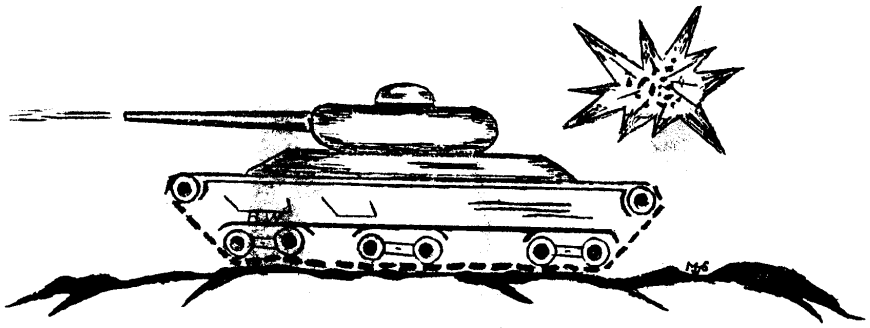
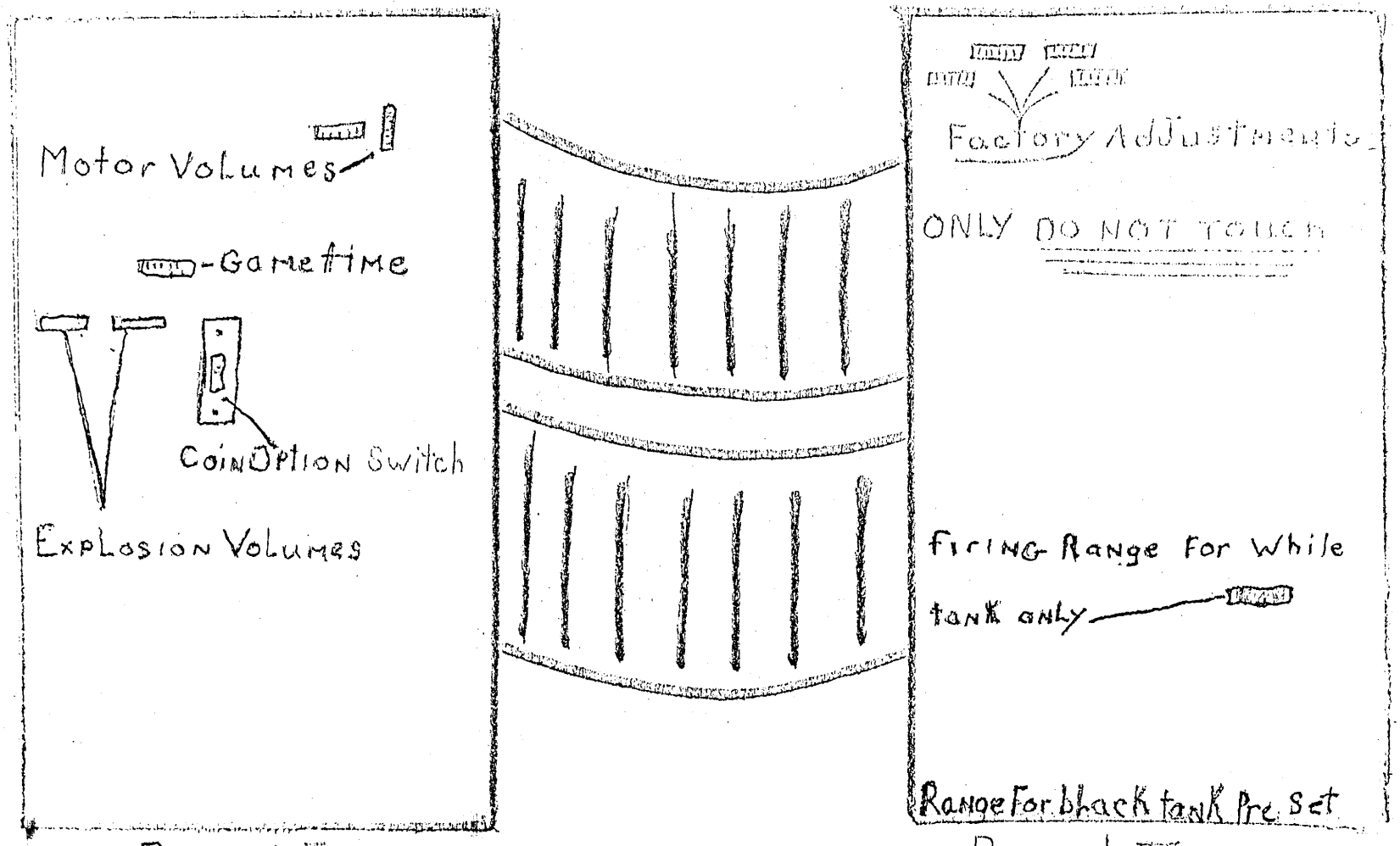
TANK



OPERATION AND SERVICE MANUAL

KEE GAMES
2175 Martin Ave.
Santa Clara, CA. 95051
(408) 249-6090

TANK CUSTOMER ADJUSTMENTS



The motorola TV and Tank Circuit Boards have been designed to give you, the customer, the most trouble free unit possible. The circuits used are all solid state for long life and reliability.

Our games are designed with the customer in mind and we appreciate any and all comments from the field.

In the event your unit does require servicing, this manual will aid your efforts.

This manual consists of the following sections:

I. Adjustments

II. Diagnosis and Procedures

III. Warranty and Service

IV. Schematics

I. ADJUSTMENTS

There are two types of adjustments that can be made to your unit: TV & Circuit Boards.

The controls on the TV Monitor work as in any normal TV. Vertical Hold, Brightness, Contrast & Horizontal Hold. These are located on the back side of the monitor chassis. The vertical & horizontal hold controls should be set in the middle of their range. Turn control until picture tears or rolls, turn control back until picture tears or rolls in the opposite direction & then reset control to the middle of the stable range. The brightness & contrast should be set at a point where the mine field in the center of the playfield is clearly visible.

Circuit Board

On Circuit Board I, (which is on the left side of the cabinet, looking from the rear of the same) there are three (3) adjustments you may want to make.

Master Volume: These adjustments are located in the upper right area of the board. There is a small tab on each of these pots & when they are set at the same point the volume between the two tanks will be even.

Missile Firing & Explosion Sound: These adjustments are located in the upper left area of the board. Again there are two (2) pots to adjust. Setting the tabs evenly on the pots will set the volume evenly between the two tanks.

Game Time: There is one (1) switch located on Board I and next to this swtich is the pot which adjusts the game time. This pot has been preset at the factory so that with the switch in the 25¢ position, one game is available for a quarter and will last for 60 seconds. With the switch in the 50¢ position, one game is available for two (2) quarters and will last for 120 seconds. You may set this switch as you wish and also adjust the time pot to your convenience.

Do not attempt to adjust any other pots located on these boards as they are factory adjustments and tampering with them may have detrimental effects upon the game.

II. DIAGNOSIS

SYMPTOM	CHECK
No Picture	Fuse, Power Cord, Harness Connections
No Sound	Speaker Connections, Volume Adjustments
Rolling or Tearing Picture	Re-Adjust TV Controls
Game Will Not Start	Coin Mechanism, Harness Connections
No Tank Movement	*Joystick Switches (proper alignment), Harness Connections
No Firing of Shell	*Joystick Switches, Harness Connections

*These are simple on/off switches and may be checked with an ohmeter or continuity tester.

NORMAL GAME OPERATION

Inserting the coins immediately starts the game with one Tank in the upper left area of the playfield and the other Tank in the lower right area.

To move Tank forward, push both joysticks forward. To stop Tank, pull both joysticks back. For turning to the right, pull right joystick back and push left joystick forward.

To turn left, push right joystick forward and pull left joystick back. Silkscreened into the front panel are illustrated instructions for the different motions.

To fire the shells, push the red button on the right joystick down. One point is scored each time a shell hits the other Tank. If a Tank hits a mine, the opponent gains one point and the mine will dissappear for the remainder of that game. When a Tank is hit by a shell or encounters a mine, an explosion sound is heard and the Tank flashes. Until this flashing has stopped, his opponent cannot fire another shell. Approximately 20 seconds before the game ends, the score display will begin flashing and continue until the game ends.

TV TROUBLESHOOTING

NO POWER: Check for blown fuses and proper line voltage. Also check to see if the interlock switch is in the on position, either with the rear door closed or with the switch defeated.

NO PICTURE: Check the monitor fuses. If blown, visually check the monitor for shorts. If fuses are OK, look to see if the CRT's choke filament is glowing and if there are any loose wires.

WHITE PICTURE BUT NO DISPLAY: This symptom indicates two problems. Either the PC Board or the TV is malfunctioning. To double check and make certain of the area of trouble, check the PC Boards that making sure power is reaching them and check the edge connectors making sure they are positioned correctly on the PC Boards. Also check the twelve (12) pin Molex connector on the TV making sure it is correctly connected.

WAVY PICTURE: If this condition exists, check the following two items to be sure they are functioning properly. First check the five (5) volt power supply on the two main circuit boards. This can be done by measuring between the two heavy traces on each board with a voltmeter or an oscilliscope. There should be 5± 1/4 volts on each board. Next, locate pin 32 on the large monitor circuit board. Measure the voltage from this pin to ground. There should be seventy-three (73) volts at this point. If the voltage is either too high or too low, adjust the 73 volt regulator pot located on the same PC Board in the upper left hand corner. DO NOT TURN THIS POT THRU THE WHOLE RANGE.

Damage will occur to it's associated parts. All that needs to be done is a slight turn to adjust properly.

IMPROPER DISPLAY: Recheck all picture adjustments (brightness, contrast, and etc.) to make sure they are correct.

REMOVAL & REPLACEMENT PROCEDURES

CONTROL PANEL: To achieve easy access to the joystick controls, open the front coin door and remove the two wing nuts mounting the control panel to the cabinet. There is one wing nut on each side. Slide the control panel out far enough to clear the mounting bolts from the cabinet and turn the panel upside down. Set the face of the panel down on the supporting blocks. The joystick controls are now exposed for servicing.

PLEXIGLASS REMOVAL: To remove the plexiglass, open the front coin door and remove the three wing nuts running along the upper frame member of the control panel. Pull the lower aluminum plexiglass anchoring bracket away from the game. The plexiglass should be pushed down and pulled out to remove it from the game.

TV MONITOR REMOVAL: To remove monitor for replacement or repair, first remove plexiglass by following the above plexiglass removal instructions. Also, remove the four screws mounting the plastic bezel. Loosen the two wing nuts by the corners of the CRT by way of the back door. Remove the 10 Pin Molex connector from the back side of the TV. By inserting a finger into the two holes on each side of the CRT, the monitor can be pulled out.

TV MONITOR REPLACEMENT: To replace the TV monitor, follow in reverse order the steps for monitor removal.

MOTOROLA MONITOR PC BOARD REMOVAL

POWER, AUDIO PC BOARD: To remove this PC Board, simply locate it on the left side of the monitor in back of the power transformer. Carefully pull up on the board. To replace this board, locate the slot between Pins 3 & 4 and put this on your left side, then simply insert into into the edge connector.

MONITOR PC BOARD: To remove the monitor PC Board, take a screwdriver or a similiar object and slowly pry the PC Board up off of the chassis until it clears the pins. Next, unplug the socket from the yoke and slide board out. To replace this board, follow the above steps in reverse order.

MAIN CIRCUIT BOARDS I & II

REMOVAL: Each board is mounted to the cabinet by two screws located one on each side. Remove the edge connectors first, then remove the four screws. DO NOT TRY TO SEPERATE THE TWO BOARDS. Each set of boards must remain as one unit. After removing boards, carefully follow board shipping procedure in order to reduce the chances of damage to a minimum.

REPLACEMENT: Follow the reverse steps of the removal procedures to replace the PC Boards.

PC BOARD SHIPPING PROCEDURES

When packaging PC Boards for shipment, make sure the top of each board is facing each other with either bubble wrap or foam rubber them. This interfacing must be thick enough to insure that parts of one board do not come in contact with the other board. DO NOT use small pieces of styrofoam as packing material between the boards. Careful packing is recommended as KEE GAMES, INC. cannot be liable for boards damaged in transit. Also, include a short statement describing the basic problem with the boards.

CABINET MAINTINANCE

Cleaning of the cabinet and plexiglass may be done with any non-abrasive household cleaner. The coin acceptors and lock cylinders should be lubricated periodically with any light oil or silicon aresol spray.

ACCESS DOORS

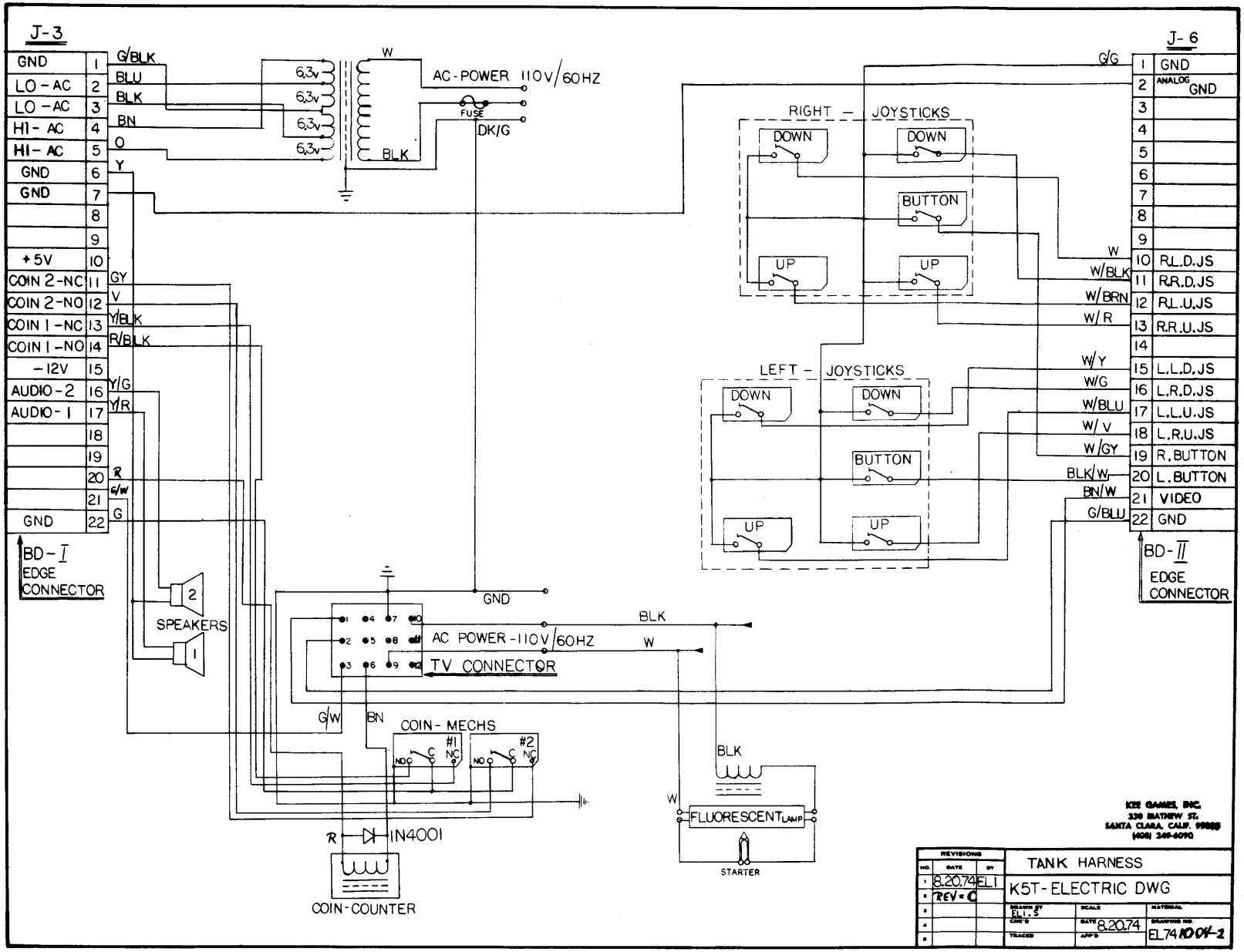
COIN DOOR: There are two coin mechs in each game. The extra coin mech is there for customer convenience and also as a spare in case of a coin jam in one of the mechs. The coin door provides access to the coin box and to all wing nuts used to secure the monitor, control panel and the bracket for the plexiglass CRT screen.

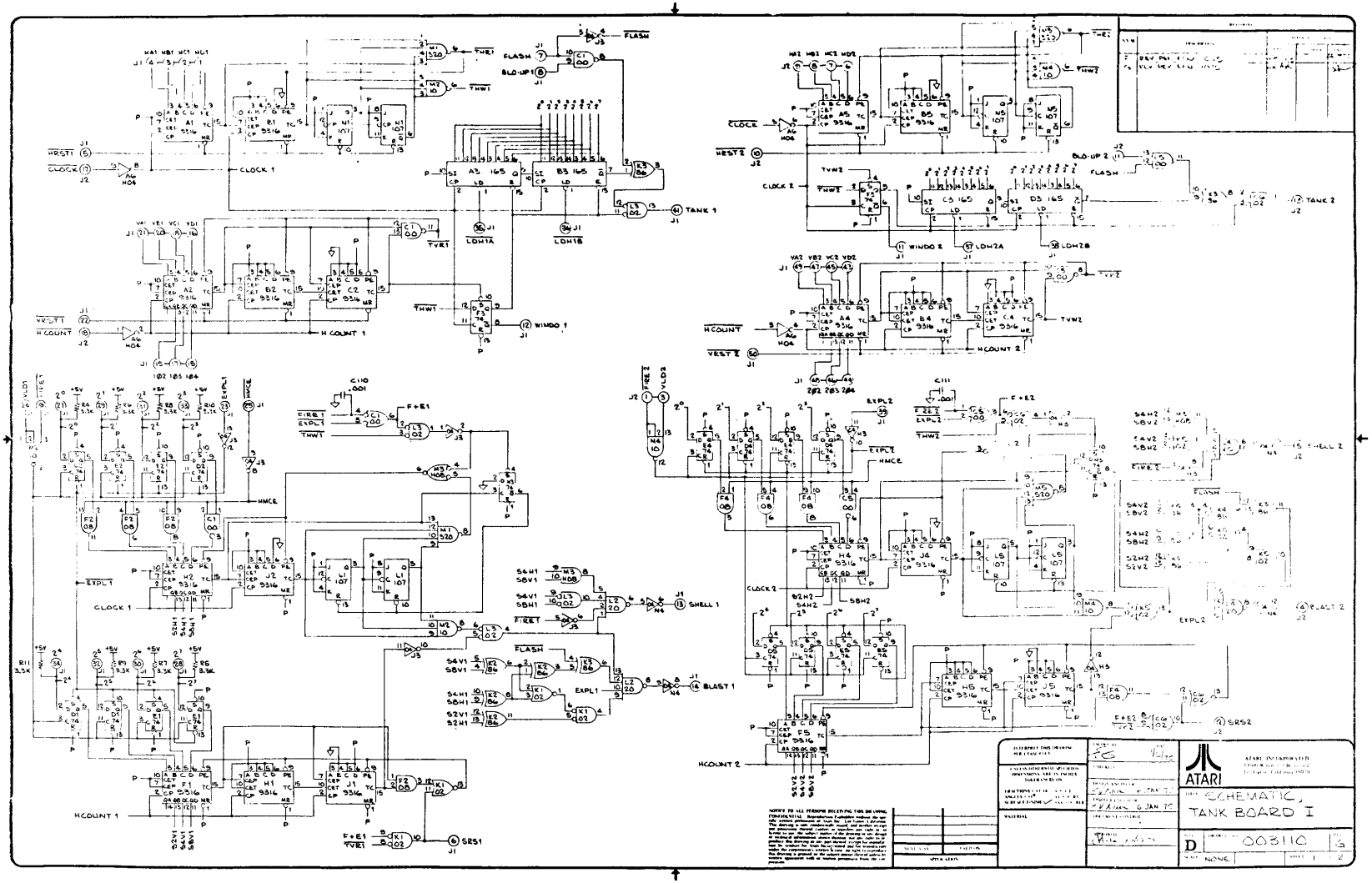
REAR DOOR: The rear door allows access to the Tank PC Board set, the fuse line filter and transformer assy, Motorola monitor controls and PC Board, and the wing nuts securing the control panel, plexiglass and TV monitor.

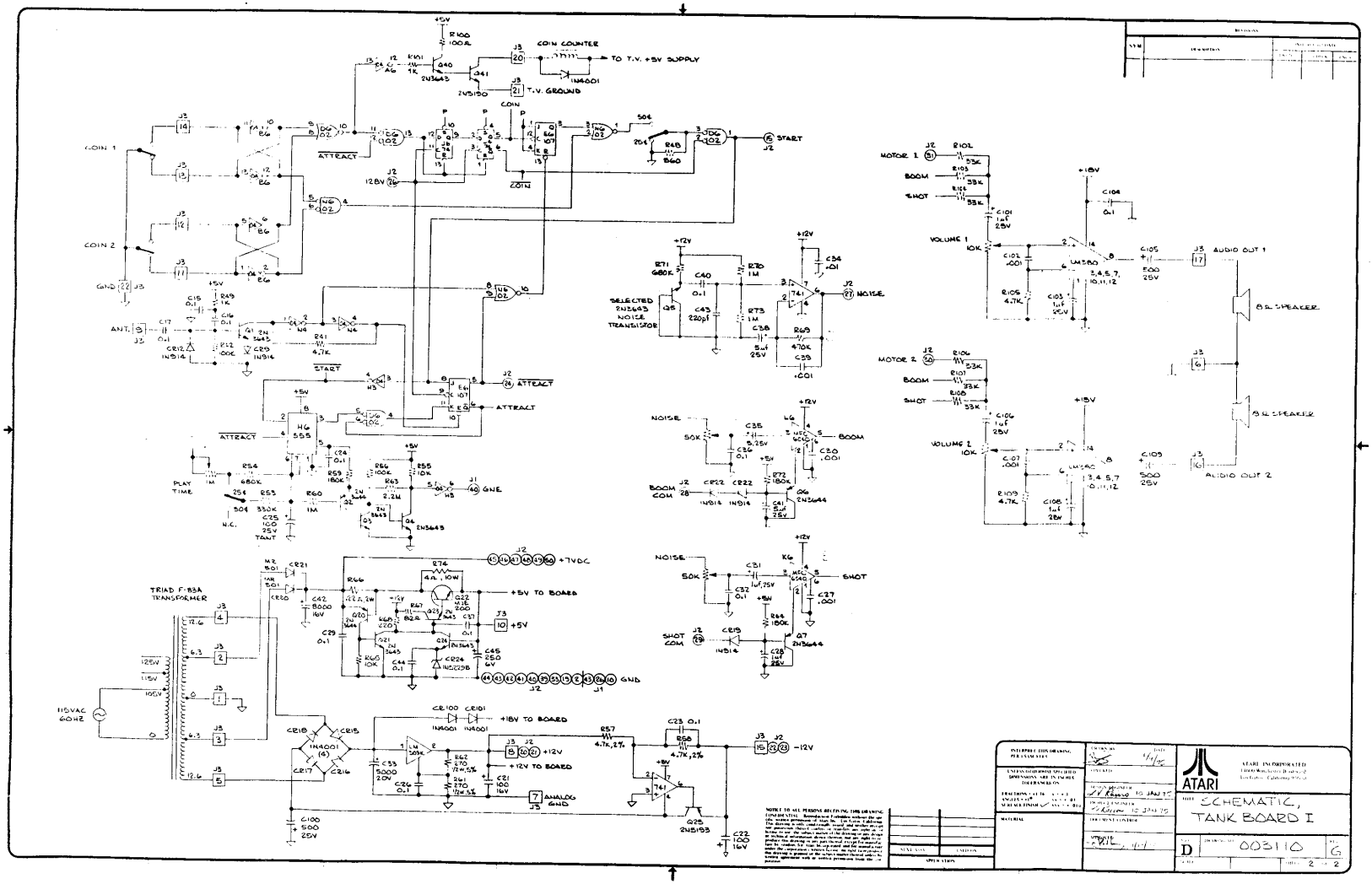
III. WARRANTY

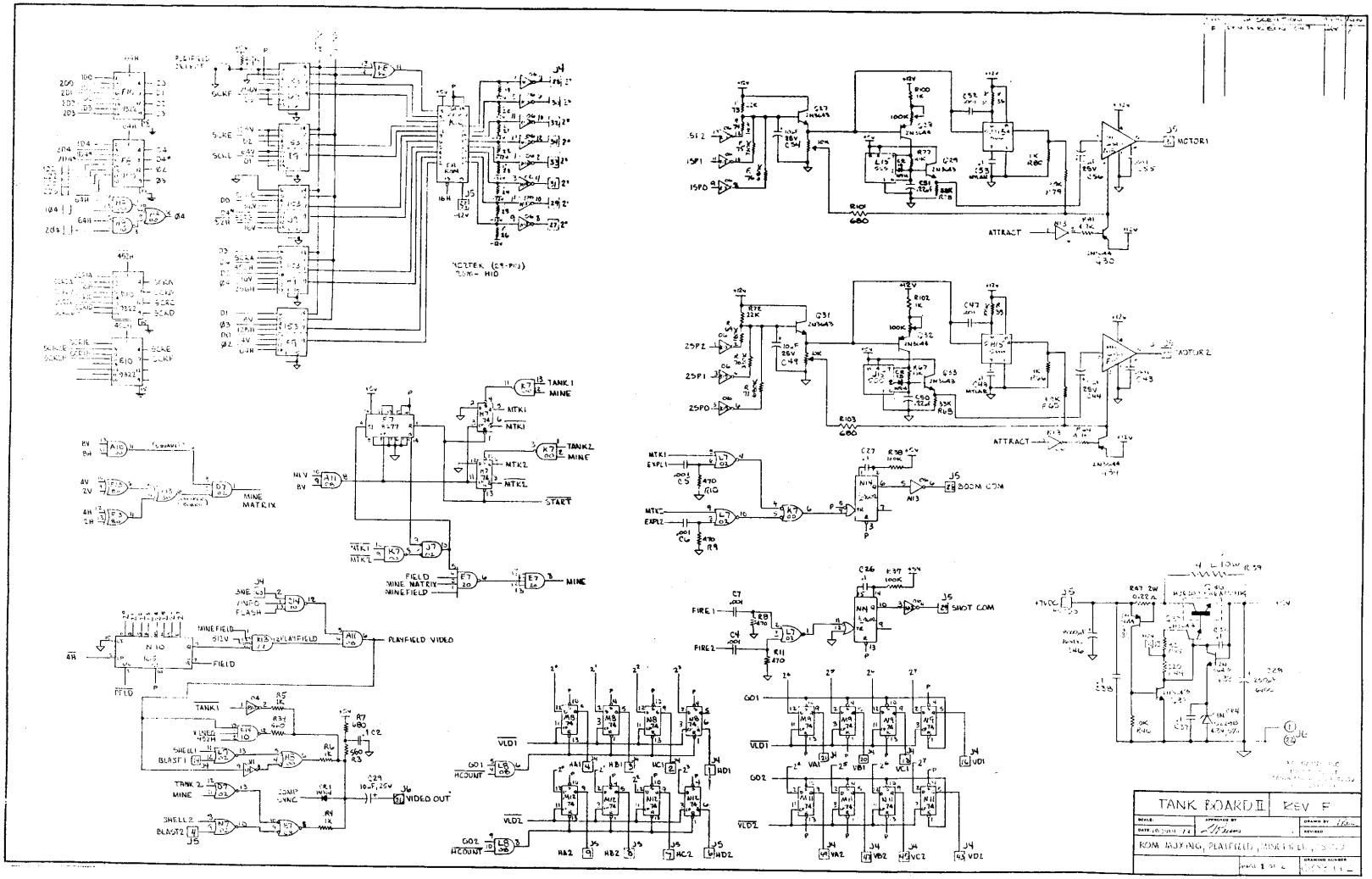
The game is warranteed for a period of ninety (90) days, excluding the TV, which is warranteed for 30 days.

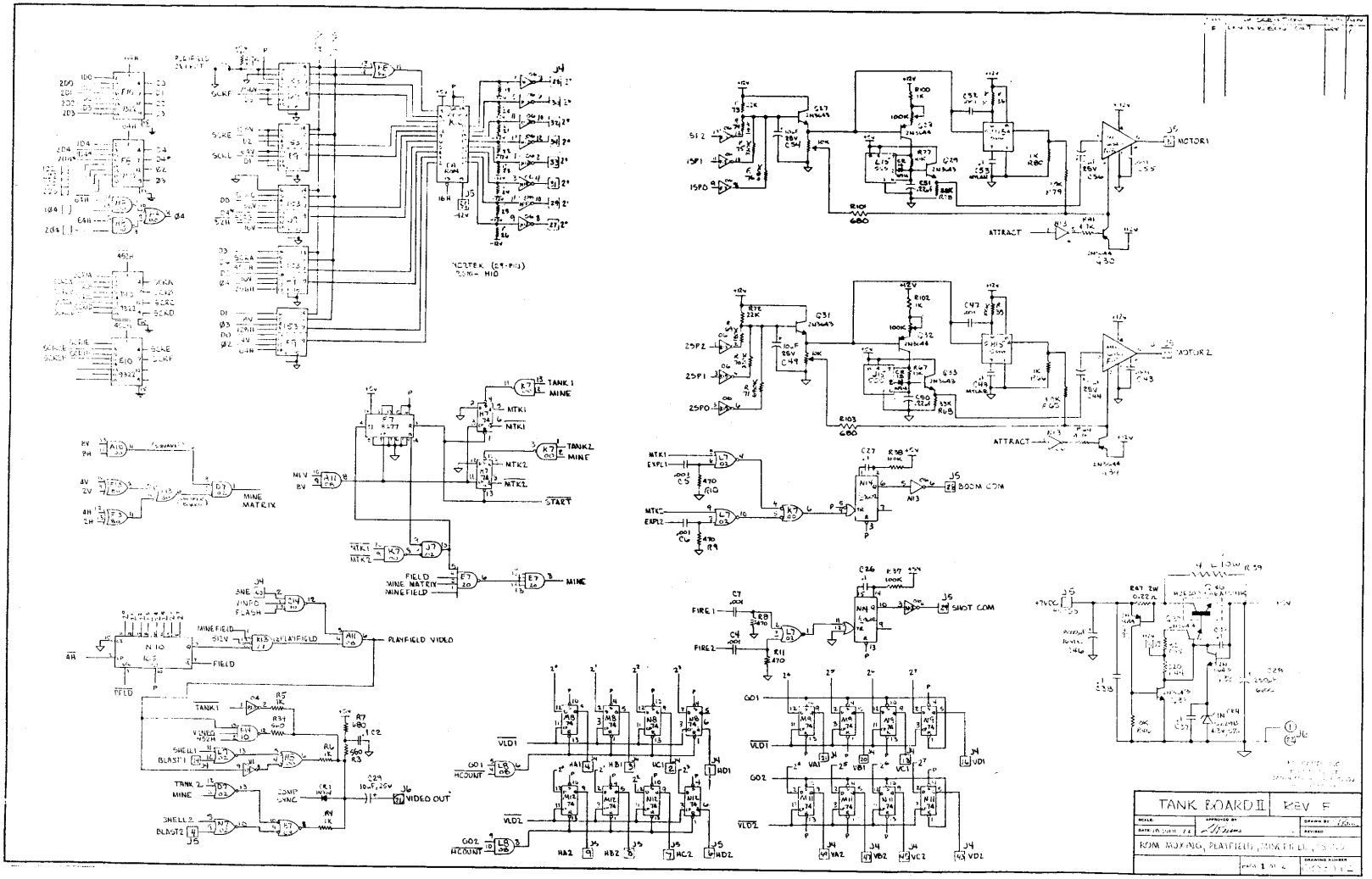
In case of failure, contact your distributor or KEE GAMES, 1280 Reamwood Ave., Sunnyvale, CA 94086 for repair or a replacement unit.

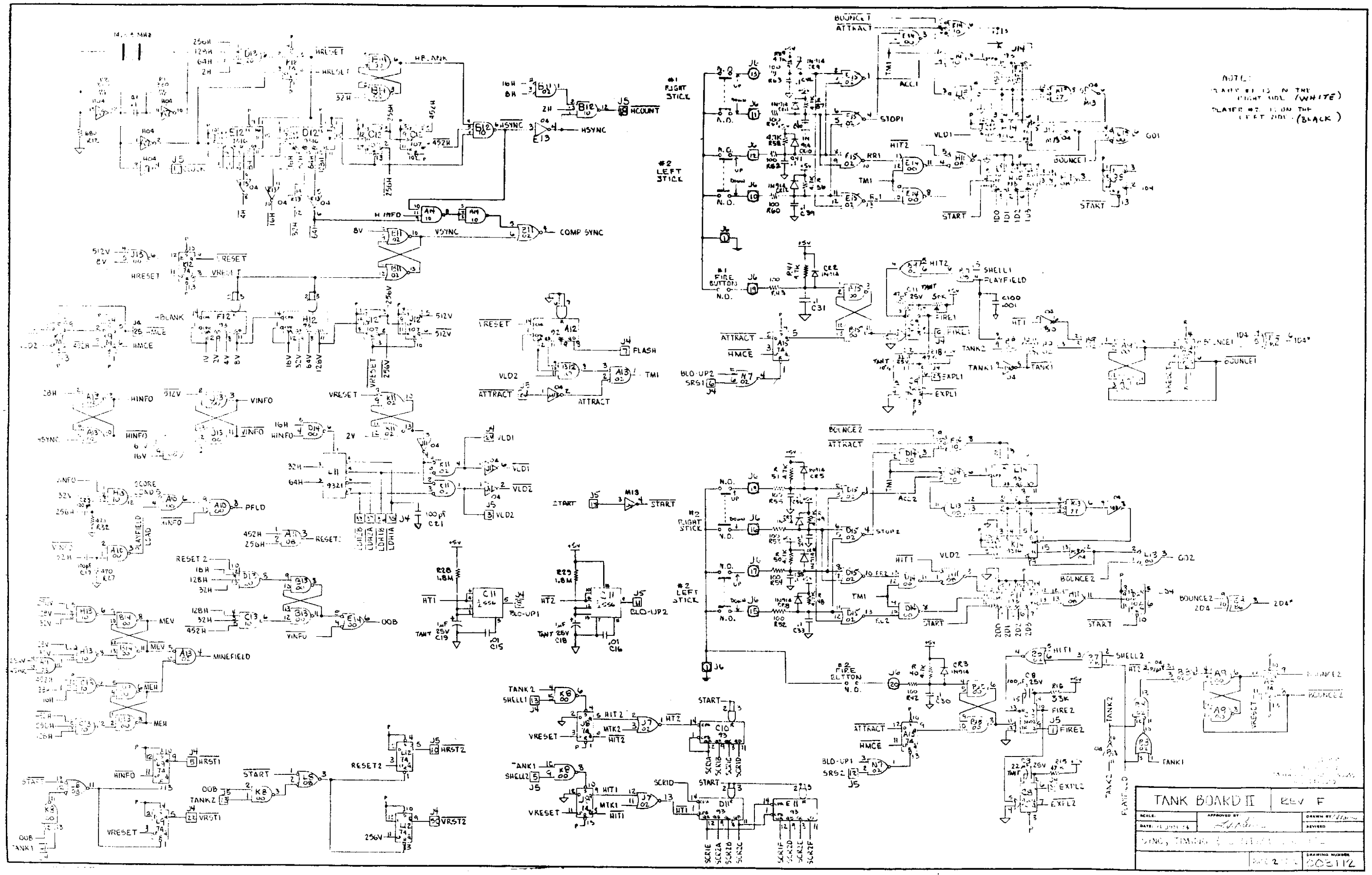

J-3
GND 1
LO-AC 2
LO-AC 3
HI-AC 4
HI-AC 5
GND 6
GND 7
8
9
+5V 10
COIN 2-NC 11
COIN 2-NO 12
COIN 1-NC 13
COIN 1-NO 14
-12V 15
AUDIO-2 16
AUDIO-1 17
18
19
20
21
GND 22
BD-I EDGE CONNECTOR
G/BLK
BLU
BLK
BN
O
Y
GY
V
Y/BLK
R/BLK
Y/G
Y/R
R
G/W
G
6.3v
6.3v
6.3v
6.3v
W
BLK
AC-POWER 110V/60HZ
FUSE
DK/G
GND
2
1
SPEAKERS
AC POWER-110V/60HZ
W
BLK
TV CONNECTOR
G/W
BN
COIN-MECHS
#1
#2
NO
C
NC
R
IN4001
COIN-COUNTER
BLK
W
FLUORESCENT LAMP
STARTER
RIGHT - JOYSTICKS
DOWN
BUTTON
UP
LEFT - JOYSTICKS
J-6
1 GND
2 ANALOG GND
3
4
5
6
7
8
9
10 R.L.D.JS
11 R.R.D.JS
12 R.L.U.JS
13 R.R.U.JS
14
15 L.L.D.JS
16 L.R.D.JS
17 L.L.U.JS
18 L.R.U.JS
19 R.BUTTON
20 L.BUTTON
21 VIDEO
22 GND
G/G
W
W/BLK
W/BRN
W/R
W/Y
W/G
W/BLU
W/V
W/GY
BLK/W
BN/W
G/BLU
BD-II EDGE CONNECTOR
KEE GAMES INC.
TANK HARNESS
K5T-ELECTRIC DWG
REVISIONS
8.20.74 EL1
REV-C
DRAWN BY EL1.S
DATE 8.20.74
EL74100K-2


SCHEMATIC,
TANK BOARD I
ATARI
D
003110
NONE

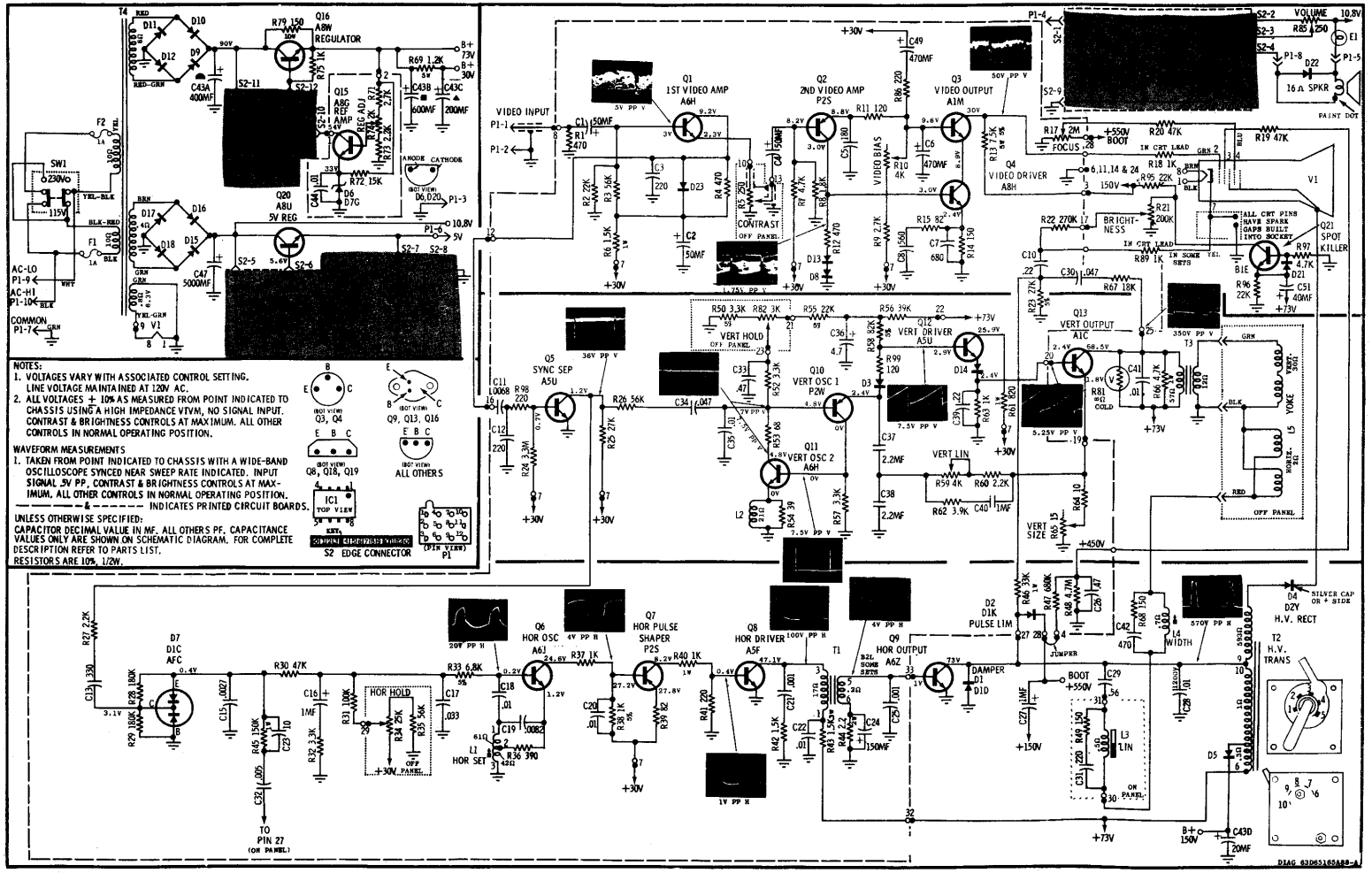

COIN COUNTER
TO T.V. +5V SUPPLY
T.V. GROUND
COIN 1
COIN 2
GND
ATTRACT
START
COIN
ANT.
PLAY TIME
GNE
TRIAD F-83A TRANSFORMER
115VAC 60HZ
+7VDC
+5V TO BOARD
+18V TO BOARD
+12V TO BOARD
-12V
ANALOG GND
SELECTED 2N3643 NOISE TRANSISTOR
NOISE
BOOM
SHOT
MOTOR 1
MOTOR 2
VOLUME 1
VOLUME 2
AUDIO OUT 1
AUDIO OUT 2
B&W SPEAKER
ATARI
SCHEMATIC, TANK BOARD I
D
003110
G


TANK BOARD II REV F
ROM MUXING, PLAYFIELD, MINEFIELD, SHOT
ATTRACT
MOTOR 1
MOTOR 2
TANK 1 MINE
TANK 2 MINE
MINE MATRIX
START
PLAYFIELD VIDEO
VIDEO OUT
SHOT COM
BOOM COM


TANK BOARD II
REV F
ROM MUXING, PLAYFIELD, SHOT, EXPLOSION



TANK BOARD II
REV F
NOTE:
PLAYER #1 IS ON THE RIGHT SIDE (WHITE)
PLAYER #2 IS ON THE LEFT SIDE (BLACK)
#1 RIGHT STICK
#2 LEFT STICK
#1 FIRE BUTTON
#2 RIGHT STICK
#2 LEFT STICK
#2 FIRE BUTTON
HBLANK
HSYNC
HCOUNT
COMP SYNC
VSYNC
H INFO
HRESET
VRESET
FLASH
ATTRACT
START
BOUNCE1
BOUNCE2
SHELL1
SHELL2
PLAYFIELD
MINEFIELD
PFLD
FIRE1
FIRE2
EXPL1
EXPL2
TANK1
TANK2
BLO-UP1
BLO-UP2
HRST1
HRST2
VRST1
VRST2
RESET2
OOB
HMCE
VLD1
VLD2
HIT1
HIT2
STOP1
STOP2



Schematic Diagram

TM-049

TANK II

Operation · Maintenance · Service Manual

KEE GAMES

A Subsidiary of Atari

ATARI, INC · 14600 Winchester Blvd · Los Gatos, CA 95030 · 408/374-2440 · Telex 357-488

TANK II

ATARI
Innovative leisure

ASSEMBLY TITLE / TOP ASSEMBLY - TANK II **P/L** 003521

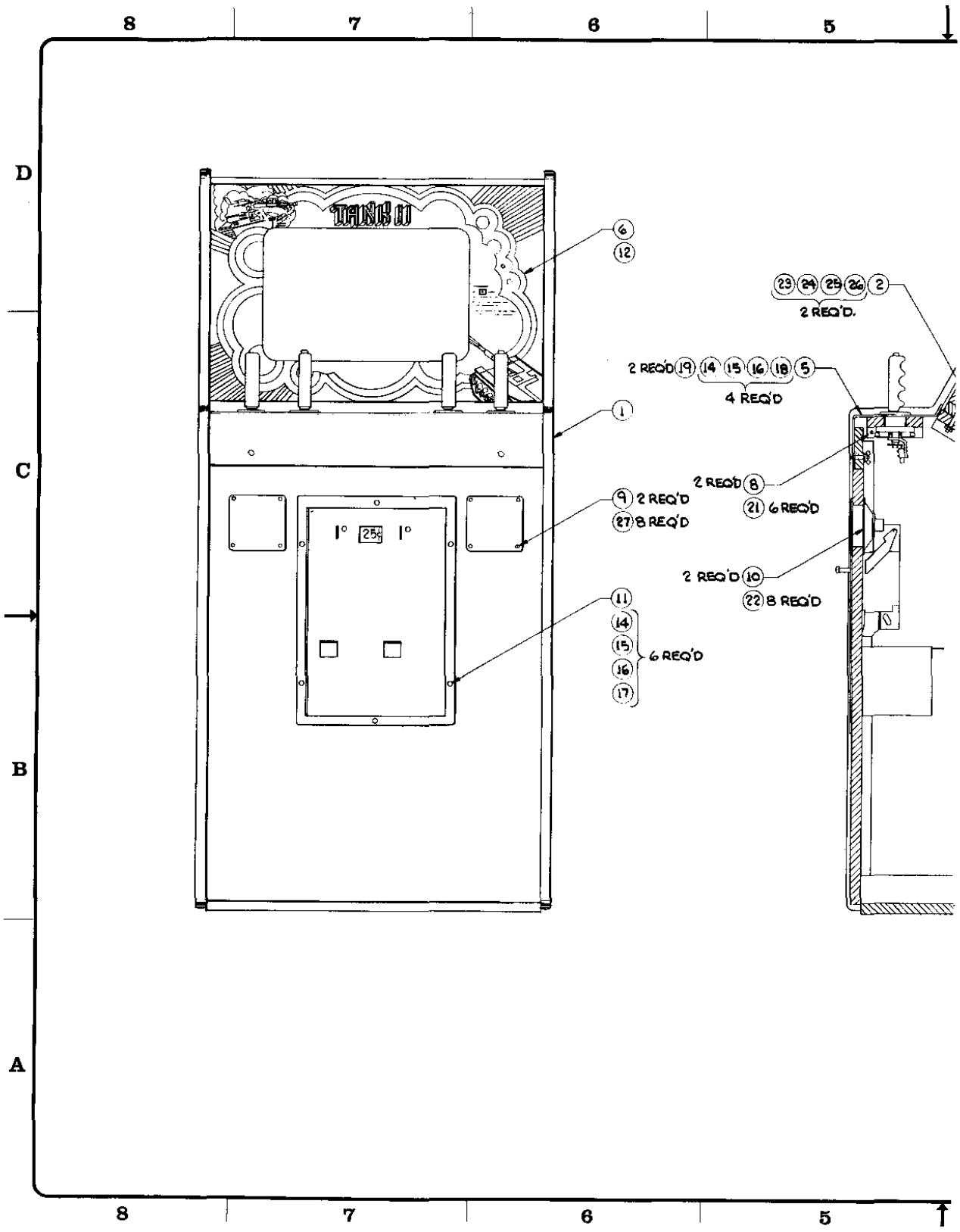
PARTS LIST SPECIFICATION Page 1 of 1

Drawn		
Checked	M.J. 5/20/75	Mech. Eng.
Proj. Eng.	[illegible]	Elec. Eng
		REV. A

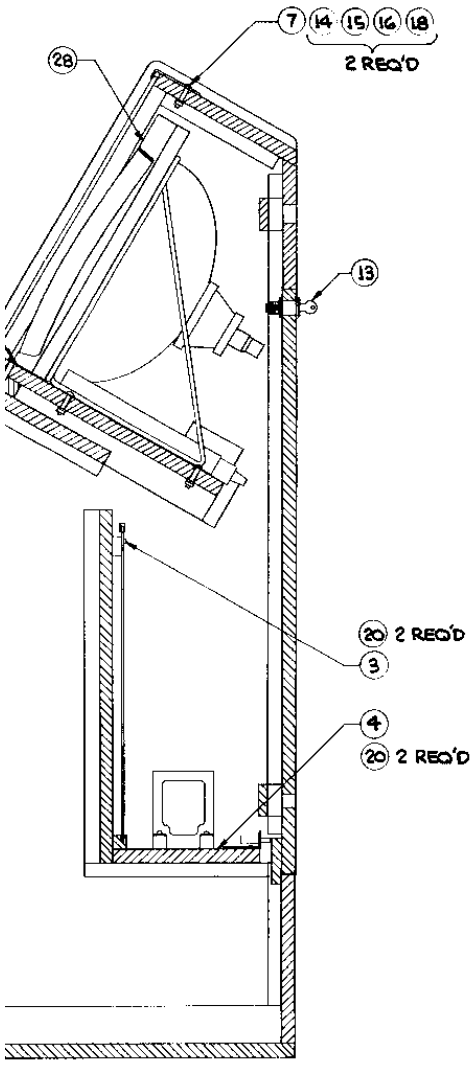
Rev.	Description	Date	Apprv.	Rev.	Description	Date	Apprv.
A	PROD REL	5/1/75	[illegible]				

Item	Part Number	Qty.	DESCRIPTION
1	A003522	1	Cabinet Assembly
2	A003544	1	TV Mount Board Assembly
3	A003534	1	PC Mount Board Assembly
4	A003538	1	Electronics Tray Assembly
5	A003540	1	Control Panel Assembly
6	003543	1	Plex Screen W/Artwork
7	001573	1	Retainer, Upper Plex.
8	002728	2	Panel Mtg. Brackets
9	000869	2	Speaker, Grill
10	*48-004	2	Speaker, 4"
11	A003637	1	Coin Door Assembly
12	003542	1	"Coin" Decal
13	71-2112	1	Lock, Mech., Barrel Cartridge
14	75-5120M	12	Bolt, Carriage, #10-24 x 1.25" Long
15	75-010S	10	Washer, Flat, #10
16	75-040	12	Washer, Split-Lock, #10
17	75-911S	6	Nut, Hex, #10-24
18	75-931	6	Nut, Wing, #10-24
19	75-035S	2	Washer, Flat, ¾" Wide Pattern
20	72-6620	4	Screw, SM, Pan Hd., Phil. #6 x 1.25" Lg.
21	72-6812	6	Screw, SM, Pan Hd., Phil. #8 x .75" Lg.
22	72-6608	8	Screw, SM, Pan Hd., Phil. #6 x .50 Lg.
23	75-5544	2	Bolt, Carriage, #¼-20 x 2.75" Lg.
24	75-015S	2	Washer, Flat, ¼
25	75-045	2	Washer, Split Lock, ¼
26	75-935	2	Nut, Wing, ¼-20
27	73-77004	8	Pop Rivet, Alum. 3/16" DIA. x .68 Lg.
28	003752	1	Bezel, Cardboard

* This speaker may be replaced by any speaker previously used on TANK.


8
7
6
5
D
C
B
A
6
12
1
9
2 REQ'D
27
8 REQ'D
11
14
15
16
17
6 REQ'D
23
24
25
26
2
2 REQ'D.
2 REQ'D
19
14
15
16
18
5
4 REQ'D
2 REQ'D
8
21
6 REQ'D
2 REQ'D
10
22
8 REQ'D

REVISIONS				
SYM	DESCRIPTION	INITIALS and DATE		
		DRFTG	CHECK	ENGRG
A	PRODUCTION REL	5-21		PLT



NOTICE TO ALL PERSONS RECEIVING THIS DRAWING: CONFIDENTIAL. Reproduction Forbidden without the specific written permission of Atari Inc., Los Gatos, California. This drawing is only conditionally issued, and neither receipt nor possession thereof confers or transfers any right in, or license to use, the subject matter of the drawing or any design or technical information shown thereon, nor any right to reproduce this drawing or any part thereof, except for manufacture by vendors for Atari Incorporated and for manufacture under the corporation's written license, no right to reproduce this drawing is granted, or the subject matter thereof others by written agreement with or written permission from the corporation.

NEXT ASSY	USED ON
APPLICATION	TANK II

INTERPRET THIS DRAWING PER USASI Y14.5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± ±1/16 .x ± .1
ANGLES ± 1° .xx ± .03
SURFACE FINISH √ .xxx ± .010

MATERIAL
SEE P/L 003521

DRAWN BY PETE DATE 5-21-75
CHECKED
DESIGN ENGINEER P. TAKAICHI
PROJECT ENGINEER
DOCUMENT CONTROL
APPROVED

ATARI

ATARI INCORPORATED
14600 Winchester Boulevard
Los Gatos, California 95030

TITLE
TOP ASSEMBLY

SIZE	DRAWING NO.	REV
D	A003521	A
SCALE		SHEET 1 OF 1

DRAWING NO. A003521 SHEET 1/1 REV A

ATARI
Innovative leisure

ASSEMBLY TITLE / JOYSTICK ASSY(UP,DOWN & FIRE) **P/L** 002303-01

PARTS LIST SPECIFICATION Page 1 of 1

Drawn			
Checked	M.J. 5/20/75	Mech. Eng.	
Proj. Eng.		Elec. Eng	REV. E

Rev.	Description	Date	Apprv.	Rev.	Description	Date	Apprv.
A	PROD REL	4-3-75					
B	Rev per ECN 1285	4-3-75					
C	Rev per ECN 1333	4/21/75					
D	Rev per ECN 1470	6/6/75					
E	Rev per ECN 1503						

Item	Part Number	Qty.	DESCRIPTION
1	002299	1	Button
2			
3	002302	1	Spring Return
4			
5	002298	1	Rod
6	002294	1	Bushing
7	002296	2	Washer, Return
8	002293	1	Hub
9	002297	1	Spacer Ring
10	003207	1	Switch Plate 11
11	002301	1	Bracket, Switch
12	002300	1	Actuator
13	A003583-01	1	Handle Assy
14	75-2412S	2	Screw, Mach, Rd Hd, Phil #4-40x3/4
15	75-044	2	Washer, Split Lock, #4
16	75-914S	2	Nut, Hex #4-40
17	75-991202	1	Nut, Hex, ¼-28
18	75-019S	1	Washer, Flat, 5/16
19	75-06003	2	Washer, Belleville Spring
20	72-6410	4	Screw, Sheet Metal, Phil. #4 x 5/8
21	72-6412	4	Screw, Sheet Metal, Phil. #4 x 3/4
22	**65-081A	3	Micro Switch
23			
24	75-912S	2	Nut, Hex, #2-56

Notes:
* Optional Handle Grip See DWG No. 003092
** Acceptable Substitutes
65-091A, 65-101A, 65-111A.

ATARI
Innovative leisure

ASSEMBLY TITLE / JOYSTICK ASSY (DUMMY BUTTON) **P/L** 002303-02

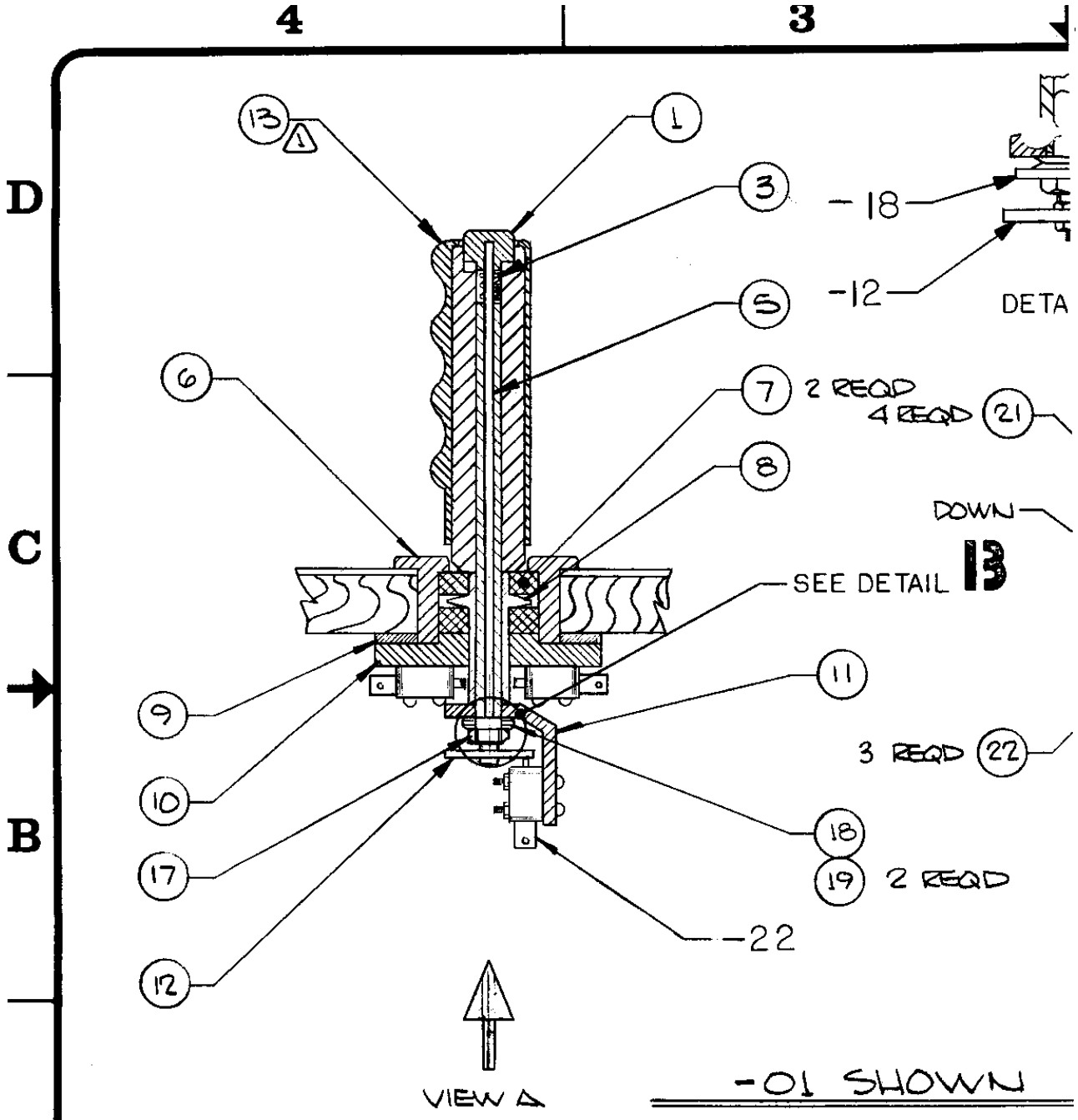
PARTS LIST SPECIFICATION Page 1 of 1

Drawn		
Checked M.J. 5/20/75	Mech. Eng. E.K.	
Proj. Eng.	Elec. Eng	REV. E

Rev.	Description	Date	Apprv.	Rev.	Description	Date	Apprv.
B	Prod Rel/ECN 1285	4-3-75					
C	Rev per ECN 1333	4/21/75					
D	Rev per ECN 1470	6/6/75	MS EK				
E	Rev per ECN 1503		EK				

Item	Part Number	Qty.	DESCRIPTION
1			
2	002294	1	Bushing
3	002296	2	Washer, Return
4	002293	1	Hub
5	002297	1	Spacer Ring
6	003207	1	Switch Plate 11
7	A003583-02	1	Handle Assy
8	75-991202	1	Nut, Hex, ¼-28
9	75-019S	2	Washer, Flat, 5/16
10	72-6410	4	Screw, Sheet Metal, Phil. #4 x 5/8
11	72-6412	4	Screw, Sheet Metal, Phil. #4 x 3/4
12	**65-081A	2	Switch

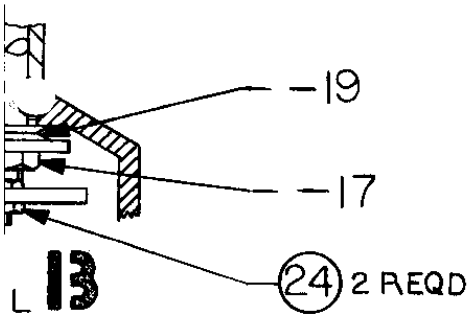
Notes:
* Optional Handle Grip See DWG No. 003082
** Acceptable Substitutes
65-091A
65-110A
65-111A



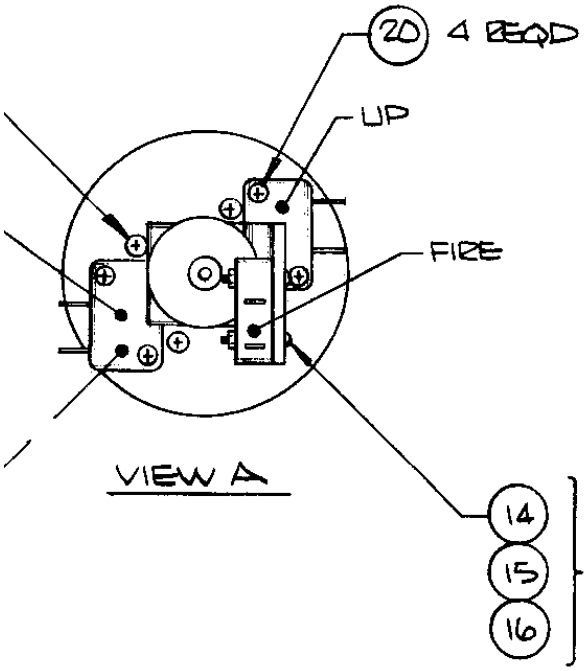
A0023

NEXT ASSY

APPLIC



REVISIONS				
SYM	DESCRIPTION	INITIALS and DATE		
		DRFTG.	CHECK	ENGRG
A	PROD REL	1-14-75	DC	
B	REV PER ECN 1285	4-3-75		
C	REV. PER ECN.1333 SH.1	TEW	4/17/75	
D	REV. PER ECN 1470	6-6-75		WS
E	REV PER ECN 1503	6-19-75		DC



NOTES:

1. HANDLE ASSY IS NOT TO BE TIGHT AFTER TOTAL ASSY. HANDLE ASSY SHOULD ROTATE.

INTERPRET THIS DRAWING PER USASI Y14.5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
FRACTIONS = ±1/16 .x = ± .1
ANGLES = ±1° .xx = ± .03
SURFACE FINISH ✓ .xxx = ± .010

MATERIAL: SEE PL 002303-01

WK
USED ON

ATION

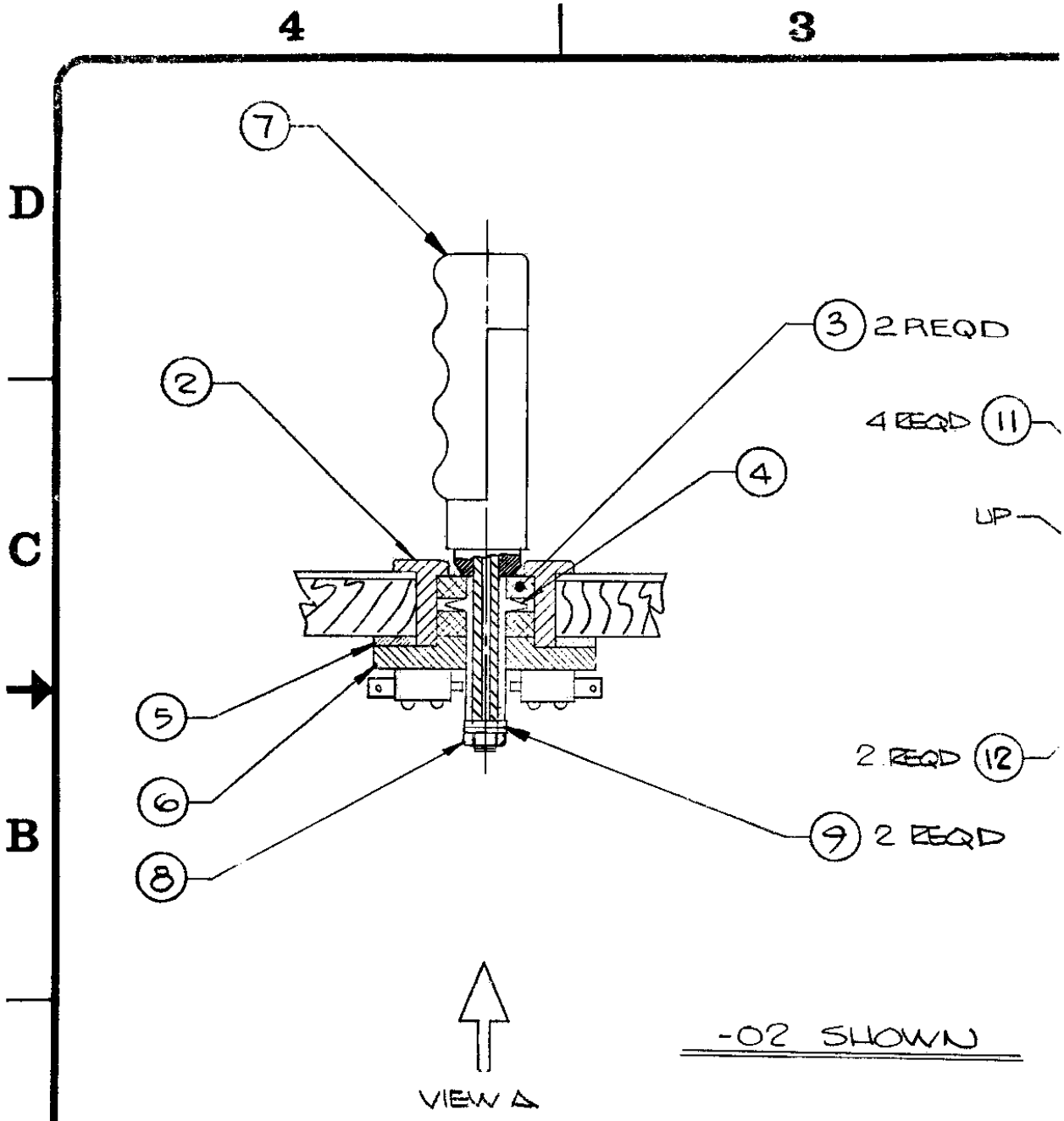
DRAWN BY COOK DATE 1-14-75
CHECKED
DESIGN ENGINEER
PROJECT ENGINEER
DOCUMENT CONTROL
APPROVED

ATARI INCORPORATED
14600 Winchester Boulevard
Los Gatos, California 95030

TITLE ASSY, JOYSTICK (UP, DOWN, FIRE)

SIZE B | DRAWING NO. A002303-01 | REV E

SCALE | SHEET 1 OF

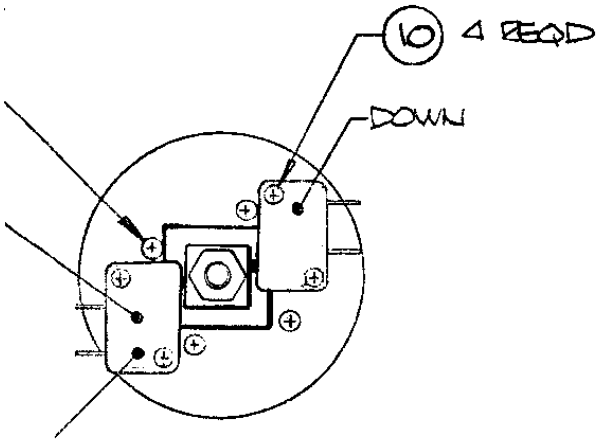


A0023

NEXT ASS

APPL

REVISIONS				
SYM	DESCRIPTION	INITIALS and DATE		
		DRFTG.	CHECK	ENGR.
B	SEE SHT 1	—	—	—
C	REV. PER ECN. 1333 SH. 2	TEW. 4/21/75	[illegible]	[illegible]
D	REV. PER ECN 1470	6-6-75	[illegible]	WLS
E	REV PER ECN 1503	6-19-75	[illegible]	DC



VIEW A

NOTES:

1. HANDLE ASSY IS NOT TO BE TIGHT AFTER TOTAL ASSY. HANDLE ASSY SHOULD ROTATE.

INTERPRET THIS DRAWING PER USASI Y14.5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:
FRACTIONS = ±1/16 .x = ±.1
ANGLES = ±1° .xx = ±.03
SURFACE FINISH ✓ .xxx = ±.010

MATERIAL: SEE PL 002303-02

NEXT ASSY USED ON

APPLICATION

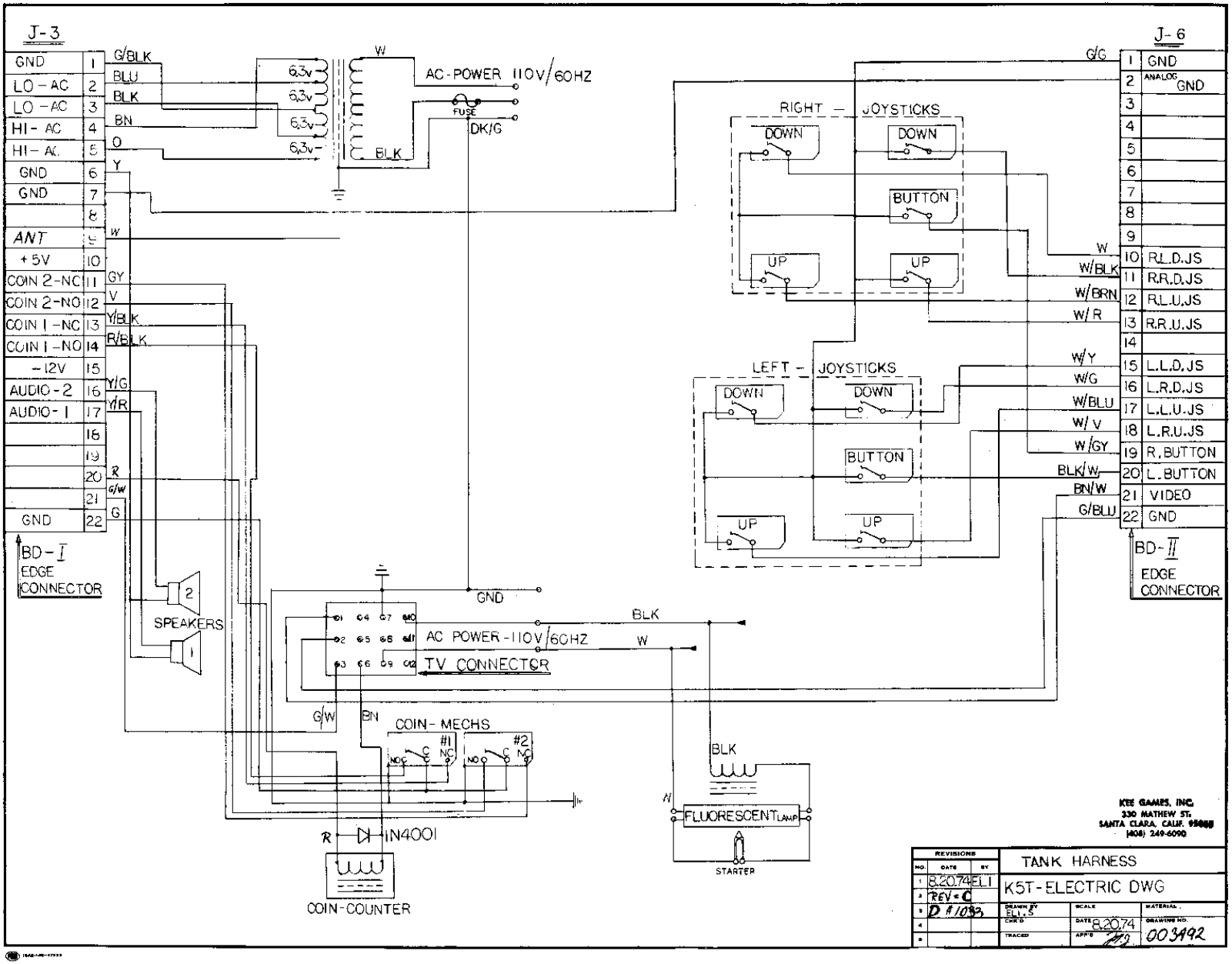
DRAWN BY ZOOK DATE 1-14-75
CHECKED
DESIGN ENGINEER
PROJECT ENGINEER
DOCUMENT CONTROL
APPROVED

ATARI INCORPORATED
14600 Winchester Boulevard
Los Gatos, California 95030

TITLE ASSY, JOYSTICK (DUMMY BUTTON)

SIZE B | DRAWING NO. A002303-02 | REV E

SCALE | SHEET 2 OF


J-3
GND 1
LO-AC 2
LO-AC 3
HI-AC 4
HI-AC 5
GND 6
GND 7
8
ANT 9
+5V 10
COIN 2-NC 11
COIN 2-NO 12
COIN 1-NC 13
COIN 1-NO 14
-12V 15
AUDIO-2 16
AUDIO-1 17
18
19
20
21
GND 22
BD-I EDGE CONNECTOR
G/BLK
BLU
BLK
BN
O
Y
W
GY
V
Y/BLK
R/BLK
Y/G
Y/R
R
G/W
G
6.3v
6.3v
6.3v
6.3v
W
BLK
AC-POWER 110V/60HZ
FUSE
DK/G
GND
2
SPEAKERS
1
GND
BLK
AC POWER-110V/60HZ
W
TV CONNECTOR
G/W
BN
COIN-MECHS
#1
#2
NC
NO
C
R
1N4001
COIN-COUNTER
BLK
W
FLUORESCENT LAMP
STARTER
RIGHT - JOYSTICKS
DOWN
DOWN
BUTTON
UP
UP
LEFT - JOYSTICKS
DOWN
DOWN
BUTTON
UP
UP
J-6
G/G
1 GND
2 ANALOG GND
3
4
5
6
7
8
9
W
W/BLK
W/BRN
W/R
10 R.L.D.JS
11 R.R.D.JS
12 R.L.U.JS
13 R.R.U.JS
14
W/Y
W/G
W/BLU
W/V
W/GY
BLK/W
BN/W
G/BLU
15 L.L.D.JS
16 L.R.D.JS
17 L.L.U.JS
18 L.R.U.JS
19 R.BUTTON
20 L.BUTTON
21 VIDEO
22 GND
BD-II EDGE CONNECTOR
KEE GAMES, INC.
330 MATHEW ST.
SANTA CLARA, CALIF. 95050
(408) 249-6090
REVISIONS
NO. DATE BY
1 8.20.74 ELI
2 REV=C
3 D # 1033
TANK HARNESS
K5T-ELECTRIC DWG
DRAWN BY ELI.S
CHK'D
TRACED
SCALE
DATE 8.20.74
APP'D
MATERIAL
DRAWING NO. 003492

TANK II

ATARI
Innovative leisure

ASSEMBLY TITLE / ELECTRONICS TRAY ASSEMBLY **P/L** 003538

PARTS LIST SPECIFICATION Page 1 of 1

Drawn

Checked M.J. 9/11/75

Proj. Eng.

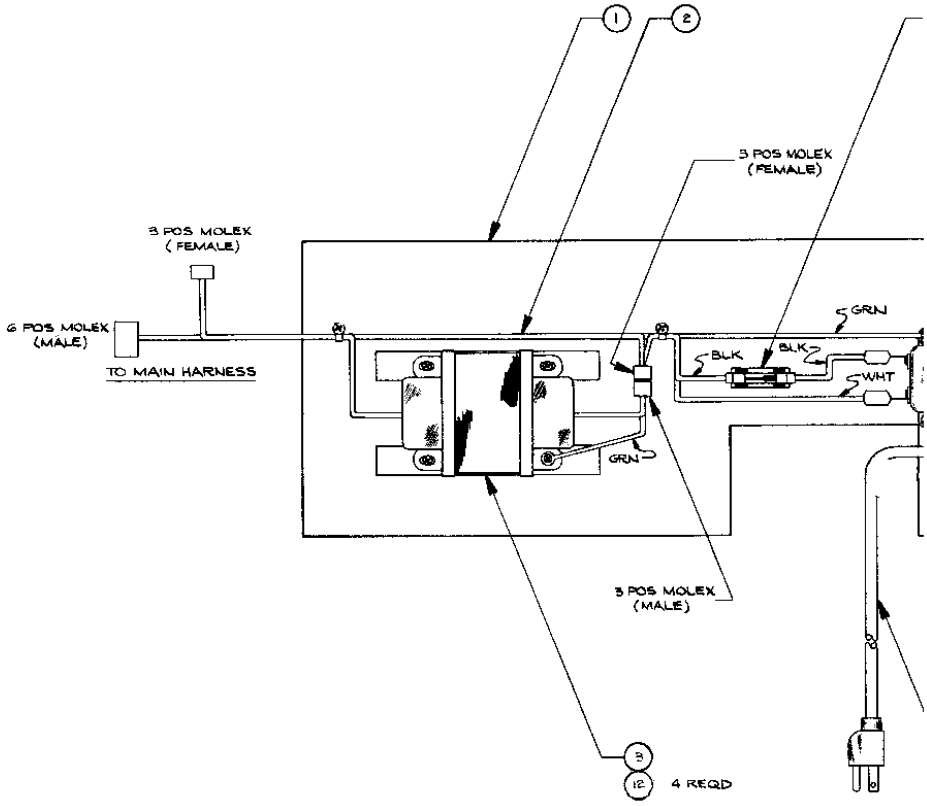
Mech. Eng.

Elec. Eng

REV. B

Rev.	Description	Date	Apprv.	Rev.	Description	Date	Apprv.
A	PROD REL	5-1-75					
B	Rev per ECN 1616	9-11-75					

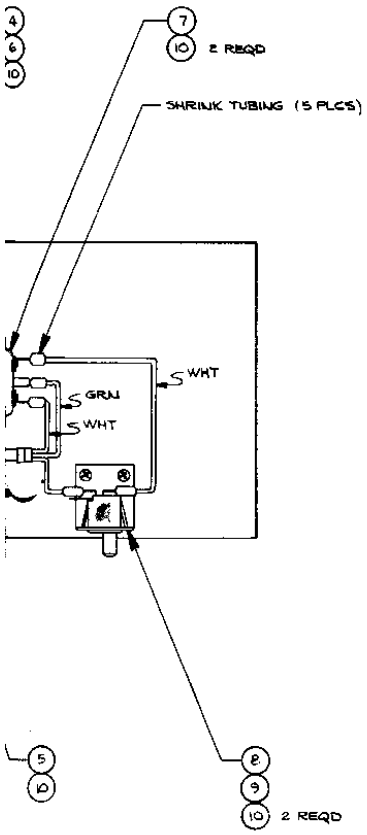
Item	Part Number	Qty.	DESCRIPTION
1	003539	1	Electronics Tray
2	A003492	1	Main Harness Assy. (K5-T)
3	A003560-01	1	Transformer Assy.
4	A003460	1	AC Power Harness Assy.
5	A004244	1	8" Power Cord Assy
6	46-202202	1	Fuse
7	90-3001	1	Filter, Power Line
8	68-001	1	A.C. Power Interlock Switch
9	000268	1	Bracket, Switch MTG.
10	78-25002	2	Screw Down, Tie Wrap
11	72-6608	8	Screw, SM, Pan Hd, Phil #6 x ½" Lg.
12	72-6824	4	Screw, SM, Pan Hd, Phil #8 x 1½ Lg.



NOTES :

1. USE ITEM 11 , S.M., PAN HD, PHIL #6 X ½ LG WITH

REVISIONS				
SYM	DESCRIPTION	INITIALS and DATE		
		DRFTG	CHECK	ENGRG
B	REVISED PER ECN 1616 MS	8-20-75		



ARNESS TIE DOWNS

NOTICE TO ALL PERSONS RECEIVING THIS DRAWING CONFIDENTIAL. Reproduction Forbidden without the specific written permission of Atari Inc., Los Gatos, California. This drawing is only conditionally issued, and neither receipt nor possession thereof confers or transfers any right in, or license to use, the subject matter of the drawing or any design or technical information shown thereon, nor any right to reproduce this drawing or any part thereof, except for manufacture by vendors for Atari Incorporated and for resale/for manufacture under the corporation's written license, no right to reproduce this drawing is granted or the subject matter thereof arising by written agreement with or written permission from the corporation.

A003521	TANK II
NEXT ASSY	USED ON
APPLICATION	

INTERPRET THIS DRAWING PER USAS Y14.5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
FRACTIONS ± 1/16 .x = ±.1
ANGLES ± 1° .xx = ±.03
SURFACE FINISH √ .xxx = ±.010

MATERIAL
SEE P/L 003588

DRAWN BY W.STEELE DATE AUG 20,75
CHECKED
DESIGN ENGINEER Brent K. Kaplan
PROJECT ENGINEER
DOCUMENT CONTROL
APPROVED J. Shachel

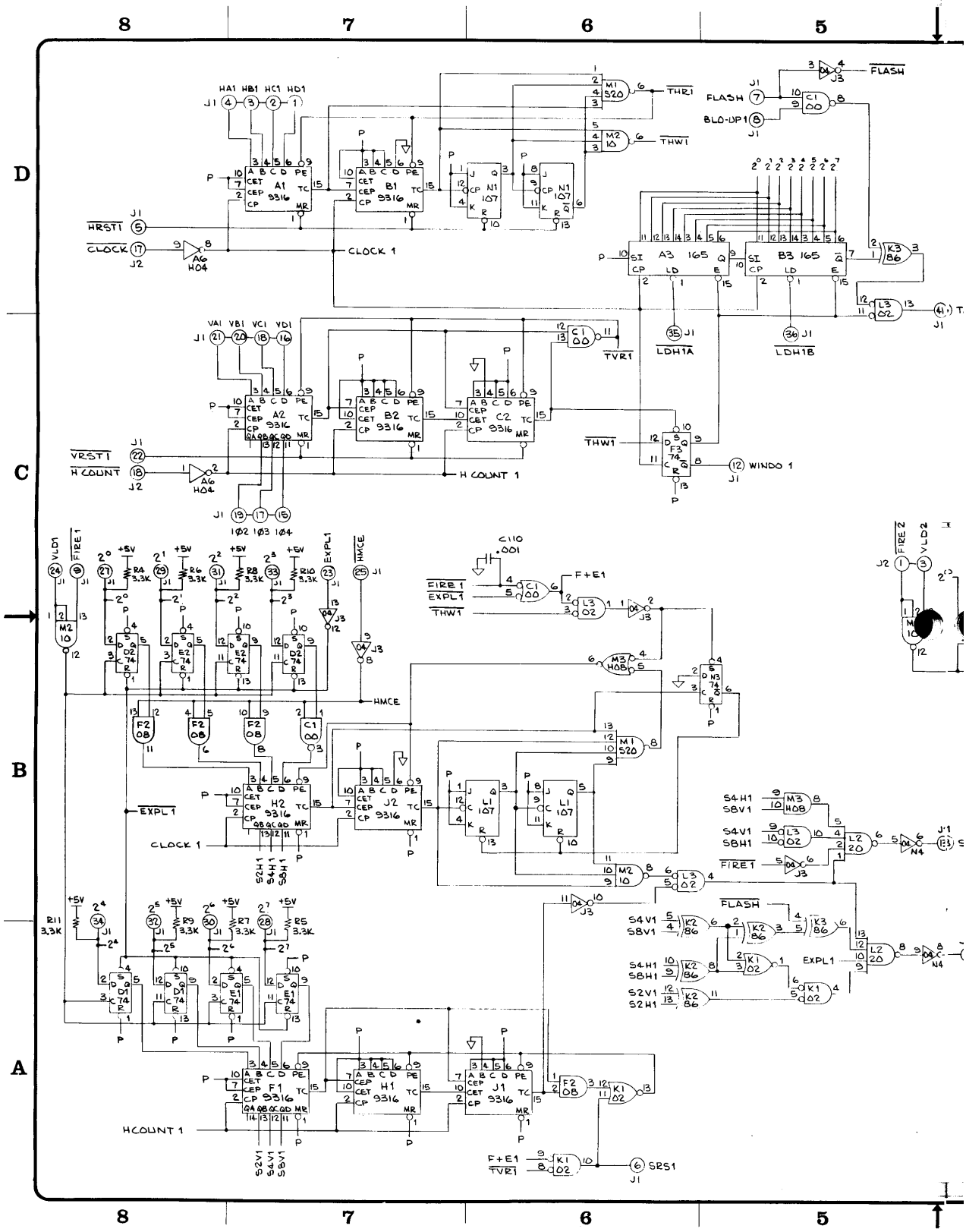
ATARI INCORPORATED
14600 Winchester Boulevard
Los Gatos, California 95030

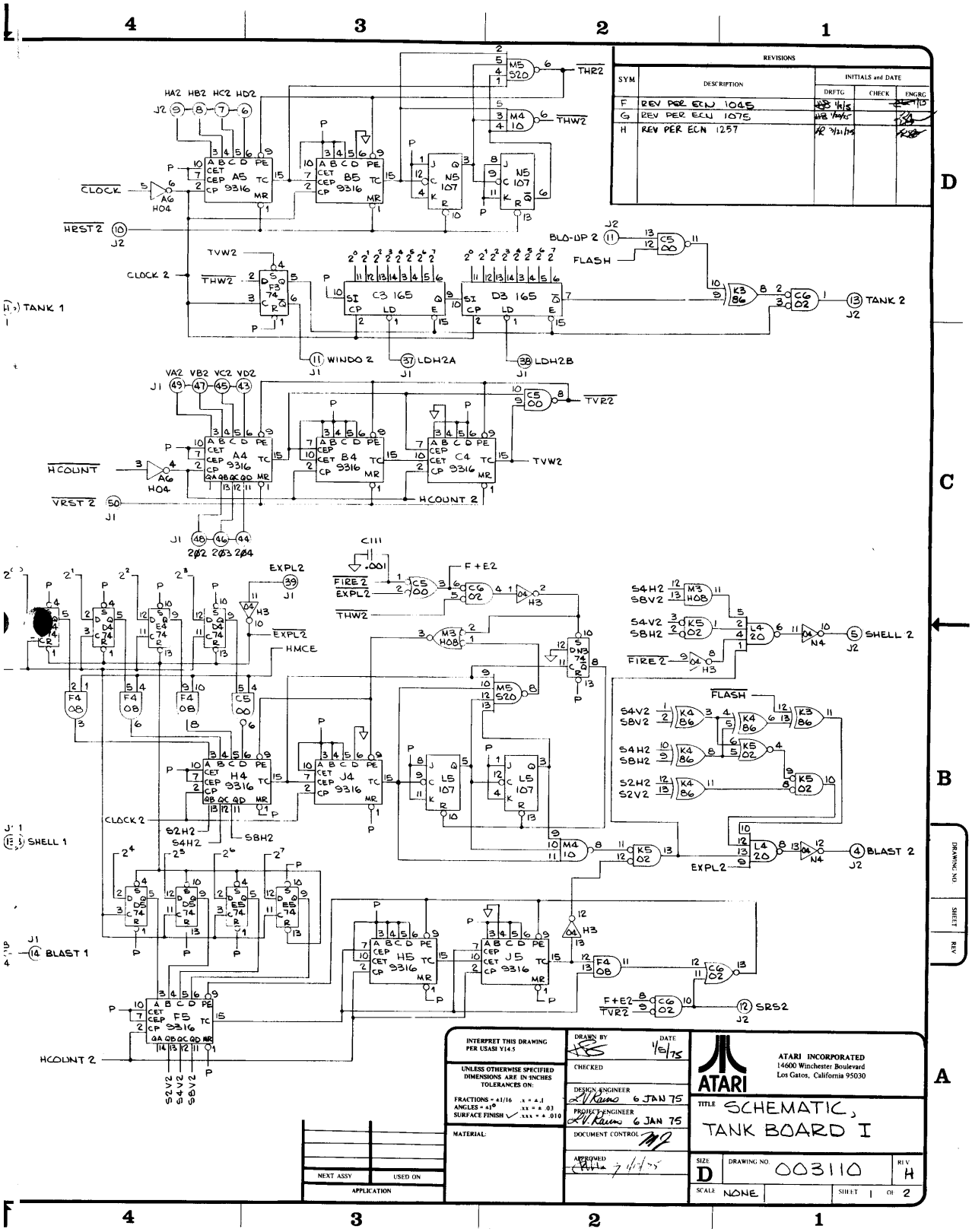
TITLE
ASSEMBLY, ELECTRONICS TRAY - TANK II

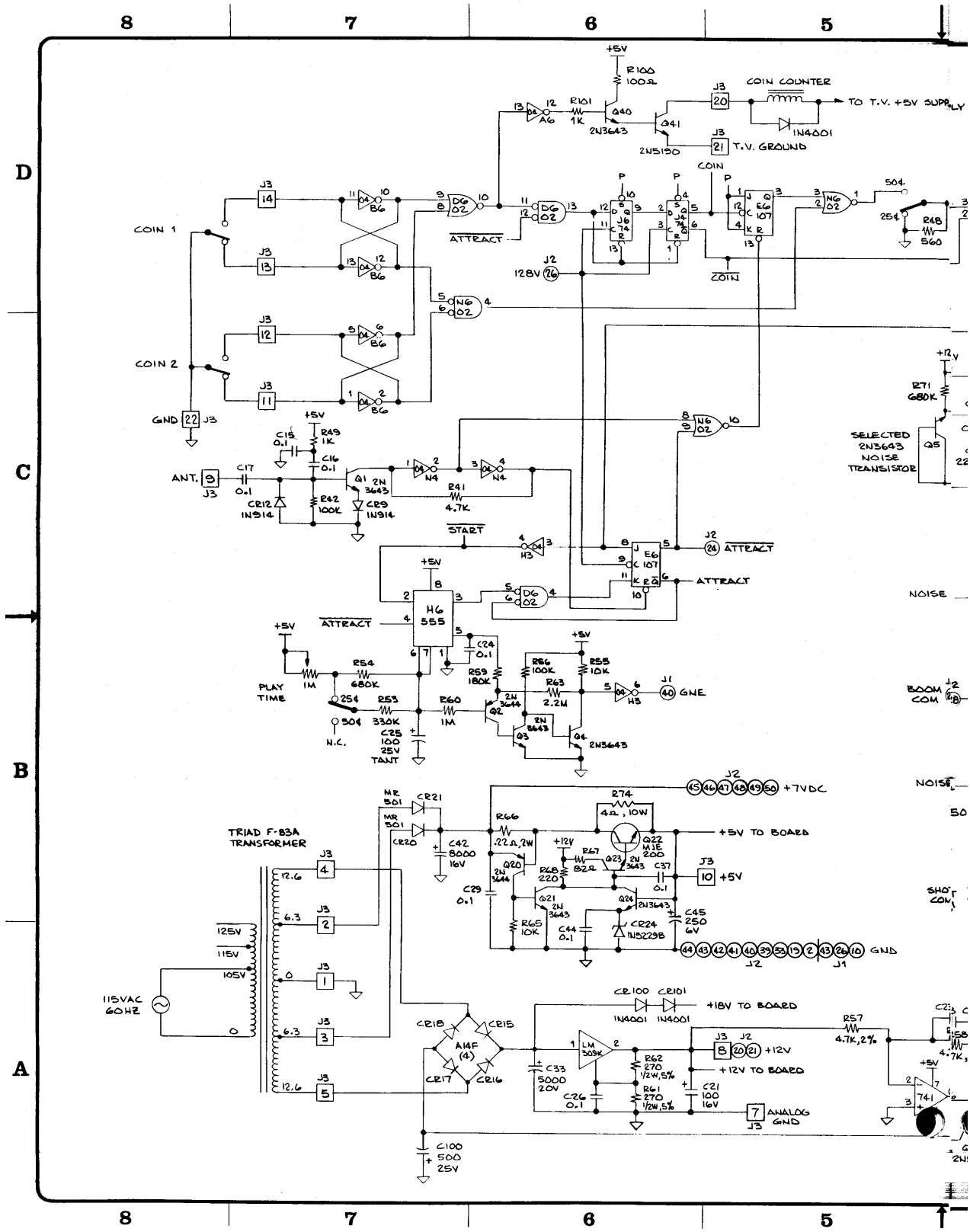
SIZE	DRAWING NO.	REV
D	A003538	B

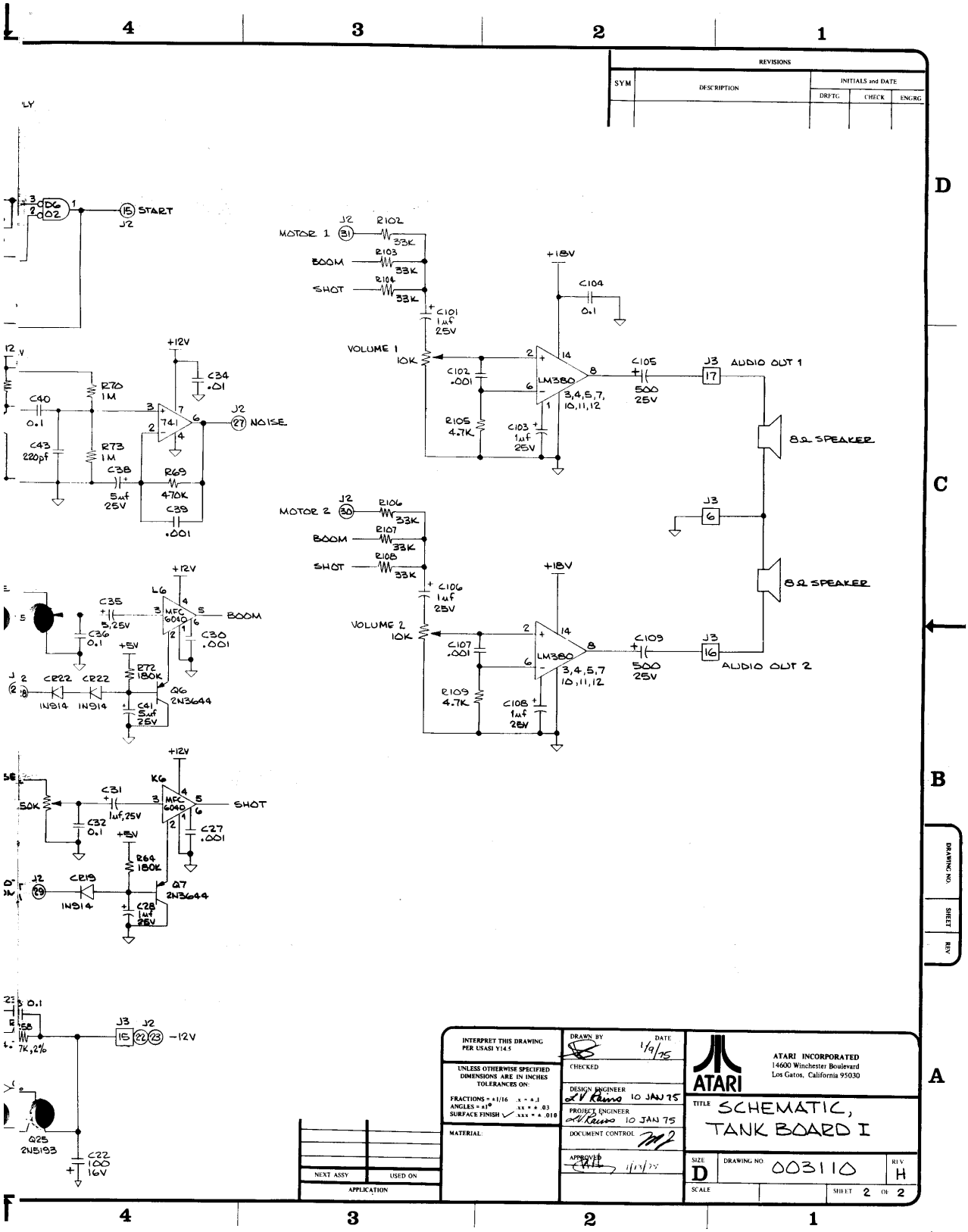
SCALE 1:2 SHEET 1 OF 1

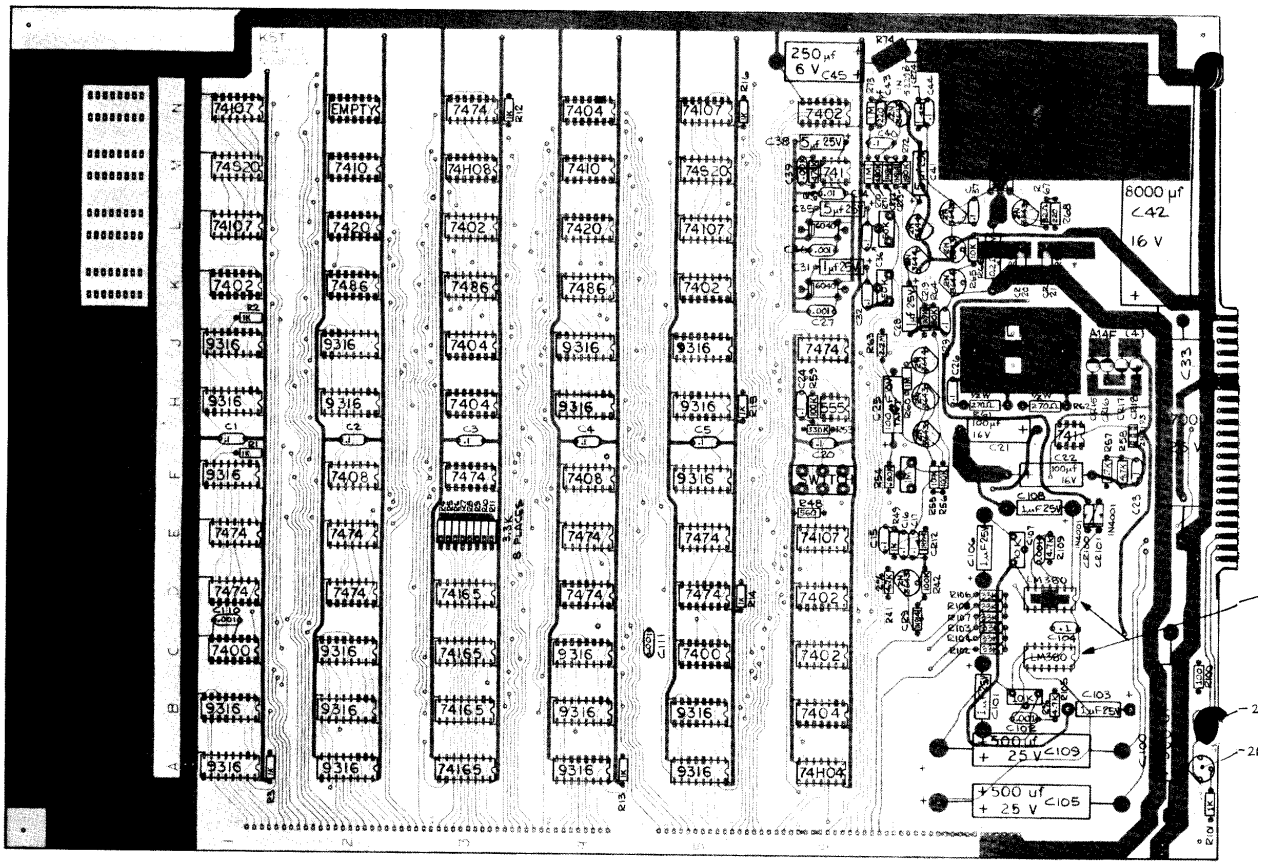
DRAWING NO
SHEET
REV


8
7
6
5
D
C
B
A
HA1 HB1 HC1 HD1
A1 9316
B1 9316
N1 107
A3 165
B3 165
K3 86
THR1
THW1
FLASH
BLO-UP1
HRST1
CLOCK
CLOCK 1
VA1 VB1 VC1 VD1
A2 9316
B2 9316
C2 9316
TVR1
LDH1A
LDH1B
VRST1
H COUNT
H COUNT 1
WINDO 1
VLD1
FIRE1
EXPL1
HMCE
R4 3.3K
R6 3.3K
R8 3.3K
R10 3.3K
R11 3.3K
R9 3.3K
R7 3.3K
R5 3.3K
F+E1
H2 9316
J2 9316
L1 107
S2H1
S4H1
S8H1
S4V1
S8V1
S2V1
HCOUNT 1
F1 9316
H1 9316
J1 9316
F+E1
TVR1
SBS1
VLD2


REVISIONS
SYM
DESCRIPTION
INITIALS and DATE
DRFTG
CHECK
ENGRG
F REV PER ECN 1045
G REV PER ECN 1075
H REV PER ECN 1257
CLOCK
HREST 2
CLOCK 2
TVW2
THW2
HCOUNT
VREST 2
HCOUNT 2
TVR2
FLASH
BLO-UP 2
TANK 1
TANK 2
WINDO 2
LDH2A
LDH2B
SHELL 1
SHELL 2
BLAST 1
BLAST 2
SRS2
EXPL2
HMCE
FIRE 2
F+E2
S2H2
S4H2
SBH2
S4V2
SBV2
S2V2
INTERPRET THIS DRAWING PER USASI Y14.5
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
FRACTIONS = 1/16 .x = ±.1
ANGLES = 1° .xx = ±.03
SURFACE FINISH .xxx = ±.010
MATERIAL
NEXT ASSY
USED ON
APPLICATION
DRAWN BY
DATE 1/6/75
CHECKED
DESIGN ENGINEER 6 JAN 75
PROJECT ENGINEER 6 JAN 75
DOCUMENT CONTROL
APPROVED 1/7/75
ATARI INCORPORATED
14600 Winchester Boulevard
Los Gatos, California 95030
TITLE SCHEMATIC, TANK BOARD I
SIZE D
DRAWING NO. 003110
REV H
SCALE NONE
SHEET 1 OF 2
DRAWING NO.
SHEET
REV


8
7
6
5
D
C
B
A
+5V
R100 100Ω
COIN COUNTER
TO T.V. +5V SUPPLY
R101 1K
Q40 2N3643
Q41 2N5190
1N4001
T.V. GROUND
COIN
ATTRACT
COIN 1
COIN 2
GND
12.8V
R71 680K
SELECTED 2N3643 NOISE TRANSISTOR
ANT.
CR12 IN914
CR29 IN914
R42 100K
R41 4.7K
R49 1K
START
PLAY TIME
R54 680K
R53 330K
R59 180K
R60 1M
R66 100K
R55 10K
R63 2.2M
C25 100 25V TANT
GNE
BOOM COM
NOISE
TRIAD F-83A TRANSFORMER
125V
115V
105V
115VAC 60HZ
CR20
CR21
C42 8000 16V
R66 .22Ω, 2W
R74 4Ω, 10W
+5V TO BOARD
R67 82Ω
R68 220
C37 0.1
C29 0.1
C44 0.1
R65 10K
CR24 1N5229B
C45 250 6V
+7VDC
GND
CR18
CR15
CR16
CR17
A14F (4)
CR100
CR101
+18V TO BOARD
C33 5000 20V
C26 0.1
R62 270 1/2W,5%
R61 270 1/2W,5%
C21 100 16V
+12V
+12V TO BOARD
ANALOG GND
C100 500 25V
R57 4.7K,2%
741


REVISIONS
SYM
DESCRIPTION
INITIALS and DATE
DRFTG
CHECK
ENGRG
D
C
B
A
4
3
2
1
(15) START
J2
MOTOR 1
J2 (31)
R102 33K
BOOM
R103 33K
SHOT
R104 33K
C101 1uf 25V
+18V
C104 0.1
VOLUME 1 10K
C102 .001
LM380
3,4,5,7, 10,11,12
C105 500 25V
J3 17
AUDIO OUT 1
R105 4.7K
C103 1uf 25V
8Ω SPEAKER
MOTOR 2
J2 (30)
R106 33K
BOOM
R107 33K
SHOT
R108 33K
C106 1uf 25V
+18V
VOLUME 2 10K
C107 .001
LM380
3,4,5,7 10,11,12
C109 500 25V
J3 16
AUDIO OUT 2
R109 4.7K
C108 1uf 25V
J3 6
8Ω SPEAKER
+12V
C34 .01
R70 1M
C40 0.1
J2 (27) NOISE
C43 220pf
R73 1M
C38 5uf 25V
R69 470K
C39 .001
+12V
C35 5,25V
LM NEC 6040
BOOM
C36 0.1
C30 .001
+5V
R72 180K
CR22 CR22
IN914 IN914
Q6 2N3644
C41 5uf 25V
+12V
C31 1uf,25V
NEC 6040
SHOT
50K
C32 0.1
C27 .001
+5V
R64 180K
J2 (29)
CR19
IN914
Q7 2N3644
C28 1uf 25V
0.1
R58 7K,2%
J3 J2
15 22 23
-12V
Q25 2N5193
C22 100 16V
INTERPRET THIS DRAWING PER USASI Y14.5
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:
FRACTIONS ± 1/16
ANGLES ± 1°
SURFACE FINISH
x ± .1
xx ± .03
xxx ± .010
MATERIAL
DRAWN BY
DATE 1/9/75
CHECKED
DESIGN ENGINEER 10 JAN 75
PROJECT ENGINEER 10 JAN 75
DOCUMENT CONTROL
APPROVED 1/13/75
NEXT ASSY
USED ON
APPLICATION
ATARI
ATARI INCORPORATED
14600 Winchester Boulevard
Los Gatos, California 95030
TITLE SCHEMATIC, TANK BOARD I
SIZE D
DRAWING NO. 003110
REV H
SCALE
SHEET 2 OF 2
DRAWING NO.
SHEET
REV.


250 µf
6 V C45
8000 µf
C42
16 V
EMPTY
7474
7404
74107
7402
74S20
7410
74H08
7420
7486
9316
7408
74165
7400
74H04
LM380
500 uf
+ 25 V C109
+500 uf
+ 25 V C105

TANK

ATARI Innovative leisure

ASSEMBLY TITLE	TANK - BOARD 1	P/L003110

PARTS LIST SPECIFICATION — Page 1 of 2

Drawn		
Checked MJ. 4-15-75	Mech. Eng.	
Proj. Eng. L. Kaims 3 JAN 75	Elec. Eng. L. Kaims 3 JAN 75	REV. H

Rev.	Description	Date	Apprv.	Rev.	Description	Date	Apprv.
D	PROD REL	11-22					
D	Incorporates ECN 74-120	11-26					
D	Incorporates ECN 74-124	12-14					
F	REV PER ECN 1045	1/13/75					
G	REV PER ECN 1075	1/20/75					
H	Rev per ECN 1257	3/21/75					

Item	Part Number	Qty.	DESCRIPTION
1	37-7400	2	Integrated Circuit, 7400
2	37-7402	6	" " 7402
3	37-7404	4	" " 7404
4	37-74H04	1	" " 74H04
5	37-7408	2	" " 7408
6	37-74H08	1	" " 74H08
7	37-7410	2	" " 7410
8	37-7420	2	" " 7420
9	37-74S20	2	" " 74S20
10	37-7474	11	" " 7474
11	37-7486	3	" " 7486
12	37-74107	5	" " 74107
13	37-74165	4	" " 74165
14	37-9316	20	" " 9316
15	37-555	1	" " 555
16	37-741	2	" " 741
17	37-LM380	2	" " LM380
18	37-MFC6040	2	" " MFC 6040
19	37-LM309	1	LM 309 K, Voltage Regulator
20	10-5101	1	Resistor, Carbon, 5%, ¼ Watt, 100 ohm
21	10-5102	10	" " " " 1K ohm
22	10-5103	2	" " " " 10K ohm
23	10-5104	3	" " " " 100K ohm
24	10-5105	3	" " " " 1Meg ohm
25	10-5221	1	" " " " 220 ohm
26	10-5225	1	" " " " 2.2M ohm
27	10-5333	6	" " " " 33K ohm
28	10-5472	3	" " " " 4.7K ohm
29			
30	10-5474	1	" " " " 470K ohm
31	10-5561	1	" " " " 560 ohm
32			
33			
34	10-5684	2	" " " " 680K ohm
35	10-5820	1	" " " " 82 ohm
36			
37	10-5334	1	" " " " 330K ohm
38	14-2472	2	" " 2% " 4.7K ohm
39	11-5271	2	Resistor, Carbon, 5%, ½ Watt, 270 ohm

ASSEMBLY TITLE TANK - BOARD 1 **P/L 003110**

PARTS LIST SPECIFICATION

Rev H

Item	Part Number	Qty.	DESCRIPTION
40			
41	13-5P22	1	Resistor, Carbon, 5%, ½ Watt, .22 ohm
42	19-808W4PO	1	Resistor, Wirewound, 20%, 10 Watt, 4 ohm
43	31-1N914	5	Diodes, 1N 914
44	31-1N4001	2	Diodes, 1N 4001
45	32-1N5229	1	Diodes, Zener, 1N 5229B, 4.3V, 5%, Motorola
46	31-MR501	2	Diodes, MR 501
47	34-2N3643	8	Transistor, 2N 3643
48	34-2N3644	4	Transistor, 2N 3644
49	34-2N5190	1	Transistor, 2N 5190
50	34-2N5193	1	Transistor, 2N 5193
51	34-MJE200	1	Transistor, MJE 200
52	19-311503	2	Trimpot, 50K
53	19-311103	2	Trimpot, 10K
54	19-311105	1	Trimpot, 1 Meg
55	27-120104	19	Capacitor, Ceramic Disc Bypass, .1 uf
56	27-101102	7	" " " .001 uf
57	24-250105	6	" Electrolytic, 1 uf, 25V
58	24-250505	3	" " 5 uf, 25V
59	24-160107	2	" " 100 uf, 16V
60	24-060257	1	" " 250 uf, 6V
61	24-250478	1	" " 4700 uf, 25V
62	24-200808	1	" " 8000 uf, 16V
63	28-101221	1	" Dipped Mica, 220 pf
64	29-001	1	" Tantalum, 100 uf, 10V
65	69-001	1	Switch, DPDT
66	78-06002	1	Heatsink, Thermalloy #6111B-66
67	78-06003	2	HEATSINK, THERMALLOY #6011B
68	72-1610S	2	Screw, Machine, , Pan Hd., Phil., 6-32 x 5/8"
69	75-056	2	Washer, Lock, Internal Star, #6
70	75-916S	2	Nut, Machine, Hex, 6-32
71	72-1412S	2	Screw, Machine, , Pan Hd., Phil., 4-40 x 3/4"
72	75-044	2	Washer, Split Lock, #4
73	75-914S	2	Nut, Hex, 4-40
74	003111	1	Printed Circuit Board, #90124
75	10-5184	2	Resistor, Carbon, 5%, ¼W, 180K ohm
76	27-101103	1	Capacitor, Ceramic Disc, .01 uf
77	24-250507	3	Capacitor, Electrolytic, 500uf, 25V
78	10-5332	8	RESISTOR, CARBON, 5%, ¼W, 3.3 K OHM
79	31-A14F	4	Diode, G.E. Type A14F

TANK

ATARI Innovative leisure

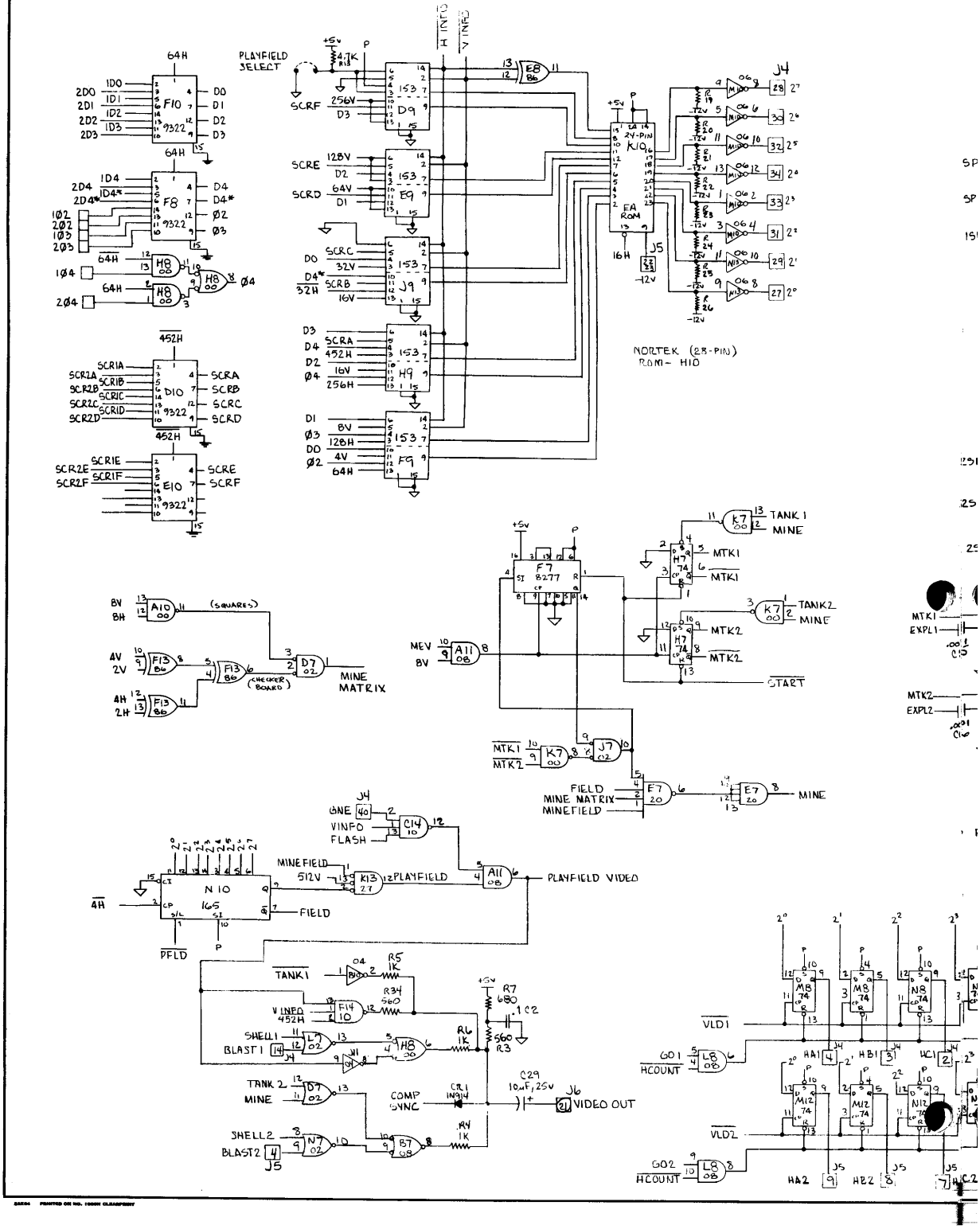
ASSEMBLY TITLE: TANK - BOARD 2 — P/L 003112

PARTS LIST SPECIFICATION — Page 1 of 2

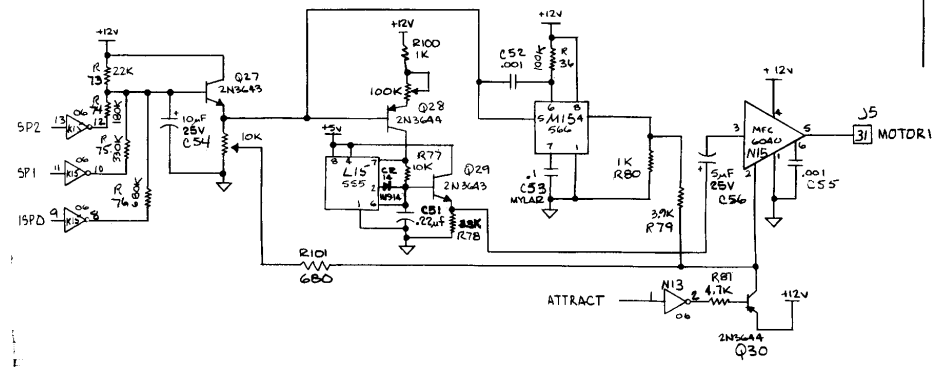
Drawn		
Checked M.J. 8/25/75	Mech. Eng.	
Proj. Eng. L.V. Rains 3 JAN 75	Elec. Eng. L.V. Rains 3 JAN 75 / 1/6/75	REV. G

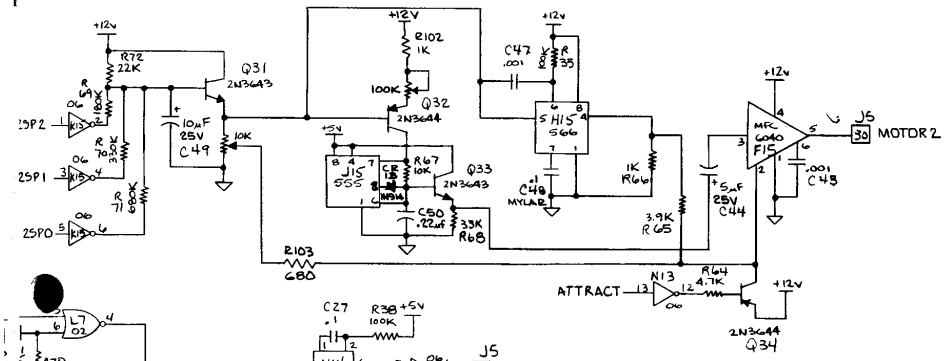
Rev.	Description	Date	Apprv.	Rev.	Description	Date	Apprv.
D	PROD REL	11-22					
D	Incorporates ECN 74-120	11-26					
D	Incorporates ECN 74-122	12-11					
F	PER ECN 1047	1/13/75					
G	PER ECN 1482	6/11/75					

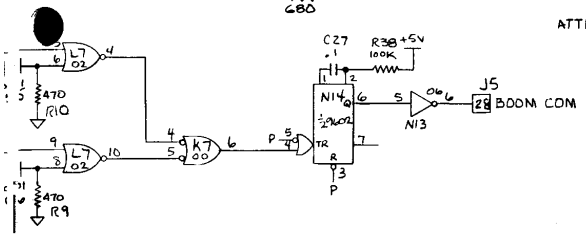
Item	Part Number	Qty.	DESCRIPTION
1	37-7400	12	Integrated Circuit, 7400
2	37-7402	11	" " 7402
3	37-7404	4	" " 7404
4	37-74H04	1	" " 74H04
5	37-7406	3	" " 7406
6	37-7408	4	" " 7408
7	37-7410	6	" " 7410
8	37-7420	2	" " 7420
9	37-7427	1	" " 7427
10	37-7474	16	" " 7474
11	37-7486	2	" " 7486
12	37-7492	1	" " 7492
13	37-7493	7	" " 7493
14	37-74107	3	" " 74107
15	37-74153	5	" " 74153
16	37-74165	1	" " 74165
17	90-2006	1	16K Tank Rom E.A. #4800SD
18	37-74193	2	Integrated Circuit, 74193
19	37-8277	1	" " 8277
20	37-9316	4	" " 9316
21	37-9321	1	" " 9321
22	37-9322	4	" " 9322
23	37-9602	3	" " 9602
24	37-555	2	" " 555
25	37-556	1	" " 556
26	37-566	2	" " 566
27	37-MFC6040	2	" " MFC 6040
28	10-5101	10	Resistor, Carbon, 5%, ¼ Watt, 100 ohm
29	10-5102	12	" " " " 1K ohm
30	10-5103	3	" " " " 10K ohm
31	10-5104	4	" " " " 100K ohm
32	10-5221	1	" " " " 220 ohm
33	10-5223	2	" " " " 22K ohm
34	10-5331	2	" " " " 330 ohm
35	10-5333	3	" " " " 33K ohm
36	10-5334	2	" " " " 330K ohm
37	10-5392	2	" " " " 3.9K ohm
38	10-5471	6	" " " " 470 ohm

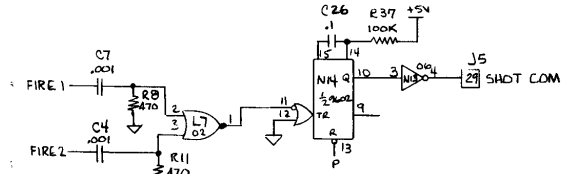

PLAYFIELD SELECT
H INFO
V INFO
NORTEK (28-PIN) ROM- H10
MINE MATRIX
(SQUARES)
(CHECKER BOARD)
TANK 1 MINE
TANK 2 MINE
START
FIELD
MINE MATRIX
MINEFIELD
MINE
PLAYFIELD VIDEO
VIDEO OUT
COMP SYNC
SHELL1
BLAST1
SHELL2
BLAST2
MTK1
EXPL1
MTK2
EXPL2
VLD1
VLD2
HCOUNT

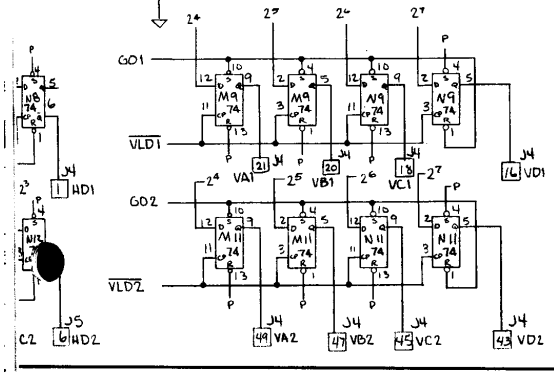
SYM	DESCRIPTION	DATE	APPV
F	REV PER ECN 1047		
G	REV PER ECN 1482		

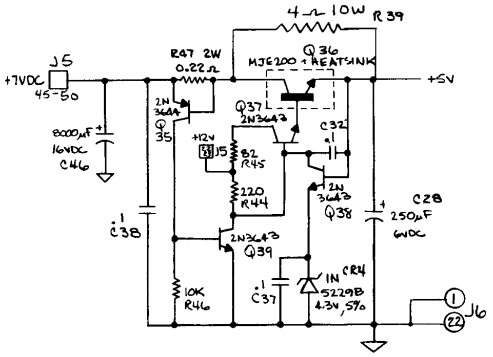






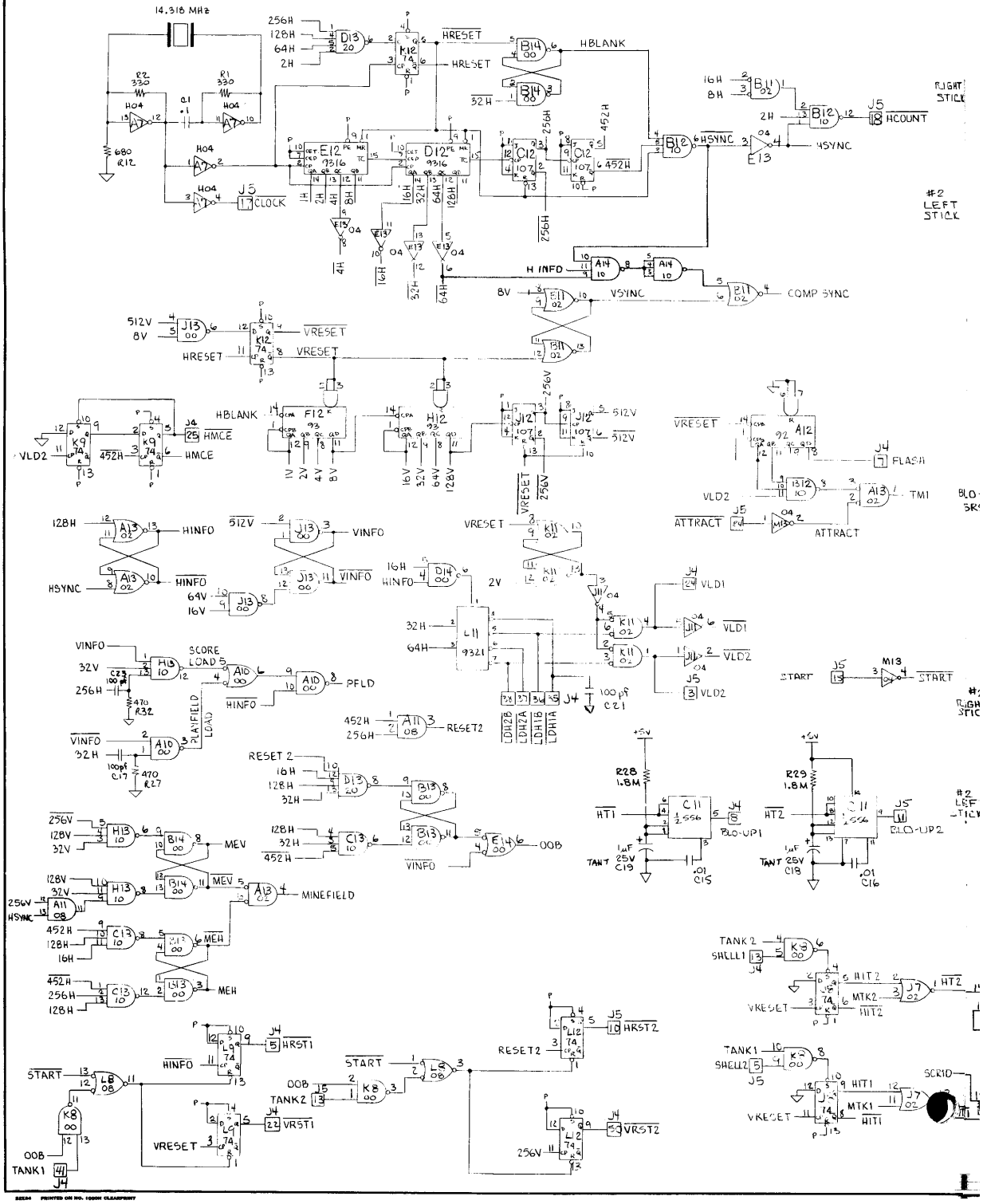


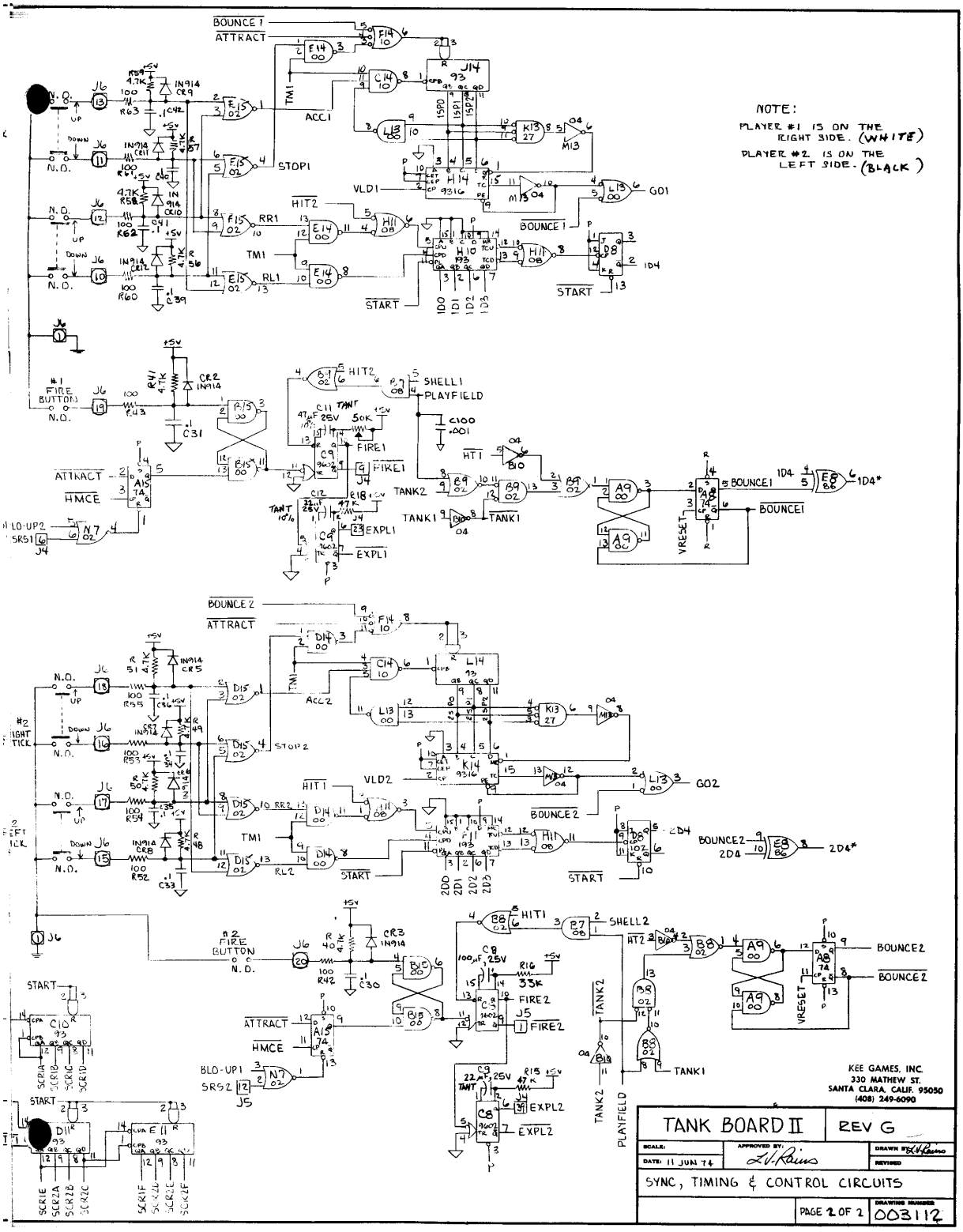


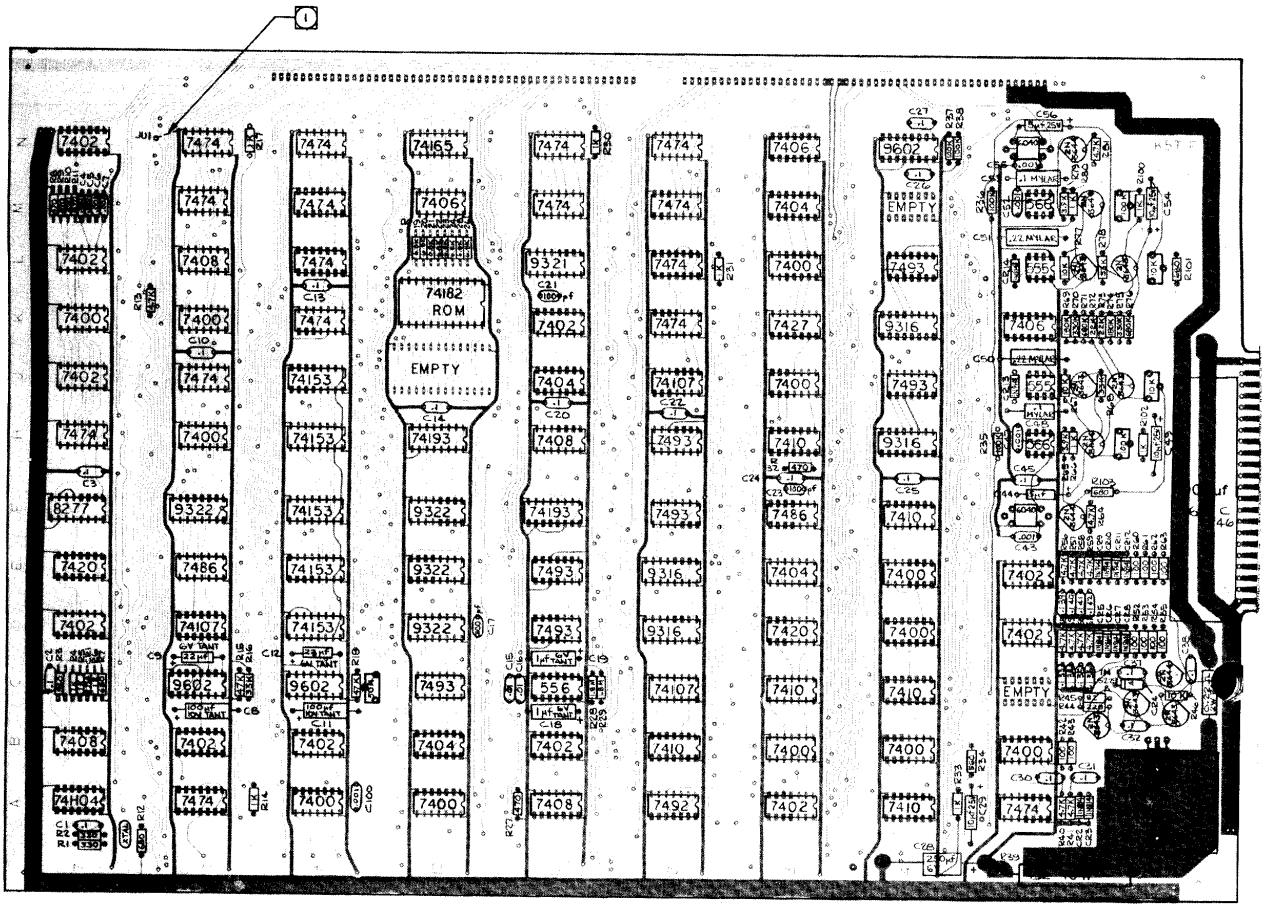


KEE GAMES, INC.
330 MATHEW ST.
SANTA CLARA, CALIF. 95050
(408) 249-6090

TANK BOARD II	REV G
SCALE:	DRAWN BY:
DATE: 18 JUNE 74	APPROVED BY:
ROM MUXING, PLAYFIELD, MINEFIELD, SOUND	REVISED
PAGE 8 OF 2	DRAWING NUMBER 003112


14.318 MHz
HRESET
HBLANK
HSYNC
HCOUNT
CLOCK
H INFO
VSYNC
COMP SYNC
VRESET
HMCE
VLD2
VLD1
FLASH
TM1
ATTRACT
HINFO
VINFO
PFLD
MEV
MEH
MINEFIELD
OOB
RESET2
HRST1
HRST2
VRST1
VRST2
HIT1
HIT2
MTK1
MTK2
SCRID
TANK1
TANK2
SHELL1
SHELL2
START
LOAD
PLAYFIELD
BLO-UP1
BLO-UP2
RIGHT STICK
#2 LEFT STICK

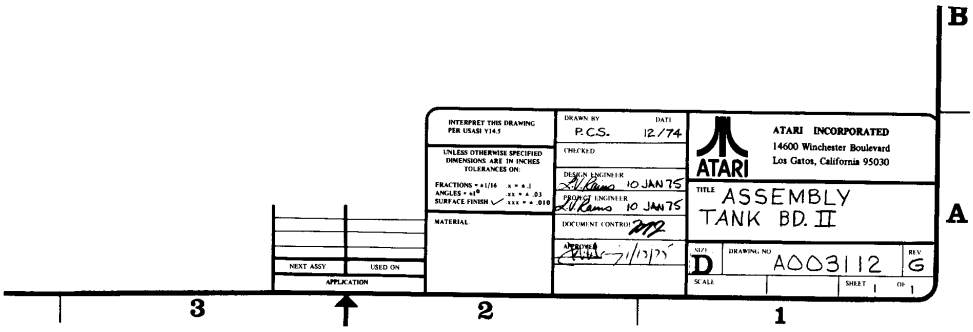

NOTE:
PLAYER #1 IS ON THE RIGHT SIDE. (WHITE)
PLAYER #2 IS ON THE LEFT SIDE. (BLACK)
BOUNCE1
ATTRACT
ACC1
STOP1
VLD1
GO1
HIT2
RR1
RL1
START
BOUNCE1
1D4
#1 FIRE BUTTON
SHELL1
PLAYFIELD
FIRE1
EXPL1
TANK2
TANK1
BOUNCE1
1D4*
VRESET
HMCE
BOUNCE2
ACC2
STOP2
VLD2
GO2
HIT1
RR2
RL2
2D4
2D4*
#2 FIRE BUTTON
SHELL2
FIRE2
EXPL2
PLAYFIELD
KEE GAMES, INC.
330 MATHEW ST.
SANTA CLARA, CALIF. 95050
(408) 249-6090
TANK BOARD II
REV G
SCALE:
APPROVED BY: L.V. Rains
DRAWN BY: L.V. Rains
DATE: 11 JUN 74
REVISED
SYNC, TIMING & CONTROL CIRCUITS
PAGE 2 OF 2
DRAWING NUMBER 003112



NOTES :

1. JU1 IS AN OPTIONAL JUMPER FOR ALTERNATE PLAYFIELD (#30 AWG, INSULATED)

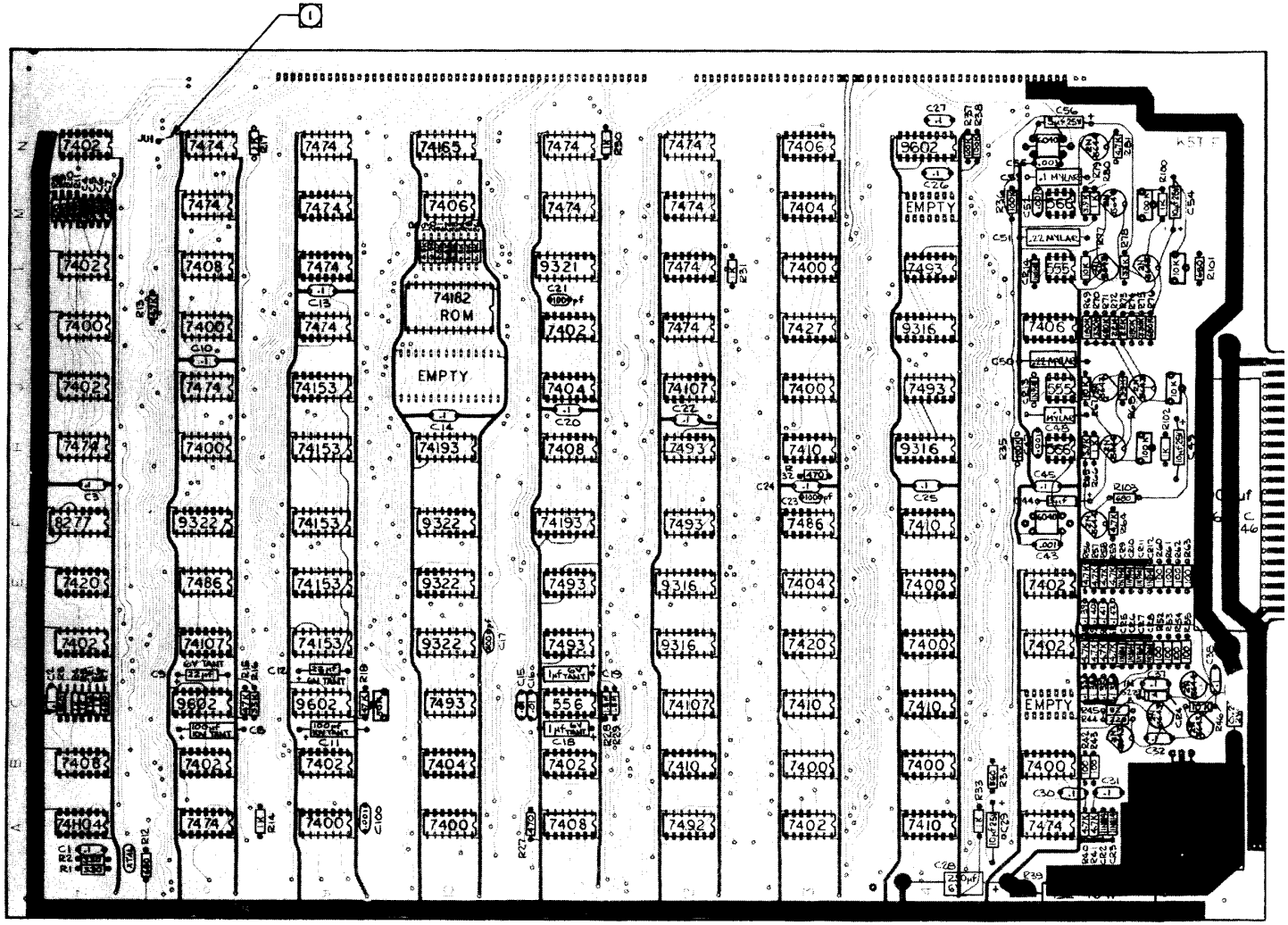
SYM	DESCRIPTION	DFT'D	APPV
F	REV PER ECN 1047	[illegible]	[illegible]
G	REV PER ECN 1482	[illegible]	[illegible]



ASSEMBLY TITLE TANK - BOARD 2 **P/L** 003112

PARTS LIST SPECIFICATION

Item	Part Number	Qty.	DESCRIPTION Rev G
39	10-5472	14	Resistor, Carbon, 5%, ¼ Watt, 4.7K ohm
40	10-5473	1	" " " " 47K ohm
41	10-5561	2	" " " " 560 ohm
42	10-5681	4	" " " " 680 ohm
43	10-5682	8	" " " " 6.8K ohm
44	10-5820	1	" " " " 82 ohm
45	10-5184	2	" " " " 180K ohm
46	10-5185	2	" " " " 1.8M ohm
47	13-5P22	1	" " " 2 Watt, .22 ohm
48	19-808W4P0	1	" Wirewound, 20%, 10W, 4 ohm
49	31-1N914	13	Diode, 1N 914
50	32-1N5229	1	Diode, Zener, 1N 5229B, 4.3V, 5%, Motorola
51	34-2N3643	7	Transistor, 2N 3643
52	34-2N3644	5	Transistor, 2N 3644
53	34-MJE200	1	Transistor, MJE 200
54	19-311103	2	Trimpot, 10K
55	19-311503	1	Trimpot, 50K
56	90-101	1	Crystal, 14.31818 mhz
57	27-120104	26	Capacitor, Ceramic Disc Bypass, .1 uf
58	27-101103	2	" " " .01 uf
59	27-250105	9	" " " .001 uf
60	28-101101	3	" Dipped Mica, 100 pf
61	29-004	2	" Tantalum, 1 uf, 6V
62	29-003	2	" " 22 uf, 6V
63	29-001	2	" " 100 uf, 10V
64	21-101224	2	" Mylar, .22 uf
65	24-250505	2	" Electrolytic, 5 uf, 25V
66	24-250106	3	" " 10 uf, 25V
67	24-060257	1	" " 250 uf, 6V
68	24-200808	1	" " 8000 uf, 16V
69	79-42424	1	Socket, 24 pin
70	78-06002	1	Heatsink, Thermalloy #6111B-66
71	55-6125	4	Flex Strip Jumper, 25 Conductor, Ansley #FSN-23A
72	72-1412S	2	Screw, Machine, , Pan Hd., Phil., 4-40 x 3/4"
73	75-044	2	Washer, Split Lock, #4
74	75-914S	2	Nut, Hex 4-40
75	003113	1	Printed Circuit Board, #90125
76	10-5684	2	Resistor, Carbon, 5%, ½W, 680K ohm
77	19311104	2	Trimpot, 100K ohm
78	21-101104	2	Capacitor, Mylar .1 uf
79	———	1	Jumper, (30 AWG, Insulated)



NOTES :

1. JU1 IS AN OPTIONAL JUMPER FOR ALTERNATE PLAYFIELD (#30 AWG, INSULATED)

SYM	DESCRIPTION	DATE	APPV
F	REV PER ECN 1047	12/19/74	CA
G	REV PER ECN 1482	12/19/74	CA