ATARI®
MODEL 130XE
COMPUTER

FEATURES: COMPLETE SCHEMATICS • PRELIMINARY SERVICE CHECKS • TROUBLESHOOTING TIPS • EASY-READ WAVEFORMS • REPLACEMENT PARTS LISTS • SEMICONDUCTOR CROSS-REFERENCE
LINE DEFINITIONS

A POT(1), A POT(2) Joystick Controls (One And Two)
A0 THRU A15 Address
AUDIO IN Audio Signal
AUDIO OUT Audio Signal Output
B POT(1), B POT(2) Joystick Controls (One And Two)
02 Phase Two Clock Output
BACK(1), BACK(2) Joystick Control (One And Two)
CASI, CAS2 Column Address Strobe 3, 1, 2
CCTL Cassette Control
CLOCK IN Clock Input
CLOCK OUT Clock Output
COMMAND Command
COMP LUMI Composite Luminance
COMP VIDEO Composite Video
CS, CS2 Chip Select
DATA IN Data Input
DATA OUT Data Output
DIRECTION Direction
EXT SEL External Select
FWD(0), FWD(1) Joysticks Trigger (One And Two)
HALT Halt CPU Input
INTERRUPT Interrupt
IRQ Interrupt Request
LEFT(1), LEFT(2) Joysticks Control (One And Two)
MOTOR CONTROL Cassette Motor Control
MP0 Math Pack Disable
NMI Non-Maskable Interrupt
O2 Clock, Phase Two
OSC Oscillator
PB8 THRU PB3, PB7 Port B, Bits 0 Thru 7
PROCEED Proceed
R/W Read/Write
RAD THRU RZ? Read/Write
RD4, RD5
RD6
RD7
RST
RST SW Reset Switch
S1 Start
S2 Select
SIO AUDIO Serial Input Output Audio
TRIGGER(1), TRIGGER(2) Input (One And Two)
00 Phase Zero Clock

SCHEMATIC NOTES

- Circuitry not used in some versions
- Circuitry used in some versions
- Rg parts list
- Ground

Waveforms and voltages taken from ground, unless noted otherwise.
Voltages, Waveforms and Logic probe readings taken with Computer turned On, no keys pressed, unless otherwise noted.
Waveforms taken with triggered scope and Sweep/Time switch in Calibrate position, scope input set for DC coupling on O reference-voltage waveforms. Switch to AC input to view waveforms after DC reference is measured when necessary. Each waveform is 7 cm. width with DC reference voltage given at the bottom line of each waveform.
Time in μsec, per cm, given with p-p reading at the end of each waveform.
Item numbers in rectangles appear in the alignment/layout instructions.
Supply voltages maintained as shown at input.
Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.
Terminal identification may not be found on unit.
Capacitors are 50 volts or less, 5% unless noted.
Electrolytic capacitors are 50 volts or less, 20% unless noted.
Resistors are 1/2W or less, 5% unless noted.
Values in [ ] used in some versions.
Measurements with switching as shown, unless noted.

Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (No light On)

(1) Probe indicates P when SHIFT, CTRL, or BREAK key is pressed.
(2) Probe indicates P when other keys are pressed.
(3) Probe indicates P with any key in pressed except SHIFT, CTRL, BREAK, START, SEL/LST, OPTION or RESET.
TEST EQUIPMENT
Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

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<tr>
<th>Equipment Name</th>
<th>B &amp; K Precision Equipment No.</th>
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<td>DVSM7, DVMS5, 5GC61</td>
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<td>FC7, 5GC61</td>
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<td>CG25, VM2</td>
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<td>CRT ANALYZER</td>
<td>464, 470</td>
<td>CRT70</td>
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SELF-TEST
The Computer has a built-in self-test. To display the self-test menu, hold the Option key down while turning the Computer On or type the word BITE and press the Return key if the Computer is already On and in Basic. Press the select key to select the desired test, the Start key to start the test and the Help key to go back to the self-test menu or the Reset key to go back to Basic. The self-test will check the ROM and RAM memory, audio, video and keyboard circuits.

When the Memory test is run, two bars will appear which represent the Operating System ROM IC (U5), then 48 squares will appear, each square representing 1K of RAM IC's (U9 thru U16). While the RAM or ROM is being tested, the color of the bar or square will be white, then change to green if the ROM or RAM is good or red if the ROM or RAM is bad. If BITE is used to enter the self-test menu only 40 squares will appear during the RAM test.

When the Audio/Visual test is run, a music staff and twinkle CRT will appear on the screen. A tune of six tones is produced with the corresponding note appearing on the screen when that note is played. Sound channels 1 thru 4 Pokey IC (U23) are tested. An audio defect is indicated by a note appearing on the screen with no sound. A video defect AIC IC (U7) and GTIA IC (U17) is indicated by a tone sounding with no note appearing on the screen.

When the Keyboard test is run, the keyboard layout is displayed on the screen. When a key is pressed the corresponding key on the screen should change to inverse video and a tone should sound. The Control and Shift keys will work only when pressed along with another key. All keys except the Reset, Help and Break keys are tested. IC's U17 and U22 are tested.

TROUBLESHOOTING
POWER SUPPLY
(jump the Power Pack and check for 5.0V from pin 3 to pin 1 of Plug P7. If 5.0V is missing check Plug P7 and the cable for possible open circuits. If Plug P7 and cable are good replace the Power Pack. Before plugging in the new Power Pack into the Computer, check for a possible short from pin 3 to pin 1 of Jack J7 with the Power Switch (SB) in the On position.

If there are no shorts, plug Power Pack into computer, turn Computer On and check for 5.0V on the positive end of Electrolyt C2. If 5.0V is missing, check the Power Switch (SB).

MICROPROCESSOR (CPU) OPERATION
Check the operation of the Reset Circuit at pin 3 of Reset IC (U13). Pin 3 should read a logic Low momentarily, then go High and stay High after the Computer is turned On or the Reset key is pressed. If the Reset reading is not correct check Capacitor C200, Resistors R38 and R40 and IC U13.

Verify the operation of the Clock Circuits by checking for a 1,7697MHz clock waveform at pin 25 of PAI IC (U23). If the waveform is missing or off frequency refer to the "CLOCK AND DIVIDERS" section of this Troubleshooting guide.

Check for pulses on the Address pins (pins 9 thru 20 and 22 thru 25) and Data pins (pins 26 thru 33) of the CPU IC (U8). If pulses are missing or one pin appears to be stuck at a logic Low or High, turn the Compute Off, remove IC U8, turn the Compute back On and recheck the Address and Data pins. The Address pins should read a logic Open and the Data pins a logic High. If pulses are missing with IC U8 in the Computer, check for pulses on the Data pins (pins 26 thru 33) of IC U8 while turning the Computer On or pressing the Reset key. If pulses appear, then suddenly stop, check the Address Decoder IC (U3), Memory Management Unit IC (U23), Operating System and Basic ROM IC's (U4 and U5) and CPU IC (U8).
TRoubleshooting (continued)

CLOCK AND DIVIDERS

Check for 14.31811MHz at pin 2 of RAM Address Multiplex

er IC (U8). If waveform is missing or off frequency check
Oscillator (V7). If waveform is good check for 3.579545MHz at
pin 37 of IC U6. If waveform is missing check IC U6.
Check for 1.19775MHz at pin 5 of IC U6. If waveform is writ-
ing check IC U6. If waveform is good check for 1.19775MHz at
pin 30 of GTIA IC (U17). If waveform is missing check IC U17.

VIDEO

If there is no video on the Monitor screen and the RF
Modulator output is being used, check for a waveform in
pin 2 of the RF Modulator. If the waveform is present, check
the RF Modulator, Channel Select Switch (S2) and camc
ging to the Monitor. If the waveform is missing at
pin 2 of the RF Modulator, check for a waveform at the
emitter of the Video Amp Transistor (Q2). If the waveform is
missing at the base of Transistor Q3, check the waveform at
the base of Transistor Q2. If the waveform is present at
the base of Transistor Q2, check Transistor Q2 and the com-
ponents associated with Transistor Q2. If the waveform is
missing at the base of Transistor Q3, check the waveform at
pin 5 of the Buffer IC (U2D). If the waveform is present at pin
5 of IC U2D, check Resistors R49 and IC U20. If the waveform is
missing at pin 5 of IC U2D, check the GTIA IC (pins 17 and
19) IC (U17).

COLOR

If the color is not correct, check the adjustment of the Color
Control (R36), see "Multicellular Adjustments". If ad-
justing R36 has no affect, check for a voltage range of 9V to
8.5V at pin 17 of the GTIA IC (U17) while turning R36 from
minimum to maximum. If the voltage is missing or does not
vary, check Control R36 and the voltages, waveforms and
components associated with Color Amp Transistor (Q1). If the
voltage range is correct at pin 17 of IC U17, check for a fre-
negacy of 3.579545MHz at pin 28 of IC U17. If the fre-
quency is correct refer to the "Clock and Divider" sec-
tion of this Troubleshooting guide. If the frequency is
incorrect, check IC U17.

If there is no color, check the waveform at pin 21 of IC U17.
If the waveform is missing, check IC U17. If the waveform is
present at pin 21 of IC U17, check the waveform at pin 3 of
pin Modulator. If the waveform is missing, check Resistor
R203 and Coil L32.

VERTICAL AND HORIZONTAL SYNC

If there is no vertical or horizontal sync, check the waveform
at pin 25 of GTIA IC (U17). If the waveform is missing check
IC U17. If the waveform is present, check IC U25, Diode CR4 and
Resistor R51.

SOUND

No sound. Type in and run the following program in Basic.

10 SOUND 0, 100, 43, 15, GOTO 10

Check for pulses at pin 37 of the POKEY IC (U32). If pulses are
missing check IC U32. If pulses are present at pin 37, check
the waveform at pin 1 of the Audio Amp IC (U1), see
Figure 1. If the waveform is missing check the voltage and
components associated with pins 1 thru 8 of IC U1. If the
waveform is present at pin 1 of IC U1, check the RF Modula-
tor.

Figure 1

If there is output when running the above program, but there
is no clicking sound when a key is pressed, check for pulses
at pin 15 of the GTIA IC (U17) while pressing a key. If
pulses are missing check IC U17. If pulses are present check
Capacitor C23 and Resistor R5.

Sound works when RF Modulator is used, but not when us-
ing a Video/Audio Monitor connected to Jack j2. Check the
connections at Jack and check Resistors R8 and R10.

Sound works when above program is run, but not when the
audio input of Jack j1 pin 5 is used. Check Electrolytic
C22.

Sound works when above program is run, but not when the
audio input of Jack j1 pin 11 is used. Check Electrolytic
C19.

KEYBOARDS

If the keyboard is dead, check Connector J8 for good con-
nexions and check the ribbon cable for defects. If the con-
ector and cable are good, check the waveform at pins 18 thru
33 of the POKEY IC (U32). If the waveforms are
missing, check IC U25. If the waveforms are present at pins
18 thru 23 of IC U22, check the waveform at pin 3 of the
Keyboard Multiplexer IC (U34) while pressing any key ex-
cept the Shift, Control, Break or Function keys. If the wave-
form is missing at pin 3 of IC U24, check IC U24 and U25.
If the waveform is present at pin 3 of IC U24 check the GTIA
IC (U17) and IC U22.

If the Start, Select or Option keys do not work, check the
logic readings at pins 12, 13 and 14 of IC U17. Pin 12 should
read logic Low when the Start key is pressed, pin 13 should
read logic Low when the Select key is pressed and pin 14
should read logic Low when the Option key is pressed. If
the logic readings are correct check IC U17. If the logic
readings are not correct check the keyboards Connector J8,
ribbon cable and Resistors R13, R12 and R136.

If the Shift, Control or Break keys do not work, check the
waveform at pin 16 of IC U22 while pressing the Shift, Con-
trol or Break keys. If the waveform is present, check IC U22.
CABINET REMOVAL
Remove four screws from cabinet bottom. Lift cabinet top up and disconnect keyboard cable. Cabinet top may now be removed.

POWER UP
Computer will come up ready to program in Basic when turned On.
For instructions on loading and saving programs with an Atari Recorder see the "Cassette Operation" section.
To run a program type RUN and press the RETURN key. To stop a program, press the BREAK key.

CASSETTE OPERATION
Connect the Atari Program Recorder to the connector on the right side of the Computer. NOTE: A standard tape recorder will not work with this Computer.

DISASSEMBLY INSTRUCTIONS
Remove seven screws holding PC board to cabinet bottom. Lift PC board and metal shield from cabinet bottom. To remove shield, twist seven tabs holding shield together and remove shield from main board.

GENERAL OPERATING INSTRUCTIONS
To load a program, type CLOAD and press the RETURN key. The speaker will beep once. After the speaker beeps, push the PLAY button on the Recorder and press the RETURN key again. The program will then load. The word READY on the screen indicates the loading is completed. The Recorder will shut-off automatically.

To save a program, type SSAVE and press the RETURN key. The speaker will beep twice. After the speaker beeps, press the PLAY and RECORD buttons on the Recorder and then press the RETURN key. The program will then save. The word READY on the screen indicates the program has been saved. The Recorder will shut-off automatically.

MISCELLANEOUS ADJUSTMENTS
COLOR
Turn the Computer On and adjust the Color Control (R38) for a blue screen on the Monitor.

TROUBLESHOOTING (Continued)
If the waveform is missing at pin 16 of IC U22, check for the same waveform at pin 5 of IC U22 while pressing the Shift key at pin 4 of U22 while pressing the CONTROL keys and at pin 14 of U22 while pressing the BREAK key. If the waveform is missing at pin 4, 5 or 14 of IC U22, check IC U22. If the waveform is present at pins 4, 5, and 14 of U22, check Resistors R96 and R137. Also check keyboard Connector J8 for good connections.

If there is no clicking sound when a key is pressed, check for pulses at pin 15 of IC U17 while pressing a key. If pulses are missing, check IC U17. If pulses are present, check Capacitor C23 and Resistor R5.

If one key is erratic, clean the key.

If characters come up wrong on the Monitor screen when a key is pressed, check IC's U7, U17 and U22.

If one key or group of keys do not work, use the following chart to determine which pin of Connector J8 connects to the defective keys. Check the keys for continuity, each key should measure about 55 ohms. If the keys check good, turn the Computer On and use a scope to check for pulses at Connector J8 while pressing the defective keys. Note: A logic probe may indicate pulses even when no key is pressed.

J8 (Connect to IC U22)
Pin KEYS
19 6, 7, Y, U, N
4 H, J, SPACE
9 4, 9, K, O, L, V
16 3, 0, E, D, G, R
16 ESC, BACK5, TAB, RETURN, CAPS
17 1, >, Q, A, `, *3
12 2, <, W, ~, S, +, X, /
8 5, 6, T, I, G, B, M
J8 (Connect to IC U25)
Pin KEYS
14 ESC, 1, 2, 3, 4, 5, 6
12 U, I, O, W, ~, =, RETURN
7 J, K, L, `, ~, CTRL
6 SHIFT, Z, X, O, V, B
5 N, M, ~, `, SPACE
15 A, S, D, F, G, H
13 BREAK, T, B, 9, <, >, BREAK
15 TAB, Q, W, E, R, T, Y

If pulses are missing check the Resistors that connect Connector J8 to IC's U24 and U25 and check IC's U24 and U25.

CASSETTE SAVE AND LOAD
Computer will not save a program on tape. Type a program or load an existing program into the Computer. Save the program back on tape, see "Cassette Operation" section of the General Operating Instructions. While saving the program, check the waveforms on pins 26, 27 and 28 of the POKEY IC U22. If any of the waveforms are missing, check IC U22 by substitution. If the waveforms are correct, check the connections at pins 1, 2, and 5 of Jack J1.

Computer will not load a program from tape. Check for pulses at pin 5 of IC U22 while loading the tape. If no pulses are present, see "Cassette Operation" section of the General Operating Instructions. If the pulses are present, check the connections at pin 3 of Jack J1.

Recorder motor will not start when saving or loading a program. Type POKE 54198,52 and press the RETURN key. Check the logic probe reading on pin 39 of the PIA IC U23. The reading should go from High to Low to start the recorder motor. If the reading stays High, check IC U23 by substitution. If the reading operates normally, check Switch Transistor Q7 and check the connections at pin 8 of Jack J1. To turn the recorder motor off, type POKE 5418,60 and press RETURN key.

PADDLES
The following Basic program can be used to check the operation of the paddles.
10 PRINT "PADDLE", "BUTTON"
20 DISP P=0 TO 3
30 PRINT "PADDLE": P, PADDLE (P), PTRIG (P) 40 NEXT P
50 FOR T=1 TO 200: NEXT T
60 PRINT: GOTO 10
On the Monitor screen the number under PADDLE should vary from 228 to 1 as the paddle is varied from MINIMUM to Maximum. The number under BUTTON should change to 0 when the button is pressed.

If a paddle does not function, use the following chart to determine which pin of the POKEY IC U22 the paddle is connected to and check the waveform on the pin.

PORT PADDLE PIN BUTTON 144
1 0 14 4
2 1 15 1 5
2 2 12 2 8
2 3 13 3 9

The waveform should vary from the sawtooth waveform shown in Figure 2 to the pulse waveform shown in Figure 3. If the waveform is missing, check the control connector, the paddle control and check IC U22 by substitution. If a button is not functioning, use the chart to determine which pin the button is connected to and use a logic probe to check the pin while the button is pressed. The logic probe reading should go from High to Low when the button is pressed. If the reading does not go Low, check the button switch and the port connector. If the logic reading is correct, check the PIA IC U23 by substitution.
TROUBLESHOOTING (Continued)

EXTRA RAM

The Computer contains 64K of extra memory RAM ICs (U26 thru U39) which can be accessed by 'bank switching' the CPU IC (U8) and ANTIC IC (U7). The bank switch is at Memory location 54017. The extra memory is switched in 16K sections and is addressed as the second block of memory (16384 to 32767).

The equation for selecting a bank of memory is:

\[ 190 + (4 \times \text{ADDRESS}) + (16 \times \text{MODE}) \]

ADDRESS MODE
0 0 TO 16383 0 EXTRA MEMORY
1 16384 TO 32767 1 NORMAL MEMORY
2 32768 TO 49151 2 EXTRA MEMORY
3 49152 TO 65535 3 NORMAL MEMORY

The normal value in memory location 54017 is 253. 226 selects the first bank of extra memory, 228 selects the second bank of extra memory. 233 selects the third bank of extra memory, 237 selects the fourth bank of extra memory.

The following Basic program can be used to check the entire bank of extra memory. The program takes approximately 34 minutes to run.

10 PRINT "TESTING RAM"
20 POKE 54017, 225
30 GOSUB 120
40 POKE 54017, 229
50 GOSUB 120
60 POKE 54017, 233
70 GOSUB 120
80 POKE 54017, 237
90 GOSUB 120
100 PRINT "RAM CHECKS GOOD"
110 END
120 FOR X = 16384 TO 32767
130 POKE X, 0
140 IF PEEK(X) = 0 THEN 160
150 GOTO 210
160 POKE X, 255
170 IF PEEK(X) = 255 THEN 190
180 GOTO 210
190 NEXT X
200 RETURN
210 PRINT "RAM BAD AT LOCATION:"); X

JOYSTICK PORT

The following Basic program can be used to check the operation of the joystick ports. Plug a joystick into the port being tested, type in and run the program.

10 PRINT "JOYSTICK", "BUTTTON";
20 FOR F = 0 TO 1
30 PRINT "PORT"; P + 1, "STICK" (P), "STRING" (P)
40 NEXT P
50 FOR T = 1 TO 200: NEXT T
60 GOTO 10

On the Monitor screen the number 1 under BUTTON should change to 0 when the button is pressed. The number 15 under JOYSTICK should change to the following for each position of the joystick.

UP 14 RIGHT 11 DOWN 13 LEFT 7

If the joystick is not working properly, check the logic readings on the PIA IC (U23) and GTIA IC (U17) pins that are used for the Joysticks. Use the following chart to determine which pin is affected by each joystick function.

PORT 1 PORT 2
UP U23 2 U23 6
DOWN U23 3 U23 7
LEFT U23 4 U23 8
RIGHT U23 5 U23 9
BUTTON U17 0 U17 9

The logic reading should go from high to low when each function of the joystick is used. If the logic readings are correct, check IC U17 if the button is not working, and check IC U23 if the position functions are not working. If the logic reading is not correct check the connectors connected to the pin with the incorrect reading and check Connectors J5 or J6 for good connections.
### PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

#### SEMICONDUCTORS (Select replacement for best results)

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<th>TYPE No.</th>
<th>MFGR. PART No.</th>
<th>REPLACEMENT DATA</th>
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**NOTES**
- (1) Replacement for NTE519
- (2) Replacement for NTE519
# PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description.

## ELECTROLYTIC CAPACITORS

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## COILS & TRANSFORMERS

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## CONTROLS (All wattages 1/2 watt, or less, unless listed)

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## WIRING DATA

- **Shielded Hook-up Wire**
  - Use BELDEN No. 3401 or 8421 (Single-Conductor)
  - Use BELDEN No. 8529 (Two-Conductor)

- **Unshielded Hook-up Wire**
  - Use BELDEN No. 8522 (Stranded) Available in 13 Colors
  - Use BELDEN No. 8522 (Solid) Available in 13 Colors

- **300-Ohm Input Lead**
  - Use BELDEN No. 7120

- **75-Ohm Input Lead**
  - Use BELDEN No. 8241
PRELIMINARY SERVICE CHECKS (Continued)
PREVENTATIVE MAINTENANCE

ENVIRONMENT

Computers perform best in a clean, cool area that is below 80 degrees Fahrenheit and free of dust and smoke particles. Even though home Computers are not affected by cigarette smoke as much as commercial Computers are affected, it is better to maintain a smoke-free area around the Computer. Do not block cabinet vents of any of the Computer system: Computer, Monitor, Printer, or other power devices.

ELECTRICAL POWER

Vacations in the line voltage can affect the Computer. Try to avoid these fluctuations by using an AC receptacle that is on a power line not used by appliances or other heavy current demand devices. A power surge protector, power-line conditioner, or non-interruptible power supply may be needed to cure the problem. Do not switch power On and Off frequently.

KEYBOARD

Liquids spilled into the Keyboard can ruin it. Immediately after a spill occurs, disconnect the Computer power plug from AC power outlet. Then, if circuitry or contacts are contaminated, disassemble the Keyboard and carefully rinse the Keyboard printed circuit board with distilled water and let it dry. Use a cotton swap to clean between the keys. Use a non-abrasive contact cleaner and lint-free wipers on accessible connections and contacts.

DISK DRIVES

Clean the read/write heads of the Disk Drives about once a month or after 100 hours usage. Use only an approved head cleaning kit. Handle carefully to preserve proper disk head alignment. A sudden bump or jolt to the Disk Drives can knock the disk head out of alignment. If the disk drive must be transported, place an old disk in slot and close door during transport.

Slow disks in their protective covers and never touch the disk surface. Observe the disk handling precautions usually found on the back of disk protective covers.

PRINTERS

Carefully vacuum the Printer regularly. Wipe surface areas clean using a light all-purpose cleaner. Do not oil the machine. The oil will collect abrasive grit and dust. The dust will act as a blanket. This can cause components to overheat and fail.

STATIC ELECTRICITY

Static electricity discharge can affect the Computer. In order to minimize the possibility, use anti-static mats, sprays, tools and materials, and maintain good humidity in the Computer environment.

MONITOR

Use an isolation transformer with any Monitor that does not come as part of the system since some Monitors use a HOT chassis (chassis connected to one side of the AC line). The face of the Monitor should never be left on for long periods of time at high brightness level except when pattern is being changed periodically. Use caution when cleaning antiglare screens, to preserve the glare-reduction feature.

PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of Computer malfunctions.

Check all interconnecting cables for good connection and correct hookup before making service checks.

Disconnect all peripherals except the Monitor from the Computer to eliminate possible external malfunctions.

Replacement or repair of the power supply, main board, keyboard, or connectors may be necessary after the malfunction has been isolated.

TEST EQUIPMENT AND TOOLS

TEST EQUIPMENT

Digital Volt/Ohm Meter

TOOLS

Low Wattage Soldering Iron

Desoldering Equipment

Switch Cleaner (non spray type)

Phillips Screwdriver

Flat Blade Screwdriver

IC Insertion and Removal Tools 16, and 40 pin

Alignment Tools GC Electronics 9440

REPLACEMENT PARTS AND DESCRIPTION

IDENT  oDESCRIPTION
S1   Switch, Power
U7   IC, ANTIC
U8   IC, CPU
U9   IC, RAM
thru
U16
U17   IC, GTIA
U22   IC, Pockey

Howard W. Sams & Co.,
4300 West 62nd Street, P. O. Box 7092, Indianapolis, Indiana 46206 U.S.A.

The listing of any available replacement part herein does not constitute an express or implied warranty or guarantee by Howard W. Sams & Co. as to the quality or suitability of such replacement part(s). The numbers of replacement parts have been compiled from information furnished to Howard W. Sams & Co. by the manufacturer(s) of the particular type of replacement part listed.

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86CC14078 DATE 6-86
PRELIMINARY SERVICE CHECKS (Continued)

SERVICE CHECKS

MATCH THE NUMBERS ON THE INTERCONNECTING DIAGRAM AND PHOTOS WITH THE NUMBERS ON THE SERVICE CHECKS TO BE PERFORMED.

1. COMPUTER DEAD
   (A) Unplug the Power Pack and check for 5.0V from pin 3 to pin 1 of Plug P7. If 5.0V is missing, check Plug P7 and the cable for possible open circuits. If the Power Pack is bad, check for a possible short from pin 3 to pin 1 of Jack J7 with the Power Switch (S1) in the On position. If a short exists, Do Not plug in a new power pack until the short is repaired.
   (B) If the Power Pack is good, turn the Computer On and check for 5.0V on the positive end of Electrolytic C2. If 5.0V is missing, check the Power Switch (S1).

2. COMPUTER DOES NOT COME UP PROPERLY
   (A) Check the CPU IC (U9), GTIA IC (U17), POKEY IC (U22), ANTIC IC (U7), and RAM IC's U9 thru U16.

3. VIDEO
   (A) No video, If RF Modulator output is being used, check the Channel Switch (S3) for correct channel. Check the ANTIC IC (U7) and GTIA IC (U17).

4. COLOR
   (A) Color not correct or no color. Check the adjustment of the Color Control (R38). See "Miscellaneous Adjustments" and check the ANTIC IC (U7) and GTIA IC (U17).

5. SYNC
   (A) No vertical or horizontal sync. Check GTIA IC (U17).

6. KEYBOARD
   (A) No clicking sound when a key is pressed. Check GTIA IC (U17).
   (B) Keyboard is dead. Check IC U17 and POKEY IC (U22).
   (C) One key is erratic. Clean the key.
   (D) One group of keys does not work. Check IC U22.
   (E) START, SELECT or OPTION function keys or SHIFT, CONTROL, and BREAK keys do not work. Check IC U17.
   (F) Wrong characters appear on the Monitor Screen when key is pressed. Check the ANTIC IC (U7), and IC's U17 and U22.

7. CASSETTE
   (A) Cassette motor will not start. Check PIA IC (U23).
   (B) Cassette save or load does not work. Check POKEY IC (U22).

8. JOYSTICKS
   (A) Joystick button does not work. Check GTIA IC (U17).
   (B) Joystick position functions do not work. Check PIA IC (U23).

9. PADDLES
   (A) Paddle button does not work. Check PIA IC (U23).
   (B) Paddle control does not work. Check POKEY IC (U22).

PRELIMINARY SERVICE CHECKS (Continued)

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL
Remove four screws from cabinet top, lift cabinet top up and disconnect keyboard cable. Cabinet top may now be removed.

MAIN BOARD REMOVAL
Remove seven screws holding PC board to cabinet bottom. Lift PC board and metal shield from cabinet bottom. To remove shield, twist seven tabs holding shield together and remove shield from main board.

MISCELLANEOUS ADJUSTMENTS

COLOR
Turn the Computer On and adjust the Color Control (R38) for a blue screen on the Monitor.

GENERAL OPERATING INSTRUCTIONS

POWER UP
Computer will come up ready to program in Basic when turned on.

For instructions on loading and saving programs with an Atari Recorder see the "Cassette Operation" section.

To run a program type RUN and press the RETURN key. To stop a program, press the BREAK key.

CASSETTE OPERATION

Connect the Atari Program Recorder to the 1-IN connector on the right side of the Computer. NOTE: A standard tape recorder will not work with this Computer.

To load a program, type CLOAD and press the RETURN key. The speaker will beep once, after the speaker beeps, push the PLAY button on the Recorder and press the RETURN key again. The program will then load. The word READY on the screen indicates the loading is completed. The Recorder will shut off automatically.

To save a program, type CSAVE and press the RETURN key. The speaker will beep twice, after the speaker beeps, press the PLAY and RECORD buttons on the Recorder and then press the RETURN key. The program will then save. The word READY on the screen indicates the program has been saved. The Recorder will shut-off automatically.
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- Complete Components Parts List in an easy to use format with field replacements shown when possible. SAMS unique semiconductor, chip and IC cross-reference gives you many replacements to choose from and is available at your Electronic Distributor.

SEMICONDUCORS (Select replacement for best results)

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ISBN: 0-672-08978-5