jr H O T S H O T

PCjr Internal Multi-Function Upgrade Card
I N S T A L L A T I O N   A N D   U S E R ' S   G U I D E
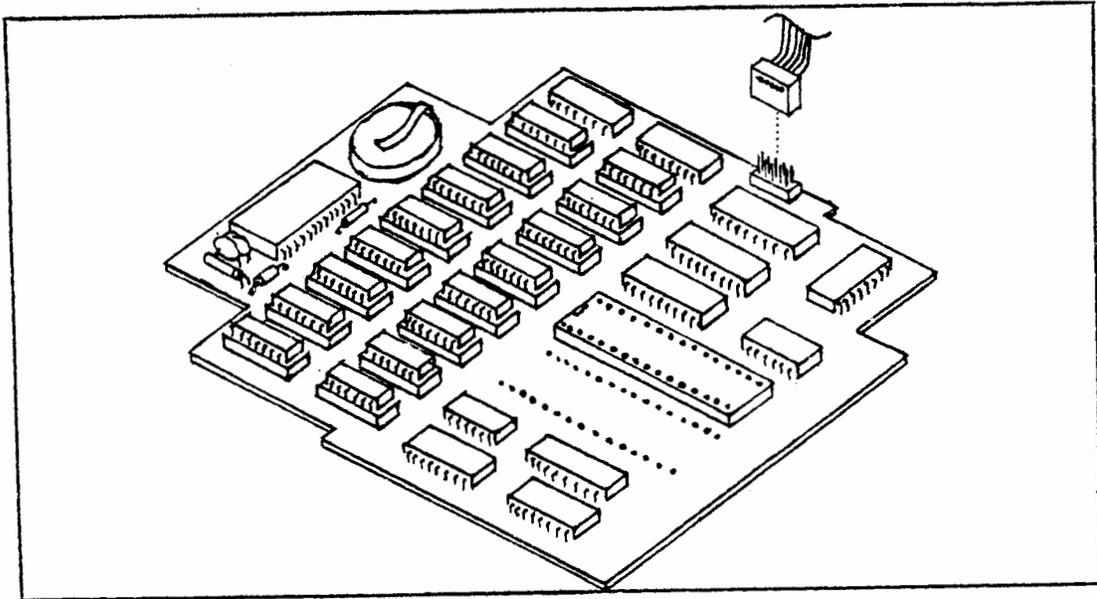
O 512K or 256K FAST MEMORY

**O Real-Time CLOCK/CALENDAR
with Lithium Battery Backup**

**O CONTROLLER AND CABLE for
Second (External) Floppy Disk**

**O Compatible with other Memory Accessories
and (non-DMA) Multi-Function Accessories**

**O Internal Mounting,
No Need for Additional Power Supply**

O Summary of How to Use jrHOTSHOT:

Plug the jrHOTSHOT board inside your PCjr as explained, and "install" the enclosed jrHOTSHOT configuration software onto a DOS disk (DOS 2.0 or higher). Then re-boot DOS and DOS will recognize and use the fast memory and other features on jrHOTSHOT. Using jrHOTSHOT is really that easy!

INTRODUCTION

The jrHOTSHOT card increases the PCjr memory by 5x. Internal memory capacity soars from 128K to 640K physical memory! The jrHOTSHOT memory is designed as fast memory, which produces a very noticable 80-130% performance increase over a standard PCjr. The jrHOTSHOT floppy disk contains software to let DOS use the full memory whenever you turn on your PCjr. The disk also contains a benchmark program called "benchmk.com" to let you see and measure the performance increase given by jrHOTSHOT memory.

Having 640K memory available for DOS lets you run standard PC programs as well as RAMdisk programs to provide a fast second "disk" (a drive C:, much like a hard disk). Your existing PCjr software, such as games, graphics, and educational programs, continues to run as before.

CONTENTS OF THIS MANUAL

PART ONE: HARDWARE INSTALLATION

1.1 Installation Summary

```
******************************************************************
*                                                                *
*    The jrHOTSHOT board installs inside the PCjr, tucked neatly  *
*    underneath the floppy disk drive.  jrHOTSHOT plugs into the  *
*    8088 microprocessor socket (located beneath the drive), and  *
*    the microprocessor then plugs into jrHOTSHOT.                *
*                                                                *
******************************************************************
```

1.2 Step-by-Step Installation

* * * * * * * * * * * * * PREPARATION * * * * * * *

Verification

Before doing anything else, see that your PCjr is working normally. Then, turn it off and UNPLUG the cords for power, video and keyboard. Then put the computer on a solid surface. Use some form of padding beneath the computer and its surroundings to protect the computer and its parts from any accidental droppage.

Loosen Plastic Clips that Hold the Floppy Disk Bracket

Underneath the PCjr are two indentations. In each one are plastic prongs in a star-like pattern. The prongs are part of a bracket that holds the floppy disk. To make removing the floppy drive easier, each of these prongs should be bent inward toward the center of the "star."

Plastic Prongs
from floppy disk bracket.

Bend Plastic Prongs
inward to facilitate
floppy disk removal.

Top Cover Removal

The top cover is removed by gently prying up the rear edge at the three rear notches. Remove the top cover entirely and put it aside.

CAUTION: DO NOT TOUCH THE DELICATE
DRIVE MECHANISM!
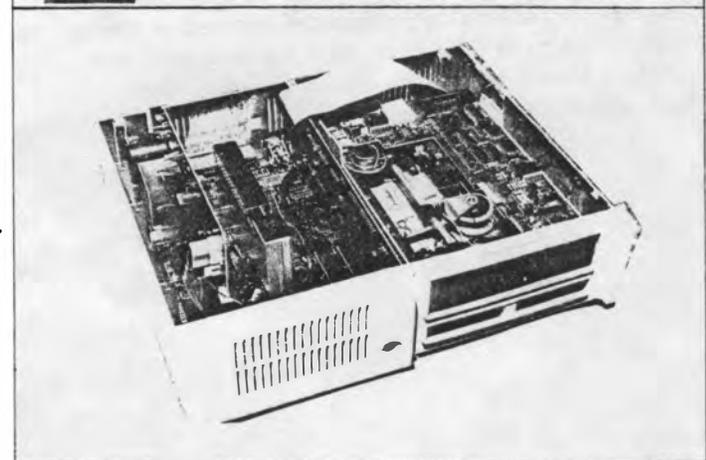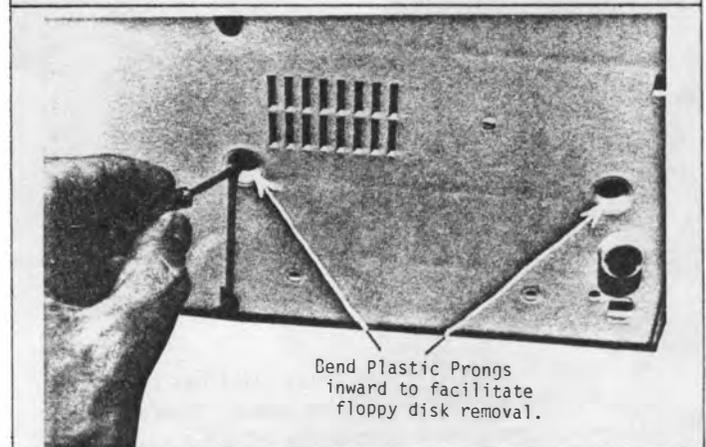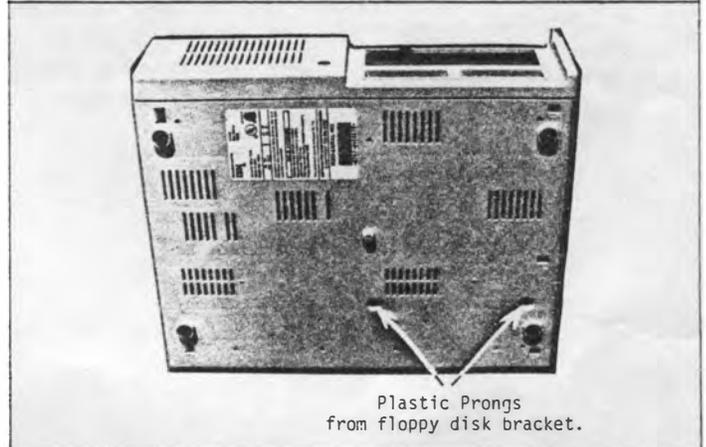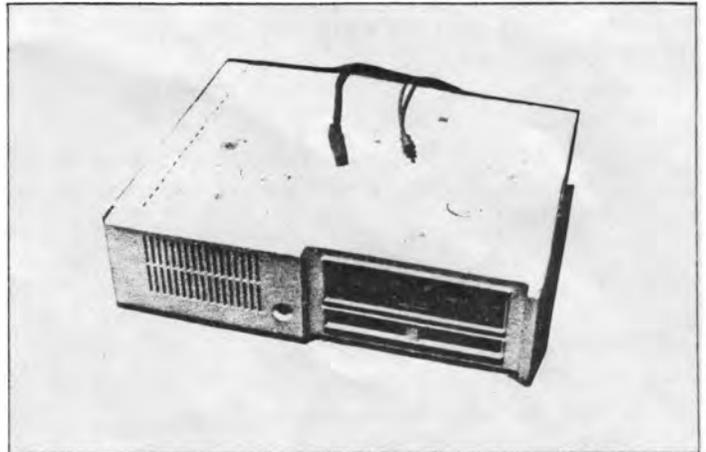
Survey the Scene

To install jrHOTSHOT, you first lift out the floppy drive (in its white plastic bracket that holds the drive).
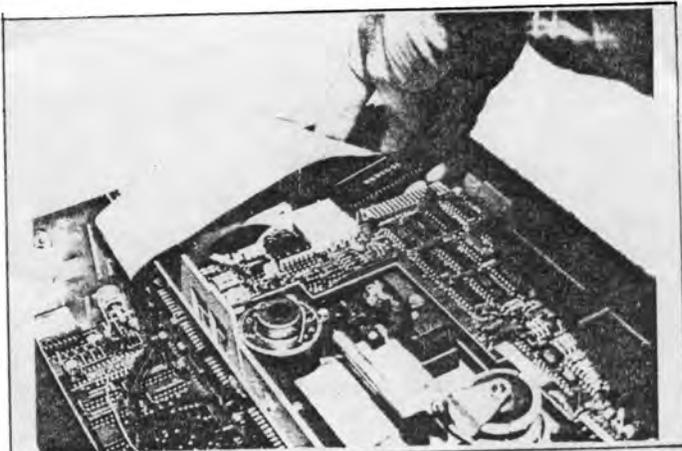
Remove the Controller Board

Wiggle the flat cable from the rear of the floppy disk drive. Then wiggle the floppy disk controller board up and out of its socket on the main electronics board. Remove the controller board and cable as one assembly (no need to disconnect the flat cable from the disk controller board) and put it aside.
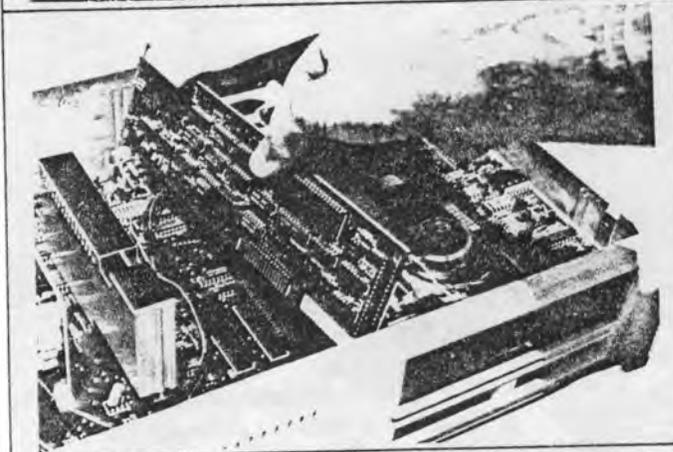
Loosen (pull up) the Floppy Drive Bracket

The plastic bracket (for the floppy disk) has two "feet" that rest on the main electronics board. These feet are anchored to the plastic case of the PCjr by plastic prongs that extend down from the feet and go through to the underside of PCjr case. In a previous step, you already bent these prongs inward to reduce their gripping force.
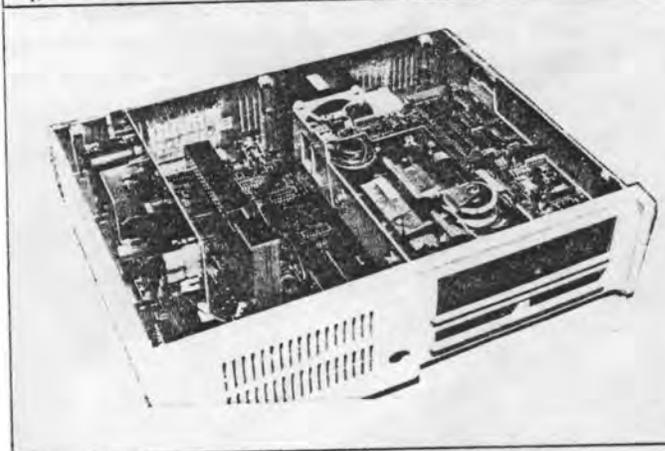
CAUTION: BE CAREFUL NOT TO TOUCH THE DRIVE MECHANISM!

3
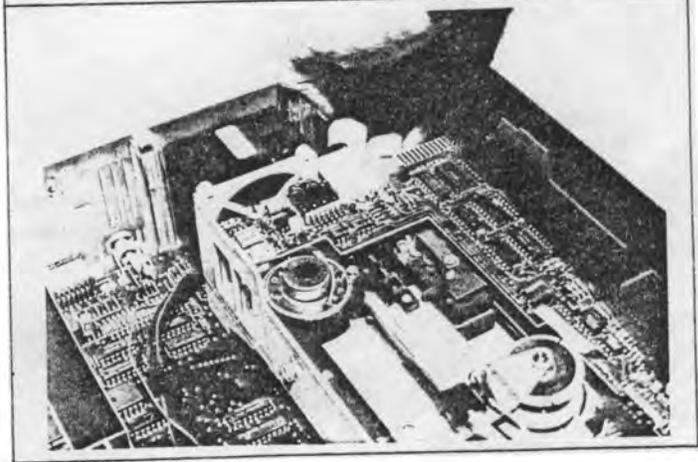
Lift Floppy Drive Up and Out

The prongs do hold the floppy bracket firmly in place. However, these prongs were designed to allow bracket removal when necessary. Being aware of that, carefully reach beneath the bracket to lift up the rear edge of the bracket.
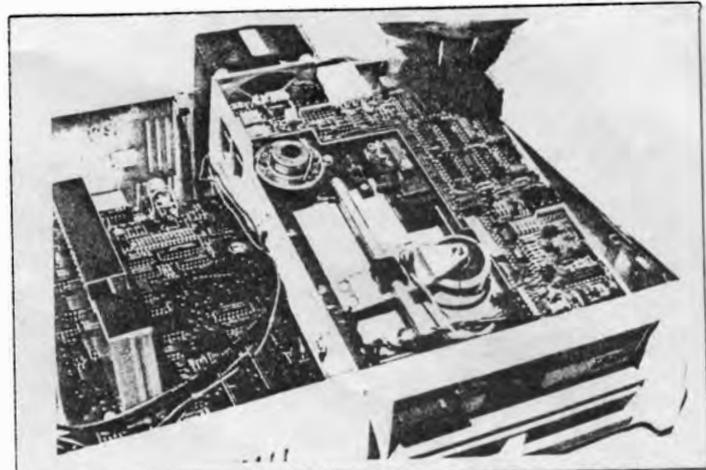
Carefully move the floppy disk assembly over to the left front of the PCjr and gently let it rest there. Just leave the wires attached while the floppy drive assembly sits there in front).

Unplug the Microprocessor Chip

Having removed the floppy disk, you can access the 8088 microprocessor chip on the main electronics board. The 8088 is the relatively large (40-pin) chip on the PCjr main electronics board. The 8088 microprocessor is plugged in a socket. The jrHOTSHOT board will plug into that socket after you have removed the microprocessor.

NOTICE THE ORIENTATION of the microprocessor. The visible notch, or dot, on the microprocessor body indicates the "pin 1" end of the chip. The 8088 "pin 1" is always toward the left of the PCjr. If you ever replace the microprocessor, do so with the notched end toward the left.

Now remove the microprocessor by gently prying it from its socket! As with any chip, its pins are easily bent. Therefore, use a small prying tool to gently work BOTH ENDS of the 8088 microprocessor from its socket. You'll have to re-install the microprocessor into jrHOTSHOT soon.

8088 Microprocessor
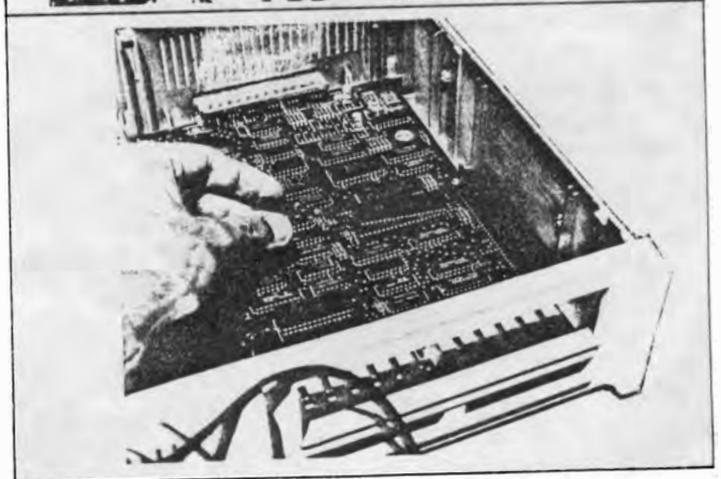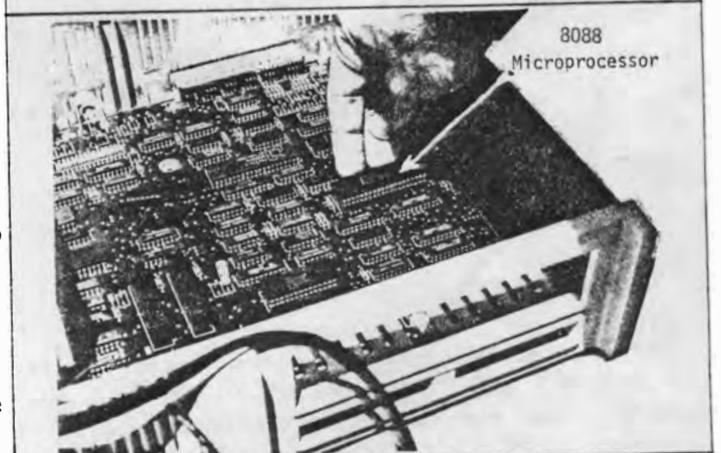
Plug Microprocessor into jrHOTSHOT

jrHOTSHOT has a 40-pin socket for the microprocessor. Align the microprocessor so that its pin 1 is toward the power supply that's inside the PCjr (toward the left, as you view it from the front of the PCjr). Plug the microprocessor chip into the jrHOTSHOT board. Inspect carefully. Be sure no pins are bent underneath the body of the chip.

Pin 1 of
256K Memory Chip

Pin 1 of
256K Memory chip

Pin 1 of
Microprocessor Chip
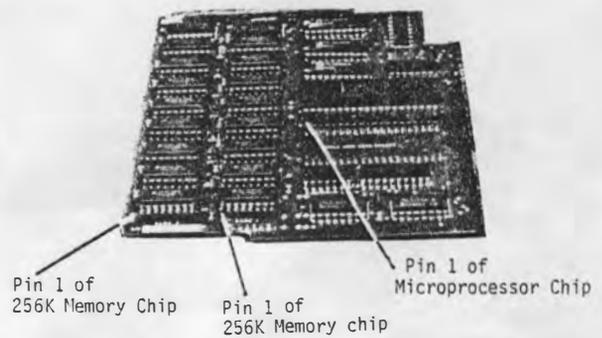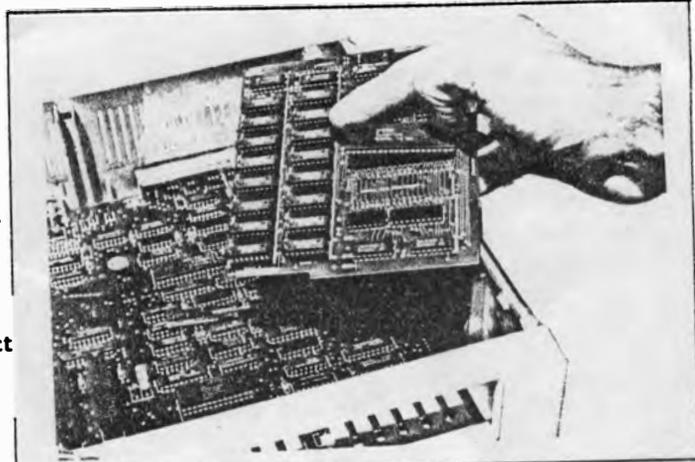
* * * * * * * jrHOTSHOT CONNECTION * * * * * *

Plug jrHOTSHOT into Microprocessor Socket

Remove the Protective anti-static foam from the bottom pins of jrHOTSHOT. Move the jrHOTSHOT board near microprocessor socket. Then, for the "final approach," look into the PCjr through the floppy drive opening. Have bright lighting for good visibility.

Getting the alignment right requires care. Carefully align the board with the microprocessor socket and gently plug it in as you continue to look in from the front. Congratulations!

POINT OF CARE: Avoid installing jrHOTSHOT off-center.
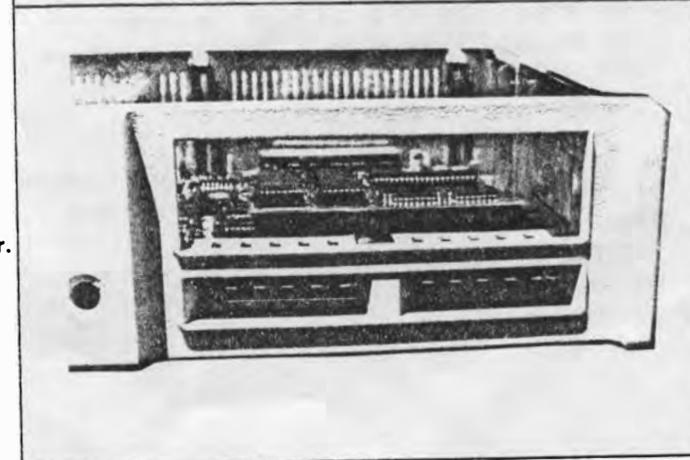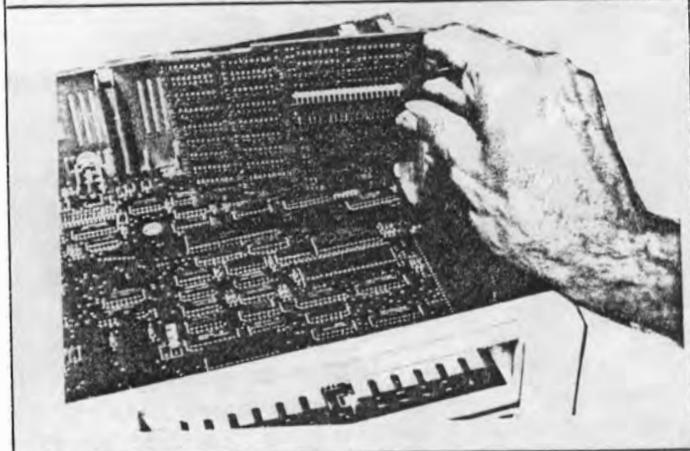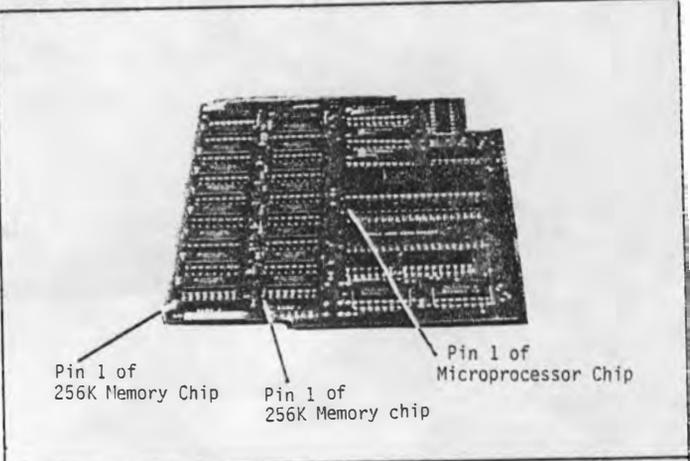
* * * * * * * * * QUICK TEST * * * * * * * *

Early Test

With the microprocessor installed into jrHOTSHOT, and jrHOTSHOT installed into the main electronics board, plug in the power cord and the video cable. Then turn on the PCjr for a quick test.

The IBM logo should come on the screen, and the memory count at the lower right corner of the screen should advance to 640K if 16 memory chips are installed in jrHOTSHOT. If only 8 memory chips are installed (in Bank 0), then the memory count should advance to 384. If the PCjr then beeps and/or signals "ERROR__H," that means it wants to access the floppy drive.

If the IBM logo does not appear, the jrHOTSHOT board is probably not correctly plugged in, not fully pushed into the socket, or perhaps the microprocessor chip is not plugged in. Perhaps the microprocessor is plugged into jrHOTSHOT backwards. The microprocessor "pin 1" end with visible notch or dot should be to the left.

If an "ERROR__A" message appears, a memory chip is probably bad or mis-plugged. Refer to the later section on replacing bad memory chips. If an "ERROR__B" appears, it indicates a keyboard connection problem; do not worry about an "ERROR__B" should it appear at this stage.

* * * * * * * * * * REPLACE FLOPPY DRIVE * * * *

Front End of Floppy Goes in First

To place the floppy disk drive into the PCjr, first get the front of the drive positioned. That may be a little tricky, but don't force anything. Notice there is a tongue-and-groove fit along the bottom front of the floppy bracket.

When the front is positioned, lower the floppy until the rear feet just touch.

6
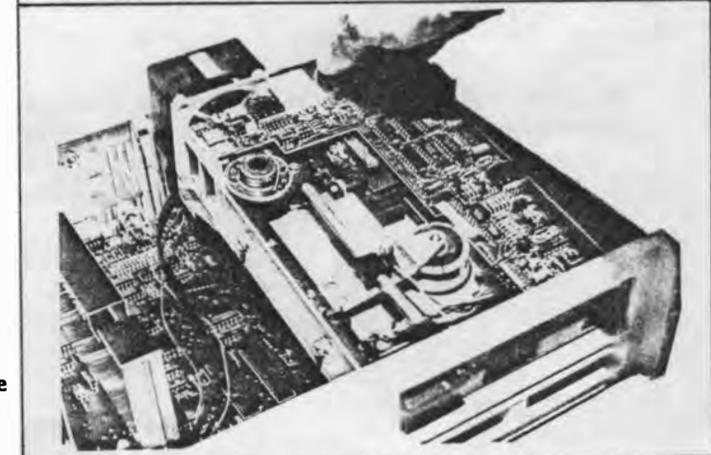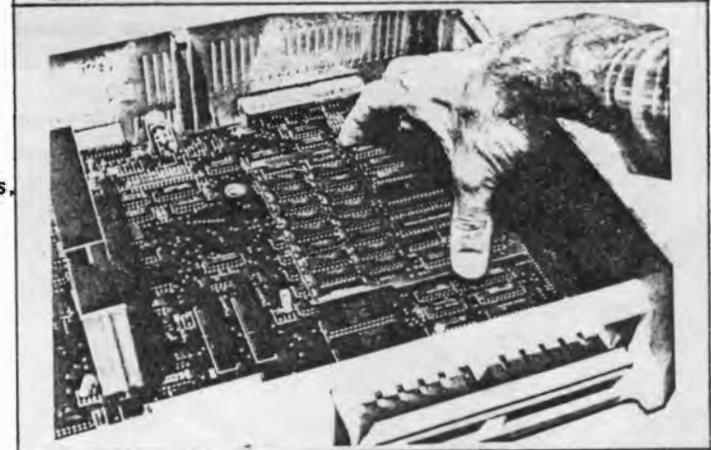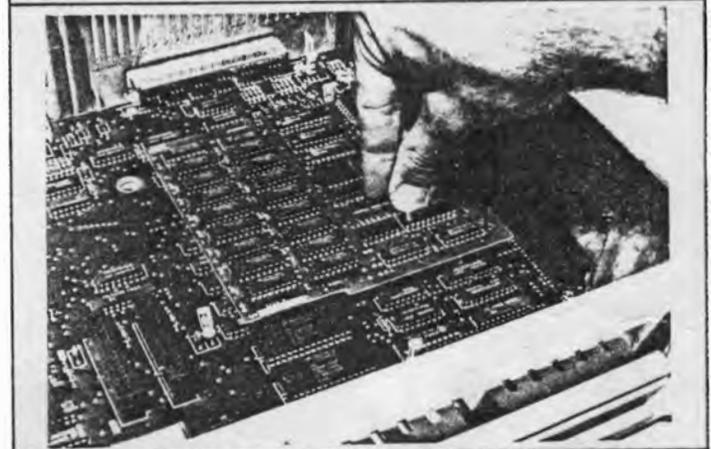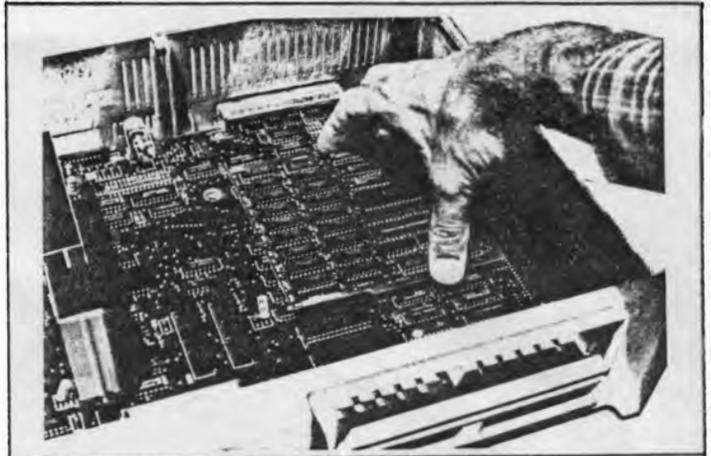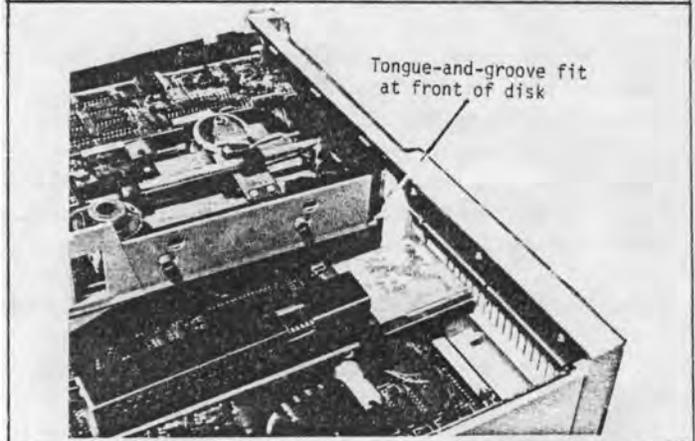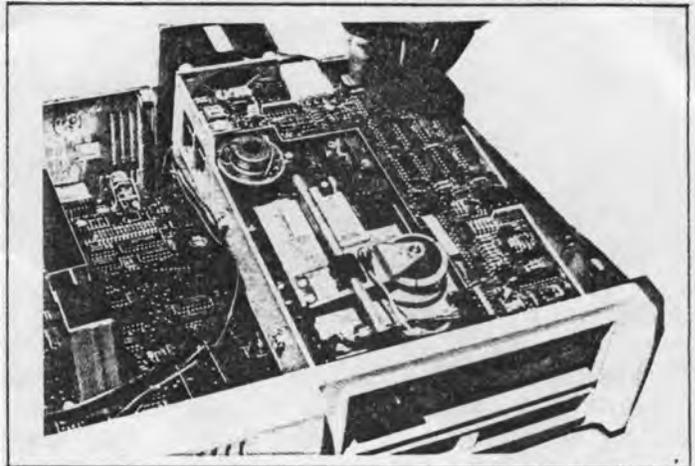
Route Power Wires and Fan Wires Behind Floppy Bracket

The internal power wires and thin fan wires to the
floppy should be routed BEHIND the foot of the floppy
bracket. Also keep them from being pinched by the metal
bracket at the inner rear wall of the PCjr. When the
wires are routed properly to allow plugging the floppy
disk bracket, place your thumb on the bottom of the
bracket foot. Push each foot down to fully seat the
floppy bracket against the electronics board.
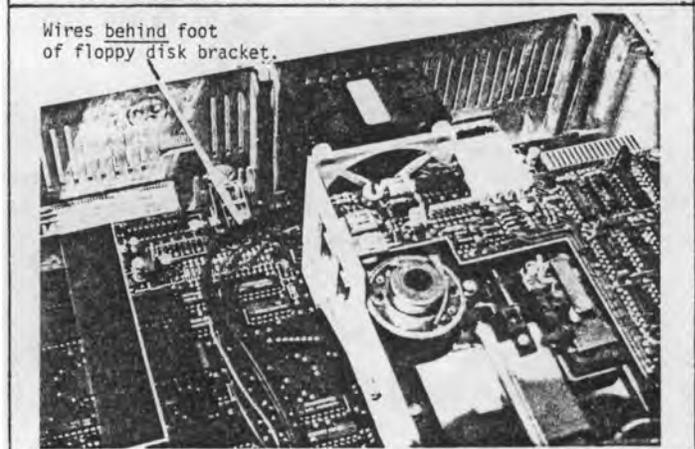
Install the Disk Controller Board

Position the floppy power cable so the disk controller
board holds it down as the controller board is plugged
into the main PCjr electronics board. Then plug the
controller board in, and also re-connect the flat cable
to the rear of the floppy disk drive.

All internal wires should be connected now. If not,
connect them.

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* * * * * * * * * * FINAL BUTTON-UP * * * * * * * *
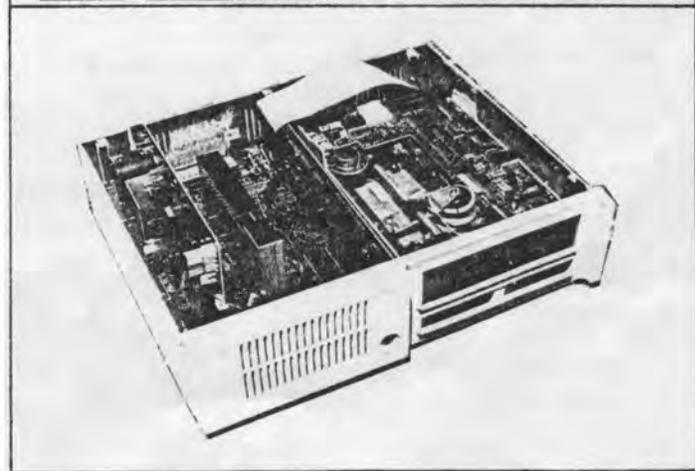
Replace Top Cover

Turn off the PCjr power. To re-attach the top cover,
position the front edge of the cover into place first
and then carefully press the rear edge into place. Turn
on the power again and see that the IBM logo appears on
the screen and the memory test continues as high as the
memory you have installed (to 384K or 640K).

The PCjr posts error message (if any) to the video
screen if something is wrong, such as:

ERROR__A – this means a memory chip is probably bad or
mis-plugged. Inspect the memory chips carefully (in
good, bright light). Refer to the later section on
replacing bad memory chips.

ERROR__B – this indicates a keyboard connection problem;
either the infra-red module (for receiving the wireless
keyboard signals) is not plugged in, or the keyboard
cable is not plugged in.

ERROR__H – this means the floppy is not responding as it
should. Check all connections of the floppy drive and
the disk controller board.

Installation of your jrHOTSHOT hardware is now complete.

1.3 Instructions for Installing the Cable for the
Second (External) Floppy Disk

If   you ordered the option for the second disk controller, you have received
a special "ribbon cable" that connects to the floppy disk A: (the internal
drive) and to disk B: (the second, external drive). Also notice that your
jrHOTSHOT board has a group of 10 pins which connects to another connector of
that special cable. Here are the steps to installing the special cable:

1. Install the jrHOTSHOT board itself as shown in the main instruction
    package. For the moment, leave the floppy disk A: out of the PCjr, and
    leave the disk controller card out of the PCjr.

2. You will no longer need the standard "ribbon cable" for the single floppy
    disk, so disconnect the standard cable from the PCjr disk controller board
    and put it aside. As you unplug that cable, be careful not to severely
    bend the pins on the controller board.

3. Before re-installing the floppy disk, get the special cable and connect
    the small 10-pin connector marked "1-FRONT" onto the 10-pins on the
    jrHOTSHOT board. Orient the 10-pin connector so that the label saying "1-
    FRONT" is facing towards the front of the PCjr. Leave the rest of the
    special cable hanging over the back of the PCjr.

4. Now re-install the internal floppy disk as shown in the main instruction
    package.

5. Then re-install the floppy disk controller board.

6. Plug the 34-pin socket marked "2-TOP" of the special cable onto the 34-
    pins of the floppy disk controller board. Plug it so that the label
    saying "2-TOP" is facing upwards.

7. Plug the 34-pin edge connector marked "A-TOP" of the special cable onto
    the internal floppy disk controller. Plug it so that the label saying "A-
    TOP" is facing upwards.

8. Locate the external floppy disk to the external power supply for the disk.
    Then configure the jumpers on the external disk so that it is Drive 0.
    For that purpose, you should find somewhere on the floppy disk a jumper
    block. Move the jumper block to the position for DRIVE 0, or DS0, or
    something to that effect (it is marked slightly differently on each brand
    of floppy drive).

9. Plug the 34-pin edge connector marked "B-TOP" of the special cable onto
    the external floppy disk controller. Plug it so that the label saying "B-
    TOP" is facing upwards.

Installation of the cable is now complete. For the software installation of
the jrHOTSHOT files when you have two floppy drives, use the INSTALL2 <RETURN>
command as described in section 2.2 of these instructions.

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2.1 jrHOTSHOT Software Summary

The PCjr self-test always recognizes the additional fast memory on jrHOTSHOT when the power is turned on. However to let the DOS operating system recognize the fast memory on jrHOTSHOT, you need to copy several files from the jrHOTSHOT disk onto your DOS disk(s) that you intend to boot from. The software is called a "device driver." Device drivers are further described in the DOS Technical Reference manual.
Having the jrHOTSHOT files on your DOS disks or other bootable disks lets DOS recognize all the memory WHENEVER YOU RE-BOOT.

2.2 Installing the jrHOTSHOT Software onto your DOS Disk

The jrHOTSHOT software allows the PCjr to recognize the Fast Memory, the Second Disk Drive and the real-time Clock/Calendar. Therefore, you need to copy several small files from the jrHOTSHOT disk version 3.2 onto the DOS disk (any DOS version from 2.0 on up) that you use to boot up the computer.

You only have to perform this software "installation" procedure once. With the jrHOTSHOT card plugged in, boot up your system using a working copy of your DOS disk. Take the write-protect tab off the DOS disk so you can install the jrHOTSHOT files onto your DOS disk.

When you have the DOS prompt, (A>), place the jrHOTSHOT disk in the drive (drive A: if you have two drives). Also, have the DOS disk on hand (have the DOS disk in drive B: if you have two drives).

Now, to install the jrHOTSHOT software:

The jrHOTSHOT disk verstion 3.2 has two "batch files" called INSTALL1.BAT and INSTALL2.BAT to get you installed easily.

IF YOU HAVE A ONE-DISK PCjr, TYPE "INSTALL1 <RETURN>" AND FOLLOW DIRECTIONS ON THE SCREEN.

--OR--

IF YOU HAVE A TWO-DISK PCjr, TYPE "INSTALL2 <RETURN>" AND FOLLOW DIRECTIONS ON THE SCREEN.

The directions on the screen allow you to copy all the needed jrHOTSHOT files to your DOS disk. The install procedure also copies your CONFIG.SYS file (if you have such a file) to CONFIG.SAV. Furthermore, the install procedure copies the file FAST.CFG to CONFIG.SYS (see the later section on PCjr configurations).

You can use this install procedure for as many bootable disks (DOS or otherwise) as you want to contain the jrHOTSHOT software.

When you are finished doing the software installation, you can re-boot DOS

(type CNTL-ALT-DEL), to Begin Using the Fast jrHOTSHOT Memory, and the
second disk drive and the real-time Clock/Calendar assuming you have those
features on your jrHOTSHOT card.

You can use this install procedure for as many bootable disks (DOS or
otherwise) as you want to contain the jrHOTSHOT software.

2.3 Re-boot DOS (type CNTL-ALT-DEL), to Begin Using the Fast jrHOTSHOT Memory

Type CNTL-ALT-DEL to cause DOS to reboot. Since the install procedure
copied FAST.CFG to the file CONFIG.SYS, you will be immediately in the
"FAST" configuration, using the full amount of fast memory. Your programs
will run signicantly faster than in the standard configuration. The
jrHOTSHOT software will also put your screen in 80-column mode, print a
sign-on message showing the amount of memory you have, and print a random,
sometimes humorous "message of the day" for you. Notice the keyboard
click feature is "on" to help you type faster and more accurately.

If you used the "install" batch file to install the jrHOTSHOT files, you
are in the FAST configuration described above. Your programs will run
signicantly faster than in the standard configuration.

Your AUTOEXEC.BAT (if you have such a file) file is not disturbed. If you
have one set up, it will execute normally. (If you have a MODE 80 command
in your AUTOEXEC.BAT file, the command is redundant now). The
AUTOEXEC.BAT file is further described by the DOS manual.

2.4 jrHOTSHOT Configurations: STANDARD, FAST, and DISKFAST

The jrHOTSHOT software lets you establish a memory "configuration." Once
a configuration is selected, the configuration takes effect each time you
boot up DOS on your PCjr. You can easily select another configuration at
any time.

The jrHOTSHOT software allows you to operate the PCjr in any of these
memory configurations, shown with diagrams on the next page.

```
    Memory map              Memory map              Memory map
        of                      of                      of
    "STANDARD"                "FAST"                "DISKFAST"
  configuration:          configuration:          configuration:

 |//////|640K          |         |640K          |         |640K
 |//////|              |         |              |         |
 |//////|              |         |              |         |
 |//////|              |         |              |         |
 |_____|              |         |              |_____|
 | HOTSHOT|            | HOTSHOT |             | HOTSHOT |
 | fast  |             |  fast   |             |  fast   |
 | memory|             | memory  |             | memory  |
 |       |             |         |             |         |
 |//////|              |         |             |         |
 |//////|              |         |             |  Your   |
 |(present|            |         |             | programs|384K
 |  on   |384K         |         |384K         | are run |
 |jrHOTSHT|            |         |             | in FAST |
 | but   |             |         |             | memory  |
 |unused)|             |         |             |  here.  |
 |//////|              |         |             |         |
 |//////|              |         |             |_____|
 |//////|              |  Your   |            |         |
 |//////|              |programs |            |R        |
 |//////|              | are run |            | A       |
 |//////|              | in FAST |            |  M      |
 |//////|              | memory  |            |   D     |
 |//////|              |  here.  |            |_ _ I _ _|129K
 |//////|129K          |_____|129K        |    S    |128K
 | video |128K         |  video  |128K        |     K   |
 |_____|             |_____|            | (any    |96K
 |  Your  |96K         |/ / / / /|96K         |  size)  |
 |programs|            |/  64K  /|            |         |
 | are run|64K         | unused  |64K         |_____|64K
 |  here. |            |/ / / / /|            | video   |
 |_____|32K          |/_/_/_/_/|32K         |_____|32K
 | DOS 2.1|            | DOS 2.1 |            | DOS 2.1 |
 |_____|0K           |_____|0K          |_____|0K
```

"STANDARD" configuration uses only 128K total, even if the memory
expansion is installed. STANDARD configuration is uselful for running
Cartridge Basic IF you normally use a large RAMdisk when in the FAST or
DISKFAST configurations (see below). Also, any program which previously
ran on the PCjr will continue to run in the Standard configuration.

"FAST" configuration lets you INSTANTLY take advantage of the extra
memory, and causes your programs to be loaded at the beginning of
jrHOTSHOT fast memory, 129K. This gives your programs an 80-130% speed
increase over standard configuration, if you had enough memory to run the
program in standard configuration at all.

"DISKFAST" configuration lets you take maximum advantage of the extra
memory and increased performance, provided that you have a resident

program, such as a RAMDISK, that occupies at least the top 64K of PCjr standard memory. The resident program occupies the remainder of slow PCjr memory, at least, and therefore causes your programs to be run in the fast jrHOTSHOT memory, as they also are when using the "FAST" configuration above.

2.5 Establishing or Changing jrHOTSHOT Configurations

Among the jrHOTSHOT programs you "install"ed onto the DOS disk are several batch files that now let you easily change from any of these configurations to any other by typing a one-word command, waiting a few seconds while the command exectues, and then re-booting the PCjr to establish the new configuration.

CAUTION: If you have a RAMdisk set up, be sure to copy all needed RAMdisk files to an actual floppy disk BEFORE you re-boot. Otherwise, the files in ramdisk will be lost!

- - - - - - ESTABLISHING A jrHOTSHOT CONFIGURATION - - - - - - -

To establish the "STANDARD" configuration:
1. Type "standard <RETURN>"
2. Wait for "standard.bat" batch file to complete execution
3. Type "CNTL-ALT-DEL" to re-boot into standard configuration

To establish the "FAST" configuration:
1. Type "fast <RETURN>"
2. Wait for "fast.bat" batch file to complete execution
3. Type "CNTL-ALT-DEL" to re-boot into fast configuration

To establish the "DISKFAST" configuration:
1. Type "diskfast <RETURN>"
2. Wait for "diskfast.bat" batch file to complete execution
3. Type "CNTL-ALT-DEL" to re-boot into diskfast configuration

For the "Diskfast" configuration, note that you should supply a ramdisk program, such as the program commonly called vdisk.sys. The jrHOTSHOT file called DISKFAST.CFG comes set up to invoke vdisk.sys if you put "vdisk.sys" ramdisk program on your DOS disk. Use a text editor such as "edlin" to modify the DISKFAST.CFG file if using another ramdisk program, or if changing the size (the buffersize) of the ramdisk.

Most of the time you, will probably want to stay in the "FAST" configuration if you don't have a RAMdisk, or in the "DISKFAST" configuration if you do have a ramdisk set up.

2.6. Instructions for Activating the Real-time Clock/Calendar

The Clock/Calendar option is very easy to use, but probably you will first need to set it to your current time and date. (You should of course have completed the hardware and software installation process as described in sections 2.2 and 2.3 of these directions.)

There are two files that interface with the Clock/Calendar chip. These files are: READCLK.SYS and SETCLK.EXE. When the software installation process is complete (using INSTALL1 for a one-drive PCjr, or INSTALL2 for a two-drive PCjr), these files for the Clock/Calendar are already copied onto your DOS disk.

TO SET THE TIME AND DATE IN THE REAL-TIME CLOCK/CALENDAR CHIP:

1. Set the DOS time using the TIME command of DOS.
2. Set the DOS date using the DATE command of DOS.
3. Copy the current DOS values of time and date to the
    Clock/Calendar by typing SETCLK <RETURN>.

TO READ THE TIME AND DATE FROM THE CLOCK/CALENDAR CHIP WHEN YOU
BOOT THE SYSTEM:

1. Reading of the time and date is automatic at boot-up if your
CONFIG.SYS file contains the line:
DEVICE = READCLK.SYS
2. If you used either the INSTALL1 or INSTALL2 installation
procedure, you are are already all set! If you used either of those
procedures, you already have a CONFIG.SYS file and it already contains a
line DEVICE = READCLK.SYS

BACKGROUND INFORMATION:

SETCLK.EXE is the command file that provides the command SETCLK, which
lets you set the time and date in the Clock/Calendar chip. Whenever you
type SETCLK <RETURN>, the current DOS values for time and date are copied
into the Clock/Calendar chip, which then continues to maintain the time
and date by itself.

READCLK.SYS is device driver file that provides the read-time and read-
date function when you boot the computer. READCLK.SYS cannot be invoked
as a command. Rather, it must be invoked by having a statement DEVICE =
READCLK.SYS in your CONFIG.SYS file. When READCLK.SYS is invoked by the
CONFIG.SYS file, the DOS time and date are set to the values of the
Clock/Calendar chip. The time and date are not explicitly displayed at
the time however. You can use the TIME and DATE commands of DOS if you
want to verify that the time and date have been set correctly.

2.7 Using the jrHOTSHOT Benchmark Program

The benchmark program, BENCHMK.COM, is for use in measuring the performance increase of the "FAST" and "DISKFAST" configurations over that of the "STANDARD" configuration. Run the benchmark when in these various configurations by typing "benchmk <RETURN>" each time. You can run the benchmark program at any time, in any configuration.

NOTE: The "FAST" configuration always gives you a performance increase. To achieve a performance increase with the "DISKFAST" configuration, the "DISKFAST" configuration requires that you ALSO have a ramdisk of at least 64K or more! That will ensure having your application programs (such as the benchmark program) loaded into the fast jrHOTSHOT memory.

Software Reference Topics

3.1 The STD.SYS, FAST.SYS and DISKFAST.SYS Device Drivers

These files are of a special category, called a "device driver." As a device driver, this software performs a memory management function so that DOS will be aware of the addtional memory present on jrHOTSHOT. The file STD.SYS or FAST.SYS or DISKFAST.SYS (or all three) should be on your DOS disk when you boot up the PCjr. DOS version 2.0 or higher must be used to support "device driver" programs.

5.2 CONFIG.SYS File

The file called CONFIG.SYS is referenced by DOS to control how DOS will configure the system whenever you re-boot the system. Therefore, the commands "STANDARD," "FAST," and "DISKFAST" activate simple batch files that copy a particular ?????.CFG file to the special, reserved file name of "CONFIG.SYS." The file CONFIG.SYS is then automatically referenced the next time DOS is re-booted.

The CONFIG.SYS file is just a character file, and you can see its contents with the "TYPE CONFIG.SYS" command, or with the "COPY CONFIG.SYS CON" command (i.e. copying it to the console). The contents of CONFIG.SYS or of any ?????.CFG file may be modified using a text editor such as edlin (edlin.com is included with DOS and is explained in the DOS manual).

You may want to modify one of the ?????.CFG files or the CONFIG.SYS file for your own system (refer to the DOS manual for the options you have). If so, it is best that the first line of your CONFIG.SYS references the device driver called STD.SYS or FAST.SYS or DISKFAST.SYS.

5.3 RAM Disks and Disk Buffers in Memory

If you desire, your CONFIG.SYS file may contain additional lines of configuration information. For example, if you would also like to setup a 250KB RAMdisk in memory, you can reference the VDISK.SYS device on the second or following lines of the CONFIG.SYS file, as shown below.

```
device = diskfast.sys
device = vdisk.sys buffersize 250 sectorsize 512 entries 64
```

The RAMdisk always becomes drive C:, not drive B:. Drive B: is still the alternate use of drive A: in the PCjr (if you have an second actual disk, that second disk becomes drive B:). The VDISK program comes with DOS 3.x (not DOS 2.x unfortunately) and it works fine with DOS 2.0. Other RAMdisk programs are in the public domain. Ask around for a version that's OK to use.

Next, if you want to setup additional DOS disk buffers to improve performance somewhat, a subsequent line in CONFIG.SYS can perform that function. The following is an example of such a "DISKFAST.SYS" file or "CONFIG.SYS" file:

```
device = diskfast.sys
device = vdisk.sys buffersize 250 sectorsize 512 entries 64
buffers = 10
```

If you wish to have a RAM disk with as much capacity as an actual floppy disk, then create a RAM disk with 360KB capacity. The CONFIG.SYS below would be appropriate:

```
device = diskfast.sys
device = vdisk.sys buffersize 360 sectorsize 512 entries 64
buffers = 10
```

If you want to create multiple RAM disks (named C:, D:, etc.), then reference the VDISK.SYS device more than once, as below. Notice that the parameters of each RAMdisk can be different.

```
device = diskfast.sys
device = vdisk.sys buffersize 115 sectorsize 512 entries 32
device = vdisk.sys buffersize 200 sectorsize 512 entries 64
buffers = 10
```

In any CONFIG.SYS files for a PCjr with the jrHOTSHOT board, the first line should be:
"device = fast.sys" or "device = diskfast.sys" as mentioned.

4.1 Replacing Defective Memory Chips

```
*****************************************************************
* For the memory to function properly, you must use the type of   *
* 256K memory chips that support "CAS before RAS refresh."  Other- *
* wise the system will probably not run reliably in the FAST or    *
* DISKFAST configurations.                                         *
*****************************************************************
```

The jrHOTSHOT fast memory board is populated with 256K x 1 dynamic memory chips. The 256K chips must have an access time spec of 150ns or less. Use chips such as Hitachi HM50256-15. 64K chips cannot be used. Each "bank" of 256K chips is made of 8 chips (the PCjr has no parity bit as does the PC) and provides approximately 256,000 bytes (characters) of memory. The board contains two "banks" and thus can hold up to 16 of the 256K memory chips, adding 521,288 bytes of memory to the PCjr.

A memory error is indicated either (1) when the PCjr self-test will not scan up the top of your jrHOTSHOT memory (up to either 384K or 640K) and boots immediately after reaching the 128K or 384K point, ignoring additional memory you have installed, or, (2) when the self-test reports an ERROR_A while the memory self-test is in progress.

A MEMORY DIAGNOSTIC PROGRAM, named "memtest.exe", has been supplied on your jrHOTSHOT disk. Running memtest will test all the jrHOTSHOT fast memory and pinpoint any defective memory chips. The memtest cannot pinpoint failures in the surrounding jrHOTSHOT control chips, unfortunately. It cannot test the lowest 128K of memory already in the PCjr.
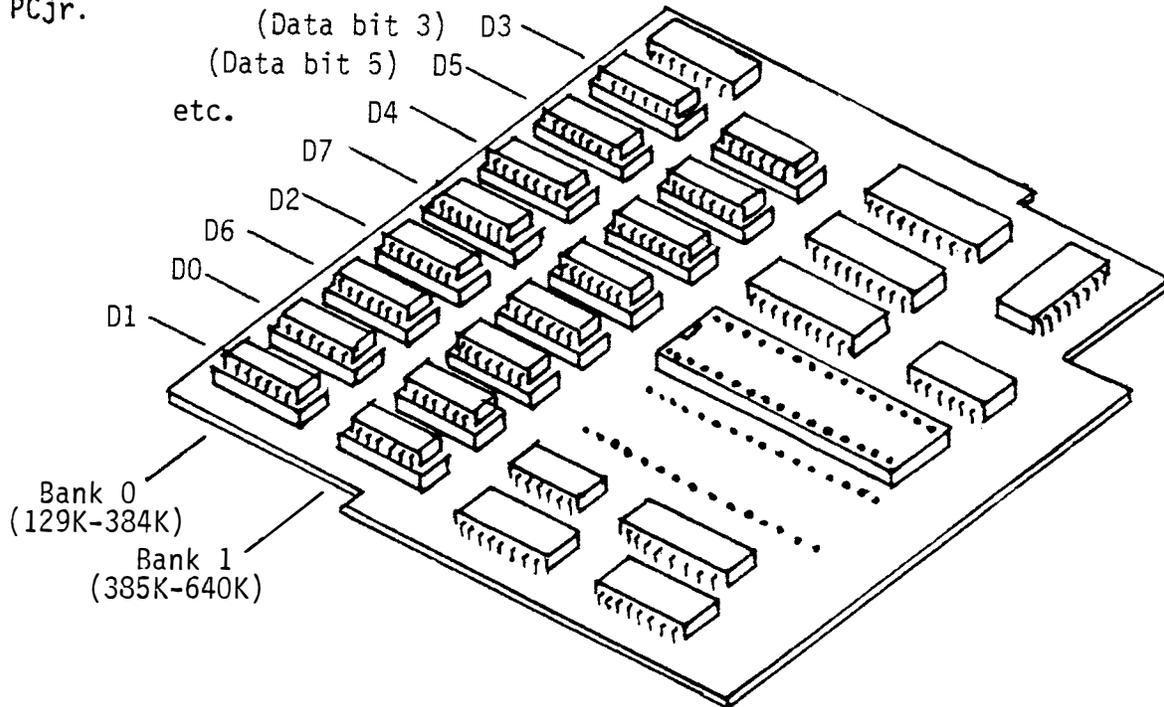
jrHOTSHOT Diagram showing
Memory Chip Layout
(as called out by memtest diagnostic)

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To use the memtest diagnostic program on the jrHOTSHOT:

To use the memtest.exe program, DOS must be running, and you must be running in the STANDARD configuration. Therefore, if an "ERROR_A" at 128K or beyond prevents DOS from booting, you should remove any one of the 256K memory chips from Bank 0. Doing so will make the PCjr unaware of any expansion memory on jrHOTSHOT, and boot DOS using only 128K.

Type "STANDARD <RETURN>" and let that batch file run, when the standard.bat file is finished, re-boot DOS to get into the STANDARD configuration. Then you can run memtest for a report on the jrHOTSHOT memory. When DOS is in the standard configuration, just type "MEMTEST <RETURN>."

The memtest diagnostic will report the location(s) of all failing 256K chip(s), including the chip in Bank 0 that you may have removed to allow DOS to boot with 128K. Refer to the drawing below for the position of Bank 0, Bank 1, D0, D1, D2, D3, D4, D5, D6, D7, and D8. To verify that a particular chip is bad, make note of its position, turn off the power, pry the chip from its socket, and replace it with a new one. Then re-run the memtest program.

Alternatively, if you don't have a spare good chip, at least remove all bad chips from Bank 0 and run with Bank 0 all good (that gives you 384K total). When you do this, completely remove at least one of the chips from Bank 1, so PCjr knows there is no usable memory beyond 384K.

4.2 Ongoing Product Support

We like to work in a co-operative way with our customers like you, and we like to be responsive to your needs. We know you want to be satisfied with the usefulness of this product.

If the jrHOTSHOT card should fail within two years of use, or if you need some help with something, contact us and we'll fix or replace the card or provide support within a reasonable time, at no additional charge. (Even after two years, call and we'll see what we can do.)

If you are not totally satisifed with the product, you may return it within 60 days for a full refund.

If we make a software update to the jrHOTSHOT disk, you can send in a formatted disk and 60 cents return postage, and we'll give you a copy of any updated jrHOTSHOT software for free.

And lastly, please mention or recommend this product to other groups or individuals who might be interested. Your support is invaluable.