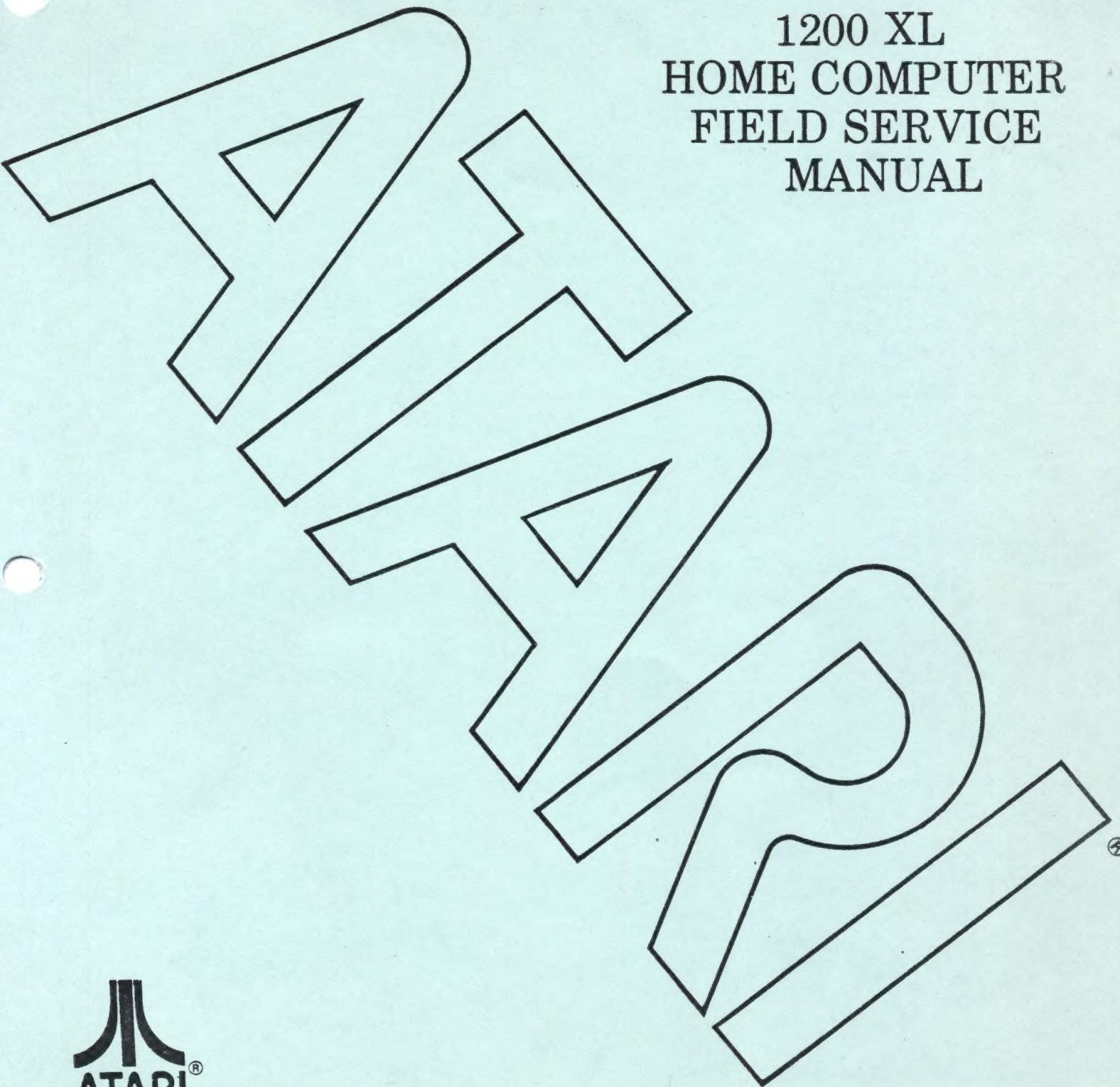


# 1200 XL HOME COMPUTER FIELD SERVICE MANUAL



Printed in U.S. America

ATARI, Incorporated  
February 1983

FD 100217  
Rev.01

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Published By:  
ATARI, INC.  
1265 Borregas Avenue  
P.O. Box 427  
Sunnyvale, California 94086

**ATARI**  
**1200 XL HOME COMPUTER**  
**FIELD SERVICE MANUAL**

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## INTRODUCTION

The Atari 1200XL Computer Field Service Manual is a reference guide for the service technician.

This Field Service Manual is organized in six sections:

- **THEORY OF OPERATION** - Overview of how the 1200XL works and what its basic assemblies look like.
- **SCHEMATICS AND SILKSCREENS** - Electrical drawings and layouts of the 1200XL printed circuit board.
- **TESTING** - Review of Diagnostic Tests available for diagnosing 1200XL problems.
- **SYMPTOM CHECKLIST** - Failure information to assist the experienced technician arrive at a rapid diagnosis of 1200XL problems.
- **PARTS LIST** - Detailed breakdown of all parts used in the 1200XL.
- **SERVICE BULLETINS** - Section to be used to hold Field Change Orders, Upgrade Bulletins and Tech Tips.



## SECTION 1

### THEORY OF OPERATION

The Atari 1200XL™ is an enhanced version of the existing Atari computer systems. It can be used with any existing Atari peripheral devices which are compatible with the 400™/800™ computer, although not all are necessary.

The console contains 64K of RAM and has an operating system which contains two 8K X 8 ROMs. The console also contains the keyboard with a HELP key, four application function keys, a single cartridge slot, connector jacks for adding peripherals and hand controllers, a detachable (RF) TV interface cable and three status LED's.

Use Figures 1-1 and 1-2 as reference for the following discussion.

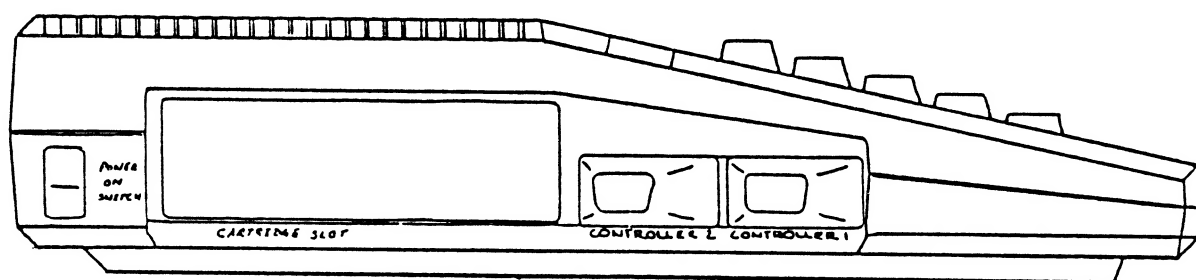


Figure 1-1. 1200XL Left Side Panel

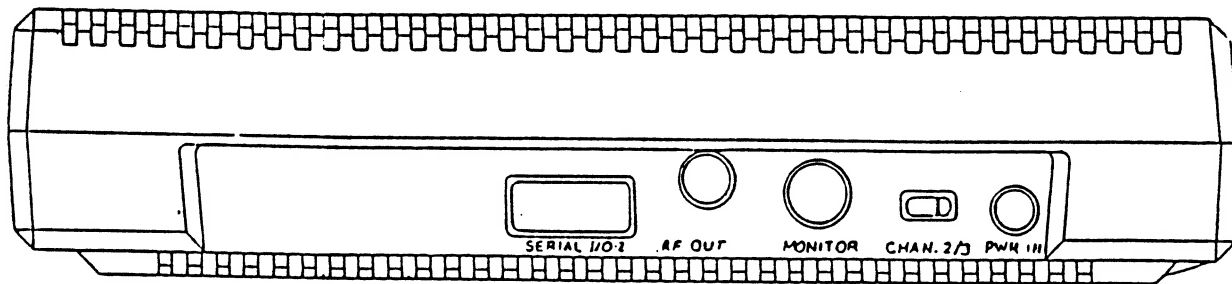


Figure 1-2. 1200XL Back View.

### User Interface

The Atari 1200XL is a general purpose microcomputer which uses a 6502 (modified) microprocessor. The 1200XL console is the central processing unit for its respective system.

The left side panel (refer to Figure 1-1) contains the power ON/OFF switch, one cartridge slot and two controller jacks. The controller jacks accept the X-Y joystick and the paddle controllers available from Atari.

The rear panel (refer to Figure 2-1) contains the Serial Input/Output (I/O) jack, the RF cable jack, the monitor jack, the channel 2-3 switch, and the Power Jack.

The console has a full stroke 54 key alphanumeric keyboard, which includes special characters and controls, a space bar, three LED indicators, and 11 function keys.

The 11 function keys above the keyboard are made of brushed and formed aluminum nameplate material. A translucent plexiglass strip above the function keys indicates the operation (function) and covers the three LEDs.

From left to right the function keys and LED indicators are:

- RESET** - Interrupts and restarts the operating system or cartridge.
- POWER** - Lights when Power to the unit is ON.
- L1** - Lights if the keyboard is disabled.
- L2** - Lights if the International character set is selected.
- START** - Starts the game or program.
- SELECT** - Selects different games.
- OPTION** - Allows the player to choose among the variations of a program.
- F1-F4** - User programmable function keys. The following functions are only applicable when software, such as BASIC, is inserted.

Press F1 to move cursor up.

Press F2 to move cursor down.

Press F3 to move cursor left.

Press F4 to move cursor right.

- HELP** - Press to display self-test options.



- Inverse Video

- BREAK** - Used for interrupt of program.

### Mechanical Description

The 1200XL computer console contains a single motherboard which houses all the chips of the system and provides connectors for interfacing external modules to the console. It includes the CPU, RAM, ROM Operating System and power supply, and includes all functions except for the keyboard and LED display. The motherboard uses a common address bus, data bus and clock lines. The sixteen-line address bus allows the microprocessor to directly address 64K of memory locations. The eight-line data bus provides the communication and data path between the functional modules. The various power requirements are routed from the power supply throughout the console.

The keyboard is connected to the PC Board by a 15-conductor ribbon cable terminating in a molex connector. The LED board is connected to the PC Board by a 5-conductor ribbon cable.

Figure 1-3 is a block diagram of the functional flow of the 1200XL.



## Digital Hardware

The digital hardware consists of:

- The 6502 (modified) CPU microprocessor
- The Alphanumeric Television Interface Controller (the ANTIC Display Processor)
- The Graphics Television Interface Adaptor (GTIA)
- The POT Keyboard Integrated Circuit (POKEY)
- The Peripheral Interface Adaptor (PIA)
- The Memory (ROM and RAM)
- Miscellaneous logic
  - Memory Management Unit (MMU)
  - Delay Line

### 6502 (modified) CPU Microprocessor

The 6502 (modified) CPU microprocessor contains register flags, interconnections, arithmetic logic, control logic, and all recognized operation codes. The characteristics of the microprocessor are:

- Byte-oriented structure
- 151 opcodes
- Decimal and binary arithmetic modes
- Seven addressing modes
- True indexing
- Stack pointer
- Two interrupt levels
- 64K address range
- Integral clock circuit
- Single +5 volt DC power Requirement

Figure 1-4 is an illustration of the 6502 (modified) CPU Pin Assignments.

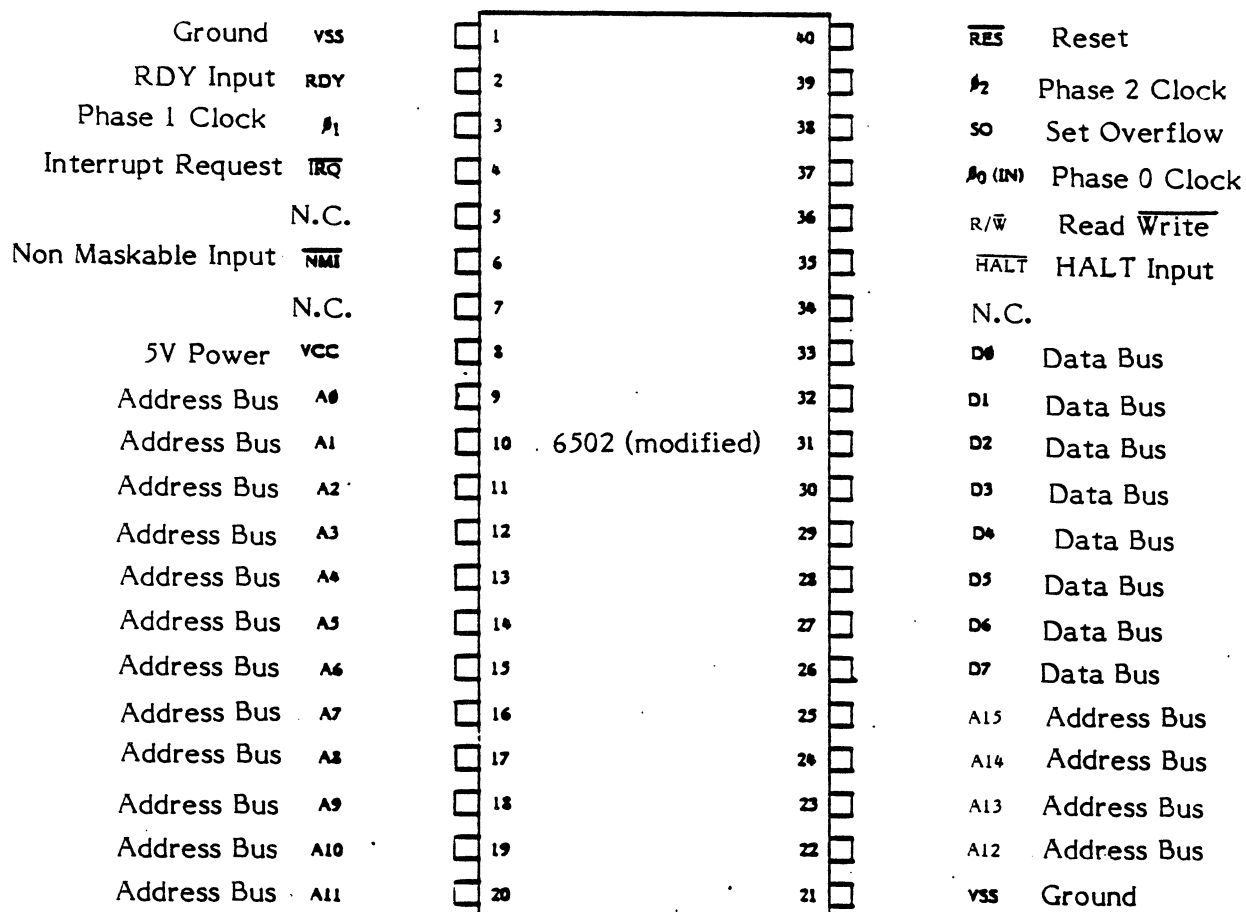


Figure 1-4. 6502 (Modified) CPU Pin Assignments

### Alphanumeric Television Interface Controller (the ANTIC Display Processor)

The ANTIC Display Processor is a custom display microprocessor with an instruction set customized for graphics generation. It also has the ability to control bus and RAM REFRESH.

Figure 1-5 is an illustration of the ANTIC Display Processor pin assignments.

|                  |      |    |                                                                                   |    |     |                    |
|------------------|------|----|-----------------------------------------------------------------------------------|----|-----|--------------------|
| GROUND           | VSS  | 1  |  | 40 | D4  | Data Bus           |
| Alphanum. Data   | AN0  | 2  |                                                                                   | 39 | D5  | Data Bus           |
| Alphanum. Data   | AN1  | 3  |                                                                                   | 38 | D6  | Data Bus           |
| Light Pen        | LP   | 4  |                                                                                   | 37 | D7  | Data Bus           |
| Alphanum. Data   | AN2  | 5  |                                                                                   | 36 | RST | Reset              |
| Interrupt Input  | RNMI | 6  |                                                                                   | 35 | F00 | Fast Phase 0 Clock |
| Interrupt Output | NMI  | 7  |                                                                                   | 34 | 00  | Phase 0 Clock      |
| Refresh          | REF  | 8  |                                                                                   | 33 | D3  | Data Bus           |
| HALT             | HALT | 9  |                                                                                   | 32 | D2  | Data Bus           |
| Address Bus      | A3   | 10 |                                                                                   | 31 | D1  | Data Bus           |
| Address Bus      | A2   | 11 |                                                                                   | 30 | D0  | Data Bus           |
| Address Bus      | A1   | 12 |                                                                                   | 29 | 02  | Phase 2 Clock      |
| Address Bus      | A0   | 13 |                                                                                   | 28 | A4  | Address Bus        |
| Read/Write       | R/W  | 14 |                                                                                   | 27 | A5  | Address Bus        |
| Ready            | RDY  | 15 |                                                                                   | 26 | A6  | Address Bus        |
| Address Bus      | A10  | 16 |                                                                                   | 25 | A7  | Address Bus        |
| Address Bus      | A12  | 17 |                                                                                   | 24 | A8  | Address Bus        |
| Address Bus      | A13  | 18 |                                                                                   | 23 | A9  | Address Bus        |
| Address Bus      | A14  | 19 |                                                                                   | 22 | A11 | Address Bus        |
| Address Bus      | A15  | 20 |                                                                                   | 21 | VCC | 5V Power           |

Figure 1-5. ANTIC Display Processor Pin Assignments.

#### Graphics Television Interface Adaptor (GTIA)

The GTIA interfaces with the ANTIC processor on one side and with the video summation circuitry on the other. Its primary task is to generate color and luminance signals from the display information bit stream it receives from the ANTIC Display Processor.

Figure 1-6 is an illustration of the GTIA pin assignments.

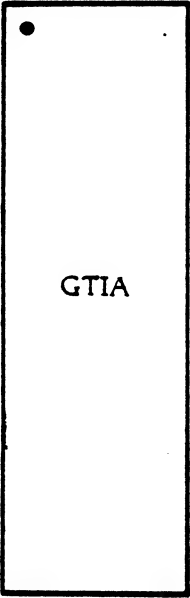
|                  |      |    |                                                                                    |    |       |                    |
|------------------|------|----|------------------------------------------------------------------------------------|----|-------|--------------------|
| Address Bus      | A1   | 1  |  | 40 | A2    | Address Bus        |
| Address Bus      | A0   | 2  |                                                                                    | 39 | A3    | Address Bus        |
| Ground           | VSS  | 3  |                                                                                    | 38 | A4    | Address Bus        |
| Data Bus         | D3   | 4  |                                                                                    | 37 | D4    | Data Bus           |
| Data Bus         | D2   | 5  |                                                                                    | 36 | D5    | Data Bus           |
| Data Bus         | D1   | 6  |                                                                                    | 35 | D6    | Data Bus           |
| Data Bus         | D0   | 7  |                                                                                    | 34 | D7    | Data Bus           |
| Trigger 0        | T0   | 8  |                                                                                    | 33 | R/W   | Read/Write         |
| Trigger 1        | T1   | 9  |                                                                                    | 32 | CS    | Chip Select 1      |
| Trigger 2        | T2   | 10 |                                                                                    | 31 | Lum 3 | Luminance Line     |
| Trigger 3        | T3   | 11 |                                                                                    | 30 | Φ2    | Phase 2 Input      |
| Option           | S0   | 12 |                                                                                    | 29 | F00   | Clock Out          |
| Start            | S1   | 13 |                                                                                    | 28 | OSC   | Oscillator Input   |
| Select           | S2   | 14 |                                                                                    | 27 | VCC   | Power              |
| Keyboard Click   | S3   | 15 |                                                                                    | 26 | HALT  | HALT               |
| PAL Color Delay  | PAL  | 16 |                                                                                    | 25 | CSYNC | Output Sync        |
| Color Delay      | CADJ | 17 |                                                                                    | 24 | LUM 2 | Luminance 2 Output |
| Alphanum. Data 0 | AN0  | 18 |                                                                                    | 23 | LUM 1 | Luminance 1 Output |
| Alphanum. Data 1 | AN1  | 19 |                                                                                    | 22 | LUM 0 | Luminance 0 Output |
| Alphanum. Data 2 | AN2  | 20 |                                                                                    | 21 | COL   | Color              |

Figure 1-6. GTIA Pin Assignments.

### POT Keyboard Integrated Circuit (POKEY)

The POKEY is a Custom Large Scale Integrated Circuit (LSI) chip. It is used for audio generation, Serial Input/Output (SIO) control, controller interface scan, and keyboard scan.

Figure 1-7 is an illustration of the POKEY pin assignments.

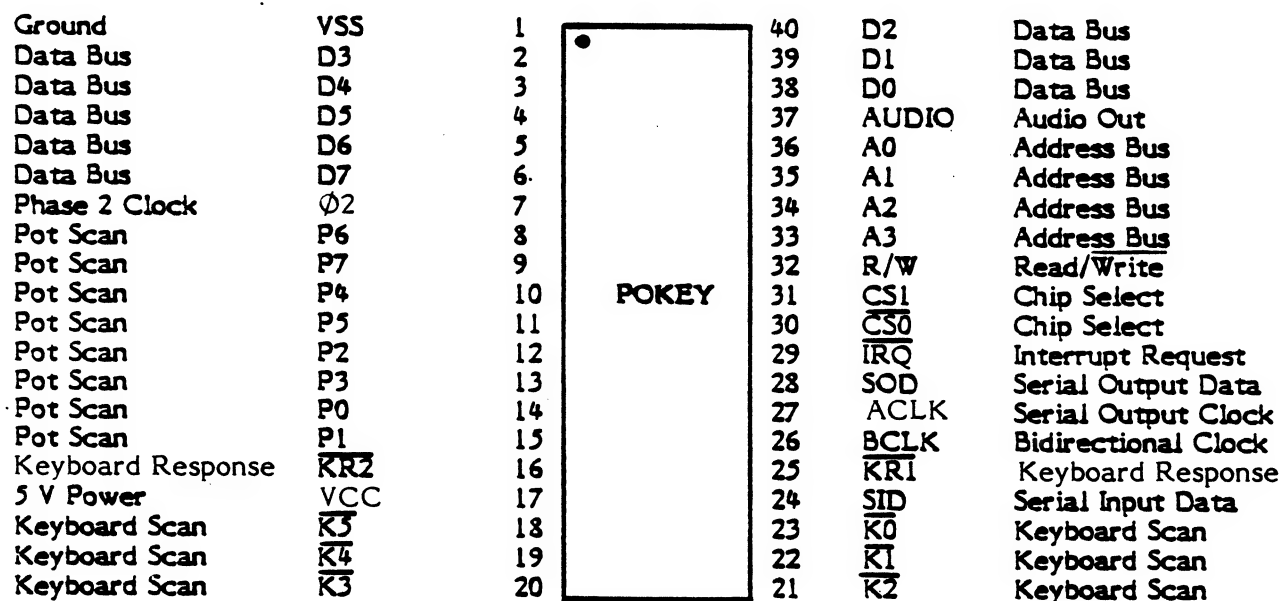


Figure 1-7. POKEY pin assignments.

#### Peripheral Interface Adaptor (PIA)

The PIA is a general purpose Input/Output (I/O) chip.

Figure 1-8 is an illustration of the PIA pin assignments.

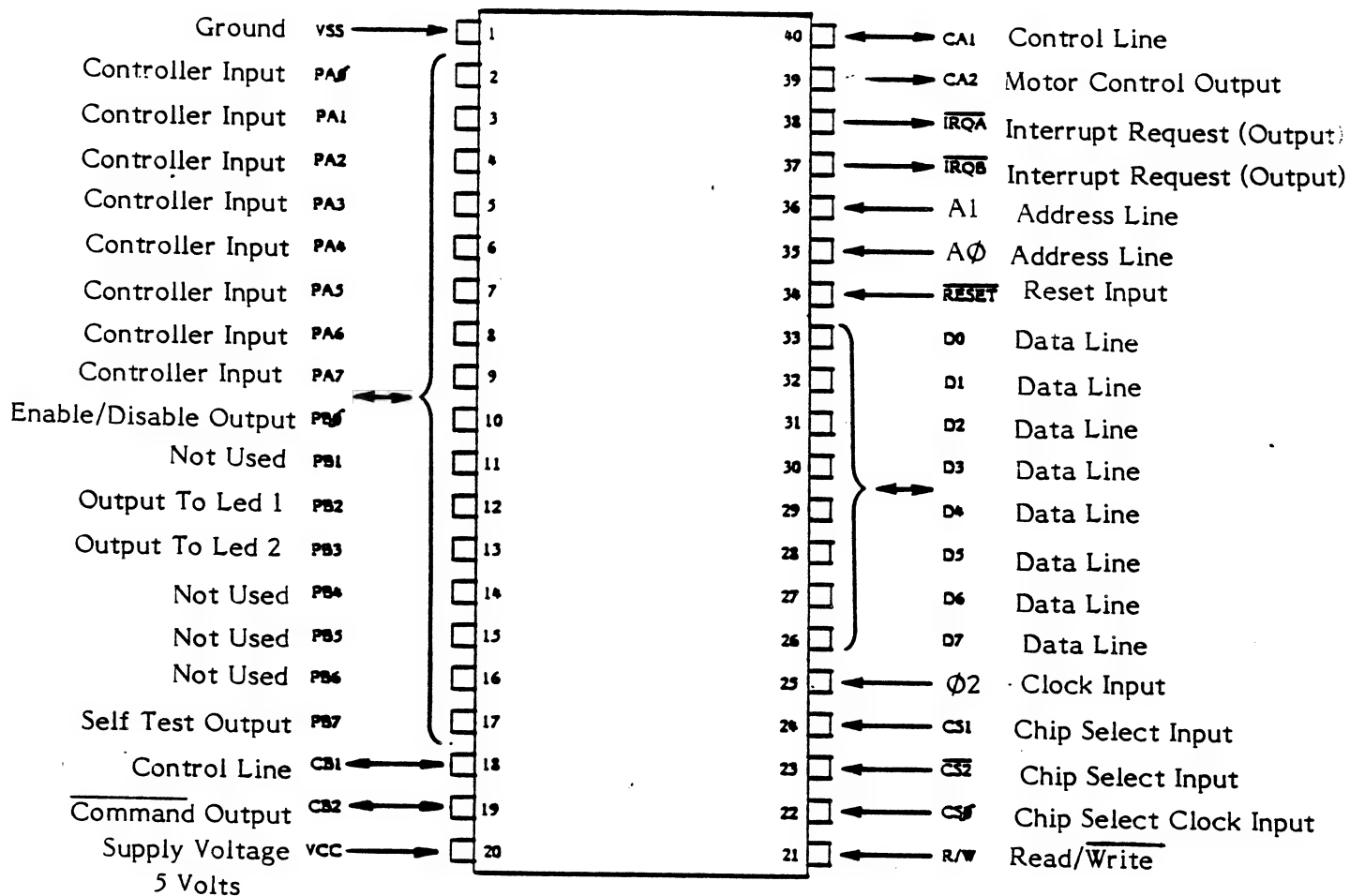


Figure 1-8. PIA Pin Assignments.

### Memory (ROM and RAM)

The 1200XL operating system is resident to two 8K X 8 ROMs. The ROMs input CPU address lines A0 through A12 and the chip selects from the address decoding circuitry and generates data on CPU data lines D0 through D7. RAM is organized as 8-64K x 1 chips, one for each data line. 48K RAM is directly available.

### Memory Management Unit (MMU)

The Memory Management (Address Decoding) circuitry consists of a Hard Array Logic (HAL), one 3 to 8 decoder and a few gates. The input to this circuitry are the address lines A8 thru A15 and control signals like ROM enable (From PIA) and Refresh. The outputs of this circuitry are GTIA chip select, POKEY chip select, PIA chip select, O.S. ROM selects, RAM selects, cartridge selects and COMM A, COMM B, COMM C.

### The RF Modulator

The RF Modulator inputs the composite video from the video summation circuitry and the monoaural audio signals and produces a modulated signal suitable for the television.

The modulated signal will have the following characteristics with a 75 Ohm termination:

Maximum Voltage: 2MV  
Minimum Voltage: 1MV  
Audio Sound Carrier Frequency: 4.5 MHz  
Frequency Response:  
Ch. 3 61.25 MHz +/- 0.5  
Ch. 2 55.25 MHz

### Power Supply

The 1200XL has a linear power supply. The power supply electronics is resident on the motherboard. The power supply accepts a 9VAC input through the power jack. An external step-down transformer accepts 115 VAC from the power line and steps it down to 9VAC. The 9VAC input is rectified by a bridge rectifier and then regulated power outputs from the regulators are bussed on separate power rails to power distinct sections of the motherboard. All power rails have a common ground.

The DC. output of each regulator is 5V +/-5% (1.7A Max). Input voltage is 9 VAC. Input power is 31 VA.

### SYSTEM INTERFACE

The 1200XL provides the following interfaces:

- The Serial Input/Output (SIO) interface
- The keyboard interface
- The controller jack interface
- The cartridge interface
- The monitor interface
- The LED board interface

## Serial Input/Output (SIO) Interface

The Atari 1200XL communicates with peripheral devices over an asynchronous serial port (19.2K Baud Rate Max). Data is transmitted and received as 8 bits of serial data (LSB sent first) preceded by a logic zero start bit and succeeded by a logic one stop bit. The serial data out is transmitted as positive logic. The serial DATA OUT line always assumes its new state when the serial CLOCK OUT line goes high; CLOCK OUT goes low in the center of the DATA OUT time.

The bus protocol specifies that all commands must originate from the computer, and that peripherals present data on the bus only when commanded to do so. Every bus operation goes to completion before another bus operation is initiated (no overlap). An error detected at any point in the bus operation will abort the entire sequence. A bus operation consists of the following elements:

- Command Frame (From Computer)
- Acknowledge Frame (From Peripheral)
- Optional Data Frame (To or From Computer)
- Complete Frame (From Peripheral)

### Command Frame

The serial bus protocol provides for three types of commands:

- 1) Data Send
- 2) Data Receive
- 3) Immediate (No Data-Command Only)

Figure 1-9 is an illustration of the SIO pin assignments.

| <u>PIN</u> |               | <u>PIN</u> |                                     |
|------------|---------------|------------|-------------------------------------|
| 1          | Clock In      | 7          | Command                             |
| 2          | Clock Out     | 8          | <u>Motor Control</u>                |
| 3          | Data Into CPU | 9          | <u>Proceed</u>                      |
| 4          | GND           | 10         | Ready (Computer ON)                 |
| 5          | Data Out      | 11         | Audio In (175 MV)                   |
| 6          | GND           | 12         | <u>+12 VDC</u> (Not used on 1200XL) |
|            |               | 13         | <u>Interrupt</u>                    |

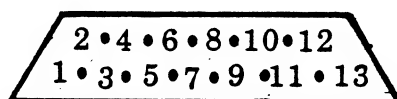


Figure 1-9. SIO Interface Pin Assignments (looking into jack on unit)

### Keyboard Interface

Figure 1-10 is an illustration of the keyboard interface pin assignments.

The 1200XL keyboard uses a 15-pin Molex Connector, which provides inputs to POKEY, GTIA (S0,S1,S2) and CPU (Reset).

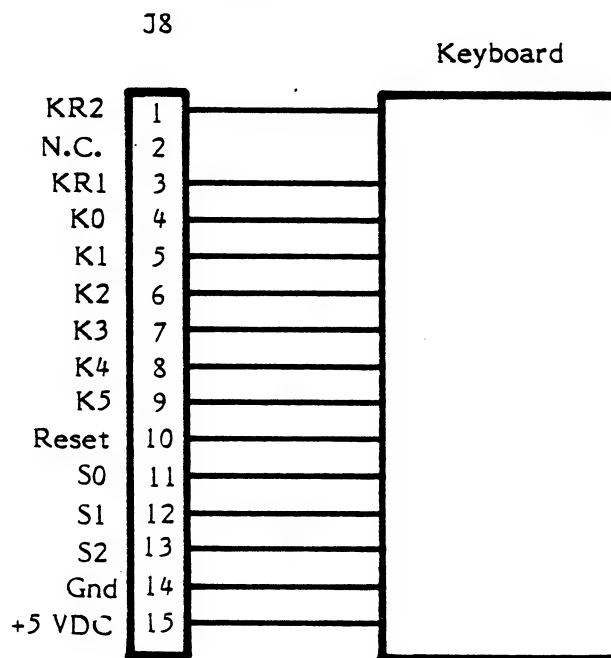


Figure 1-10. Keyboard Interface Pin Assignments.

## Controller Jack Interface

The 1200XL provides two controller jack interfaces. Both are functionally and electrically identical. The controller jacks are 9-pin D-type connectors.

Figure 1-11 is an illustration of the controller jack pin assignments.

- |                             |                  |
|-----------------------------|------------------|
| 1. (Joystick) Forward Input | 6. Trigger Input |
| 2. (Joystick) Back Input    | 7. +5 volts      |
| 3. (Joystick) Left Input    | 8. Ground        |
| 4. (Joystick) Right Input   | 9. Pot A Input   |
| 5. Pot B Input              |                  |

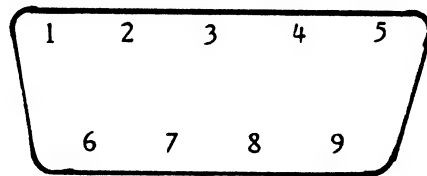


Figure 1-11. Controller Jack Pin Assignments (from left side of 1200XL)

## Cartridge Interface

The cartridge interface is a 30 pin edge connector.

Figure 1-12 is an illustration of the cartridge interface pin assignments.

|                      |      |    |   |     |                                 |
|----------------------|------|----|---|-----|---------------------------------|
| Select               | S4   | 1  | A | RD4 | Input from cartridge            |
| Address Bus          | A3   | 2  | B | GND | Ground                          |
| Address Bus          | A2   | 3  | C | A4  | Address Bus                     |
| Address Bus          | A1   | 4  | D | A5  | Address Bus                     |
| Address Bus          | A0   | 5  | E | A6  | Address Bus                     |
| Data Bus             | D4   | 6  | F | A7  | Address Bus                     |
| Data Bus             | D5   | 7  | H | A8  | Address Bus                     |
| Data Bus             | D2   | 8  | J | A9  | Address Bus                     |
| Data Bus             | D1   | 9  | K | A12 | Address Bus                     |
| Data Bus             | D0   | 10 | L | D3  | Data Bus                        |
| Data Bus             | D6   | 11 | M | D7  | Data Bus                        |
| Select               | S5   | 12 | N | A11 | Address Bus                     |
| VCC                  | +5V  | 13 | P | A10 | Address Bus                     |
| Input from cartridge | RD5  | 14 | R | R/W | Read/ $\overline{\text{Write}}$ |
| Cartridge Control    | CCTL | 15 | S | B02 | Buffered Phase 2                |

Figure 1-12. Cartridge Interface Pin Assignments  
(from left side of 1200XL)

### Monitor Interface

The monitor interface is a 5-pin DIN connector.

Figure 1-13 is an illustration of the monitor interface pin assignments.

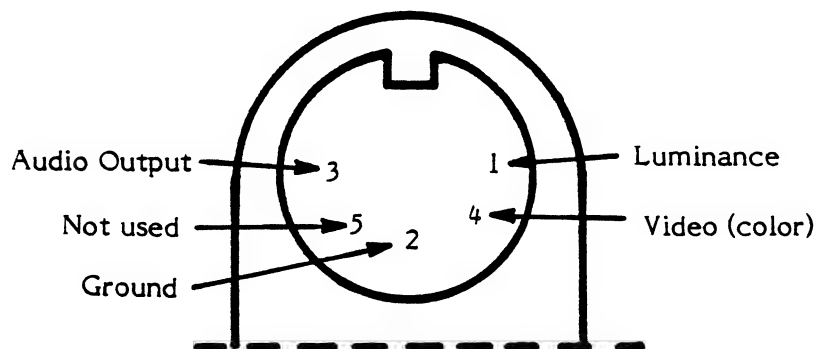


Figure 1-13. Monitor Interface Pin Assignments

### LED Board Interface

The LED Board is connected to the CPU Board with a 5 wire flat cable terminating in a 5 pin molex connector with the following pin assignments.

| <u>Pin</u> | <u>Signal</u>                       |
|------------|-------------------------------------|
| 1          | LED 3 (Power On)                    |
| 2          | No Connect (N.C.)                   |
| 3          | LED 2 (International Character Set) |
| 4          | LED 1 (Keyboard Disable)            |
| 5          | Ground                              |

## SECTION 2

### SCHEMATICS AND SILKSCREENS

The schematics and silkscreens for the 1200XL are attached to the front cover of this manual.

Minor variations in design may be encountered depending upon the production date of the console. The attached drawings provide all details required for an in-depth understanding of the 1200XL.



## SECTION 3

### TESTING

#### OVERVIEW

This section describes the procedures available for testing the 1200XL. They are:

- Self Test
- Using SALT 2.05 Diagnostic Cartridge

#### EQUIPMENT NEEDED

- a 1200XL console with accessories
- a TV set, properly adjusted
- a SALT 2.05 Diagnostic Cartridge

#### SELF TEST

The Self Test feature allows the user to perform minimal tests on the following components:

- Memory - RAM, ROM and ANTIC
- Audio/Visual - ANTIC, GTIA, and POKEY
- Keyboard - POKEY and ANTIC

To enter the testing sequence, press the HELP key while the power-on logo is on the screen.

NOTE: No cartridge should be inserted in the unit.

To exit the test, press the SYSTEM RESET key (causes the power-on initialization sequence) or the HELP key (exits back to the Self Test Screen Menu).

NOTE: Pressing the HELP key has no effect while the HELP (Self Test) screen is displayed.

## Procedure:

1. Connect 1200XL console to TV set as shown in owners manual.
2. Turn on computer and TV set.
3. Press HELP key when power-on logo appears.
4. The Self Test menu displays four options:

Memory  
Audio Visual  
Keyboard  
All Tests

Press the SELECT key to move the selection down a line until you reach the desired test.  
Press the START key to begin the test.

**CAUTION:** Self Test will not go into Attract Mode. Do not leave the TV set on any of the Self Test screens for any length of time, since screen burning can occur.

### MEMORY TEST SCREEN

**Purpose:** To test ROM, RAM and ANTIC chips.

**Format:** Two long bars display at the top of the screen. Below them are three rows with sixteen blocks representing the RAM (each block represents 1K). The two long bars displayed at the top of the screen represent the two 8K ROMs in the system. When either ROM or RAM is being tested, the corresponding bar segment color is white. If the ROM or RAM tests good, the bar color changes to light green. If the ROM or RAM tests defective, the color changes to red. Once a ROM or RAM has been tested and found defective the bar remains red and is not tested again on subsequent test passes.

During the RAM test the LEDs cycle one on and one off. On exiting the Memory tests the LEDs will be left in the off state.

The Memory Test loops and continues testing until either the HELP or RESET key is pressed.

### AUDIO VISUAL TEST SCREEN

**Purpose:** To test the ANTIC and POKEY chips.

**Format:** This screen displays a music staff and treble clef. A sequence of six notes plays and the corresponding note shows on the staff. The tune plays sequentially from channel one through channel four. The channel number changes for each according to the sound channel in use. Voice #1-4 under the staff and treble clef indicates the channel in use. There is a slight pause between each voice.

The Audio Visual Test loops and continues testing until either the HELP or RESET key is pressed.

## KEYBOARD TEST SCREEN

**Purpose:** To test the POKEY, the ANTIC and ROM chips.

**Format:** A full keyboard displays. Press each keyboard key. The corresponding key on the screen should change to inverse video. It should change back to the original color when the key is released. **NOTE:** The control and shift keys change only when pressed at the same time as another key - the display for both keys will change to inverse video and then back. As each key (except RESET) is pressed, a tone is generated.

**NOTE:** The BREAK key does not change appearance or generate a note when pressed.

## ALL TESTS

All of the Self Tests are continuously executed one after another until either the HELP or RESET key is pressed.

**NOTE:** When All Tests is executing, the Memory Test and the Audio Visual Test exit after a complete test cycle.

Keyboard Test during All Tests is software controlled. No operator input is required.

## USING THE SALT 2.05 DIAGNOSTIC CARTRIDGE

**NOTE:** Not all of the tests available on the SALT 2.05 Diagnostic cartridge are applicable to the 1200XL. Only the tests discussed in the following paragraphs are applicable.

### Procedure:

1. Connect the 1200XL console to the TV set as shown in the Operators Manual.
2. Turn on the computer and TV set.
3. Insert the SALT 2.05 Diagnostic Cartridge in the cartridge slot.
4. After a few seconds the SALT header displays (See Figure 3-1).

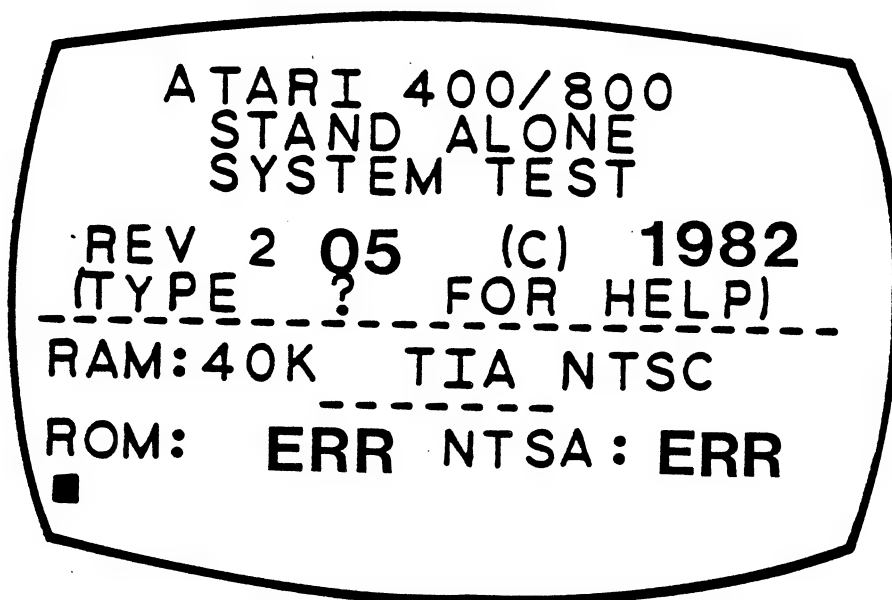


Figure 3-1. SALT Header

Note that the following do not indicate failures:

- ERR in the ROM: row
- Red screen

5. Type ? and RETURN to display the SALT Menu (See Figure 3-2). The highlighted character in red on the display is the command letter for each test. Press the command letter then RETURN to select a test.

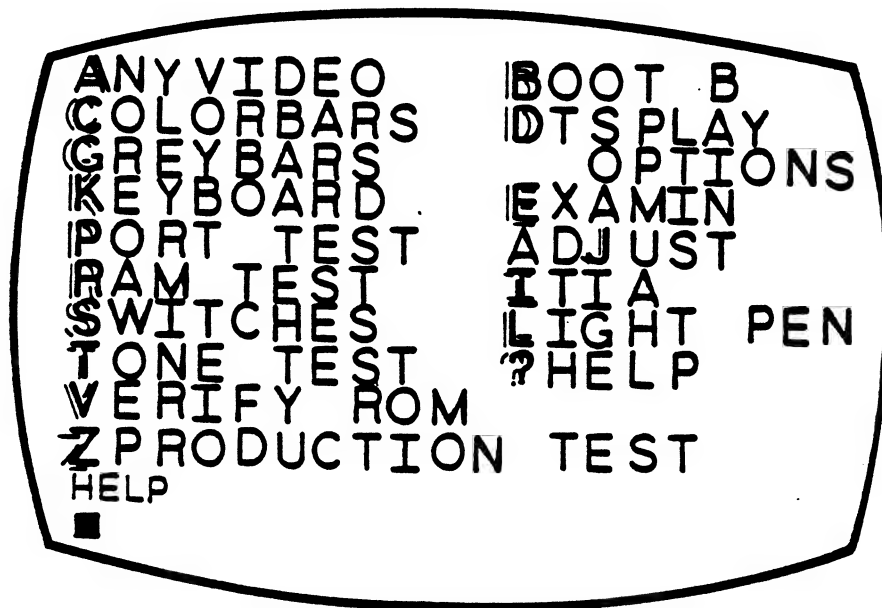


Figure 3-2. SALT Menu

A number of tests on this menu are not applicable to the 1200XL and should be disregarded. They are:

- KEYBOARD (use Self Test instead of SALT 2.05)
- PORT TEST
- SWITCHES
- TONE TEST (Use Self Test instead of SALT 2.05)
- VERIFY ROM (Use Self Test instead of SALT 2.05)
- ADJUST
- TIA

Disregard the other functions:

- BOOT B
- EXAMINE
- LIGHT PEN
- PRODUCTION TEST

RESET is used to take you from a test back to the SALT Header.

The tests applicable to the 1200XL are discussed on the following pages.

## COLOR BAR TEST

This test verifies and allows for adjustment to the color circuitry. Enter the command letter **C** and press **RETURN** to activate this test. Figure 3-3 is a black and white representation of what your television display screen should look like.

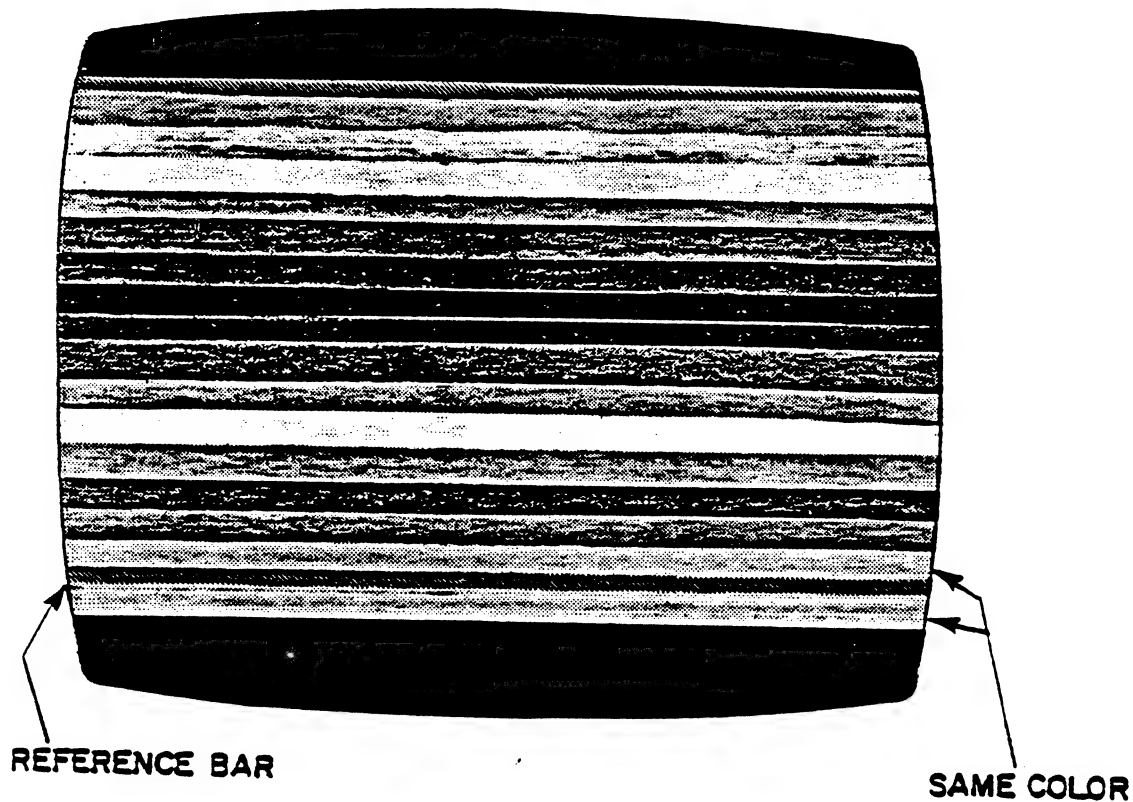


Figure 3-3. Color Bar Test Screen

A 15-color rainbow scale is displayed above the reference bar with a single color bar below. The color bars directly above and below the reference bar should be the same color (golden rod). If not, proper adjustment of VR1 makes the color bars above and below the reference bar identical, thus adjusting the color frequency of the console to the proper setting. See Figure 4-1 for VR1 location. Minor glitches on the edges of the color bars are acceptable. Leave this test on for at least 60 seconds in order to catch any intermittent problems, such as a bar momentarily changing colors or blanking out.

## ANY VIDEO TEST

This test verifies the console's ability to generate a video (TV) display. This test also checks for pattern sensitivity of the ANTIC chip.

Enter the command letter **A** and press **RETURN** to activate this test.

Figure 3-4 illustrates the screen display for the Any Video Test. **NOTE:** Figure 3-4 is a black and white representation of a colored screen.

The screen should have a black background with eight vertical bars. Half of the vertical bars should be narrow, and the other half, much wider. A horizontal bar should appear across the top of the screen. From the left to right, the shade of color on the horizontal bar should change. On the right of the bar, two Vs should be displayed, right side up; one in normal video and the other in inverse video.

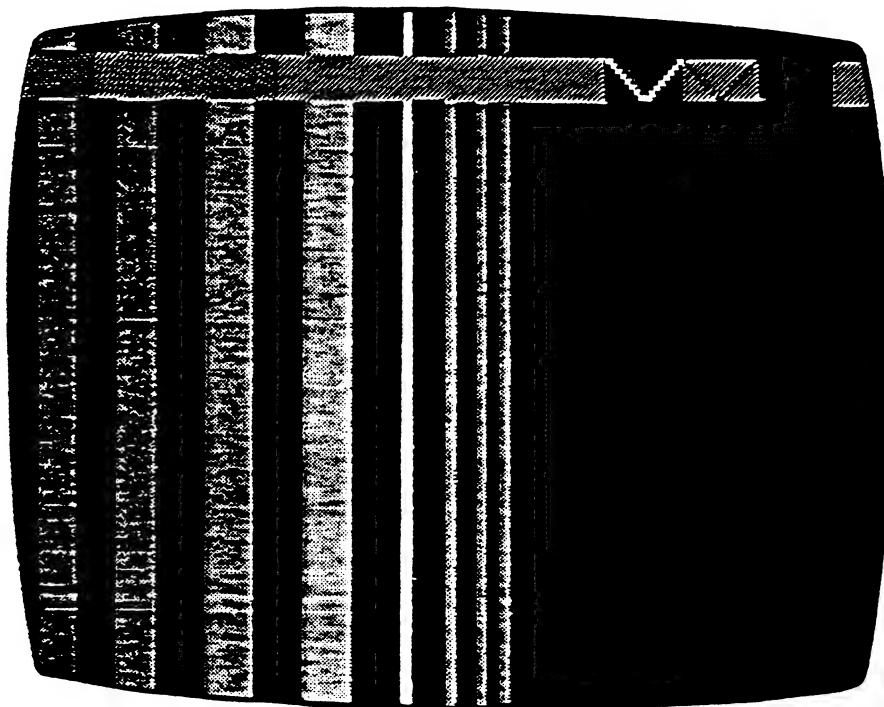


Figure 3-4. Any Video Test Screen

## GRAY BAR TEST

This test verifies that the GTIA is generating Lum 0, 1 and 2. L3 is not tested. Press the command letter **G** and then **RETURN** to activate this test.

Figure 3-5 illustrates the screen display of the Gray Bar Test. The screen is divided into eight equal sized horizontal bars. The bar at the top of the screen should be black and subsequent bars should progress to white at bar eight. The bars should lighten in even shades. The screen should be steady and unchanging. These lines may have minor glitches at their edges. A thin white line should always appear just over the top (black) bar. No color should appear anywhere on the screen. The areas above the top (black) bar and below the bottom (white) bar are of no importance to this test. This test should be left on for at least 60 seconds to ensure that there is no "flashing" of color or shifting of the gray bars.

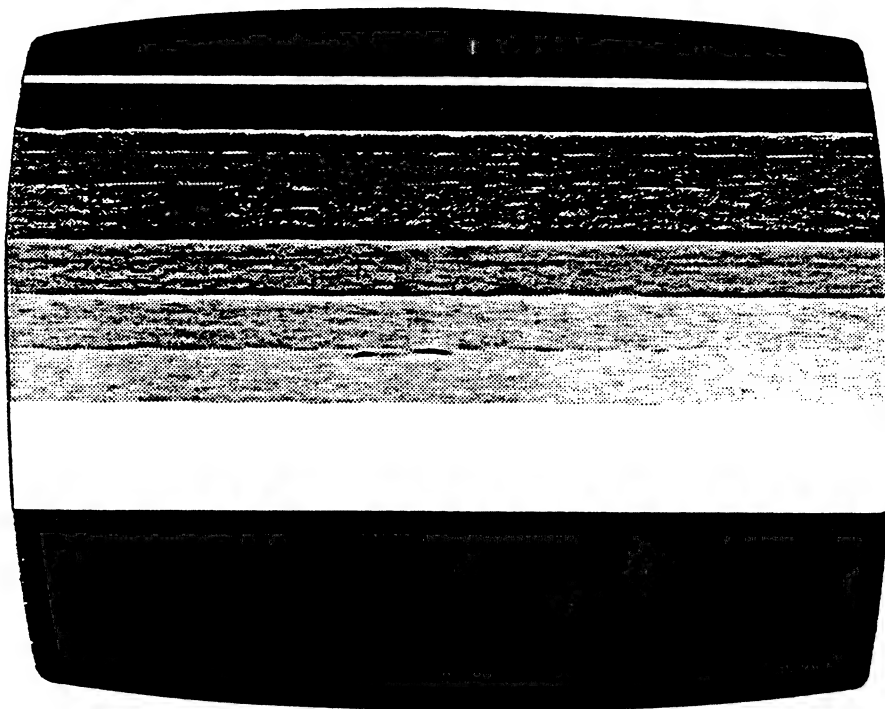


Figure 3-5. Gray Bar Test Screen

## DISPLAY OPTIONS

This function, which is not a test, displays a diagnostic matrix when used in conjunction with the RAM TEST.

To enter test, select letter **D** and **RETURN**. The screen returns the prompt to enter a test format. Enter command **E** and press **RETURN**. Enter the command letter **C** and press **RETURN** for continuous testing.

Press the command letter **R** and then **RETURN** to activate the RAM test. To terminate the test press the **SPACE BAR**. NOTE: The RAM test completes its current test before stopping.

## RAM TEST

This test verifies the operation of the RAM chips. Press the command letter **R** and then **RETURN** to activate this test. Figure 3-6 illustrates the RAM test screen display when command letter **E** is pressed under Display Options. The four digit number in white at the bottom right of the screen indicates the number of tests completed. A red four digit number directly above this is used to count the number of failures.

Failures appear as red 1's in this display. Only the D row is applicable for the 1200XL.

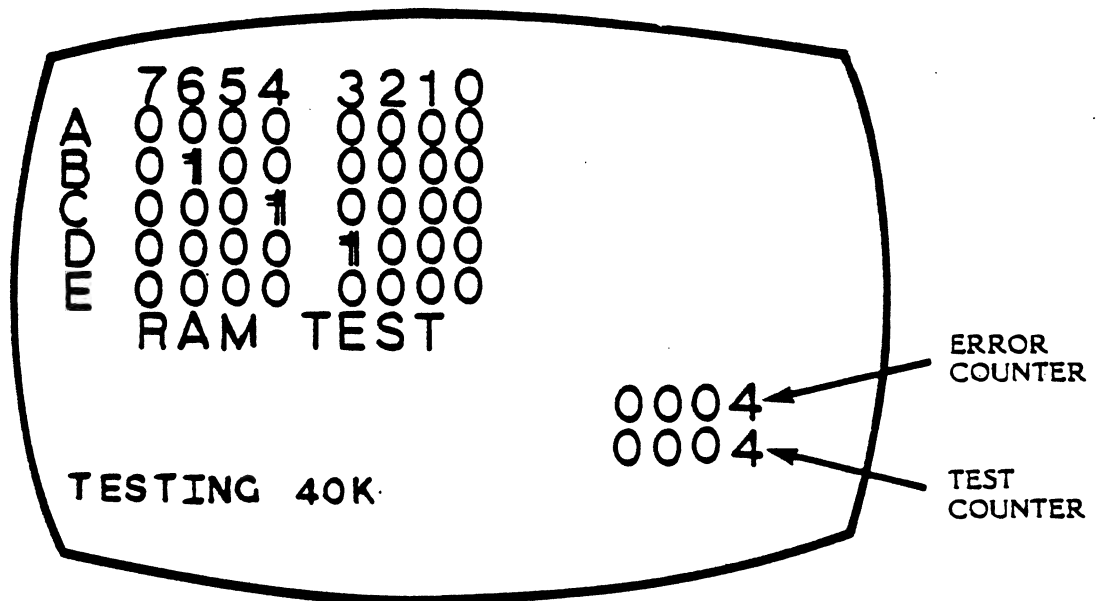


Figure 3-6. RAM Test Screen.

Only the D row is applicable for the 1200XL. Use the information below to identify the defective RAM.

Each red 1 from matrix row D indicates a failing chip. Use the information below to identify each chip location.

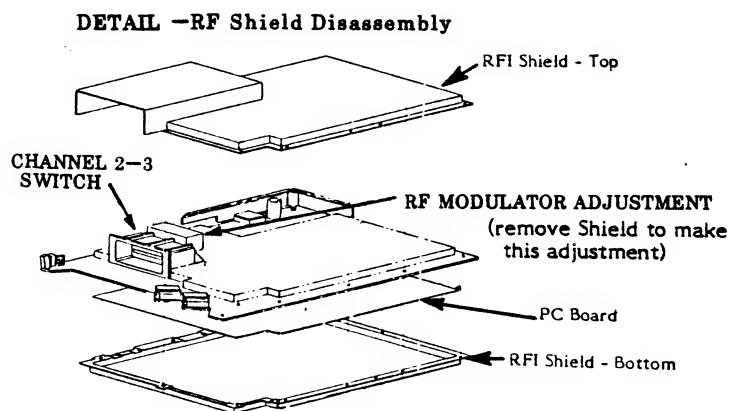
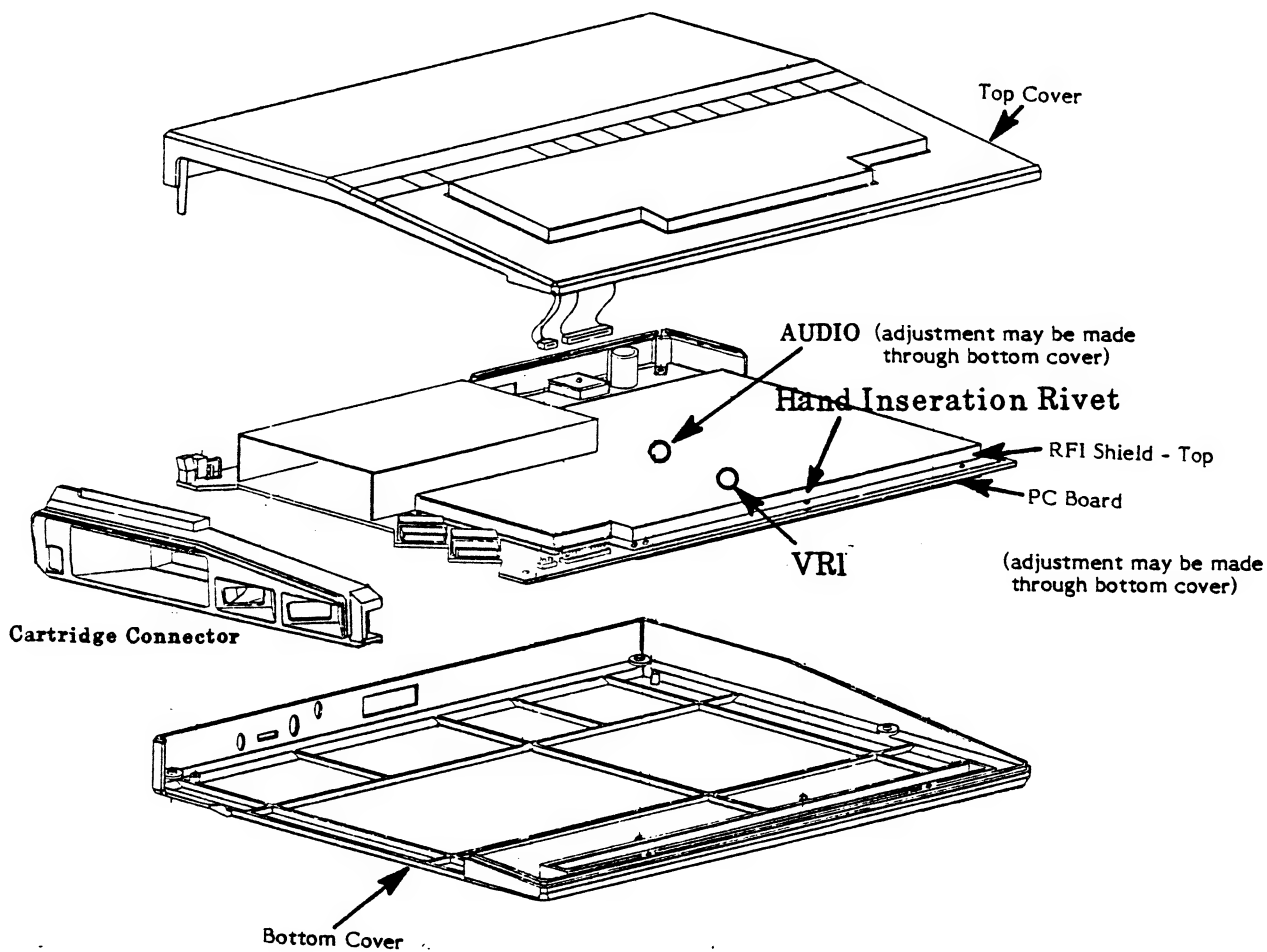
| <u>Defective RAM Identifier</u> |             |
|---------------------------------|-------------|
| <u>Bad Bit</u>                  |             |
| <u>Column</u>                   | <u>64 K</u> |
| D0                              | U9          |
| D1                              | U8          |
| D2                              | U6          |
| D3                              | U5          |
| D4                              | U4          |
| D5                              | U3          |
| D6                              | U2          |
| D7                              | U1          |

## SECTION 4

### SYMPTOM CHECKLIST

The Symptom Checklist is designed to assist you arrive at a rapid diagnosis for problems. Each symptom is accompanied by some possible causes. **Instructions for Disassembly/Assembly, adjustments and/or replacements are on the pages following this Symptom Checklist.**

| <u>SYMPTOM</u>                              | <u>POSSIBLE CAUSES</u>                                                      | <u>REMEDY</u>                                                                   |
|---------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Snowy Screen                                | Switch Box, AC Adaptor, Channel Select Switch, RF Modulator or Cable Damage | Adjust or replace<br>(See Page 4-4)                                             |
| Black/Gray Screen                           | A1-A2(7805), +5VDC, L4-L8, ANTIC, CR8 Power Plug, SW1, Y1                   | Replace                                                                         |
| Green/Yellow Screen                         | U27, U1-U9, U12,U13                                                         | Replace                                                                         |
| Solid Blue Screen                           | U24, Q3, Y1, Q2, Q4, U19                                                    | Replace                                                                         |
| No Color or Bad Color Bars                  | VR1 Adjust, U20, U2, U19, Q3, Y1, RF Modulator                              | Adjust or replace<br>(VR1 Adjust - Page 4-2;<br>RF Modulator Adjust - Page 4-4) |
| No Color Bars on TIA Test                   | U19                                                                         | Replace                                                                         |
| No Lights (L1,L2,L3)                        | LED 3, LED Pin 1, +5A Power Supply, U23, Q9 Q10, Pin 3, Pin 4               | Replace. If problem is LED, replace the LED Board)                              |
| No Gray Bars                                | RF Modulator Y1, VR1, Q3 U19                                                | Adjust or replace<br>(VR1 Adjust - Page 4-2;<br>RF Modulator Adjust - Page 4-4) |
| Upside down Alpha/ Numerics or Player Field | U20, U19, Q3                                                                | Replace                                                                         |
| Some Keyboard Keys Fail                     | U24, Keyboard                                                               | Replace (See Page 4-4)                                                          |
| All Keyboard Keys Fail                      | U24, Keyboard                                                               | Replace (See Page 4-4)                                                          |
| Tones Missing During Sound or Games         | U24, L11-L12                                                                | Adjust or Replace<br>(Adjust Audio - Figure 4-1)                                |
| Console (Game) Switches Will Not Function   | U19, U23                                                                    | Replace                                                                         |
| ROM Test Failed                             | U12, U13, U14, U18, U22                                                     | Replace                                                                         |
| RAM Test Failed                             | U1-U9, U7, U14, U22                                                         | Replace                                                                         |



## **ADJUSTMENTS AND REPLACEMENTS**

Use Figure 4-1 as reference for the following discussion.

### **CONSOLE DISASSEMBLY**

1. Turn console upside down and place on the workbench.
2. Remove the six screws that hold the bottom cover to the top cover.
3. Remove the bottom cover containing PCB and turn it right side up.
4. Remove the six screws that hold the PCB in place.
5. Remove the PCB and cartridge connector from the bottom cover.
6. Remove the push rivets from shielding (11 rivets).
7. Separate the top and bottom RF Shields and remove the fish paper. Take care that PCB is not damaged.

### **CONSOLE ASSEMBLY**

1. Position the top shield upside down on the bench.
2. Position the PCB upside down on the top shield.
3. Place the fish paper inside of bottom shield.
4. Hold the fish paper and bottom shield together and position upside down on top of PCB. Be sure that adjustment holes are clear.
5. Place one push rivet in a hole in the bottom shield. Repeat for ten more push rivets.
6. Place bottom cover with right side up on bench.
7. Insert cartridge connector into PCB/shields assembly.
8. Hold the assembly together, and position within bottom cover assembly. Be sure that screw holes are aligned.
9. Attach with six screws.

### **KEYBOARD REMOVAL/REPLACEMENT**

1. Remove the top cover from the console.
2. Remove the keyboard connector and LED connector. Note the position of the LED connector for reference during assembly.
3. Remove the four screws which hold the keyboard to the top cover.
4. Remove the keyboard from the top cover.

### **TO REPLACE THE KEYBOARD:**

1. Place the top cover upside down on the workbench.
2. Install and position the new keyboard.
3. Insert and tighten the four screws which hold the keyboard to the top cover.
4. Attach the keyboard connector and the LED connector (Be careful not to twist the LED connector cable).

### **RF MODULATOR ADJUSTMENT**

1. Disassemble the console (See Page 4-3).
2. Remove the RF Shield.
3. Adjust RF modulator for correct Color Bar Test Screen (See Page 3-6, Figure 3-3).
4. Replace the RF Shield.

NOTE: RF modulator may also be adjusted using a frequency meter.

#### **Procedure:**

- Connect the frequency meter to the RF output jack on the modulator (A3).
- Set SW3 to Channel 3 position.
- Adjust modulator to 61.25 MHz.

### **SOUND ADJUSTMENT**

See Figure 4-1, Page 4-2.

Adjustment can be made through top or bottom cover.

### **COLOR ADJUSTMENT**

See Figure 4-1, Page 4-2.

Adjustment can be made through top or bottom cover.

## SECTION 5

### 1200XL PARTS LIST

#### MAJOR ASSEMBLIES

| <u>LINE NO.</u> | <u>DESCRIPTION</u>        | <u>PART NUMBER</u> |
|-----------------|---------------------------|--------------------|
| 1.              | Final Assembly (unpacked) | CA060276           |
| 2.              | Top Cover Assembly        | CA060278           |
| 3.              | PCB-RFI Shield Assembly   | CA061074           |
| 4.              | Bottom Cover Assembly     | CA060277           |
| 5.              | Cartridge Conn Panel      | C060096            |
|                 | Antenna Switch Box        | CA010112           |
|                 | Power Adaptor             | CA017964           |

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| <u>LOCATION</u> | <u>DESCRIPTION</u>             | <u>PART NUMBER</u> |
|-----------------|--------------------------------|--------------------|
|                 | <b>TOP COVER ASSEMBLY</b>      | <b>CA060278</b>    |
| Top             | Top Cover                      | C060103            |
| Top             | Keyboard Mask (64K)            | C060105            |
| Top             | Indicator Strip                | C060106            |
| Top             | Trim                           | C060281            |
| Top             | Key caps                       | C060562            |
| Top             | Standoff (LED)                 | C060944            |
| Top             | Label/Nameplate                | C061071            |
| Top             | Keyboard Assy                  | CA060046           |
| Top             | Indicator PC Board Assy        | CA060568           |
| Top             | Connector/Cable Assy           | CA060606           |
| LED1-3          | LED Pilot Lamp                 | C014776            |
|                 | <b>PCB/RFI SHIELD ASSEMBLY</b> | <b>CA061074</b>    |
| Main            | Fastener Latching (Heatsink)   | C014796            |
| Main            | Fastener Latching              | C015344            |
| Main            | Cartridge Guide                | C060097            |
| Main            | Conn Retainer                  | C060098            |
| Main            | Upper CPU Shield               | C060285            |
| Main            | Lower CPU Shield               | C060286            |
| Main            | Conn, Edge, Rt Angle 15/30     | C060410            |
| Main            | Heatsink                       | C060581            |
| Main            | Stud, tri-mount                | C061488            |
| Main            | Insulator Lower Shield         | C061123            |
| Main            | Plastic Rivet                  | C061490            |
| Main            | PC Board Assy (MAIN)           | CA060588           |
| Main            | Heat Sink Assy                 | CA061135           |
| Main            | RF Cable Assy (12 Ft)          | CA061177           |

## SECTION 5

### 1200XL PARTS LIST

| <u>LOCATION</u>                                                        | <u>DESCRIPTION</u>               | <u>PART NUMBER</u> |
|------------------------------------------------------------------------|----------------------------------|--------------------|
| A1,2                                                                   | Voltage Regulator (78M05) 5V     | C014348            |
| A3                                                                     | Modulator                        | C060618            |
| Main                                                                   | Socket IC (24 pin)               | C014386-08         |
|                                                                        | Alternate for P/N C014386-07-1   |                    |
| Main                                                                   | Diode (1N914)                    | 31-1N914           |
|                                                                        | Alternate for P/N C060607-2      |                    |
| <b>PCB/RFI SHIELD ASSEMBLY</b>                                         |                                  | <b>CA061074</b>    |
| C1                                                                     | Cap. Ceramic Axial 68pF          | C014179-12         |
| C2-5,8,10-12,14-25,<br>30-32,34,48,55-59,<br>68,95,100                 | Cap. Ceramic Axial .1uF (25V)    | C014181-03         |
| C7,51,52                                                               | Cap. Alum Elec Axial 47uF (10V)  | 24-100476          |
| C9,98                                                                  | Cap. 270pF (25V)                 | C061336-02         |
| C13,35,64-67,72-91,<br>103-106,109-114,<br>120-145,147,148,<br>151-154 | Cap. Ceramic Axial .001uF (25V)  | C014181-01         |
| C26-29                                                                 | Cap. Ceramic Axial .047uF (25V)  | C014180-09         |
| C36,37,149,150                                                         | Cap. .01uF (100V)                | C061337-01         |
| C39                                                                    | Cap. 10000uF (16V)               | C060603            |
| C40,41,54,93,99,<br>102,155                                            | Cap. Alum Elec Axial 22uF (16V)  | C014393            |
| C42,47                                                                 | Cap. Ceramic Axial .01uF (25V)   | C014181-02         |
| C60,118                                                                | Cap. Ceramic Axial 100pF (25V)   | C014179-19         |
| C61                                                                    | Cap. Ceramic Axial 150pF (25V)   | C014179-09         |
| C63                                                                    | Cap. Ceramic Axial 390pF (25V)   | C014180-10         |
| C96,97                                                                 | Cap. 820pF (25V)                 | C061336-03         |
| C115,162                                                               | Cap. Alum Elect Axial 10uF (16V) | C014371            |
| C116                                                                   | Cap. Ceramic Axial 6800pF (25V)  | C014180-12         |
| C117                                                                   | Cap. Ceramic Axial 1500pF (25V)  | C014180-15         |
| C119                                                                   | Cap. 3.9pF (25V)                 | C061336-01         |
| CR1,2,6,16-21                                                          | Diode (1N4148) Alternate listed  | C060607            |
| CR8                                                                    | Diode Bridge (MDA 990-2)         | C060584            |
| J1                                                                     | Connector Rt Angle (13 pin)      | C012995            |
| J2                                                                     | Connector DIN (5 pin female)     | C014388            |
| J4                                                                     | Cartridge Connector Assy         | CA060287           |
| J5,6                                                                   | Connector "D" (9 pin male)       | C010448            |
| J7                                                                     | Connector LED (5 pin)            | C060450-01         |
| J8                                                                     | Connector Keyboard 15 pin        | C060450-02         |
| J10                                                                    | Connector Power Jack             | C014715            |
| L1-8,10,13,14,16,17                                                    | Inductor Ferrite Bead            | C014384            |
| L9                                                                     | Inductor Axial 1uH               | C014383            |
| L11                                                                    | Inductor Adjustable              | C010823            |
| L12                                                                    | Inductor 2uH                     | C010822            |
| L15                                                                    | Inductor 820uH                   | C061338-01         |

## SECTION 5

### 1200XL PARTS LIST

| <u>LOCATION</u>                                           | <u>DESCRIPTION</u>      | <u>PART NUMBER</u> |
|-----------------------------------------------------------|-------------------------|--------------------|
| Q1,7,8,11,12,14-16,<br>18,19                              | Transistor (2N3904)     | 34-2N3904          |
| Q2,4,9,10,17                                              | Transistor (2N3906)     | 33-2N3906          |
| Q3                                                        | Transistor (MPSA55)     | C014809            |
| Q13                                                       | Transistor (2N3563) NPN | 34-2N3563          |
| R1                                                        | Resistor 1/4W 39K       | 14-5393            |
| R2                                                        | Resistor 1/4W 680 Ohm   | 14-5681            |
| R3,4,6,7,26,27,30,<br>32,33,46,48,59,87,<br>89,98,117,118 | Resistor 1/4W 3K        | 14-5302            |
| R8                                                        | Resistor 1/4W 430 Ohm   | 14-5431            |
| R9                                                        | Resistor 1/4W 27 Ohm    | 14-5270            |
| R10                                                       | Resistor 1/4W 1.5K      | 14-5152            |
| R11,13,15,45,63,64,<br>79,120-128,154,155,<br>163-171     | Resistor 1/4W 100 Ohm   | 14-5101            |
| R12,47,49,56,61,62,<br>65-69,80,85,119,<br>175            | Resistor 1/4W 220 Ohm   | 14-5221            |
| R14                                                       | Resistor 1/4W 56K       | 14-5563            |
| R16,19,20,43,70-74,<br>101,102,142,184,185                | Resistor 1/4W 1K        | 14-5102            |
| R17,31,129-134,<br>148,177                                | Resistor 1/4W 10K Ohm   | 14-5103            |
| R21,107,151,183                                           | Resistor 1/4W 2.2K      | 14-5222            |
| R22                                                       | Resistor 1/4W 4.3K      | 14-5432            |
| R23,24,153,180                                            | Resistor 1/4W 180 Ohm   | 14-5181            |
| R25,28                                                    | Resistor 1/4W 130 Ohm   | 14-5131            |
| R29,173,181                                               | Resistor 1/4W 3.3K      | 14-5332            |
| R34-37,139,150                                            | Resistor 1/4W 1.8K      | 14-5182            |
| R38-42,50,51,53-55,<br>57,58,84,152,178                   | Resistor 1/4W 4.7K      | 14-5472            |
| R52,174                                                   | Resistor 1/4W 2.7K      | 14-5272            |
| R81                                                       | Resistor 1/4W 36K       | 14-5363            |
| R82,105,106                                               | Resistor 1/4W 18K       | 14-5183            |
| R83,143                                                   | Resistor 1/4W 9.1K      | 14-5912            |
| R90-97,99,100                                             | Resistor 1/4W 33 Ohm    | 14-5330            |
| R136                                                      | Resistor 1/4W 8.2K      | 14-5822            |
| R137                                                      | Resistor 1/4W 20K       | 14-5203            |
| R138,188                                                  | Resistor 1/4W 910 Ohm   | 14-5911            |
| R140                                                      | Resistor 1/4W 75 Ohm    | 14-5750            |
| R141,172                                                  | Resistor 1/4W 5.1K      | 14-5512            |
| R144                                                      | Resistor 1/4W 3.9K      | 14-5392            |

**SECTION 5**  
**1200XL PARTS LIST**

| <b><u>LOCATION</u></b>       | <b><u>DESCRIPTION</u></b>    | <b><u>PART NUMBER</u></b> |
|------------------------------|------------------------------|---------------------------|
| R149                         | Resistor 1/4W 2.4K           | 14-5242                   |
| R162                         | Resistor 1/4W 150 Ohm        | 14-5151                   |
| R176                         | Resistor 1/4W 47K            | 14-5473                   |
| R179                         | Resistor 1/4W 390 Ohm        | 14-5391                   |
| R182                         | Resistor 1/4W 6.2K           | 14-5622                   |
| R186                         | Resistor 1/4W 240 Ohm        | 14-5241                   |
| R187                         | Resistor 1/4W 1 Meg          | 14-5105                   |
| S1                           | Switch Power                 | C061022                   |
| S3                           | Switch SPDT (Channel Select) | C012241                   |
| U1-6,8,9                     | IC 64K X 1 RAM               | C060612                   |
| U7,10                        | IC Multiplexer (74LS158)     | C014345                   |
| U11                          | IC (74LS375)                 | C060613                   |
| U12                          | IC OS ROM A (8K X 8)         | C060617                   |
| U13                          | IC OS ROM B (8K X 8)         | C060616                   |
| U14                          | Memory Mngt Unit Hal         | C060609                   |
| U16                          | IC (74LS14)                  | C016541                   |
| U17                          | IC Quad AND (74LS08)         | C017097                   |
| U18                          | IC Decoder (74LS138)         | C014344                   |
| U19                          | IC GTIA                      | C014805                   |
| U20                          | IC ANTIC                     | C012296                   |
| U21                          | IC (6502 Modified)           | C014806                   |
| U22                          | IC (DDU-4) 14 pin            | C060472                   |
| U23                          | IC PIA                       | C014795                   |
| U24                          | IC POKEY                     | C012294                   |
| U25                          | IC (74LS51)                  | C060474                   |
| U27                          | IC HEX CMOS Buffer (CD4050B) | C010816                   |
| VR1                          | Resistor Variable 500K       | 19-411504                 |
| W1,6-9,R44                   | Jumper Zero Ohm              | C060629                   |
| XU1-11,18,27                 | Socket IC (16 pin)           | C014386-03                |
| XU12,13                      | Socket IC (24 pin)           | C014386-07                |
|                              | (Alternate listed)           |                           |
| XU14                         | Socket IC (20 pin)           | C014386-05                |
| XU16,17,25                   | Socket IC (14 pin)           | C014386-02                |
| XU19-21,23,24                | Socket IC (40 pin)           | C014386-09                |
| Y1                           | Crystal 3.579545 MHz         | C061090                   |
| <b>BOTTOM COVER ASSEMBLY</b> |                              | <b>CA060277</b>           |
|                              | Rubber Feet                  | 88-1004                   |
|                              | Cartridge Connector Panel    | C060096                   |
|                              | Lower Cover                  | C060102                   |
|                              | FCC/Serial Label (Hong Kong) | C061335                   |
|                              | FCC/Serial Label (Taiwan)    | C061334                   |
|                              | FCC/Serial Label (USA)       | C061333                   |

## SECTION 6

### SERVICE BULLETINS

This section is to be used by you to file the three classifications of service bulletins which are periodically released by the Manager of Technical Support.

The following are brief descriptions of each classification:

#### FIELD CHANGE ORDER

A Field Change Order describes hardware or software changes to ATARI products and instructs how to implement these changes. This identifies a failure mode which affects reliability and describes a procedure to correct the failure. This procedure must be performed on **all units serviced or repaired**.

#### UPGRADE BULLETIN

An Upgrade Bulletin describes product improvements or modifications which the consumer may wish to purchase. These Bulletins allow you to modify the customer's unit to add capabilities which may not have been available when the unit was originally manufactured.

#### TECH TIP

A Tech Tip is a document of a general nature which transmits routine service or repair information. By communicating methods developed since you attended training classes, Tech Tips aid to continuously improve repair skills and increase knowledge of ATARI Products.

Other times, Tech Tips alert you to units which have been modified and are now standard from ATARI Manufacturing, but are different from many existing units and require different repair techniques.



Consumer Product Service  
Manager of Technical Support  
**TECH TIP**

TT  
HCD  
**15**

number

MODEL: Atari 1200XL Computer

DATE: June 7, 1983

SUBJECT:

Audio Frequency (Sound) Drift

DESCRIPTION:

The audio is of poor quality or does not exist at all.

PROBLEM:

The audio must be constantly readjusted or cannot be adjusted. The problem is caused by components which do not meet specification.

SOLUTION:

Most audio frequency drift problems will be resolved by the following series of component changes. It is necessary to substitute polystyrene capacitors in place of the ceramic capacitors in the AUDIO OSCILLATOR CIRCUITRY.

NOTE: Perform the following modification procedure only on those units which display audio frequency drift problems.

MODIFICATION PROCEDURE:

| Silk Screen Location | Remove Comp Descrip | Part Number | Replacement Component | Descr. | Part No. |
|----------------------|---------------------|-------------|-----------------------|--------|----------|
| C96,97               | Cap Cer 820pF 25V   | C061336-03  | Cap Poly 820pF 25V    |        | C018261* |

\* = Alternate for C018261 is C010821.

TROUBLESHOOTING:

These changes do not effect the troubleshooting procedures outlined in the 1200XL Computer Field Service Manual (FD100217).

DIFFICULTY REPORTING:

If you have questions or need further assistance, call the Atari Techline Specialist:

Inside California  
(800) 672-1466

Outside California  
(800)538-1535





Consumer Product Service  
Manager of Technical Support  
**TECH TIP**

**TT**  
HCD  
**12**

number

MODEL: ATARI 1200XL COMPUTER

DATE: June 16, 1983

**SUBJECT:**

Color Burst/Video Sync

**DESCRIPTION:**

Loss of video sync on certain televisions and monitors.

**PROBLEM:**

The screen distorts with high intensity (black to white) screens. Characters appear to be very wavy, torn or ghost images, and the video on the screen seems to enlarge.

**SOLUTION:**

Most video sync problems will be resolved by the following series of component changes.

**NOTE:** Perform the following modification procedure only on those units which display video sync problems.

**MODIFICATION PROCEDURE:**

| Silk Screen Location | Remove Comp Desc. | Part Number | Replacement Comp. Descr.                                  | Part No. |
|----------------------|-------------------|-------------|-----------------------------------------------------------|----------|
| R22                  | Res 1/4W 4.3K     | 14-5432     | Res 1/4W 6.2K                                             | 14-5622  |
| R188                 | Res 1/4W 910 Ohm  | 14-5911     | Diode 1N914<br>Place cathode closest to bridge rectifier. | 31-1N914 |
| R163                 | Res 1/4W 100 Ohm  | 14-5101     | Res 1/4W 150 Ohm                                          | 14-5151  |
| R145                 | Unused            |             | Res 1/4W 18K                                              | 14-5183  |

**TROUBLESHOOTING:**

These changes do not effect the troubleshooting procedures outlined in the 1200XL Computer Field Service Manual (FD100217).

**DIFFICULTY REPORTING:**

If you have questions or need further assistance, call the Atari Techline Specialist:

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Consumer Product Service  
Manager of Technical Support  
**TECH TIP**

**TT**  
HCD  
**18**

number

MODEL: ATARI 1200XL COMPUTER

DATE: July 12, 1983

SUBJECT:

Operating System (OS) ROMs

DESCRIPTION:

Early production 1200XLs were manufactured with OS EPROMs rather than OS ROMs. Silk screen locations U12 and U13.

PROBLEM:

If an EPROM fails, you must replace both EPROMs with new OS ROMs (U12-C060617 and U13 - C060616).

SOLUTION:

After inserting the new ROMs, it is necessary to change the current 0.0 Ohm jumpers per the following modification instruction.

MODIFICATION INSTRUCTION:

Remove jumpers (C060629) W1, W11, W12, W13 and R44 (28-pin device ONLY).

Install jumpers (C060629) W1, W6, W7, W8, W9, and R44 (24-pin device ONLY).

NOTE: Remember that if you replace an EPROM at U12 or U13 with a ROM, you must REPLACE BOTH.

TROUBLESHOOTING AND MAINTENANCE:

These changes do not affect the troubleshooting procedures outlined in the 1200XL Field Service Manual (FD100217).

DIFFICULTY REPORTING:

If you have questions or need further assistance, call the Atari Techline Specialist.

Inside California  
(800) 672-1466

Outside California  
(800) 538-1535



Consumer Product Service  
Manager of Technical Support  
**TECH TIP**

**TT**  
HCD  
number **18A**

MODEL: Atari 1200XL Computer OS

DATE: September 29, 1983

**This Tech Tip Supersedes Tech Tip 18 Dated July 12, 1983.**

**SUBJECT:**

If customer difficulty with the SYSTEM RESET key is reported, replacement of the Rev. A O/S may be necessary.

**DESCRIPTION:**

On some 1200XL units it may be necessary to replace Rev. A EPROMs or ROMs with Rev. B ROMs (silk screen locations U12 and U13).

**PROBLEM:**

If a 1200XL (OS) problem is encountered, you must replace Rev. A EPROMs or ROMs with Rev. B OS ROMs (U12 - C060617B and U13 -C060616B). The only difference between Rev. A and Rev. B is that Rev. B corrects a problem in the function of the System Reset key.

Rev. A OS EPROMs or ROMs should be replaced by Rev. B OS ROMs in only one of two situations:

- 1) If the Rev. A OS EPROMs or ROMs have failed.
- 2) If the consumer has complained about the improper function of the SYSTEM RESET key. There are no other differences between Rev. A and Rev. B.

**SOLUTION:**

1. For units with Rev. A ROMs installed, change from Rev. A OS ROMs to Rev. B OS ROMs by replacing both ROMs.
2. For units with Rev. A EPROMs installed it is necessary to change the 0.0 Ohm jumpers per the following modification instruction prior to inserting the Rev. B ROMs.

**MODIFICATION INSTRUCTION:**

To convert from Rev. A EPROMs to Rev. B ROMs perform the following:

1. Remove jumpers (C060629) W11, W12, and W13 (28-pin device ONLY).
2. Install jumpers (C060629) W6, W7, W8, and W9 (24-pin device ONLY).
3. Install Rev. B ROMs with Pin 1 of the ROMs in Pin Location 3 of the sockets.

NOTE: The 1200XL OS is a two (2) EPROM or ROM set. When replacing a Rev. A OS with Rev. B OS both devices must be changed.



Consumer Product Service  
Manager of Technical Support  
**TECH TIP**

**TT**  
HCD  
number **18A**

MODEL: Atari 1200XL Computer OS

DATE: September 29, 1983

**TROUBLESHOOTING AND MAINTENANCE:**

There is no change to either maintenance or troubleshooting techniques because of this change.

**PROBLEM REPORTING:**

If you have questions or require further explanation concerning this Tech Tip, contact your Atari Tech-line Specialists:

Inside California:  
(800) 672-1466

Outside California  
(800) 538-1535



Consumer Product Service  
Manager of Technical Support  
**TECH TIP**

**TT**  
HCD  
number **18A**

MODEL: Atari 1200XL Computer OS

DATE: September 29, 1983

**This Tech Tip Supersedes Tech Tip 18 Dated July 12, 1983.**

**SUBJECT:**

If customer difficulty with the SYSTEM RESET key is reported, replacement of the Rev. A O/S may be necessary.

**DESCRIPTION:**

On some 1200XL units it may be necessary to replace Rev. A EPROMs or ROMs with Rev. B ROMs (silk screen locations U12 and U13).

**PROBLEM:**

If a 1200XL (OS) problem is encountered, you must replace Rev. A EPROMs or ROMs with Rev. B OS ROMs (U12 - C060617B and U13 -C060616B). The only difference between Rev. A and Rev. B is that Rev. B corrects a problem in the function of the System Reset key.

Rev. A OS EPROMs or ROMs should be replaced by Rev. B OS ROMs in only one of two situations:

- 1) If the Rev. A OS EPROMs or ROMs have failed.
- 2) If the consumer has complained about the improper function of the SYSTEM RESET key. There are no other differences between Rev. A and Rev. B.

**SOLUTION:**

1. For units with Rev. A ROMs installed, change from Rev. A OS ROMs to Rev. B OS ROMs by replacing both ROMs.
2. For units with Rev. A EPROMs installed it is necessary to change the 0.0 Ohm jumpers per the following modification instruction prior to inserting the Rev. B ROMs.

**MODIFICATION INSTRUCTION:**

To convert from Rev. A EPROMs to Rev. B ROMs perform the following:

1. Remove jumpers (C060629) W11, W12, and W13 (28-pin device ONLY).
2. Install jumpers (C060629) W6, W7, W8, and W9 (24-pin device ONLY).
3. Install Rev. B ROMs with Pin 1 of the ROMs in Pin Location 3 of the sockets.

NOTE: The 1200XL OS is a two (2) EPROM or ROM set. When replacing a Rev. A OS with Rev. B OS both devices must be changed.



Consumer Product Service  
Manager of Technical Support  
**TECH TIP**

**TT**  
**HCD**  
number **19**

MODEL: ATARI 1200XL CPU

DATE: August 15, 1983

**SUBJECT:**

No Picture on Star Raiders™.

**PROBLEM:**

Some 1200XL CPU's display no picture when the Star Raiders cartridge is powered up.

**DESCRIPTION:**

The reset timing to the 6502 CPU is incorrect for the cartridge. The placement of a 1000pF (NPO, 50VDC) capacitor between Pins 3 and 7 on U16 eliminates this problem.

**SOLUTION:**

Solder one lead of a .001uF NPO, 50VDC capacitor (C014181-01) to Pin 3 of U16, and the other lead to Pin 7 of U16.

**TESTING AND TROUBLESHOOTING:**

These changes do not affect the troubleshooting procedures outlined in the 1200XL Home Computer Field Service Manual (FD100217).

**DIFFICULTY REPORTING:**

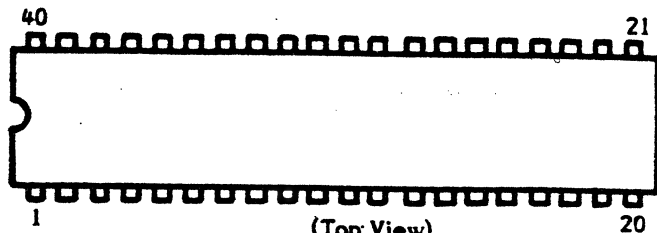
If you have questions or require further explanation concerning this Tech.Tip, contact your Atari Techline Specialist:

Inside California  
(800) 672-1466

Outside California  
(800) 538-1535

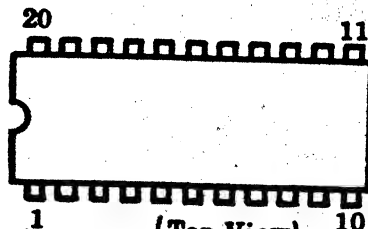


# ATARI 1200XL COMPUTER CONSOLE



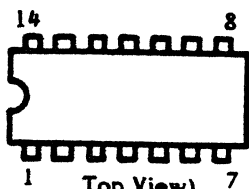
(Top View)

6502B(CO14806) POKEY (CO12294)  
GTIA(CO14805) PLA 6520(CO14795)  
ANTIC(CO12296)



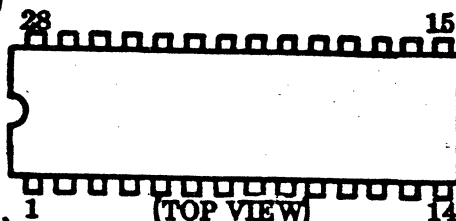
(Top View)

MMU(CO60609)



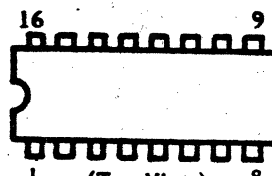
(Top View)

TRANSISTOR ARRAY (CO10174)  
74LS14(CO16541) 74LS08(CO17097)  
74LS51(CO60474) DDU-4(CO60472)  
74LS138N(CO14344)



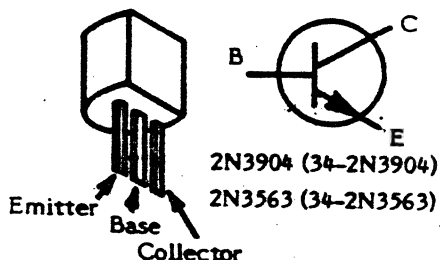
(TOP VIEW)

OS ROM A(CO60617)  
OS ROM B (CO60616)

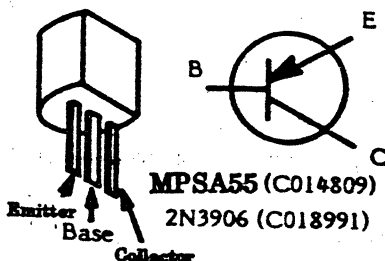


(Top View)

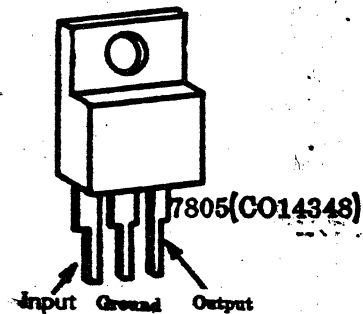
CD4050B(CO10816)  
74LS375(CO60613)  
64RAM(CO60612)  
74LS158N(CO14345)



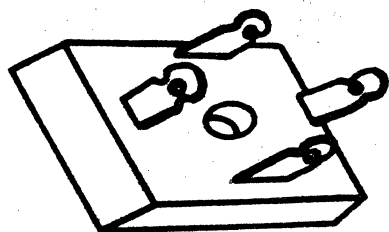
2N3904 (34-2N3904)  
2N3563 (34-2N3563)



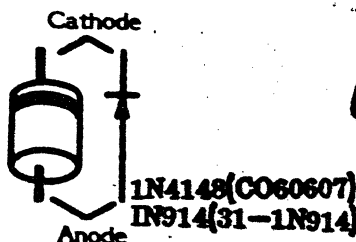
MPSA55 (CO14809)  
2N3906 (CO18991)



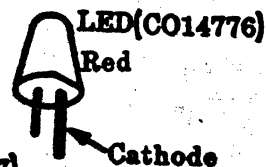
7805(CO14348)



MDA990-2 (CO60584)



1N4148(CO60607)  
1N914(31-1N914)



LED(CO14776)



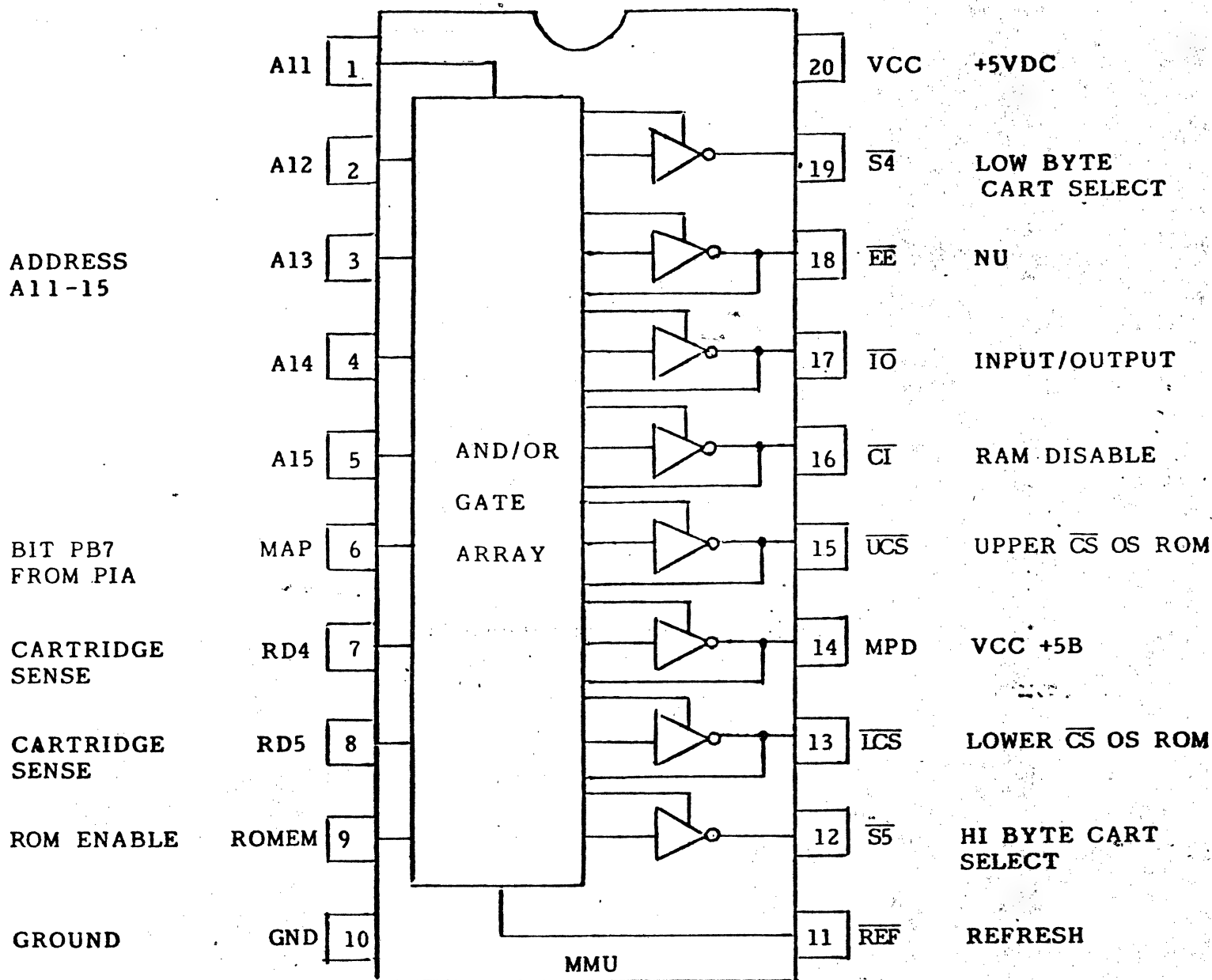
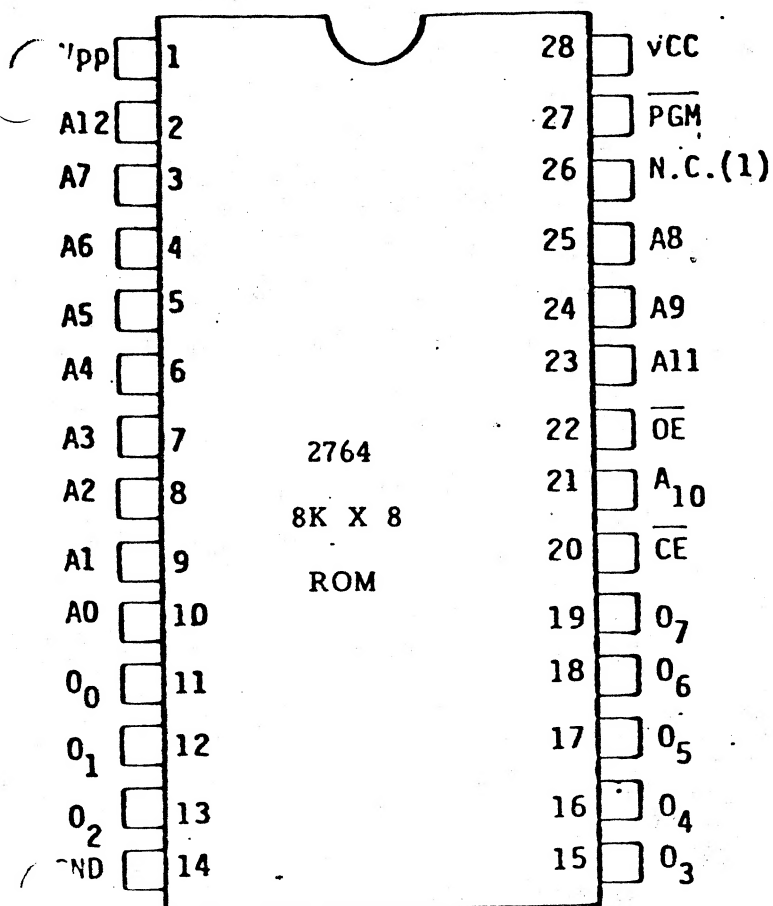


Figure E Memory Management Unit



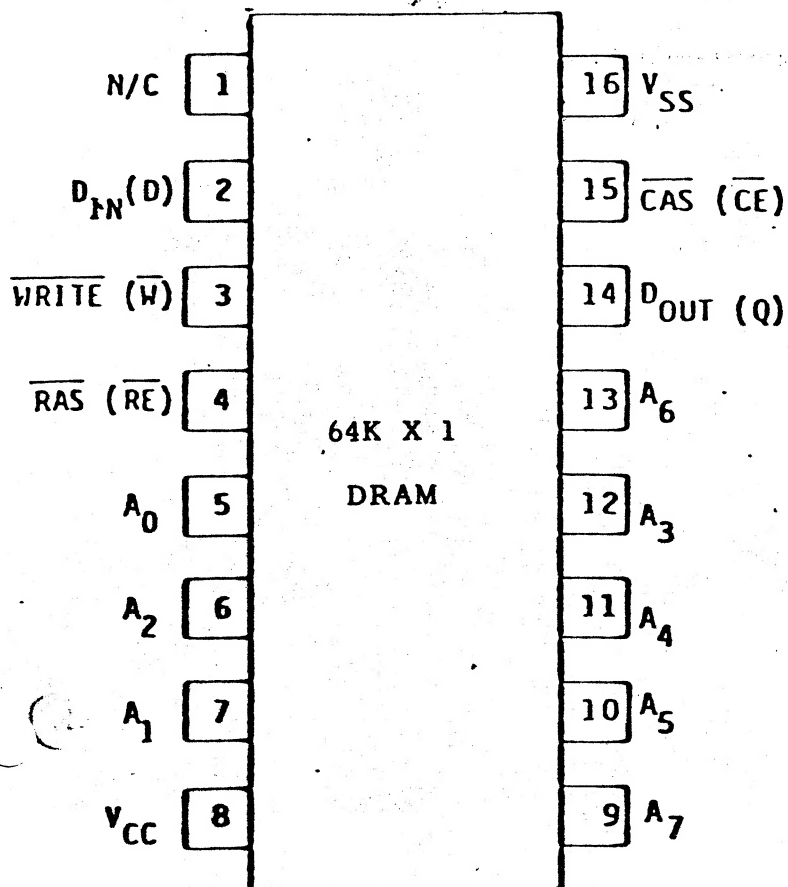
# PIN CONFIGURATION



## PIN NAMES

|                  |               |
|------------------|---------------|
| $A_0-A_{12}$     | ADDRESSES     |
| $\overline{CE}$  | CHIP ENABLE   |
| $\overline{OE}$  | OUTPUT ENABLE |
| $O_0-O_7$        | OUTPUTS       |
| $\overline{PGM}$ | PROGRAM       |
| N.C.             | NO CONNECT    |

# PIN CONFIGURATION



## PIN FUNCTIONS

|                                 |                     |
|---------------------------------|---------------------|
| $A_0-A_7$                       | Address Inputs      |
| $\overline{CAS}(\overline{CE})$ | Col. Address Strobe |
| $D_{IN}(D)$                     | Data In             |
| $D_{OUT}(Q)$                    | Data Out            |
| $\overline{RAS}(\overline{RE})$ | Row Address Strobe  |
| $\overline{WRITE}(W)$           | Read/Write Input    |
| N/C                             | Not Connected       |
| $V_{CC}$                        | Power (+5V)         |
| $V_{SS}$                        | GND                 |

Figure D 8K ROM and 64K RAM Pinouts





