



Consumer Product Service
Manager of Technical Support
UPGRADE BULLETIN

number **1**

MODEL: ATARI 400/800 COMPUTERS

DATE: May 28, 1982

SUBJECT:

GTIA Chip

CHANGE DESCRIPTION:

New units manufactured by Atari contain the Graphic Television Interface Adapt (GTIA) chip on the CPU printed circuit board. The GTIA chip is an enhancement of the Color Television Interface Adapter (CTIA) chip and may be purchased as an upgrade to existing units.

Part Location - CPU printed circuit board location A301.

INSTALLATION PROCEDURES:

For troubleshooting, installation, and testing, observe warnings or cautions stated in Atari Home Compute Division 400/800 Home Computer System Field Service Manual. Before a chip or board is added to or removed from the system, power the system down.

Follow disassembly instructions in 400/800 Field Service Manual.

Remove CO12295 from location A301 on CPU printed circuit board.

Install CO14805 in location A301 on CPU printed circuit board.

TESTING PROCEDURES:

Follow standard Test Procedures using Atari Stand Alone Test (Diagnostic) as outlined in Atari 400/800 Computer System Service Manual.

CONSUMER INFORMATION:

The GTIA chip adds three graphics modes accessible with BASIC for a total of eleven different graphics modes in BASIC and 256 different colors.

The GTIA chip is fully compatible with software written to run on existing CTIA units. Software which is written to run on the GTIA chip using its enhanced features is not displayed correctly with CTIA units.



Consumer Product Service
Manager of Technical Support
UPGRADE BULLETIN

number _____

MODEL: ATARI 400/600 COMPUTERS

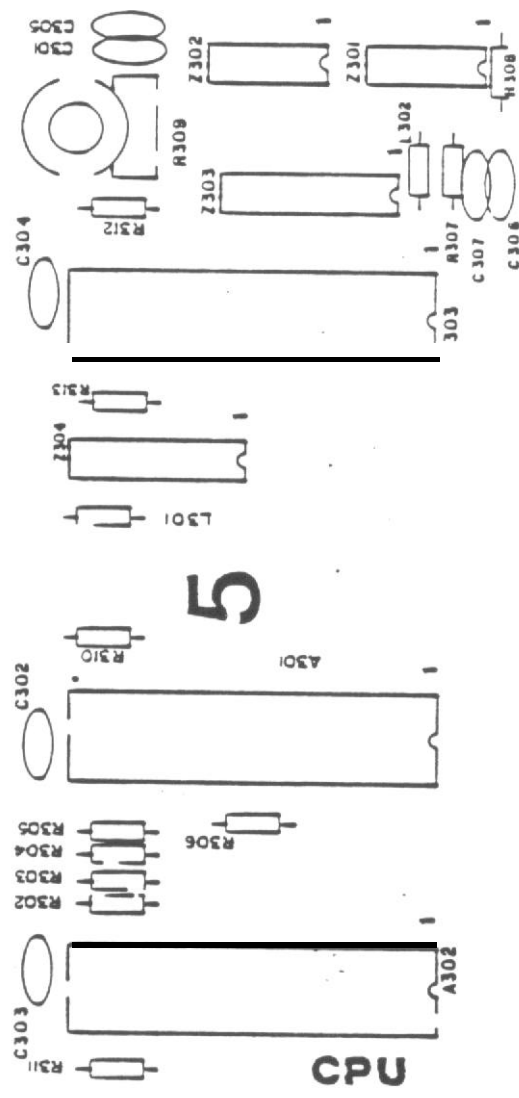
DATE: _____

PARTS DISPOSITION:

Not Applicable

ENCLOSURES:

CPU Silk Screen



CPU Board Silkscreen



Consumer Product Service
Manager of Technical Support
UPGRADE BULLETIN

UE
HCI
number **04**

MODEL: Atari 400™ Computer

DATE: July 12, 1983

SUBJECT:

48K Memory EXPANSION for the ATARI 400 COMPUTER

UPGRADE DESCRIPTION:

There is a 48K RAM EXPANSION Kit for the Atari 400 computer available. Included with the kit are: (1) RAM board, (4) 32AWC wire jumpers, and (1) Installation Guide. This Upgrade Bulletin instructs Service Dealers who install and/or service 400's with the 48K MEMORY EXPANSION.

INSTALLATION PROCEDURE:

Follow the Installation Guide included with the kit or Installation Instructions provided with this Upgrade Bulletin.

Note: Jumpers go fromto
conn-pin conn-pin
J108-1 J109-R
3108-A J109-T
J108-12 J109-N
3108-14 J109-M

Also note: the letters "G,I,O,Q" are NOT present on a 44 pin connector (J109).

TESTING PROCEDURE:

Follow the standard test procedures outlined In the 400-800 Field Service Manual, Section 3-RAM & ROM TEST.

Note: Salt 2.05 or 2.07 will only test up to 40K of RAM.

CONSUMER INFO:

Provides 48K of RAM for the Atari 400 Computer. This board is NOT for use in the Atari 800 computer.

COMPATIBILITY:

Will work with any Atari software previously available for the 400, and now will also work with Atari software requiring up to 48K of RAM.

Allows use of a 400 computer for Atari software requiring up to 48K of RAM, and all Atari software previously available for the unmodified 400 computer.



Consumer Product Service
Manager of Technical Support
UPGRADE BULLETIN

UB
HCD
number **04**

MODEL: Atari 400 Computer

DATE: July 12, 1983

PARTS DISPOSITION:

Note: This board uses 64K RAM chips, but only 48K of the RAM is accessed!

ATTACHMENTS:

400-48K RAM UPGRADE INSTALLATION INSTRUCTIONS

400-48K RAM UPGRADE INSTALLATION INSTRUCTIONS

(Note: Disconnect all power to the computer. Also make sure no cartridge is inserted; if so, remove.)

1. REMOVE BOTTOM

- a. Turn upside down (cable away from you, controller jacks toward you).
- b. Remove 4 screws.
- c. Lift off bottom and set to left, bottom side down (notice placement of cable and toroid for reassembly).

2. REMOVE RR SHIELD

- a. Remove 8 screws around perimeter of flat metal shield, lift off.
- b. Lift off paper insulator sheet.

3. REMOVE SPEAKER

- a. Locate speaker (Lower righthand corner).
- b. Slide speaker connect off PCB (Printed Circuit Board) and set aside.

4. REMOVE MOTHER BOARD

- a. Lift MOTHER board straight up about 1/2 inch, disconnecting power supply connector pins from power supply board.
- b. Lift right side of MOTHER board holding left side steady, till MOTHER board is perpendicular to table (be careful not to bend power supply connector pins).
- c. Disconnect plastic keyboard ribbon connector from MOTHER board. Set board (solder side down) on clear work area.

5. LIFT OFF RAM AND CPU BOARDS

6. INSTALL JUMPERS

- a. Turn MOTHER board over (solder side up).
- b. Solder on jumpers (30 AWC wire) supplied.

NOTE: Jumpers go from

corm-pin	corm-pin
J108-1	J109-R
J108-A	J109-T
J108-12	J109-N
J108-14	J109-M

7. INSTALL NEW RAM BOARD

- a. Turn MOTHER board **over** (solder side down, controller jack connectors forward).
- b. Install CPU board (solder side forward) in back connector.
- c. Clean edge connector of RAM board with freon solvent.
- d. Install new RAM board (solder side forward) in front connector.

8. IDENTIFY PLASTIC PCB SPACER

- a. Locate plastic PCB spacer in top of **RFI** casing.
- b. If you have type A, then proceed to step 9.
- c. If you have type B, then it must be clipped.
 - 1) Pull PCB spacer out of **RFI** casing (attached with double-back tape).
 - 2) **Clip** PCB spacer with wire cutters.

9. REASSEMBLE COMPUTER

(Perform steps ~~4c~~ thru I in reverse)

- a. Replace MOTHER board.
- b. Reconnect speaker (be sure to center speaker directly beneath speaker connector to hold in place).
- c. Replace paper insulator, **RFI** shield.
- d. Replace bottom (place wire wound **toroid** behind **RFI** casing, inside plastic covers).

INSTALLATION VERIFICATION

To verify that the new RAM is installed correctly, follow these steps.

1. Connect power to computer and computer to T.V. and turn both on. Check screen for:

ATARI COMPUTER-MEMO PAD

2. Insert BASIC cartridge, after "READY" type:

```
PRINT FRE(0) RETURN
```

The computer should respond with:

```
3 7 9 0 2
```

This is about 37K free user memory space with BASIC inserted. The reason the full 48K is not available is as follows: With the BASIC ROM cartridge inserted, the computer disables 8K of RAM so it will read only from the ROM, and not try to read from ROM and RAM at the same time. The other 3K is used by the Atari Operating System and BASIC.

If you do not get "MEMO PAD" or "37902" after PRINT FRE(0) with BASIC inserted, then go to the beginning of the INSTALLATION INSTRUCTIONS and make sure everything was done correctly. Pay special attention to the soldering of the jumpers. When reassembled, check the INSTALLATION VERIFICATION procedure. If you still experience problems call the Atari Techline Specialist:

Inside California
(800) 672-1466

Outside California
(800) 538-1535

EQUIPMENT LIST

Philips screwdriver, wire cutters, soldering iron, BASIC cartridge, TV.



Consumer Product Service
Manager of Technical Support
TECH TIP

n u m b e r **2**

MODEL: Atari 400/800 Computers

DATE: May 28, 1982

SUBJECT:

Revision B, Operating System ROMs.

DESCRIPTION:

New Atari 400/800 computers contain Revision B ROMs — a refined version of an Operating System ROM, which has a different checksum from Revision A ROMs. When replacing these components, do not mix revision levels. System will not operate if Revision A is paired with Revision B.

Parts:

Old ROMS: C012499A and C014599A

Rev B ROMS: C012499B and C014599B

Part Location:

400 Computer System - Motherboard location
A103 (C014599) and A104 (C012499)

800 Computer System - Personality Board Location
A401 (C014599) and A403 (C012499).

You can recognize the new part in this manner:

Top is imprinted with a copyright symbol followed by 1981 Atari.

TROUBLESHOOTING AND MAINTENANCE PROCEDURES:

For troubleshooting, maintenance and testing, observe warnings and cautions stated in Atari 400/800 Home Computer System Service Manual. Before a component or board is added to or removed from the system, power the system down.

If ROM chips are defective or if printer overprints (hiccups), replace ROM chips.



Consumer Product Service
Manager of Tehnical Support
TECH TIP

number _____

MODEL:

Atari4001800 Computers

DATE:

400 Computer

Follow 400 computer disassembly instructions in 400/800 Home Computer System Service Manual to access motherboard.

Remove ROM chips located at A103 (C014599A) and A104 (C012499A).

Replace C014599A and C012499A with A103 (C014599B) and A104 (C012499B).

Follow reassembly instructions in 400/800 Home Computer System Service Manual.

800 Computer

Follow 800 computer disassembly instructions in 400/800 Home Computer System Service Manual Section to access ROM module.

Remove ROM chips located at A401 (C014599A) and A403 (C012499A) on ROM module.

Replace C014599A and C012499A with A401 (C014599B) and A403 (C012499B).

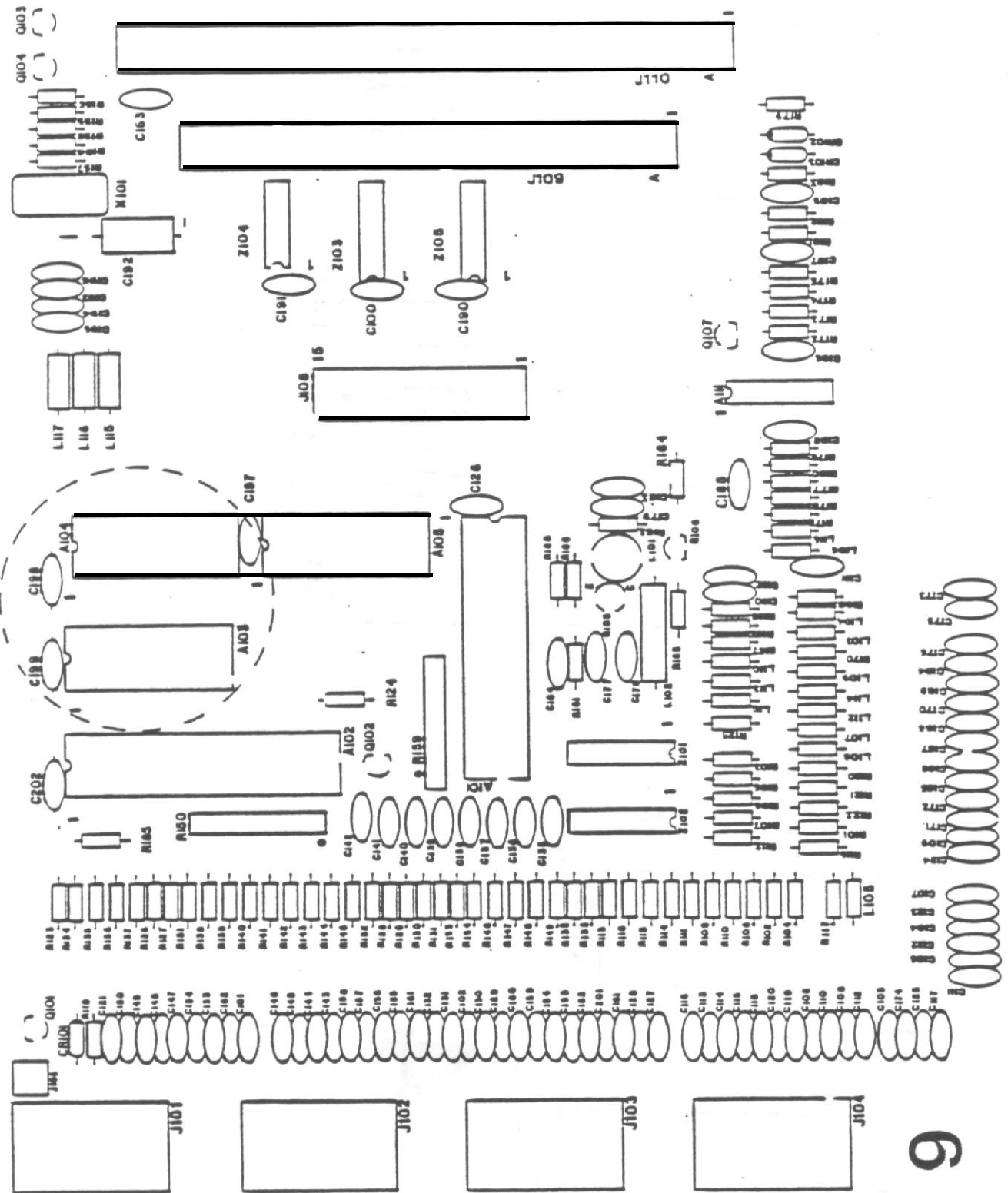
Follow reassembly instructions in your 400/800 Home Computer System Service Manual under ROM Module Installation.

TESTING PROCEDURES:

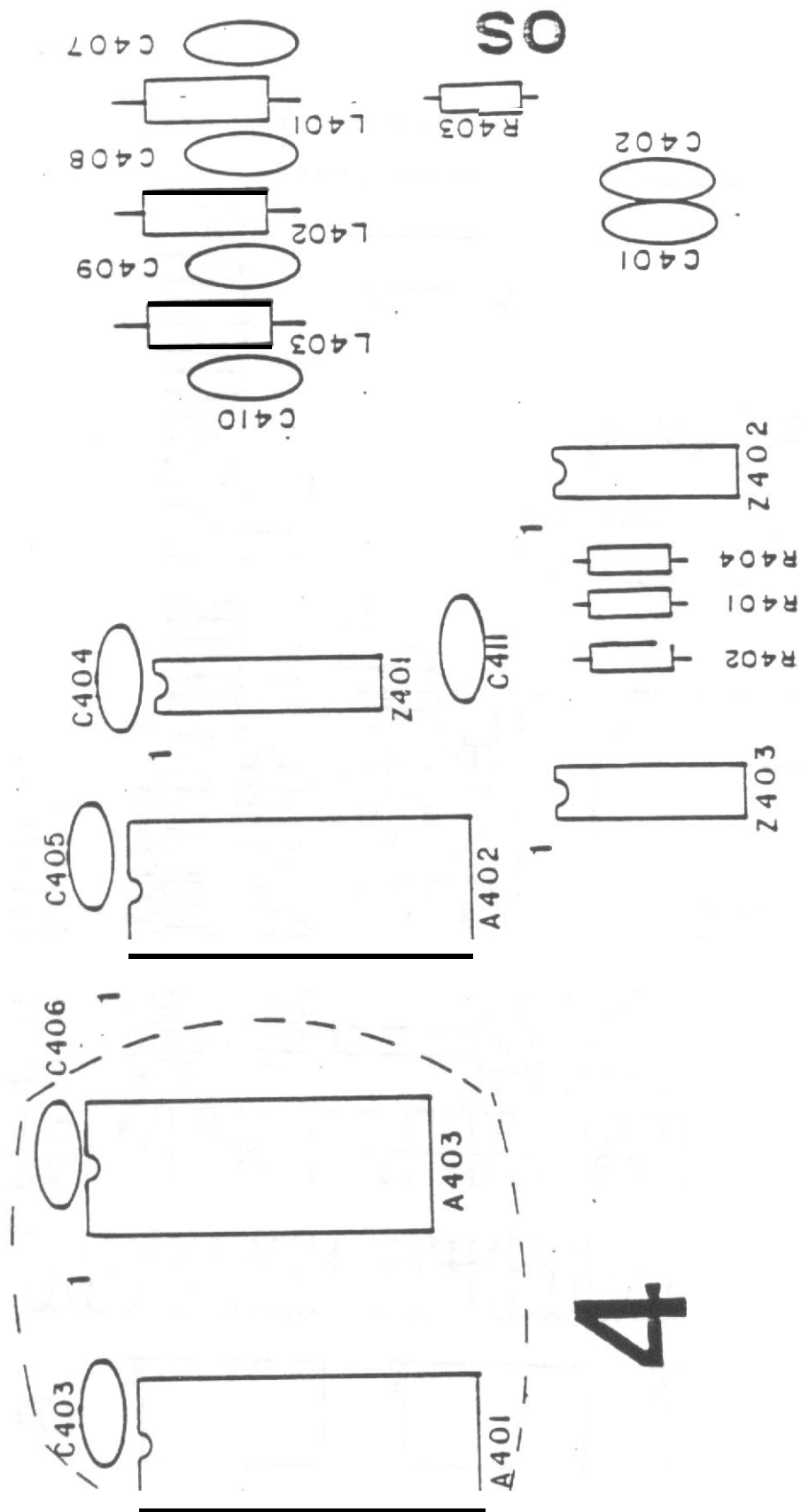
Follow standard test procedures using Atari Stand Alone Test (Diagnostic) as outlined in Atari 400/800 Computer System Service Manual.

ENCLOSURE

1. 400 Motherboard, placement
2. 800 Personality Board, placement



400 Motherboard Silkscreen



OS

4



Consumer Product Service
Manager of Technical Support
TECH TIP

HCD
number **10**

MODEL: 400/800 Computer

DATE: 02/22/83

SUBJECT:

Atari 400/800 System Lock-up

DESCRIPTION:

When the Atari 400/800 computer systems experiences intermittent lock-up, there is no response from the keyboard and control of the computer is gone.

Probable Causes (in order of likelihood)

1. User is editing BASIC programs at time of lock-up
2. User is running user written software that contains errors
3. User is running third party software (non-Atari) that contains errors
4. Hardware failure

Troubleshooting

Ask your customer the following questions, and use the responses given to determine if the problem is hardware or software oriented:

1. Does the unit lockup randomly only when editing statements in your ATARI BASIC programs?

YES- The lockup is caused by an anomaly in the ATARI BASIC cartridge. The lockup condition is cleared by recycling the power switch OFF/ON. This will clear the program from your unit's memory and any editing completed since the last SAVE will be lost. Atari recommends saving programs being edited every 15 minutes to minimize consternation should a lockup occur.

2. Does the unit lockup consistently only when executing certain BASIC programs?

YES - The lockup could be caused by logic errors in the program. The most common error is invalid machine code called from a USR function in BASIC.

3. Does the unit lockup only when loading or executing third party software?

YES - The lockup could be caused by the configuration not meeting minimum requirements for memory or peripherals, or by errors in the third-party software.



Consumer Product Service
Manager of Technical Support

T E C H T I P

HCD
number 10

MODEL: 400/800 Computer

DATE: 02/22/83

If intermittent lockups occur in a variety of operating situations the unit should be checked for hardware failure in one of three areas.

- o Dirty contacts or corrosion of edge connector%
- o Heat related failure of components particularly the 6502 MPU.
- o Outright failure of components.

If the problem appears to be user written software, refer your customer to the Product Support Hot Line for programming assistance.

800-672-1404 Inside California
800-538-8543 Outside California

If the problem appears to be third party software oriented, refer your customer to the retail outlet where it was purchased, or to the manufacturer of the software.

If you cannot determine from your customer's answers whether the problem is software or hardware oriented, burn-in the unit for at least 12 hours using continuous RAM Test of the SALT 2.05 Test Cartridge. At the end of the burn-in period, press the SYSTEM RESET control key six times. Watch the screen after each press to see that the POWER-UP screen correctly appears. If the screen does not come up correctly - there is definitely a component failure occurring. Use the disassembly procedures outlined in the Atari 400™/800™ Computer Field Service Manual (FD100001) to disassemble the unit.

1. Check for frayed and/or broken wires; J114 Motherboard to 1202 of the Power Supply Board. Check that connectors are clean and securely attached between the Power Supply and Motherboard, and where the ROM/RAMs and CPU plug into the Motherboard. When checking the above look for cold solder joints.
2. Replace the 6502 (CPU) (Part # C014377) to eliminate this component as possible failure.
3. Insert a Star Raider cartridge, Power-Up the system and continue testing.
4. If no failure occurs and everything checks OK then return computer to customer.

If computer is returned and is still failing, check the following additional ICs:

Replace
ANTIC
GTIA
Multiplexers (Vendor & Date Codes must match)
(On 8 and 16K
RAM boards)

Part Number
CO 12296
C014805
c014345
(Z503 and
Z504)



Consumer Product Service
Manager of Technical Support
TECH TIP

HCD

number 10

MODEL: 400/800 Computer

DATE: 02/22/83

If the POWER-UP screen appears correctly after all six SYSTEM RESET control key pressed, return the unit to the customer with NO TROUBLE FOUND.

Trouble Reporting

If you have any questions concerning this Tech Tip, call your Atari Tech Line Specialists:

Inside California
(800) 672-1466

Outside California
(800) 538-2535



Consumer Product Service
Manager of Technical Support
TECH TIP

TT
HCD

number 1 1

MODEL: ATARI 400/800 Computer

DATE: July 8, 1983

SUBJECT:

Video Screen Noise

DESCRIPTION:

Wavy lines or a black bar that scrolls across the display screen.

PROBLEM:

The wrong value components are in locations C203, and C208 on the 400 Power Supply Board; components at A201 and A202 may also be of the improper value.

There are wrong valued components in locations C203, C206 and C212 on the 800 Power Supply Board; components at A201 and A202 may also be of the improper value.

SOLUTION:

400 COMPUTER

Perform the following modification ONLY on those units which display video screen noise.

Silkscreen Location	REMOVE	Part Number	REPLACE	Part Number
	Description		Description	
C203,208	Cap, Poly Film, .22uF	CO10394	Cap, Cer, Axial .47uF	C014181-07

Make certain that the following components are In place on the 400 Power Supply PCB.

Location	Description	Device Number	Part Number
A201	Regulator, .5Amp, +1 2V	78M12	co14349
A202	Regulator, 1 Amp, +5V	7805	CO14348



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Manager of Technical Support
TECH TIP

TT
HCD
11

number

MODEL: ATARI 400/800 Computer

DATE: July 8, 1983

800 COMPUTER

Perform the following modification ONLY on those units which display video screen noise.

Silkscreen Location	REMOVE	Part Number	REPLACE	Part Number
	Description		Description	
C203, 206 c212	Cap, Poly Film, .22uF	CO10394	Cap, Cer, Axial .47uF	C014181-07
	Cap, Cer, Axial .001uF	C014181-01	Cap, Cer. Axial .01uF	C014181-06

Make certain that the following components are in place on the 800 Power Supply PCB.

Location	Description	Device Number	Part Number
A201	Regulator, .5Amp, +12V	78M12	co14349
A202	Regulator, 1 Amp, +5V	7805	C014348

TROUBLESHOOTING:

These changes do not effect the troubleshooting procedures outlined in the 400/800 Computer Field Service Manual (FD100001).

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
13

number

MODEL: 800 COMPUTER

DATE: June 22, 1983

SUBJECT:

Keyboard Malfunctions

DESCRIPTION:

Pressure exerted on the spacebar of the Atari 800 Computer's Hi-Tek Keyboard is resulting in keyboard malfunction.

PROBLEM:

Some Hi-Tek keyboards originally installed have unauthorized design changes on the spacebar mechanism, which cause a solder fracture on the solder side of the keyboard PCB at switch location 57.

SOLUTION:

On systems which contain a Hi-Tek keyboard and which display a spacebar malfunction only, replace the Hi-Tek keyboard with a keyboard from another manufacturer. Atari Part number affected is CA012952-02.

MODIFICATION INSTRUCTION:

Follow disassembly and assembly instructions in the Atari 400/800 Computer Field Service Manual (FD100001).

TROUBLESHOOTING AND MAINTENANCE:

These changes do not effect the troubleshooting procedures outlined in the Atari 400/800 Field Service Manual (FD100001).

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 **14**

ODEL: 400/800 Computers

DATE: June 7, 1983

SUBJECT:

Inoperative Defender™ Cartridges

DESCRIPTION:

Some 400/800 computer systems have an interactive problem with the Defender cartridge. The cartridge does not consistently operate correctly in systems with National Semiconductor (NSC) components on the, 16K RAM board at locations 2505, 2506, and/or 2508.

SOLUTION:

If no other problems exist, replace the National Semiconductor components at 2505, 2506, and/or 2508 with those of another manufacturer.

AFFECTED PART:

National Semiconductor ICs (Atari Part Number C014331).

TROUBLESHOOTING AND MAINTENANCE:

These changes do not effect the troubleshooting procedures outlined in the 400/800 Computer Field Service Manual (FD100001).

DIFFICULTY REPORTING:

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

Inside California
(800) 672-1466

Outside California
(800) 53X-1535