



Consumer Product Service
Manager of Technical Support
UPGRADE BULLETIN

UB
HCD
04

number

MODEL: Atari 400TM 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) 32AWG 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
J108-A	J109-T
J108-12	J109-N
J108-14	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 400-300 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 300 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.



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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 RFI 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 AWG wire) supplied.

NOTE: Jumpers go from

conn-pin	conn-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 1 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:

37902

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.