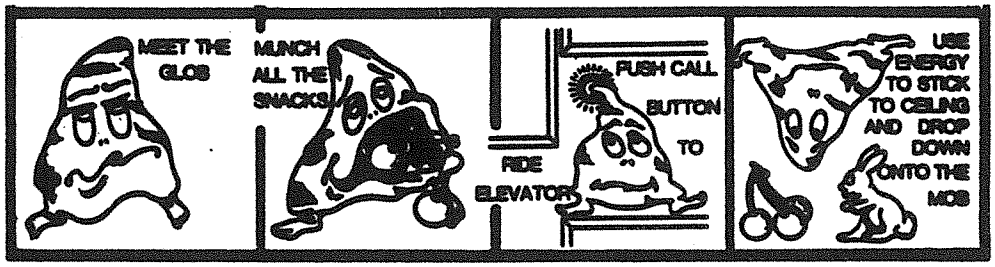
The Glob

Fully Licensed



INSTRUCTION MANUAL

Manufacturer

Magic Conversion Co.
P.O. Box 3263
820 Elmwood Avenue
Providence, RI 02907
(401) 461-9389

Distributor

THE GLOB DIAGNOSTICS

In order to aid the operator in quickly locating and correcting problems in THE GLOB game board, several comprehensive diagnostic routines were provided in THE GLOB software. A diagnostic button provided on the harness and designed to be located inside the arcade cabinet, will allow the operator to enter the diagnostic program. After depressing the diagnostic button, the diagnostic routines may be selected and executed by using the joystick and the energy button. A menu will be displayed once entering the diagnostics and will display the following diagnostic routines:

1. CURRENT SETTING
2. COLOR TABLE
3. SCRATCHPAD RAM
4. VIDEO RAM
5. ROM
6. CONVERGENCE
7. BUTTONS
8. EXIT

The above eight selections are described as follows:

1. CURRENT SETTING- Upon entering this routine, the status of the dip switches will be displayed along with a description of the function of each switch. Use this routine when checking the setting or use it as an aid in readjusting the settings. Among the game functions which may be adjusted are the number of GLOBS per credit, the number of credits per coin, the difficulty level, the extra GLOB level and whether the attract mode sound is on or off.

2. COLOR TABLE- The color table function will display the different colors of both palettes of the color PROM. If bad colors are found, the color PROM, U66, should be checked and if necessary, replaced.

3. SCRATCHPAD RAM- This routine allows U12 to be checked for faulty static ram locations. Should an error be found, try reseating U12. If an error still persists, replace U12.

4. VIDEO RAM- This routine performs several checks of the dynamic ram comprising the display ram. At the end of the routine, the status of each dynamic ram is displayed. Faulty dynamic rams should be replaced with 150ns 4116's. If errors persist, the ram controllers, U37 and U58, should be suspected.

5. ROM- This selection performs a ROM checksum which should point out data and program memory errors should they exist. Faulty EPROM's will be identified after the execution of this routine. Try reseating the EPROM's before an EPROM failure is assumed. If an EPROM is replaced, replace it with one with the same code number as indicated on the EPROM label.

6. CONVERGENCE- This routine displays a convergence pattern which allows the operator to align the color guns of the video game monitor.

7. BUTTONS- This routine allows the operator to locate faulty buttons. A tone will sound when the joystick is moved or a button is pressed. If the tone does not sound for a button depression, faulty or dirty contacts should be suspected.

8. EXIT- This routine takes the operator out of diagnostics and into the regular game mode.

NOTE: Every time the game is powered-up, all necessary diagnostic routines are run to ensure the normal operation of the game. Should an error be located by the "self test" diagnostics, the error will be pointed out on the screen.

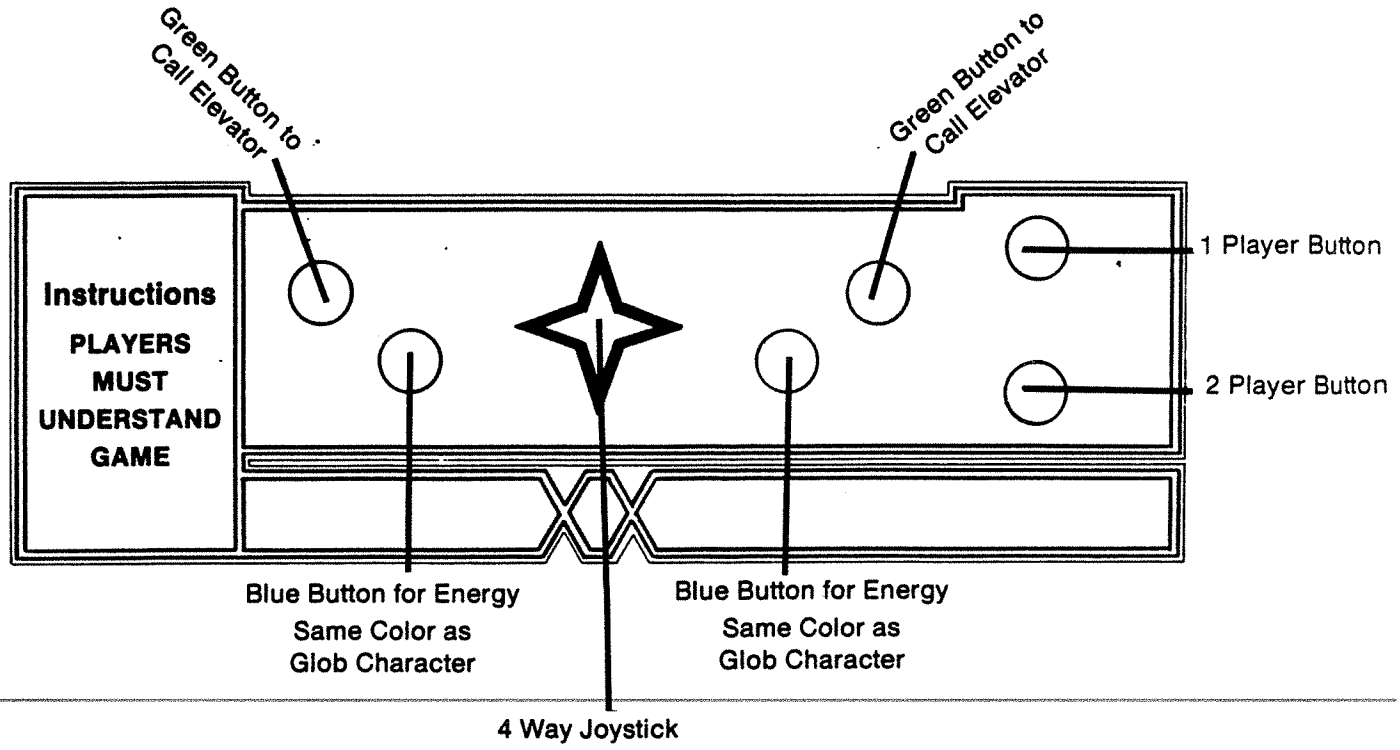
CONVERTABILITY FEATURE

THE GLOB has an exclusive built-in convertability feature which enables the operator to quickly change THE GLOB into the next available conversion game. This convertability feature relies on the addition of an "ID MODULE" which will allow the game logic board to execute the new game. Wires are provided on THE GLOB harness for the future connection to the "ID MODULE". (Do not detach these extra wires) THE GLOB does not require an ID MODULE therefore one was not provided. However, when the next conversion is purchased, a new set of EPROMS and an "ID MODULE" will be sent along with the installation instructions for the new game.

Because of the "ID MODULE" feature, new top earning games may be installed simply by replacing the EPROMS and the "ID-MODULE" at a substantial savings to the operator.

FRONT PANEL LAYOUT

We suggest you follow this layout as it is working very well



It is important to put buttons on either side of Joystick to appeal to left or right handed players

Edgeconnector Assignments

Pin No.	SOLDER SIDE	Pin No.	PARTS SIDE
A	GND-Black	1	GND-Black
B	GND-Black	2	GND-Black
C	Plus 5 VDC-Red	3	Plus 5 VDC-Red
D	Plus 5 VDC-Red	4	Plus 5 VDC-Red
E	TO COIN COUNTER-Yellow	5	
F	LIGHT II-White/Yellow	6	LIGHT I-Orange
H	ID MODULE-Green	7	ID MODULE-White/Yellow
J	ID MODULE-Gray	8	ID MODULE-Purple
K	ID MODULE-Purple	9	ID MODULE-Gray
L	ID MODULE-White/Yellow	10	ID MODULE-White-Red
M	JOYSTICK UP-White/Red	11	JOYSTICK RIGHT-Gray
N	JOYSTICK DOWN-Brown	12	JOYSTICK LEFT-Blue
P		13	ENERGY BUTTON-Yellow
R	ELEVATOR CALL BUTTON-Green	14	
S	1 PLAYER BUTTON-White	15	COIN IN-Gray
T		16	2 PLAYER GAME BUTTON-Brown
U		17	DIAGNOSTICS BUTTON-White/red
V	BLUE GUN-Blue	18	GREEN GUN-Green
W	Plus 5 VDC-Red	19	Plus 5 VDC-Red
X	Plus 5 VDC-Red	20	Plus 5 VDC-Red
Y	GND-Black	21	GND-Black
Z	GND-Black	22	Gnd-Black
a	Minus 5 VDC-Brown	23	Minus 5 VDC-Brown
b	Minus 5 VDC-Brown	24	Minus 5 VDC-Brown
c	Plus 12 VDC-Orange	25	Plus 12 VDC-Orange
d	Plus 12 VDC-Orange	26	Plus 12 VDC-Orange
e	RED GUN-Red	27	SPEAKER-Yellow
f	EXTERNAL RESET-Purple	28	COMPOSITE SYNC-White

Dip Switch Assignments

S1 . . ON — 1 credit per coin
OFF — 2 credits per coin

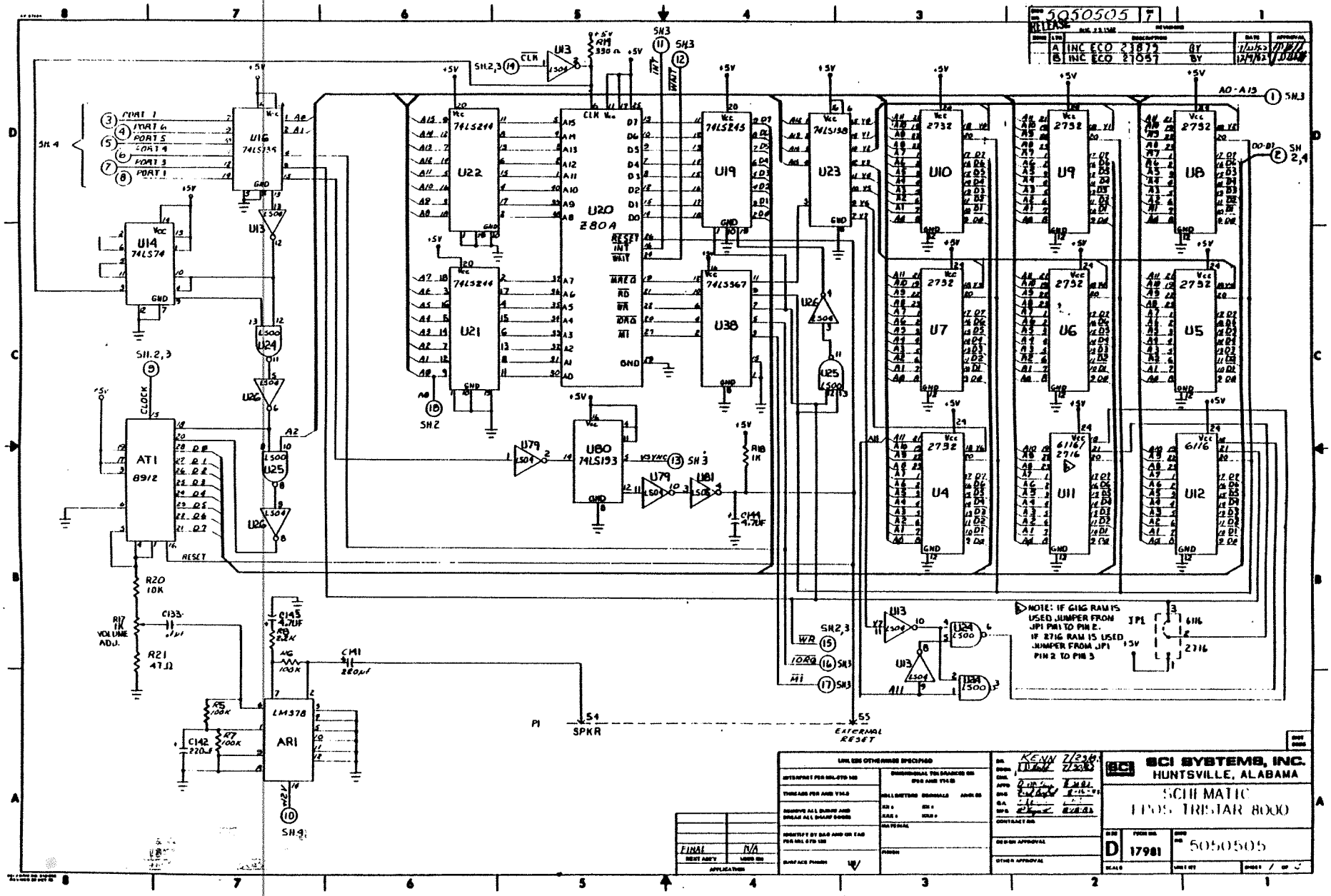
S2, S3 . . ON , ON — 3 GLOBS per credit
OFF, ON — 4 GLOBS per credit
ON , OFF — 5 GLOBS per credit
OFF, OFF — 6 GLOBS per credit

S4, S5, S6, S7 . ON , ON , ON ,ON — Difficulty Level 1, Free GLOB at 20000
OFF, ON , ON , ON — Difficulty Level 2, Free GLOB at 30000
ON , OFF, ON , ON — Difficulty Level 3, Free GLOB at 40000
OFF, OFF, ON , ON — Difficulty Level 4, Free GLOB at 50000
ON , ON , OFF, ON — Difficulty Level 5, Free GLOB at 60000
OFF, ON , OFF, ON — Difficulty Level 6, Free GLOB at 70000
ON , OFF, OFF, ON — Difficulty Level 7, Free GLOB at 80000
OFF, OFF, OFF, ON — Difficulty Level 8, Free GLOB at 90000
ON , ON , ON , OFF — Difficulty Level 1, Free GLOB at 100000
OFF, ON , ON , OFF — Difficulty Level 2, Free GLOB at 110000
ON , OFF, ON , OFF — Difficulty Level 3, Free GLOB at 120000
OFF, OFF, ON , OFF — Difficulty Level 4, Free GLOB at 130000
ON , ON , OFF, OFF — Difficulty Level 5, Free GLOB at 140000
OFF, ON , OFF, OFF — Difficulty Level 6, Free GLOB at 150000
ON , OFF, OFF, OFF — Difficulty Level 7, Free GLOB at 160000
OFF, OFF, OFF, OFF — Difficulty Level 8, Free GLOB at 170000

S8 . . ON — Attract Mode Sound ON
OFF — Attract Mode sound OFF

Important Information Concerning This Harness

Wire groups labelled as GROUP 5 and GROUP 6 are provided for FUTURE GAME CONVERSIONS and are NOT required for opertion of THE GLOB game board. HOWEVER, it is strongly suggsted that both groups (5 and 6) be unaltered and fastened securely to the side of the game cabinet for future use. Further information concerning game conversions can be obtained by corresponding with your distributor.


5050505
RELEASE
A INC ECO 21875
B INC ECO 21057
U20 280A
U16 74LS367
U22 74LS244
U19 74LS245
U23 74LS138
U21 74LS244
U38 74LS367
U80 74LS193
U14 74LS74
AT1 8912
AR1 LM378
U10 2732
U9 2732
U8 2732
U7 2732
U6 2732
U5 2732
U4 2732
U11 6116/2716
U12 6116
U24 LS00
U25 LS00
U26 LS04
U79 LS04
U81 LS04
U13 LS06
U2C LS04
U2G LS04
R20 10K
R17 1K VOLUME ADJ.
R21 47Ω
C133 .1μF
C145 4.7μF
C141 4.7μF
C142 220μF
R18 1K
R16 100K
R5 100K
R7 100K
CM1 2200pF
RESET
CLOCK
SPKR
EXTERNAL RESET
NOTE: IF 6116 RAM IS USED JUMPER FROM JP1 PIN 1 TO PIN 3. IF 2716 RAM IS USED JUMPER FROM JP1 PIN 2 TO PIN 3
JP1
6116
2716
FINAL
N/A
SCI SYSTEMS, INC.
HUNTSVILLE, ALABAMA
SCHEMATIC
IPDS TRISTAR 8000
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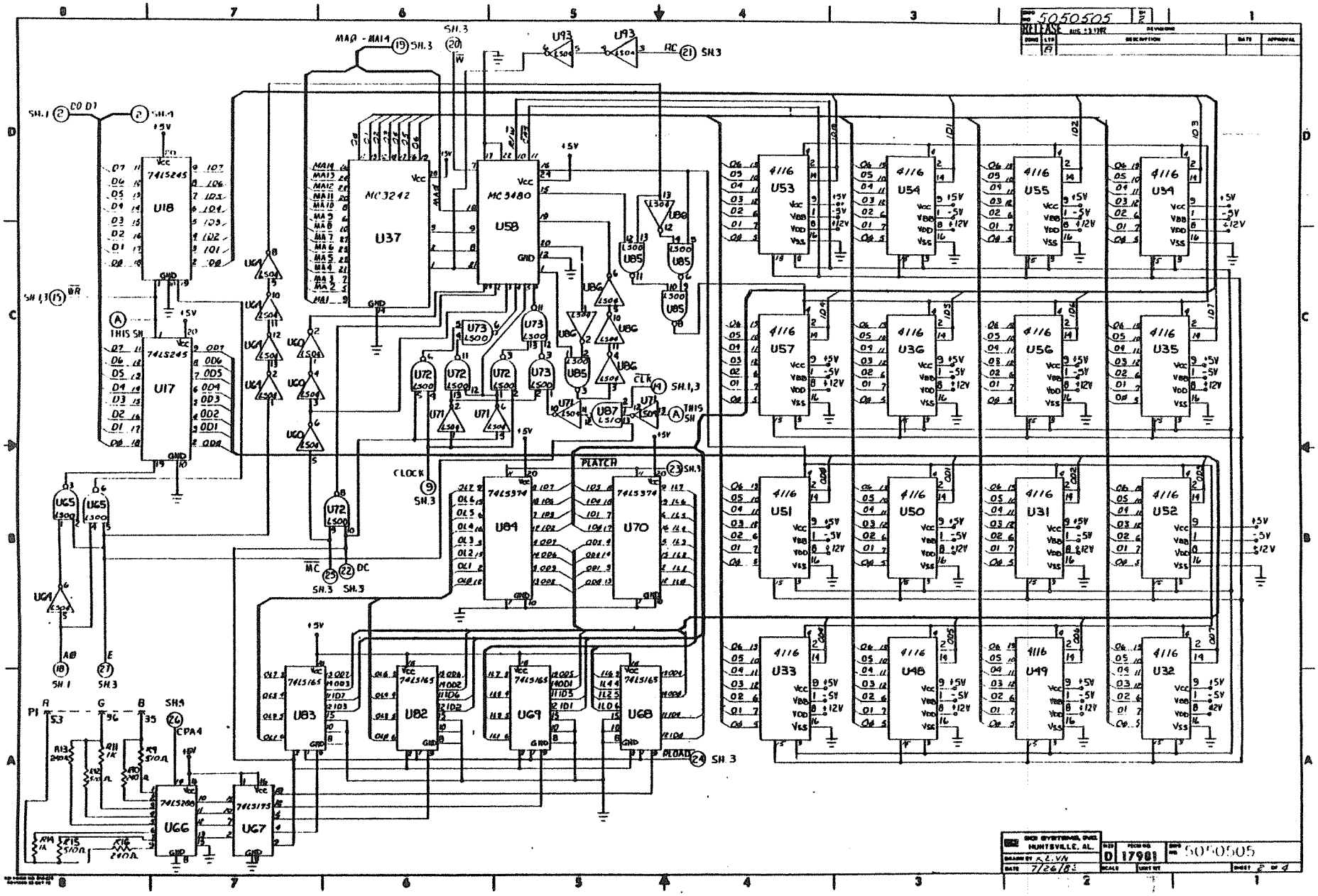
17981
5050505


5050505
RELEASE
MA0 - MA14
MC3242
MC3480
74LS245
74LS374
74LS165
4116
PLATCH
CLOCK
PLOAD
CPA4
SBC SYSTEMS, INC.
HUNTSVILLE, AL.
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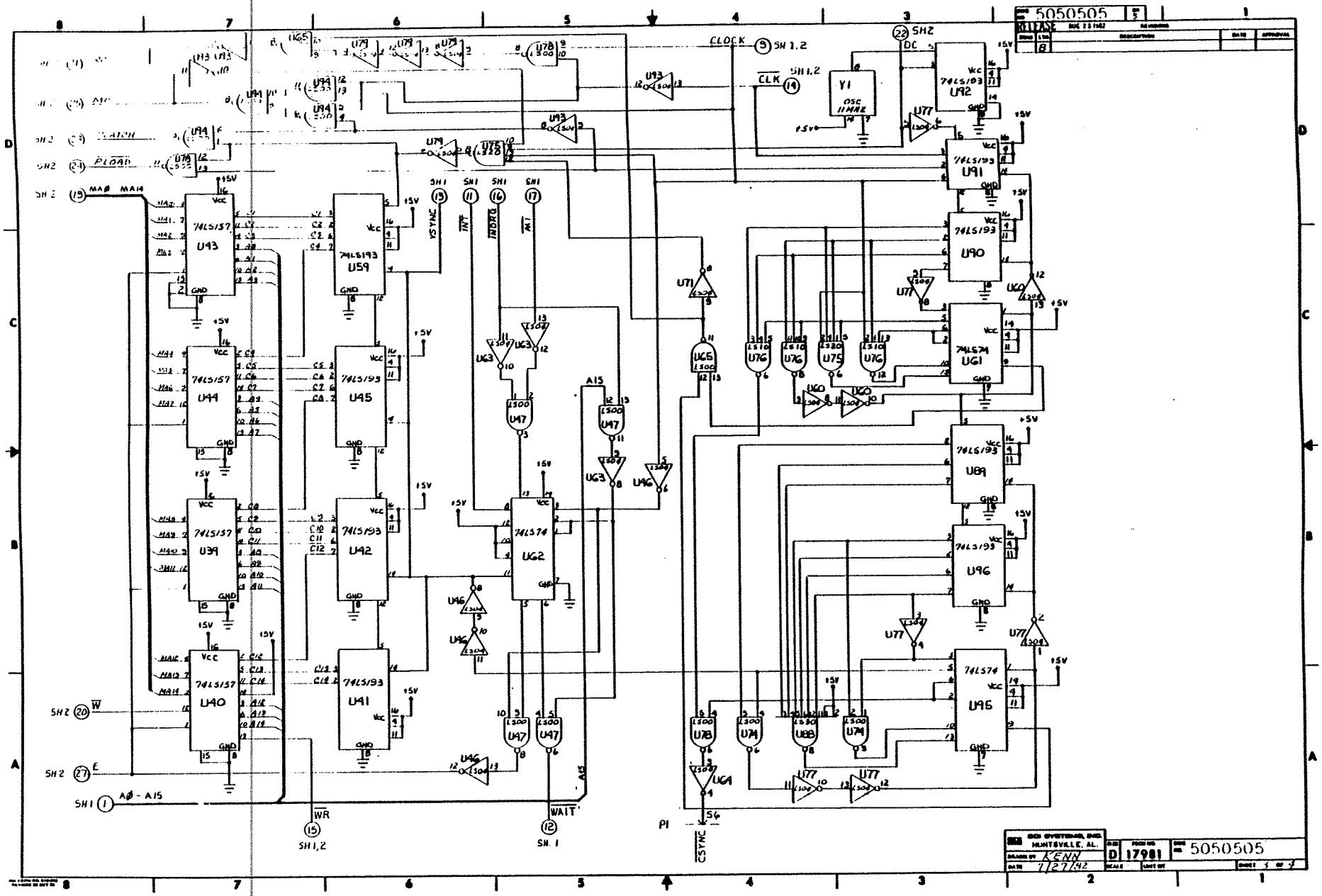
7/26/83


5050505
RELEASE
CLOCK
SH1.2
CLK
Y1
OSC
11MHZ
74LS193
U92
U91
U90
74LS74
UG1
U89
U96
U95
74LS157
U93
U44
U39
U40
74LS193
U59
U45
U42
U41
74LS74
UG2
MA0 - MA14
A0 - A15
WR
WAIT
VSYNC
INTA
INSTA
M1
CSYNC
PI
RD
IORQ
MEMRQ
PLOAD
PCLOCK
W
E
+5V
GND
ROCKWELL INTERNATIONAL
HUNTSVILLE, AL.
KENN
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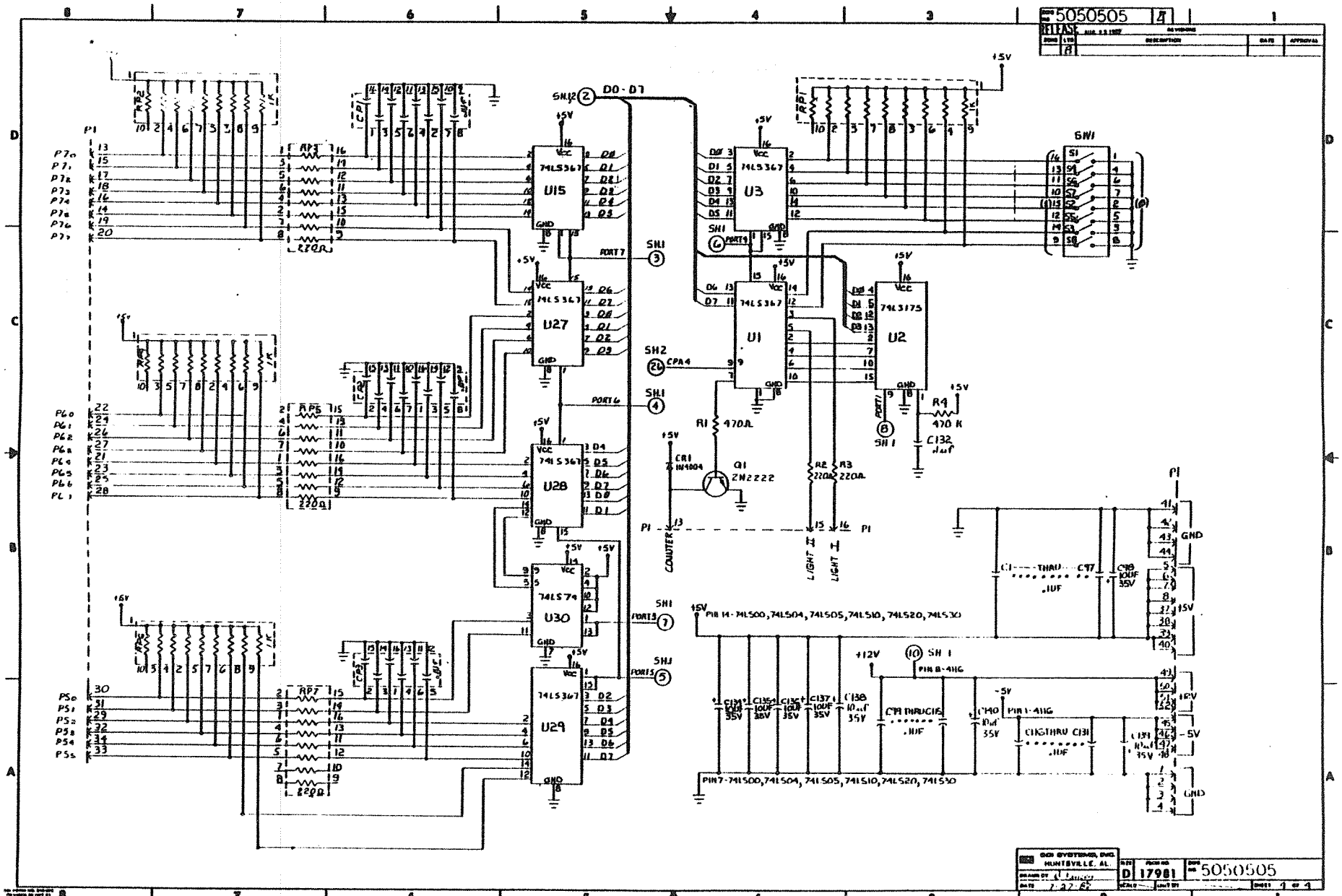
17981
5050505


5050505
RELEASE
U15
U27
U28
U30
U29
U3
U1
U2
74LS367
74LS374
74LS3175
SW1
D0 - D7
+5V
GND
470Ω
470 K
2N2222
1N4004
PIN 14 - 74LS00, 74LS04, 74LS05, 74LS10, 74LS20, 74LS30
PIN 7 - 74LS00, 74LS04, 74LS05, 74LS10, 74LS20, 74LS30
+12V
-5V
COUNTER
LIGHT
GDC SYSTEMS, INC.
HUNTSVILLE, AL.
D
17981
5050505

RELEASE

DR.	B. Yancey	7-29-82
DSGN.	J. D. Wells	7-30-82
CHK.	B. Yancey	8-11-82
APPD.	D. McElroy	8-20-82
ENG.	Fred Byrd	8-16-82
Q. A.	S. Knight	8-11-82
MFG.	R. Byrd	8-18-82
DESIGN APPROVAL		

SCI SYSTEMS, INC.
HUNTSVILLE, ALABAMA

FSCM NO.	CONTRACT NO	RELEASE DATE		SHEET
17981		AUG 23 1982	PL 5050507	1 OF 2

PARTS LIST

PRINTED WIRING ASSY

EPOS TRISTAR 8000

NOTES 1. DROP SHIP ITEMS 4,5,21 & 29 / CUSTOMER INSTALLED.

REV	
LTR	A
ECO NO.	27057
DATE	12/8/82
APPVL	J. D. Wells

ITEM NO.	QTY REQD	QTY REQD	-001 QTY REQD	SCI CONTROL NO.	DESCRIPTION/NOMENCLATURE	FSCM NO.	PART/IDENTIFICATION NO.	DOC/SPEC NO.
1			1	505050 06-001	PRINTED WIRING BOARD	17981	505050 6-001	
2			AR	M2000000-001	SOLDER		SN63WRMAP3	
3			1	E5002133-001	IC MUC CPU PDIP		28OA-CPU	
4			7	E5003300-001	IC MEM EPROM 32K PDIP		TP27328A	
5			2	E5008277-001	IC MEM 2KX8 CMOS RAM PDIP		6116	
6			16	E5002220-001	IC MEM 16384 XT RAM PDIP		4116	
7			10	E5000002-001	IC DIGITTL QUAD 2NAND PDIP		74LS00	
8			1	E5000005-001	IC DIGTTL HEX INVERT PDIP		74LS04	
9			1	E5001178-001	IC DIGTTL BUFFER PDIP		74LS05	
10			2	E5000007-001	IC DIGTTL TRIP 3NAND PDIP		74LS10	
11			1	E5000009-001	IC DIGTTL DUAL 4NAND PDIP		74LS20	
12			1	E5000011-001	IC DIGTTL BNAND PDIP		74LS30	
13			5	E5000012-001	IC DIGTTL DFLIPFLOP PDIP		74LS74	
14			2	E5000033-001	IC DIGTTL DECODER PDIP		74LS138	
15			4	E5000047-001	IC DIGTTL MULTIPLEX PDIP		74LS157	
16			4	E5000068-001	IC DIGTTL SHFT REG PDIP		74LS165	
17			2	E5000117-001	IC DIGTTL DFLIPFLOP PDIP		74LS175	
18			1	E5001149-001	IC DIGTTL COUNTER PDIP		74LS193	
19			2	E5000062-001	IC DIGTTL OCTBUS DR PDIP		74LS249	
20			3	E5000310-001	IC DIGTTL OCTBUS DR PDIP		74LS245	
21			1	E5009269-001	IC MEM 256 BIT PROGRD PDIP		74LS288	
22			7	E5000053-001	IC DIGTTL HEXBUFFER PDIP		74LS367	
23			2	E5000069-001	IC DIGTTL FLOPFLOP PDIP		74LS374	
24			1	G5002333-001	XTAL 11.0MHZ 14PIN DIP	75378	MX050-2-11.0MHZ	
25			1	E5009267-001	IC MISC AUDIO TRANS PDIP	11936	AY-3-8912	
26			1	E5009570-001	IC MEM ADDRESS MPLEXP DIP	94990	MC3242A	
27			1	E5009968-001	IC MEM CONTROLLER PDIP	94990	MC3480	
28			1	E5009966-001	IC LIN DUAL AWATTAMP PDIP	27014	LM378	
29			1	E5002202-001	IC MEMEPROM 2048X8 PDIP		2716	
30			1	H5002209-001	SKT IC 40PIN	00779	640379-1	
31			10	H5000063-002	SKT IC 24PIN	00779	640361-1	
32			17	V5000071-001	SKT IC 16PIN	00779	640358-1	
33			1	J3000046-001	SWT DIP 8 STATION		76B08	GRAYHILL
34			1	D5000002-001	DIO RCT 400PTN TA MAXCUR		1N4004	
35			1	C5000025-001	XSTL LOWPWR SIL NPN BOOMA		2N2222	
36			1	A5003312-001	RES T/2W POT TK 20%	80740	72PM1K	BECKMAN

SCI FORM NO. 810 071 REV 15 MAY 81

PL 5050507

RELEASE

PARTS LIST CONTINUATION SHEET

SCI SCI SYSTEMS, INC. HUNTSVILLE, ALABAMA

FSCM NO. 17981

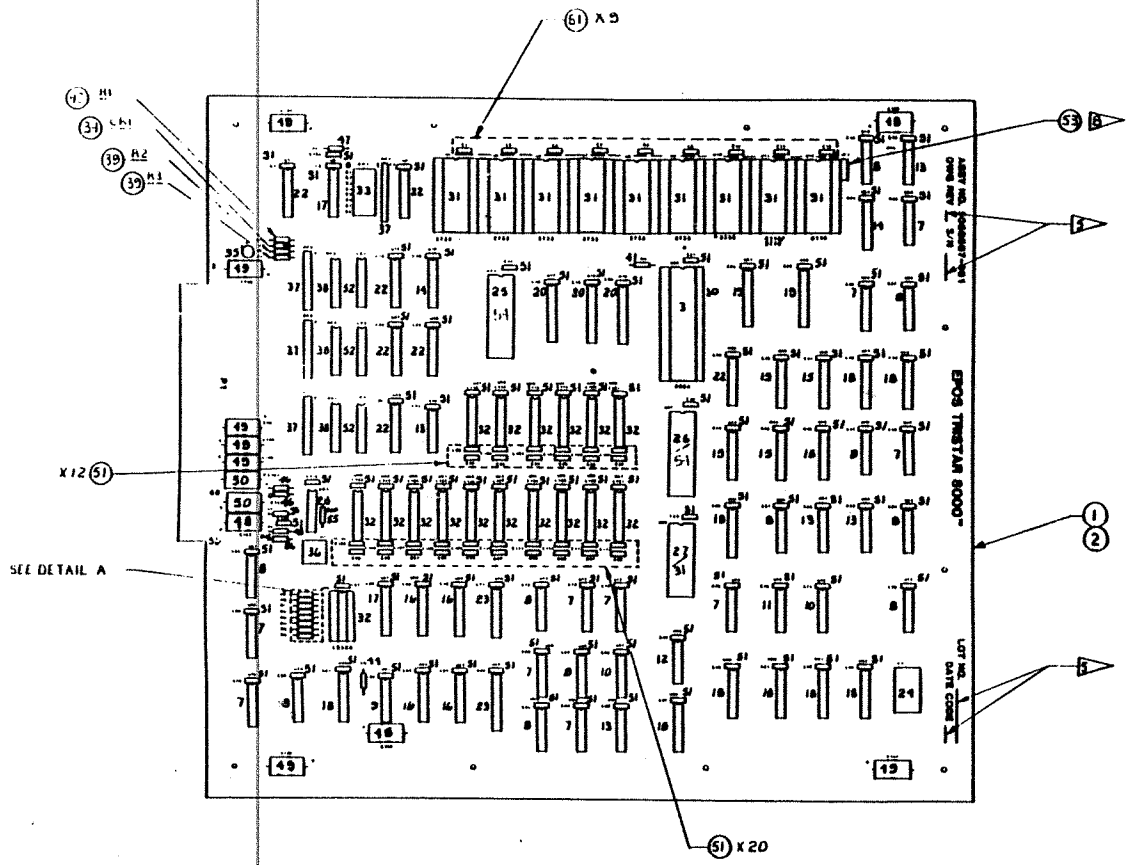
RELEASE DATE AUG 23 1982

PL 5050507

SHEET 2 OF 2

REV	LTR	ECO NO.	DATE	APPVL
	A			

ITEM NO.	QTY REQD	QTY REQD	-001 QTY REQD	SCI CONTROL NO.	DESCRIPTION/NOMENCLATURE	FSCM NO.	PART/IDENTIFICATION NO.	DOC/SPEC NO.	NOTES
37			4	E5002299-0001	IC RESISTOR PAK 10K 5%	80294	4310R-1101-102	BOURNS	
38			3	A5005554-0001	RES 1/4W FCF 220 OHM MP 2%	80294	4116R-001-221	BOURNS	
39			2	A5000065-0001	RES 1/4W FCF 220 OHM 5%				
40			3	A5000064-0001	RES 1/4W FCF 249 OHM 5%				
41			1	A5000035-0001	RES 1/4W FCF 330 OHM 5%				
42			1	A5000044-0001	RES 1/4W FCF 470 OHM 5%				
43			3	A5000086-0001	RES 1/4W FCF 510 OHM 5%				
44			3	A5000003-0001	RES 1/4W FCF 1K 5%				
45			1	A5000009-0001	RES 1/4W FCF 2.2K 5%				
46			3	A5000038-0001	RES 1/4W FCF 100K 5%				
47			1	A5001171-0001	RES 1/4W FCF 470K 5%				
48			2	B5000454-0001	CAP FAE 4.7UF 50V 10% A	50293	ECE-B1HV4R7SC	PANASONIC	
49			8	B5000576-0001	CAP FAE 10UF 35V 10% A	50253	ECEB1VV100SC	PANASONIC	
50			2	B5000671-0001	CAP FAE 220UF 35V 10% A	50293	ECEB1VV221SC	PANASONIC	
51		132	2	B5000670-0001	CAP FCD .1UF 50V 10% DIP		C630C104K5X5CA	KEMET	
52			3	B5000669-0001	CAP FCD .1UF 50V NW K 10% DIP	56289	526CK5R103K100B	SPRAGUE	
53			2	J7000091-0001	WIRE 20AWG BUSS				
54			2	H5002210-0001	SKT IC 28 POS	00779	640362-1		
55			1	A5000119-0001	RES 1/4W FCF 10K 5%				
56			1	A5000084-0001	RES 1/4W FCF 47 OHM 5%				



R5	43
R10	40
R11	44
R12	43
R13	40
R14	44
R15	43
R16	40

DETAIL A

NOTES:

1. COMPONENT SIDE OF BOARD SHOWN
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIONS, PREFIX WITH UNIT NUMBER AND ASSY DESIGNATIONS
3. WORKMANSHIP TO MEET GOOD COMMERCIAL STANDARDS PER IPC-CM-770
4. REFERENCE DRAWING: SCHEMATIC 5050505.
5. APPLY APPROPRIATE INFORMATION IN PLACES SHOWN, PER SCI PS-8101.
6. ALL LEADS ON CIRCUIT SIDE MUST BE TRIMMED TO A MAXIMUM OF .06 FROM BOARD SURFACE.
7. ITEMS 4,5,21 AND 29 TO BE DROPPED SHIPPED TO CUSTOMER AND INSTALLED BY CUSTOMER.
8. INSTALL JUMPER WIRE AS REQUIRED PER ENGINEERING INPUT.

-001 SHOWN

SEE SEPARATE PARTS LIST

N/A	N/A

SCI SYSTEMS, INC.
HUNTSVILLE, ALABAMA

PWB ASSY
EPOS TRISTAR 8000

SIZE D	FSCM NO 17981	DWG NO 5050507
SCALE 1:1		SHEET 1 OF 1

IMPORTANT TECHNICAL INFORMATION

The Glob Diagnostics

In order to aid the operator in setting up THE GLOB, adjusting the monitor and quickly locating and correcting problems, several comprehensive diagnostic routines were provided in THE GLOB software. Dip switch #7 is used to enter diagnostics on both "Upright" and "Table" models. As an additional convenience to the operator, the standard "Test" switch may be used to enter diagnostics on "Upright" models. After activating one of the diagnostics switches, a menu will be displayed which instructs the operator to use Player 1's controls to select and execute the various routines. The options are:

1. Current Settings
2. Static Ram
3. Eproms
4. Convergence
5. Levels
6. Sounds
7. Buttons
8. Exit

The above eight selections are described as follows:

1. CURRENT SETTINGS - Upon entering this routine, the status of Dip Switches 1 through 6 will be displayed along with a description of the function of each switch. Additionally, whether the game is in "Upright" or "Table" mode is displayed. Use this routine when checking the settings or use it as an aid in readjusting the settings. Among the game functions which may be adjusted are the number of GLOBS per credit, the difficulty level and whether the attract mode sound is on or off.

2. STATIC RAM - This routine allows IC's 4K, 4L, 4M, 4N, 4P and 4R on the math game board to be checked for faulty static ram locations. Should an error be found, try reseating the "bad" chip. If an error still persists, replace the offending IC.

3. EPROMS - This selection performs a ROM checksum on U2 and U3 on the sub-board which should point out data and program memory errors should they exist. Faulty EPROM'S will be identified after execution of this routine and the checksums will be displayed. Try reseating the EPROM'S before an EPROM failure is assumed. If an EPROM is replaced, replace it with one with the same code number as indicated on the EPROM label.

(over)

4. CONVERGENCE - This routine displays a convergence pattern which allows the operator to align the color guns of the video game monitor.

5. LEVELS - This routine allows the operator to set up each of the 24 levels for inspection or demonstration. Once a level has been set up, the operator may exit back to the levels menu or actually play the level. The play will be at the same speed and difficulty as would be encountered in normal arcade game play.

6. SOUNDS - Each of the 22 game sounds found in THE GLOB may be initiated with this test.

7. BUTTONS - This routine allows the operator to locate faulty buttons. Each of the player inputs (including the coin-in and player 2's controls on the Table model) is displayed on the screen. When the joystick is moved or a button is depressed, the appropriate display is high-lighted and a tone is sounded to indicate activation. If no indication is given, faulty or dirty contacts should be suspected. This routine can also be used to assist in the initial hookup of all of the controls.

8. EXIT - This routine tests the automatic watchdog reset feature of the hardware and if successful, takes the operator out of diagnostics and into the game's attract mode.