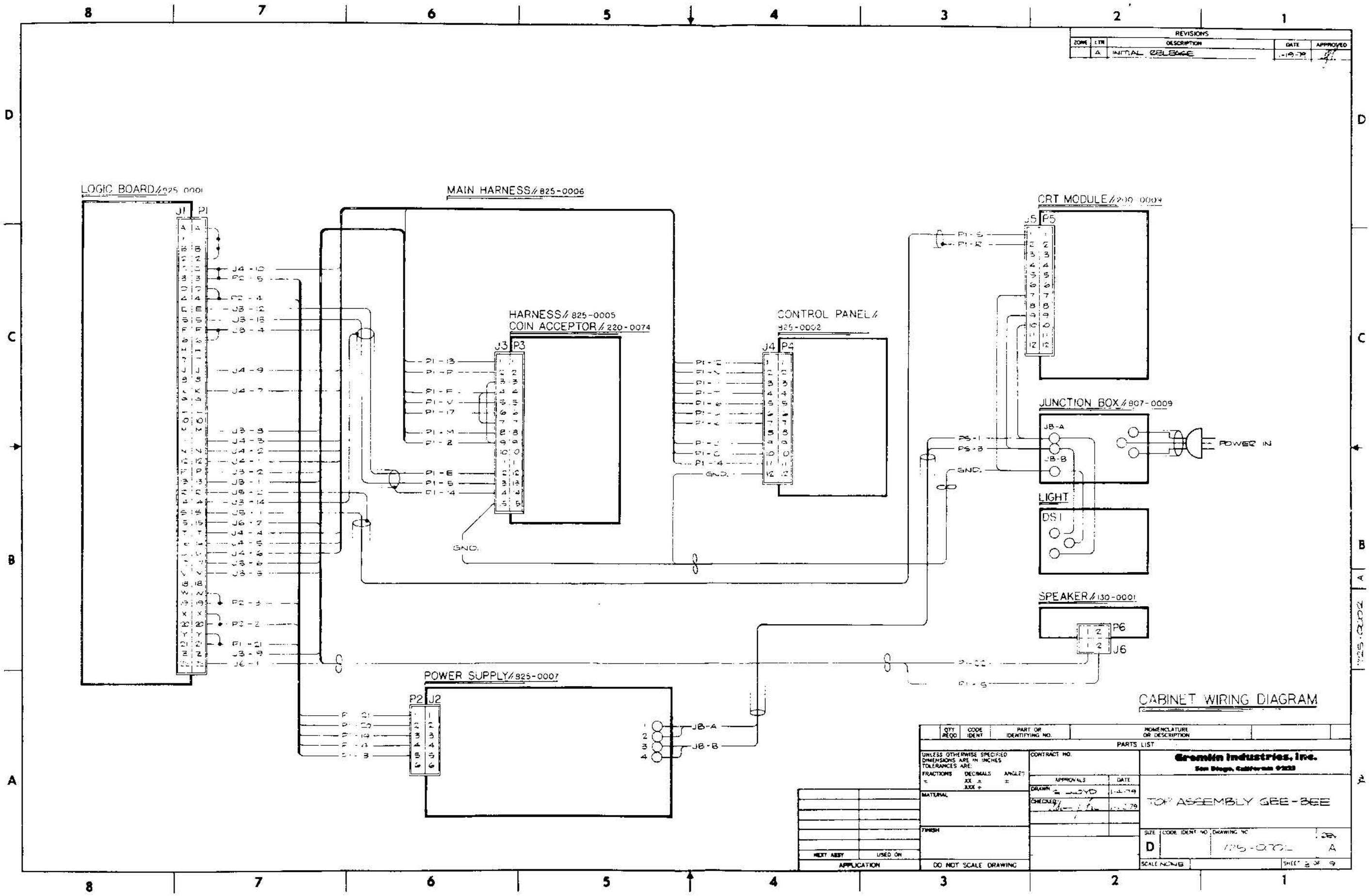
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE
1		ISSUE	11/10/79

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 ±		
MATERIAL		DRAWN: J. WARD 11/5/79	
FINISH		CHECKED BY: [Signature] 11/20/79	
NEXT ASSY.		USED ON	
APPLICATION		DO NOT SCALE DRAWING	
		Gremlin Industries, Inc. San Diego, California 92123	
		TOP ASSEMBLY SEE - 3EE	
SIZE	CODE IDENT NO	DRAWING NO	REV.
D		725-0002	A
SCALE 1/4"		SHEET 3 OF 9	

CONTAINER DETAIL

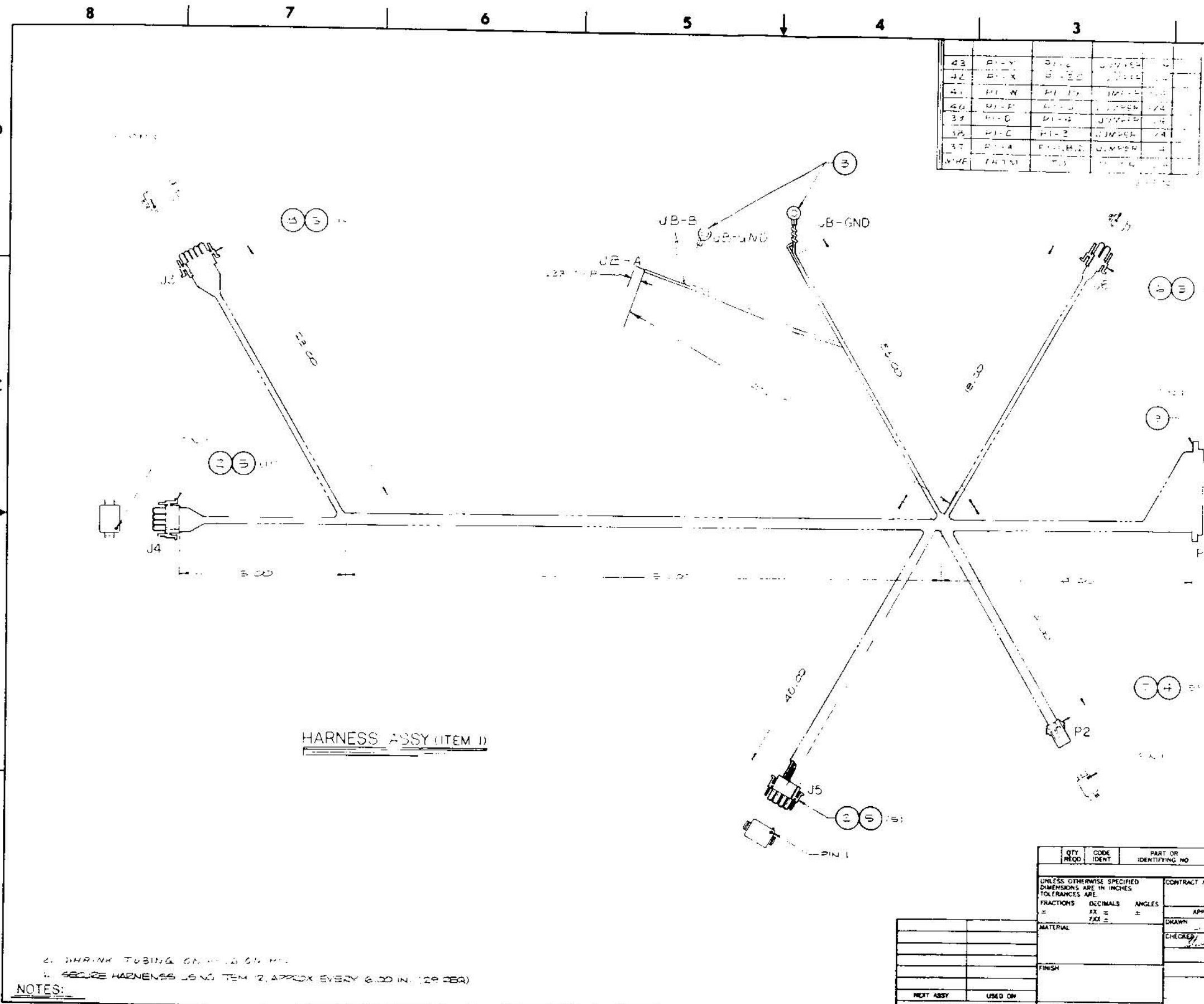
725-0002

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		INITIAL RELEASE	1-19-79	



CABINET WIRING DIAGRAM

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NAME/CLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.	
FRACTIONS	DECIMALS	ANGLE	APPROVALS
±	±	±	DATE
MATERIAL		DRAWN BY: <i>WJYD</i>	
FINISH		CHECKED BY: <i>WJYD</i>	
NEXT ASSY		USED ON	
APPLICATION		DO NOT SCALE DRAWING	
Gromin Industries, Inc. San Diego, California 92123			TOP ASSEMBLY GEE-BEE
SIZE (CODE IDENT NO)		DRAWING NO	
D		175-0702	
SCALE NONE		SHEET 2 OF 9	



REV	BY	CHKD	DATE	DESCRIPTION
43	P1-Y	P1-C	11/15/74	REVISED
42	P1-X	P1-Z	11/15/74	REVISED
41	P1-N	P1-M	11/15/74	REVISED
40	P1-F	P1-E	11/15/74	REVISED
39	P1-C	P1-B	11/15/74	REVISED
38	P1-E	P1-D	11/15/74	REVISED
37	P1-A	P1-H	11/15/74	REVISED
36	P1-A	P1-G	11/15/74	REVISED

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

QTY	CODE	IDENT	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION
26	JB-3			WHT, GRN
15	JB-7			WHT
41	JB-5			JB-GND WHT
44	JB-5			JB-GND WHT
42	JB-5			JB-GND WHT
8	JB-8			JB-B WHT
41	JB-7			JB-GND WHT
41	JB-12			JB-1 WHT
13	JB-16			JB-4 GRN
17	P1-2			JB-9 WHT/GRN
20	P1-6			P1-5 WHT
25	P1-5			P1-5 BRN
22	P1-4			JB-4 WHT
24	P1-3			JB-5 BLU
22	P1-7			JB-6 WHT/GRN
11	P1-11			JB-6 WHT/BLK
20	P1-6			JB-5 WHT/GRY
4	P1-7			JB-4 WHT/GRN
8	P1-8			JB-2 WHT/GRN
11	P1-12			JB-11 WHT/GRN
6	P1-4			JB-11 WHT/GRN
8	P1-13			JB-12 GRN
4	P1-3			JB-11 WHT
4	P1-9			JB-2 BRN
2	P1-10			JB-11 WHT/GRN
1	P1-11			JB-2 WHT/GRN
10	P1-11			JB-3 WHT/BLU
9	P1-14			JB-8 GRN
5	P1-12			JB-7 PNK
7	P1-11			JB-9 WHT/YEL
4	P1-17			JB-4 RED
5	P1-16			JB-13 WHT/GRN
4	P1-16			JB-10 WHT/BLK
4	P1-20			P2-2 WHT
1	P1-21			JB-10 BRN
1	P1-21			P2-1 WHT

WIRE LIST

WIRE	FROM	TO	COLOR	IN

QTY	CODE	IDENT	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS DECIMALS ANGLES

CONTRACT NO. **Gremlin Industries, Inc**
San Diego, California 92123

APPROVALS: DRAWN: _____ DATE: _____
CHECKED: _____

MATERIAL: _____ FINISH: _____

SIZE: CODE IDENT NO: DRAWING NO: **D 825-0006**

SCALE: NONE SHEET: A

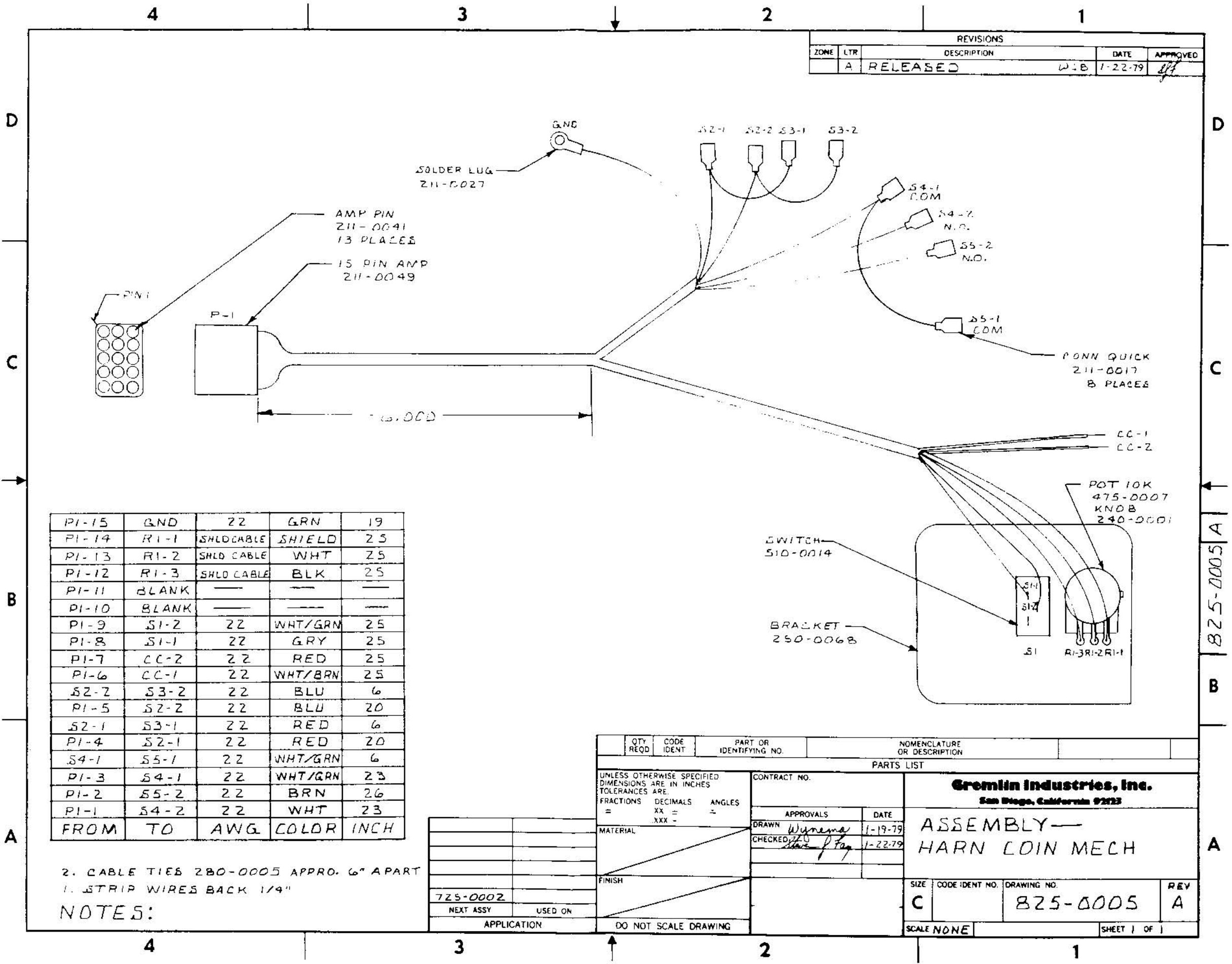
NOTES:

- SHRINK TUBING (0.015 IN. DIA.)
- SECURE HARNESS USING ITEM 12, APPROX EVERY 6.00 IN. (29 PER)

APPLICATION	USED ON

DO NOT SCALE DRAWING

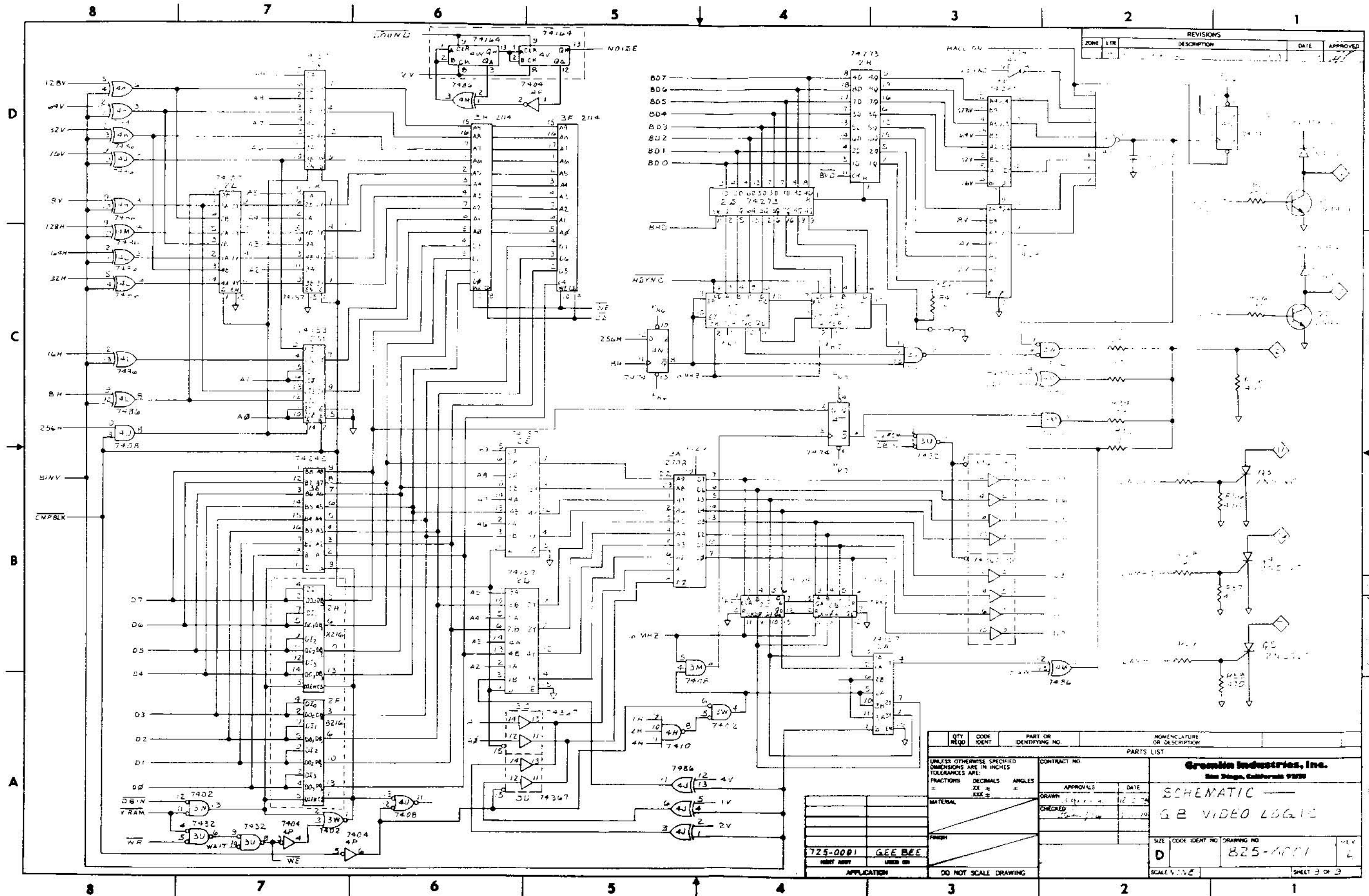
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		RELEASED	1-22-79	[Signature]



PI-15	GND	22	GRN	19
PI-14	RI-1	SHLD CABLE	SHIELD	25
PI-13	RI-2	SHLD CABLE	WHT	25
PI-12	RI-3	SHLD CABLE	BLK	25
PI-11	BLANK			
PI-10	BLANK			
PI-9	SI-2	22	WHT/GRN	25
PI-8	SI-1	22	GRY	25
PI-7	CC-2	22	RED	25
PI-6	CC-1	22	WHT/BRN	25
S2-2	S3-2	22	BLU	6
PI-5	S2-2	22	BLU	20
S2-1	S3-1	22	RED	6
PI-4	S2-1	22	RED	20
S4-1	S5-1	22	WHT/GRN	6
PI-3	S4-1	22	WHT/GRN	23
PI-2	S5-2	22	BRN	26
PI-1	S4-2	22	WHT	23
FROM	TO	AWG	COLOR	INCH

2. CABLE TIES 280-0005 APPROX. 6" APART
 1. STRIP WIRES BACK 1/4"
NOTES:

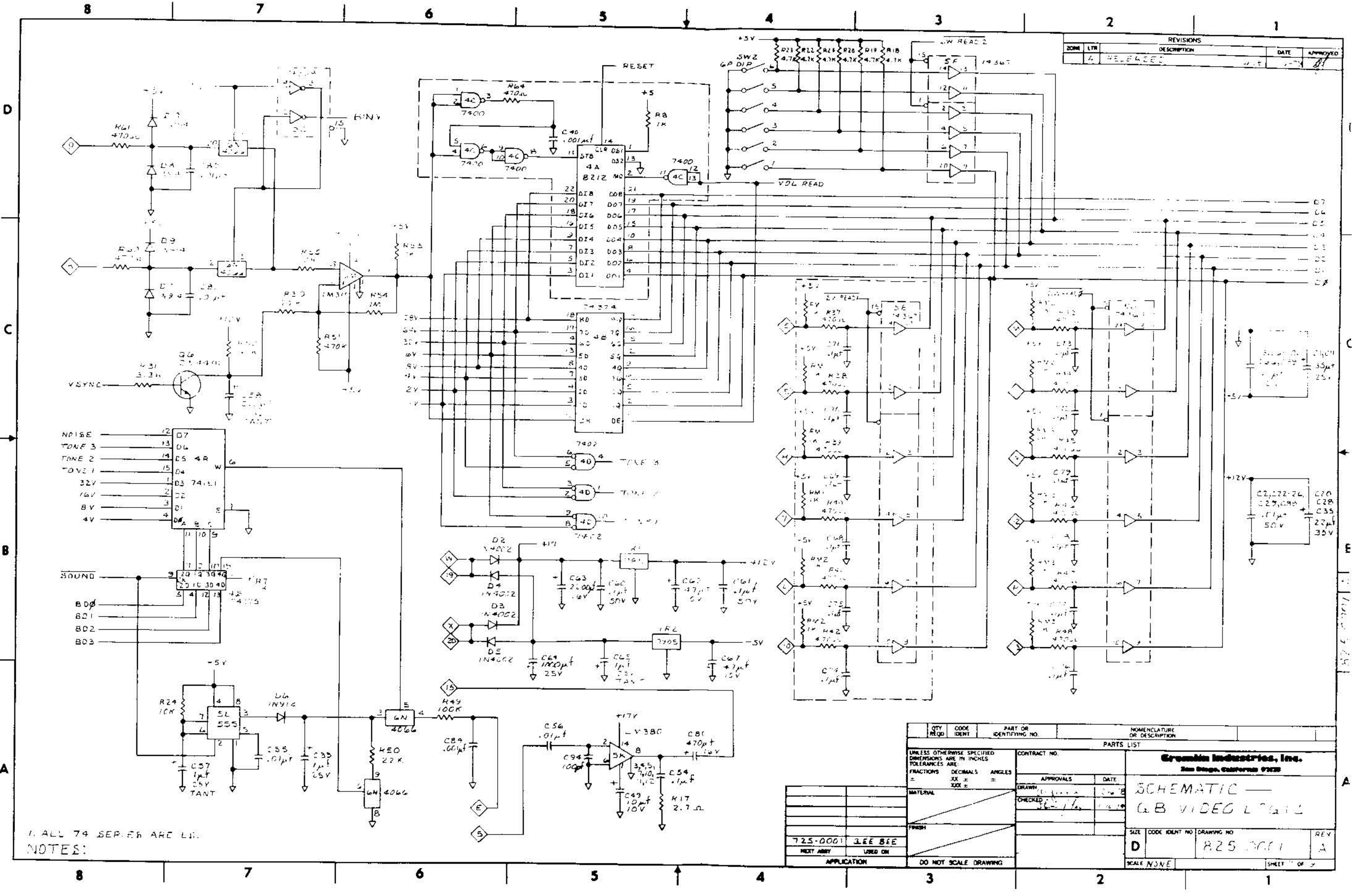
QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES = XX = = XXX -		CONTRACT NO.	Gremlin Industries, Inc. San Diego, California 92123
MATERIAL		APPROVALS DRAWN: Wynema CHECKED: [Signature]	
FINISH		DATE: 1-19-79	ASSEMBLY— HARN LOIN MECH
725-0002	NEXT ASSY	USED ON	SIZE: C CODE IDENT NO.: DRAWING NO.: 825-0005 REV: A
APPLICATION		DO NOT SCALE DRAWING	SCALE: NONE SHEET 1 OF 1



REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES = XX ± XXX ±			
CONTRACT NO.		APPROVALS DATE	
MATERIAL		DRAWN DATE	
FINISH		CHECKED DATE	
Green Industries, Inc. San Diego, California 92108			
SCHEMATIC GB VIDEO LOGIC			
725-0001 GEE BEE		SIZE CODE IDENT NO DRAWING NO	
NEXT REV		D 825-0001	
APPLICATION		SCALE 1:1	
DO NOT SCALE DRAWING		SHEET 3 OF 3	

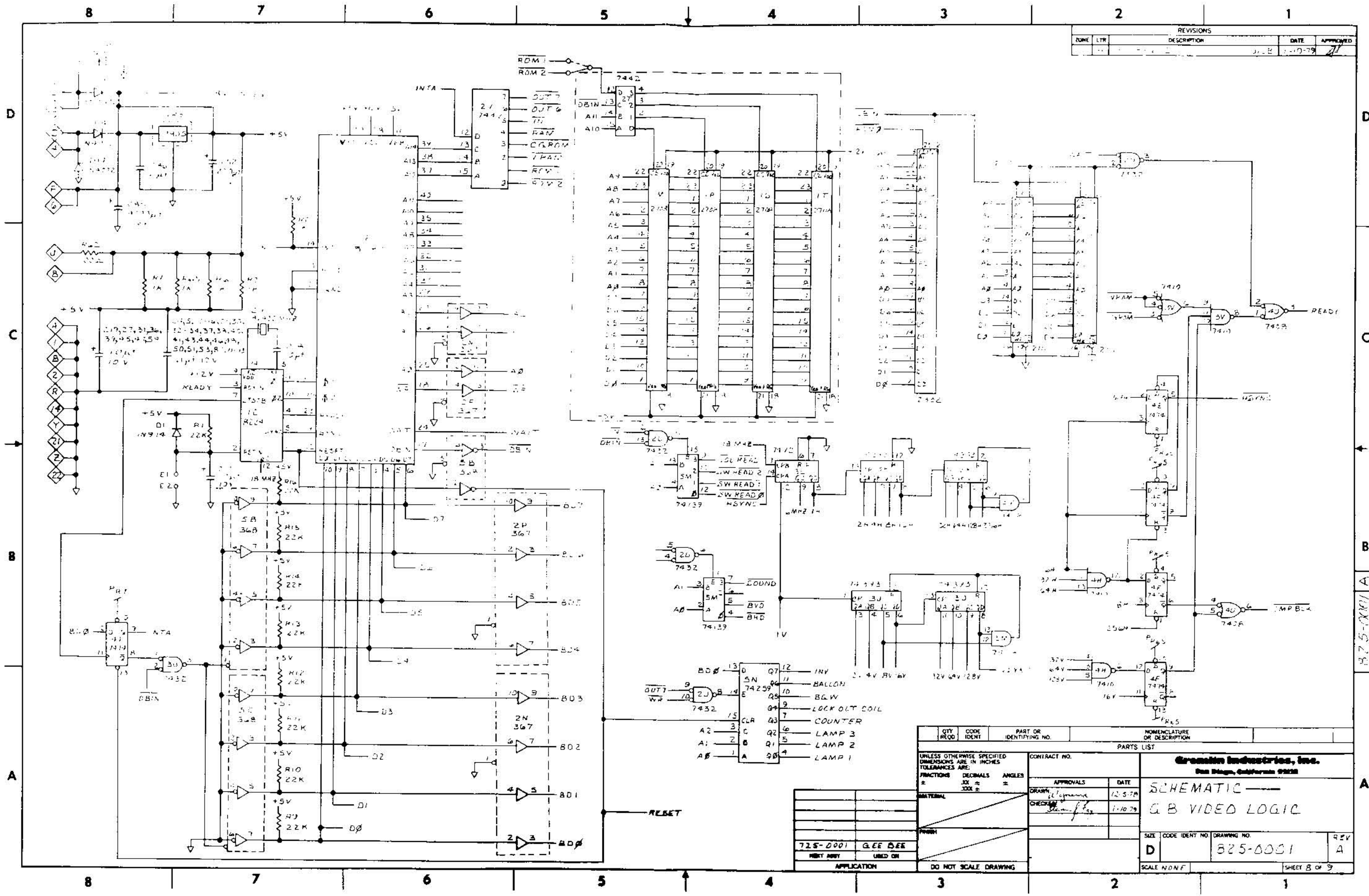
REVISIONS			
ZONE	LTN	DESCRIPTION	DATE
4	RELEASED		



NOTES:
1. ALL 74 SERIES ARE LIT.

QTY	CODE	PART OR	NOMENCLATURE
REQD	IDENT	IDENTIFYING NO.	OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES			
DRAWN		DATE	
CHECKED		DATE	
MATERIAL		CONTRACT NO.	
FINISH		COLUMBIA INDUSTRIES, INC.	
		San Diego, California 92161	
		SCHEMATIC —	
		G.B. VIDEO L7611	
725-0001	J.E.E. BEE	SIZE	CODE IDENT NO
NEXT AMBY	USED ON	D	825-0001
APPLICATION		DO NOT SCALE DRAWING	REV
		SCALE NONE	A
			SHEET 1 OF 2

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



BD 13	0	Q7	12	INV
SN	04	11	BALLON	
74259	05	10	BGW	
	06	09	LOCK OUT COIL	
	07		COUNTER	
CLR	03	08	LAMP 3	
A2	3	Q2	5	LAMP 2
A1	2	Q1	4	LAMP 1
AB	1	Q0		

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			
FRACTIONS	DECIMALS	ANGLES	
±	±	±	
MATERIAL			
FINISH			
APPLICATION			
DO NOT SCALE DRAWING			

CONTRACT NO.		DATE	
APPROVALS		DATE	
DRAWN		12-5-79	
CHECKED		1-10-79	
NOMENCLATURE OR DESCRIPTION			
SCHEMATIC			
GB VIDED LOGIC			
SIZE	CODE IDENT NO	DRAWING NO.	REV
D		825-0001	A
SCALE NONE		SHEET 8 OF 9	

825-0001 A

Gramm Industries, Inc.
San Diego, California 92123

PARTS
LIST

TITLE
ASSY VIDEO LOGIC
G. B

825-0001
DWG NO

SH 2
OF 9

A
REV

ITEM NO	PART NO	QTY PER ASSY					DESCRIPTION	REF DES
1	150-0001	3					CAP E 22 μ f 35V	C20, C28, C35
2	150-0004	9					CAP E 10 μ f 10V	C19, C27, C31, C36, C39, C45, C47, C49, C59
3	150-0005	1					CAP E 4700 μ f 16V	C85
4	150-0008	1					CAP E 2200 μ f 16V	C63
5	150-0012	2					CAP E 47 μ f 10V	C62, C67
6	150-0017	2					CAP E 35 μ f 25V	C1, C11
7	150-0031	1					CAP E 470 μ f 16V	C80
8	150-0032	1					CAP E 220 μ f 10V	C52
9	150-0033	1					CAP E 1000 μ f 25V	C64
10	151-0002	1					CAP CER 100 pf 50V	C94
11	151-0008	1					CAP CER .001 μ f 50V	C84
12	151-0011	13					CAP CER .01 μ f 50V	C22, 26, 29, 42, 55, 56, 81, 82, 88
13	151-0012	2					CAP CER .1 μ f 50V	C60, C61
14	151-0013	1					CAP CER 10 pf 50V	C18
15	151-0017	43					CAP CER .1 μ f 12V	C3-C9, C10, C12-C16, C21, C30, C32-C34, C37, C38, C40, C41, C43, C44, C46, C48, C50, C51, C53, C54, C66, C72, C73, C76-C79, C86, C87, C89, C91-C93
16	153-0001	1					CAP TANT 10 μ f 10V	C17
17	153-0002	3					CAP TANT 1 μ f 25V	C33, C57, C65
18	153-0003	1					CAP TANT 2.2 μ f 25V	C58

Greenline Industries, Inc.
San Diego, California 92108

PARTS
LIST

TITLE
ASSY VIDEO LOGIC
G.B.

825-0001
DWG NO

SH 3
OF 9

A
REV

ITEM NO	PART NO	QTY PER ASSY					DESCRIPTION	REF DES
19	170-0157	1					PCB VID LOG G.B.	
20	211-0004	2					CONN PIN TEST PT	E1, E2
21	213-0001	6					SKT 24 PIN DUAL INLN	XIK, X3A, XIM, XIP, XIS, XIT
22	213-0005	1					SKT 40 PIN DUAL INLN	XIF
23	230-0023	1					XTAL 18.432 MHZ	CY
24	313-0002	1					IC LM311C	6M
25	313-0003	1					IC 7805	1R3
26	313-0006	1					IC LM380	5K
27	313-0014	1					IC 7812	1R1
28	313-0023	1					IC 7905C	1R2
29	314-0001	1					IC NE555	5L
30	314-0019	1					IC 74LS04	4P
31	314-0058	2					IC 74LS08	3M 4U
32	314-0059	2					IC 74LS10	3V 4H
33	314-0061	2					IC 74LS42	2V, 2T
34	314-0062	4					IC 74LS74	4E, 4F, 4N, 4T
35	314-0064	1					IC 74LS153	2M
36	314-0067	1					IC 74LS30	3N
37	314-0068	2					IC 74LS32	2U, 3U
38	314-0070	4					IC 74LS86	4J, 4K, 4L, 4M
39	314-0071	1					IC 74LS151	4R
40	314-0073	1					IC 74LS175	4S

Groskin Industries, Inc. San Diego, California 92122		PARTS LIST		TITLE ASSY VIDEO LOGIC G.B.		825-0001 DWG NO		SH 4 OF 9		A REV	
ITEM NO	PART NO	QTY PER ASSY				DESCRIPTION	REF DES				
41	314-0075	2				IC 74LS393	3J,3K				
42	314-0076	6				IC 74LS157	2A,2D,2E,2J,2K,2L				
43	314-0078	2				IC 74LS02	3W 4D				
44	314-0087	1				IC 74LS139	5M				
45	314-0093	1				IC 74LS374	4B				
46	314-0094	1				IC 74LS259	5N				
47	314-0095	1				IC 8224	1C				
48	314-0096	1				IC 74LS92	3L				
49	314-0097	2				IC 74LS161	3S,3T				
50	314-0098	2				IC 74LS194	2B,2C				
51	314-0099	1				IC 74LS245	3E				
52	314-0100	2				IC 74LS273	2R,2S				
53	314-0101	2				IC 74LS283	3P 3R				
54	314-0102	6				IC 74LS367	2N,2P,3C,3D,5D,5F				
55	314-0103	2				IC 74LS368	5B,5C				
56	315-0014	1				IC 8080	1F				
57	315-0018	2				IC 2111	1V,1W				
58	315-0019	1				IC 2708	3A				
59	315-0045	1				IC CD4066	6N				
60	315-0046	2				IC 2114 / 2114L RAM	3F,3H				
61	470-0102	18				RES 1K OHM 1/4W 5%	R2-4,6-8,27-29,35,53,65				
62	470-0103	2				RES 10K OHM 1/4W 5%	R24,R55				
63	470-0104	1				RES 100K OHM 1/4W 5%	R49				
64	470-0223	11				RES 2.2K OHM 1/4W 5%	R1,R9-R16,R30 R50				

Greenix Industries, Inc. San Diego, California 92108		PARTS LIST		TITLE ASSY VIDEO LOGIC G.B.		825-0001 DWG NO		SH 5 OF 9		A REV	
ITEM NO	PART NO	QTY PER ASSY				DESCRIPTION	REF DES				
65	470-02R7	1				RES 2.7 OHM 1/4W 5%	R17				
66	470-0332	1				RES 3.3K OHM 1/4W 5%	R31				
67	470-0331	2				RES 330 OHM 1/4W 5%	R25, R26				
68	470-0152	2				RES 1.5K OHM 1/4W 5%	R33, R34				
69	470-0471	12				RES 470 OHM 1/4W 5%	R43-R48, R36, R56-R58, R60, R61				
70	470-0472	6				RES 4.7K OHM 1/4W 5%	R18 - R23				
71	470-0474	1				RES 470K OHM 1/4W 5%	R51				
72	470-0912	1				RES 9.1K OHM 1/4W 5%	R52				
73	481-0001	10				DIODE 1N4002	D2-D5, D11-D14, D16, D17				
74	481-0006	6				DIODE 1N914/1N4148	D1, D6-D10				
75	482-0009	3				XSTR 2N5060	Q3-Q5				
76	482-0014	3				XSTR 2N4401	Q1 Q2 Q6				
77	510-0043	1				SWITCH 6 POS DIP	SW 2				
78	530-0008	1				HEAT SINK					
79	470-0105	1				RES 1M OHM 1/4W 5%	R54				
80	470-0101	1				RES 100 OHM 1/4W 5%	R62				
81	470-0682	1				RES 680 OHM 1/4W 5%	R32				
82	316-0137	1				IC PROM 2332 G.B.	1K				