

**130XE™
REFERENCE
MANUAL**

ATARI



ATARI (U.S.) CORP.

130XE Fsm
MARCH 1990

LOCATION	DESCRIPTION	PART NUMBER
R40,53,90,117,118, R119,128-131	RES; 100 OHM 1/4W 5% CARBON	14-5101
R10,13,14,37,41-45, R72,80	RES; 1K OHM 1/4W 5% CARBON	14-5102
R70	RES; 10K OHM 1/4W 5% CARBON	14-5103
R29 ALT	RES; 1M OHM 1/4W 5% CARBON	14-5105
R205	RES; 150 OHM 1/4W 5% CARBON	14-5151
R46	RES; 1.6K OHM 1/4W 5% CARBON	14-5162
R202	RES; 180 OHM 1/4W 5% CARBON	14-5181
R76-79	RES; 1.8K OHM 1/4W 5% CARBON	14-5182
R48	RES; 18K OHM 1/4W 5% CARBON	14-5183
R2,7,52	RES; 2K OHM 1/4W 5% CARBON	14-5202
R18,27,95,120-127, R132-136	RES; 220 OHM 1/4W 5% CARBON	14-5221
R1,11,26	RES; 2.2K OHM 1/4W 5% CARBON	14-5222
R137-153	RES; 270 OHM 1/4W 5% CARBON	14-5271
R91	RES; 2.7K OHM 1/4W 5% CARBON	14-5272
R12,15,19-22,30,31, R33,34,74,75,85-88	RES; 3K OHM 1/4W 5% CARBON	14-5302
R110,111	RES; 33 OHM 1/4W 5% CARBON	14-5330
R9,23-25,203,206	RES; 3.3K OHM 1/4W 5% CARBON	14-5332
R35	RES; 33K OHM 1/4W 5% CARBON	14-5333
R47	RES; 36K OHM 1/4W 5% CARBON	14-5363
R204	RES; 47 OHM 1/4W 5% CARBON	14-5470
R50,81-84,92-94	RES; 4.7K OHM 1/4W 5% CARBON	14-5472
R89,96	RES; 47K OHM 1/4W 5% CARBON	14-5473
R5,200	RES; 470K OHM 1/4W 5% CARBON	14-5474
R116	RES; 51 OHM 1/4W 5% CARBON	14-5510
R8	RES; 5.1K OHM 1/4W 5% CARBON	14-5512
R4,39	RES; 56K OHM 1/4W 5% CARBON	14-5563

LOCATION	DESCRIPTION	PART NUMBER
R3	RES; 6.2K OHM 1/4W 5% CARBON	14-5622
R36	RES; 680 OHM 1/4W 5% CARBON	14-5681
R69,201	RES; 6.8K OHM 1/4W 5% CARBON	14-5682
R6	RES; 68K OHM 1/4W 5% CARBON	14-5683
R51	RES; 750 OHM 1/4W 5% CARBON	14-5751
R49	RES; 9.1K OHM 1/4W 5% CARBON	14-5912
R28 ALT	RES; 910K OHM 1/4W 5% CARBON	14-5914
Q1-5	TRANSISTOR; 2N3904 NPN	34-2N3904
	OWNERS MANUAL	CA025951-001
	PCB ASSEMBLY	CAD70012-001
U20	IC, CD4050B	C010816
U22	IC, CUSTOM CHIP "POKEY"	C012294
J1	CONN; 13PIN RIGHT ANGLE SID	C012995
C59,206	CAP; 22PF CERAMIC AXIAL, NPO	C014179-01
C44	CAP; 68PF CERAMIC AXIAL, NPO	C014179-12
C60	CAP; 56PF CERAMIC AXIAL, NPO	C014179-14
C33 ALT	CAP; 10PF CERAMIC AXIAL, NPO	C014179-22
C32 ALT	CAP; 18PF CERAMIC AXIAL, NPO	C014179-28
C45	CAP; 220PF CERAMIC AXIAL, NPO	C014180-05
C17,23,63-66	CAP; .047UF CERAMIC AXIAL, NPO	C014180-09
C5,6,8,9,12,14,15, C46,47,71-78,80-92, C96,97,102,112	CAP; 1000PF CERAMIC AXIAL, NPO	C014181-01
C7,11,94,95	CAP; .01UF CERAMIC AXIAL, NPO	C014181-02
C4,13,16,18,26-31, C34-43,48,51, C62,68-70,93,101, C103,105,113-120, C200,201,204,205	CAP; .1UF CERAMIC AXIAL, NPO	C014181-03
U24,25	IC, CD4051B	C014336

LOCATION	DESCRIPTION	PART NUMBER
U2 ALT	IC,	CO14344
C1	CAP: 470UF 10V ELEC. RADIAL	CO14368
L14	INDUCTOR: 22UH 10% AXIAL	CO14380
L15-23, 25-30	INDUCTOR: 10UH 10% AXIAL	CO14381
L1-3, 5, 7, 9, 12, 31, 37, L102, 103	INDUCTOR: AXIAL FERRITE BEAD	CO14384
C24, 50, 98	CAP: 10UF 16V ELEC. RADIAL	CO14392
C2, 3, 10, 79	CAP: 22UF 16V ELEC. AXIAL	CO14393
U23	IC, 6520A PIA	CO14795
U17	IC, CUSTOM GTIA CHIP	CO14805
U8	IC, CUSTOM "SALLY"	CO14806
Q7	TRANSISTOR: MPSA55	CO14809
U18	IC, 74LS08	CO17097
L13	INDUCTOR: 1.5UH 10% AXIAL	CO17222
L6, 32	INDUCTOR: 100UH 10% AXIAL	CO17948-04
J5, 6	CONN: 9PIN DSUB RIGHT ANGLE	CO19062
U19	IC, 555	CO19748
U7	IC, CUSTOM ANTIC "E"	CO21697
R38	RES: 500K OHM VARIABLE	CO23030-04
U4	IC, CUSTOM 8K X 8 BASIC ROM "C"	CO24947A
U34	IC, CUSTOM GATE ARRAY	CO25953
CR2-5	DIODE: 1N4148	CO60607
U9-16, 26, 33	IC, 64K X 1 DRAM 150/200NS	CO60612
W1, 2	RES: 0 OHM, JUMPER	CO60629
S1	SWITCH: POWER SPDT ROCKER	CO61022
U2	IC, 74LS138	CO61428
U5	IC, CUSTOM 16K X 8 O.S. ROM	CO61598
U3	IC, CUSTOM MMU CHIP	CO61618
C19, 20, 22	CAP: 4.7UF 35V NONPOLARIZED	CO61647

LOCATION	DESCRIPTION	PART NUMBER
U1	IC, LM358	C061702
J8	CONN; 24PIN KEYBOARD	C061793
J7	CONN; 7PIN DIN POWER	C061838
U6	IC, CUSTOM CHIP "FREDDIE"	C061922
	POWER ADAPTOR	C061982
U6 ALT	IC,	C061991
A1	RF MODULATOR	C070000
S1 ALT	SWITCH	C070006
	KEYBOARD ASSEMBLY	C070015
	OSC MODULE 14.31818MHZ OSC	C070024
Y1 ALT	CRYSTAL 14.31818MHZ	C070032
J2	CONN; 5PIN DIN MONITOR	C070033
Y1 ALT	CRYSTAL 14.187576MHZ	C070034
	TOP HOUSING	C070054
	BOTTOM HOUSING	C070055-001
	SHIELD TOP	C070061
	SHIELD BOTTOM	C070062
J4	CONN; DUAL 30P & 14P	C070064
REFERENCE	SCHEMATIC DIAGRAM	C070065
C301-310	CAP; 1000PF CERAMIC RADIAL	C070121
	KEYCAP KIT	T/B/A

XE/XL PRODUCTION TEST
OPERATOR'S INSTRUCTIONS
REV 3.4: MAY 22, 1986

This software is for functional test of all XE and XL series Atari computers.

REQUIREMENTS:

Production test cartridge, color T.V. set or monitor, R.F. cable, and loop-back jumpers for serial and player ports.

SET-UP:

1. Plug loop-back jumpers into serial and player ports.
2. Plug R.F. cable into T.V. and computer modulator.
3. Install cartridge in cartridge slot (small 800/65) (large 103XE).
4. Apply power to computer. After a few seconds, the T.V. display will show:

(800/65)
ATARI 65XE TESTS
REV 3.4 NTSC

(130XE)
ATARI 130XE TESTS
REV 3.4 NTSC

>PRODUCTION TESTS
AUDIO
VIDEO
PORTS
KEYBOARD
ROM
RAM
PBI (ON 130 XE ONLY)

At the bottom of the screen is displayed: START, SELECT, or OPTION. *If the machine has 128K of RAM, 130 XE will be displayed, if it has PAL GTIA, then PAL will be displayed in place of NTSC.

5. Hit START key to begin testing.

RUNNING THE PRODUCTION TESTS:

1. AUDIO TEST: Listen for 6 pure tones, followed by a noise ("buzz"). Adjust the T.V. volume if necessary. If a tone is missing or the sound is bad, make note of it. The test will repeat until the space bar is pressed. The 6 tones are produced by the POKEY chip. The "buzz" is produced by GTIA.

2. VIDEO TEST: The display has 3 parts (see diagram, "Video Test Display"). The top half of the screen shows the 9 color registers representing the players, missiles, and playfields against a gray background. The middle of the screen shows 4 players and 4 missiles (one color) moving up and down 1 scan line. The bottom of the screen shows a color tuning bar. The operator must verify that:

1. Each of the 12 players, missiles, and playfields is

distinct (seperated by gray background).

2. 8 luminance levels (black to white) are shown.

3. All colors are present and uniform across the screen.

4. The players and missiles in the middle of the screen move up and down.

5. The color tuning bar is one solid color. If the color is out of adjustment, another color bar will show inside the tuning bar. Adjust the trim pot until this smaller bar disappears (can be reached from hole in housing bottom). It will be noted that the colors do not exactly align horizontally. This is acceptable. The operator should reject machines with problems such as:

1. Missing/overlapping players, missiles or playfields.

2. Flecks of (wrong) color at the margin of players, missiles or playfields.

3. Gaps in the luminance or color bands (except the 5th gray bar and 1st color bar, which are the same as the background color).

These problems likely indicate a bad GTIA chip.

3. PORTS: The top of the screen will go blank until the test is completed. PASS or FAIL will be printed. If the test fails, one or more error codes will be displayed. Make note of the error code and press the space bar to continue with the next test.

4. KEYBOARD: 12 keys are displayed on the screen. As each of these keys is pressed, the key on the screen should change color. The last key to be pressed must be the OPTION key. After the option key is pressed, the test is over. If all keys were detected, the next test will begin. If not, the screen will turn red. To reset the test, push START, or to continue with the next test, push SELECT.

5. ROM TEST: The screen will display PASS or FAIL when done. Press the space bar to begin the next test.

6. RAM TEST: If no errors occur, the test will take about 15 seconds. When the test is done, PASS or FAIL will be displayed. Press the space bar to continue. If an error does occur, the test will halt, and the test number (1-4), the address which failed, the data read from that address, the data expected, and the bits that failed (i.e. numbers 1-8, corresponding to 8 ram chips, printed red if data was bad, green if good) will be displayed to the screen, as in the following example:

```
1          (test number)
7E45=34 35 (address, data read, data expected)
1 2 3 4 5 6 7 8 (bit numbers)
```

7. On completion of all tests, the screen will show any tests which failed (except AUDIO or VIDEO, since the operator must determine if the test passes). Finally, the operator should press the reset key to verify that it works (the screen should go blank).

FOR 130XE ONLY

CARTRIDGE & EXPANSION SLOT TEST FIXTURE

The CARTRIDGE & EXPANSION SLOT test fixture insures that all traces are properly connected on the PCB. On power-up of the computer the board looks for a state change on all output and bi-directional lines. If NO state change is detected then the corresponding LED will light.

In order to test the input lines the operator will have to select PBI test from the menu. Once selected it will report 3 types of errors:

1) ERROR 71; This means that either RD4 or S4 is not present on cart connector and/or A13 is not present on Expansion connector.

2) ERROR 72; This means that MPD is not present on Expansion connector.

3) ERROR 73; This means that EXSEL is not present on Expansion connector.

The Audio In line is also tested by the software, when you select PBI a motor type noise should be heard from the TV or Monitor speaker. If NO noise is heard then Audio In is not present on Expansion connector.

If Errors 72,73, and no sound occur simultaneously then CCTL line on cart connector is not present.

XL/XE PRODUCTION TEST
DIAGNOSTIC ERROR CODES
REV 3.4: MAY 22, 1986

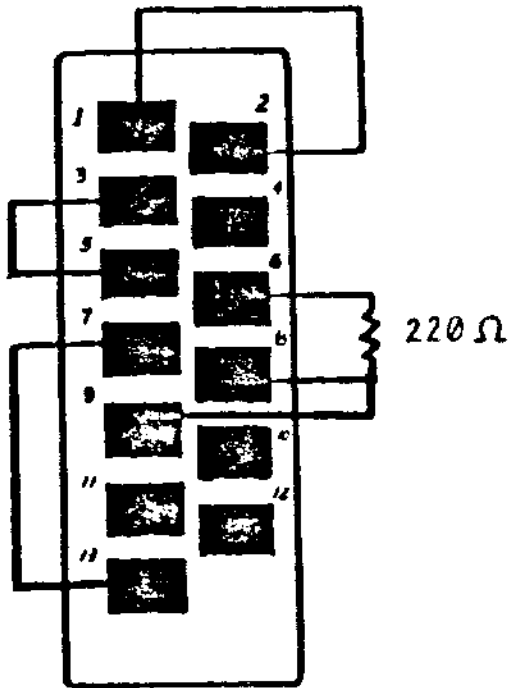
PORT TEST ERRORS

- 34 Serial communication error. The line carrying serial data or clock is bad, or POKEY chip is bad, or the serial loopback connector is loose.
- 35 Serial control error. The line transmitting the signal for Motor Control, Proceed, Interrupt, or Command is bad; or POKEY chip is bad; or the serial loopback connector is loose.
- 36 Serial control interrupt error. Any condition causing error 35 may also cause this error. If error 35 does not occur, failure is in POKEY or the interrupt line to the 6502, or the 6502 is bad.
- 37 Player port direction error. The lines carrying signals from the PIA to the connectors is bad (FWD, BACK, LEFT, RIGHT), or the PIA is bad, or the loopback connector is not making contact.
- 38 Pot line error. Player port pot lines are bad, or POKEY chip is bad, or loopback connector is not making contact.
- 39 Trigger line error. Player port trigger line or GTIA chip is bad, or loopback connector is not making contact.

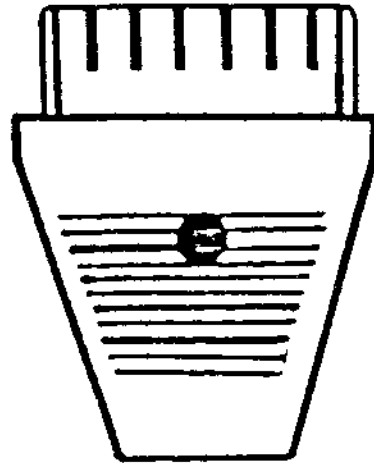
SYSTEM ERRORS

A system error is a failure in some critical component which affects the operation of the machine to the extent that it prevents further testing.

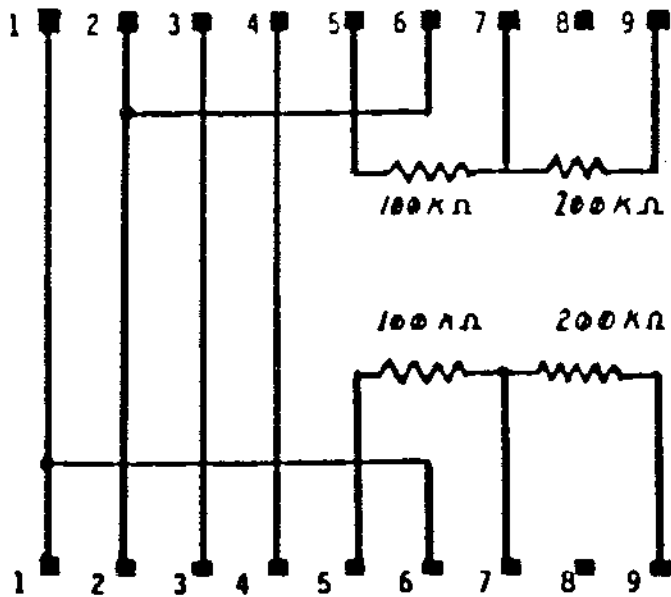
- 01 Failure in Antic vertical or horizontal synchronization.
- 02 Failure in Antic vertical blank interrupt.
- 03 Failure in Antic display list interrupt.
- 04 Failure writing or reading page 0 or 1 RAM.
- 05 Failure during data line check. Possible RAM failure.
- 06 Failure during address line check. (Address decoding error).
- 07 Failure during RAM refresh check using pattern 00.
- 08 Failure during RAM refresh check using pattern FF.
- 10 Failure during write to error storage (RAM).
- 11 POKEY timer failed.
- 12 POKEY interrupt failed.



(PLUG INTO PERIPHERAL PORT)

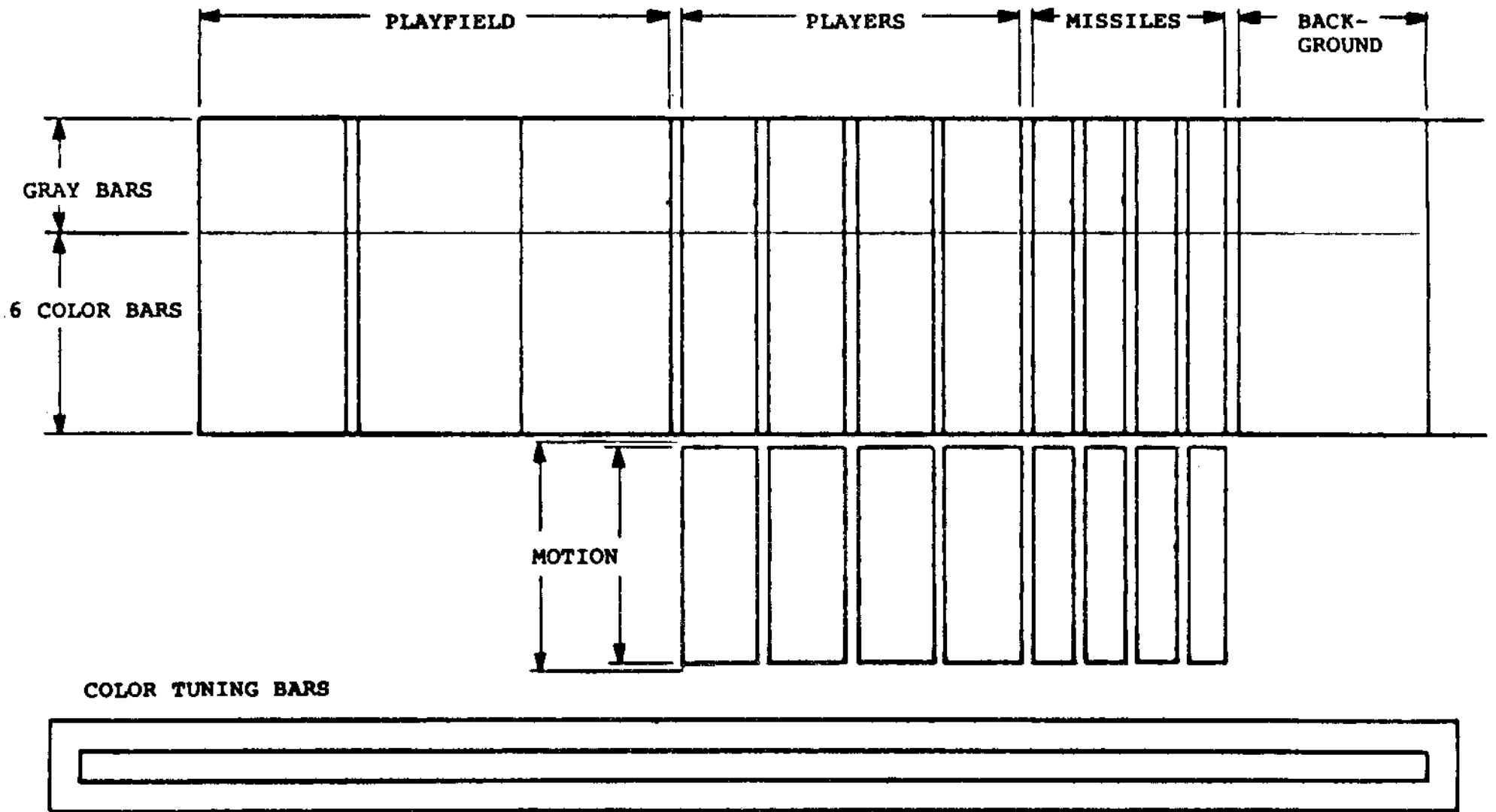


P1 -- 13 Pins SIO (Serial Input Output) Conector

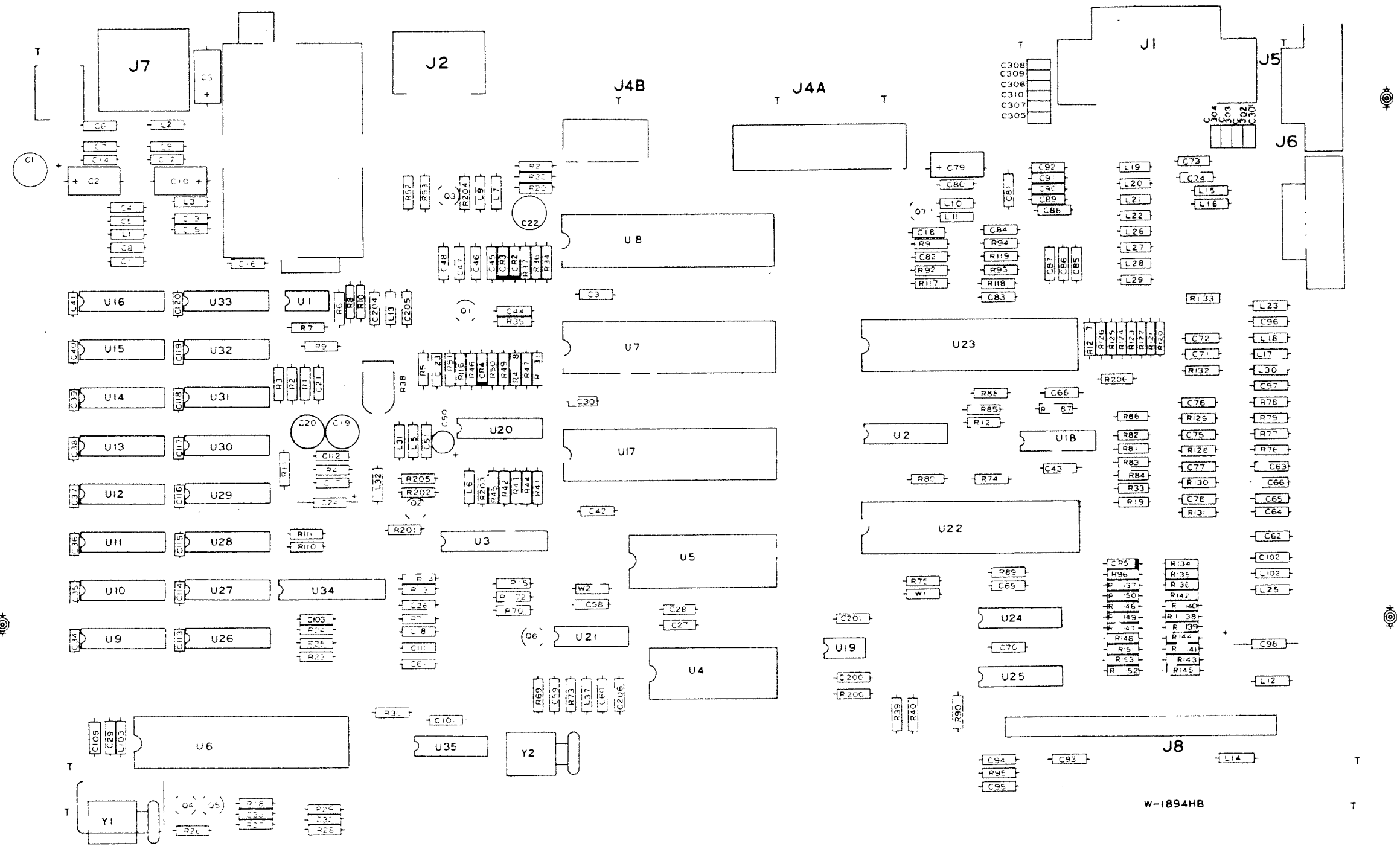


- 1.- FVB
- 2.- BACK
- 3.- LEFT
- 4.- RIGHT
- 5.- POT B
- 6.- TRIGGER
- 7.- +5 Vcc
- 8.- GND
- 9.- POT A

P5 - P6 -- 9 Pins Player port conector




VIDEO TEST DISPLAY



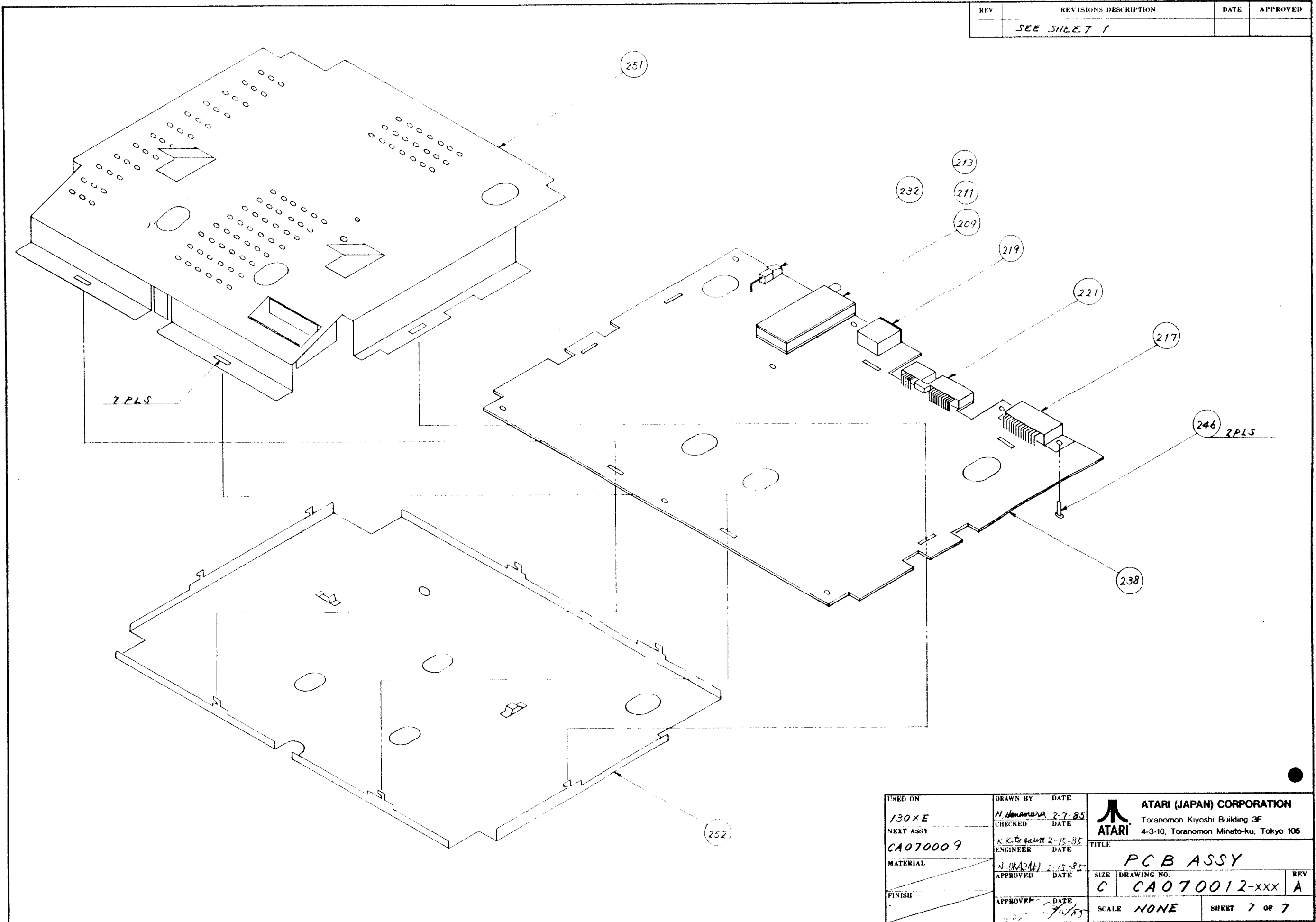
SILK PRINT

SEE P.N. C070066 PCB FABRICATION.

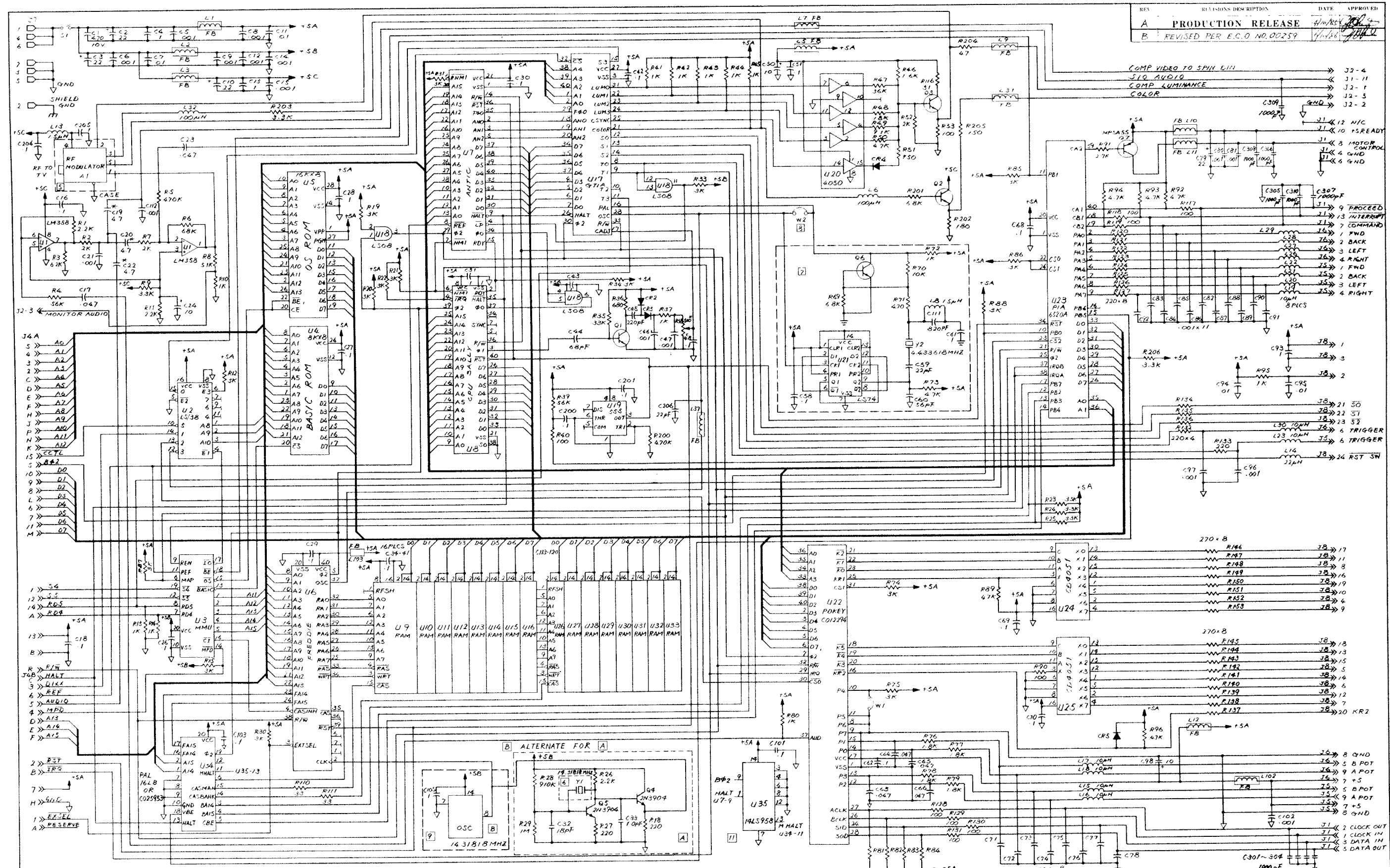
NOTES - UNLESS OTHERWISE SPECIFIED:

USED ON 130XE	DRAWN BY DATE	 ATARI (JAPAN) CORPORATION Toranomon Kiyoshi Building 3F 4-3-10, Toranomon Minato-ku, Tokyo 105
NEXT ASSY CAD7001Z	CHECKED K. Kitagawa DATE 4-10-85	
MATERIAL	ENGINEER A. Shinagawa DATE 4-10-85	TITLE P.C.B
FINISH	APPROVED [Signature] DATE 4-10-85	SIZE DRAWING NO. B C070067
		REV A
		SCALE NONE SHEET 1 OF 5

REV	REVISIONS DESCRIPTION	DATE	APPROVED
	SEE SHEET 1		



USED ON	DRAWN BY	DATE	ATARI (JAPAN) CORPORATION	
130XE	N. Hamamura	2-7-85	Toranomon Kiyoshi Building 3F	
NEXT ASSY	CHECKED	DATE	ATARI 4-3-10, Toranomon Minato-ku, Tokyo 105	
CA070009	K. Kitagawa	2-15-85	TITLE	
MATERIAL	ENGINEER	DATE	PCB ASSY	
	S. (KAZU)	2-15-85	SIZE	DRAWING NO.
	APPROVED	DATE	C	CA070012-XXX
FINISH			SCALE	REV
			NONE	A
			SHEET 7 OF 7	



6 *CRYSTAL REQUIREMENTS: DOM: 19.31818MHZ
 INTERNATIONAL: 19.187576MHZ
 12 4.933418MHZ

5 *MODULATOR REQUIREMENTS: DOM: UM1652
 INTERNATIONAL: PAL B/GERMANY (CH 9)
 PAL II UK (CH 36)

4 *TRANSISTORS ARE 2N3904.
 3 *DIODES ARE 1N4148
 2 *ELECTROLYTIC CAPACITORS ARE CAPACITORS WITH A POLARITY
 1 *CAPACITORS ARE MEASURED IN MICROFARADS
 NOTES - UNLESS OTHERWISE SPECIFIED:

11 U35 IS AN ALTERNATE FOR THE CUSTOM GATE APRT AND
 MUST BE USED IN COMBINATION WITH A PAL16LB

10. CAPACITORS MARKED WITH AN ASTERISK (*)
 ARE NON-POLARIZED.

9 *OSC MODULE FREQUENCY REQUIREMENTS:
 DOM: 19.31818 MHZ
 INTERNATIONAL: 19.187576 MHZ

8 *ADD JUMPER W2 FOR DOMESTIC.

7 *NOT REQUIRED FOR DOMESTIC UNITS.

LAST REFERENCE DESIGNATOR USED

R10	32 54-68	C49	52-57	L4	33-36
R16	109 112-115	C79	79, 100	38-99	
R14	199	C80	106-110	J 3	
		C81	121-199	CR 1	

REFERENCE DESIGNATORS NOT USED

12. APPLICABLE PCB C070067

USED ON 130XE	DRAWN BY H. Kawaguchi	DATE 1.28.83	ATARI (JAPAN) CORPORATION Toranomon Kyushu Building 3F 4-3-10, Toranomon Minato-ku, Tokyo 105
NEXT ASSY CA070012	CHECKED I. Kawanishi	DATE 2.15.83	TITLE SCHEMATIC DIAGRAM (130XE NTSC/PAL)
MATERIAL	DESIGNED BY A.S. Nagawa	DATE 7.15.81	SIZE: DRAWING NO. D C070065
FINISH	APPROVED BY H.A.	DATE 7.15.81	SCALE: NONE
			SHEET 1 OF 1

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