



Information Technology Workshop



By
P Ramu,
M.Tech (Ph.D),
Assistant Professor,
Dept of CSE, SNIST.

Syllabus

- 1. Introduction to computers**, identify the peripherals of a computers, components in a CPU & its functions, draw the block diagram of the CPU along with the configuration of each peripherals.
- 2. Assembling & Disassembling.**
- 3. Install computer with dual boot operating system** (Windows, Linux with PowerPoint presentation) & Types of Operating Systems.
- 4. Software. Introduction to MS-Office and its importance. (MS Word & MS Power Point Presentation).**
- 5. Introduction to MS-Excel.**

Introduction to Computers

Objectives

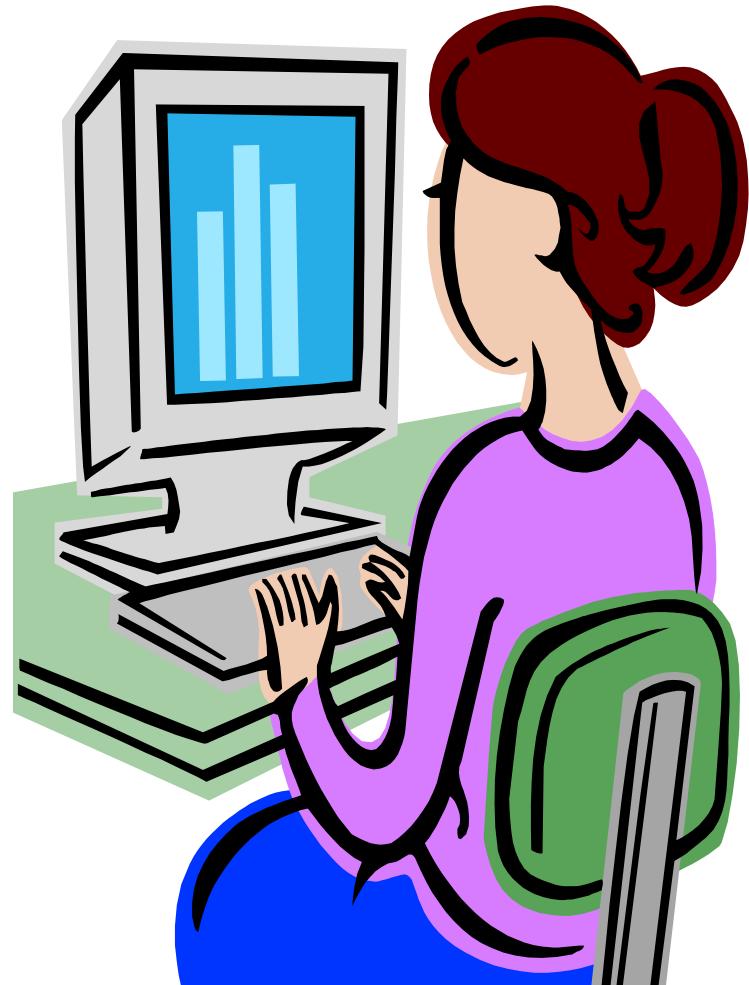
- What is a computer?
- To review basic computer systems concepts
- To be able to understand the different computing environments and their components



What is a Computer?

What is a Computer?

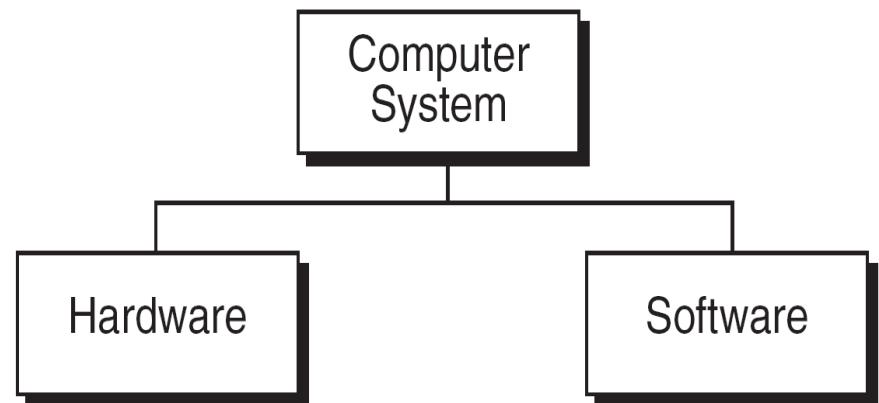
- A computer is a fast electronic device that processes the input data according to instructions given by programmer/user and provides the desired information as output.



Computers Have Two Main Parts



1. Computer Hardware
2. Computer Software



- The computer and all equipment attached to it are called **hardware**.
- The instructions that tell it what to do are called **software**.



Hardware

- The **hardware** is the part of the computer you can touch and see.
- The computer and all equipment attached to it are called **hardware**

Hardware examples

- The **Monitor** is the display screen, similar to a television screen.
- The **Computer**, tower or case is the heart of the system. This is a box that contains all the parts that make the computer work.
- The **Keyboard** is what you type on, similar to a typewriter.
- The **Mouse** is the small hand held device that attaches to the computer. It may have two or three buttons. The mouse is used to move the cursor (pointer) on the computer screen.



Hardware

- The **Printer** is a device that puts what you have created on to paper.
- The **Scanner** similar to a color photocopier is a device that captures pictures or documents, so that they can be seen or used on the computer.
- The **Laptop** also known as a notebook computer is a small personal computer designed for mobile use.



❖ Software

- Software is a part of the computer you cannot touch.
- The instructions that tell it what to do are called **software**
- Software consist of computer programs and procedures that perform some tasks on your computer.

- Computer software is divided into **three** basic types
- **System software**
- **Application software**
- **Programming software**

- System software

- *Operating System* is the base program on a computer is considered system software. It tells the computer how to work or operate. The operating system also allows you to load other programs that do specialized tasks on to your computer.
- **(ex. Windows XP and Vista)**



Windows Vista™

- Application software
 - *Application software* allows you to accomplish one or more specific tasks. Such as computer games for entertainment or Microsoft Word for typing.



- Programming software
 - *Programming software* provides tools to assist a computer programmer in writing programs and software.

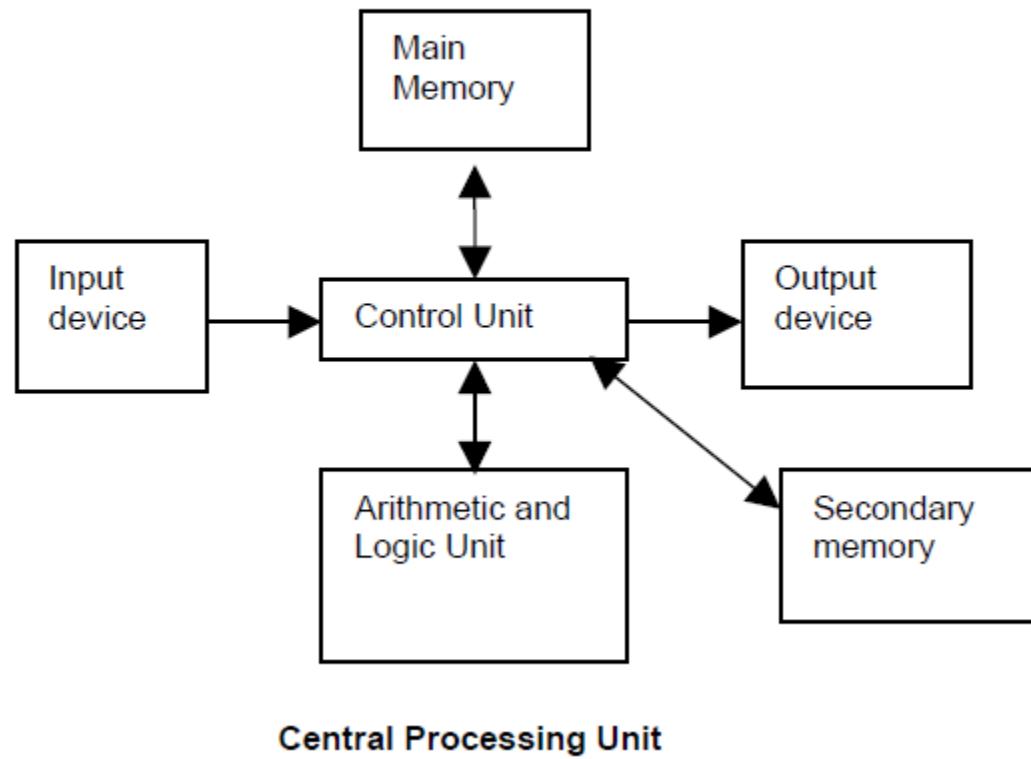


❖ **BASIC FUNCTIONAL UNITS OF A DIGITAL COMPUTER**

A computer system has five basic functional units which are listed below

1. Input Unit
 2. Output Unit
 3. Control Unit
 4. Memory Unit
 5. Arithmetic Logic Unit
- 
- Central Processing Unit(CPU)

Block Diagram of a Digital Computer



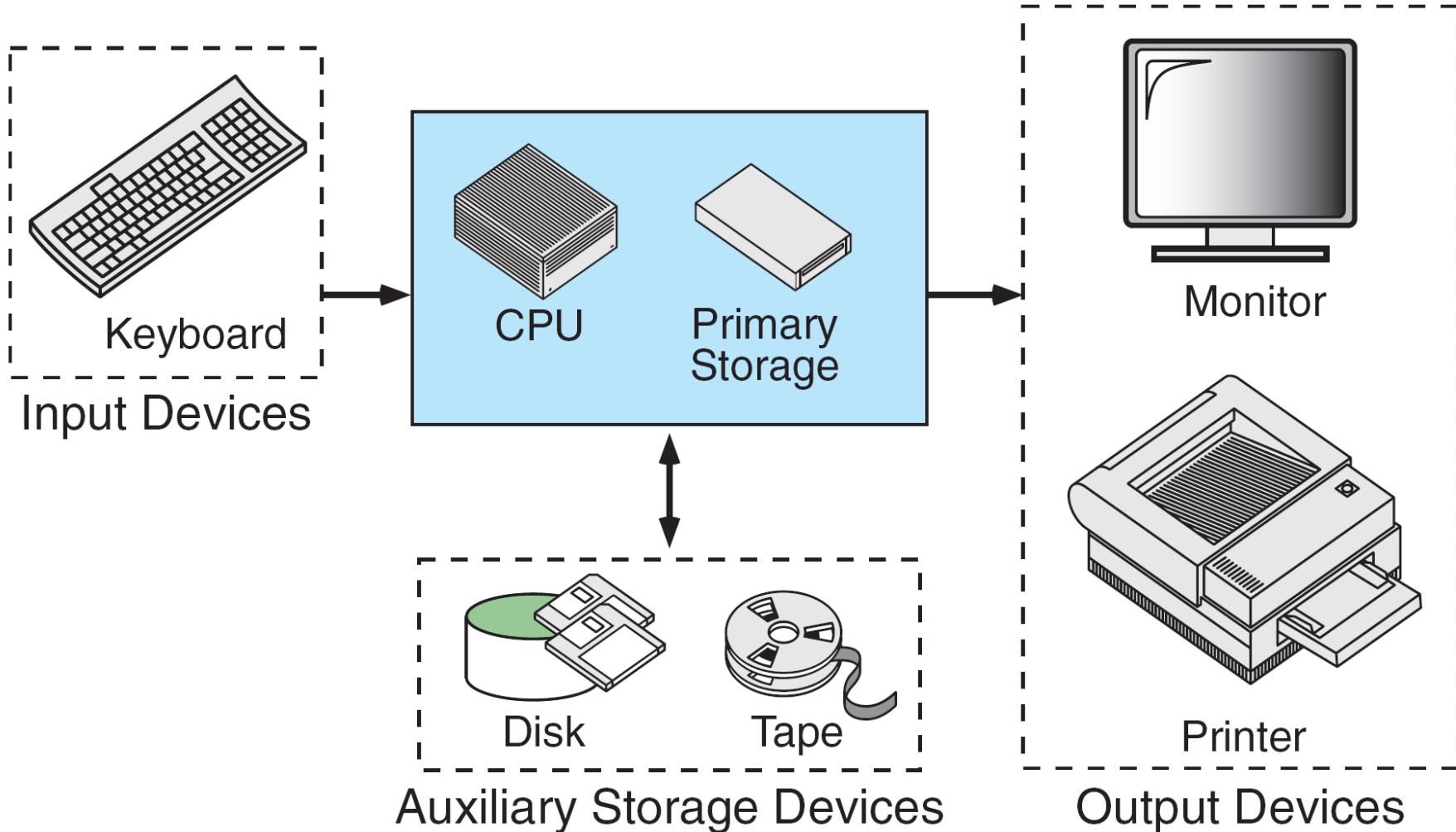


FIGURE . Basic Hardware Components

❖Central Processing Unit (CPU)

It performs all the processing of input data. The control unit and ALU of the computer are together known as the Central Processing Unit (CPU).

CPU consists of following parts:

1. Arithmetic Logic Unit (ALU)
2. Control Unit (CU)
3. Memory Unit (MU)
4. Registers
5. Buses
6. Clock

- The CPU is like brain performs the following functions:
 -
 - It performs all calculations.
 -
 - It takes all decisions.
 -
 - It controls all units of the computer.

Memory Unit

- It is used to store the data, instructions and information before, during and after the processing by ALU. It is also known as Main/Primary/Internal Memory.

It is divided into 3 types:

1. Read Only Memory (ROM)/Non-Volatile Memory
2. Random Access Memory (RAM)/ Volatile Memory
3. Complementary Metal Oxide Semiconductor Memory (CMOS)

❖ **Read Only Memory (ROM)/Non-Volatile Memory**

- ROM is permanent and is not erased when system is switched off. ROM is also called *Nonvolatile Memory*.

Types of ROM

1. Mask ROM
2. PROM (Programmable Read Only Memory)
3. EPROM (Erasable Programmable Read Only Memory)
4. EEPROM (Electrically Erasable Programmable Read Only Memory)
5. EAPROM (Electrically Alterable Programmable Read Only Memory)

❖ **Random Access Memory (RAM)/ Volatile Memory**

RAM is temporary and is erased when the computer is switched off. RAM is also called *volatile Memory*.

Types of RAM

1. Dynamic RAM (DRAM)

2. Static RAM (SRAM)

❖ Differences between Dynamic RAM & Static RAM

Dynamic RAM (DRAM)	Static RAM (SRAM)
1. The information stored in Dynamic RAM has to be refreshed after every few milliseconds otherwise it is erased.	1. The information stored in Static RAM need not to be refreshed, but it remains stable as long as power supply is provided.
2. DRAM has higher storage capacity.	2. SRAM has lesser storage capacity.
3. It provides less speed to computer.	3. It provides more speed to computer.
4. It is cheaper.	4. It is costlier.
5. It based on MOS transistor gates.	5. Is made-up of Flip Flops (an electronic device), which stores bit as a voltage.

❖ PROGRAMMING LANGUAGES CLASSIFICATION

1. Machine Languages / First Generation Languages

2. Assembly Languages / Second Generation Languages

3. High Level Languages

1. Machine Languages / First Generation Languages

- Each processor or CPU has its own set of instructions. These instructions are binary instructions and written in a sequence of ‘0’s and ‘1’s.
- Any program written by using the binary instructions are known as machine language.
- Machine language for every processor is different. Writing a program in machine language is very burden and difficult.
- **Advantages:** The advantage of the machine language code is that a processor can execute it without any transaction.

PROGRAM 1-1

The Multiplication Program in Machine Language

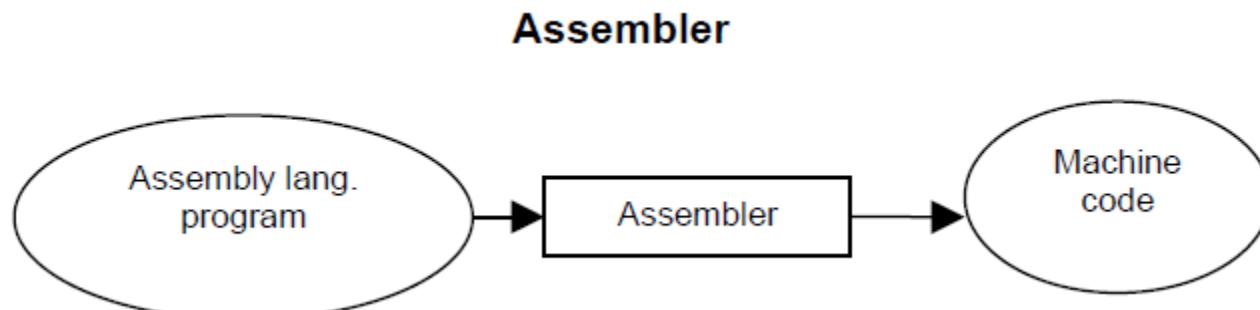
1		00000000	00000100	0000000000000000
2	01011110	00001100	11000010	0000000000000010
3		11101111	00010110	0000000000000101
4		11101111	10011110	0000000000001011
5	11111000	10101101	11011111	00000000000010010
6		01100010	11011111	00000000000010101
7	11101111	00000010	11111011	00000000000010111
8	11110100	10101101	11011111	00000000000011110
9	00000011	10100010	11011111	00000000000100001
10	11101111	00000010	11111011	00000000000100100
11	01111110	11110100	10101101	
12	11111000	10101110	11000101	00000000000101011
13	00000110	10100010	11111011	00000000000110001
14	11101111	00000010	11111011	00000000000110100
15		01010000	11010100	00000000000111011
16			00000100	00000000000111101

Note

The only language understood by computer
hardware is machine language.

2. Assembly Language / Second Generation Languages

- The processor cannot understand the code written in assembly language. So, it would not be able to execute assembly language instructions.
 - The processor understands the machine language. So, assembly language programs have to be converted into machine language. This is done by the assembler.
- **Assembler:** The assembler is a program, which converts an assembly language program into machine code (object code), which can be executed by the processor.



Assembly language and machine language are known as lower level languages. These languages are dependent on the processor or the processor specific.

Advantages: The advantage of the assembly language over machine language is that it is more convenient for the programmer to write programs in assembly language.

.

PROGRAM 1-2 The Multiplication Program in Symbolic Language

```
1      entry    main,^m<r2>
2      subl2   #12,sp
3      jsb     C$MAIN_ARGS
4      movab   $CHAR_STRING_CON
5
6      pushal   -8(fp)
7      pushal   (r2)
8      calls   #2,SCANF
9      pushal   -12(fp)
10     pushal   3(r2)
11     calls   #2,SCANF
12     mull3   -8(fp),-12(fp),-
13     pusha   6(r2)
14     calls   #2,PRINTF
15     clrl    r0
16     ret
```

Note

Symbolic language uses symbols, or mnemonics, to represent the various machine language instructions.

3. High Level Languages (HLL)

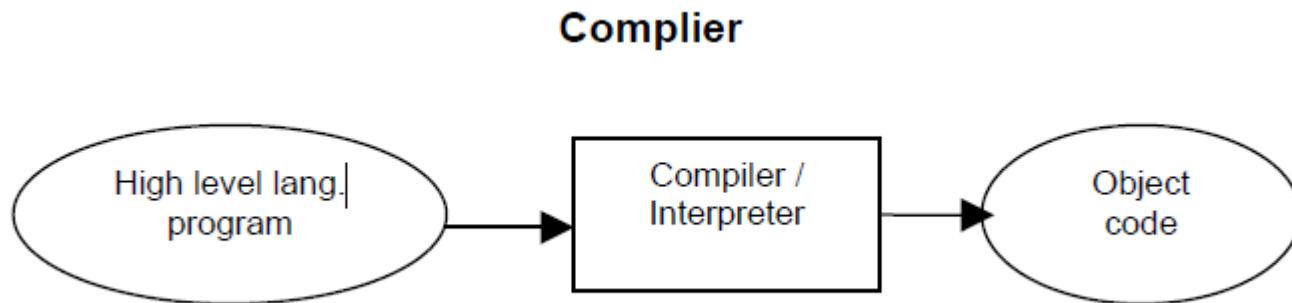
- High-level languages are machine independent. So, it is not necessary to know the architecture details of a processor to write the programs in these languages.

Ex: COBOL, BASIC, PASCAL, ADA, C etc.

- **Advantages:** Writing programs in High Level Languages is more easy because they provide the construct and set of statements which are easy to use.
- Writing a program for problem in higher-level language is easier than machine and assembly language. So, program development time in high-level language is low.

Translation of High-level language Program – Compiler/Interpreter

- The program written in a high-level language needs to be translated into the language, which a machine understands. Translation of a program from high-level language to low level language is done by the software called *Compiler & Interpreter*.



Differences between Compiler & Interpreter

Compiler	Interpreter
1. It takes the whole program and generates the object code.	1. It executes the program line by line.
2. In the compilation process, the whole program is scanned for syntax errors and the compiler lists all the errors at one time.	2. In the Interpretation process, translation is done line by line and the interpreter checks only one line at a time for the syntax error.
3. Execution time of the compiled code or object code is fast.	3. Execution time is slow.
4. Debugging of a program is difficult because all the errors are listed at every compilation attempt.	4. It is best suited for debugging process.

PROGRAM 1-3 The Multiplication Program in C

```
1  /* This program reads two integers from the keyboard
2   and prints their product.
3   Written by:
4   Date:
5 */
6 #include <stdio.h>
7
8 int main (void)
9 {
10 // Local Definitions
11     int number1;
12     int number2;
13     int result;
14
15 // Statements
16     scanf ("%d", &number1);
```

PROGRAM 1-3 The Multiplication Program in C (*continued*)

```
17     scanf ("%d", &number2);
18     result = number1 * number2;
19     printf ("%d", result);
20     return 0;
21 } // main
```

❖ Creating and Running Programs

In this section, we explain the procedure for turning a program written in C into machine language. The process is presented in a straightforward, linear fashion, but you should recognize that these steps are repeated many times during development to correct errors and make improvements to the code.

Topics discussed in this section:

- ✓ Writing and Editing Programs
- ✓ Compiling Programs
- ✓ Linking Programs
- ✓ Executing Programs

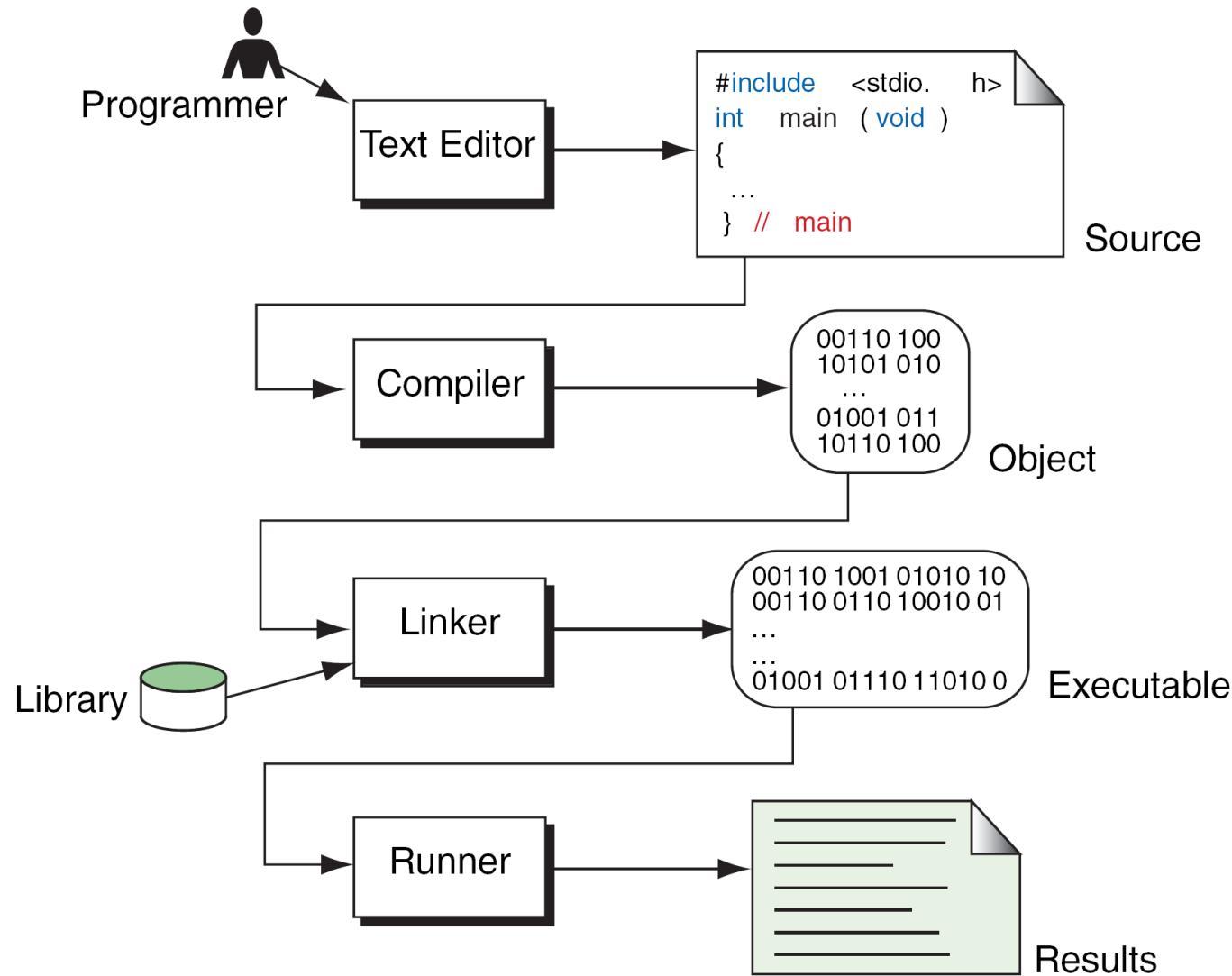


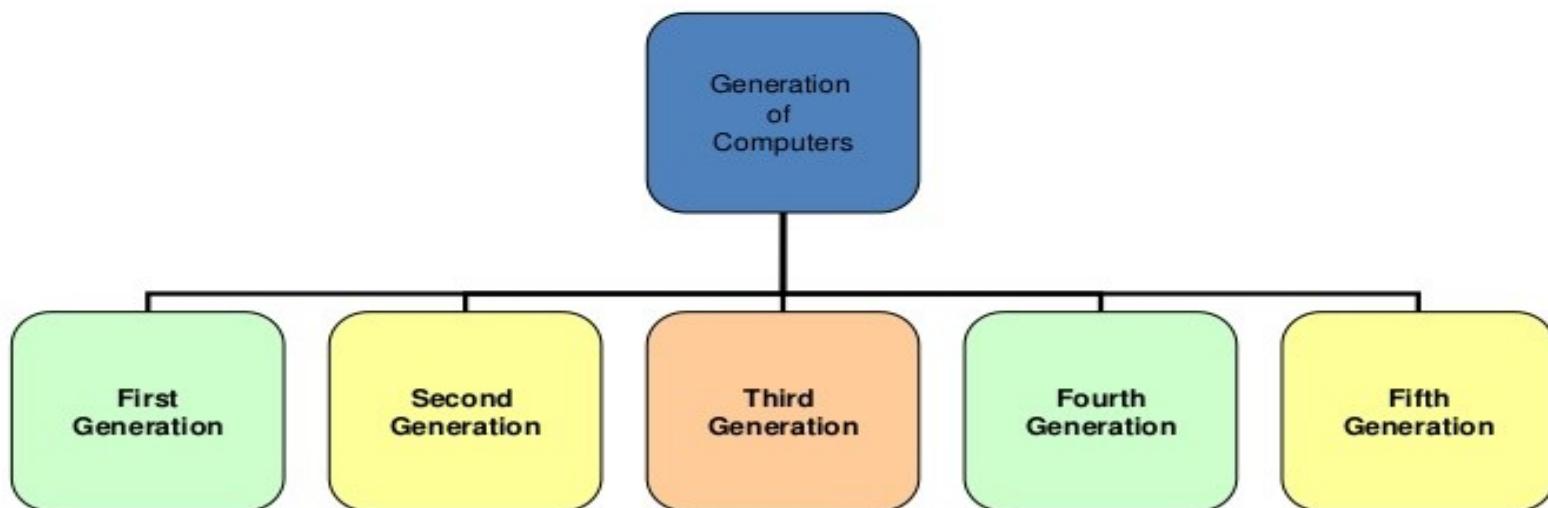
FIGURE 1-10 Building a C Program

I/O Devices

- **Input Devices:** devices through which computer receives the information
 - Keyboard
 - Mouse
 - Scanner
- **Output Devices:** The output device is used to display or print result from a computer
 - Monitor
 - Printers
 - Plotter

Generation of Computers

Based on the characteristics of various computers developed from time to time, they are categorized as generation of computers.



First Generation Computers

Time Period : 1951 to 1959
Size : Very Large System

Technology : Vacuum Tubes
Processing : Very Slow



First Generation Computers

Characterized By:-

- Magnetic Drums
- Magnetic Tapes
- Difficult to program
- Used machine language & assembly language

Second Generation Computers

Time Period : 1959 to 1963
Size : Smaller

Technology : Transistors
Processing : Faster



Second Generation Computers

Characterized By:-

- Magnetic Cores
- Magnetic Disk
- Used high level language
- Easier to program

Third Generation Computers

Time Period

: 1963 to 1975

Technology

: ICs (Integrated Circuits)

Incorporated many transistors & electronic circuits on a single chip

Size

: Small as compared to 2nd generation computers

Processing

: Faster than 2nd generation computers



IC (Integrated Circuit)

Characterized by:-

- Minicomputers accessible by multiple users from remote terminals.

Fourth Generation Computers

Time Period	: 1975 to Today
Technology	: VLSI (Very Large Scale Integration) Incorporated many millions of transistors & electronic circuits on a single chip
Size	: Small as compared to first generation computer
Processing	: Faster than first generation computer



Characterized by:

The personal computer and user friendly micro-programs, very fast processor chip high level language, OOP (Object Oriented Programming)

VLSI (Very Large Scale Integration)

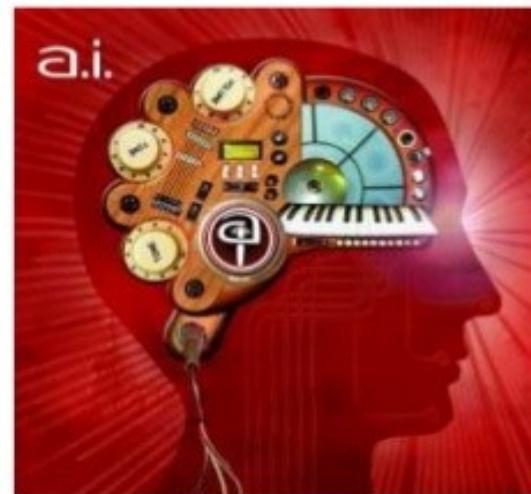
Fifth Generation Computers

Time Period
Technology

: Future Technology
: AI (Artificial Intelligence)



Fifth Generation Computer



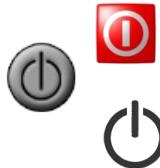
AI (Artificial Intelligence)

How to Start?



How to start?

- **Power Up**
 - **Turning on your Computer**
 - **Universal Power Symbol** – most electronic devices such as computers, printers and scanners will have a button that displays this symbol. Simply, press the corresponding button to power up your computer.
- **Turning off your Computer**
 - When powering down your computer, check to make sure all programs are closed and files are saved. Properly remove any connected devices, such as Mp3 players and USB Flash Drives.
 - Click “Start” then “Shutdown” to power off your computer.



Operating System



Windows XP is the operating system used for this class. As an operating system Windows XP manages all that the computer does. The main screen is called the "Desktop" you can get to everything your computer can do.



My Computer



My Documents



Internet
Explorer



My Network
Places

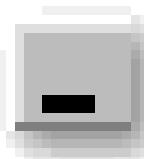
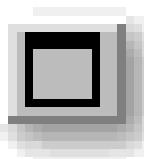
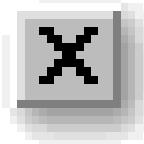


Recycle Bin

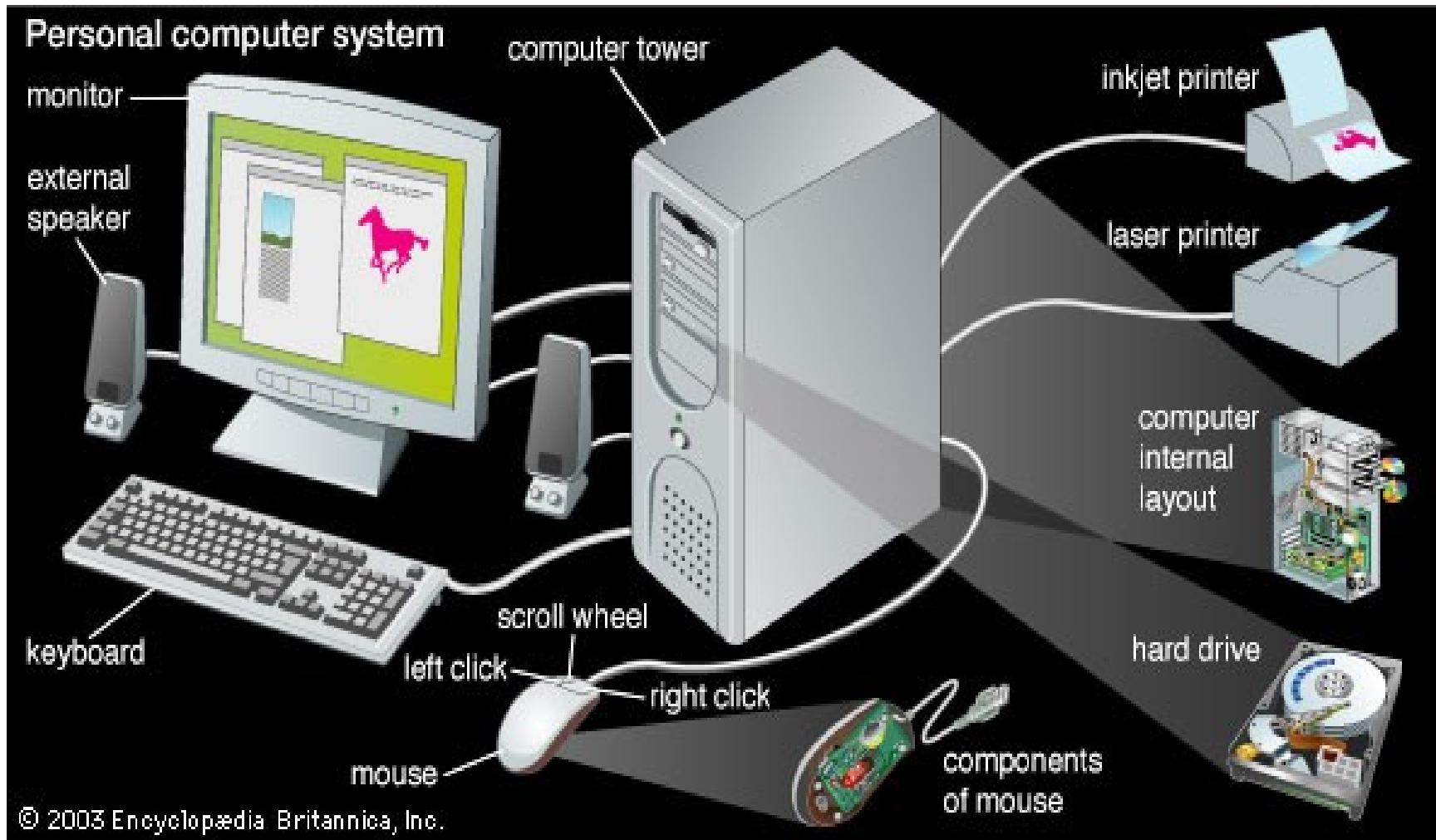
“Desktop”

Moving your program window.

- **Close** -- *Click* on the button marked with an “x.”
Clicking on this button stops the program you are using.
- **Maximize** -- This button opens a program's window so that it fills the screen as much as it can.
- **Minimize** -- This button puts a program on hold and places it on the taskbar at the bottom of your screen. To re-open a program that is on the taskbar *click* on the box which represents the program you want to open.



❖ Parts of a Computer



❖ **Monitor:**



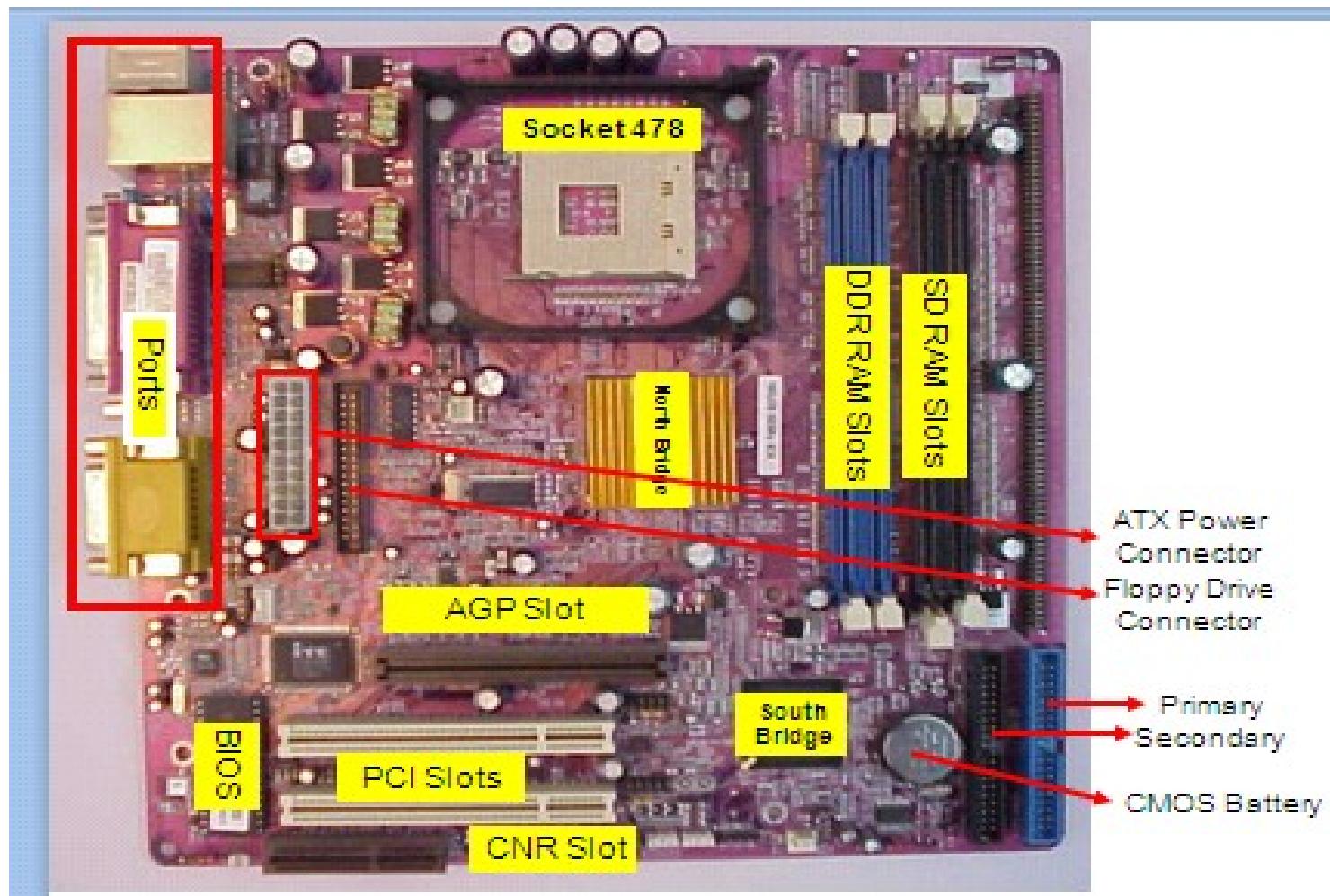
❖ Mouse



❖ Keyboard:



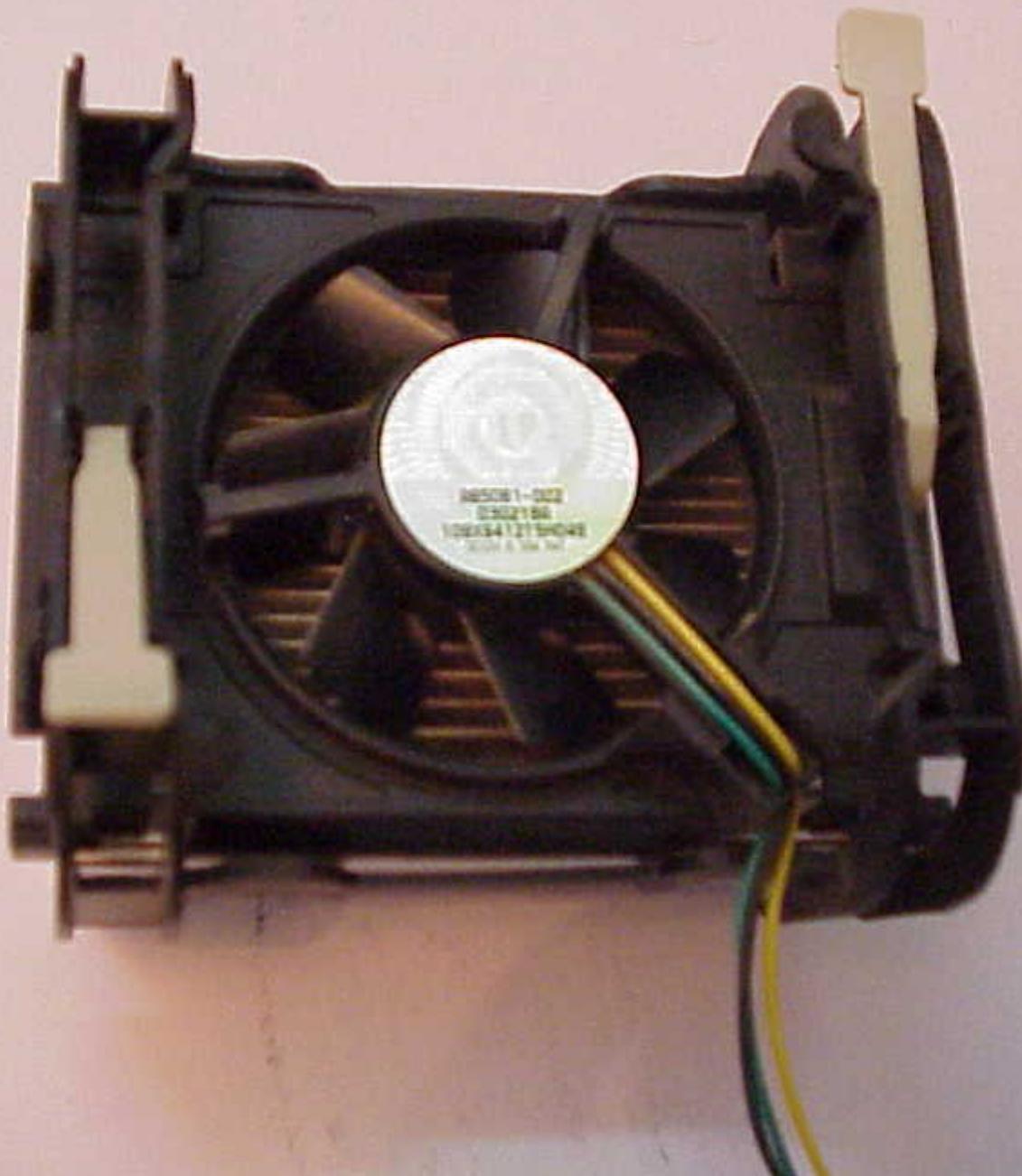
❖ Motherboard



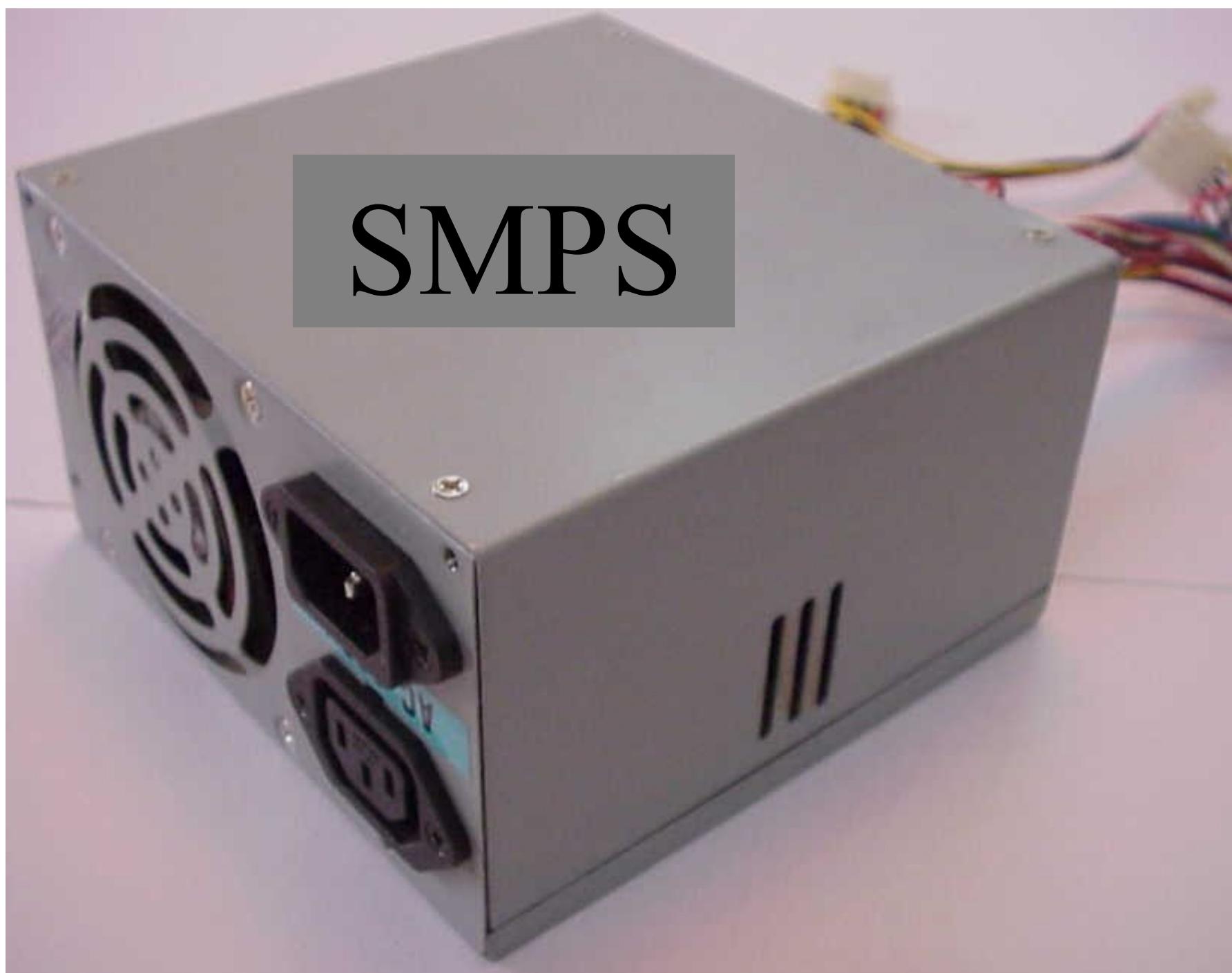
❖CPU



CPU Heat Sink & Fan



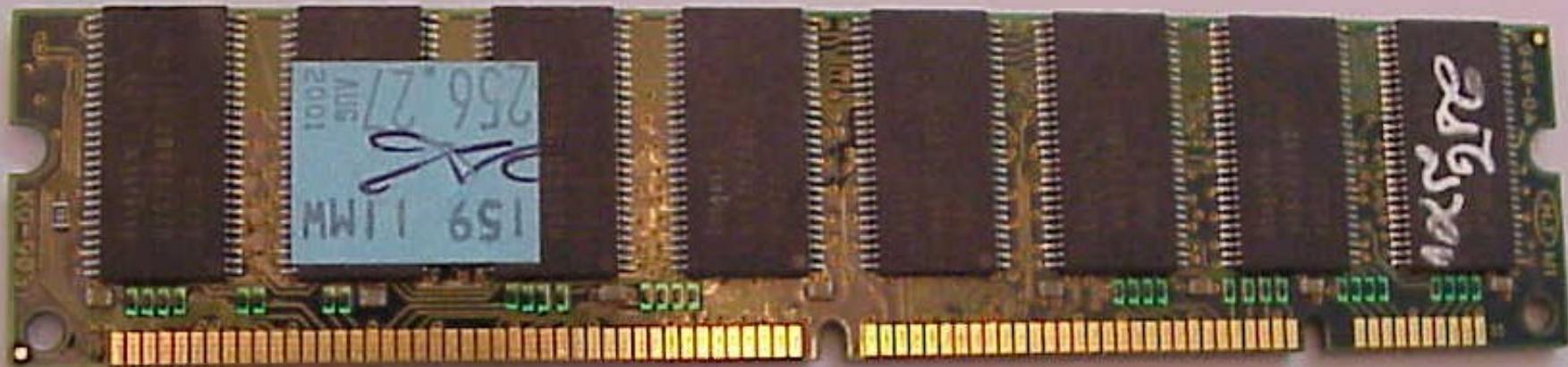
SMPS



Cabinet



Random Access Memory

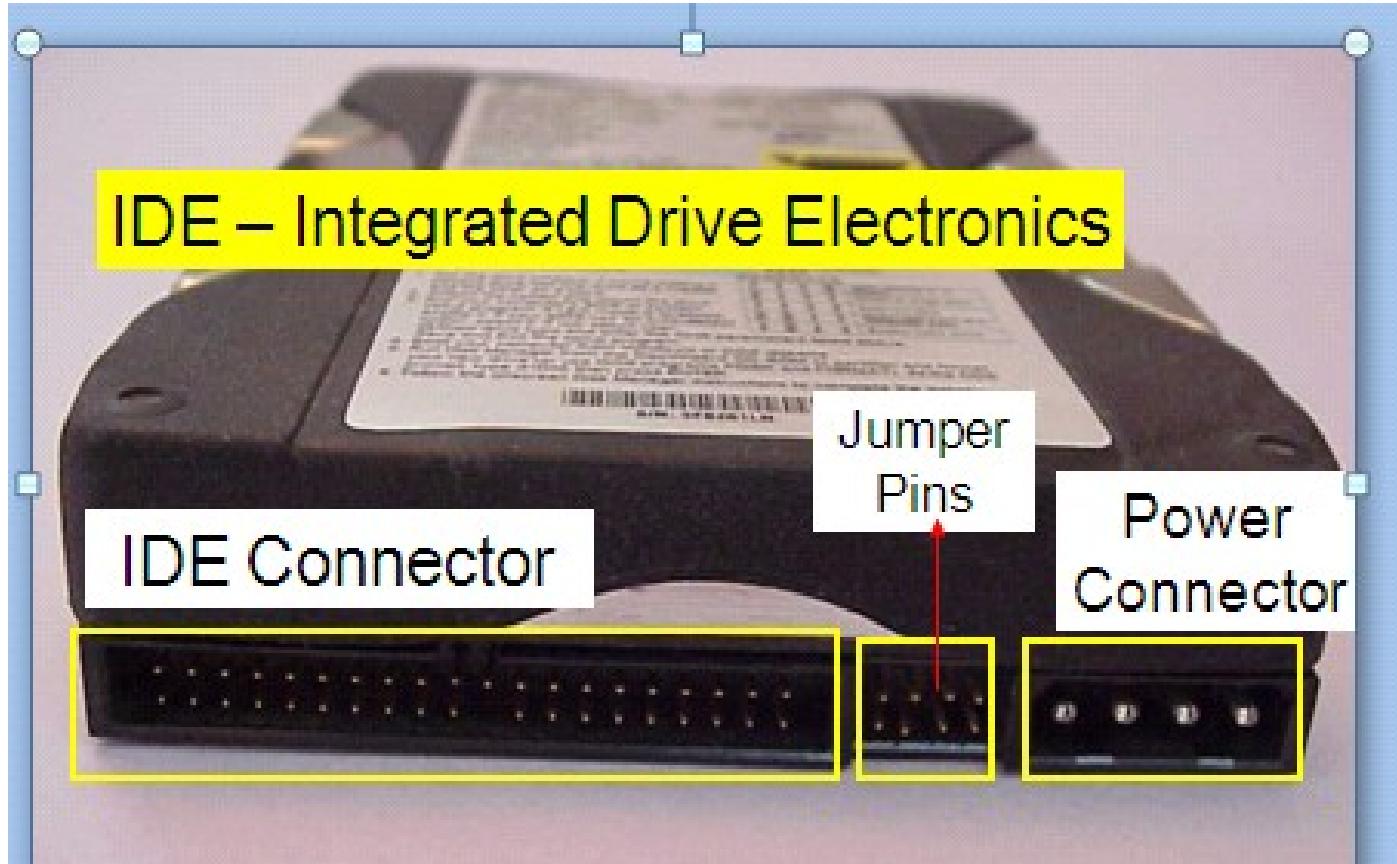


SD (Synchronous Dynamic) RAM



Hard Disk Drive (HDD)

❖ Hard Disk



CD ROM Drive



CD Writer



Screws



OPERATING SYSTEMS

Introduction of Operating System

What is an operating system?

An operating system is a program that acts as an intermediary between the user and the computer hardware. The purpose of an OS is to provide a convenient environment in which user can execute programs in a convenient and efficient manner.

It is a resource allocator responsible for allocating system resources and a control program which controls the operation of the computer hardware.

What are the different operating systems?

- **GUI**
- **Multiprocessing**
- **Multiuser**
- **Multitasking**
- **Multithreading**

GUI : GUI Operating System contains graphics and icons that are manipulated using a mouse or other input device.

Multiprocessing: An Operating System capable of supporting and utilizing more than one computer Processor.

Multiuser: The multiuser Operating system allows many people to use it all at once or at different times.

Multitasking: A Multitasking Operating System can run multiple programs at the same time.

Multithreading: A Multithreading Operating System allows different parts of software to be run concurrently.

Assembling and Disassembling.

- Disassembling a PC
- Requirements for Disassembling:
 - ✓ P.C Which is assembled
 - ✓ Screw driver
 - ✓ Cutting player
 - ✓ Tester

Procedure:

- Step1: Shut down the PC if it is running
- Step2: Switch off power supply and remove power cables from the power supply switch.
- Step3: Remove all the cables connected to CPU i.e.,
 - Power plugs which are connected to CPU and Monitor
 - Remove all the cables from Input/ output panel ports.
 - Display cable
 - Keyboard
 - Mouse
 - Printer and LAN
 - Audio ports
 - Serial Port

- **Step4:** Remove the screws of the slides from the cabinet and then remove the slides from the Cabinet
- **Step5:** Remove the power cables and data cables which are connected to mother board and hard disk, CD-Drive, Floppy Drive.
- **Step6:** Remove the front panel cables from the motherboard which are power –led , key switch, hard disk ,drive led, Reset switch led, turbo switch led.
- **Step7:** Remove the cable of Mother Board speakers.
- **Step8:** Remove the screws of SMPS and Remove SMPS from the Cabinet.

- **Step9:** Remove all expansion cables from motherboard which are LAN, MODEM, Display...
- **Step10:** Remove the screws of Hard Disk , CD-Drive and Floppy drive and then remove Hard Disk, CD-Drive , Floppy drive from the Cabinet.
- **Step11:** Remove the Screws of Mother Board and then remove motherboard from the cabinet.
- **Step12:** Remove the Locks of RAM and then remove the RAM from motherboard

- Step13: Remove the Power cable of processor Fan.
- Step14: Remove the Locks of Processor fan and the Remove Fan from the Processor.
- Step15: Remove the heat sinker from Processor.
- Step16: Open interlocks of processor and then remove the processor from processor slots/slogs.
- Step17: Remove the CMOS Battery (Locks) from the Motherboard

ASSEMBLING

➤ **REQUIREMENTS FOR ASSEMBLING THE P.C TOOLS:-**

➤ **Screw Driver**

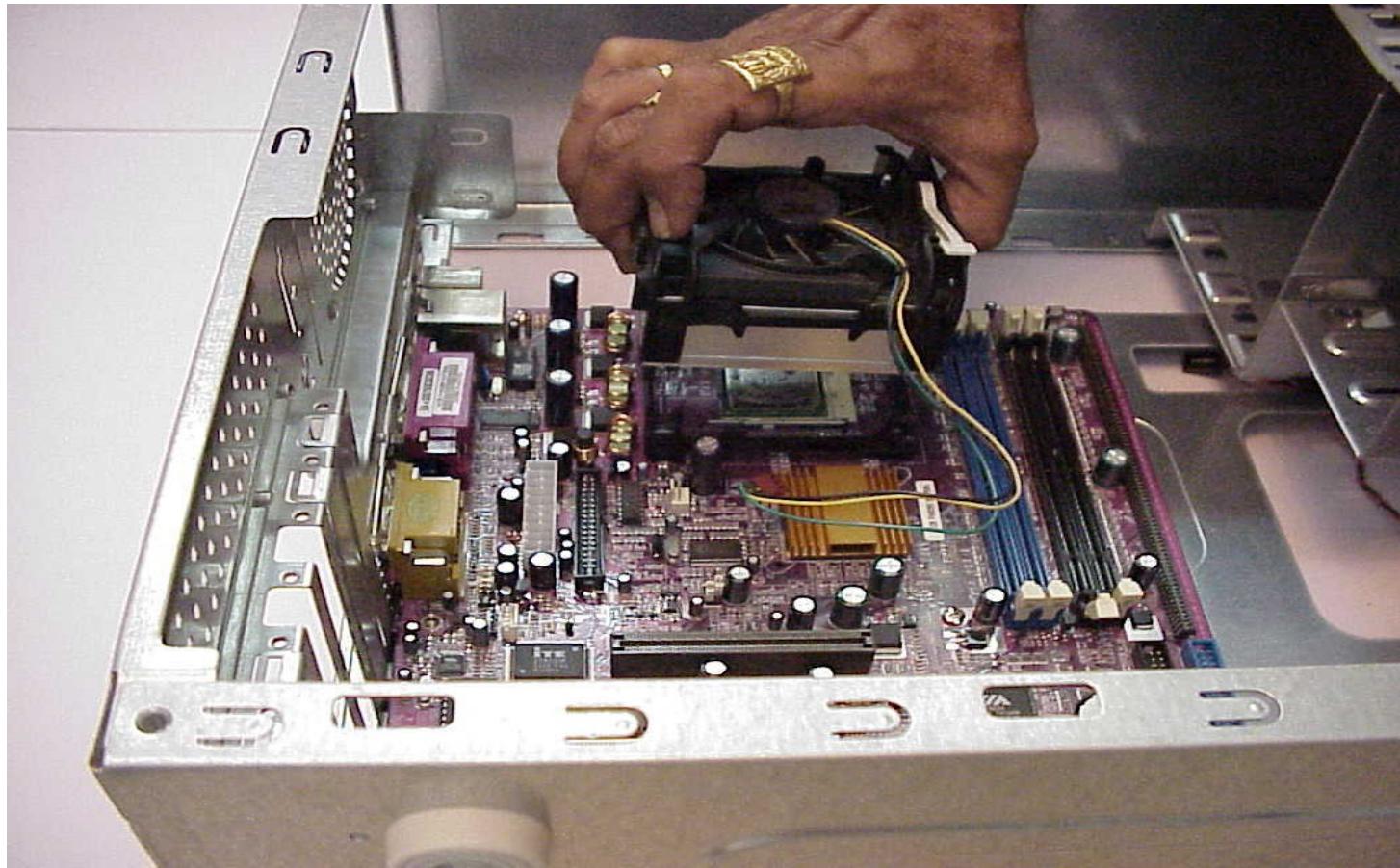
➤ **Cutting Player**

➤ **Tester**

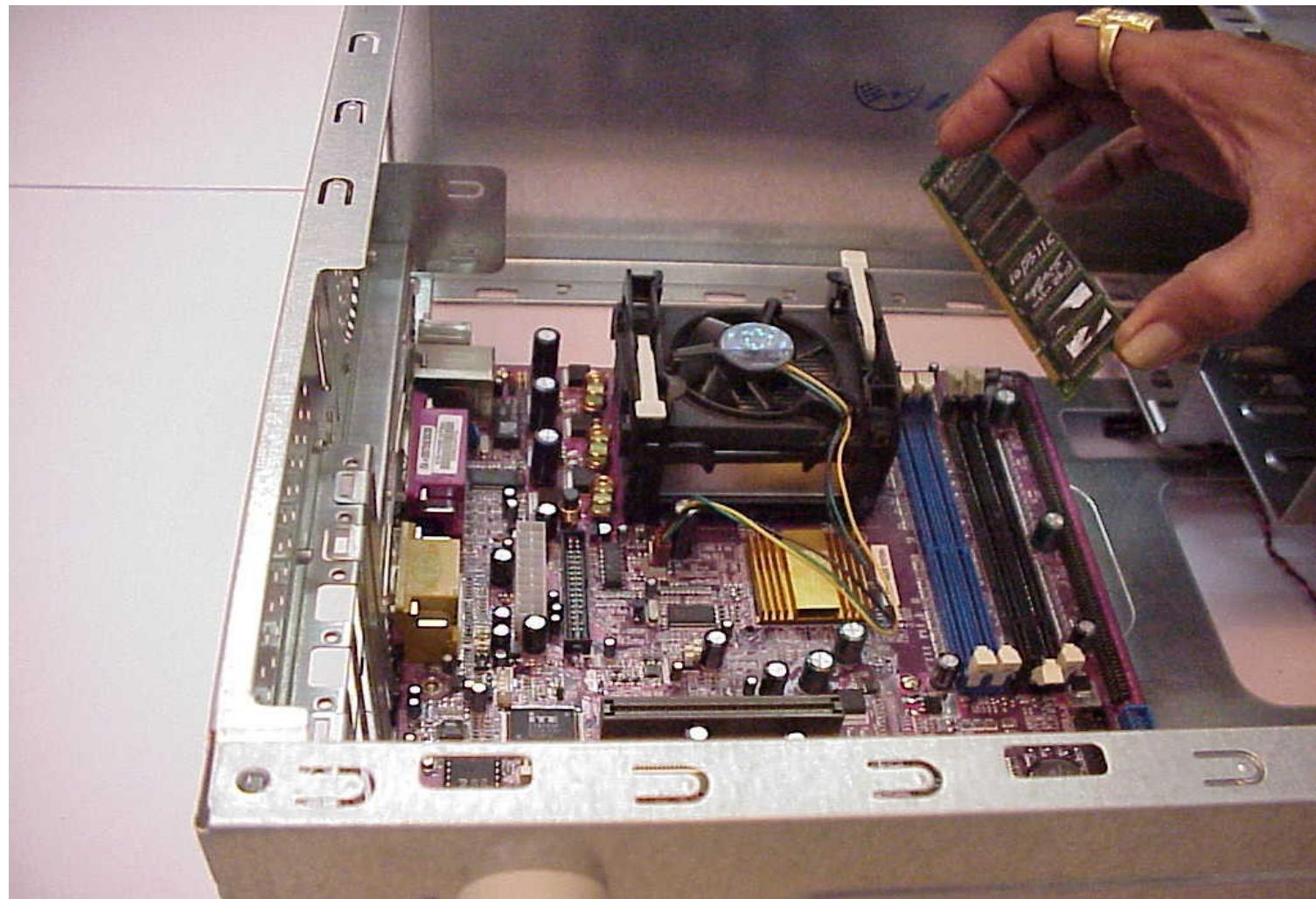
➤ **COMPONENTS FOR P.C:**

- Case
- Mother Board (ATX & NLX)
- Connectors
- Power supply
- Front Panel (power switch led)
- Back I/O panel (serial, parallel , USB Ports
- Expansion Slots
- Memory module
- CPU
- Fans and Filters.

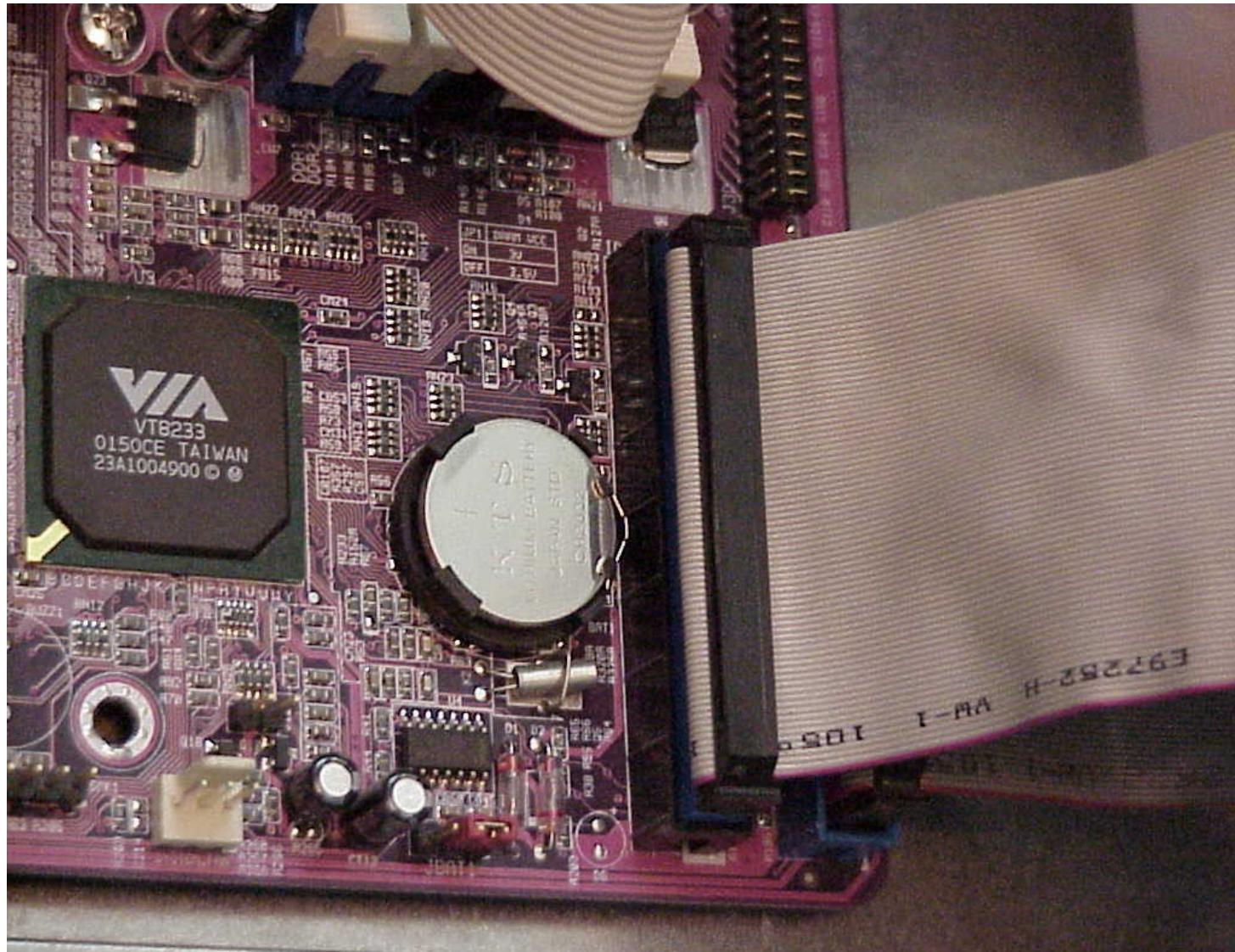
- Steps Required for P.C ASSEMBLING:
- Step1: Installation of CPU(Follow motherboard Manual)Install Heat sinker Fan, do CPU arrangements , CPU sockets and Slots.



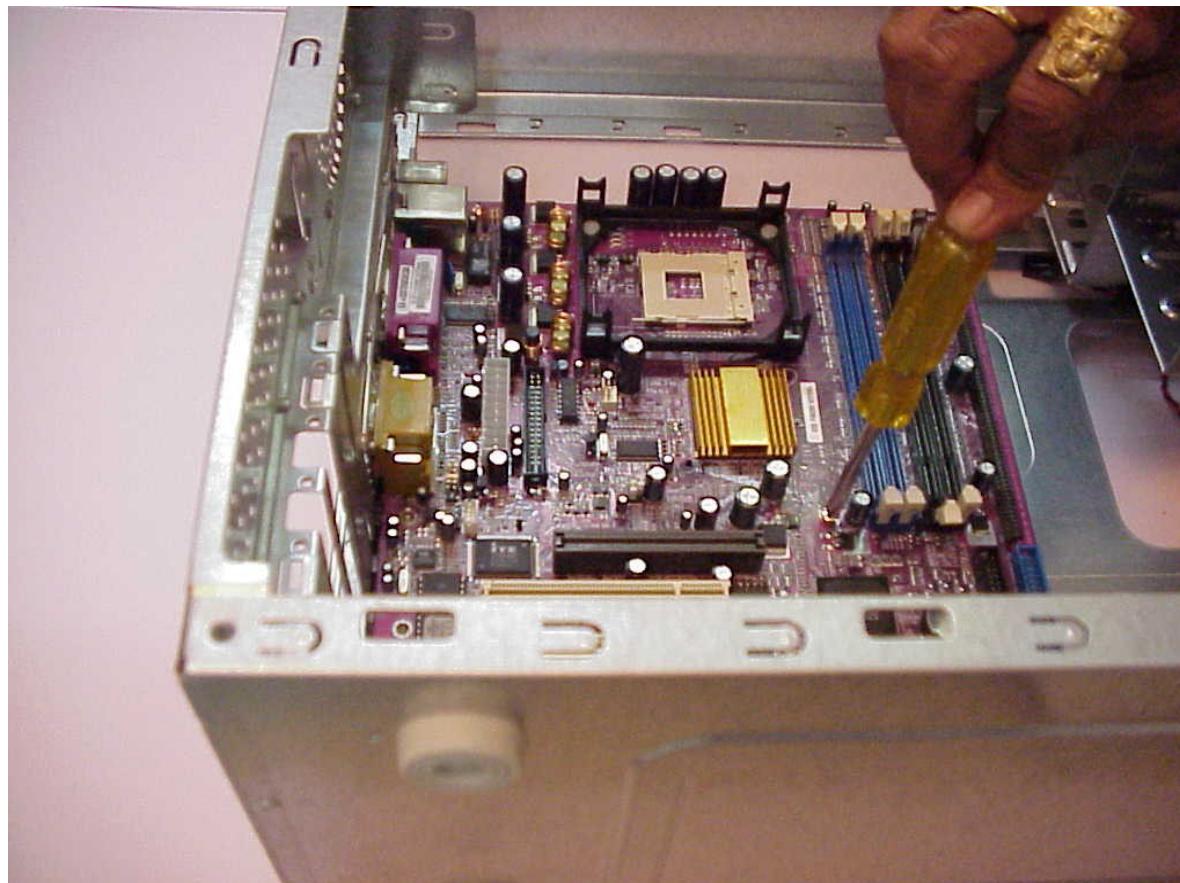
- Step2: Installation of Memory , SDR and DDR Memory.



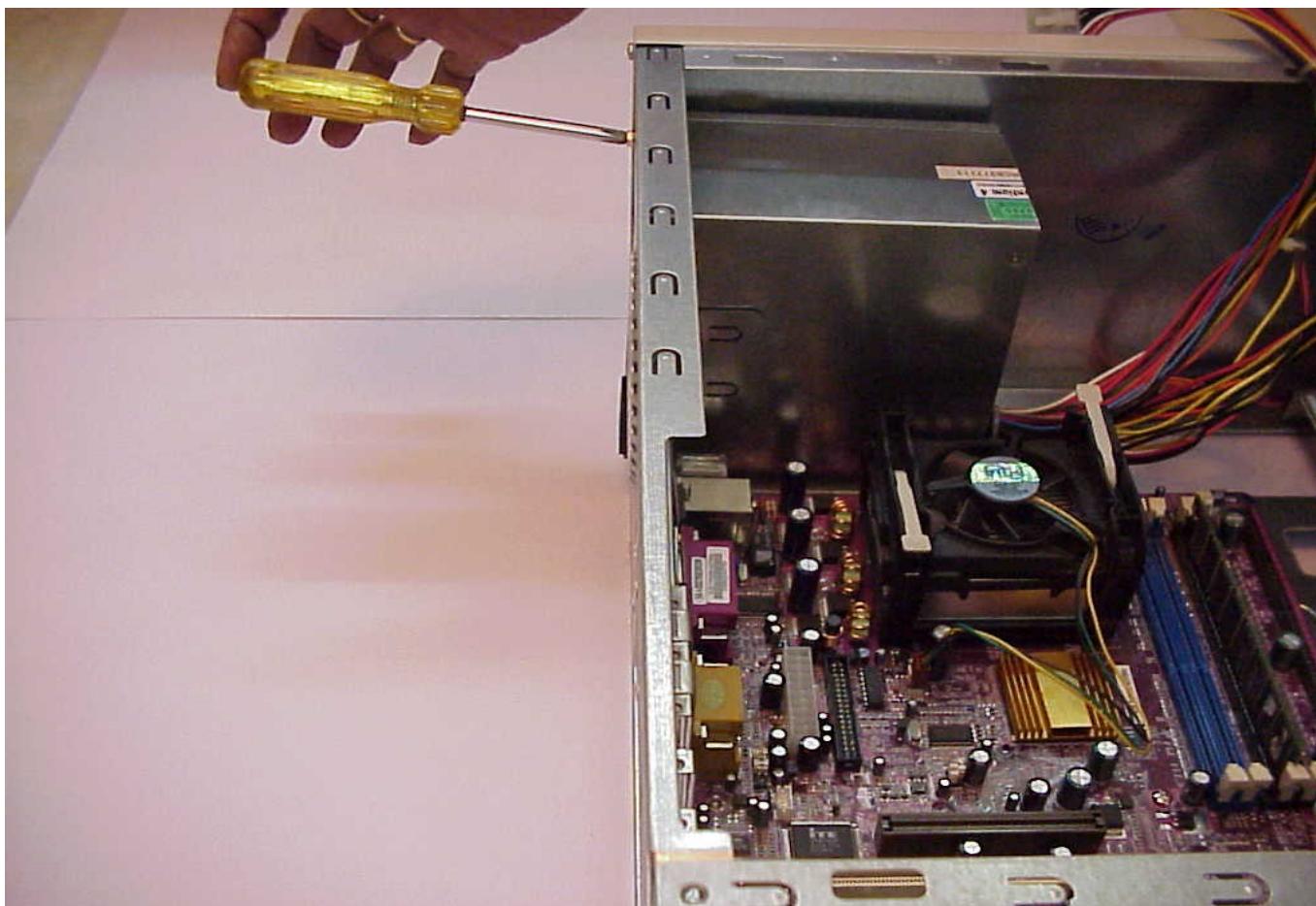
- Step3: CMOS Battery installation (configure, Clock speed, Jumper and multiplier Jumper)



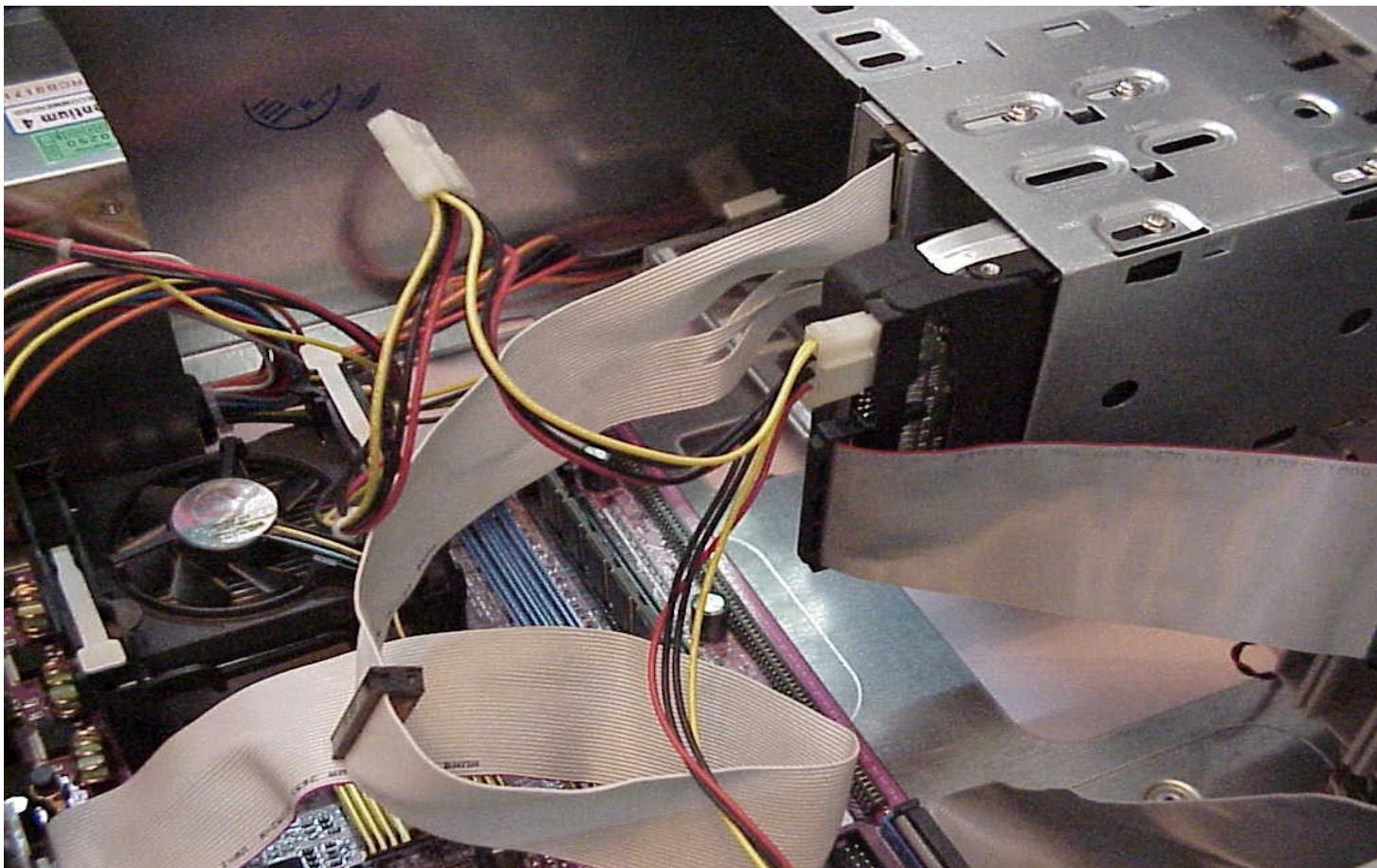
- Step4: Install motherboard in case. Install wires for front panel and mother power connectors.
- Take antistatic precautions property mount motherboard and screws it with screws gently, properly aligns expansion slots and ensure ports. Proper accessibility at the back.



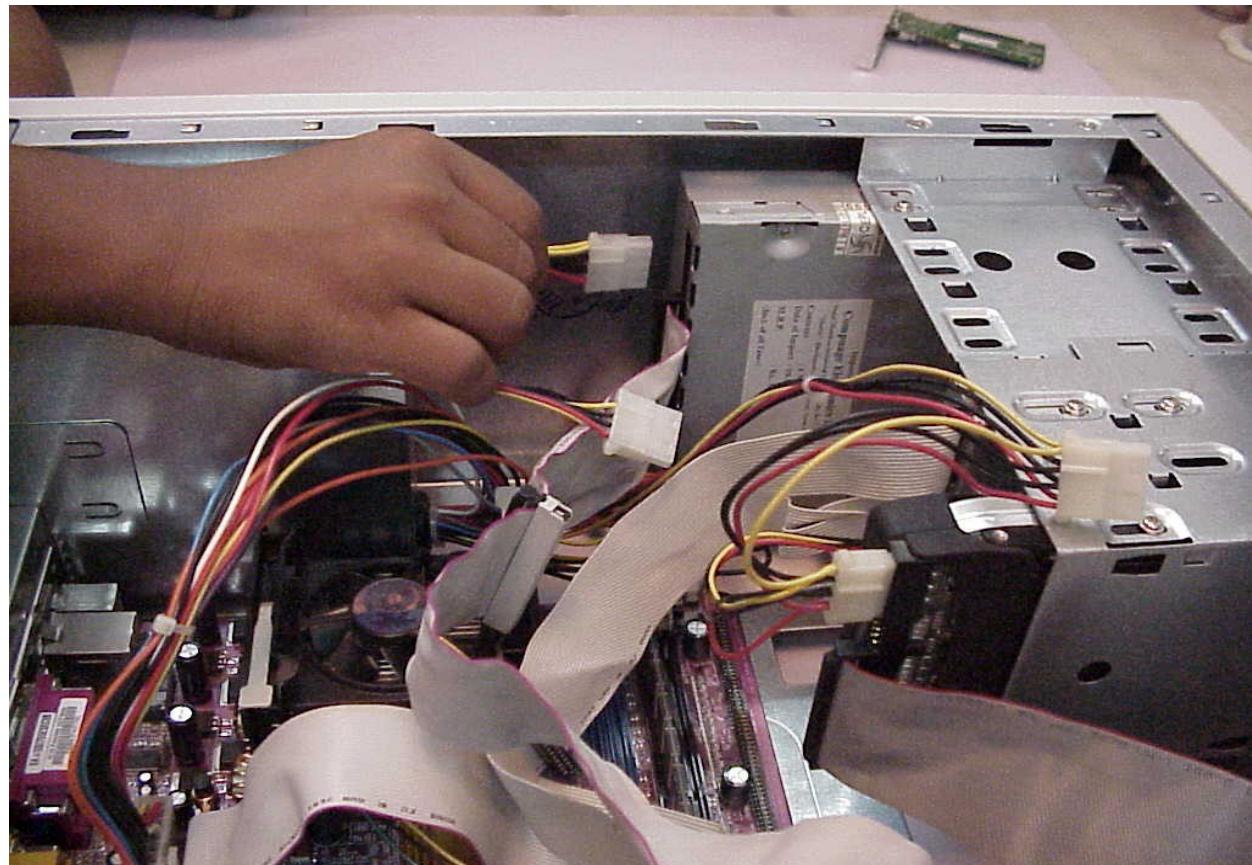
- Step5: Case wiring (front panel ports) connect various wires like those power led, Keys which restart switch, HDD led, Turbo switch and etc. to corresponding motherboard positions.
- Step6: Install the power supply (install SMPS)



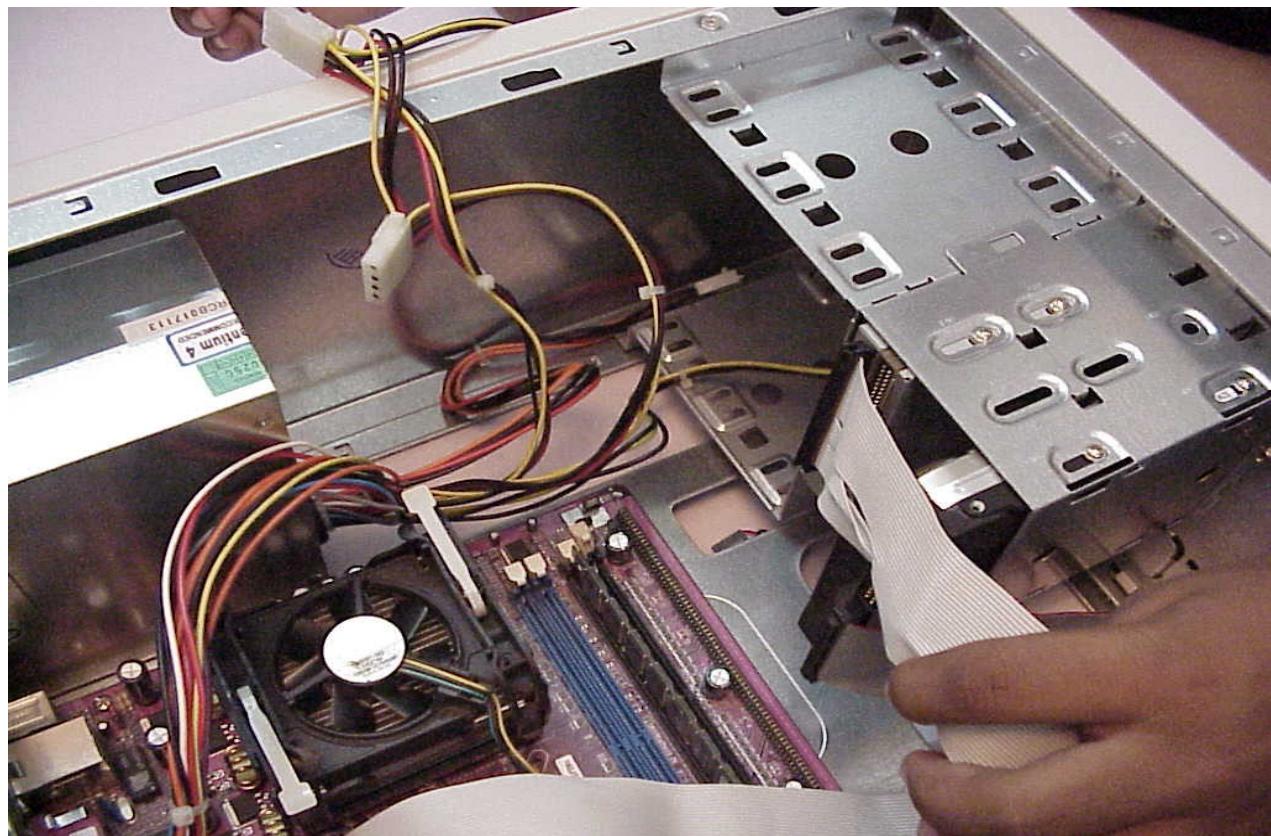
- Step7: Hard disk drive system installation. As Motherboard already provides a aida HDD controller, simply connect hard disk drive to this controller, and enable controller. Take HDD cable of 40 Pins and attach correct and to the 40 pin HDD header on the Motherboard



- Step8: CD-ROM Drive:
- Installing on IDE (Integrated Development Environments) secondary channel of the controller. Explain connections pin alignments, master slave combination.



- Step9:Floppy drive installation
- If controller already is motherboard, don't install a new controller, simply connect the floppy drive cable to an attach the controller. End to the 34 pin floppy drive disk (FDD) Header on the motherboard (take care of pins Alignments)



- Step 10: Sound board Installation:
- Installing an audio card, which use different interrupts .IVO address and one DMA channel(Direct memory access). Beware of hard complies plug and plug type to do automatically other jumper settings like MIDI and game board setting.
- Step 11: System precaution:
- Before closing things up, check whether all Hardware is physically, properly installed and connected before installing on hard disk, check the following
 - a) Securing of motherboard , expansion boards and etc., no louse screws.
 - b) Check proper seating of expansion cards no interference with CPU RAM Chips.
 - c) Routing properly , Ribbon cables etc.. always from heat of supply , Fans, Video ports.

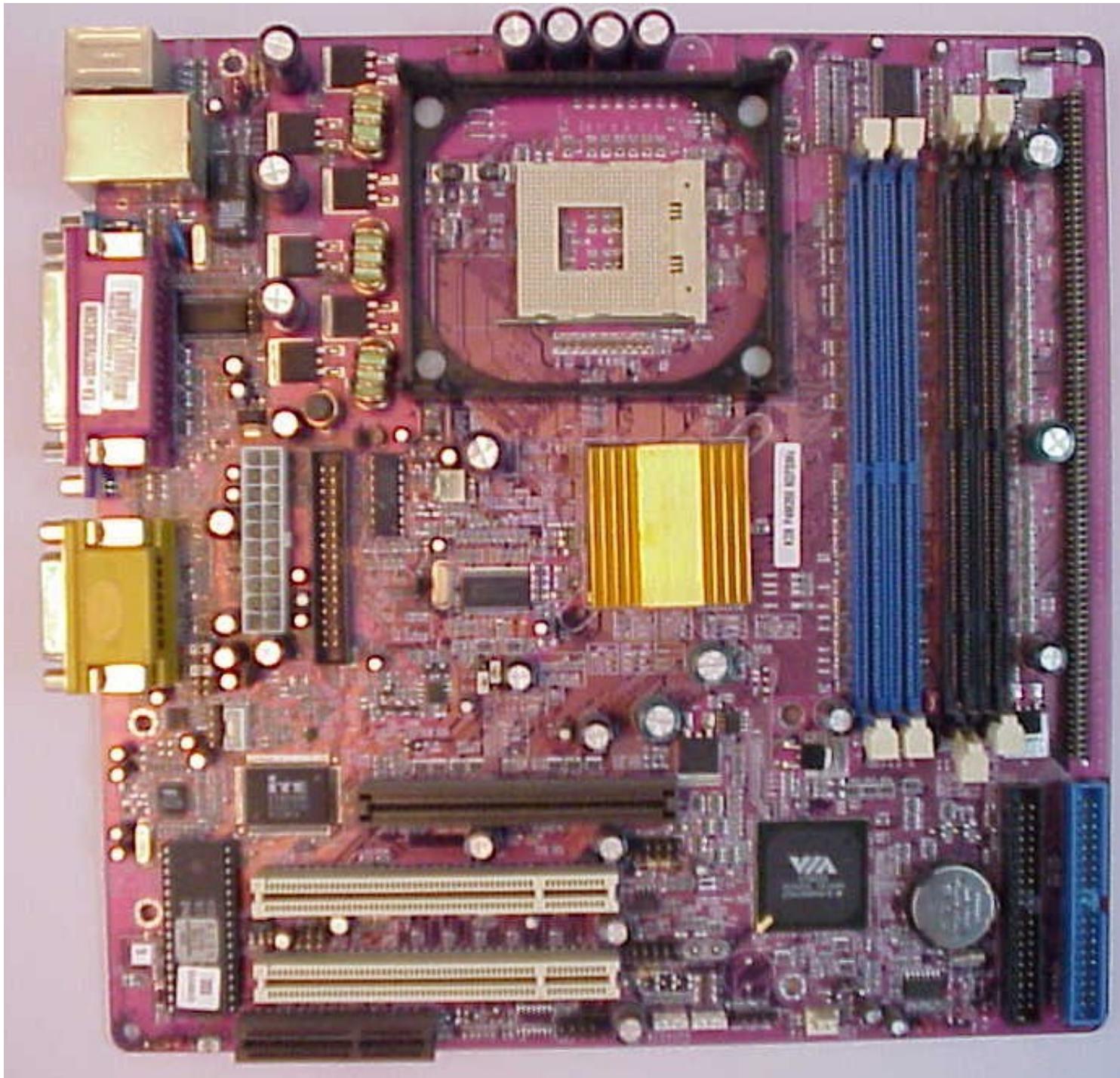
- Step12: Back up the CMOS
- If motherboard has a video port already attached. Connect monitor to this port , enable video controllers, loading monitor drivers, choosing resolution.
- Step13:Keyboard Installation
 - ✓ Attach the keyboard cable to the corresponding port in the case. This port would be connected to motherboard.
- Step14:Install the Mouse
 - ✓ If there is a serial port to connect attach cable to proper connectors.
 - ✓ Explain difference with PS/2 mouse and adaptor
 - ✓ Explain bus mouse and how it is configured in open ISA slot.

- Step15:Burn in Test
- Check component Failures by keeping devices and PC powered on long periods after it is completely and successfully assembled.
- Step16:Step Button Up
- When all hardware components installed and connected, PC Powered on and everything working properly than close the outer casing and bolt it

Parts of
a computer

In this section you will know about

- The Mother Board



In this section you will know about

- The Mother Board
- CPU

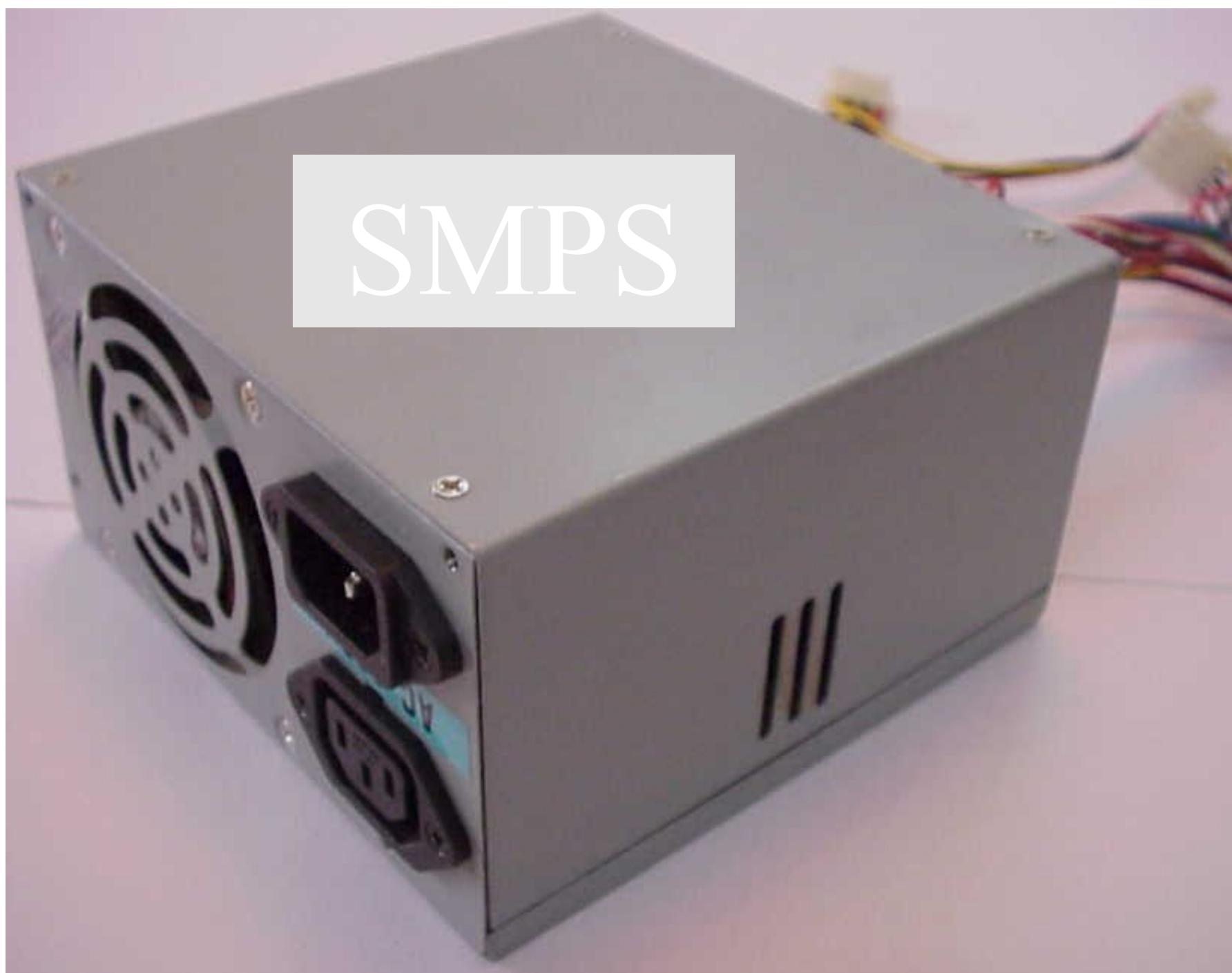
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PENTIUM®4
1.6GHZ/256/400/1.75V
SL5VH COSTA RICA
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In this section you will know about

- The Mother Board
- CPU
- SMPS

SMPS



In this section you will know about

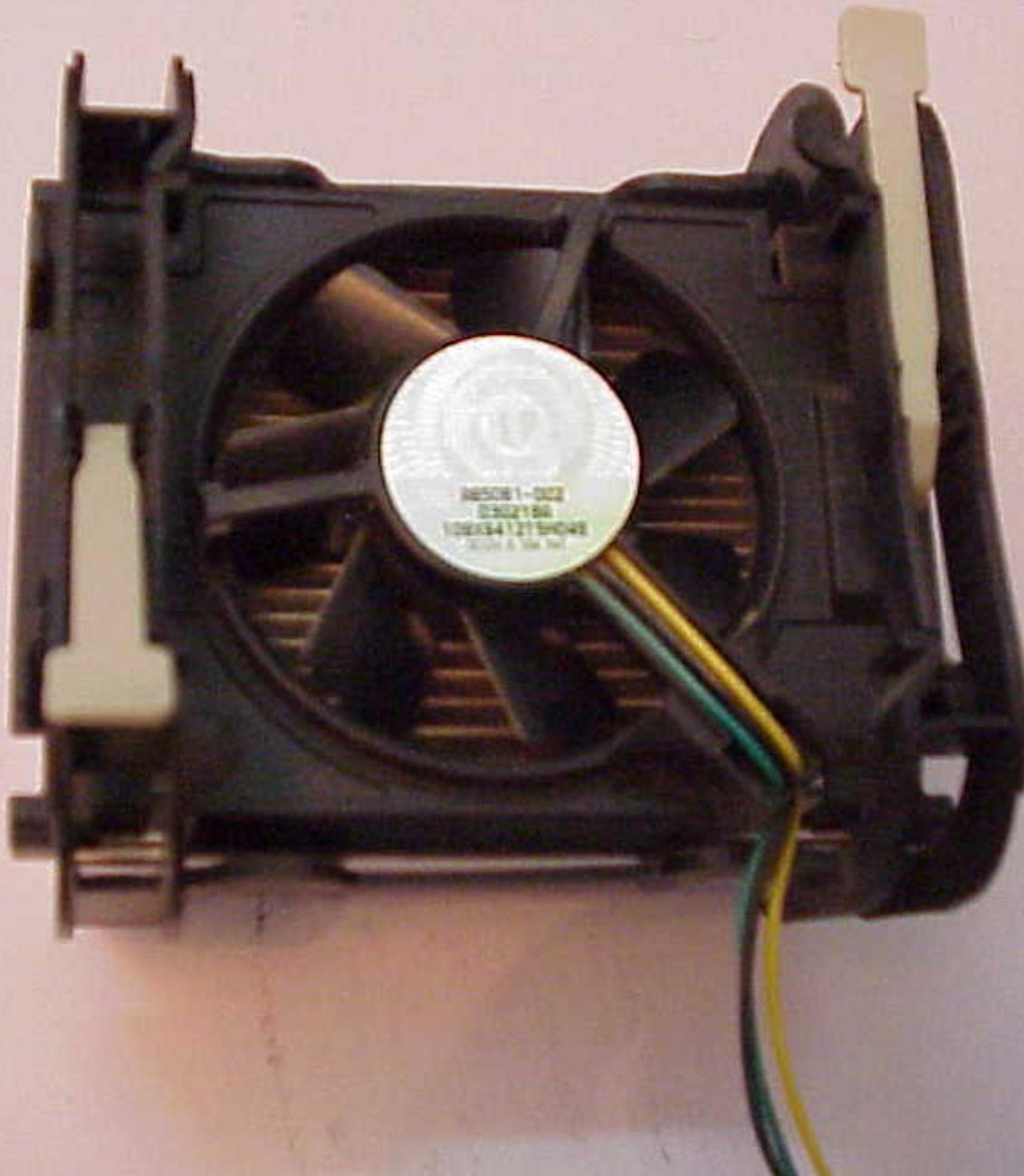
- The Mother Board
- CPU
- SMPS
- Cabinet



In this section you will know about

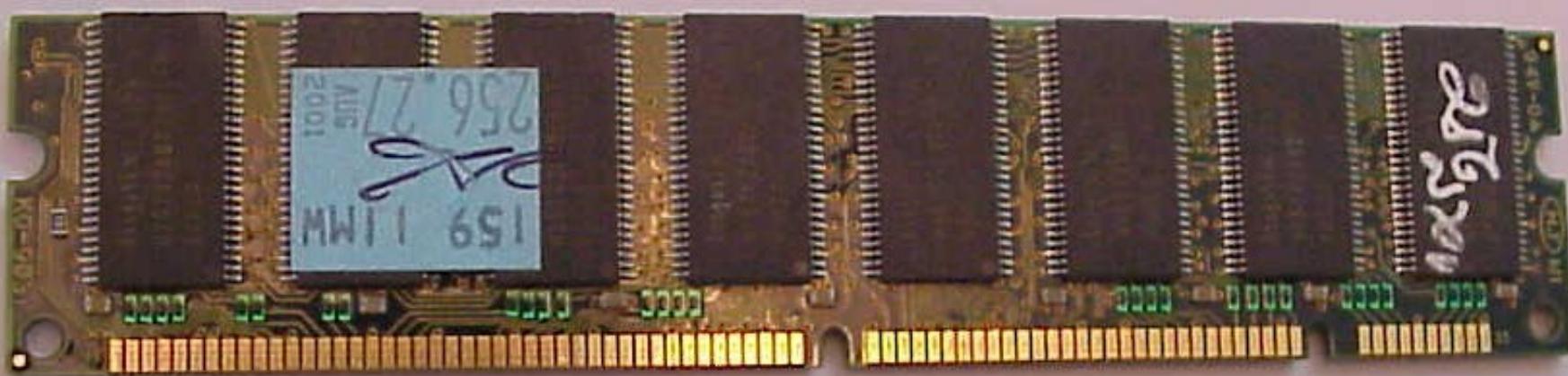
- The Mother Board
- CPU
- SMPS
- Cabinet
- CPU Heat Sink & Fan

CPU Heat Sink & Fan



In this section you will know about

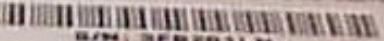
- The Mother Board
- CPU
- SMPS
- Cabinet
- CPU Heat Sink & Fan
- RAM



In this section you will know about

- The Mother Board
- CPU
- SMPS
- Cabinet
- CPU Heat Sink & Fan
- RAM
- Hard Disk Drive (HDD)

1. This device is designed to be used with a 12V DC power source.
2. Do not use with other power sources or voltages.
3. Power consumption is approximately 10W at 12V DC.
4. Power consumption is approximately 10W at 12V DC.



S/N: 3F0201LN

In this section you will know about

- The Mother Board
- CPU
- SMPS
- Cabinet
- CPU Heat Sink & Fan
- RAM
- Hard Disk Drive (HDD)
- Floppy Disk Drive (FDD)



Contd...

- CD ROM Drive

Windows® 98

SAMSUNG



FCC

CD-MAXX 22E MODEL SC-152

SAMSUNG

22K Max

disc

Contd...

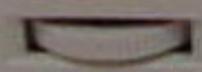
- CD ROM Drive
- CD Writer



LG

COMPACT
disc!
ReWritable

52x24x 52x



Contd...

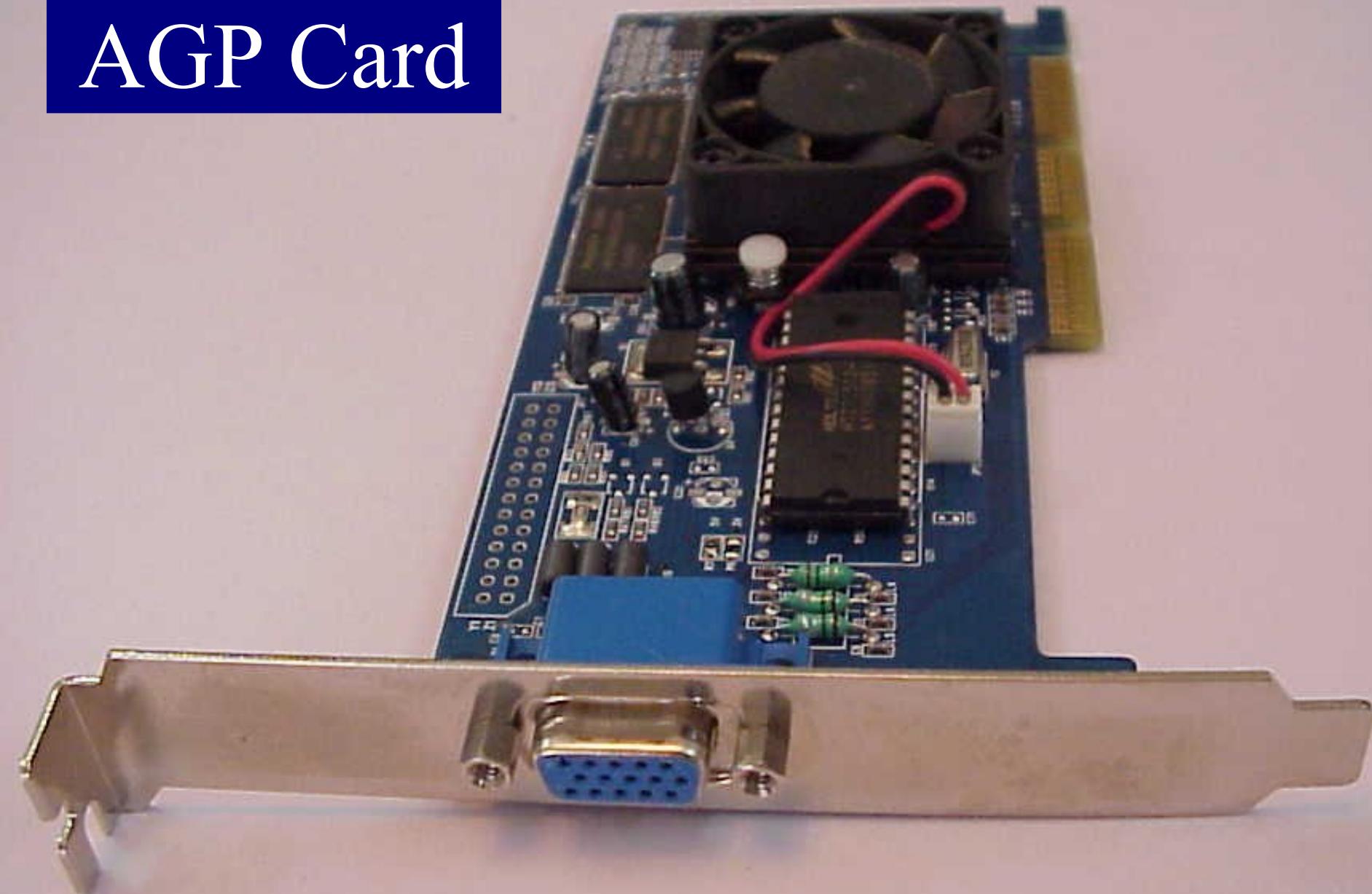
- CD ROM Drive
- CD Writer
- Different Screws Used



Contd...

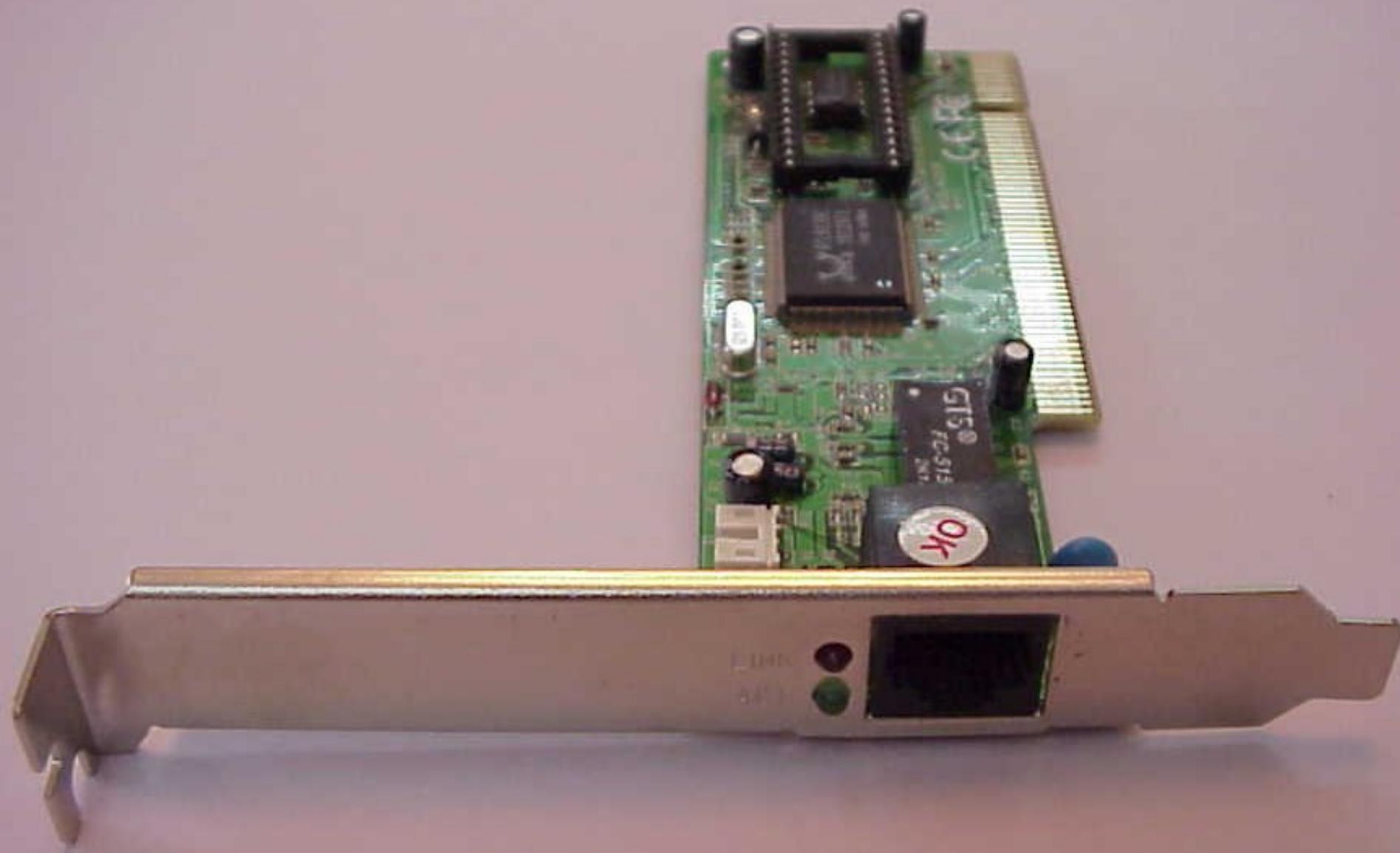
- CD ROM Drive
- CD Writer
- Different Screws Used
- AGP Card

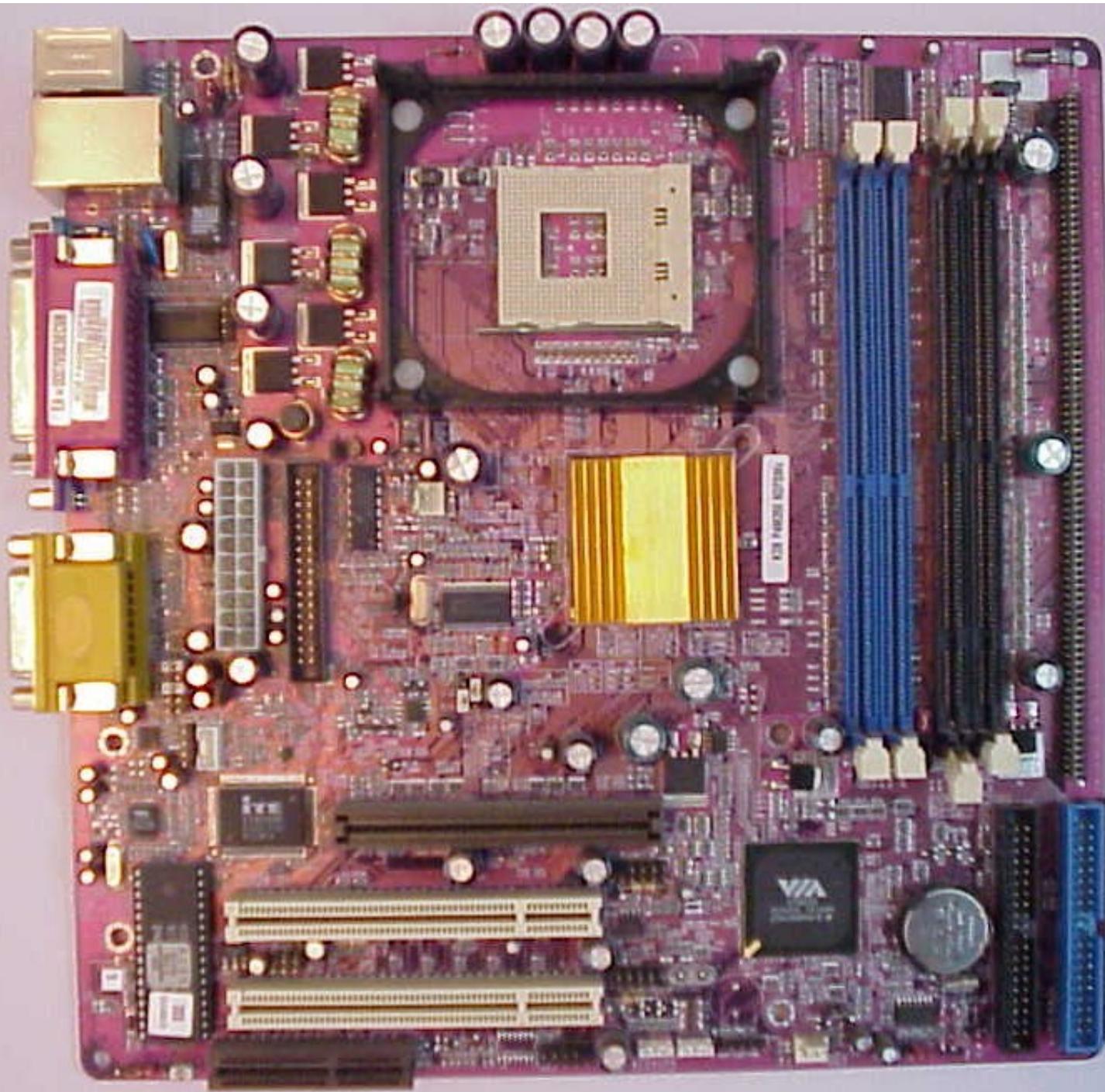
AGP Card

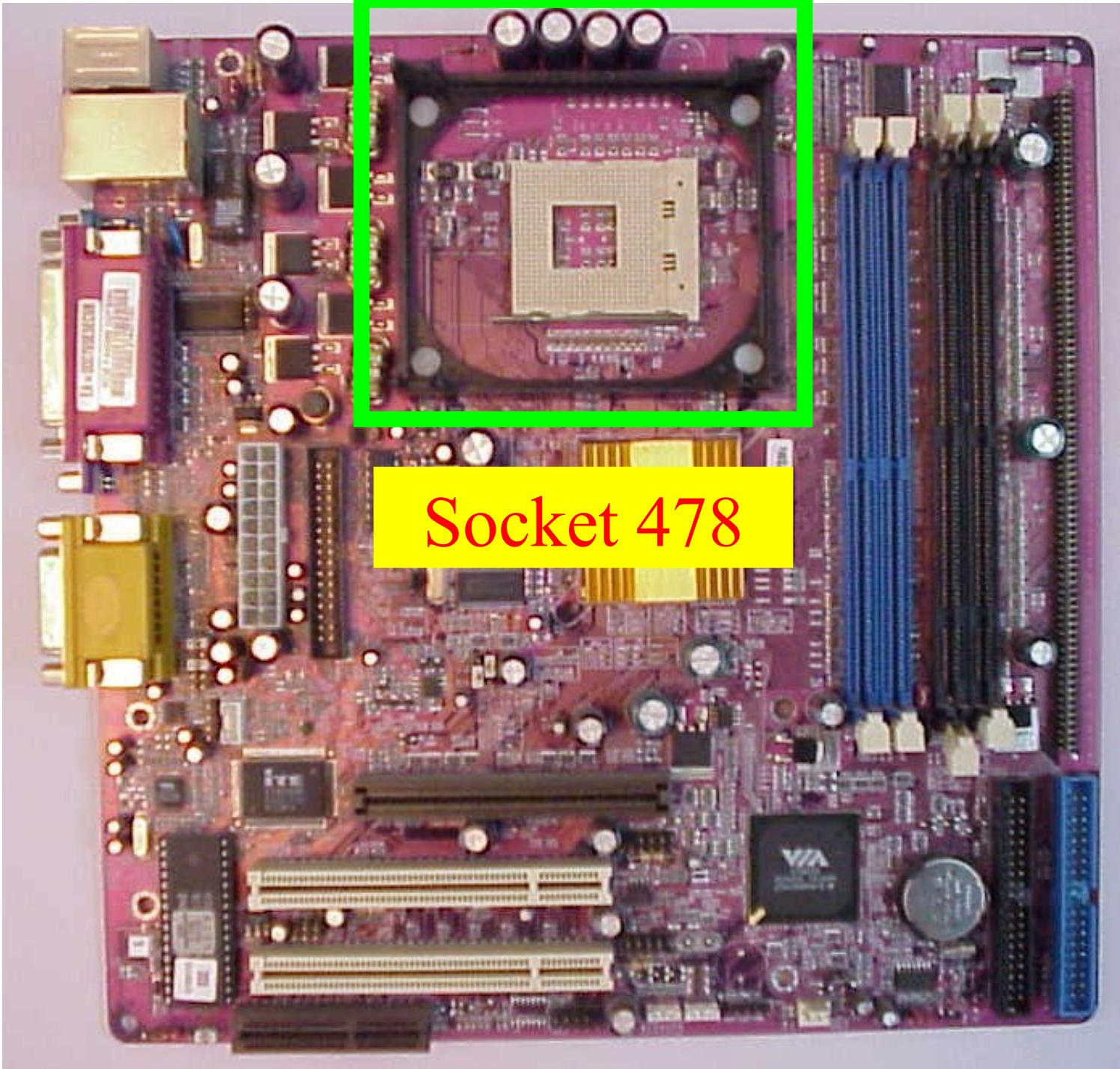


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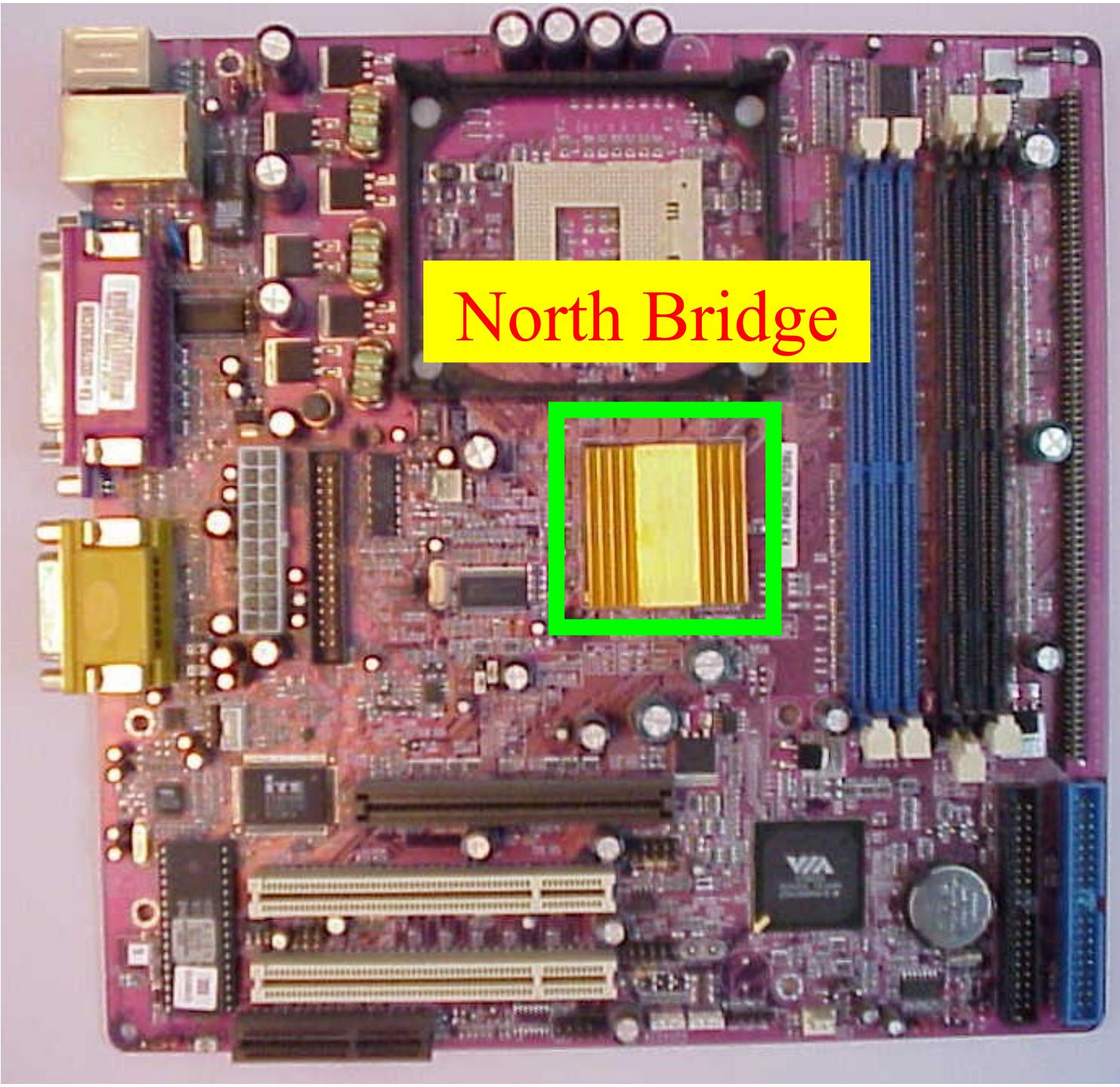
- CD ROM Drive
- CD Writer
- Different Screws Used
- AGP Card
- LAN Card



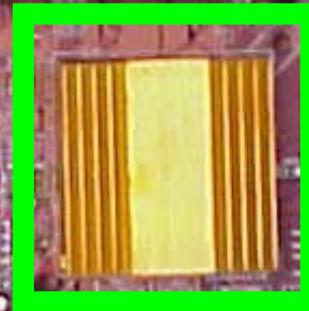


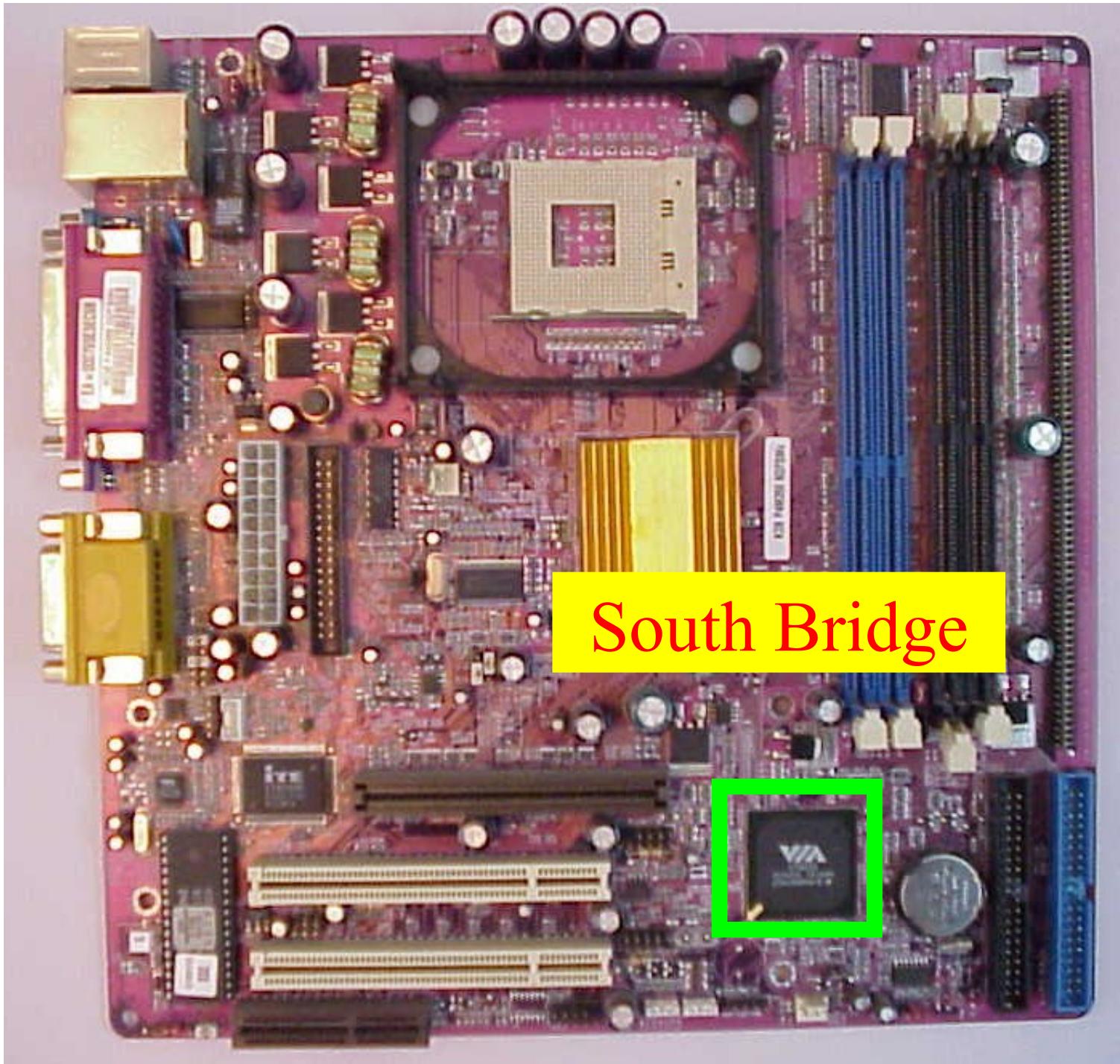


Socket 478

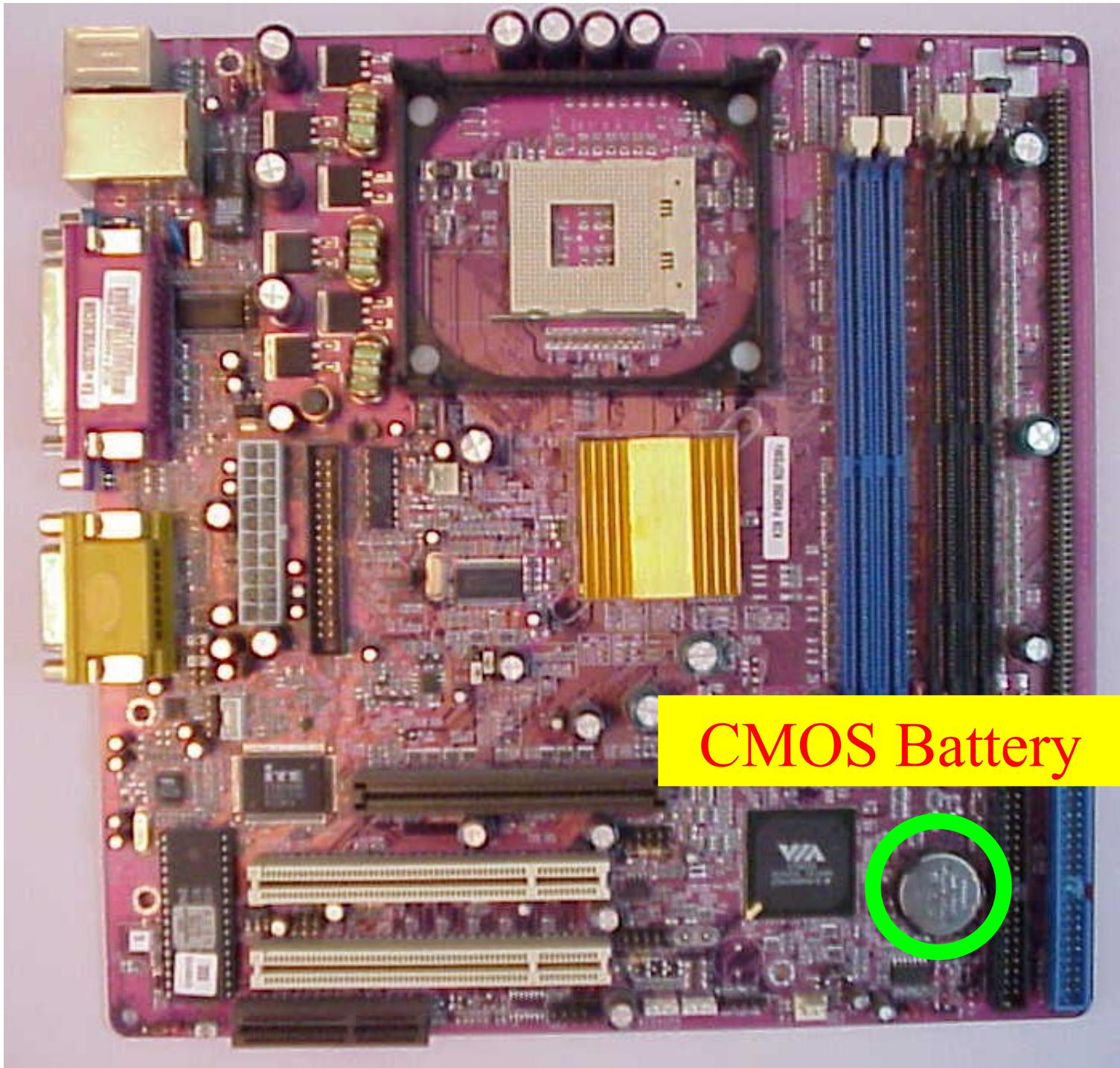


North Bridge

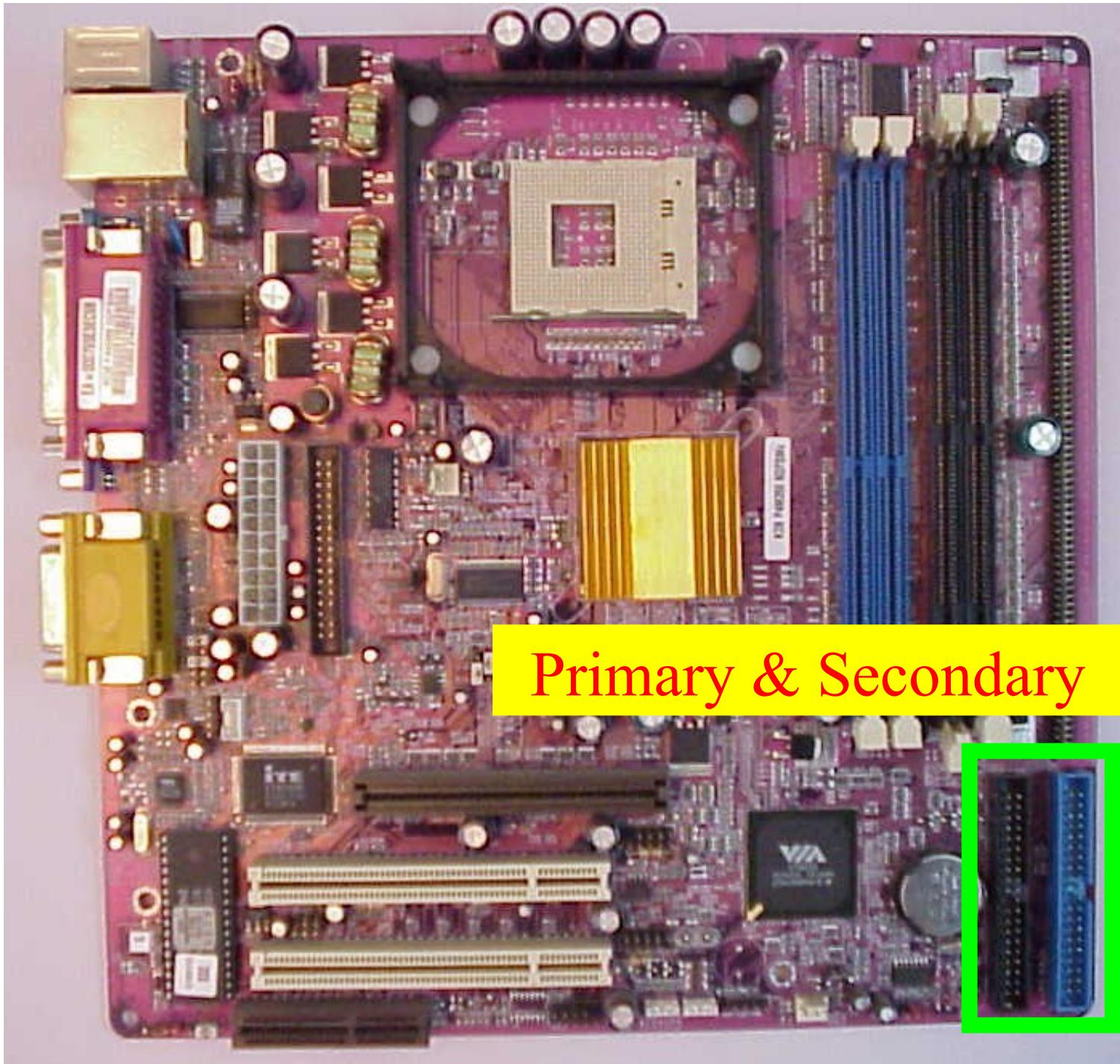




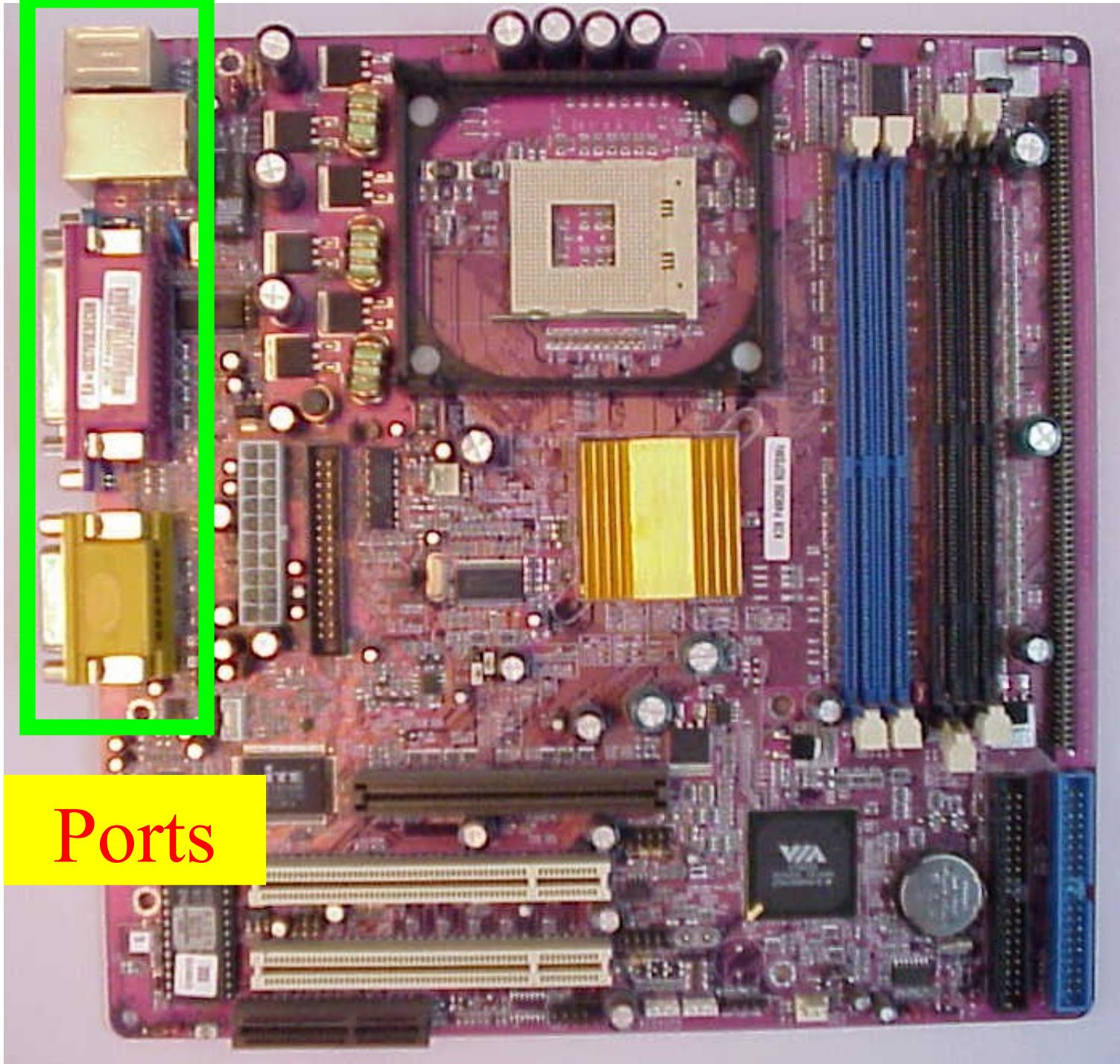
South Bridge



CMOS Battery

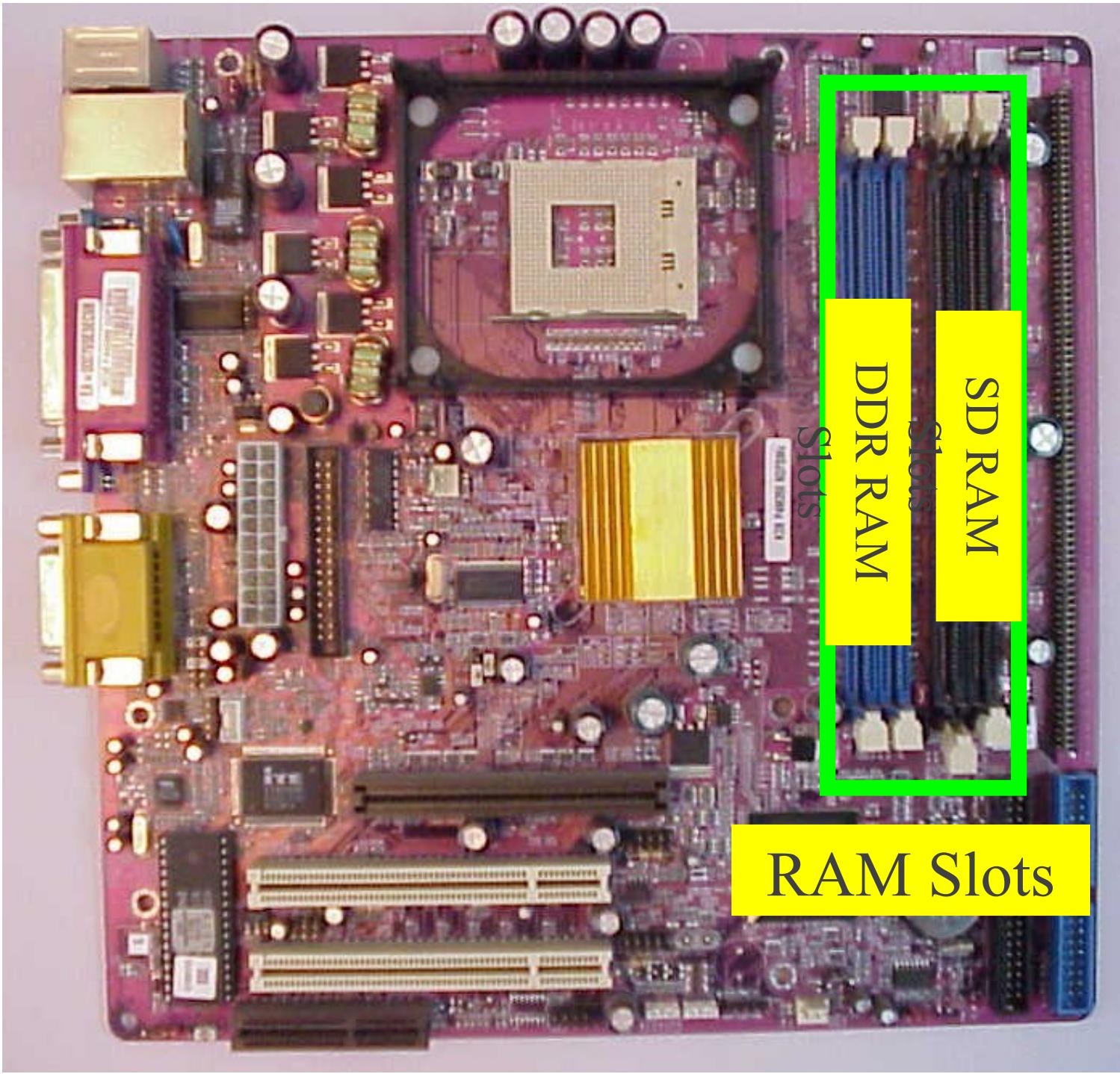


Primary & Secondary

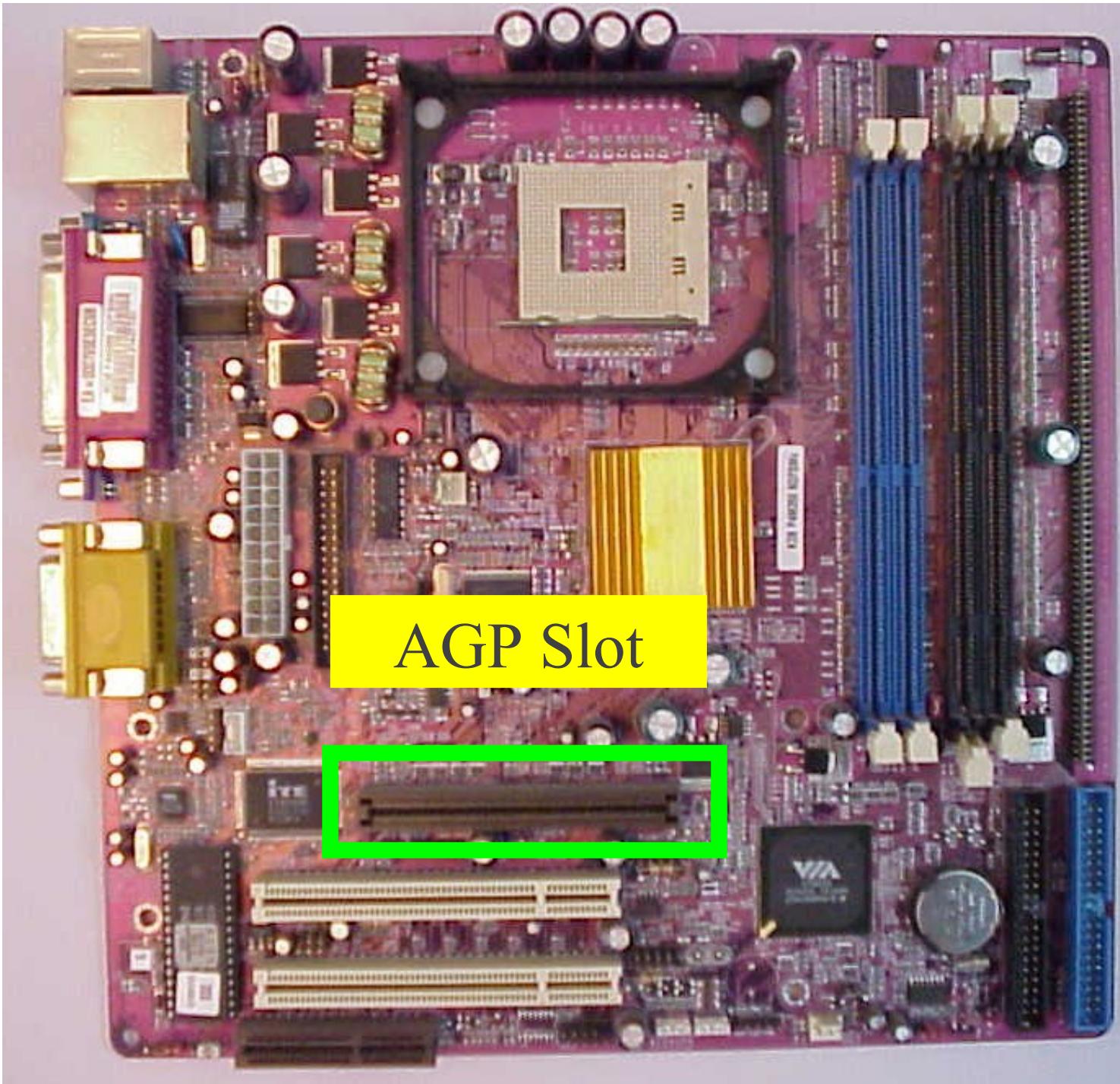


Ports

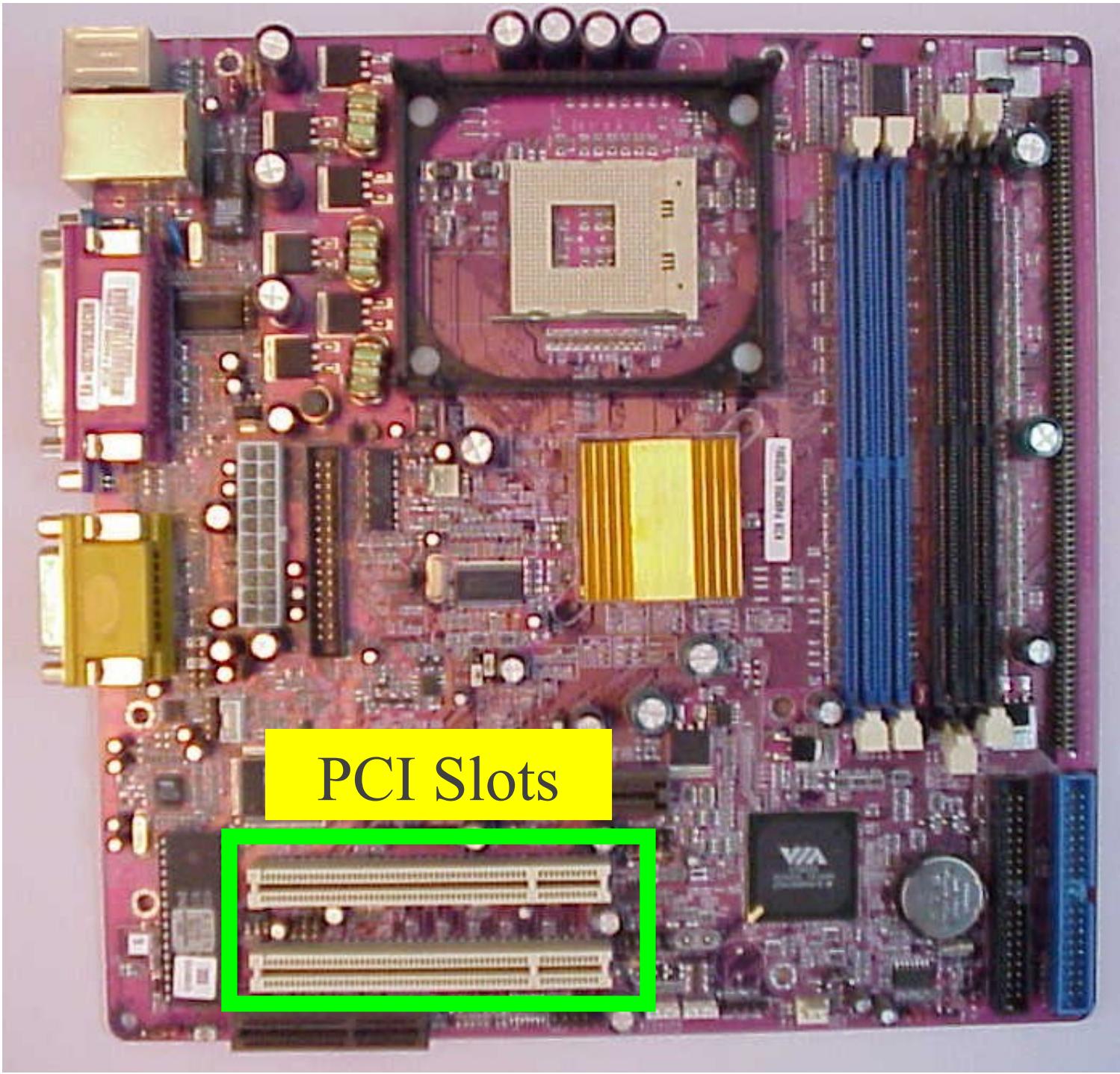
Mother Board



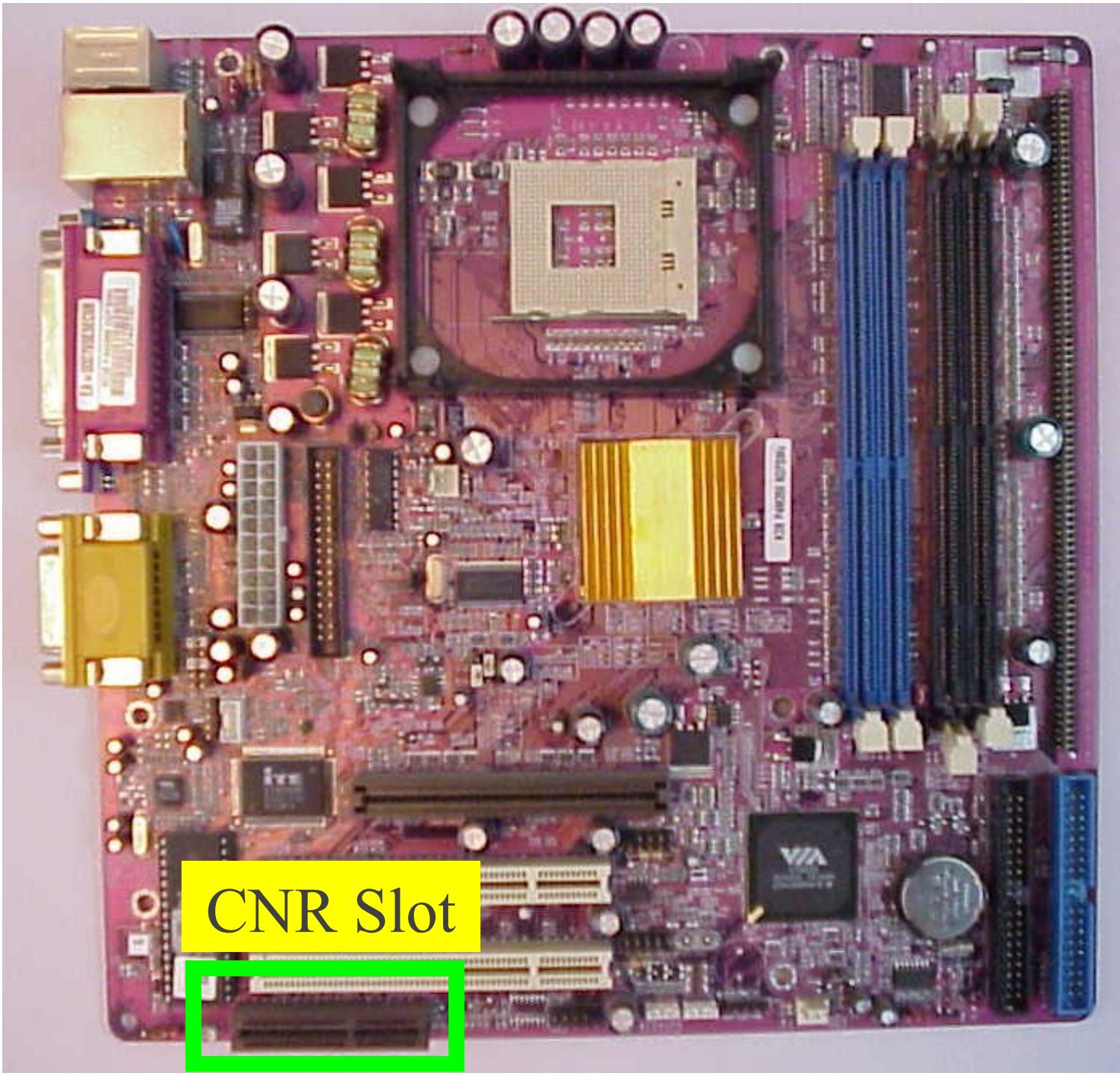
Mother Board



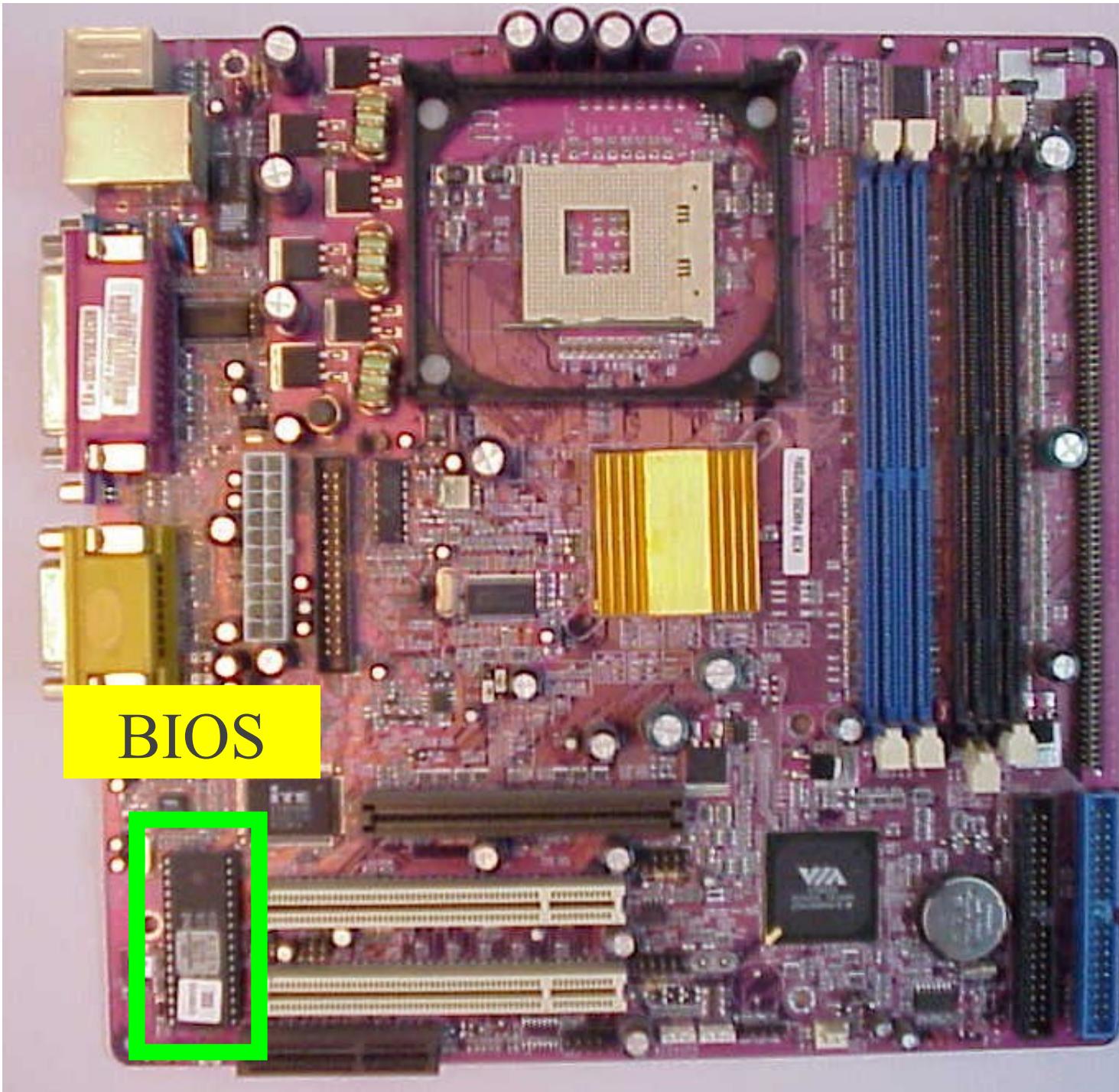
Mother Board



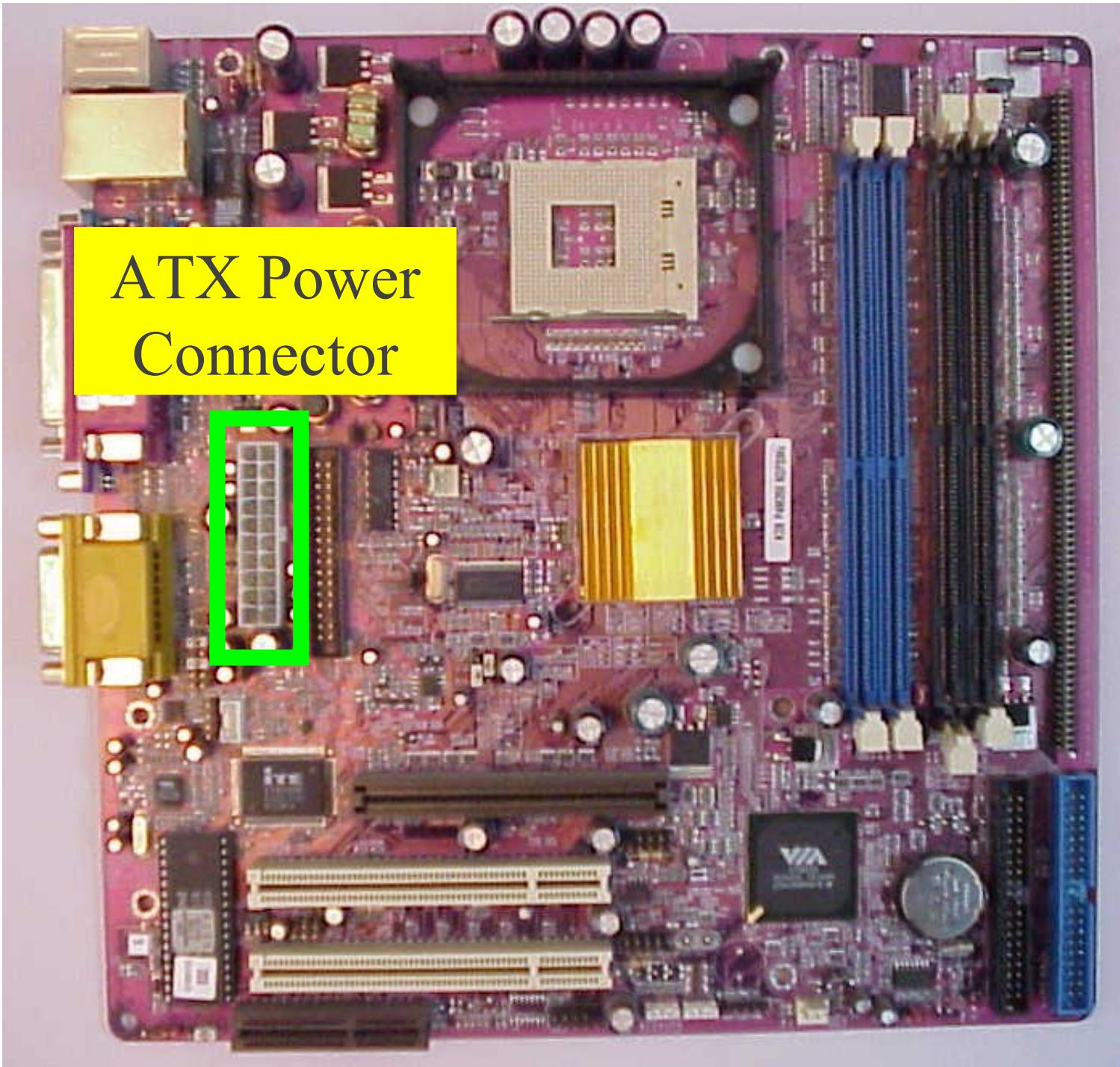
Mother Board



Mother Board

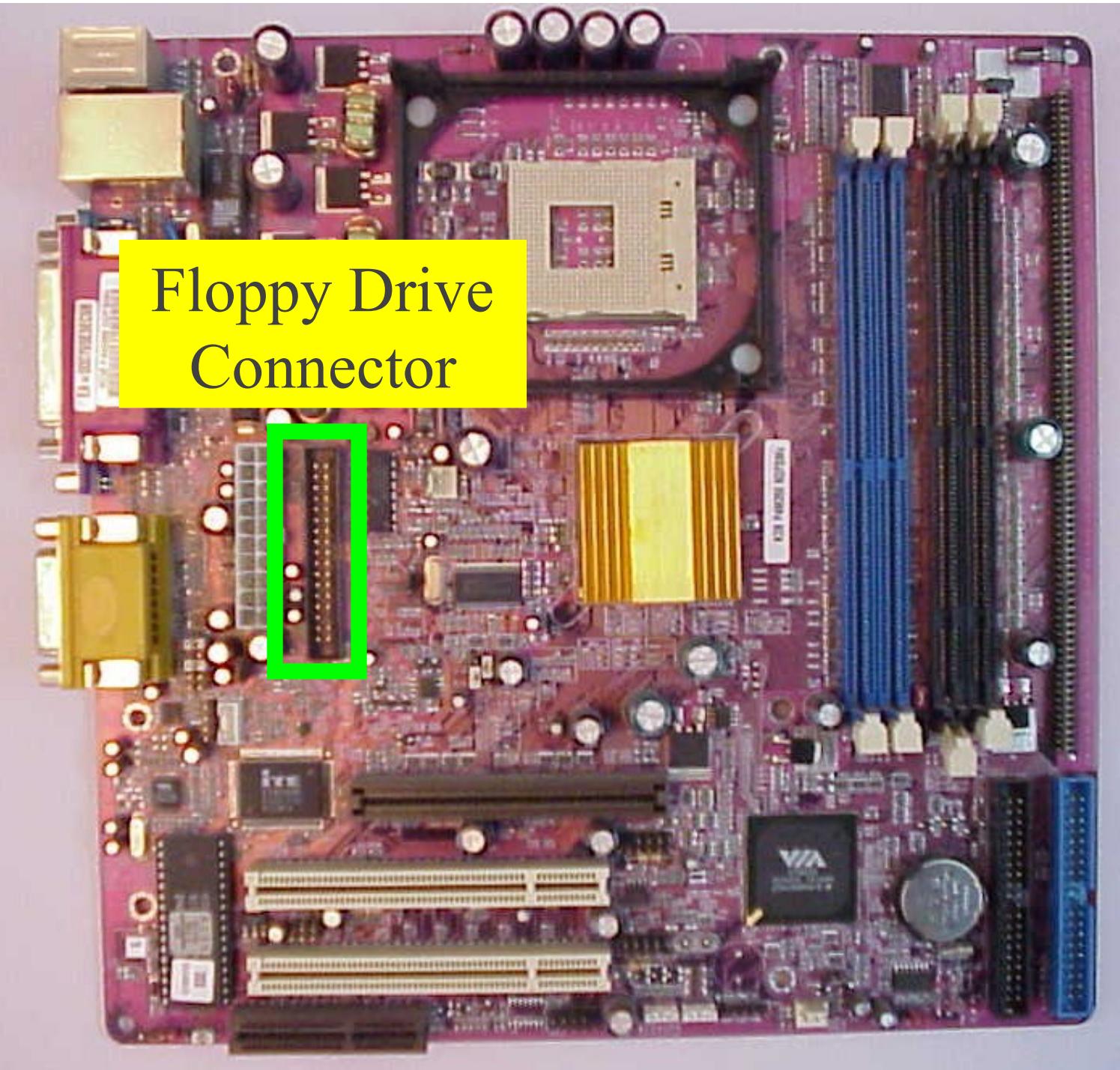


Mother Board

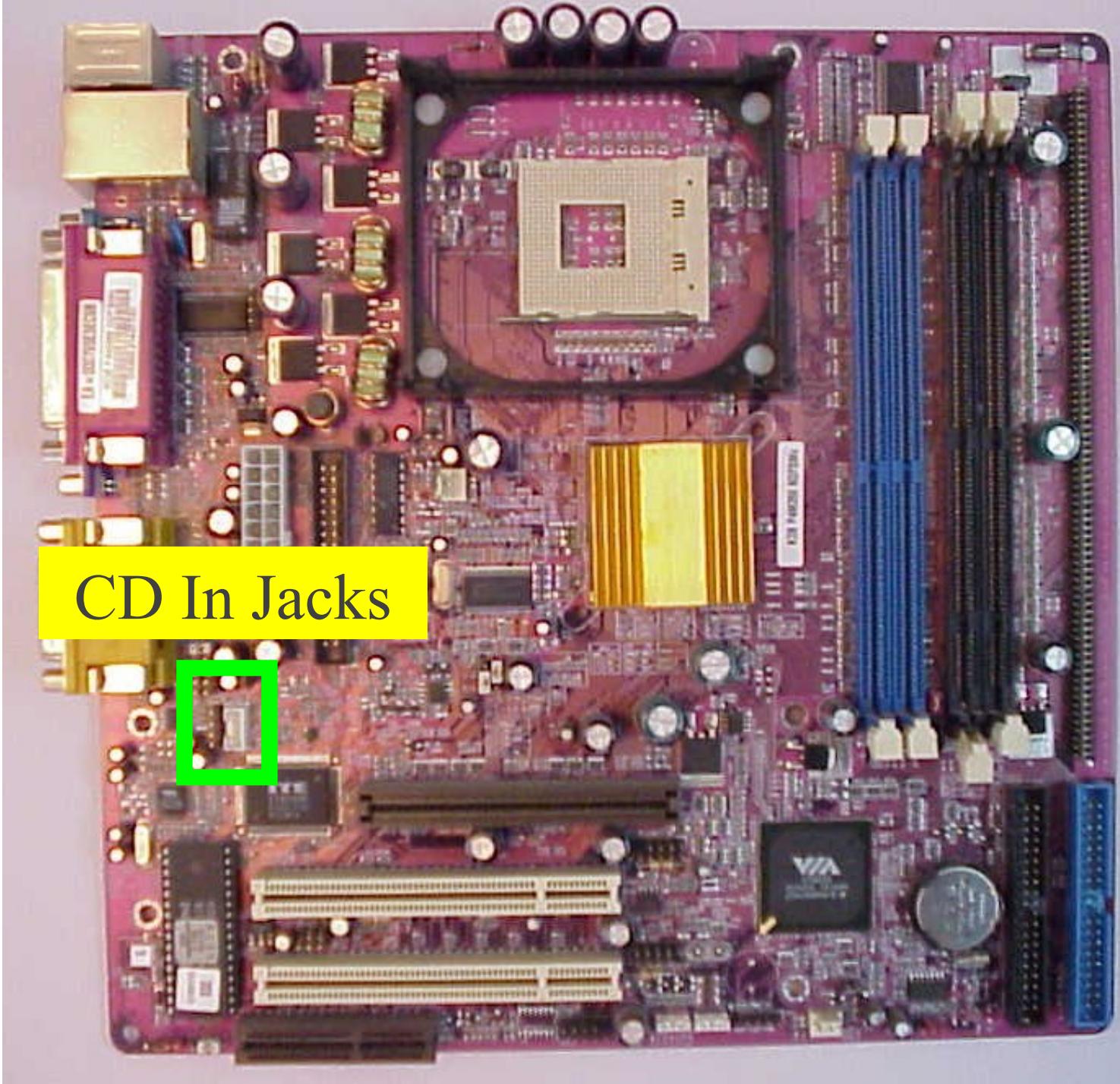


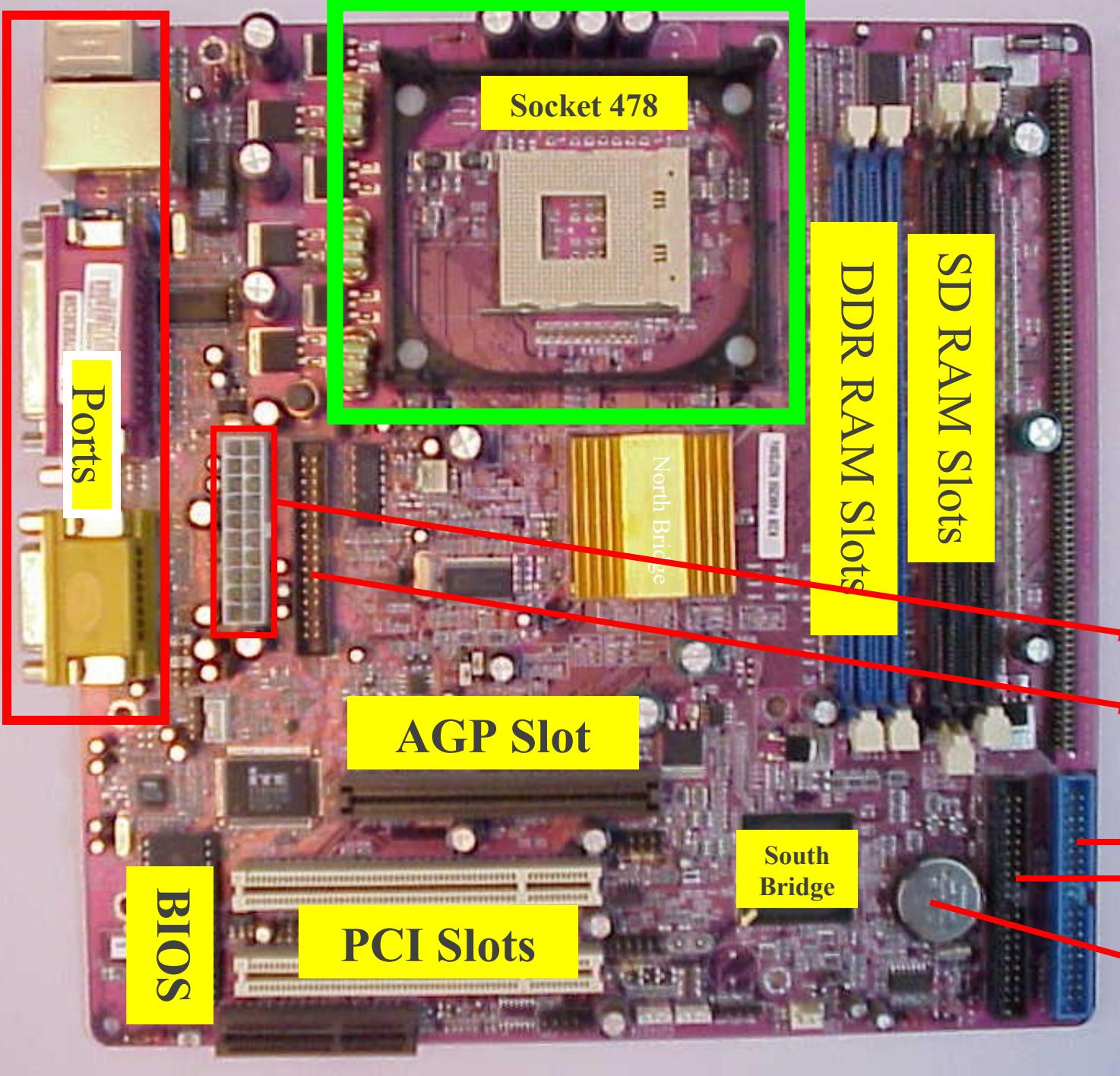
Mother Board

Floppy Drive
Connector

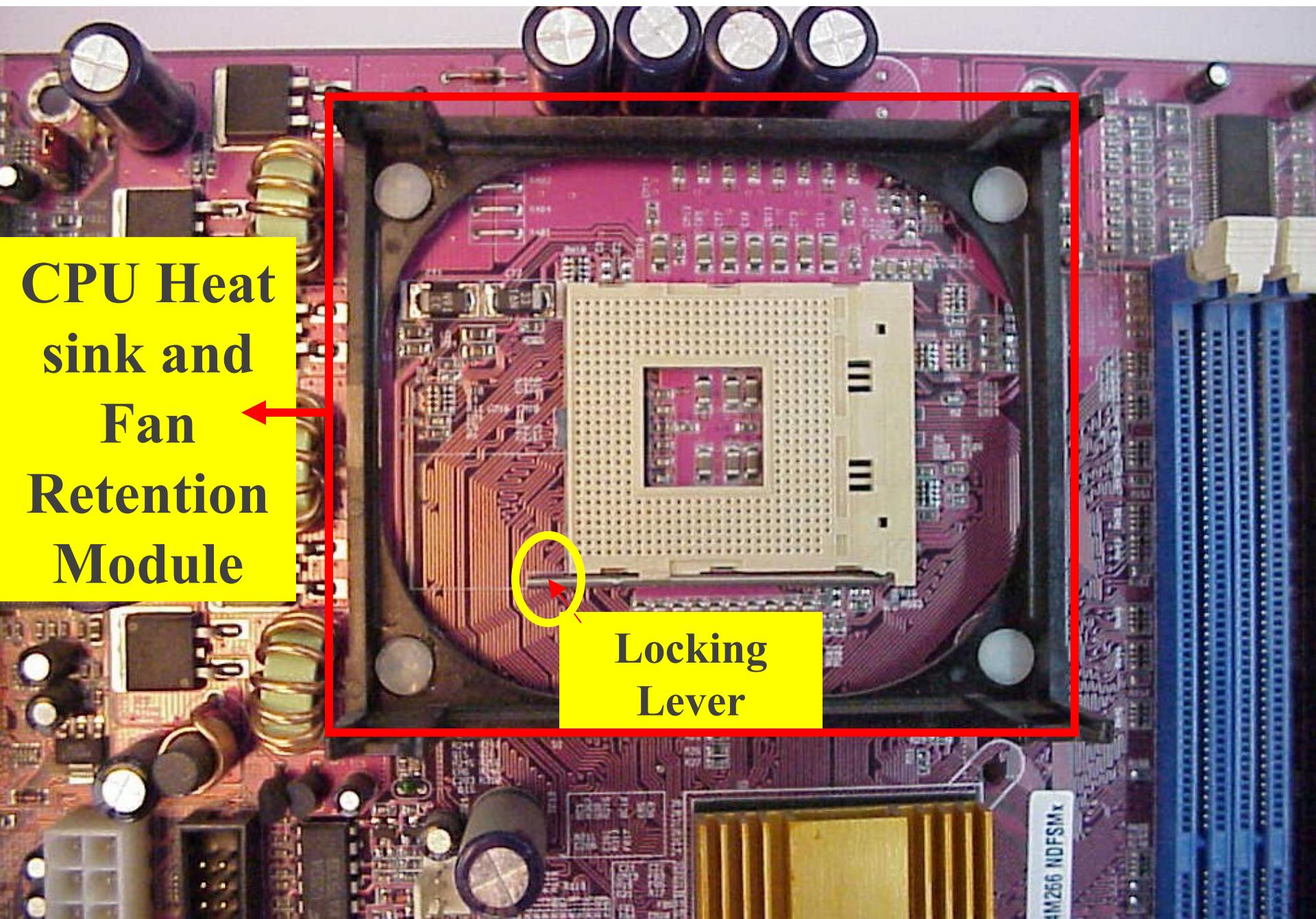


Mother Board

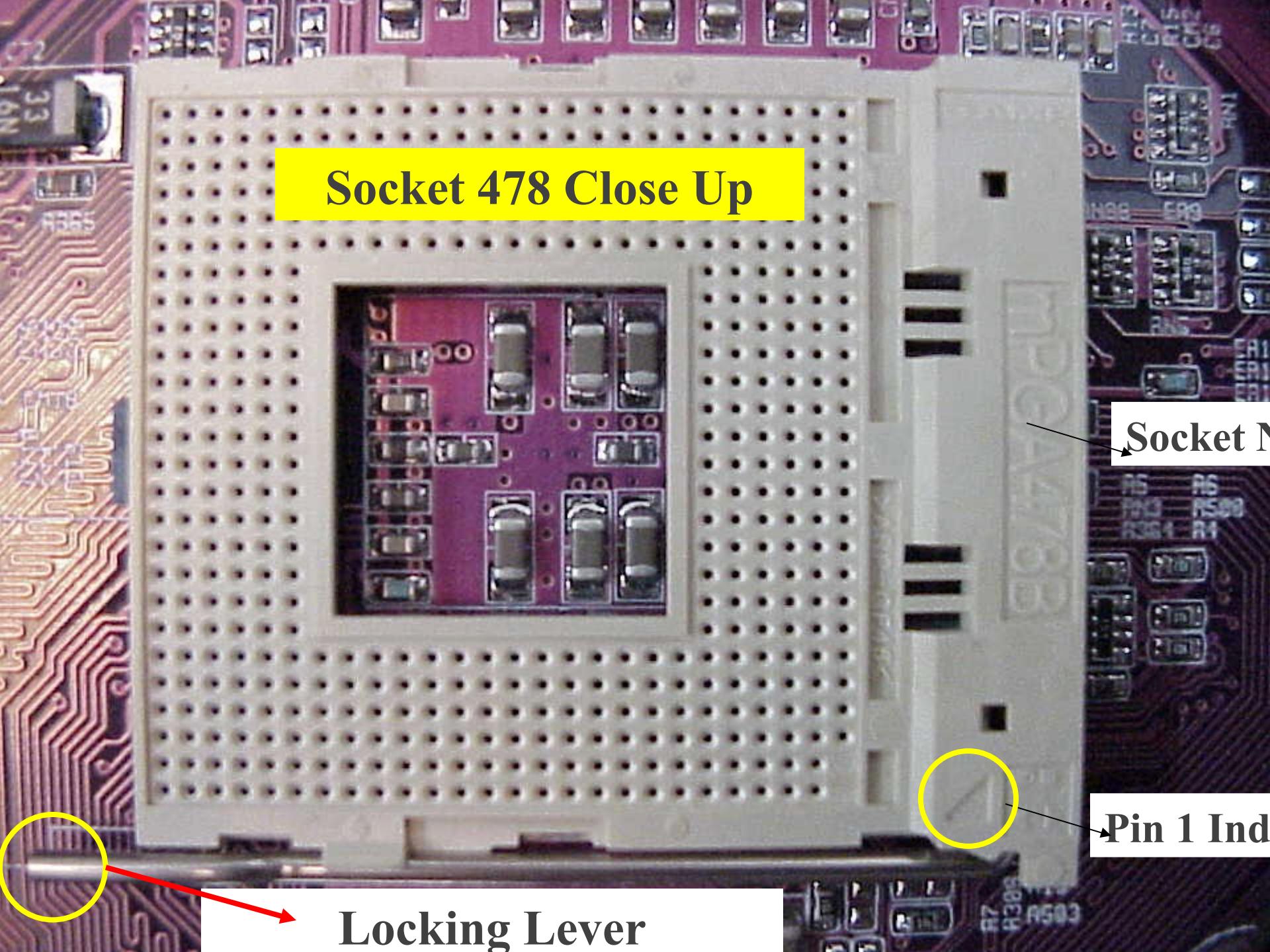




Socket 478



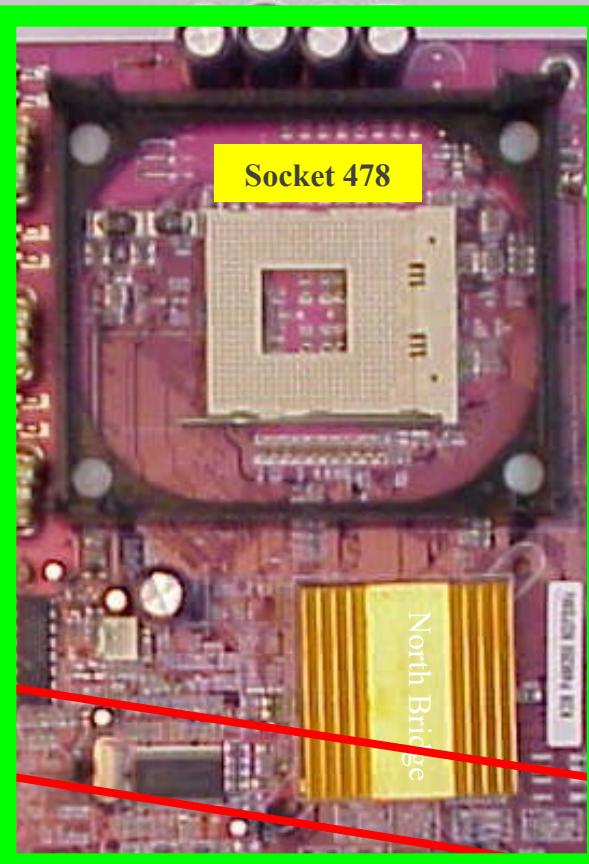
Socket 478 Close Up



Locking Lever

Pin 1 Ind

Socket N



AGP Slot



South Bridge

BIOS

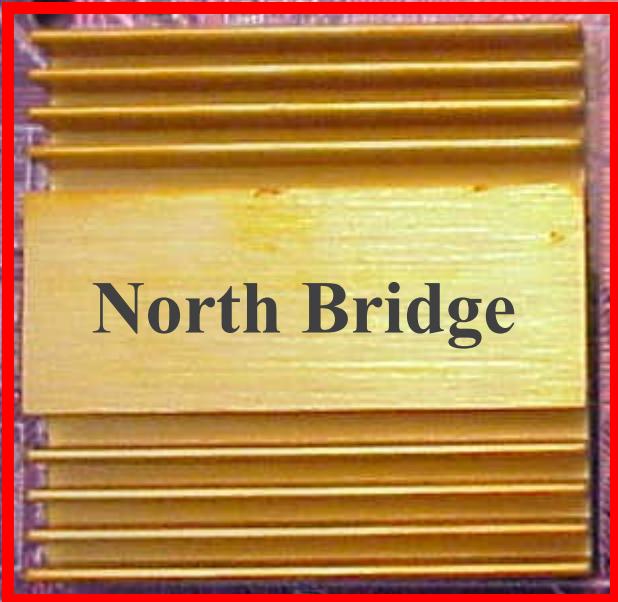
PCI Slots

ATX Power Connector

Floppy Drive Connector

**Primary
Secondary**

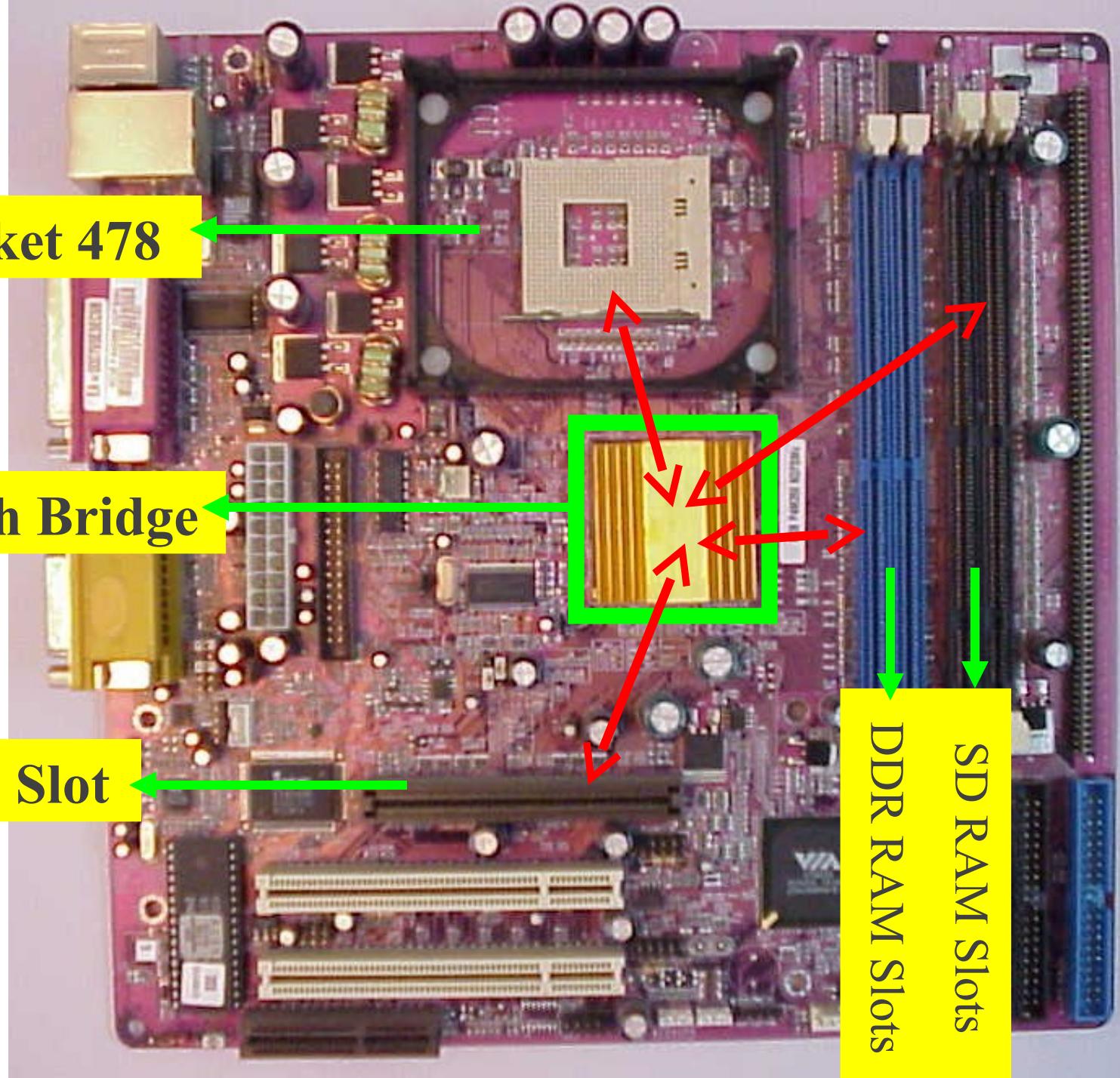
CMOS Battery



North Bridge

KOB P4M266 NDFSMx

Mother Board





Ports

Socket 478

DDR RAM Slots

AGP Slot

BIOS

PCI Slots

North Bridge

South Bridge

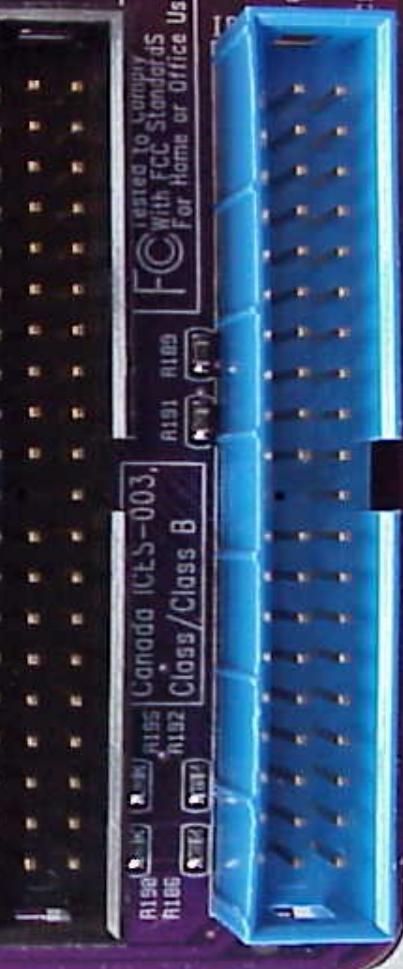
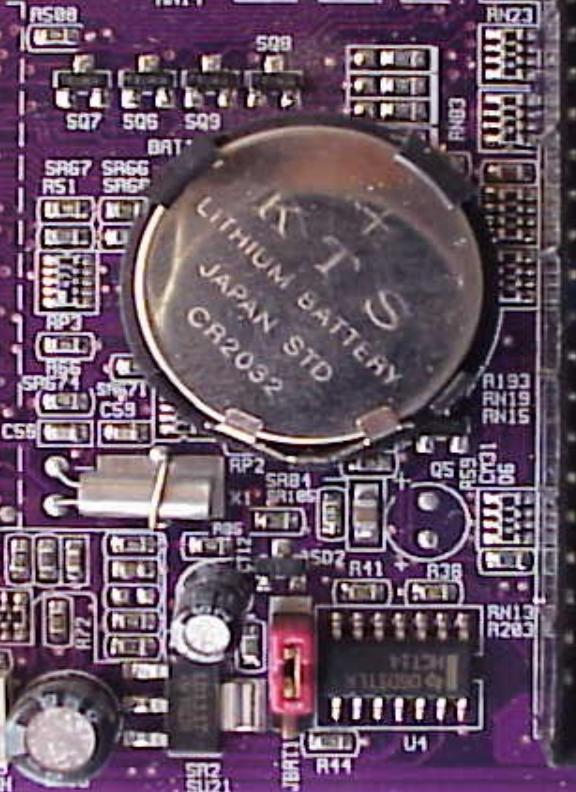
ATX Power
Connector

Floppy Drive
Connector

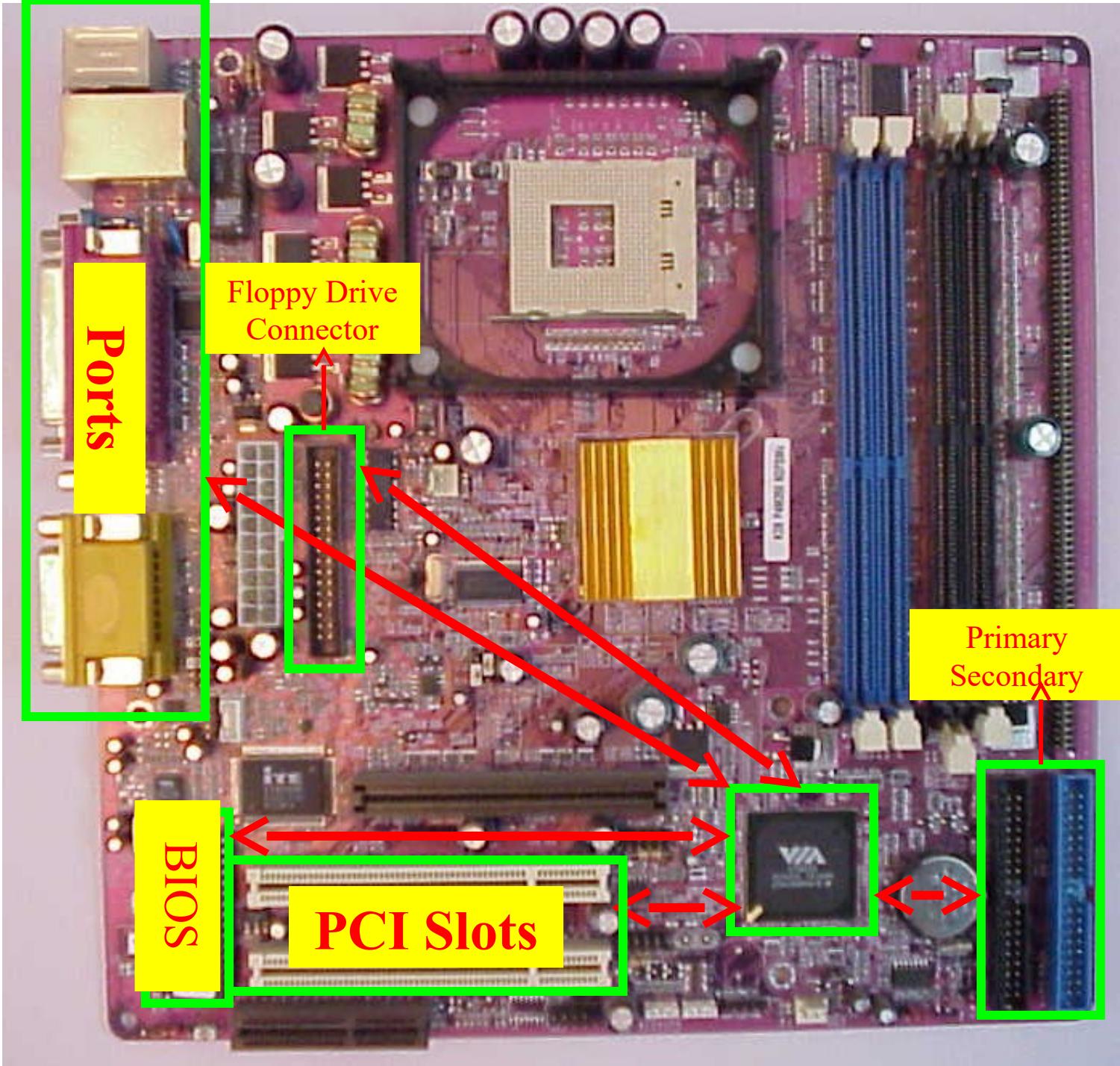
Primary
Secondary

CMOS Battery

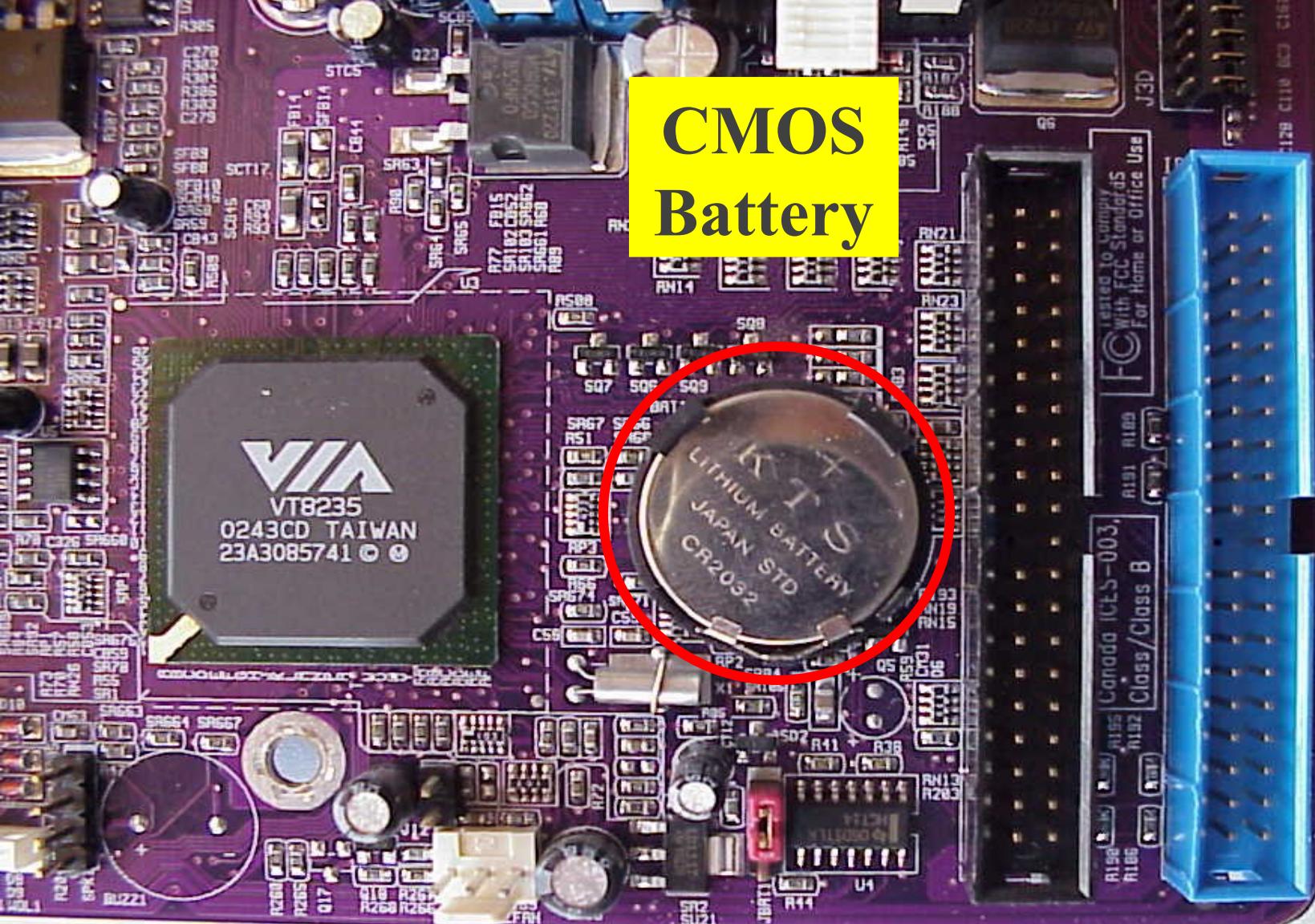
South Bridge

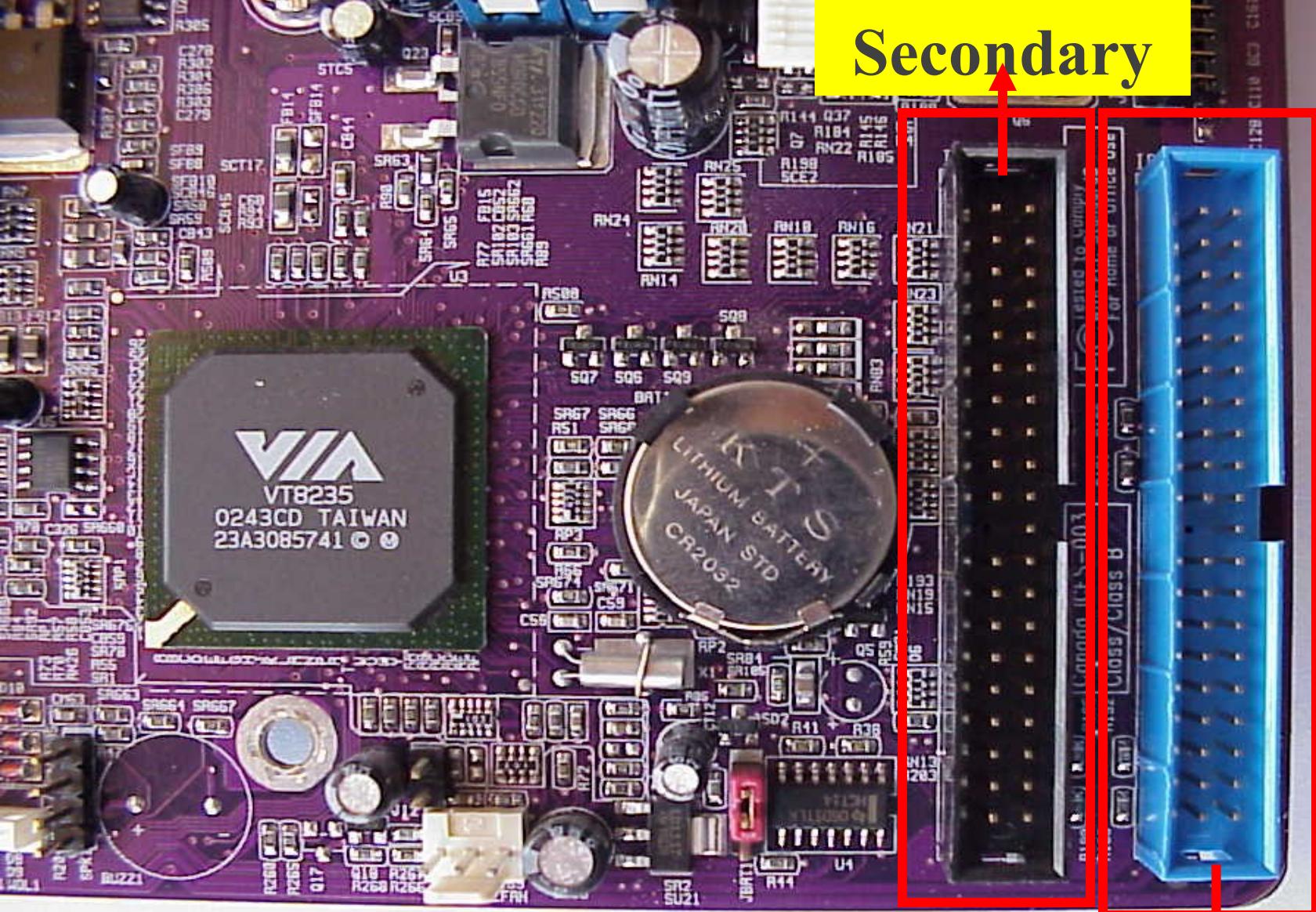


Mother Board



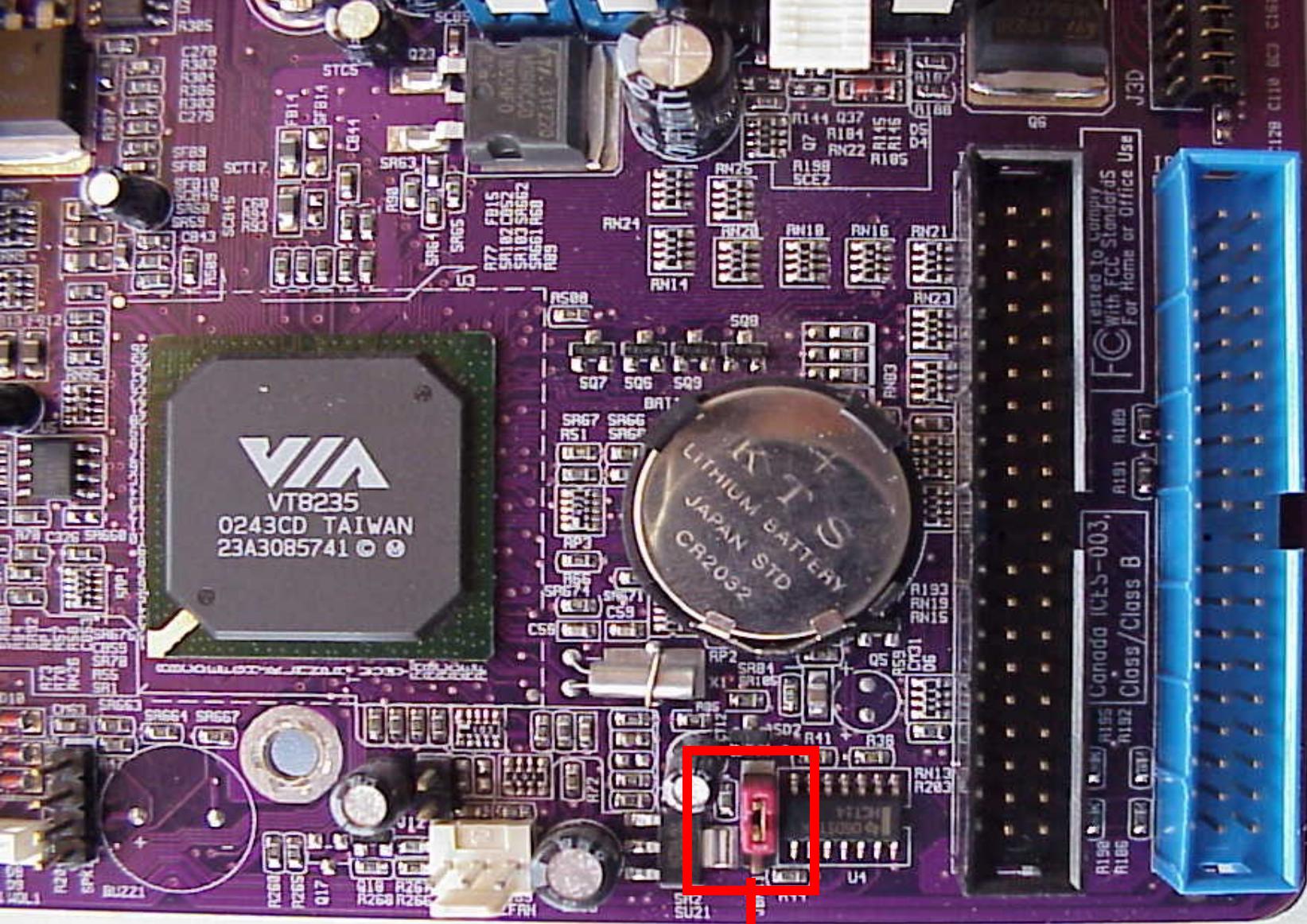
CMOS Battery



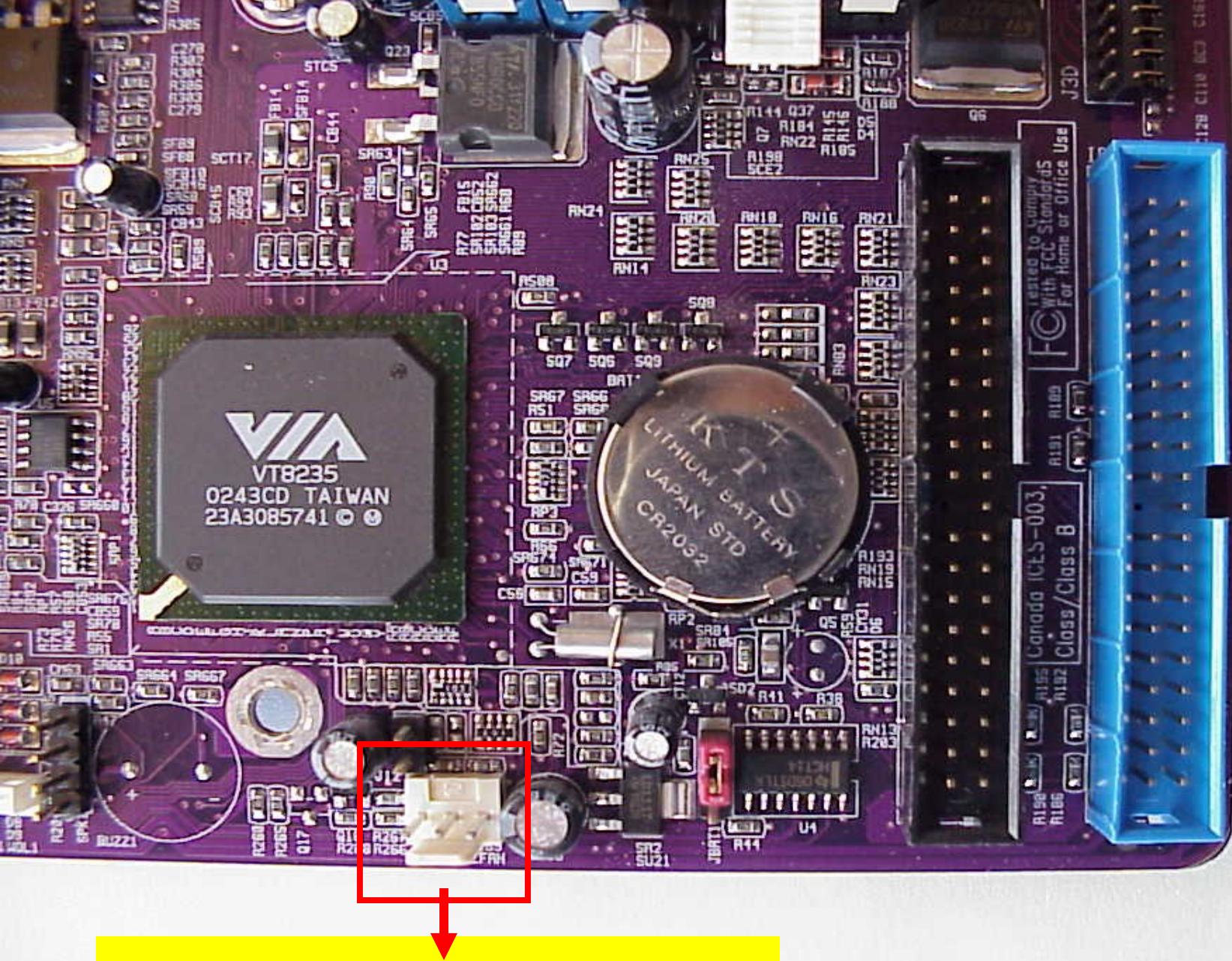


Secondary

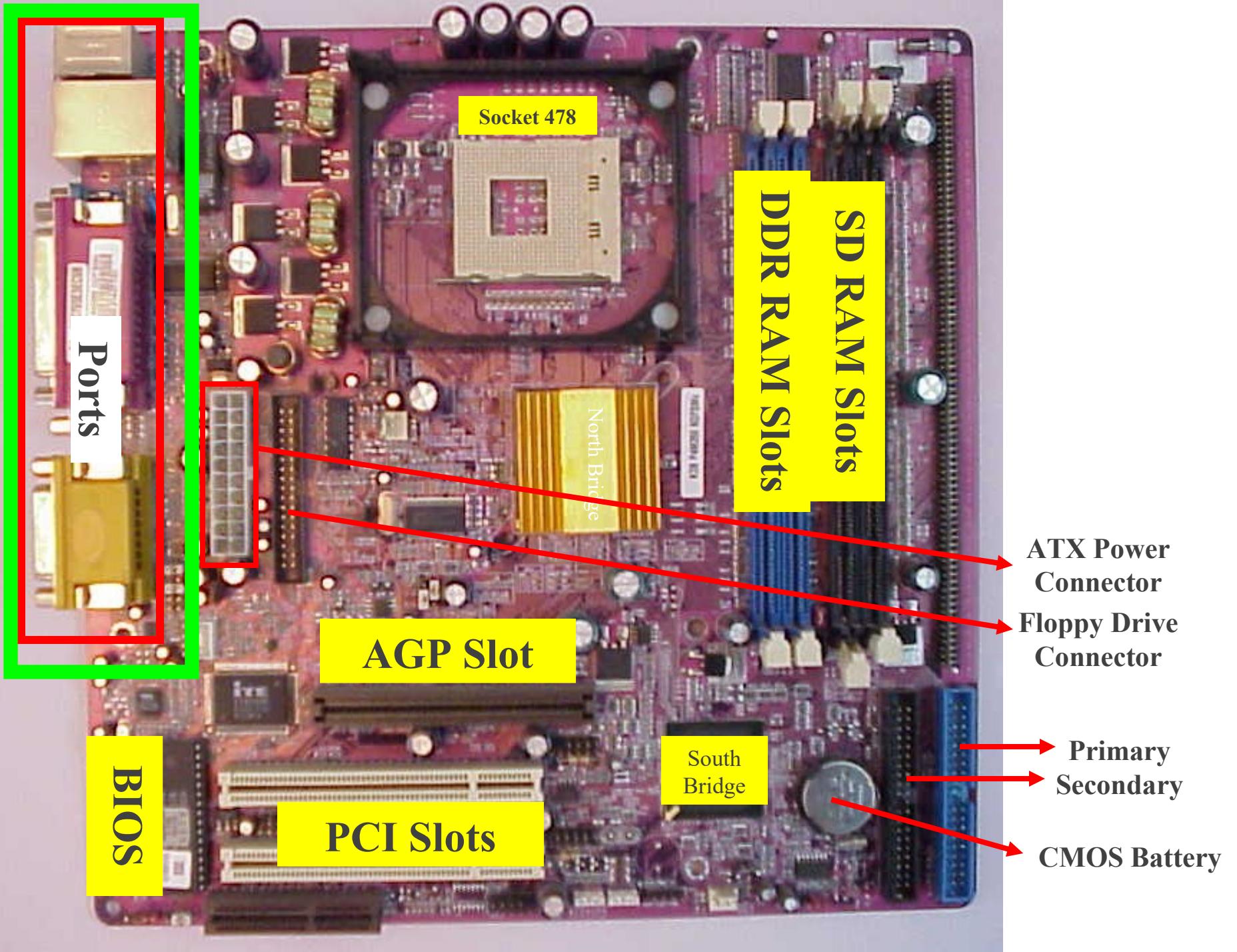
Primary



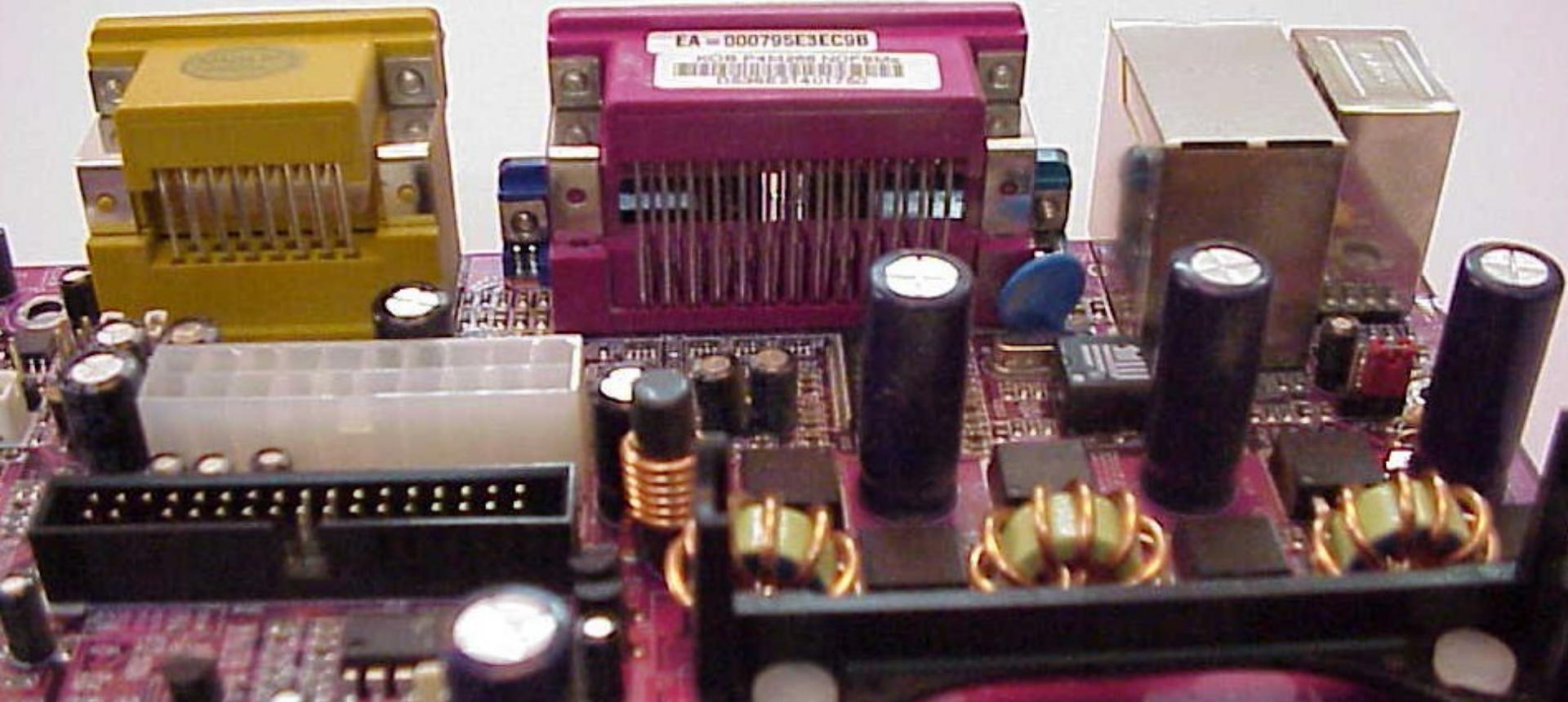
CMOS
Jumper

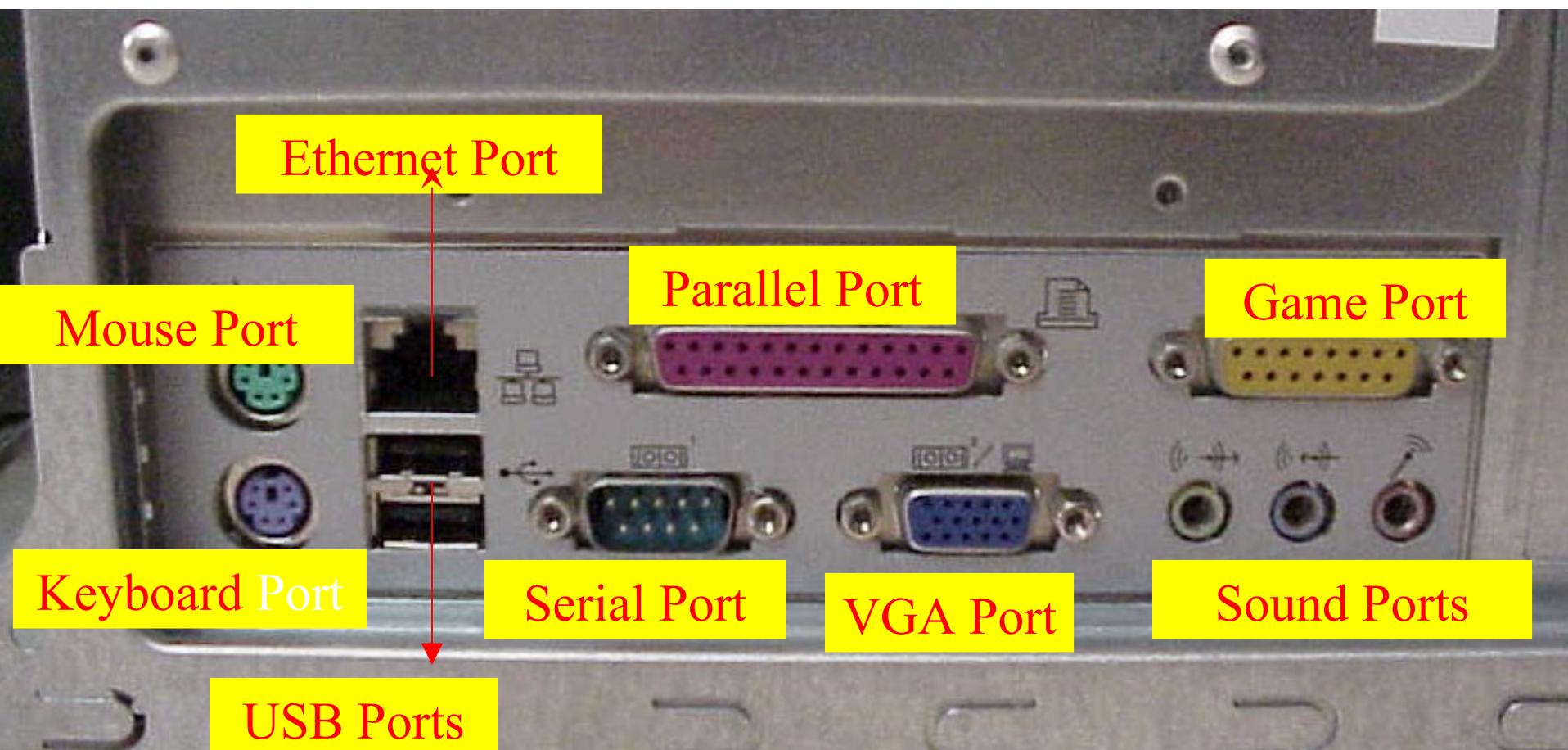


System Fan Connector



Ports (Back View)







Ports

Socket 478

North Bridge

DDR RAM Slots

SD RAM Slots

AGP Slot

South Bridge

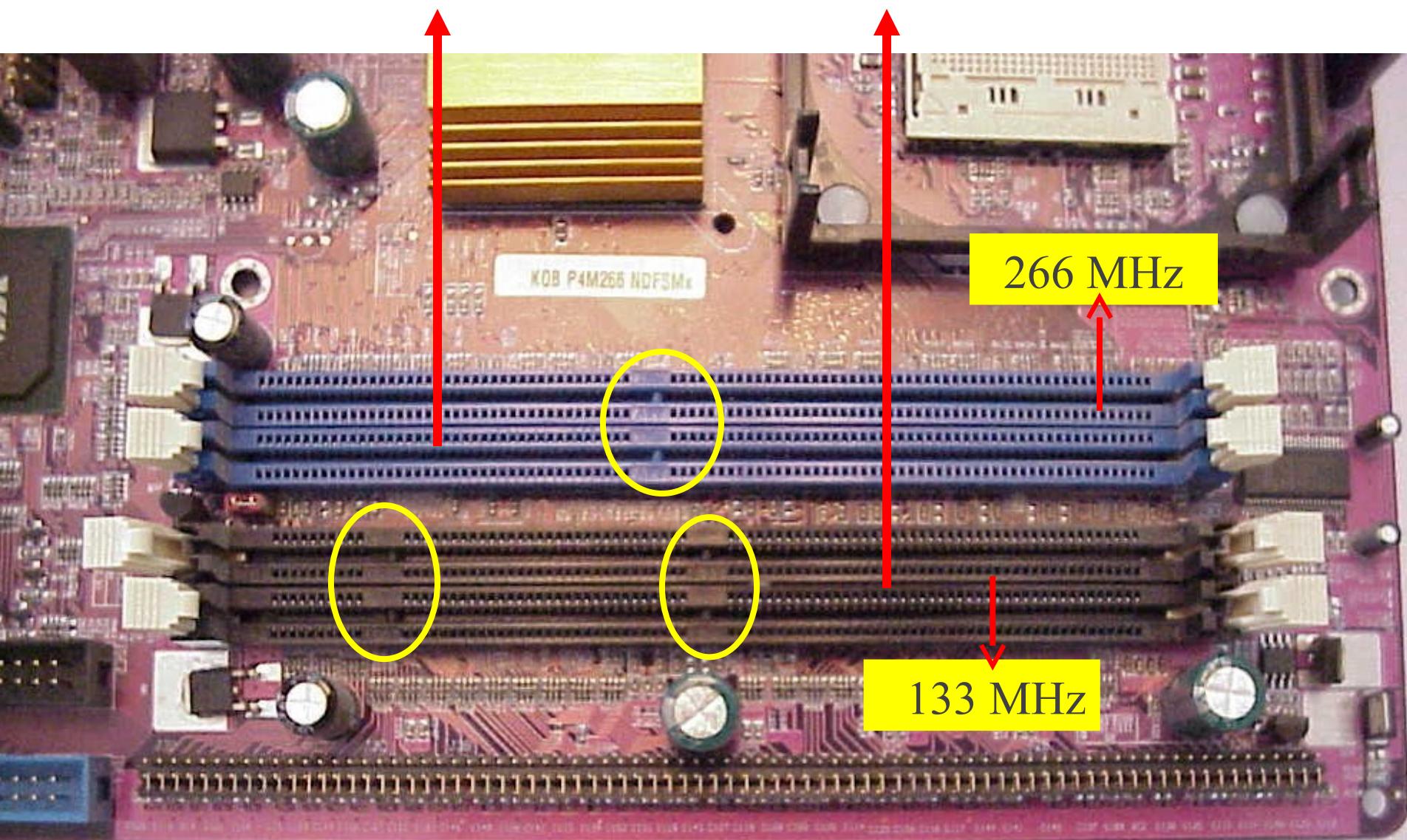
BIOS

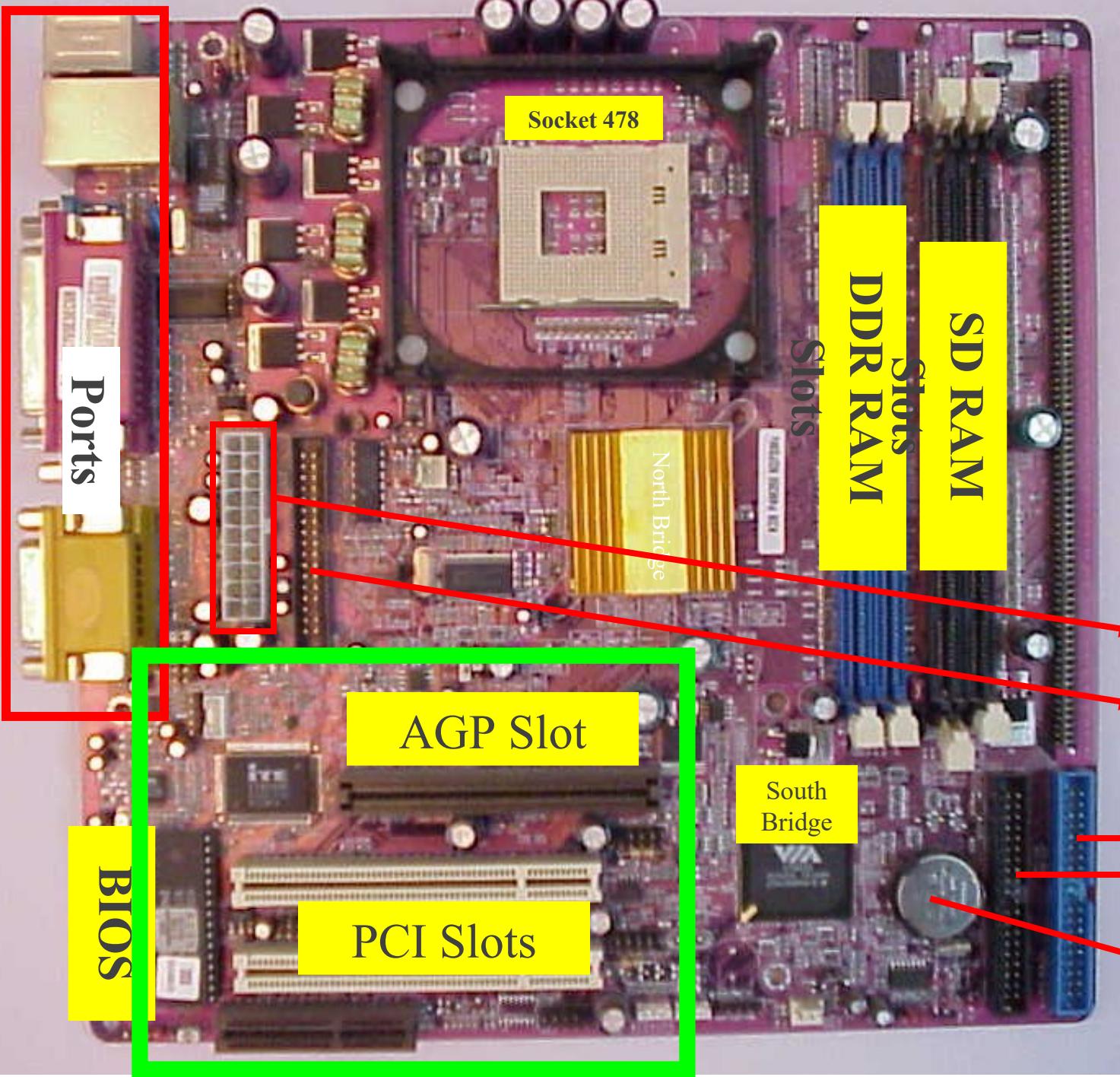
PCI Slots

ATX Power
Connector
Floppy Drive
Connector

Primary
Secondary
CMOS Battery

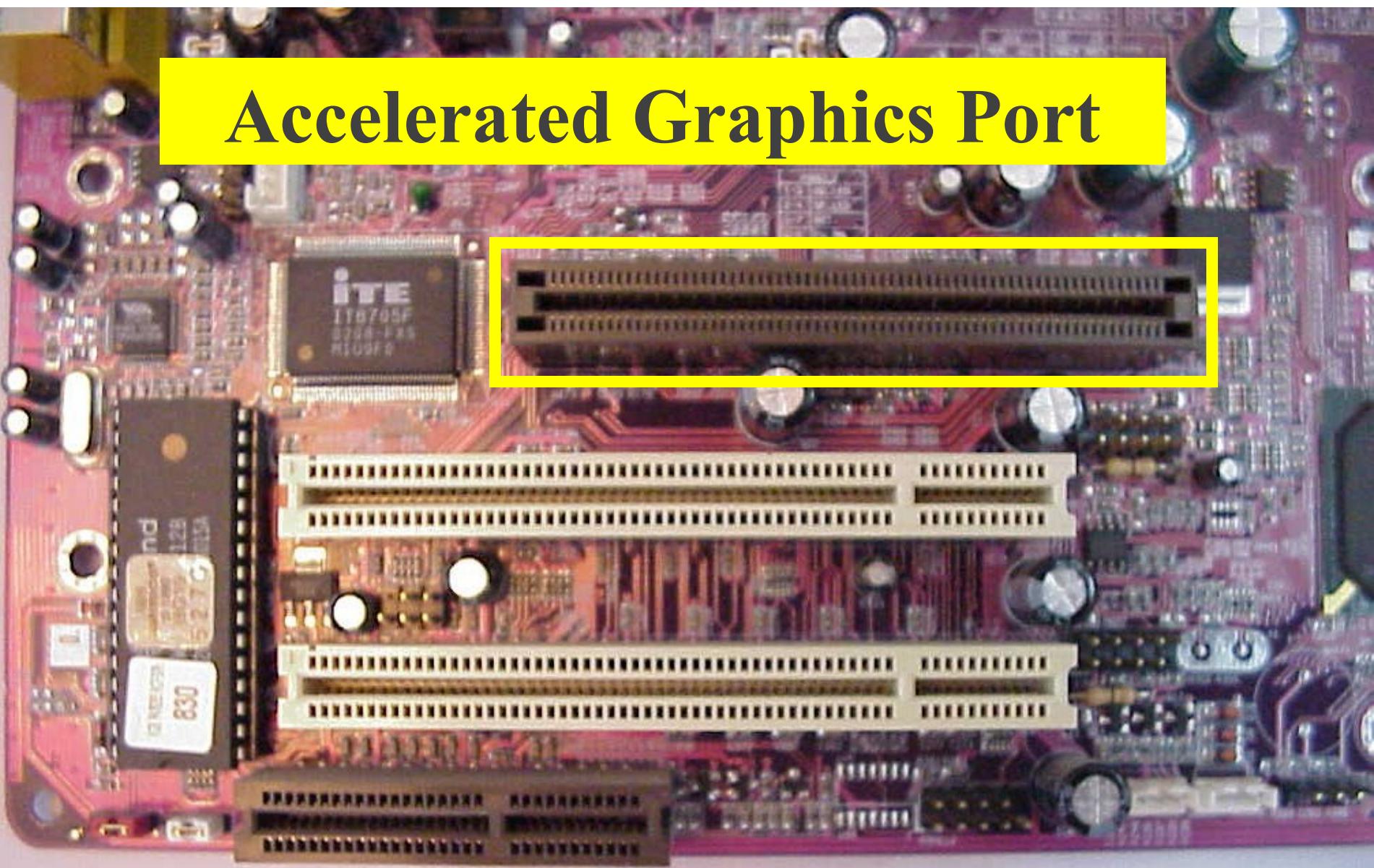
DDR RAM & SD RAM Slots





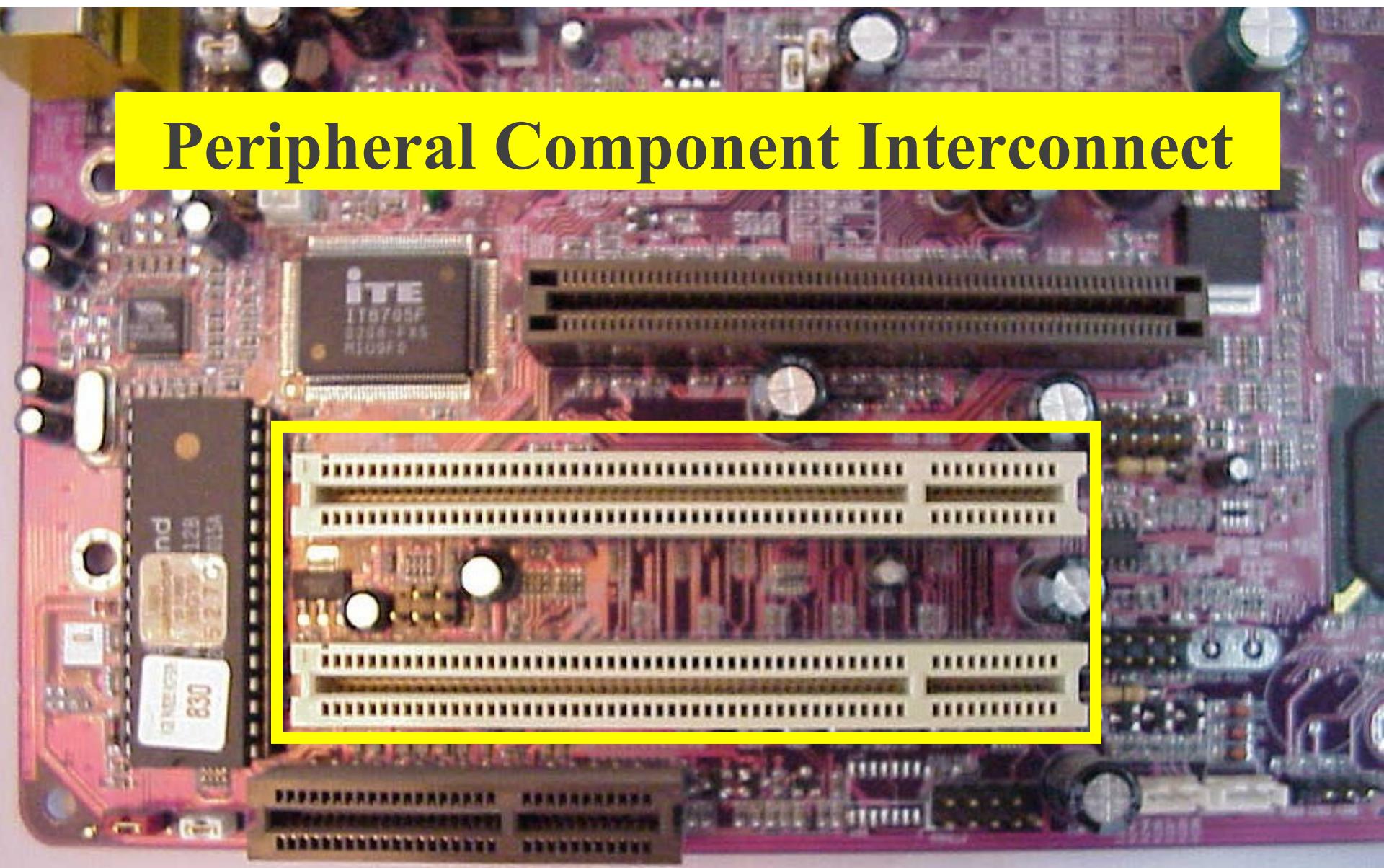
AGP Slot

Accelerated Graphics Port



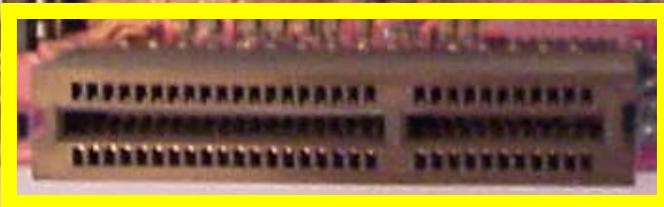
PCI Slots

Peripheral Component Interconnect

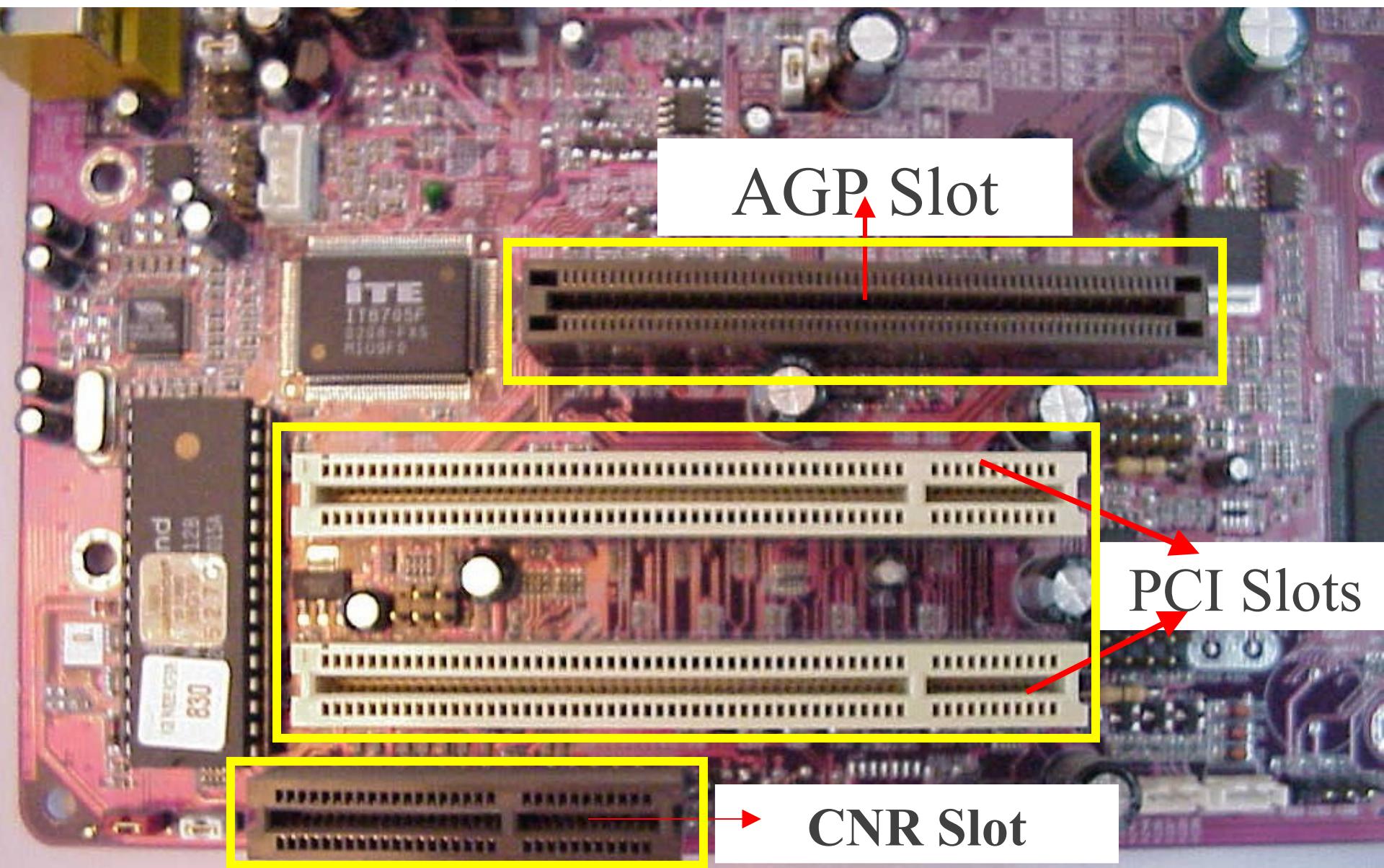


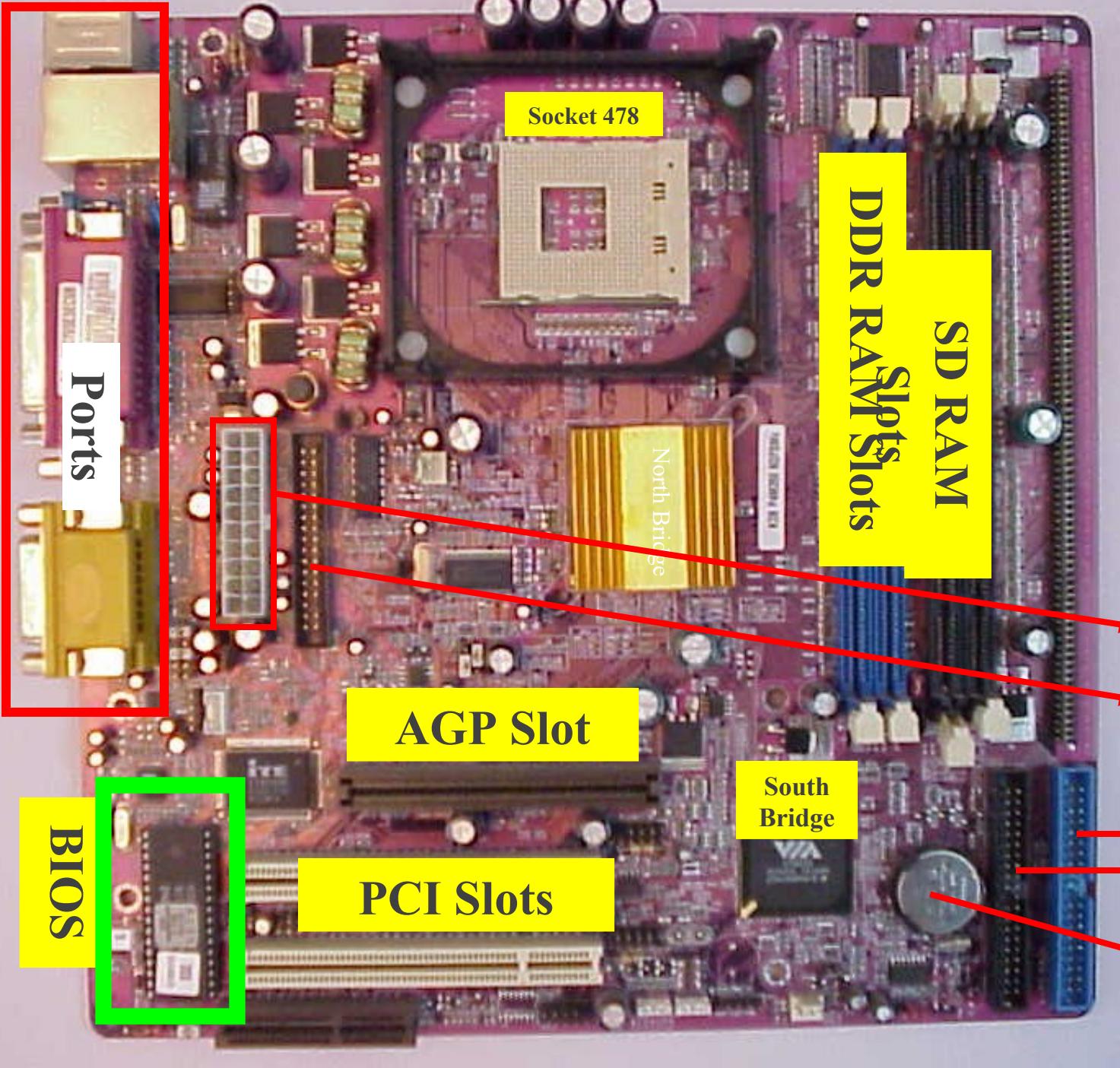
CNR Slot

Communications and Networking Raiser



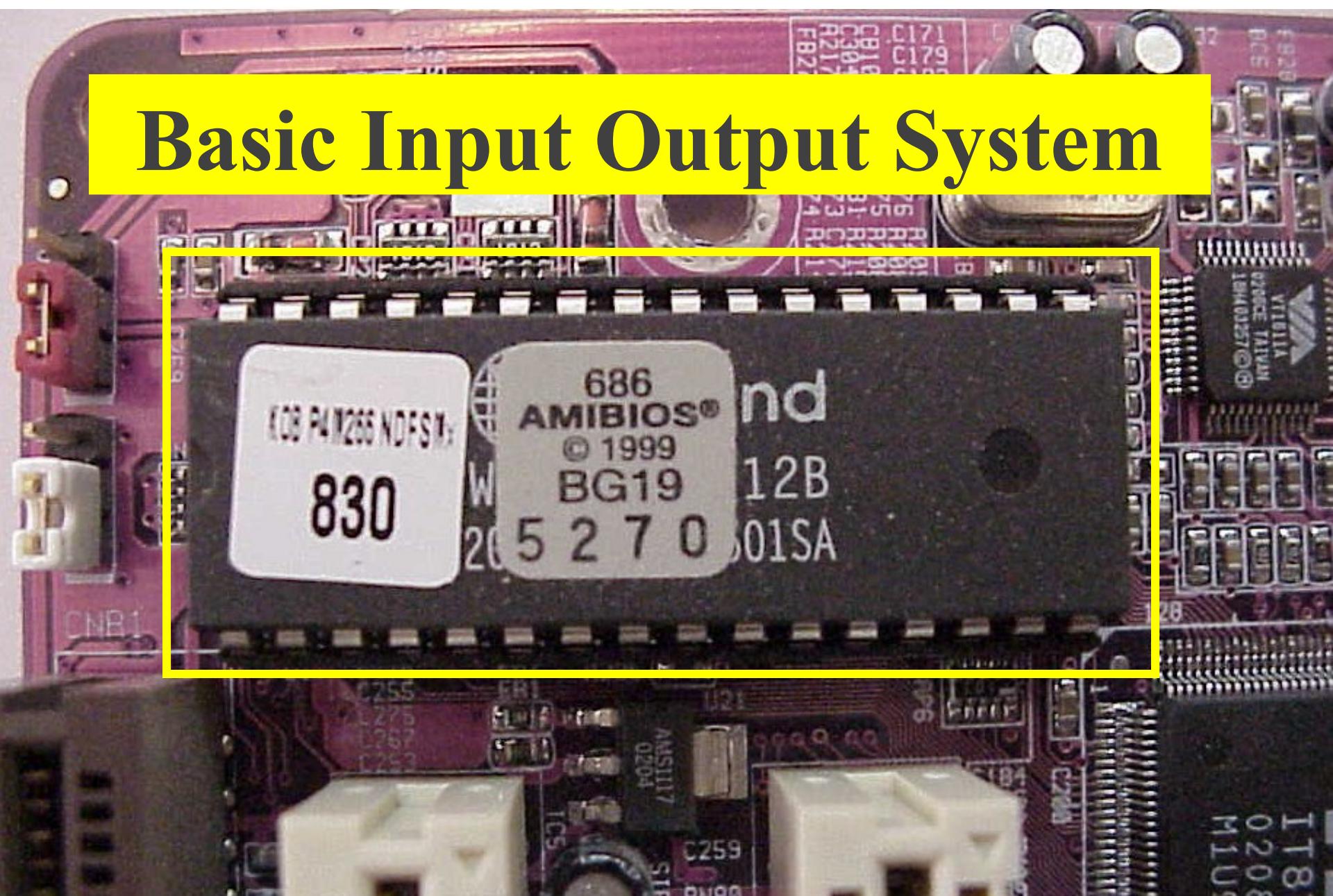
CNR, PCI, AGP Slots

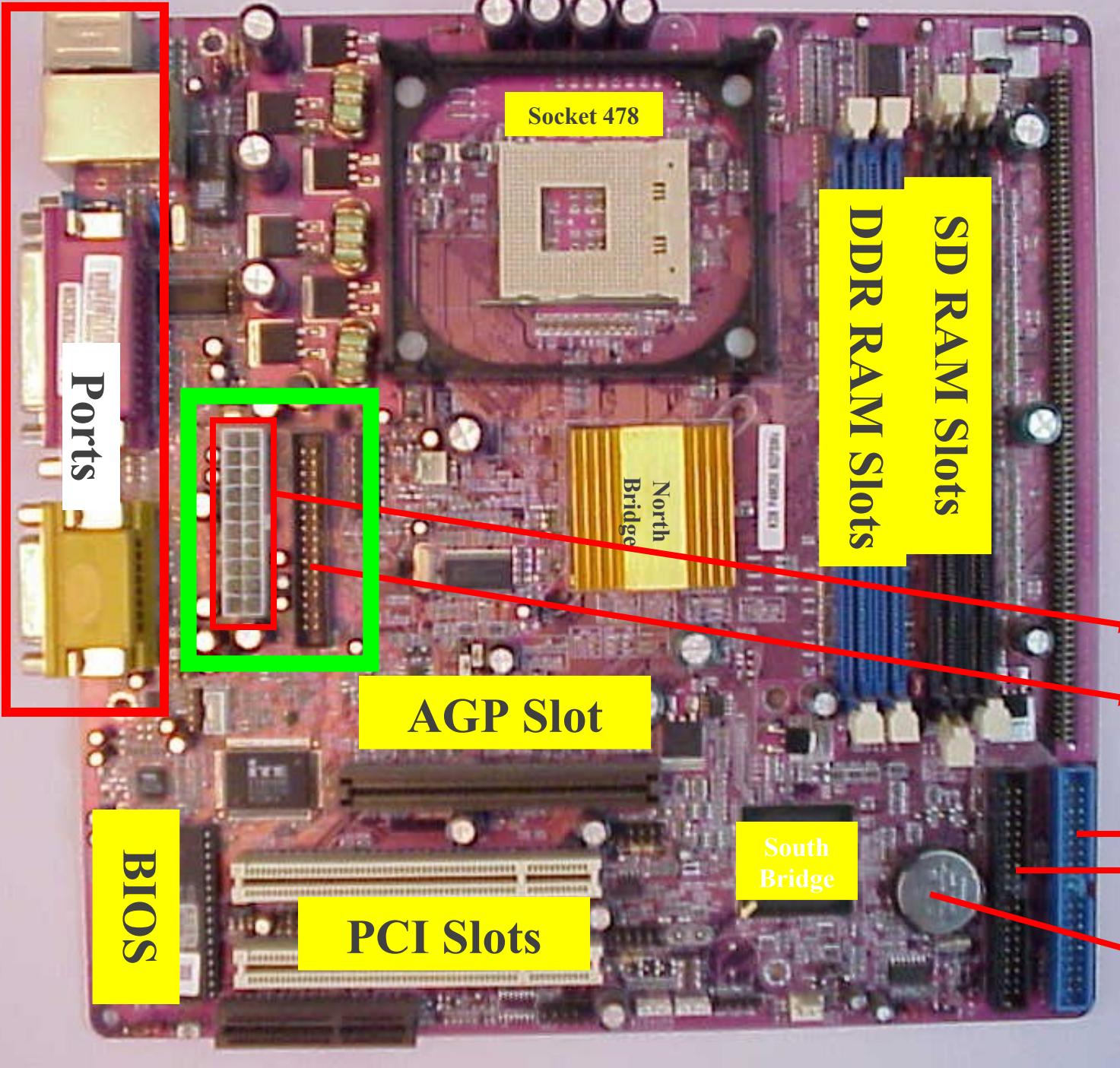


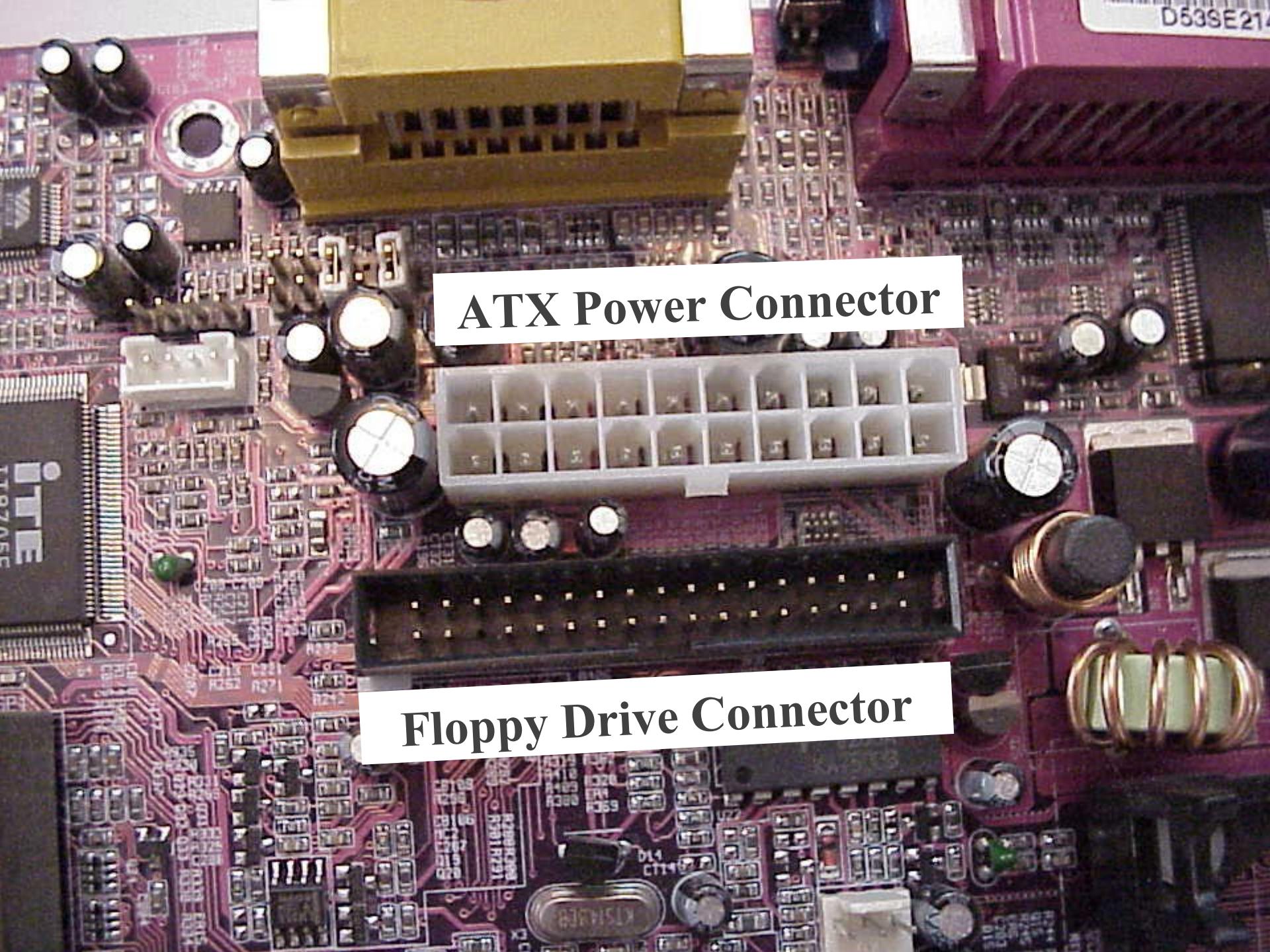


BIOS

Basic Input Output System

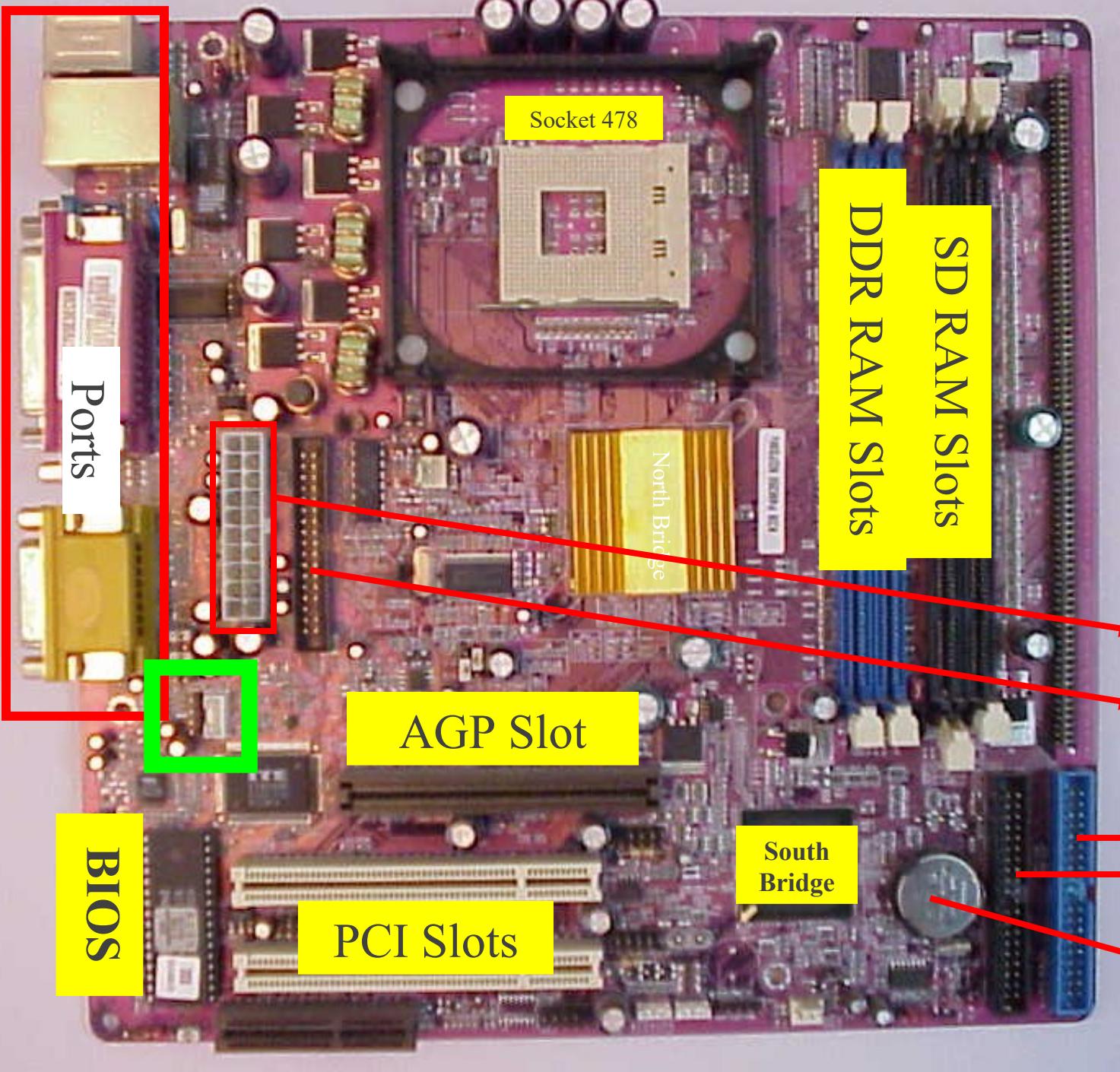




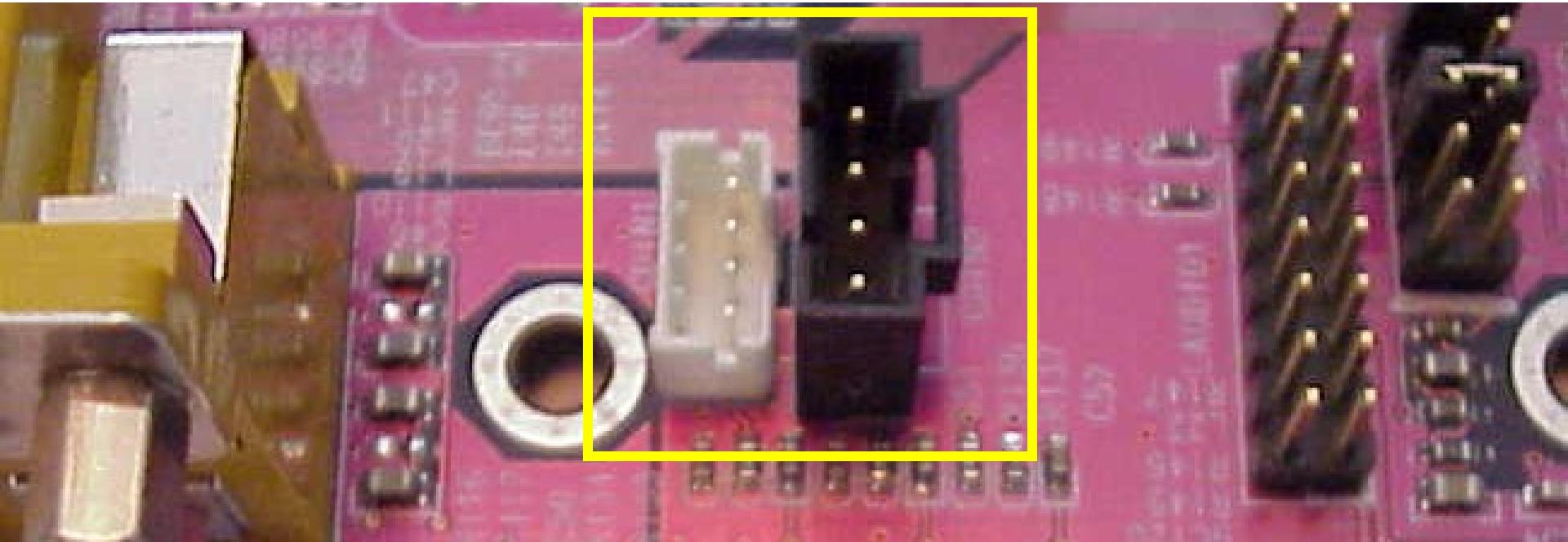


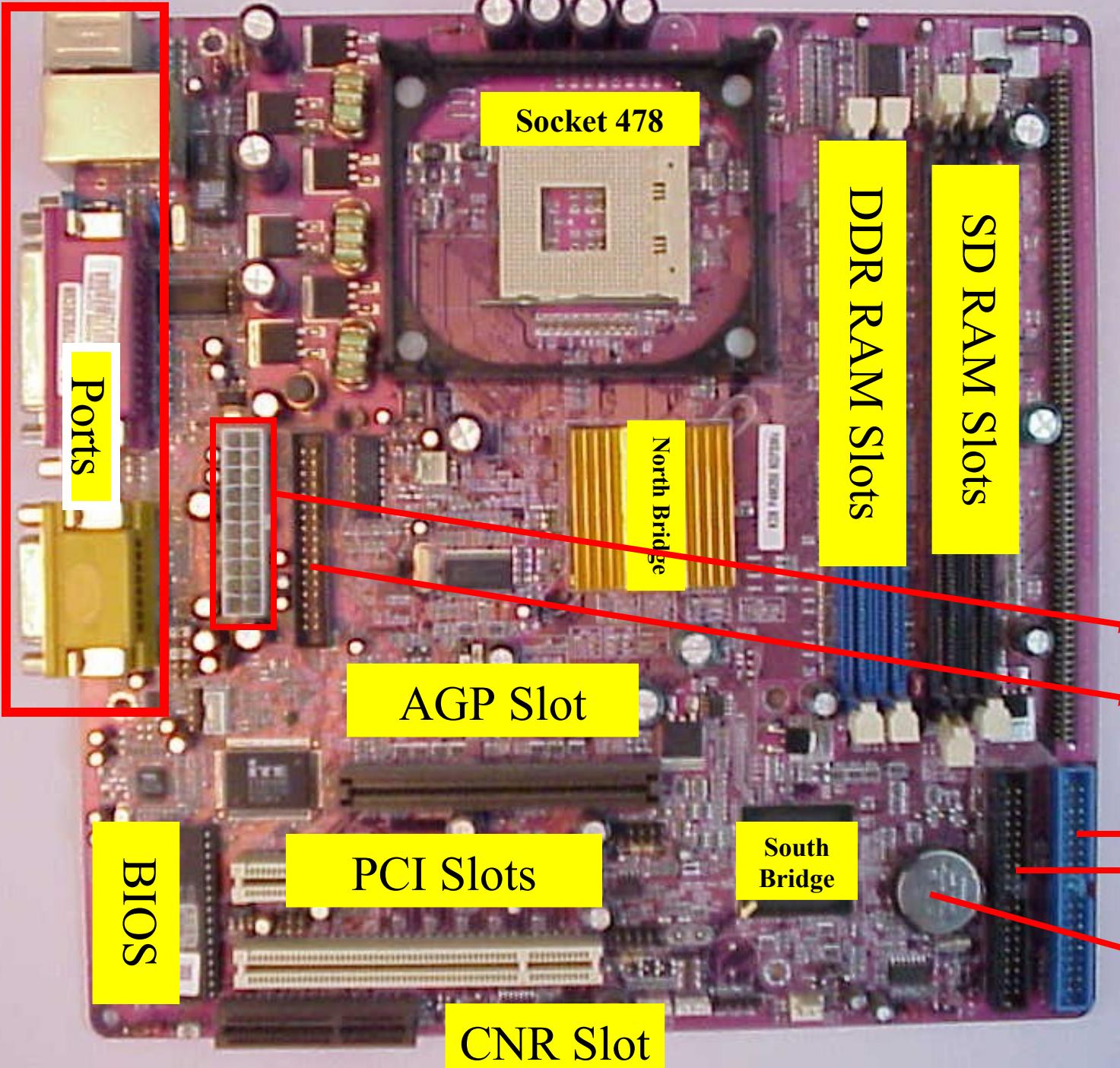
ATX Power Connector

Floppy Drive Connector



CD in





Clock Speed

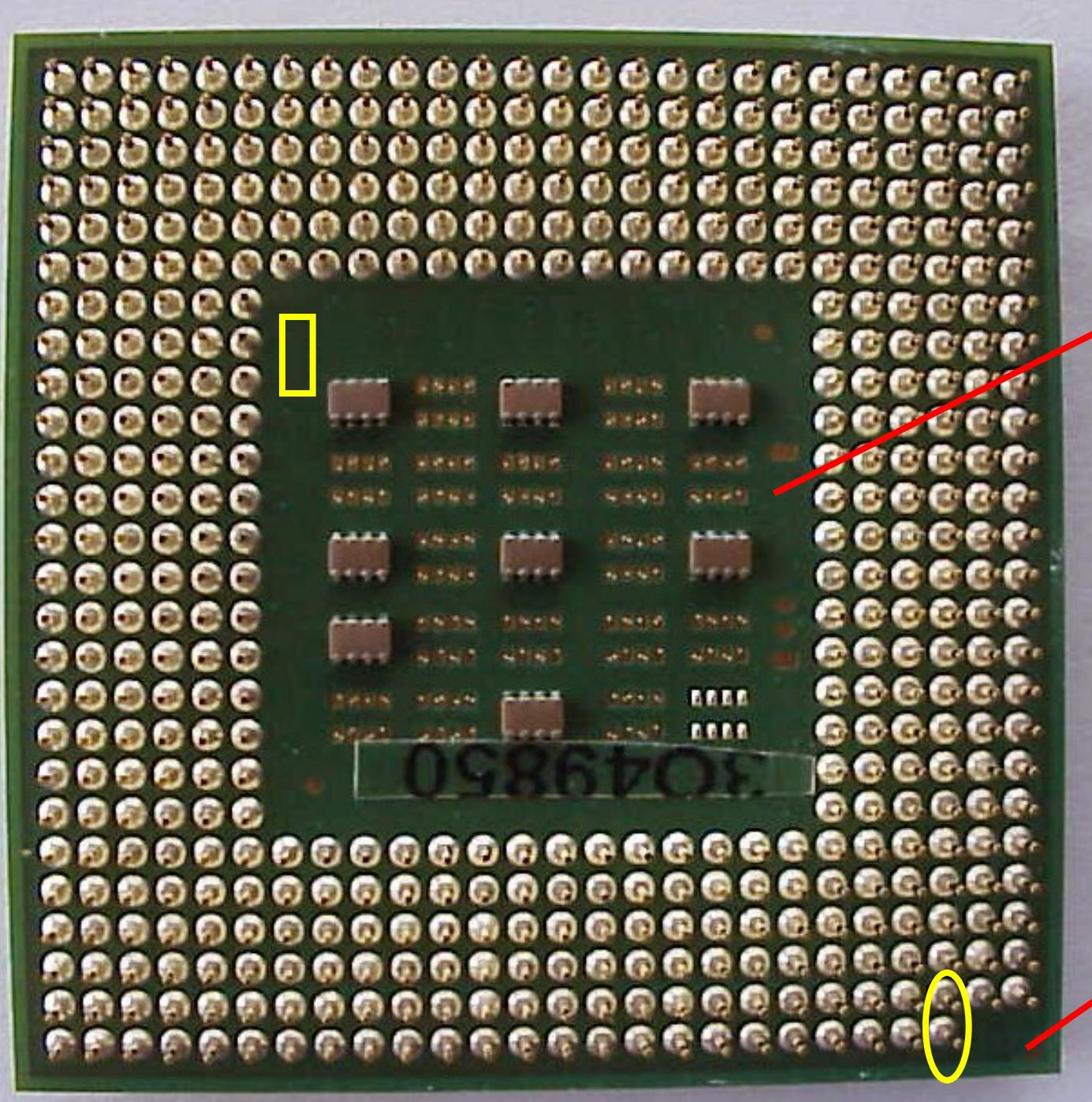
L2 Cache

FSB Speed

Core Voltage

P - IV CPU Top View

Pin 1
Indication

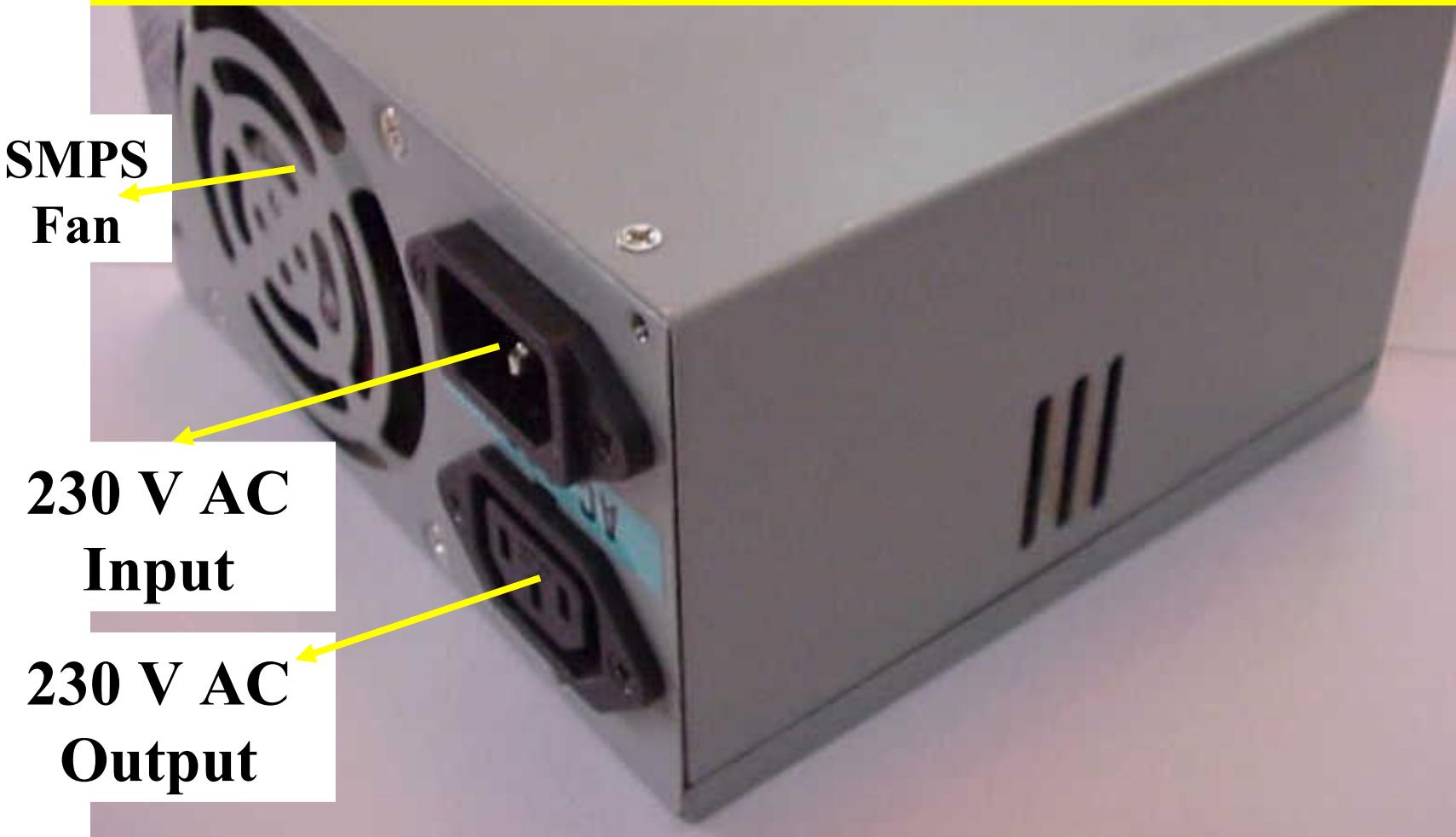


L2 Cache

**Pin 1
Indication**

SMPS

Switching Mode Power Supply



Purple(P) +5V Stand
By

Blue(Blu) -12V

Green(G) Power
Supply On

White(W) -5V

Red(R) +5V

Yellow(Y) +12V

Orange(O) 3.3V

Grey(Gr) Power
Good

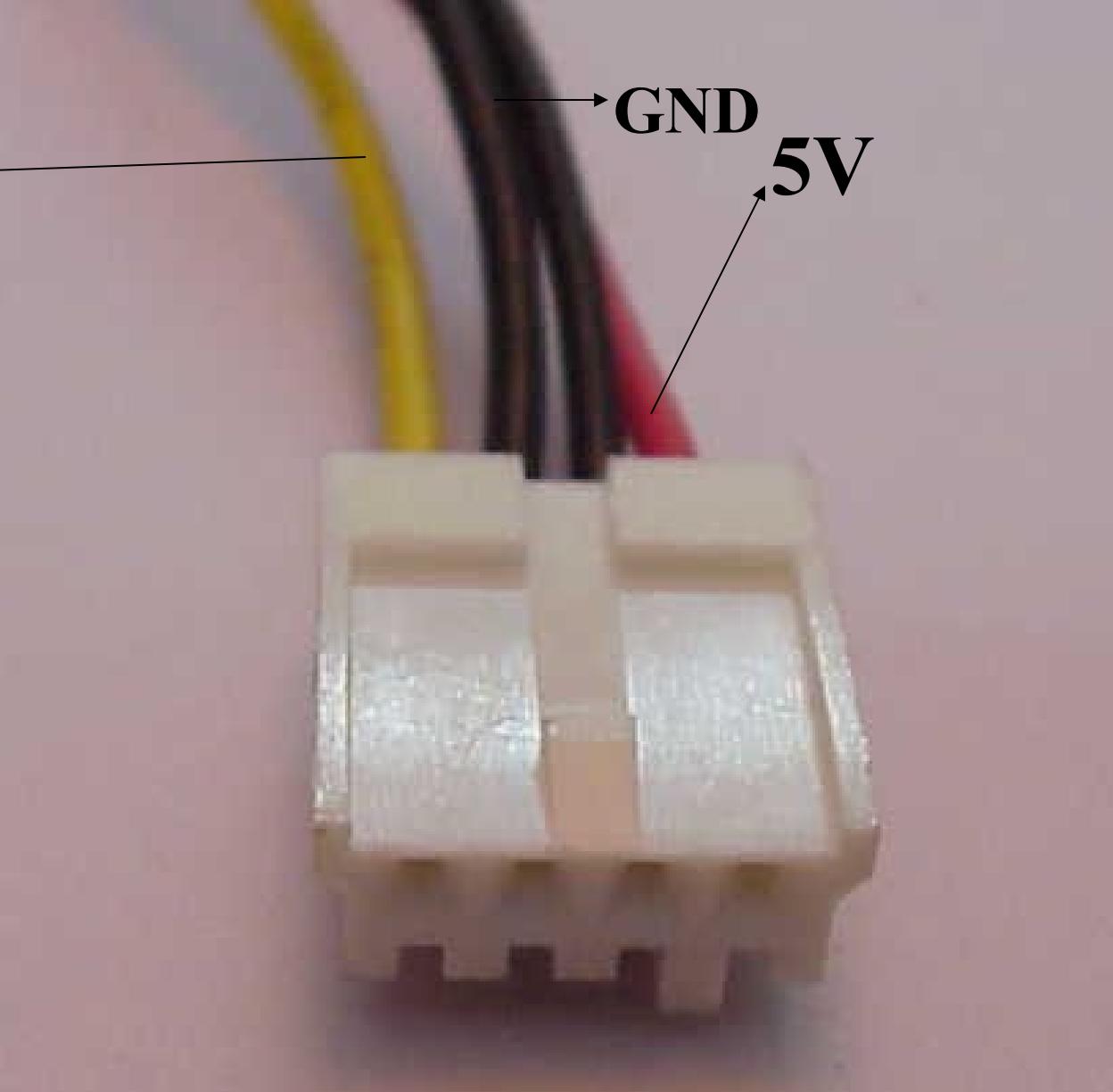
ATX Power Connector

O	Blu	B	G	B	B	B	W	R	R
11	12	13	14	15	16	17	18	19	20

o	1	o	2	B	3	R	4	B	5	R	6	B	7	8	Gr	9	P	10	Y
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	---	---	----	---

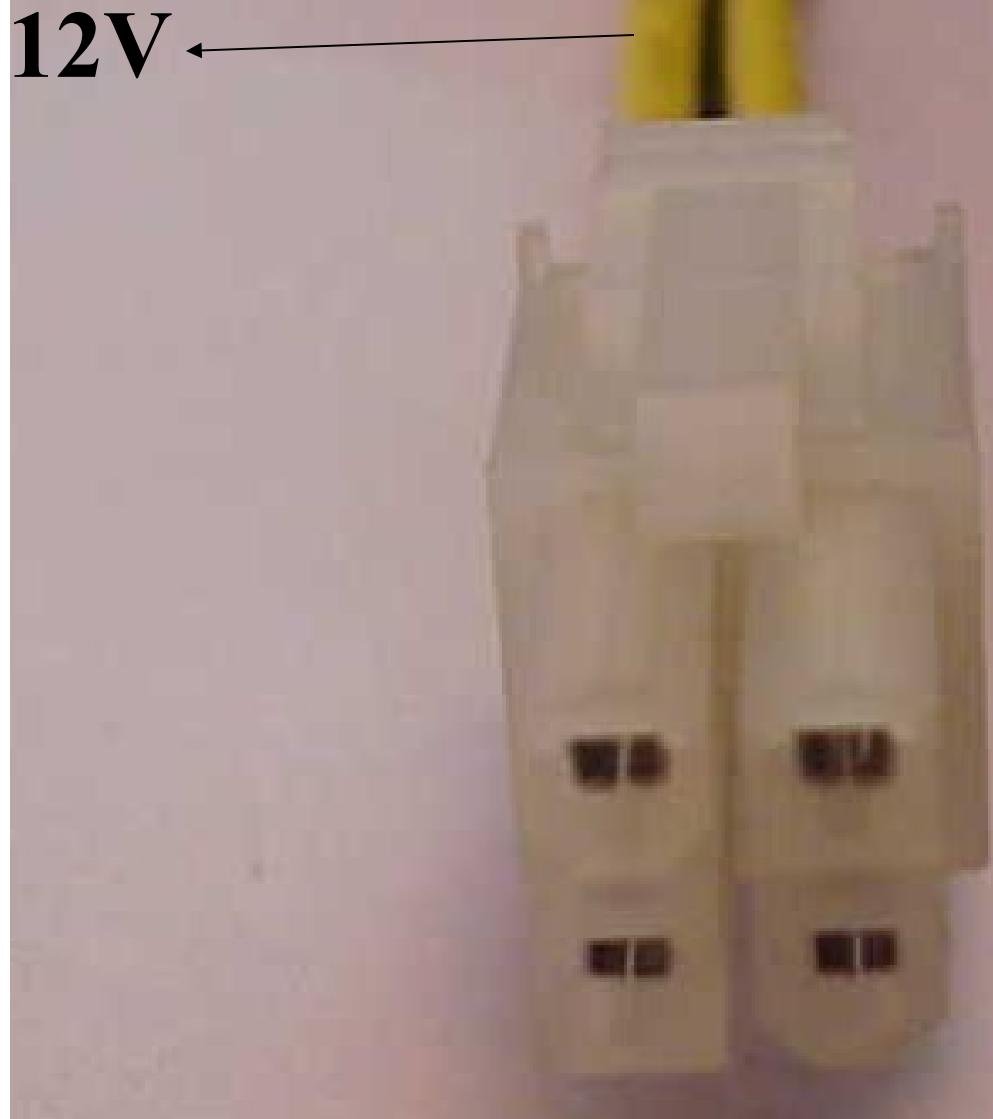


Peripheral Power Connector

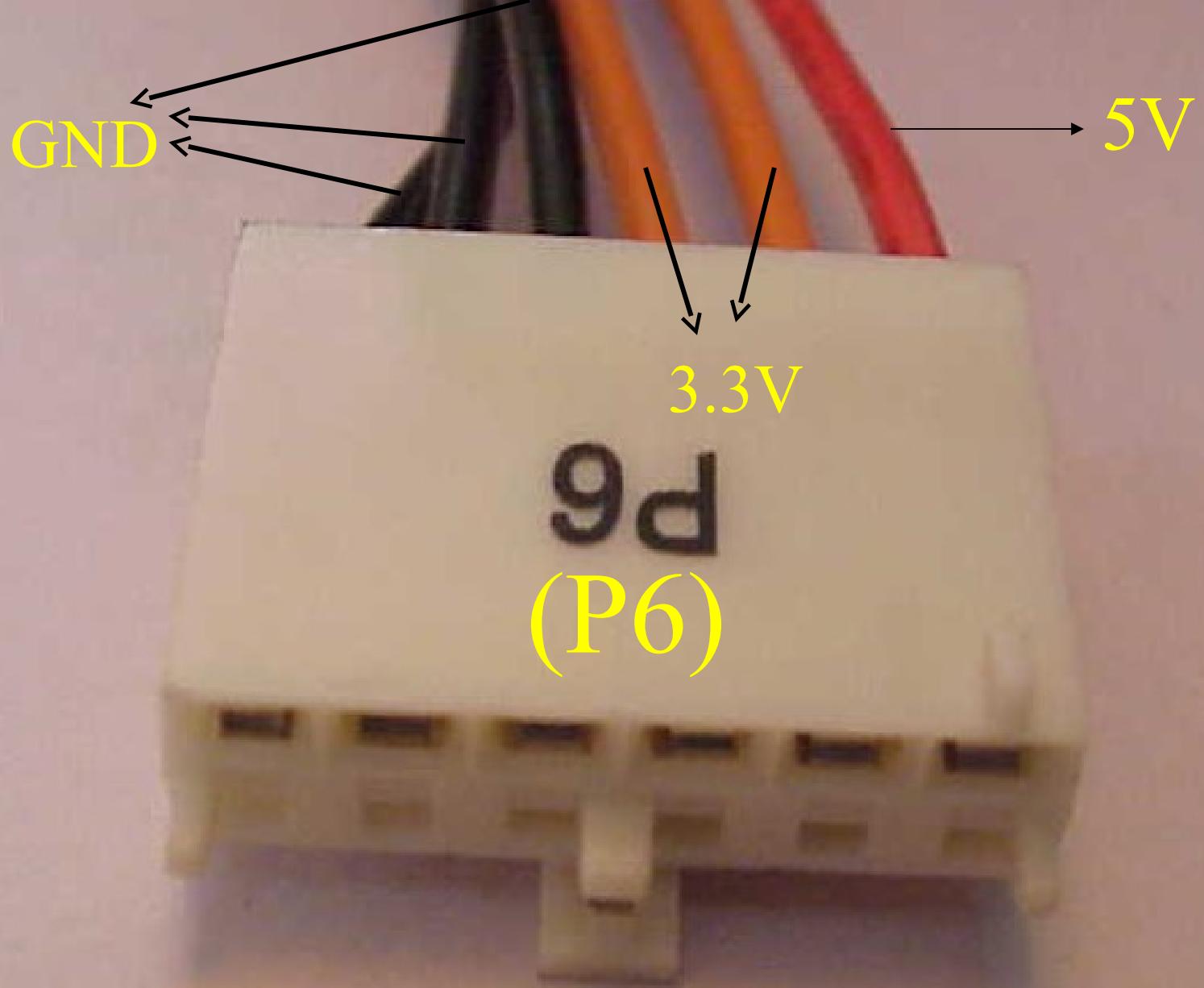


12V ←
→ **GND**
→ **5V**

Floppy Power Connector

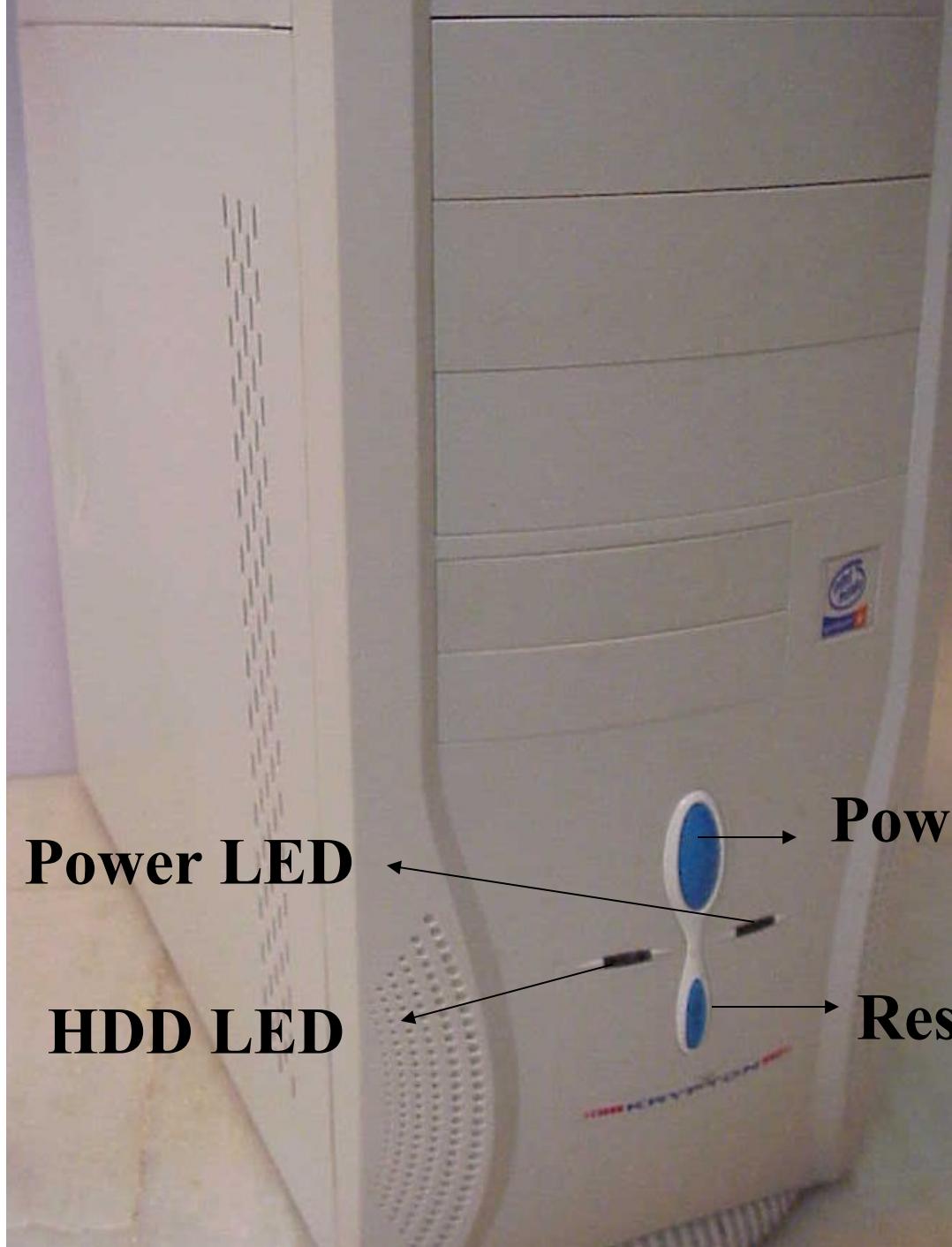


ATX 12V Connector



ATX Auxiliary Connector

Cabinet

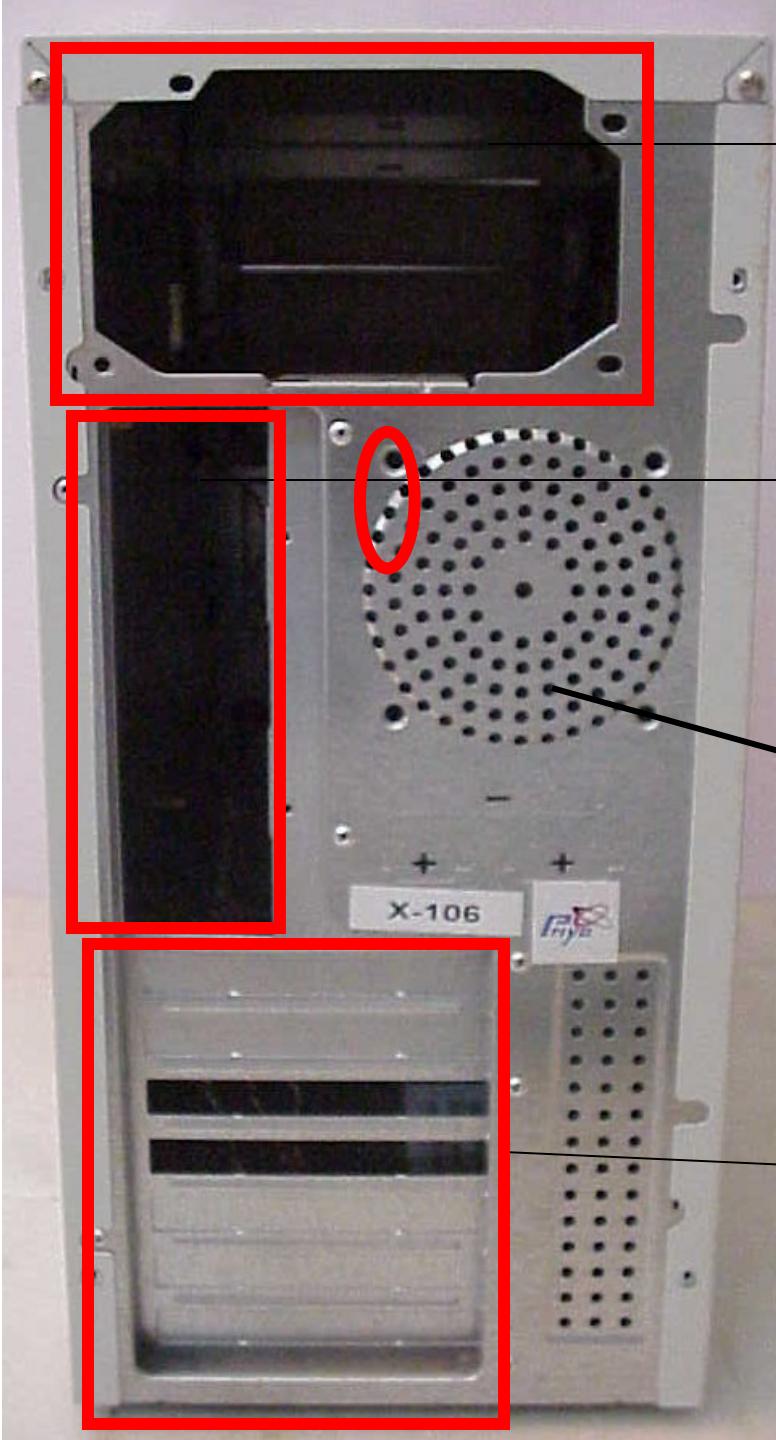


Power LED

HDD LED

Power Switch

Reset Switch



→ **SMPS Case**

→ **Mother
Board Ports
case**

→ **System Fan
Case**

→ **ADD ON
Cards Cases**

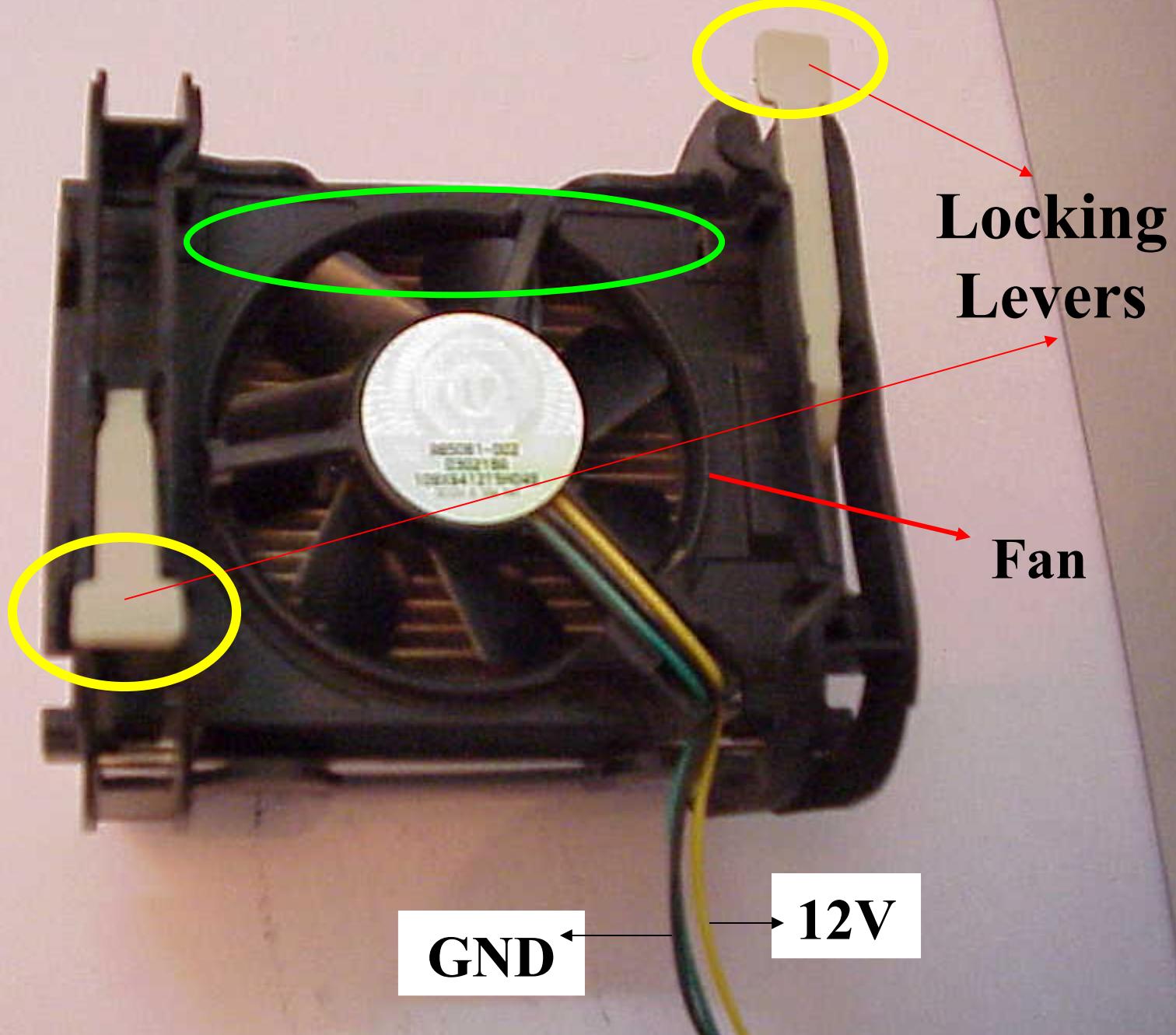
CDD Cabin

HDD &
FDD Cabin

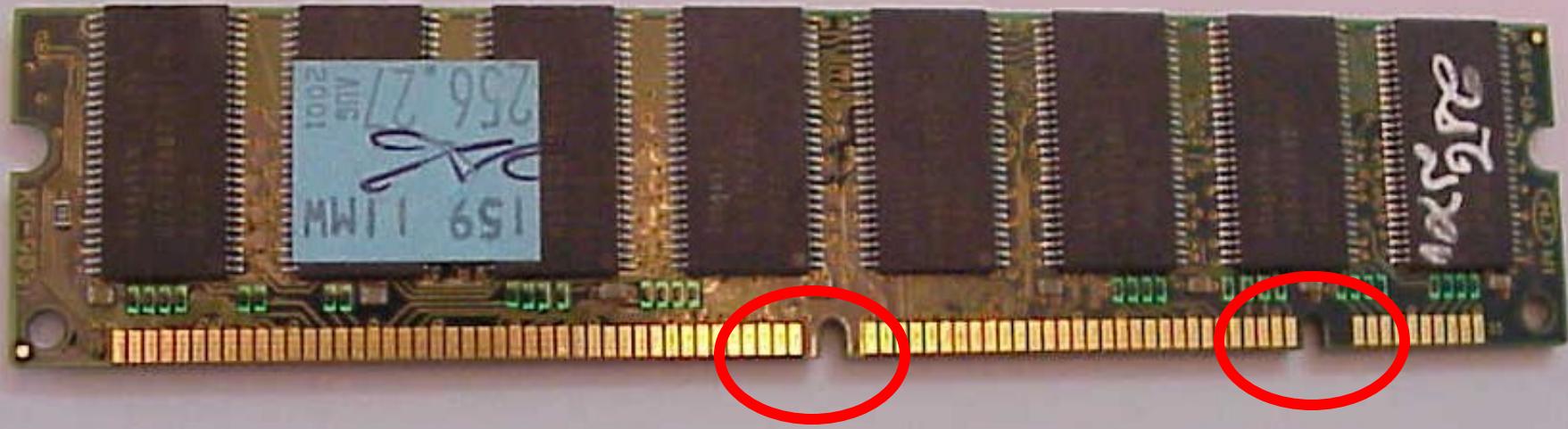
Speaker



CPU Heat Sink & Fan

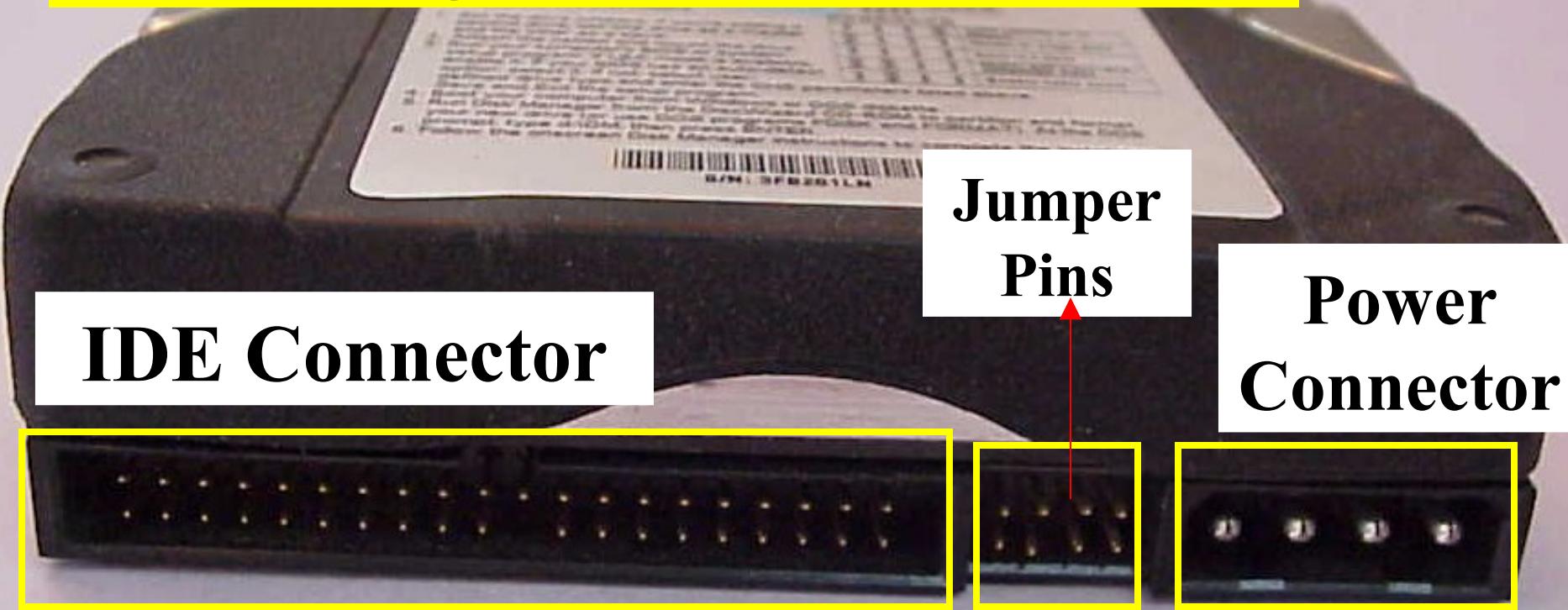


Random Access Memory



SD (Synchronous Dynamic) RAM

IDE – Integrated Drive Electronics

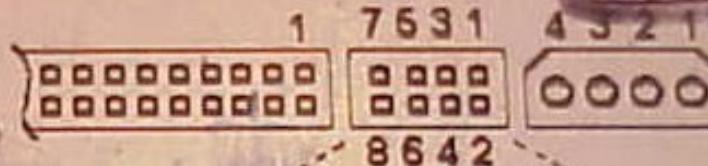


Hard Disk Drive (HDD)

Hard Top View



Installation Summary

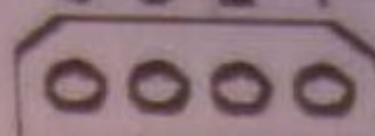


If you cannot use DiscWizard:

1. Set the drive jumpers. If you're adding a second drive, set one drive as a master and the other as a slave.
2. Attach the cables and mount the drive.
3. Run your computer's BIOS or system setup program. If LBA mode is available, enable it. If your BIOS has an auto-detect option, select it. If not, select user-defined drive type and enter the CHS parameters listed above.
Save and Exit the setup program.
4. Boot your computer from Windows or DOS diskette.
5. Run Disk Manager from the DiscWizard CD-ROM to partition and format your new drive (or use DOS programs FDISK and FORMAT). At the DOS prompt, type d:\DM, then press ENTER.
6. Follow the onscreen Disk Manager instructions to complete the installation.

1 7531

4321

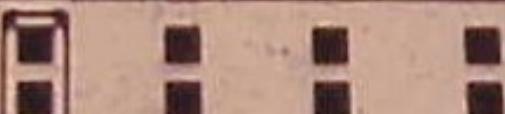


8642

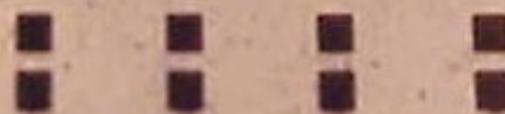
(7-8) (5-6) (3-4) (1-2)



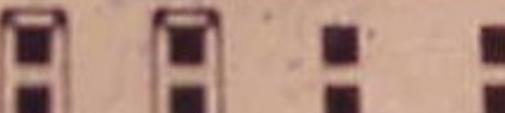
Limit capacity to 32 Gbytes



Master or single drive



Drive is a slave



Master with a non-ATA-compatible slave



Enable cable select

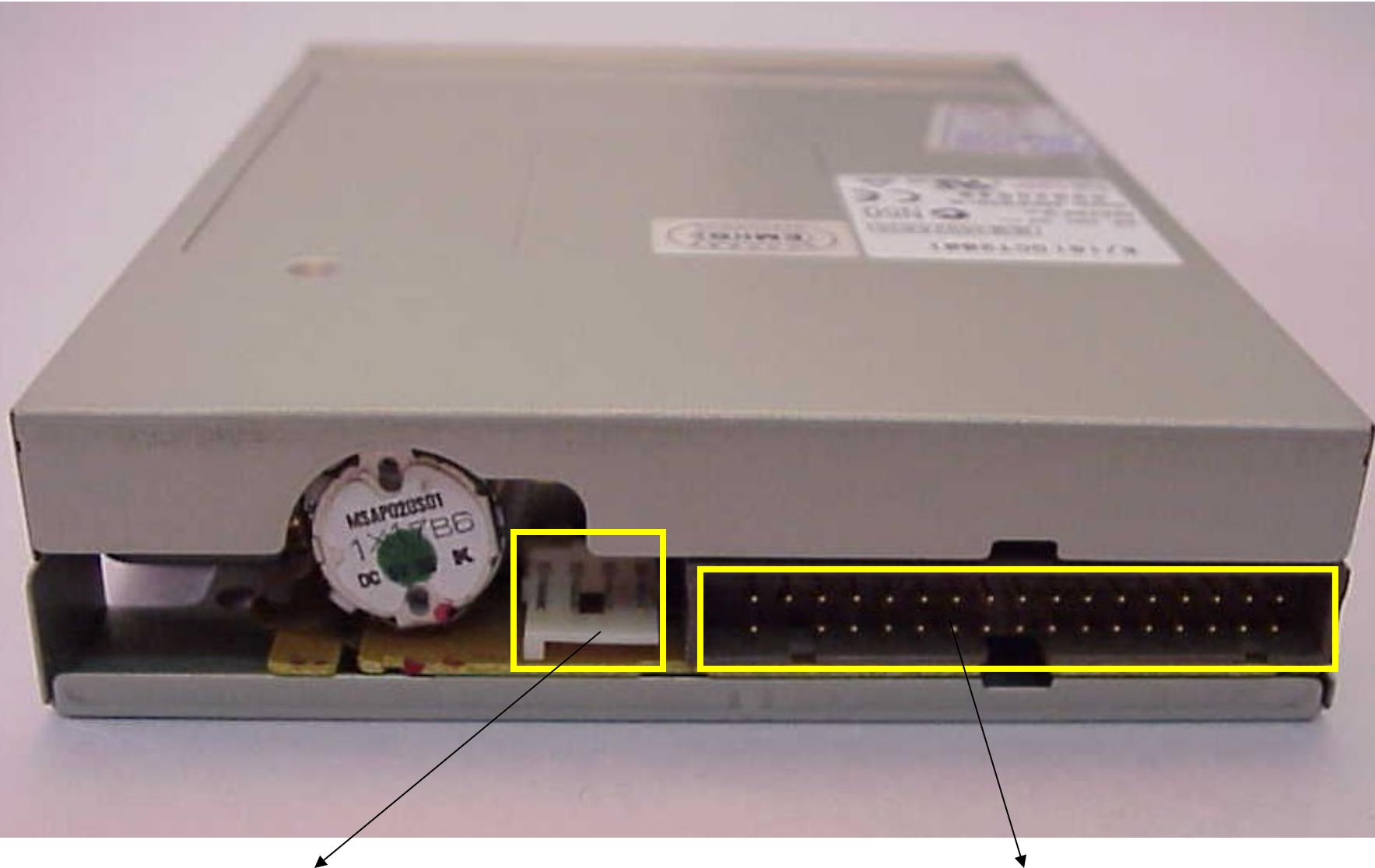
Floppy Disk Drive (FDD)



Access LED

Eject Button

FDD Back View



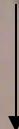
Power Connector

Data Cable Connector

CD ROM Drive



SAMSUNG



Vendor Name

Head Phones Jack



Volume Control

Access LED



Speed of a CDD

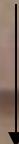


52X Max

$$52X = 52 \times 150 \text{ KBps} = 7800 \text{ KBps}$$

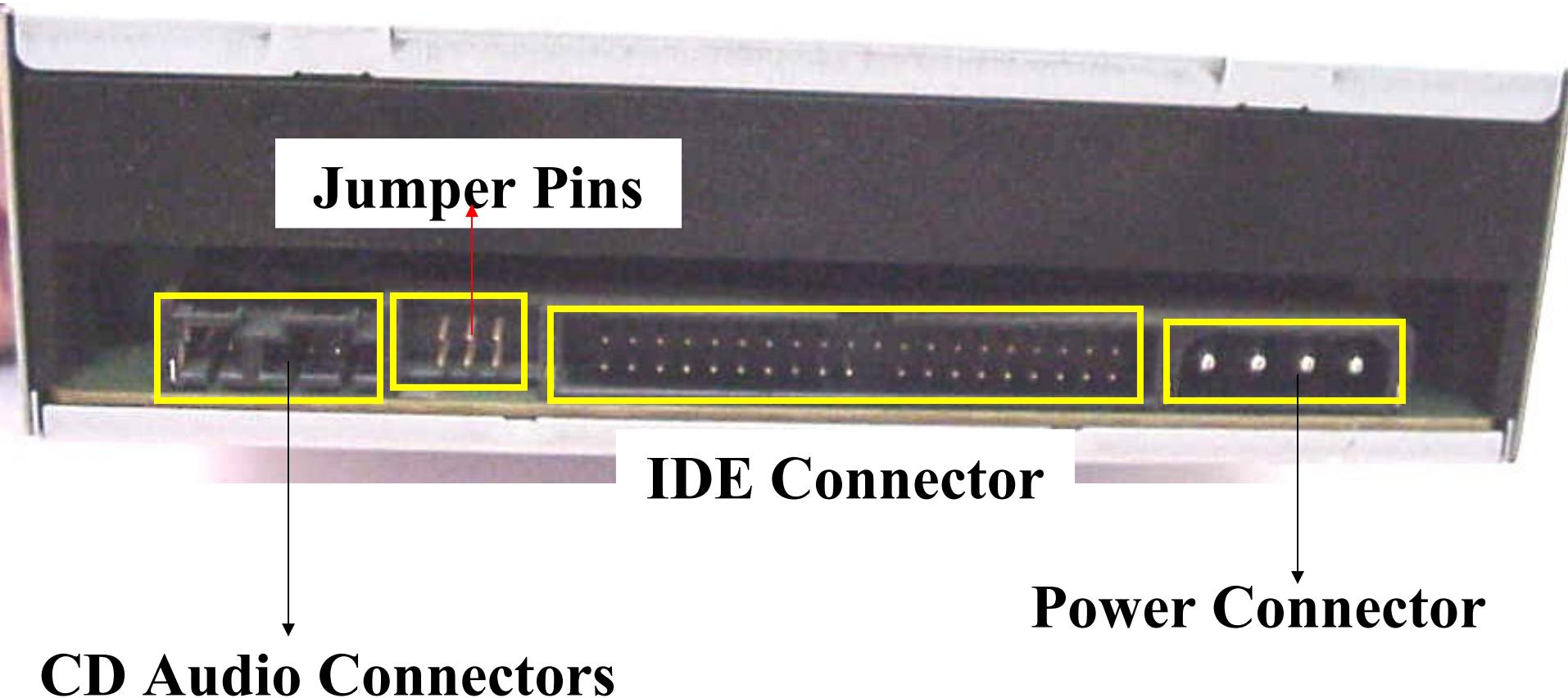
COMPACT
disc

Pin Hole



Open / Close Button

CDD Rear View



CDD Connectors Specifications

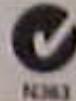
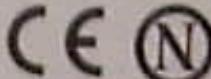
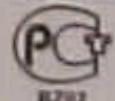


CDD Top View

SAMSUNG

5V === 1.3A
12V === 1.5A

CD-Master 52E MODEL SC-152



Tested To Comply
With FCC Standards

FOR HOME OR OFFICE USE

檢磁 3892D170

PRODUCT IS CERTIFIED BY THE
MANUFACTURER TO COMPLY WITH DHHS
RULES 21CFR CHAPTER 1, SUBCHAPTER J
APPLICABLE AT DATE OF MANUFACTURE.

THIS PRODUCT IS NOT INTENDED FOR SALE IN KOREA.
A/S IN KOREA MUST BE PAID FOR.

(본 제품은 한국의 지역 판매용으로 한국내에서는 유상 A/S 처리됩니다.)

Made for Indian Conditions



CLASS 1 LASER PRODUCT
APPAREIL A LASER DE CLASSE 1
LASER SCHUTZ KLASSE 1 PRODUKT
NACH IEC 60825

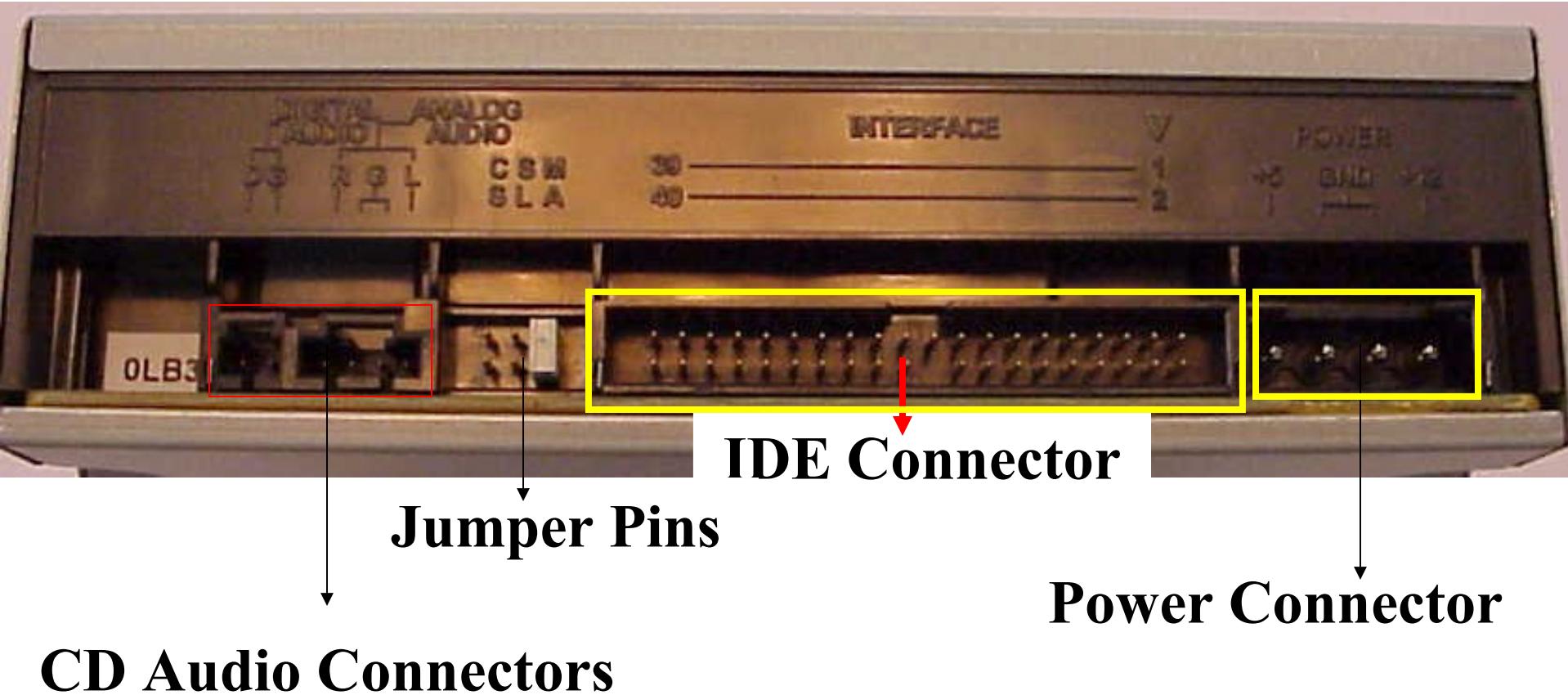
CAUTION
LASER RADIATION WHEN OPEN DO NOT
STARE INTO BEAM

SAMSUNG ELECTRONICS CO., LTD.
416, Maetan-3Dong, Paldal-Gu, Suwon City,
Kyungki-Do, 442-742, Korea

CD Writer



CD Writer Rear View





LG

Vendor Name

Volume Control

Head Phones Jack

COMPACT
disc!
ReWritable

Write Speed

Read Speed

52x24x 52x

Re Write Speed

Pin Hole

Access LED

Open / Close Button

CD Writer Top View



Electronics (Huizhou) Inc.
LG Rd. 12, Zhongkai Hi-Tech Industry
Development Zone, Huizhou, Guangdong, China.



Data Storage
Designed by Hitachi-LG Data Storage, Inc.

MANUFACTURED:
3850H-1346K

FEBRUARY 2003

CD-R/RW DRIVE
MODEL : GCE-8520B

5V/12V == 0.8A/1.7A

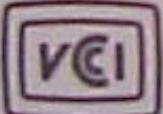
THE USE OF THIS PRODUCT IS RESTRICTED BY ASME B80.2



Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE



D33017



CLASS 1 LASER
PRODUCT TO IEC 60825
LASER KLASSE 1
PRODUKT NACH IEC 60825

CAUTION
ADVARSEL
ADVARSEL
VAROI
WARNING

VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.
SYNLIG OG USYNLIG LASERSTRÅLING VED ÅPNING. UNDGÅ UDSETTELSE FOR STRÅLING.
SE IKKE IND I STRÅLEN-HELLER IKKE MED OPTISKE INSTRUMENTER.
SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. UNDGÅ EksPOSERING FOR STRÅLEN.
STIRR IKKE INN I STRÅLEN ELLER SE DIREKTE MED OPTISKE INSTRUMENTER.
AVATTAESSÄ OLET ALTTINA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSÄTEILYLLÉ.
ÄLA TUJUOTA SÄTEESEN ÄLKÄ KATSO SITÄ OPTISEEN LAITTEEN LÄPI.
SYNLIG OCH OSYNLIG LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD. STRÅLEN ÄR FARLIG.
STIRRA EJ IN I STRÅLEN OCH BETRAKTA EJ STRÅLEN MED OPTISKA INSTRUMENT

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

PRODUCT COMPLIES WITH DHHS RULES 21 CFR, SUBCHAPTER J IN EFFECT AT DATE OF MANUFACTURE.

DHHS CODE: GH
FACTORY ID: GH
MADE IN CHINA

Screws



Outer

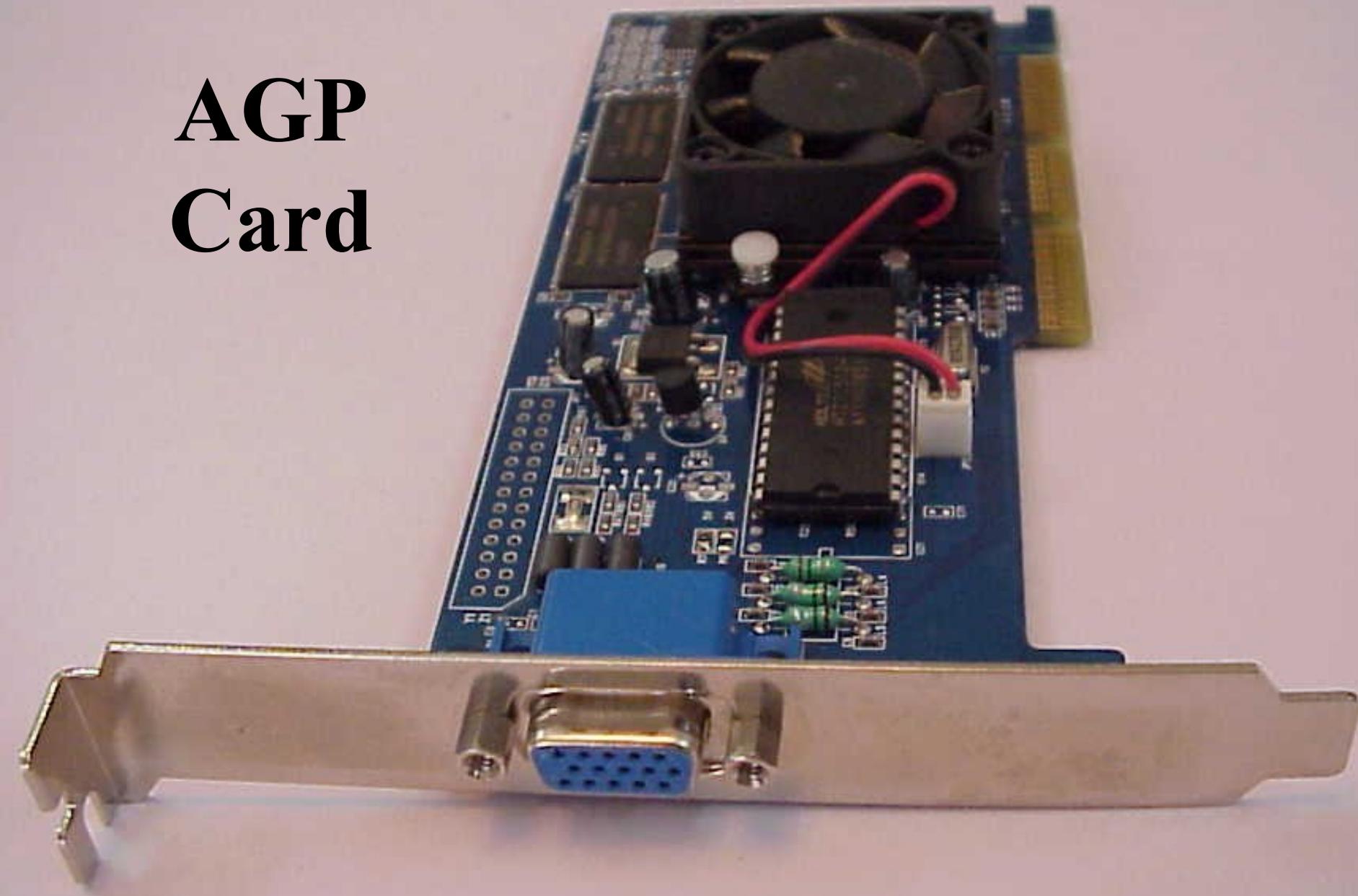


Inner

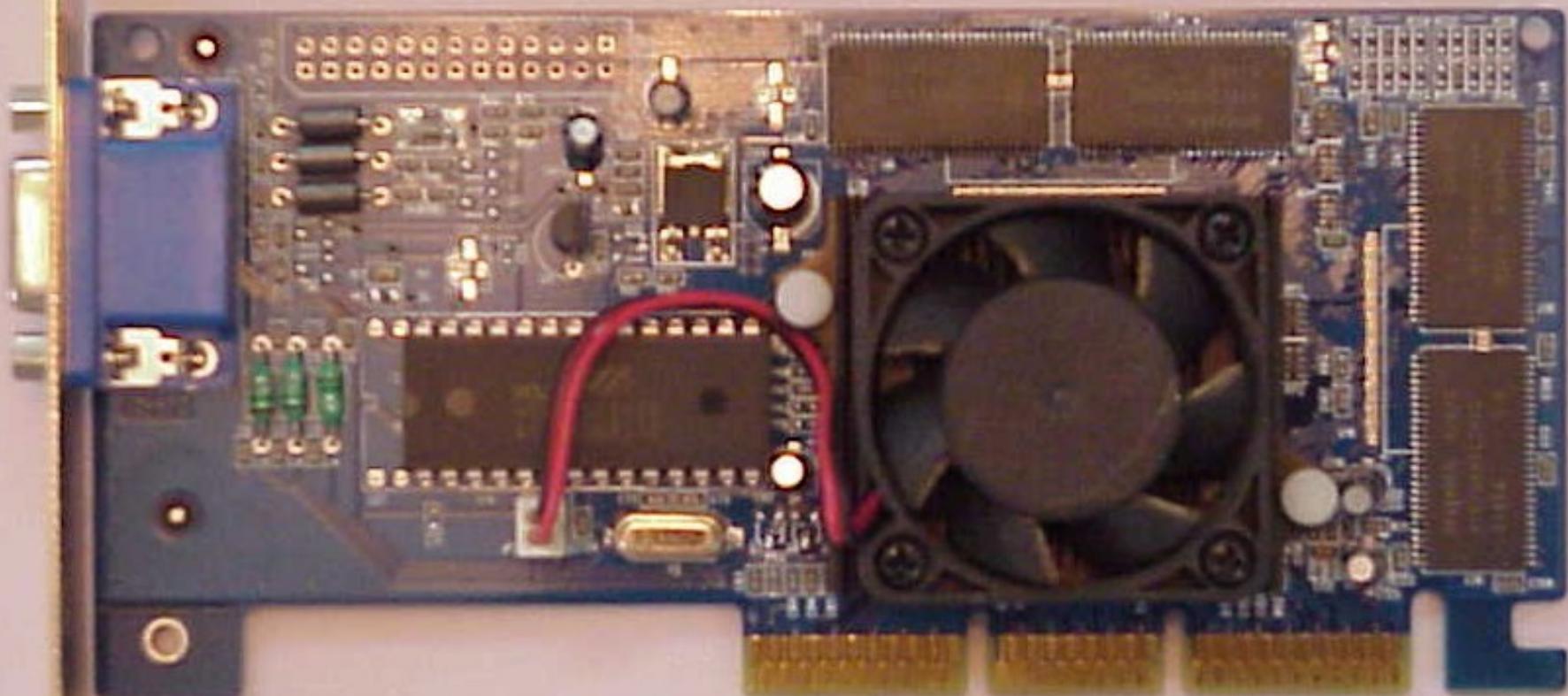


Mother Board

AGP Card



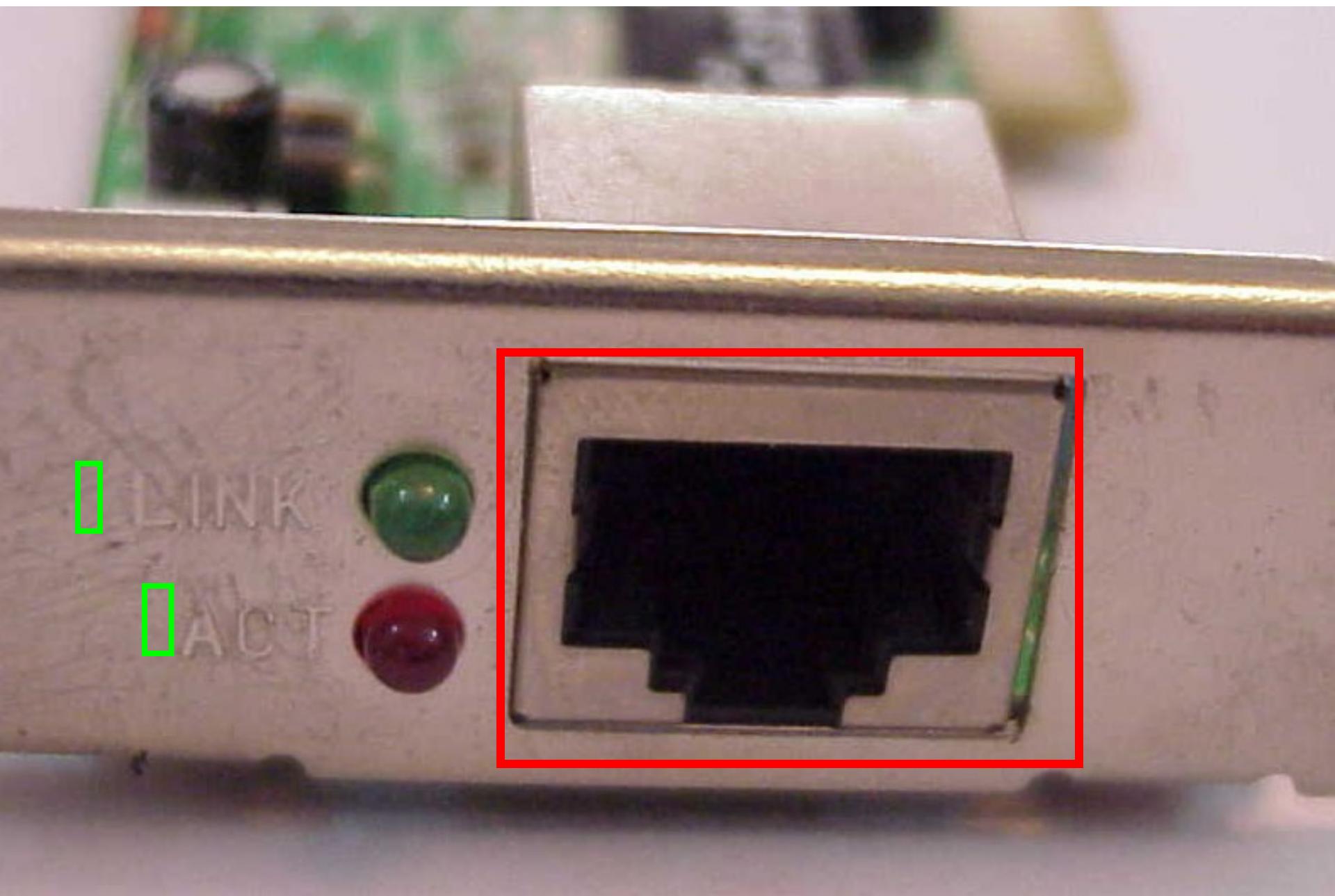
AGP Card top view

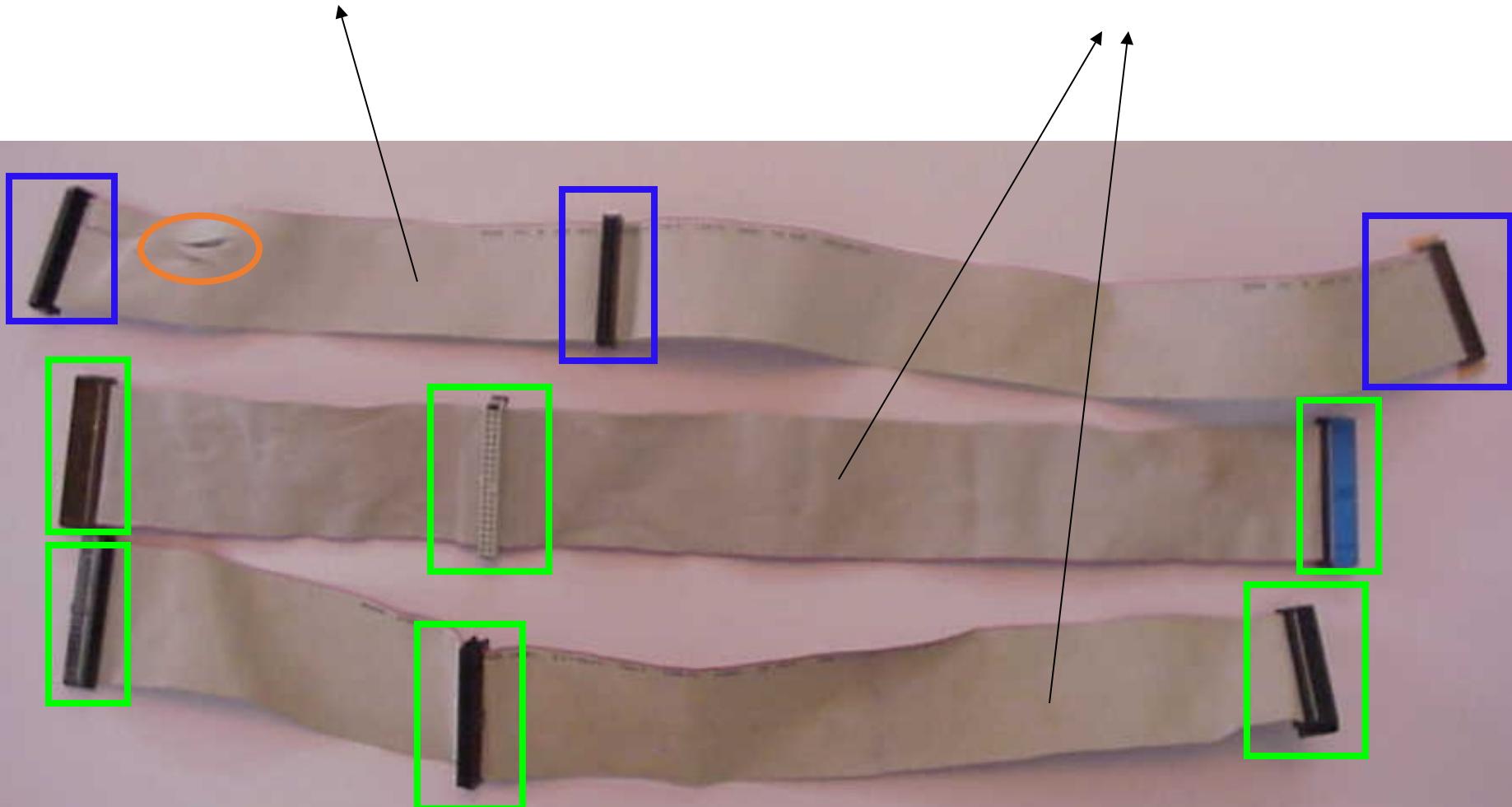


LAN Card



RJ 45 Jack





Low Speed

40
Conductor
Cable

High Speed

80
Conductor
Cable

Assembling

In this section you will learn

How to assemble a Pentium – IV PC with

- P – IV 1.6 GHz 478 pin CPU
- KOB P4M266 NDFSMX Mother Board
- 256 MB SD RAM
- Sony FDD
- Creative Infra 48X CD ROM Drive
- Seagate 40 GB HDD
- 10 /100 Realtek Ethernet Card







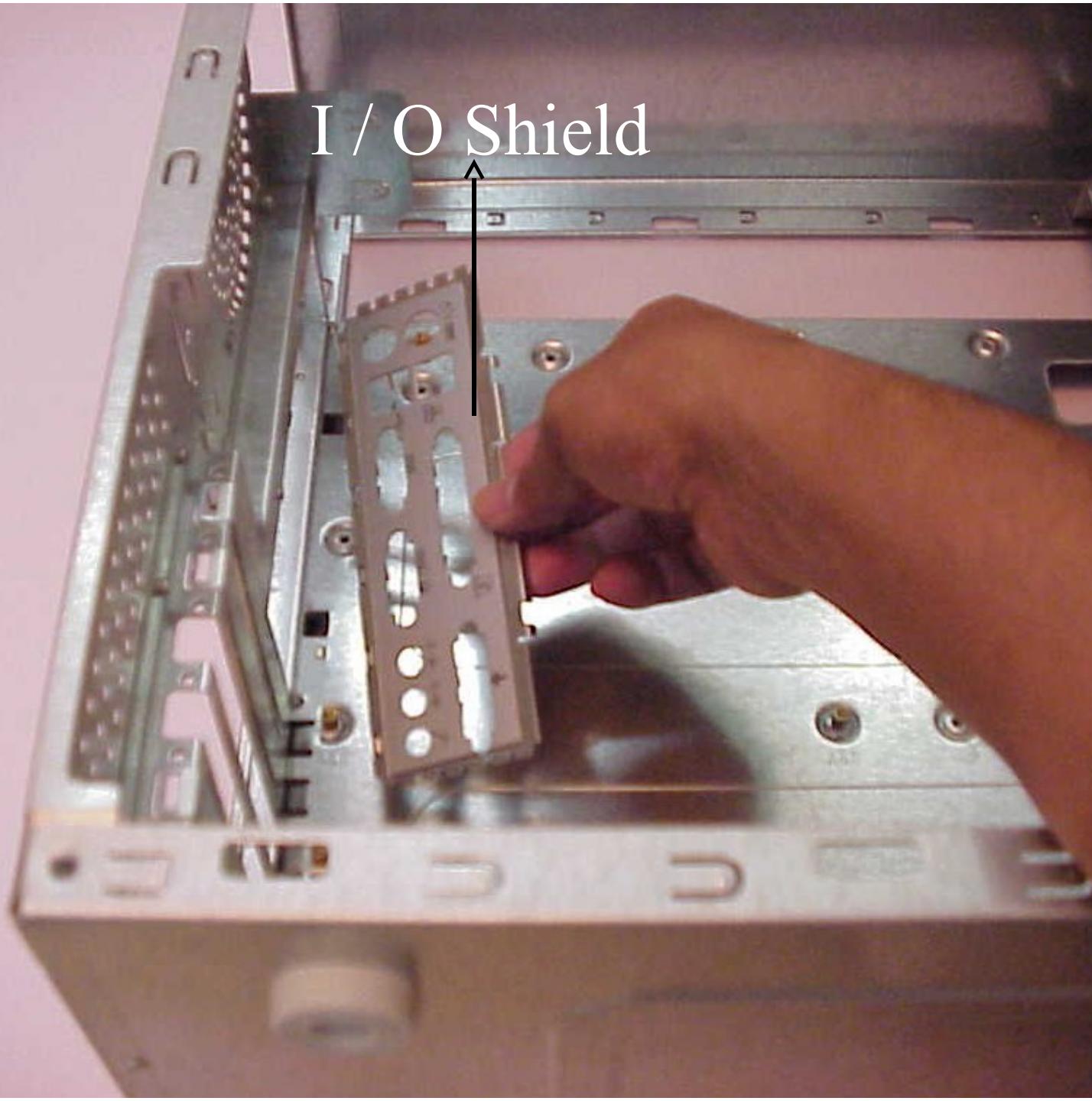


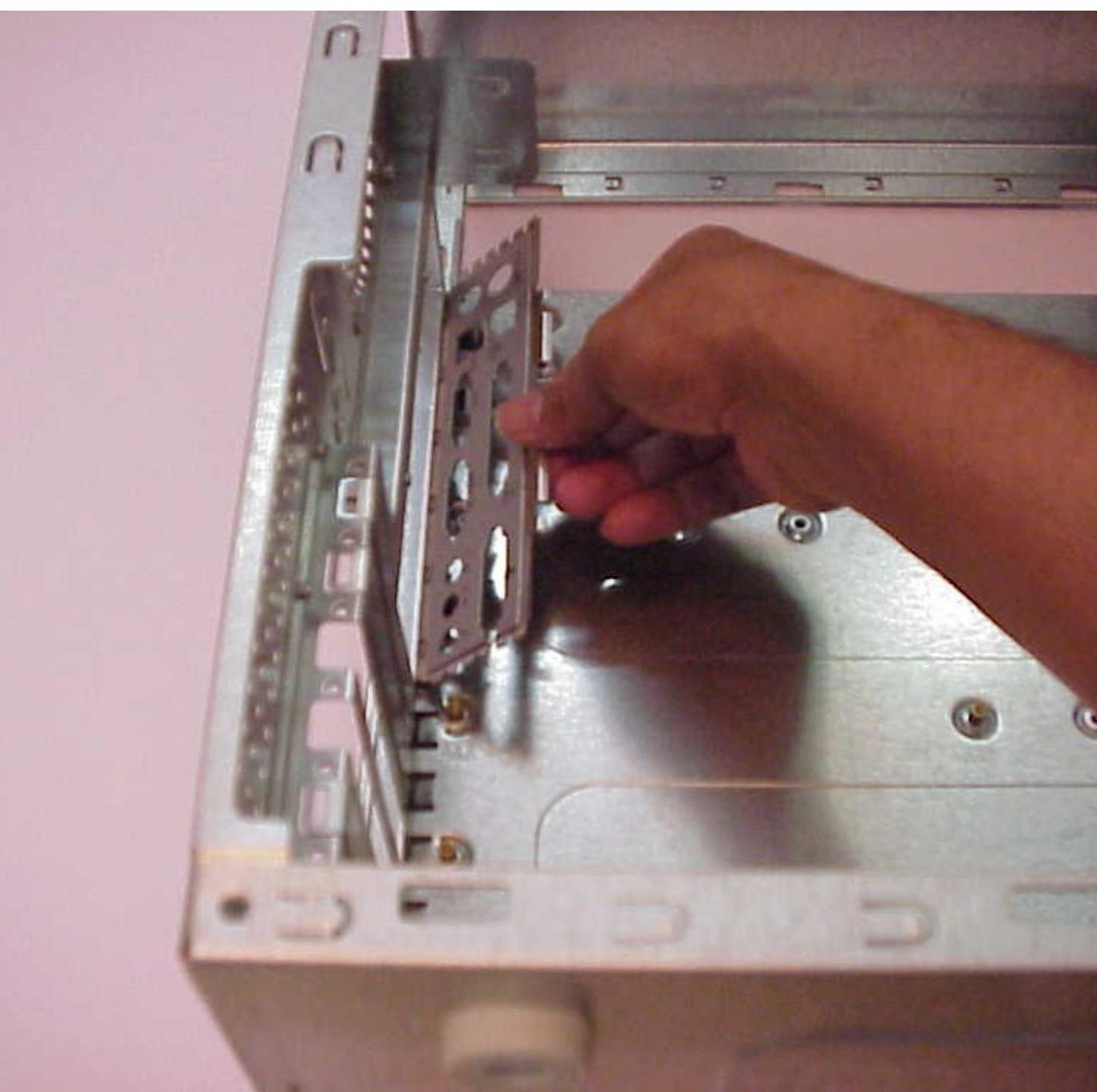


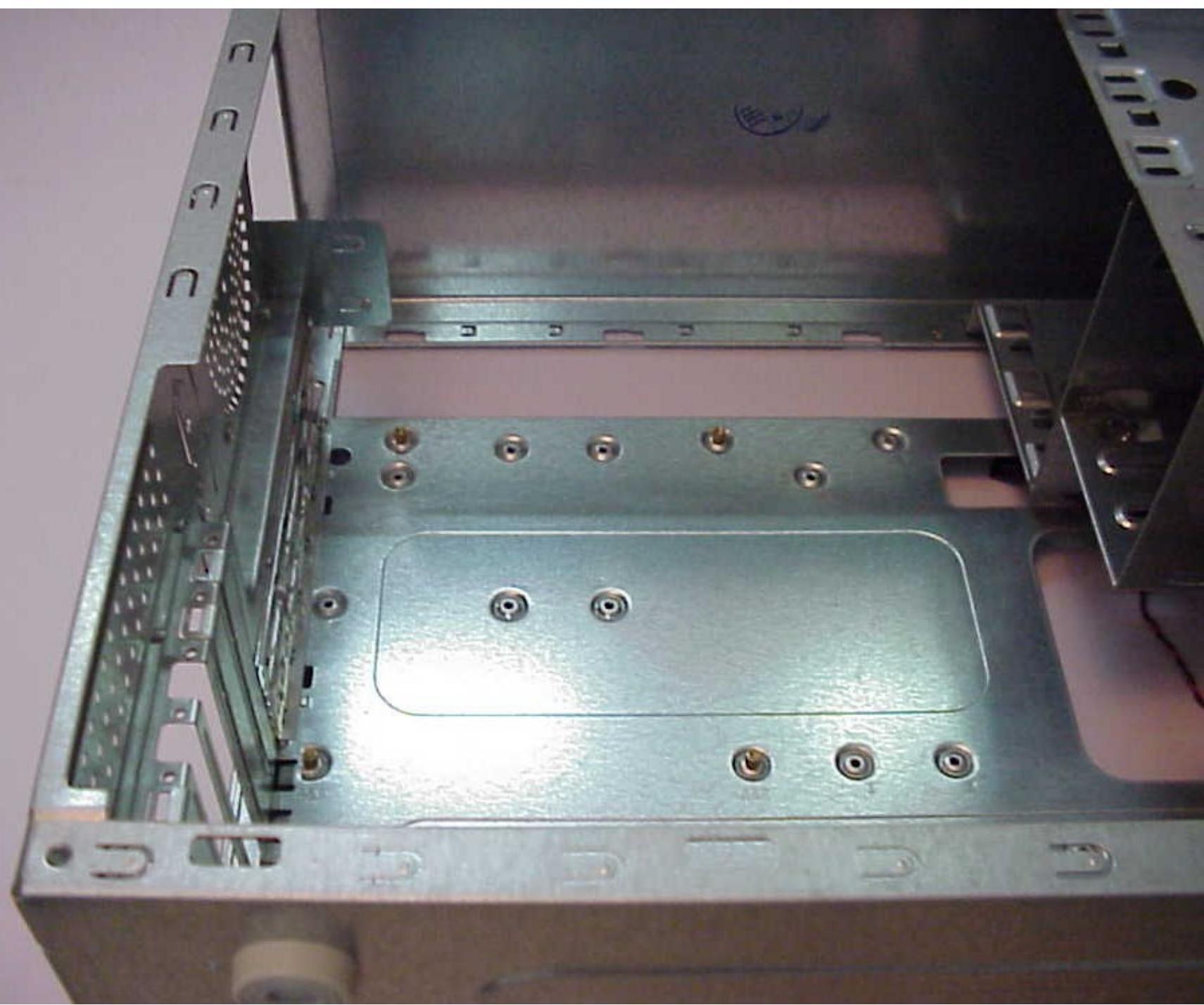
X-106

R_H

I / O Shield



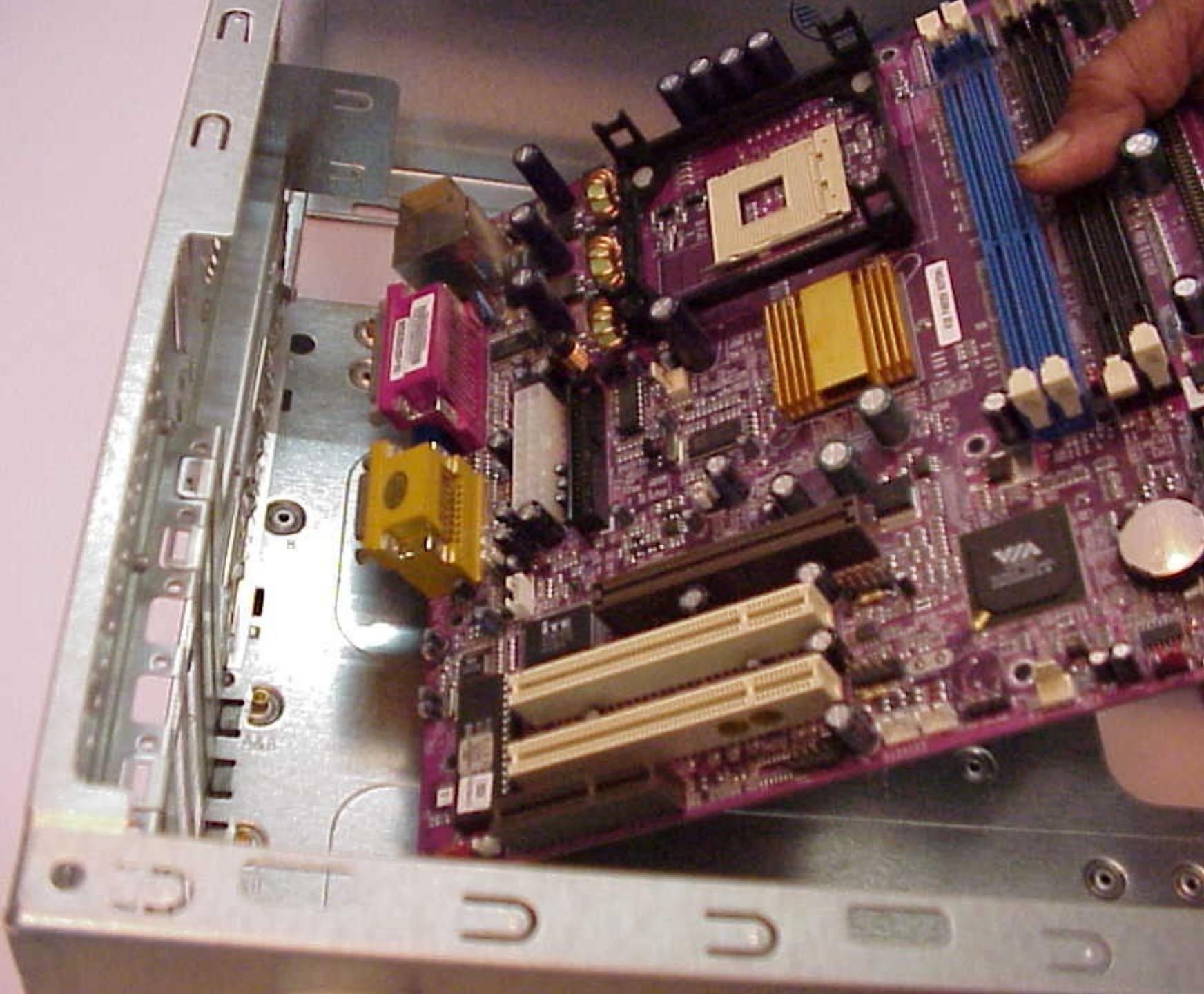


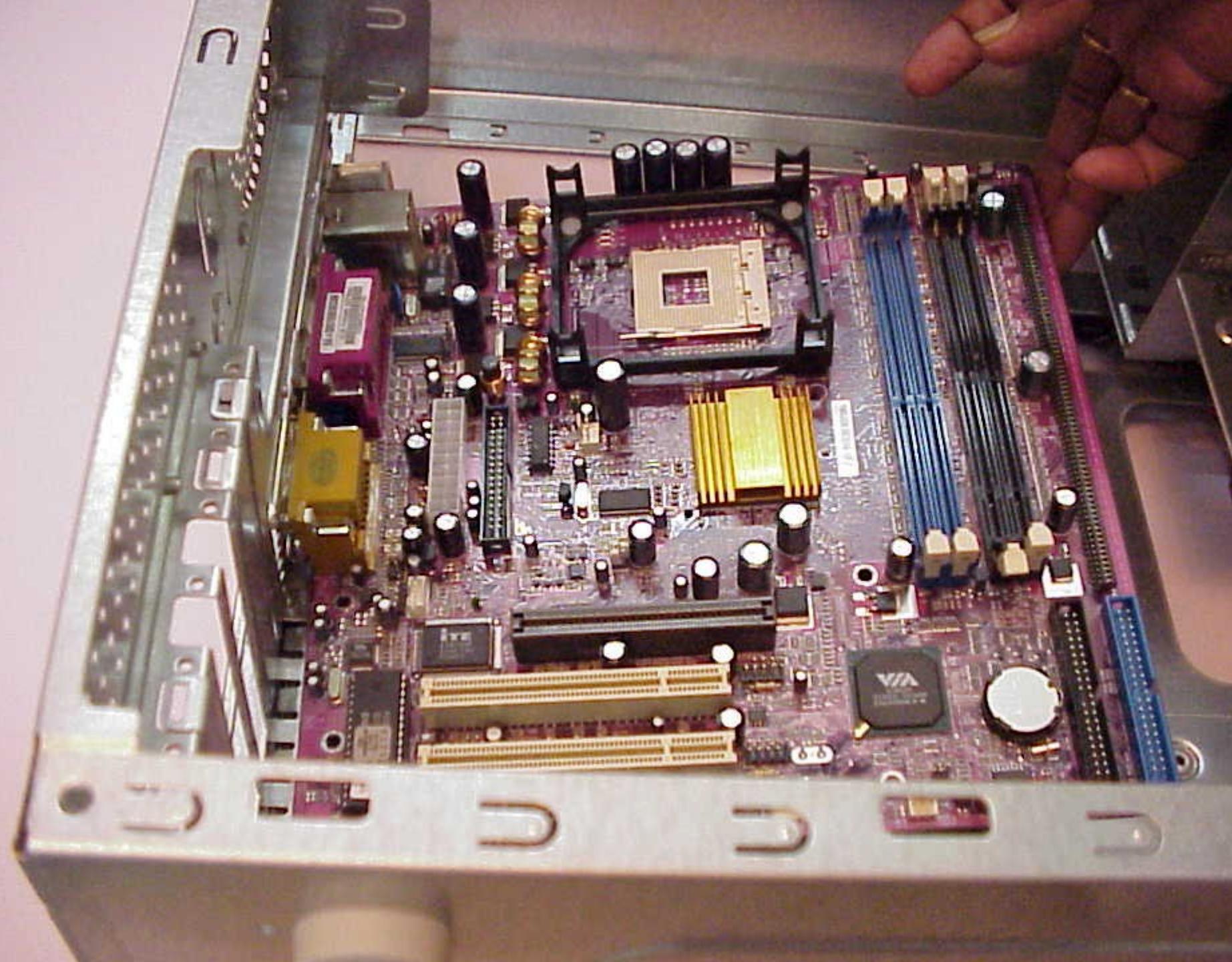


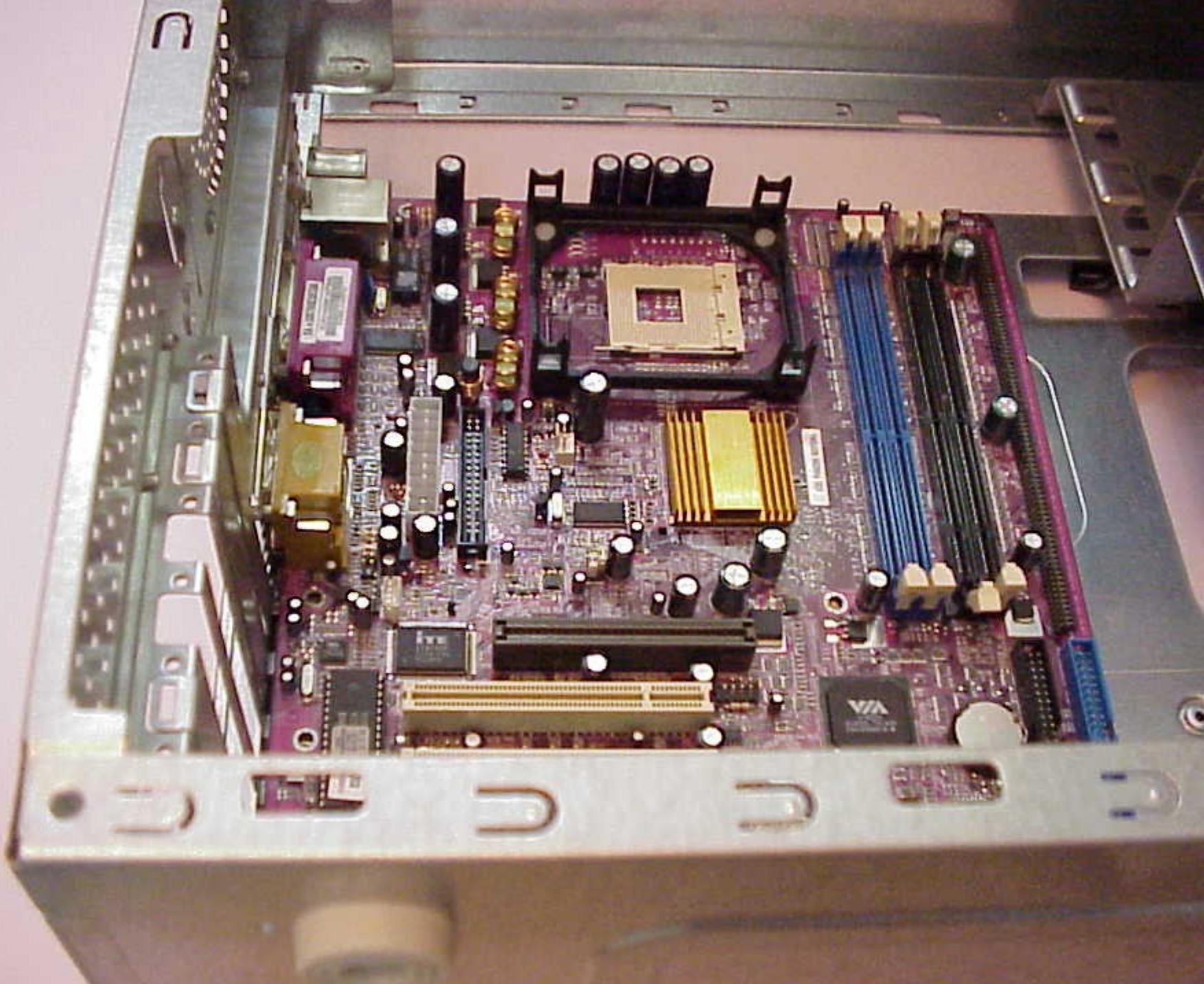
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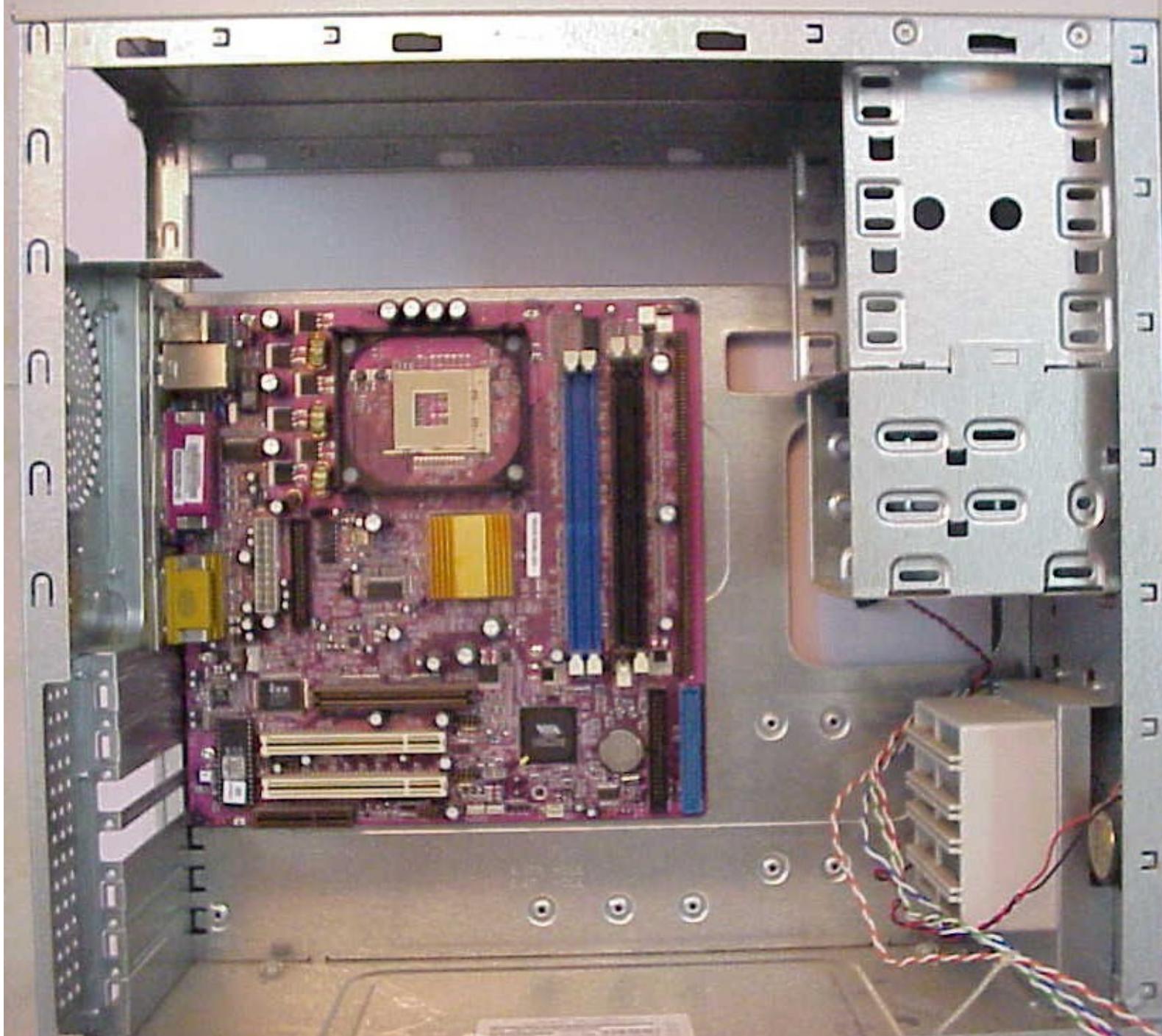


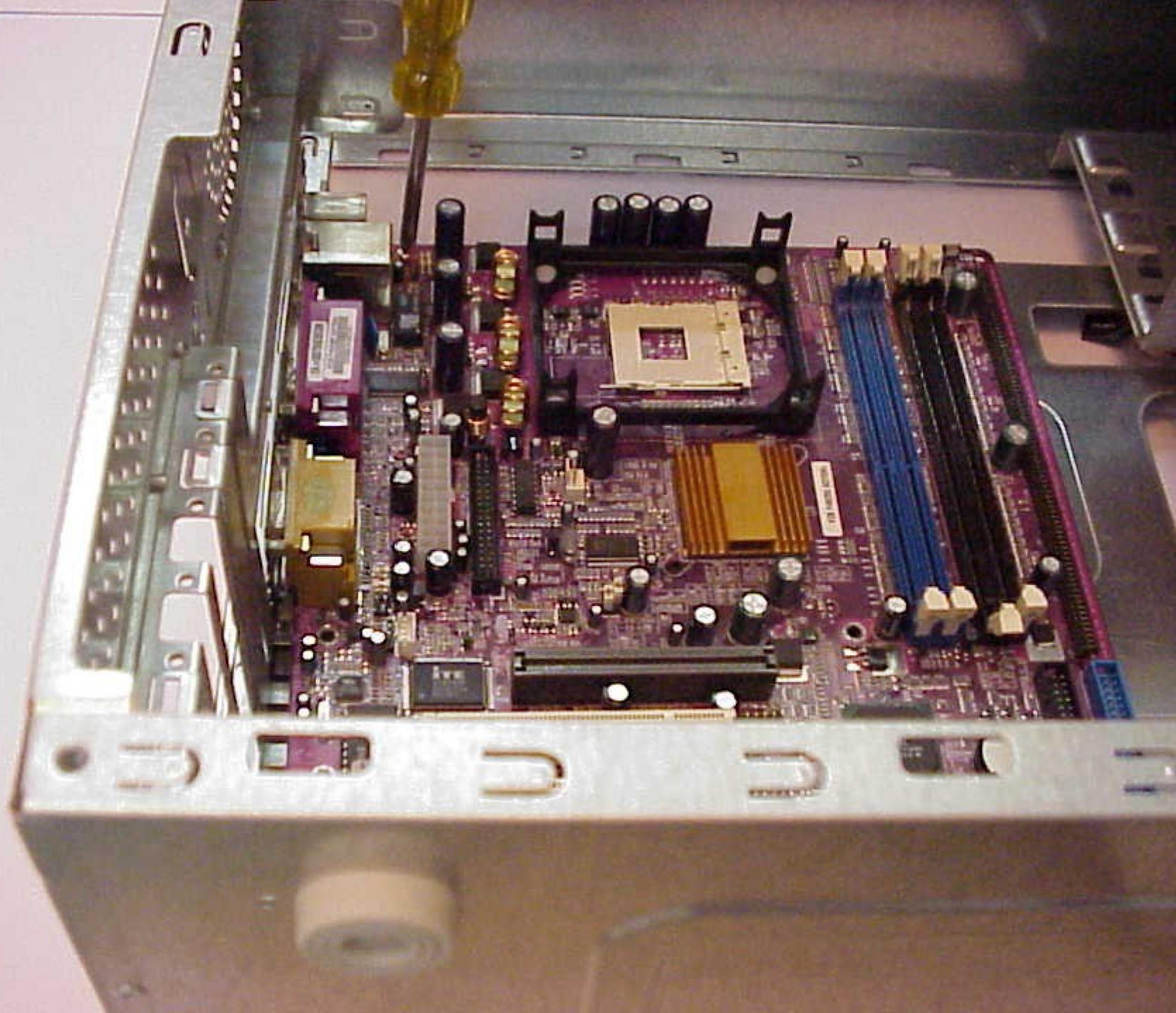
Installing the Mother Board

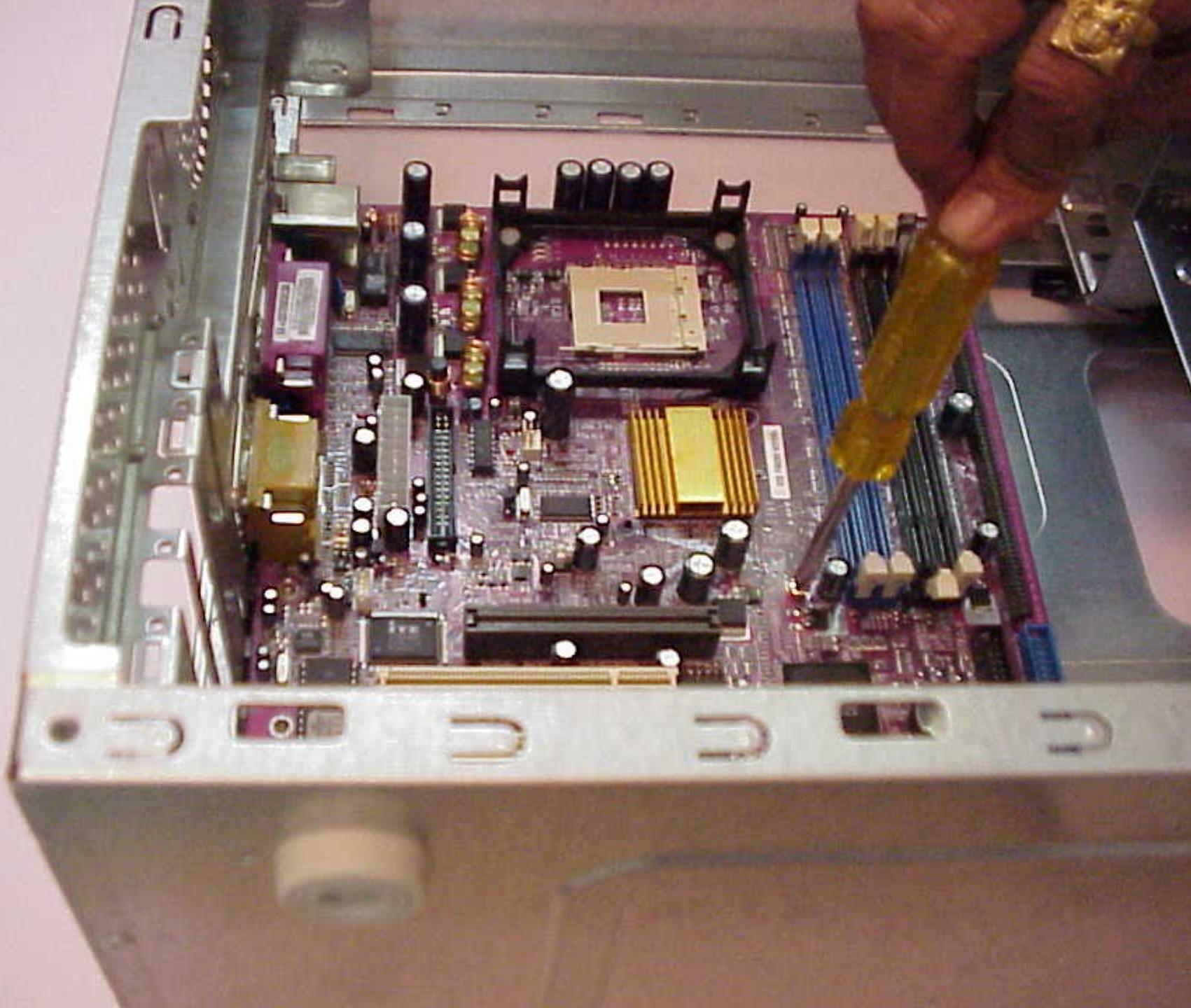


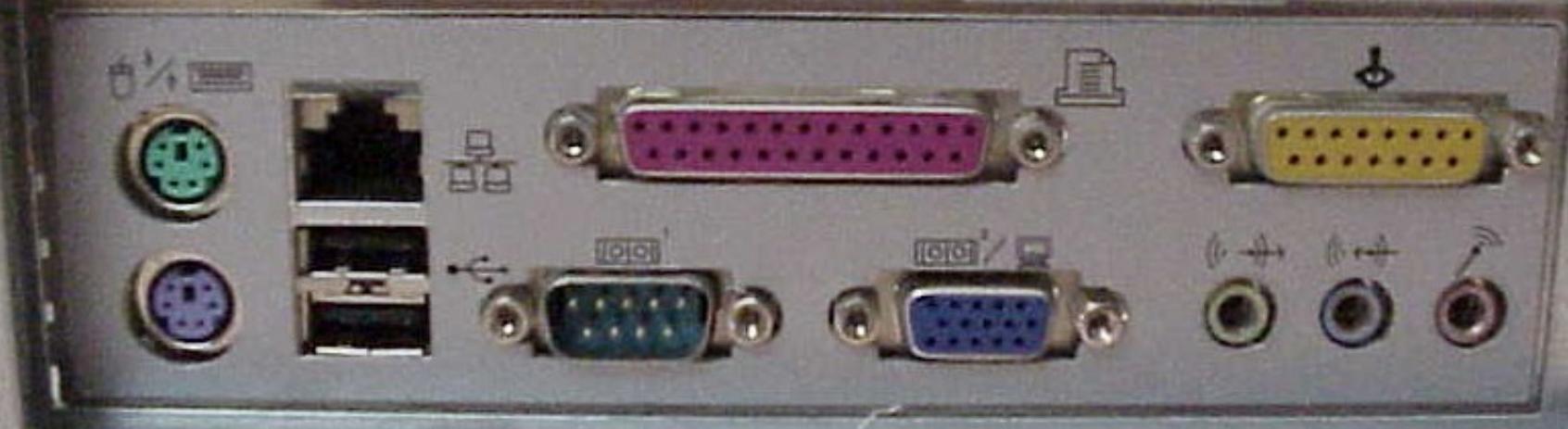




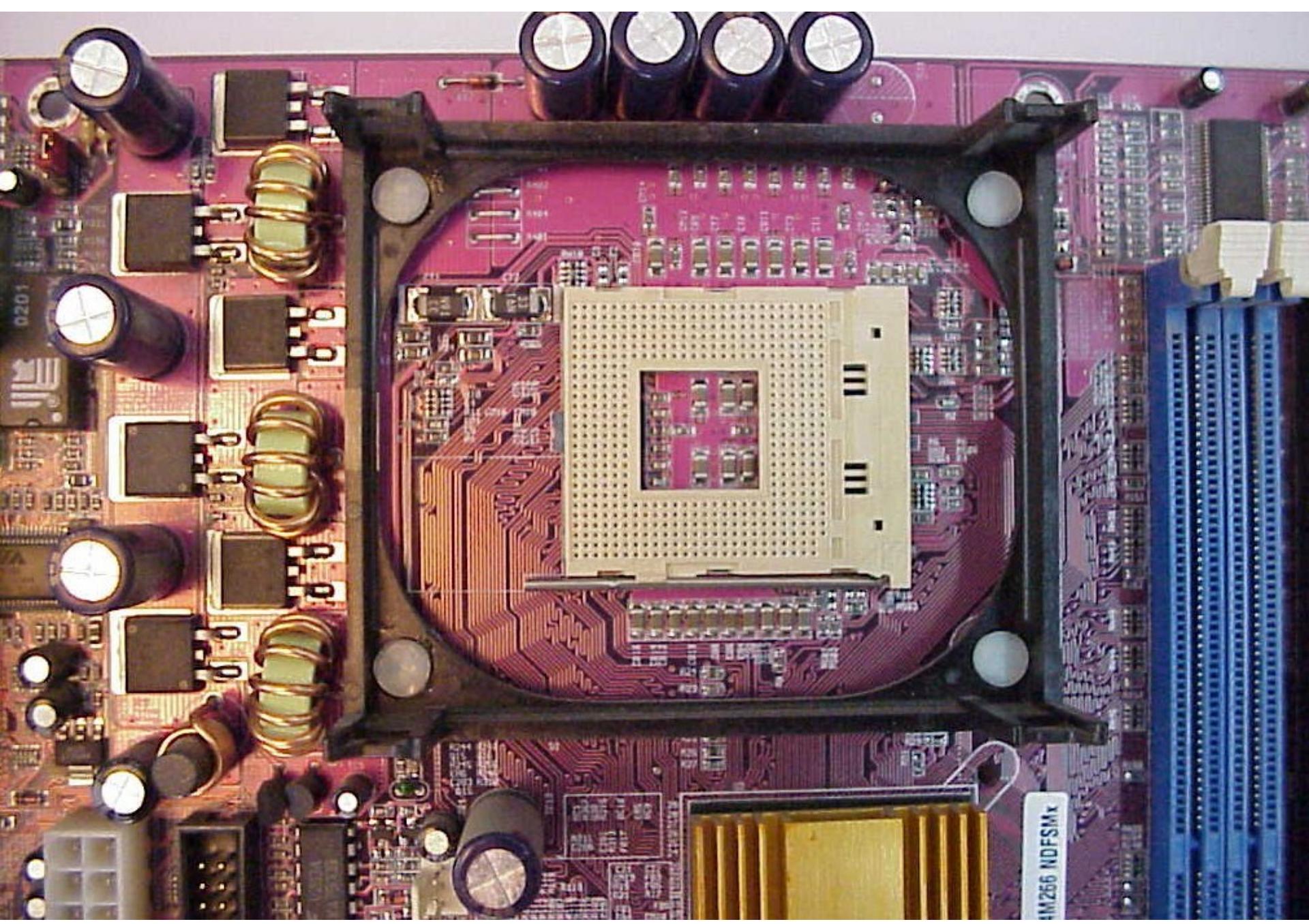


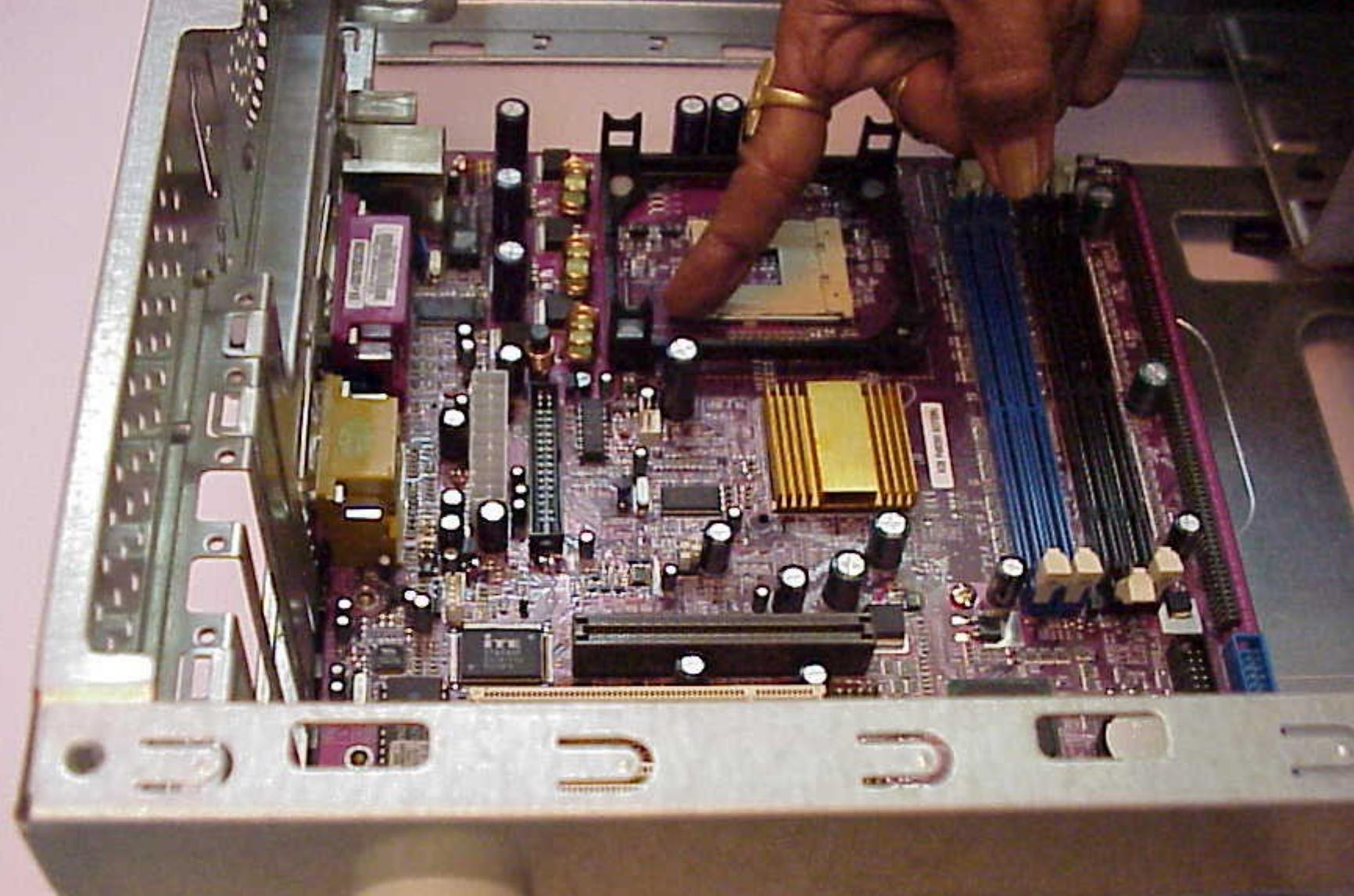


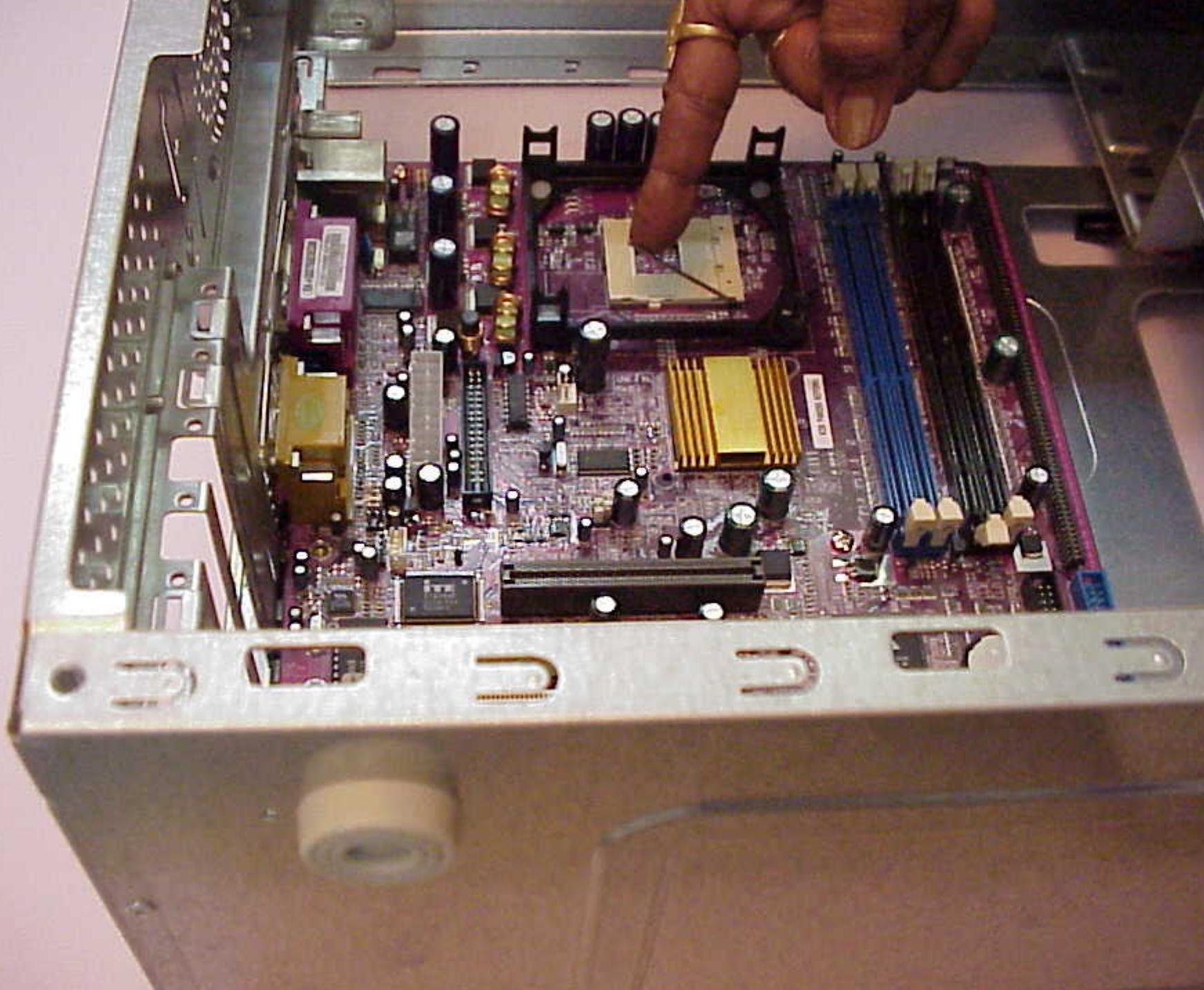


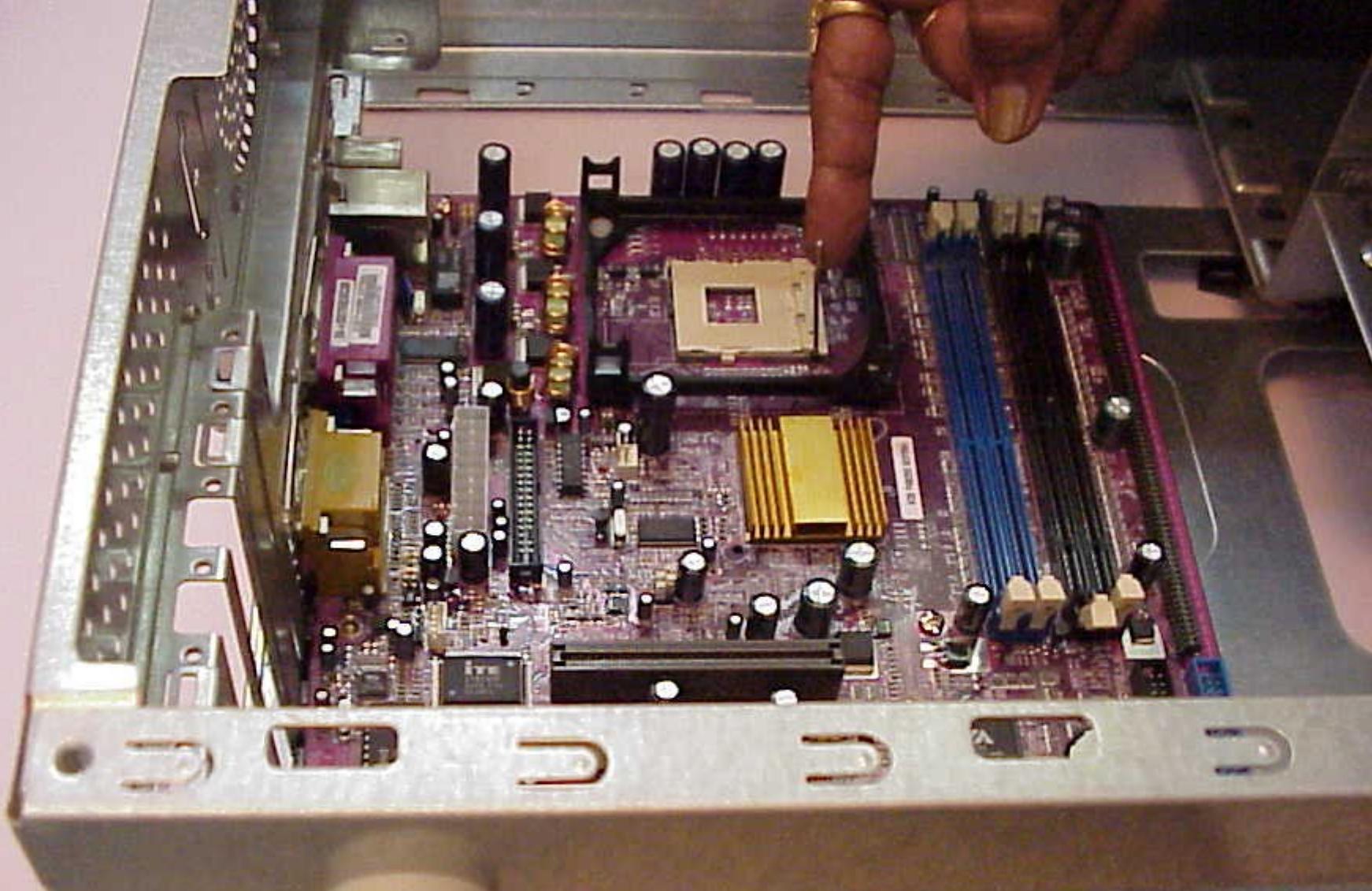


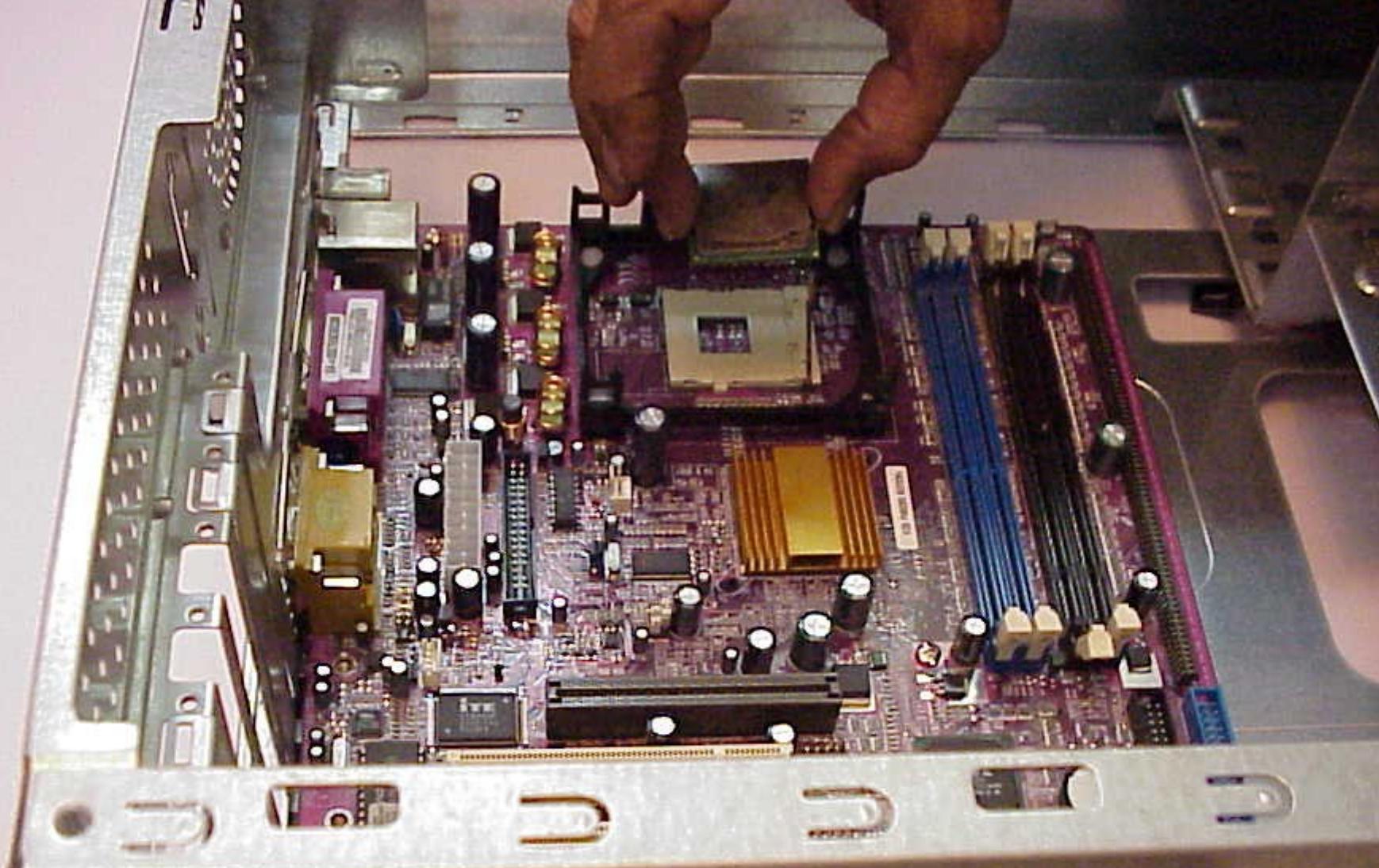
Installing the CPU

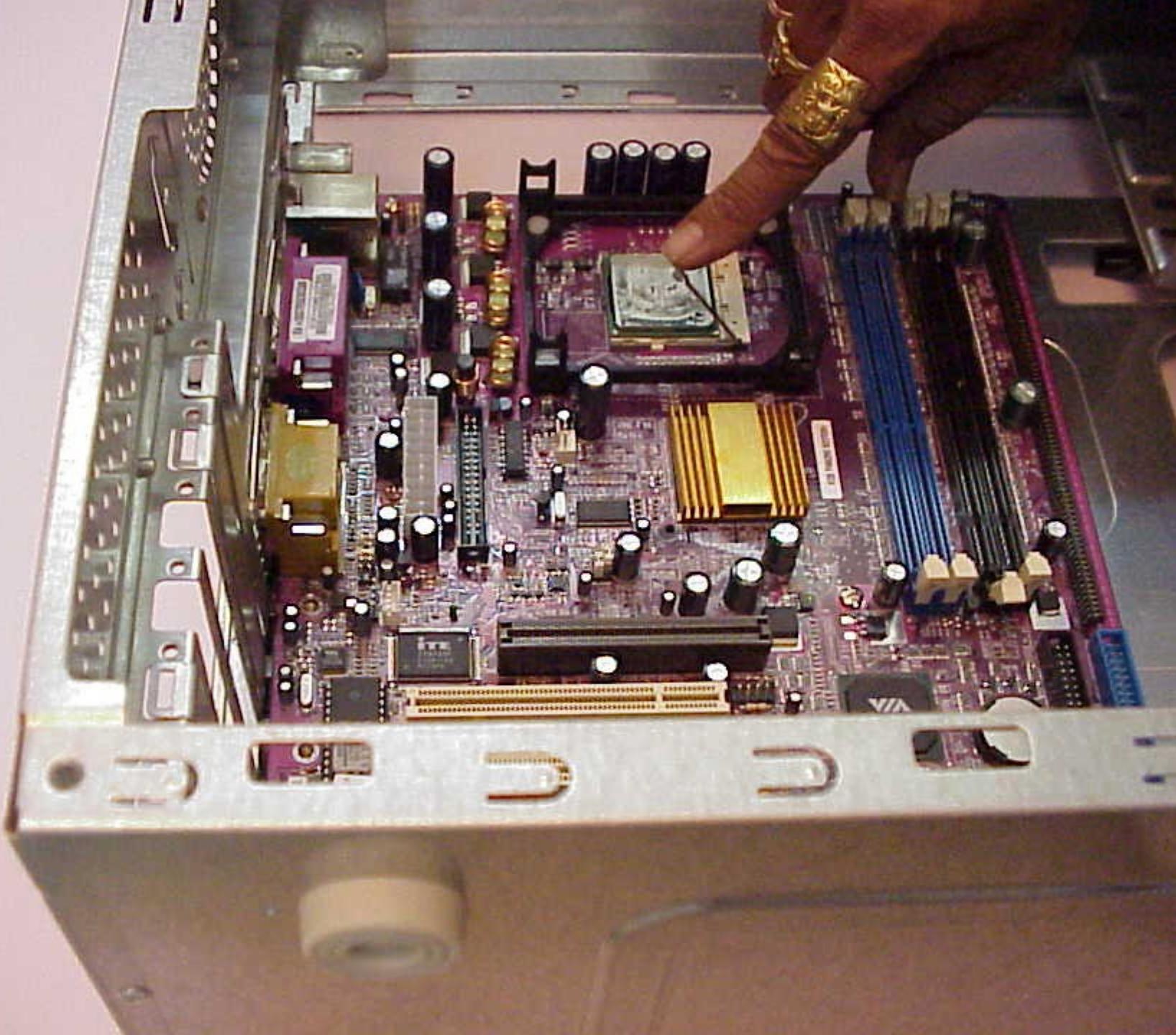


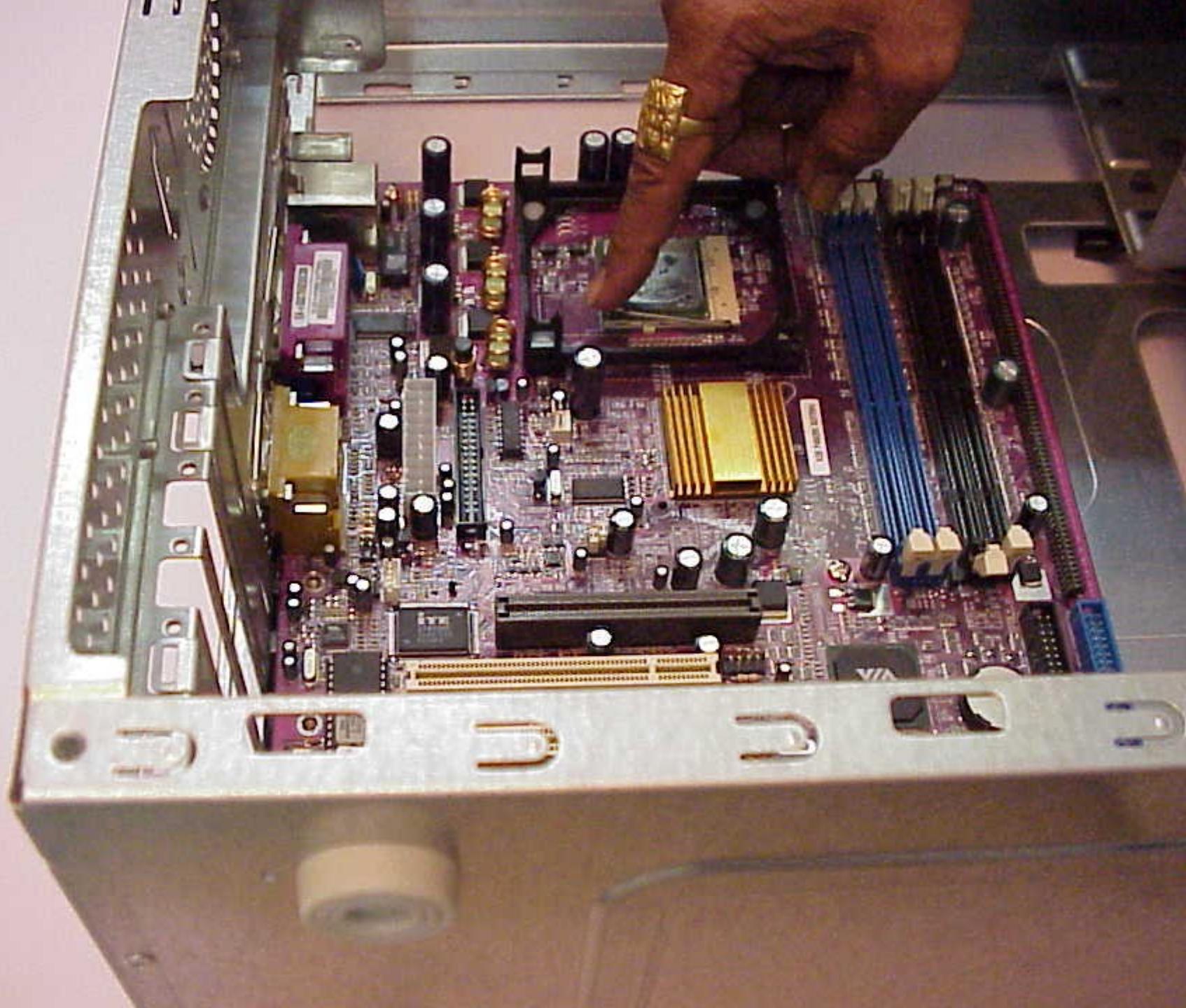


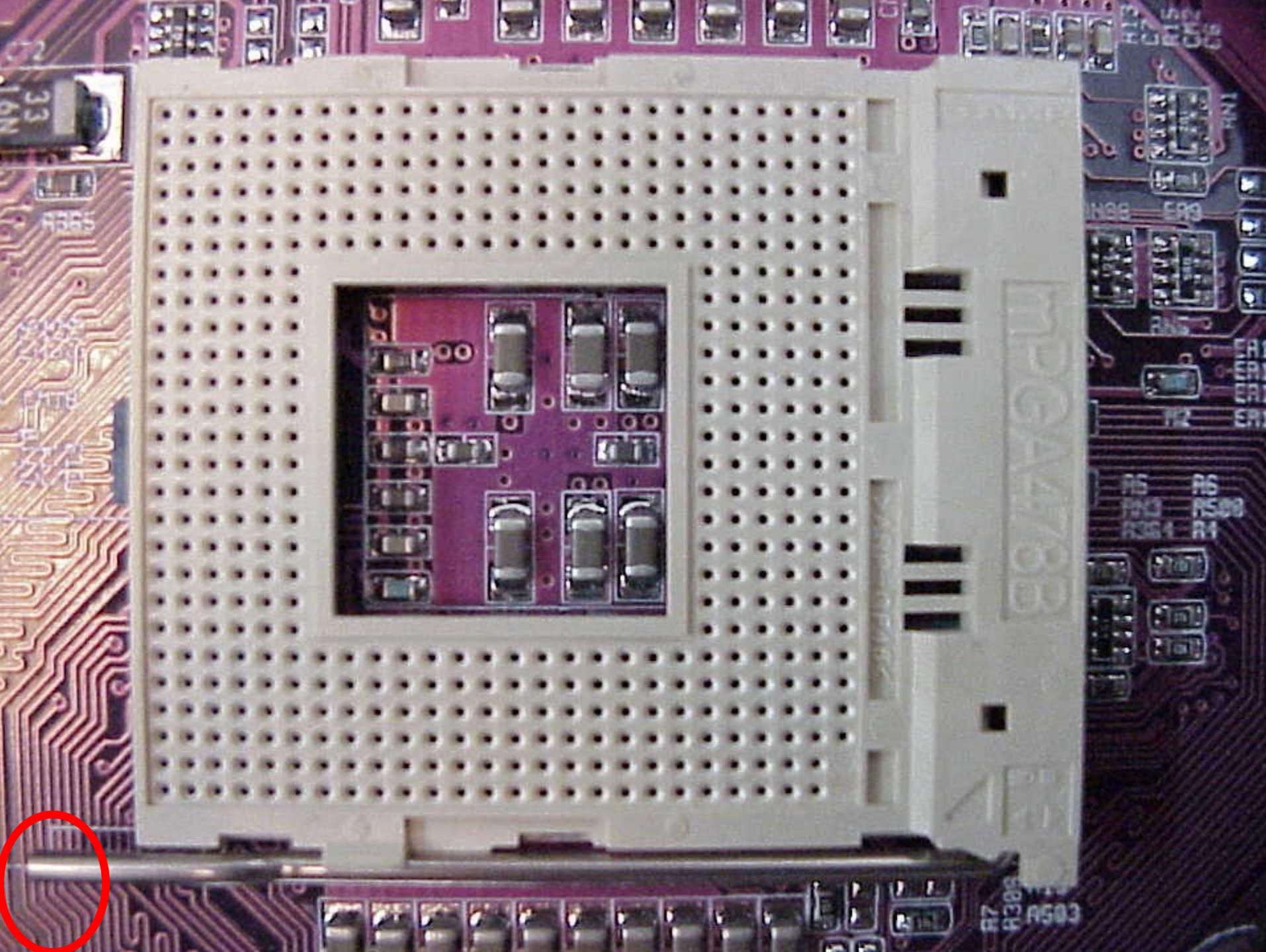


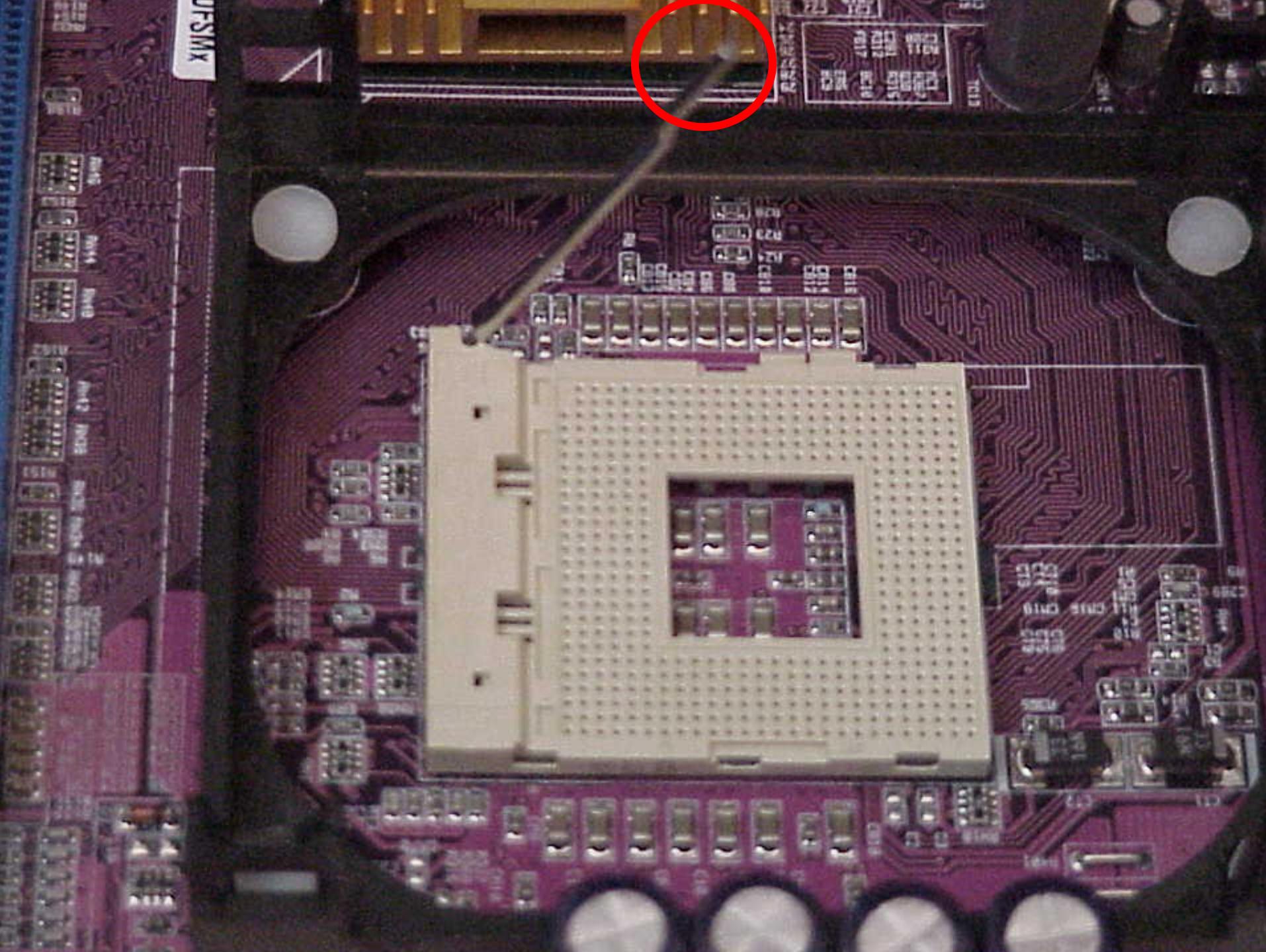


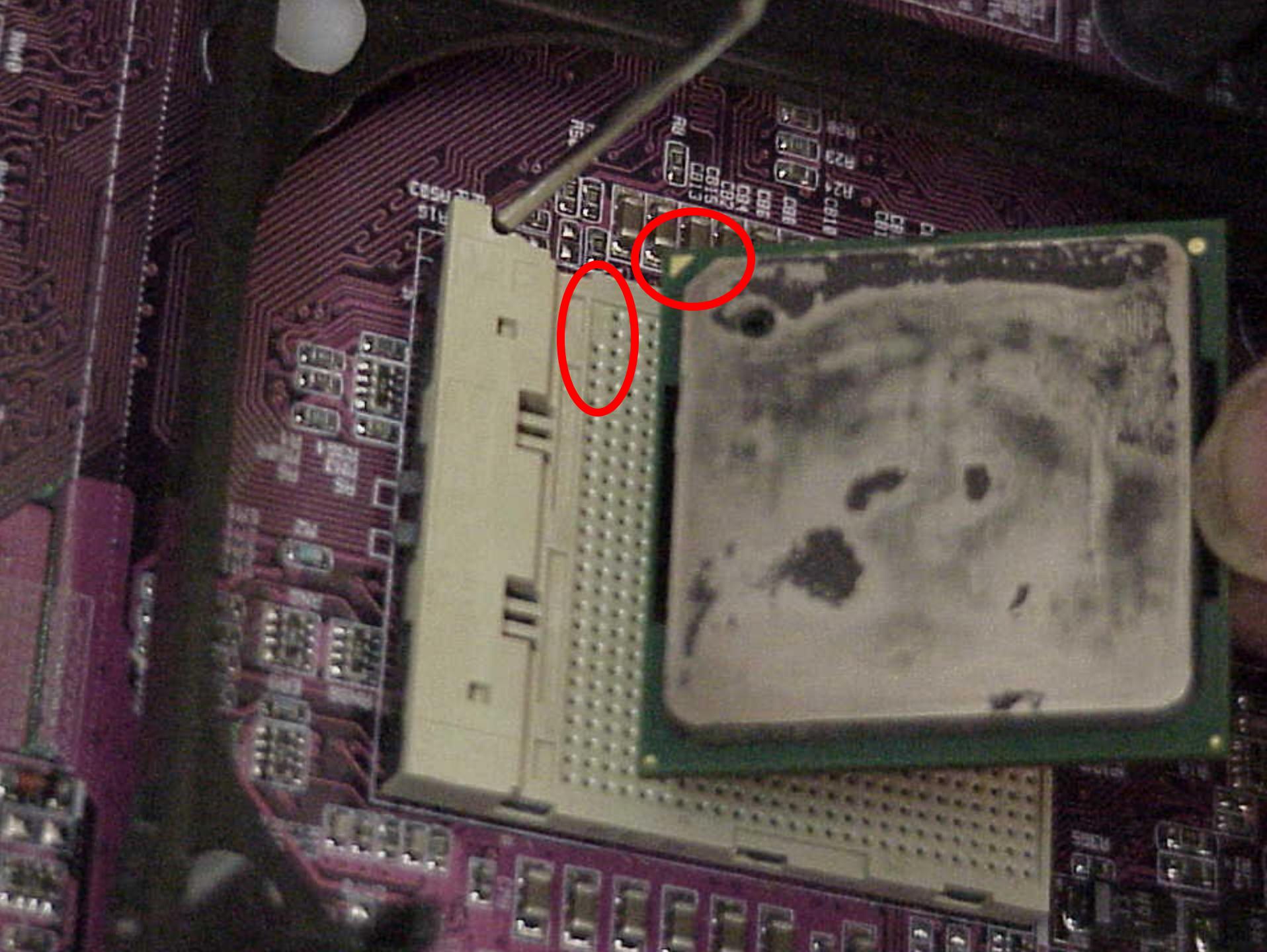


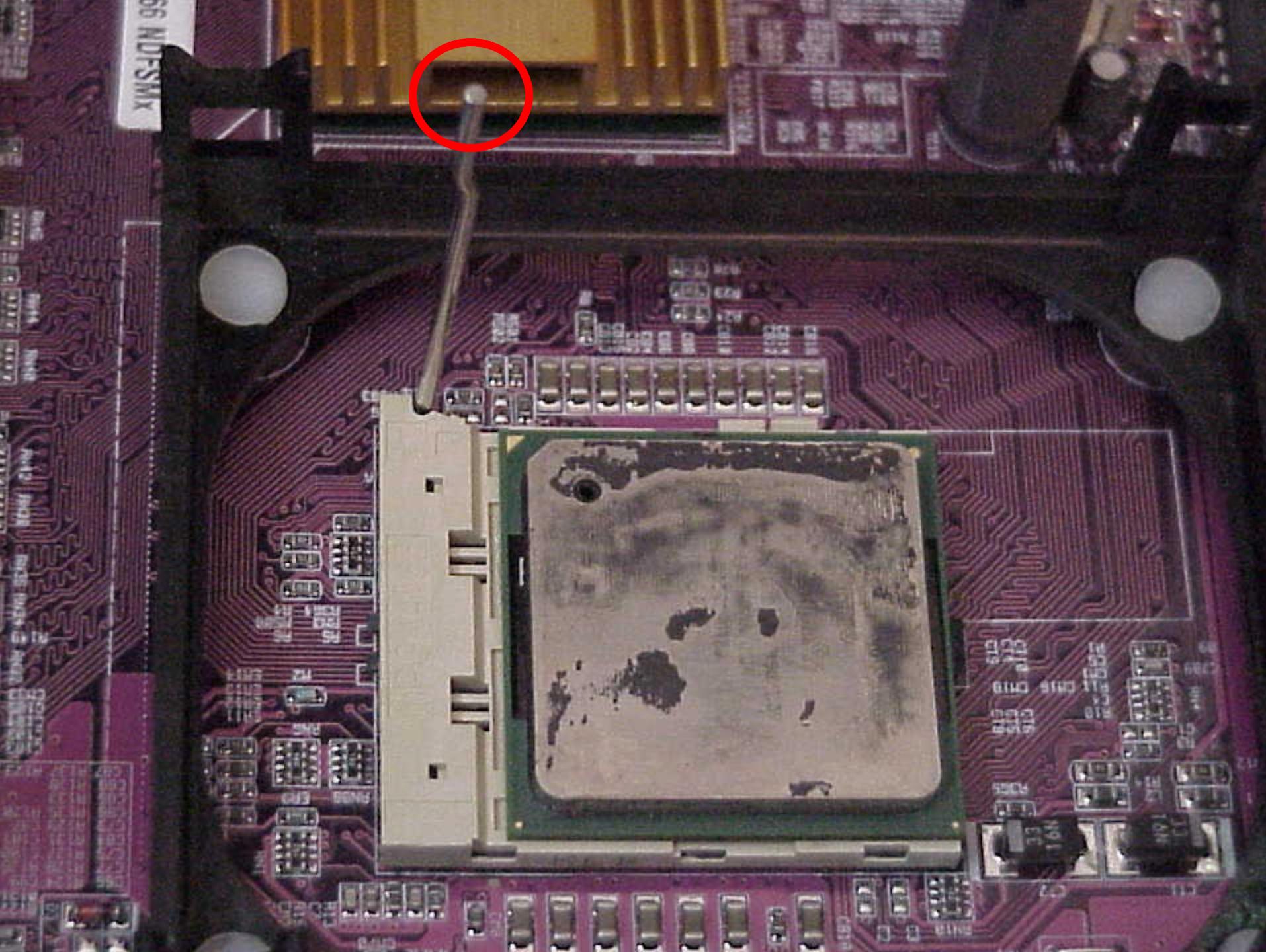


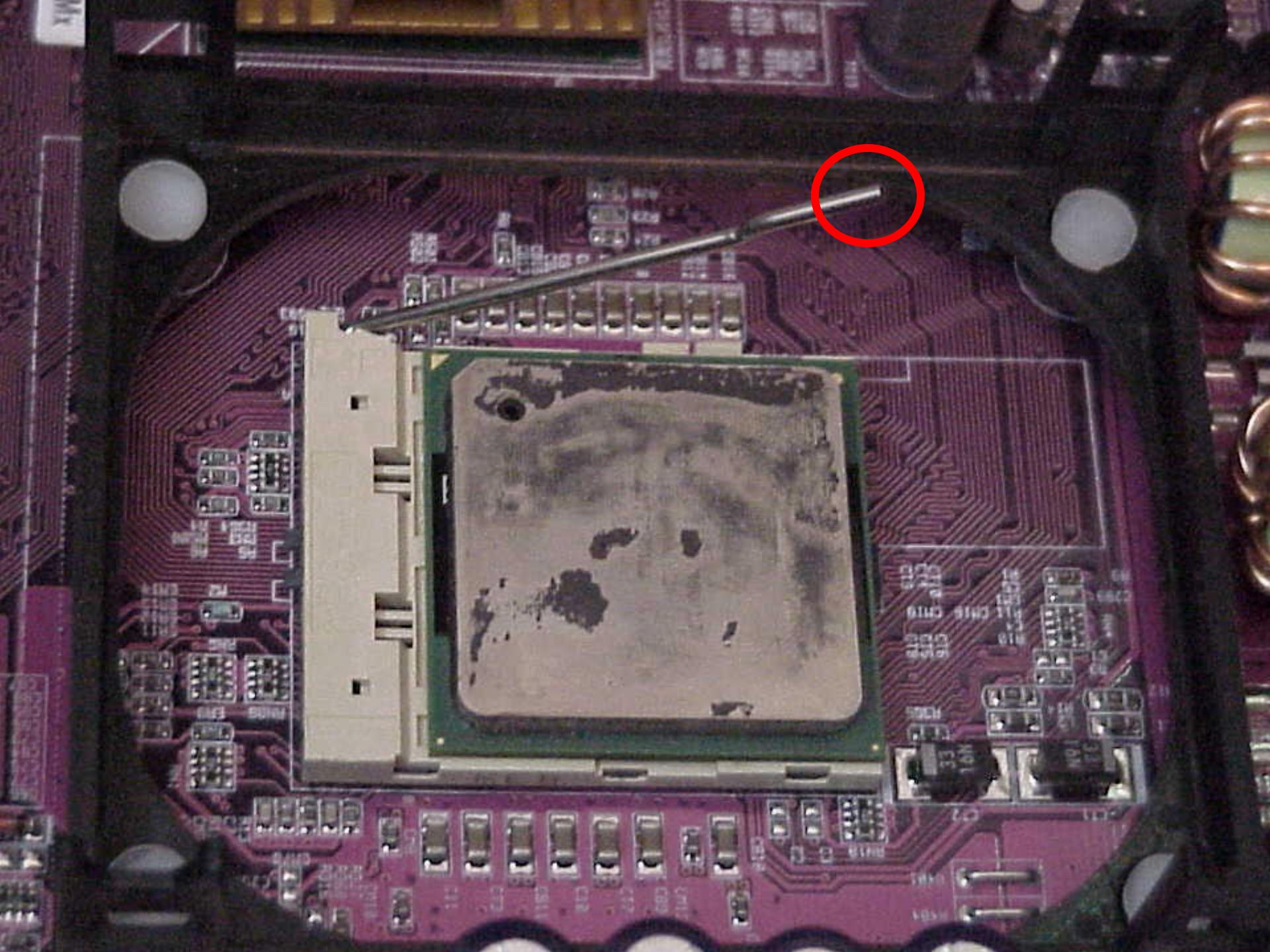


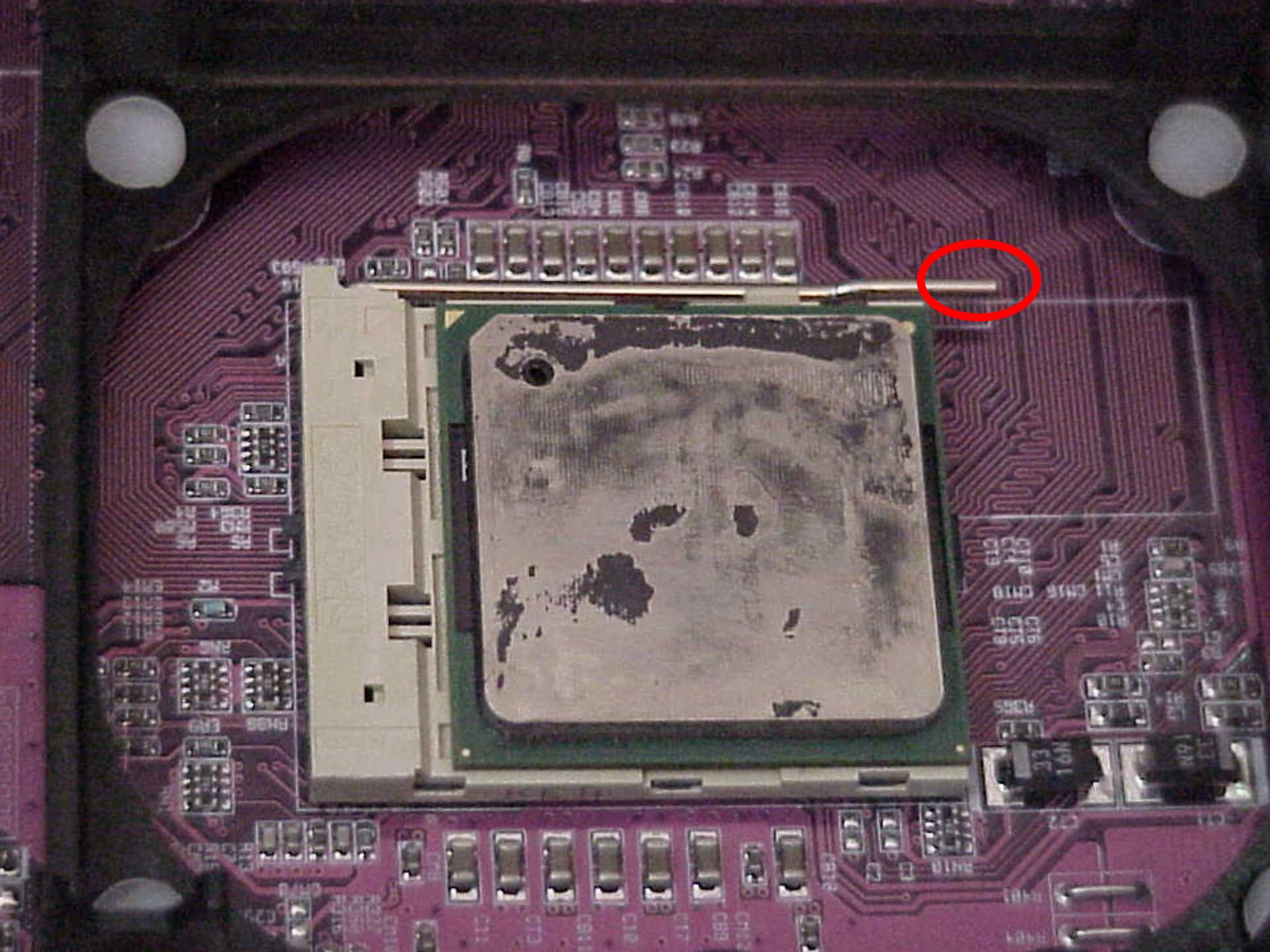




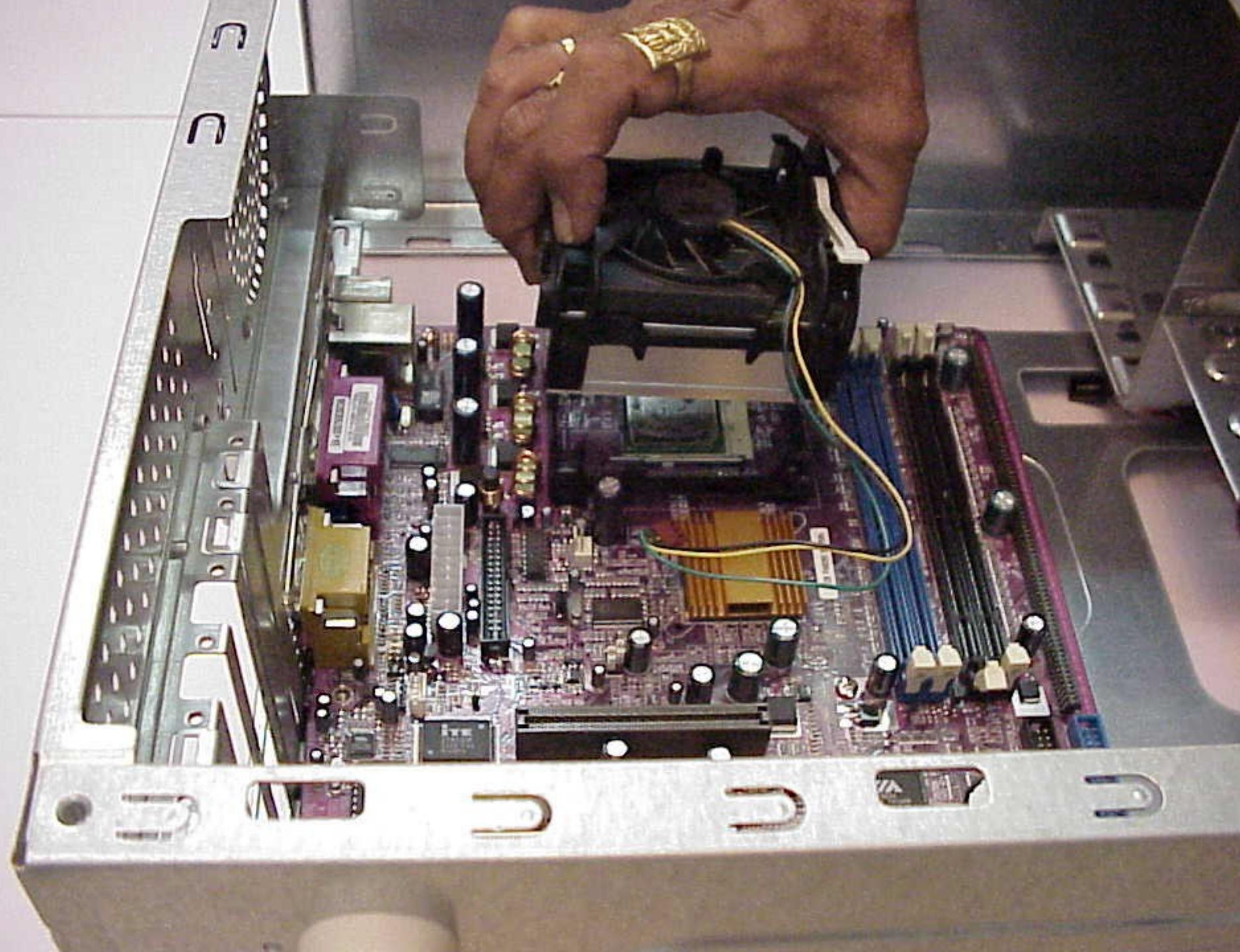


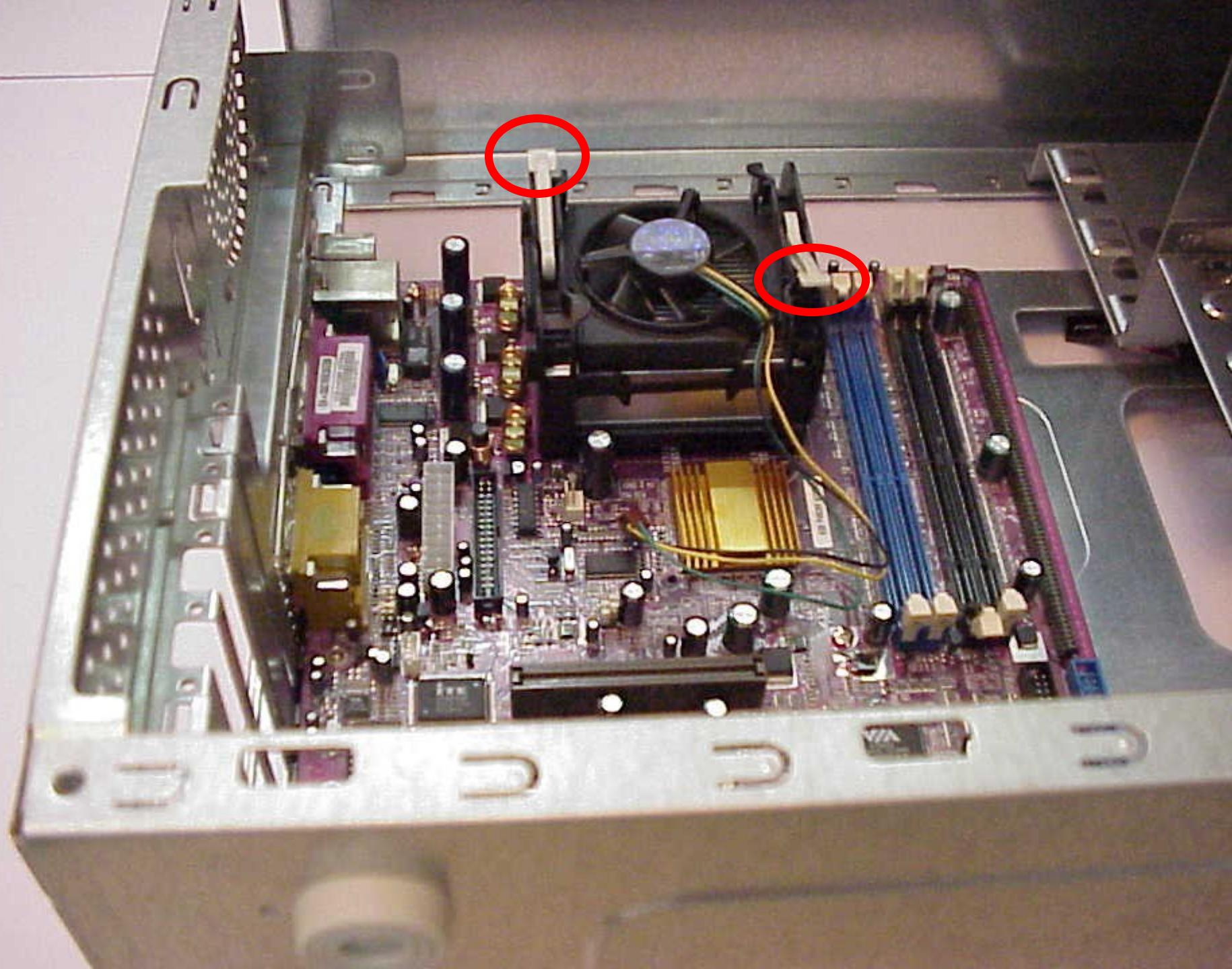


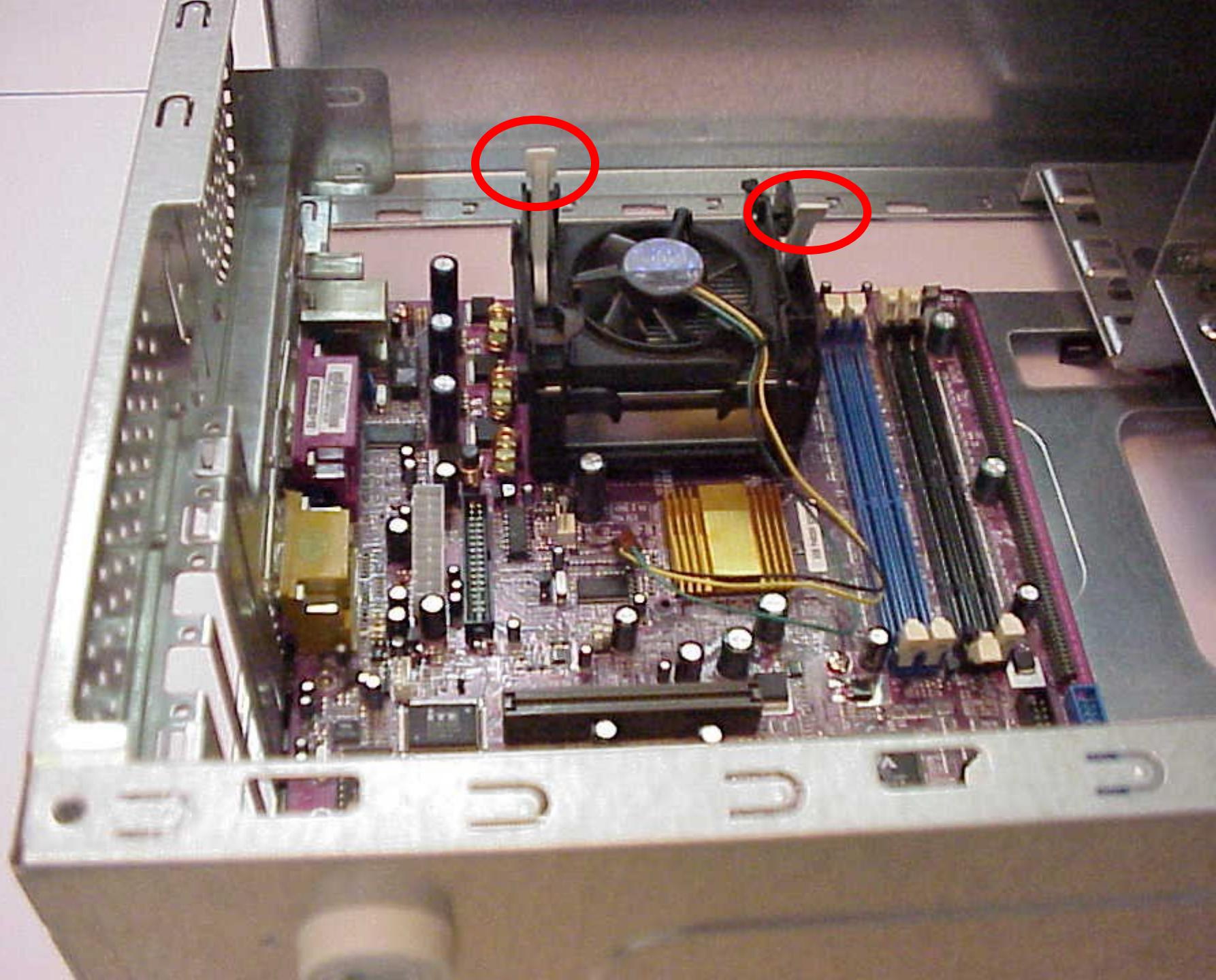


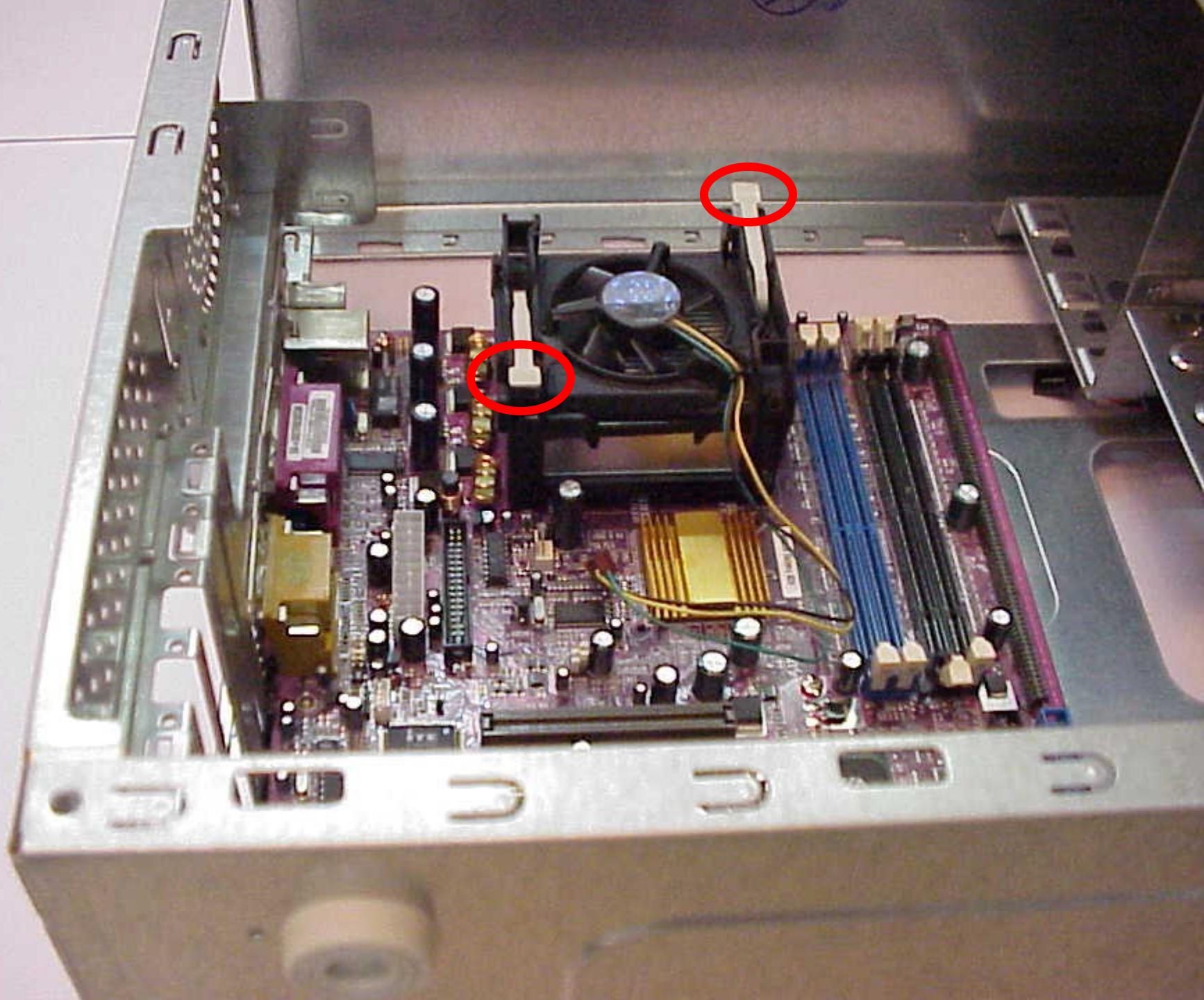


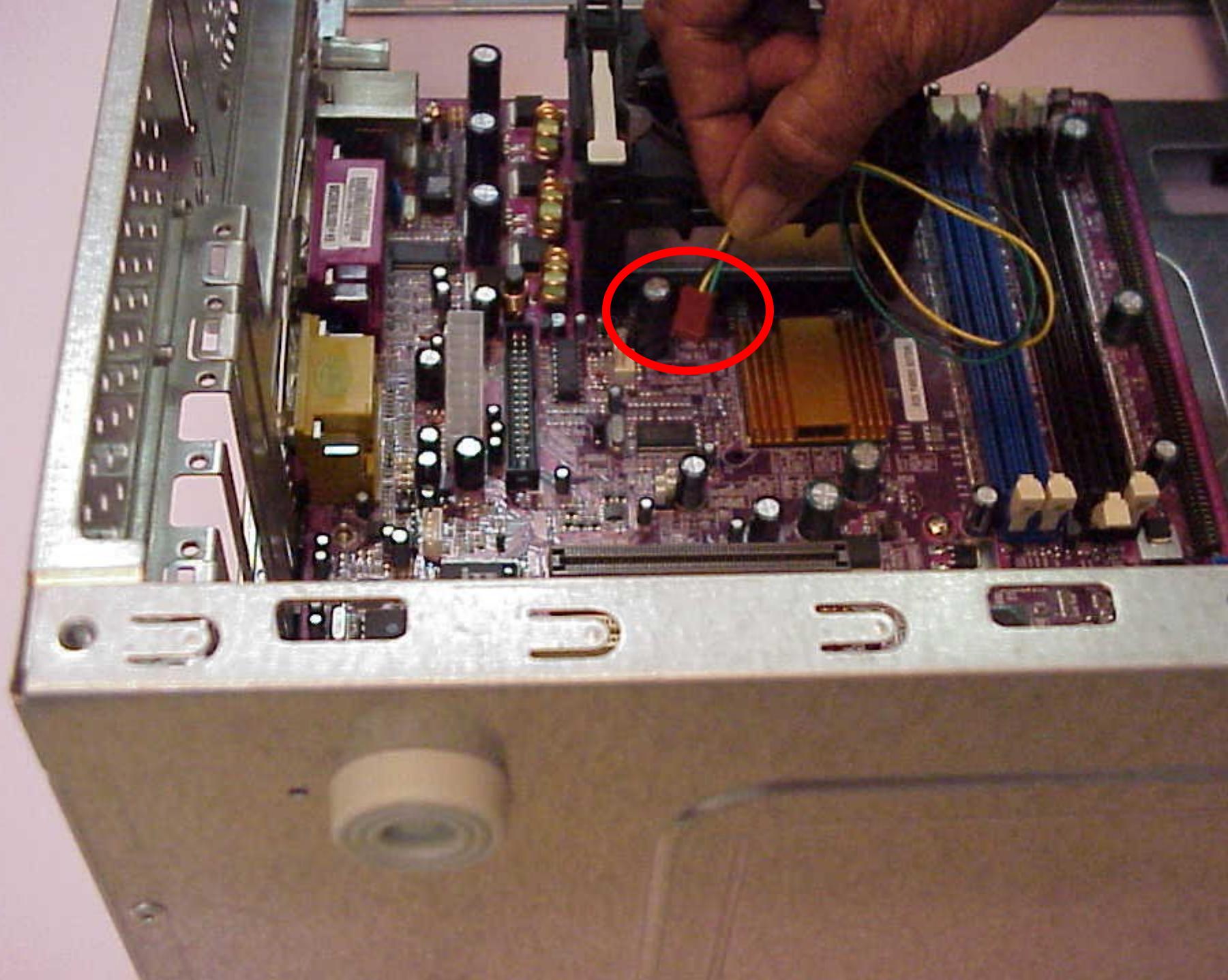
Installing the CPU fan

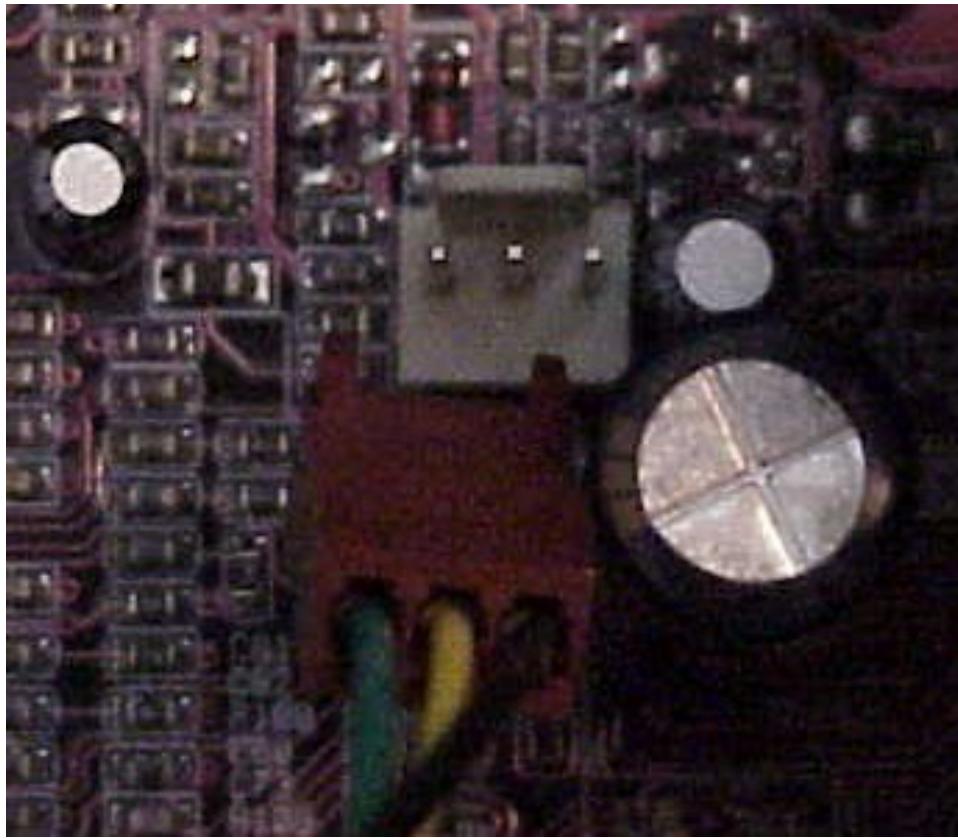


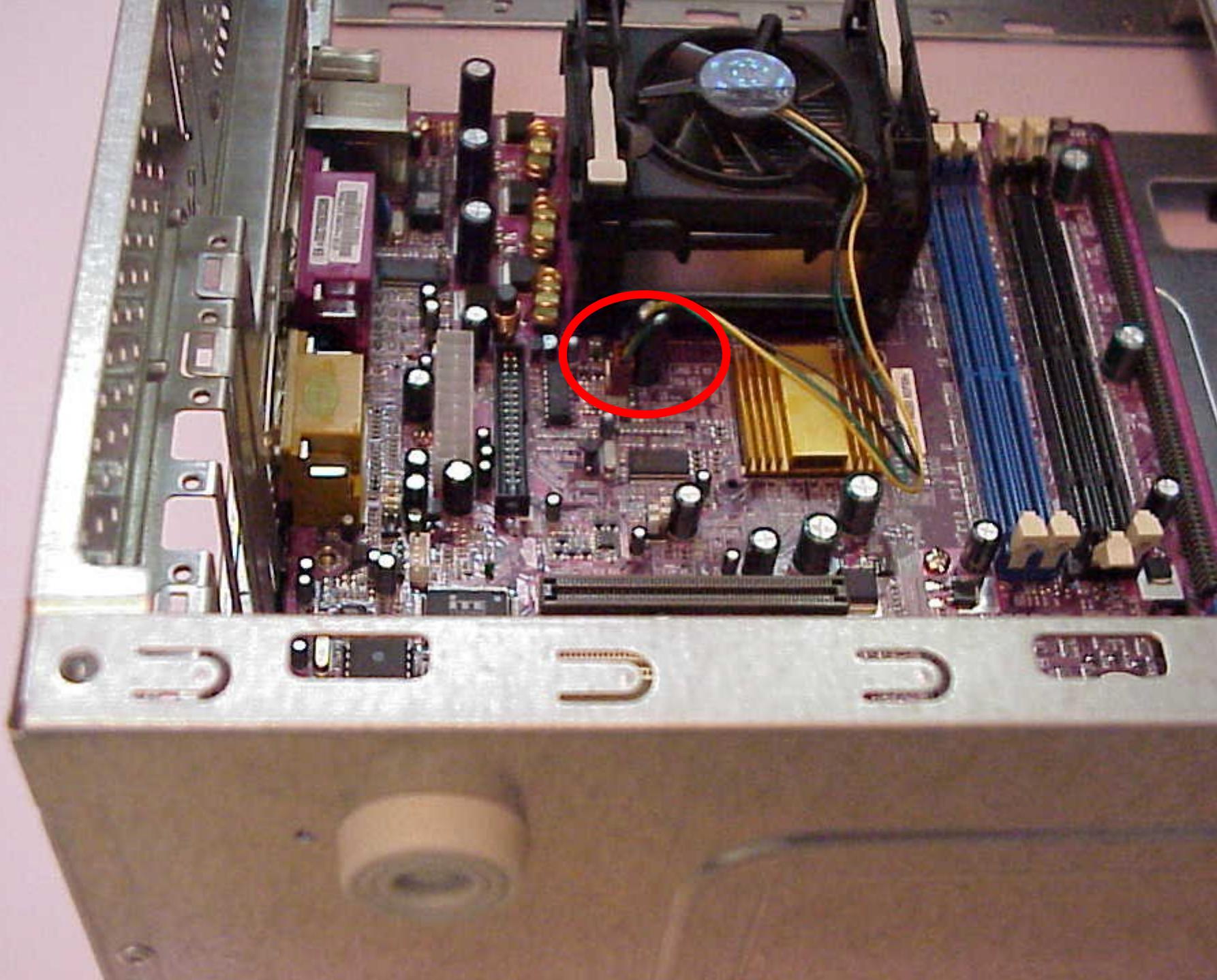


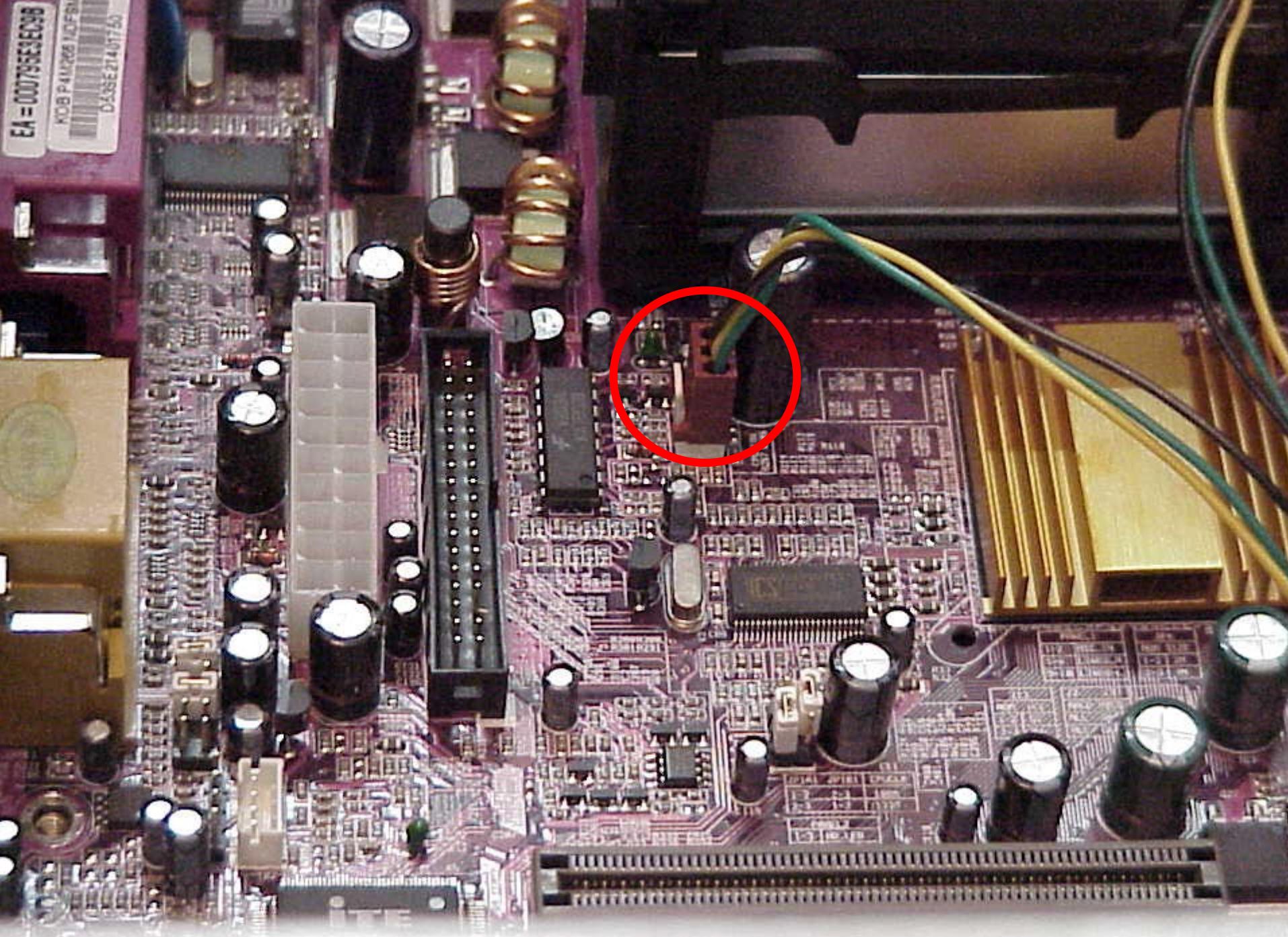






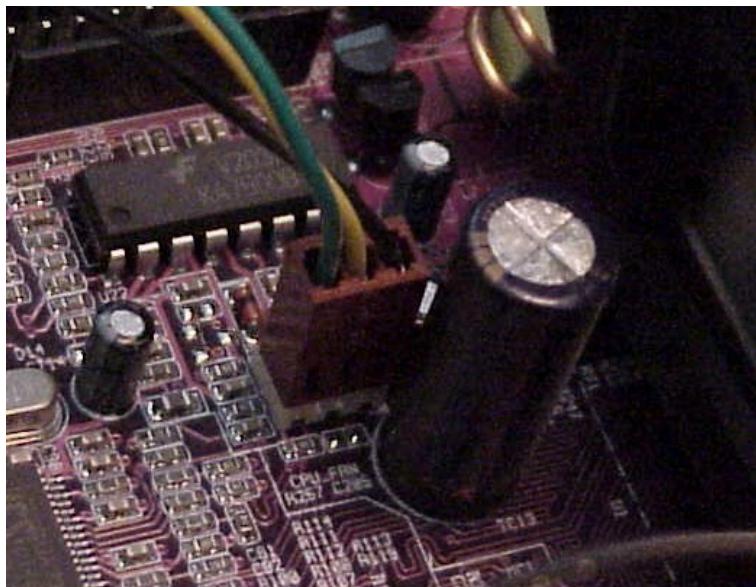




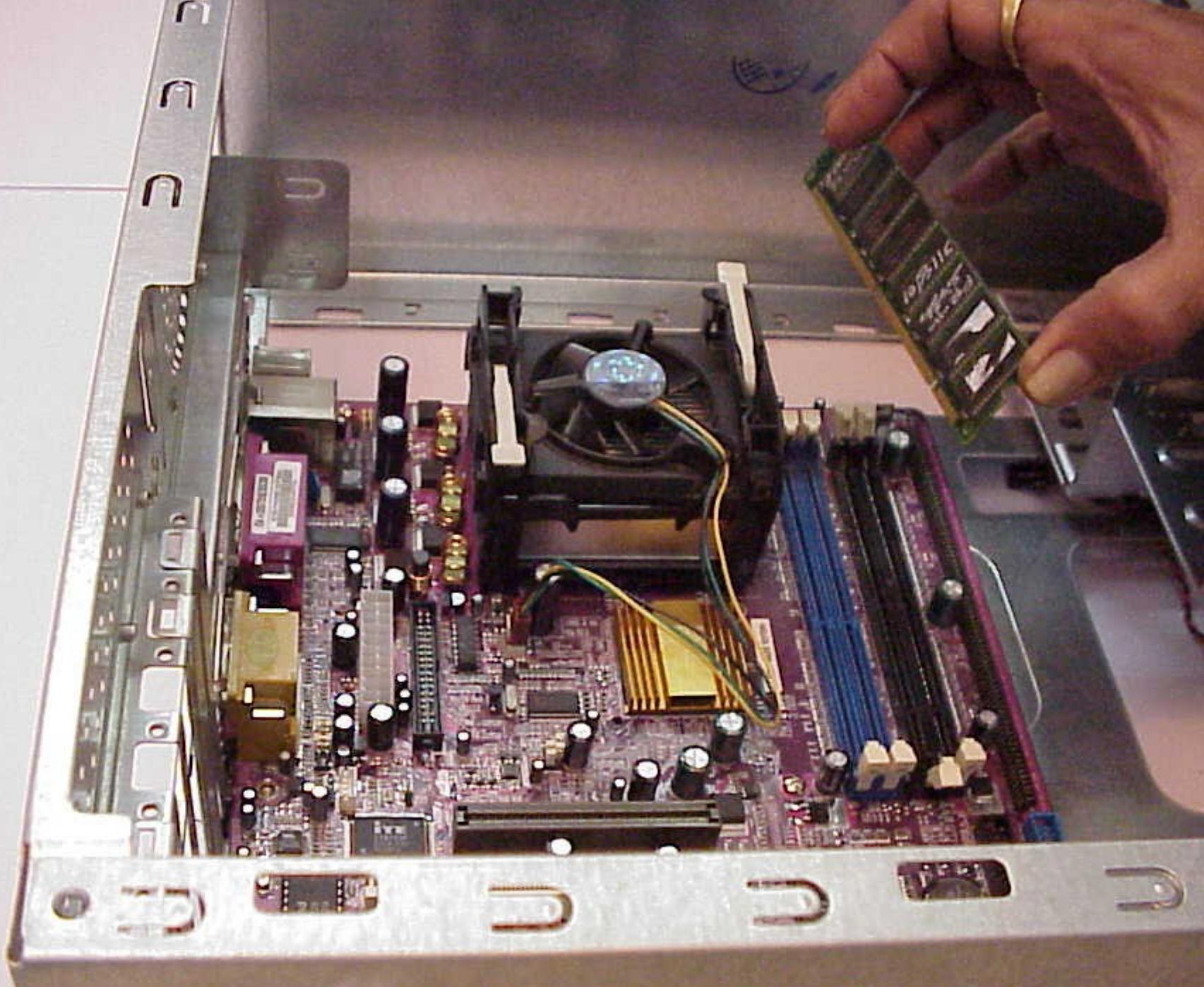


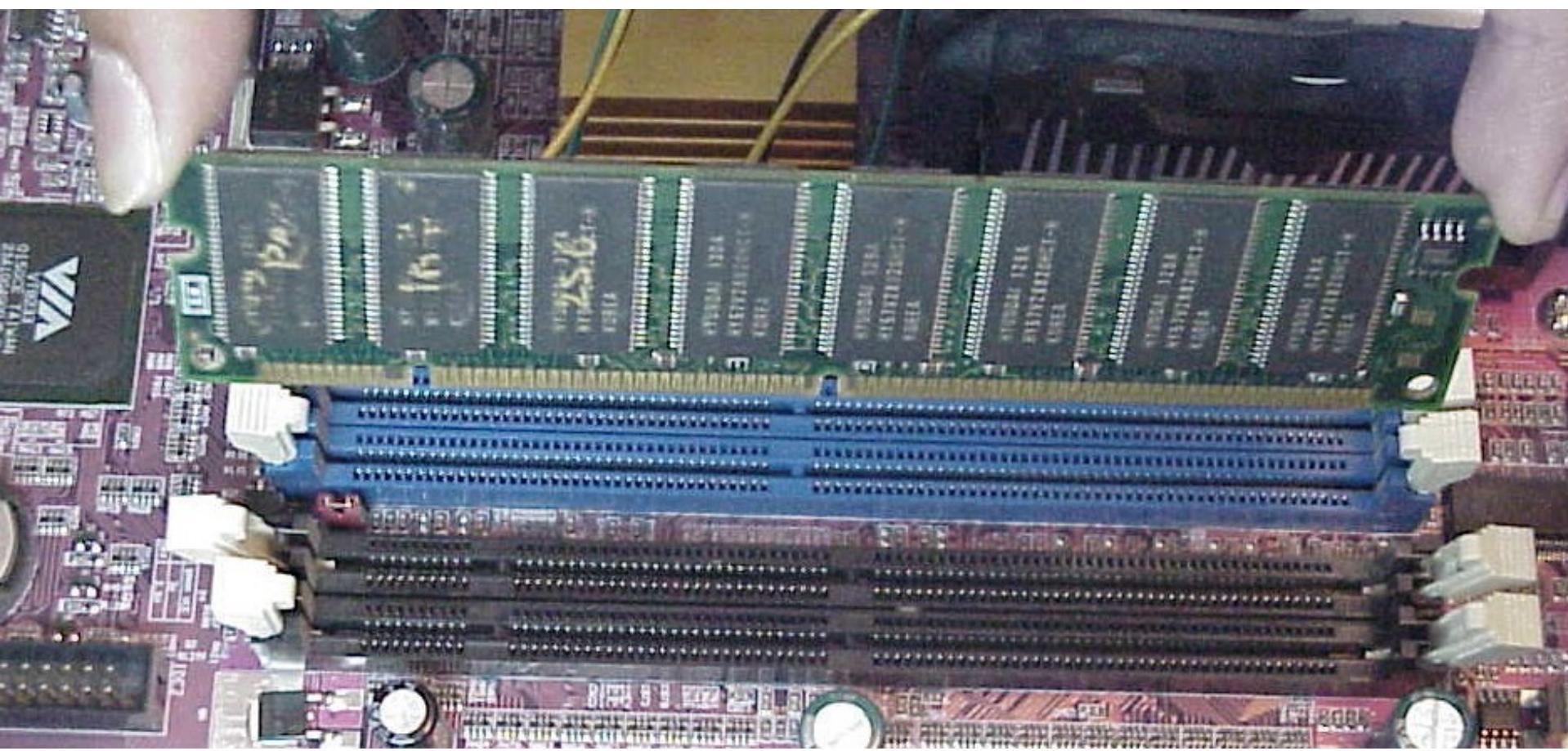
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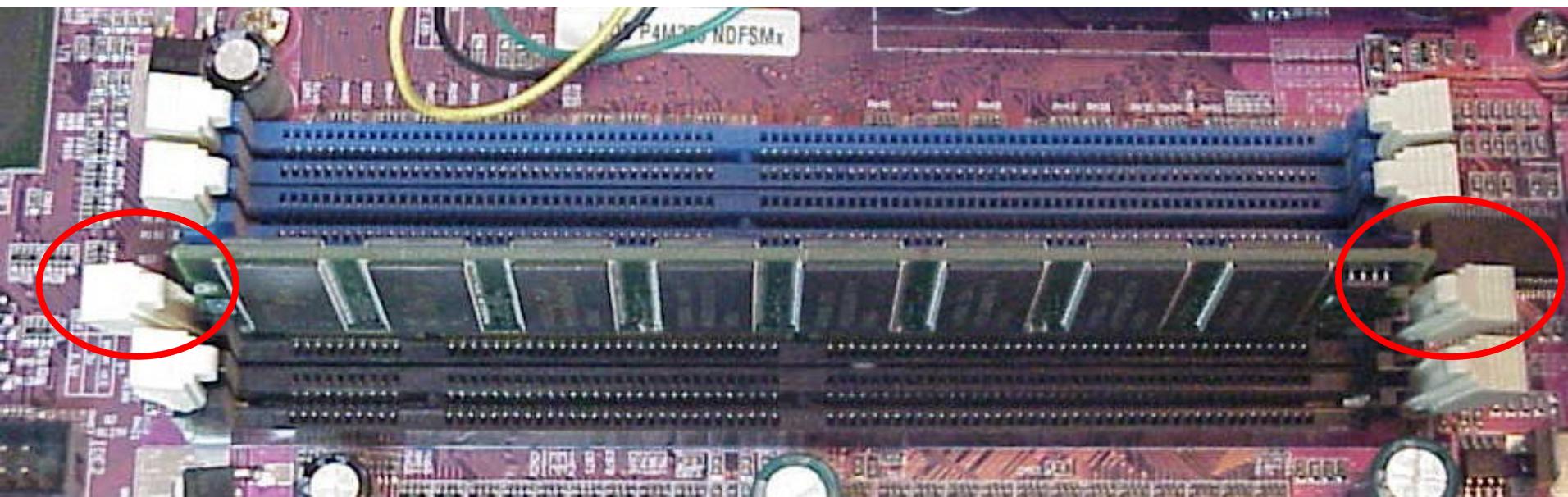
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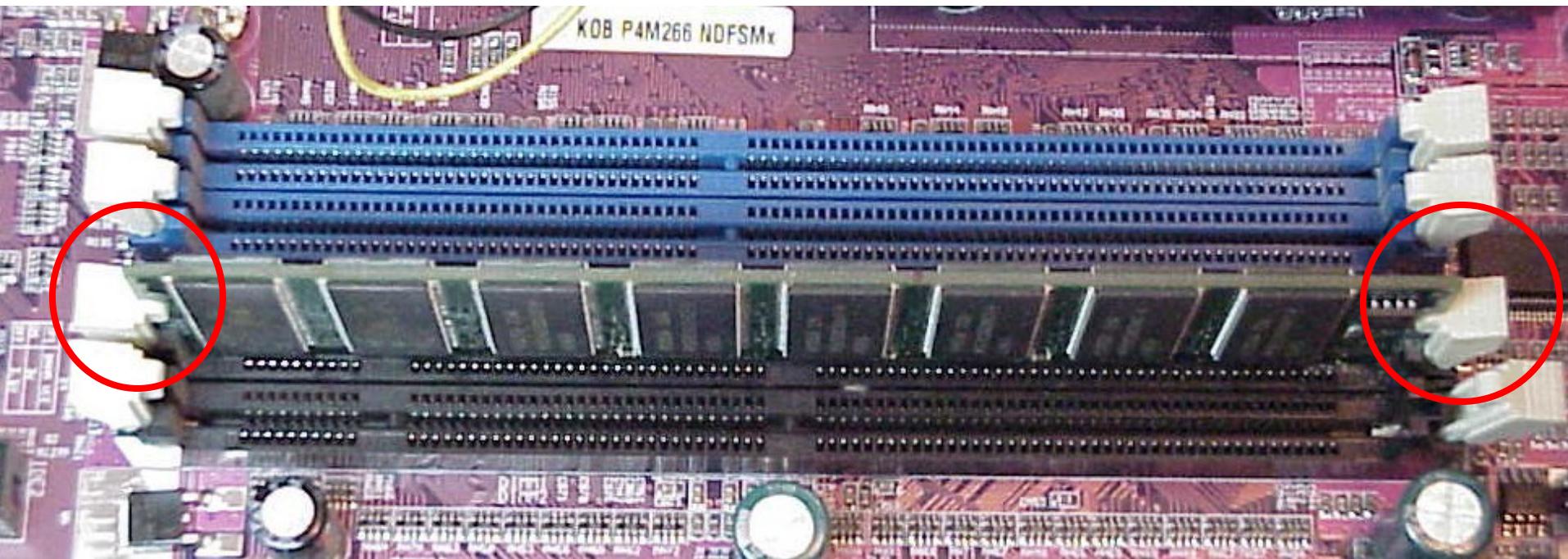


Installing the RAM



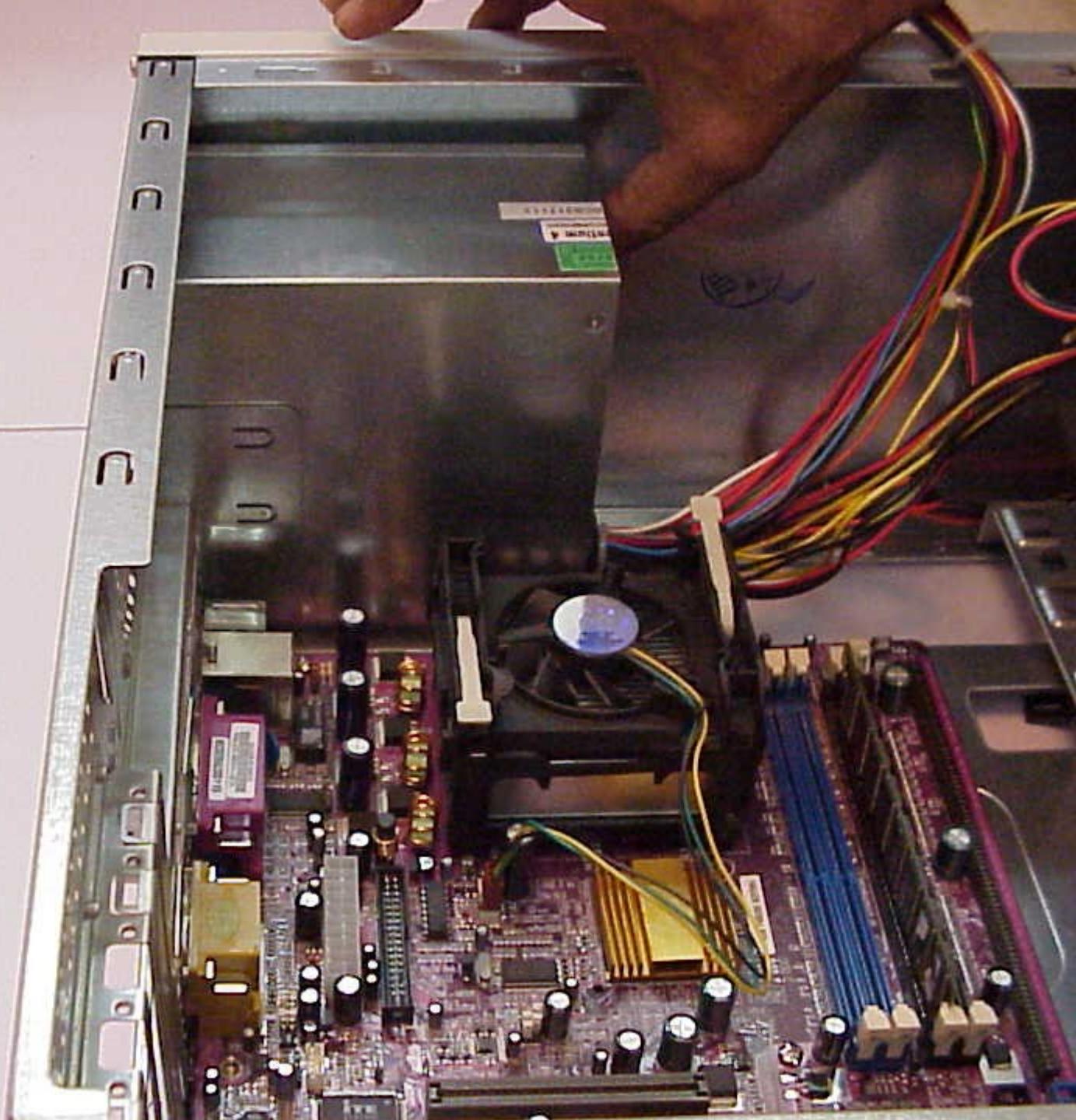


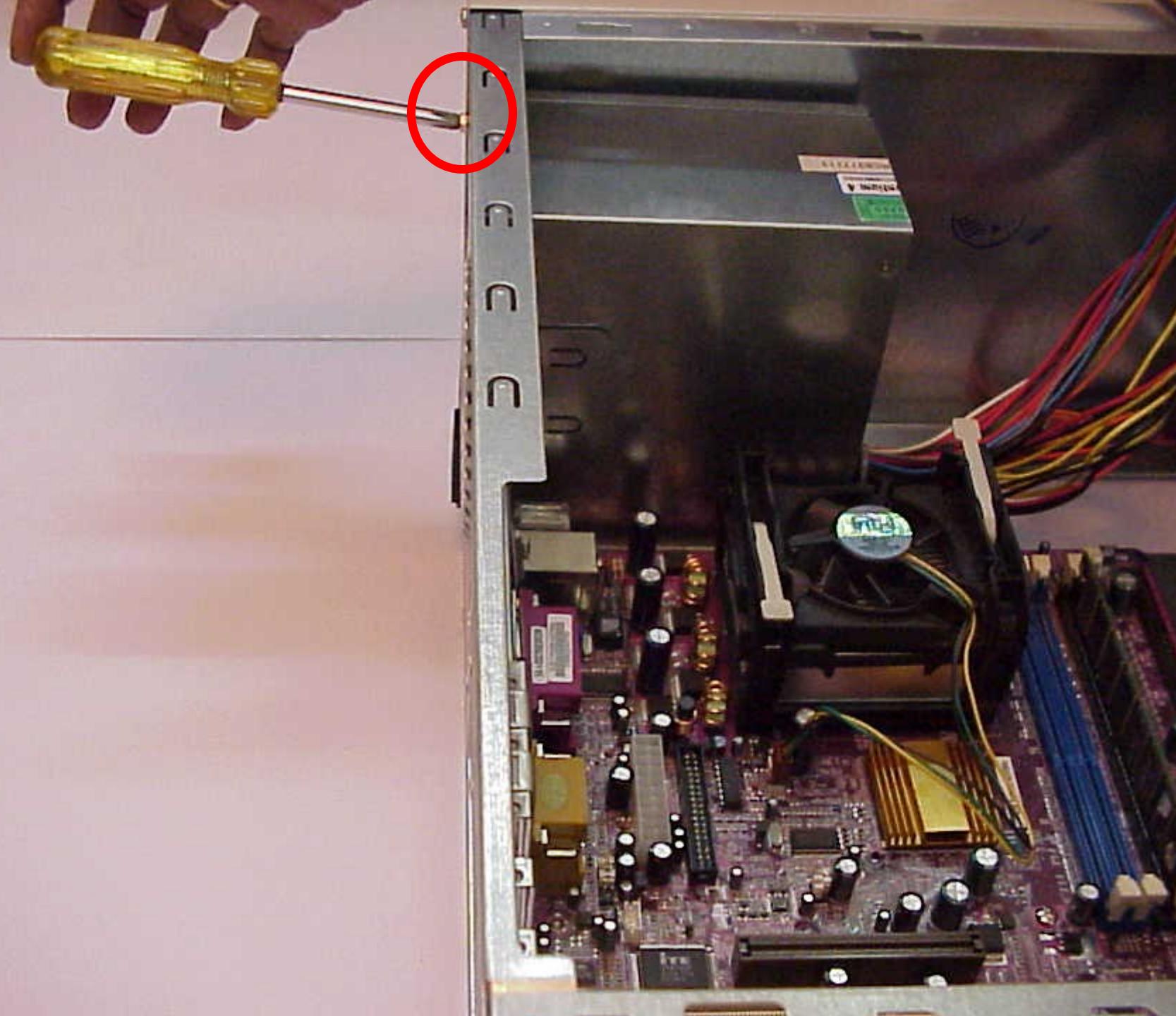




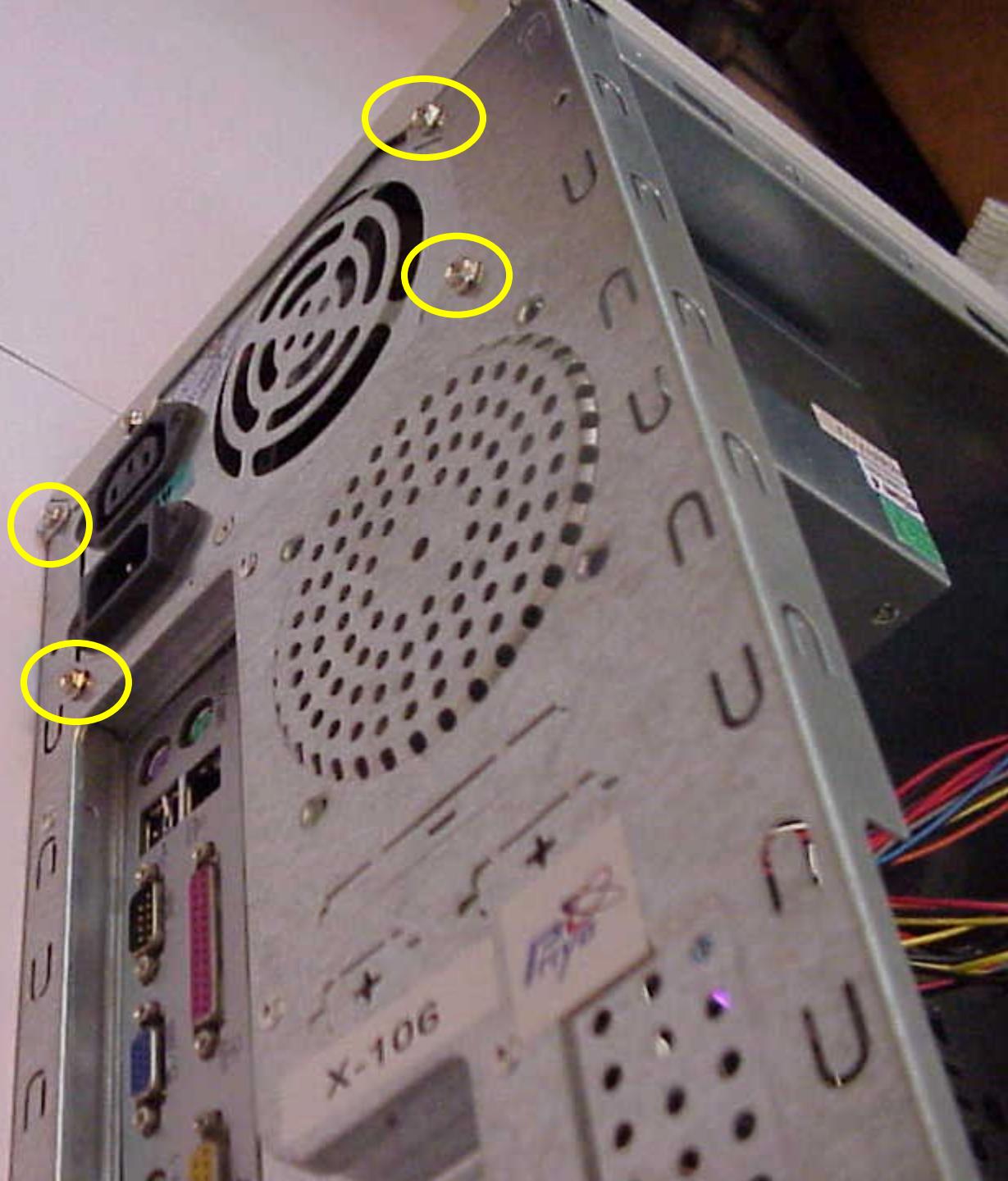
Installing the SMPS



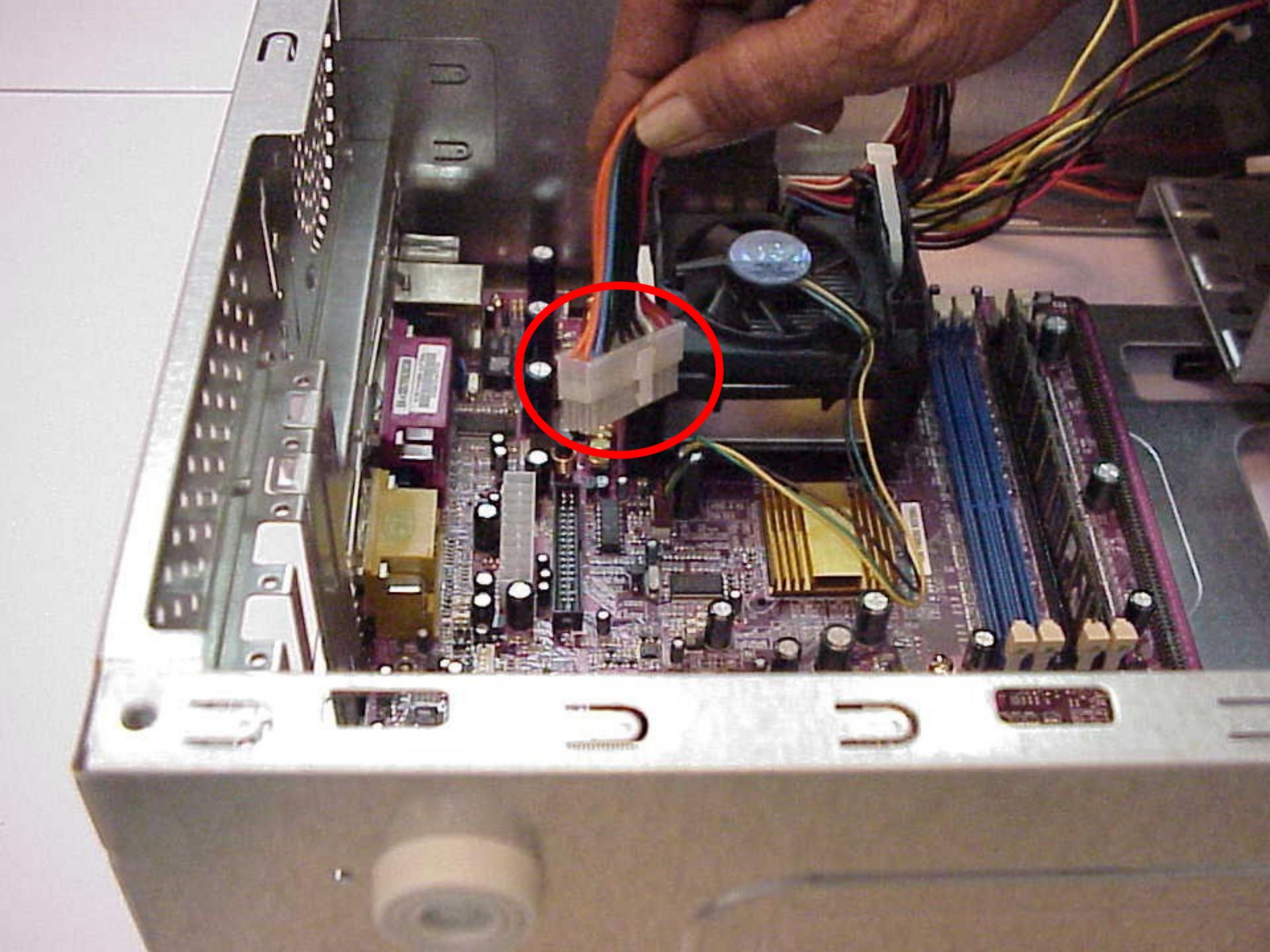


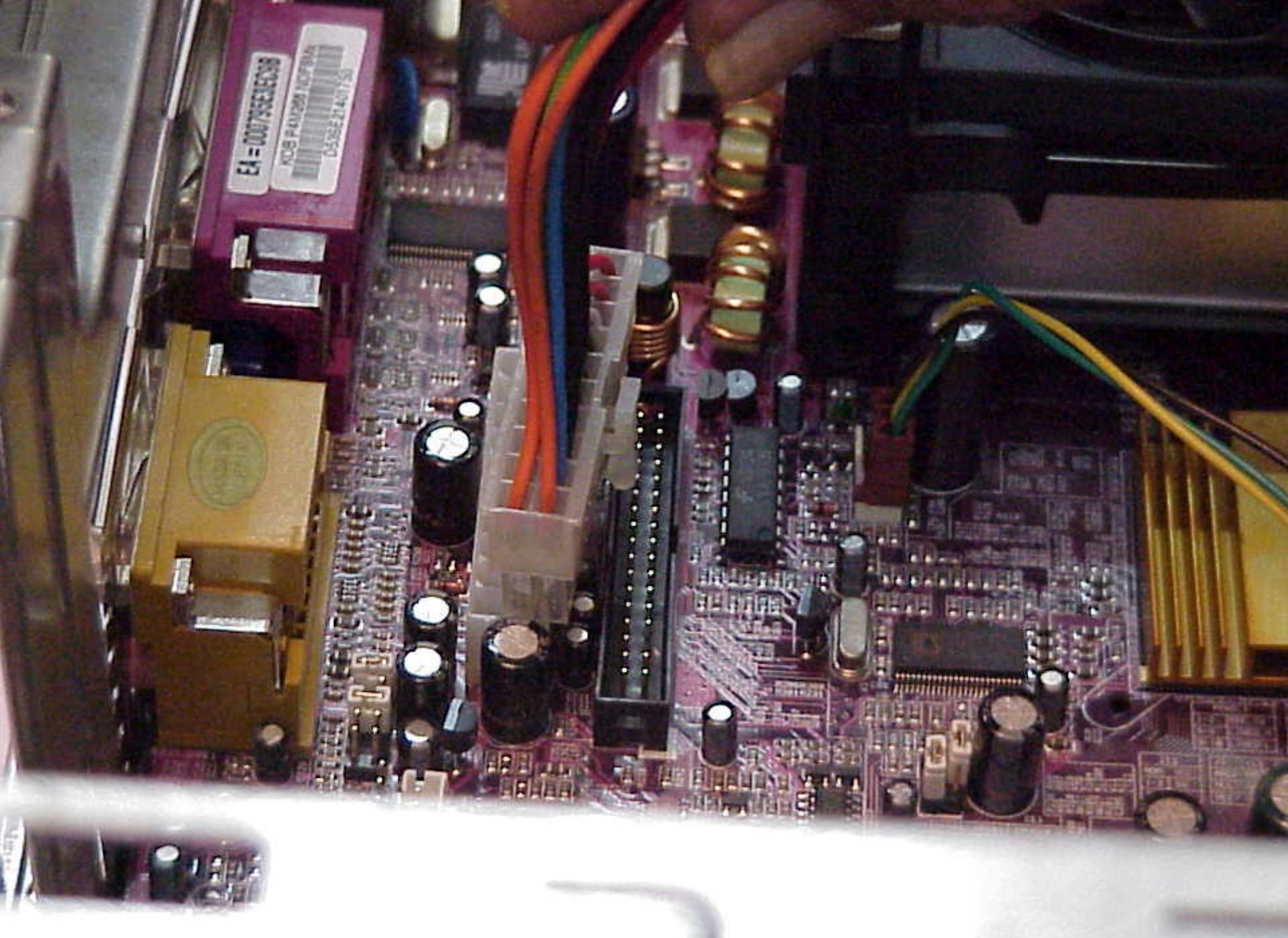




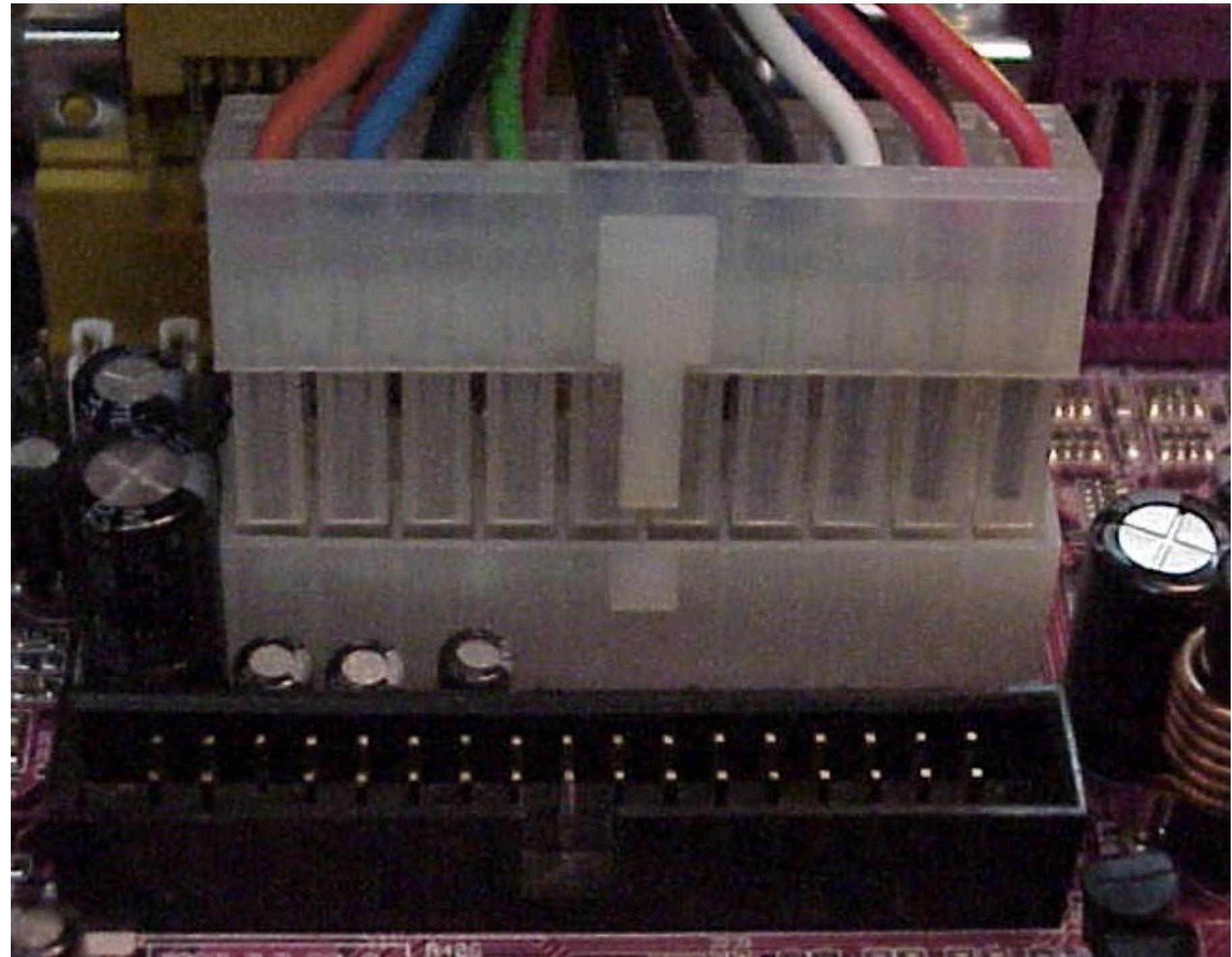


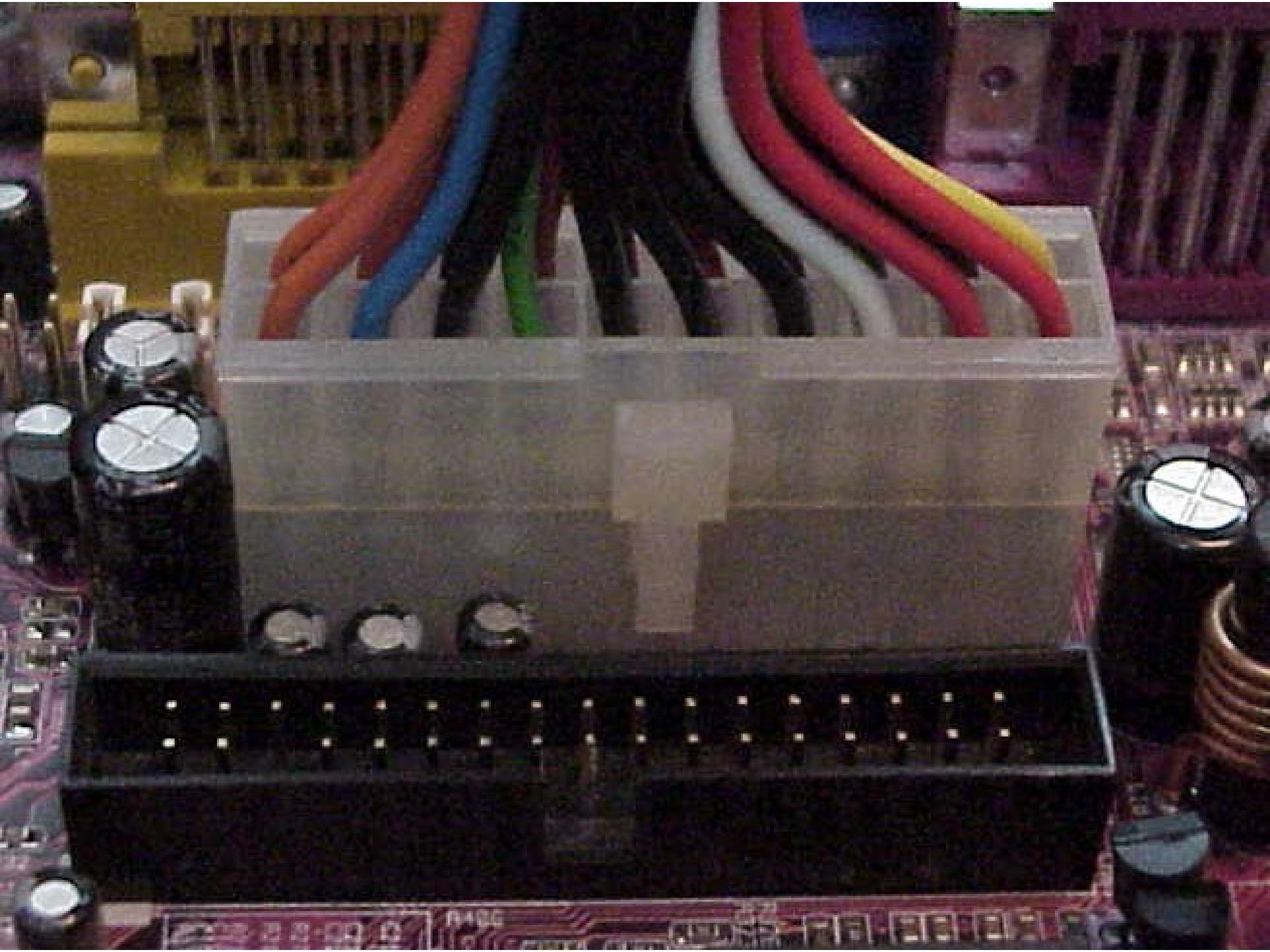
Installing the ATX Power Connector



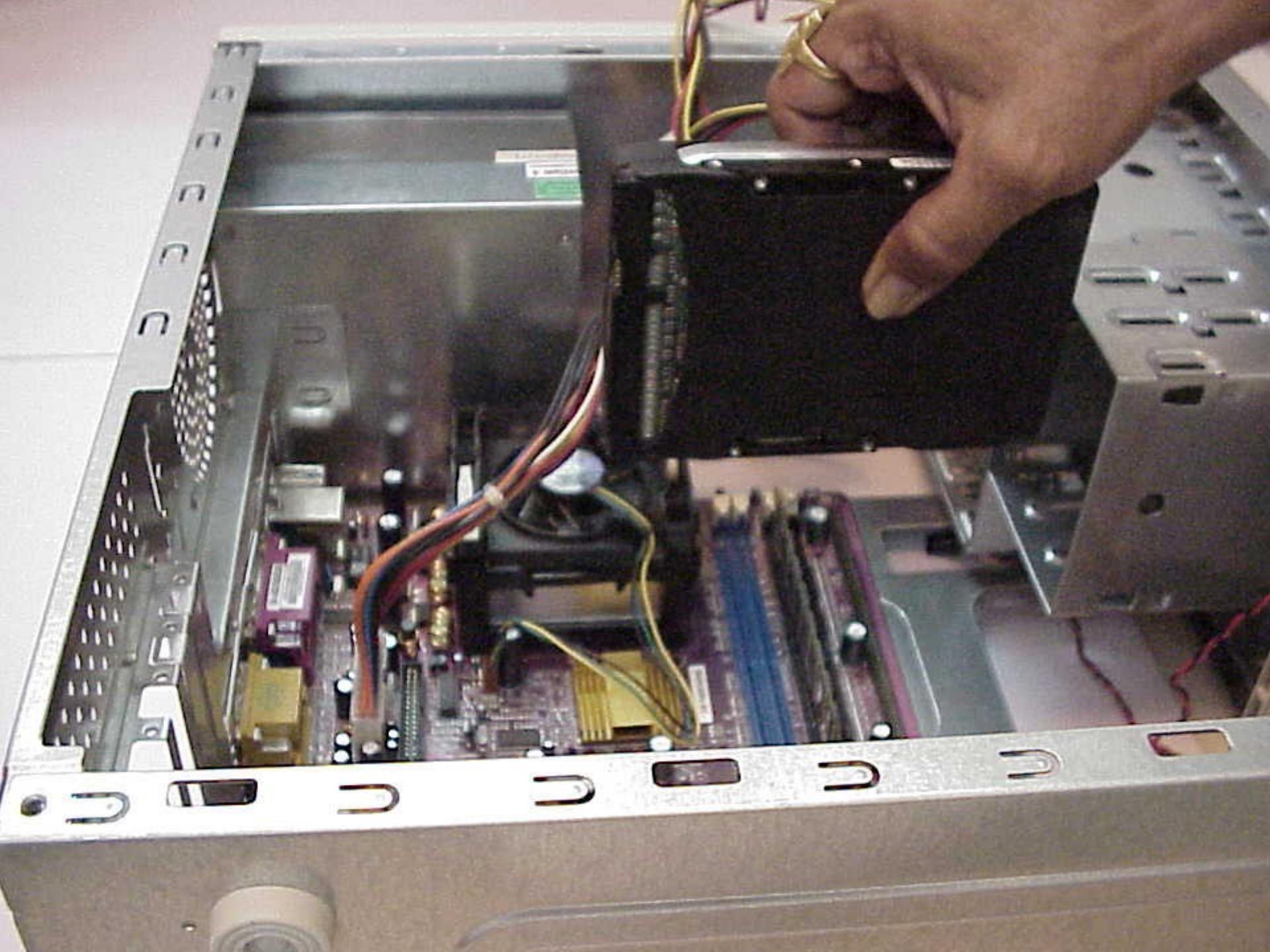


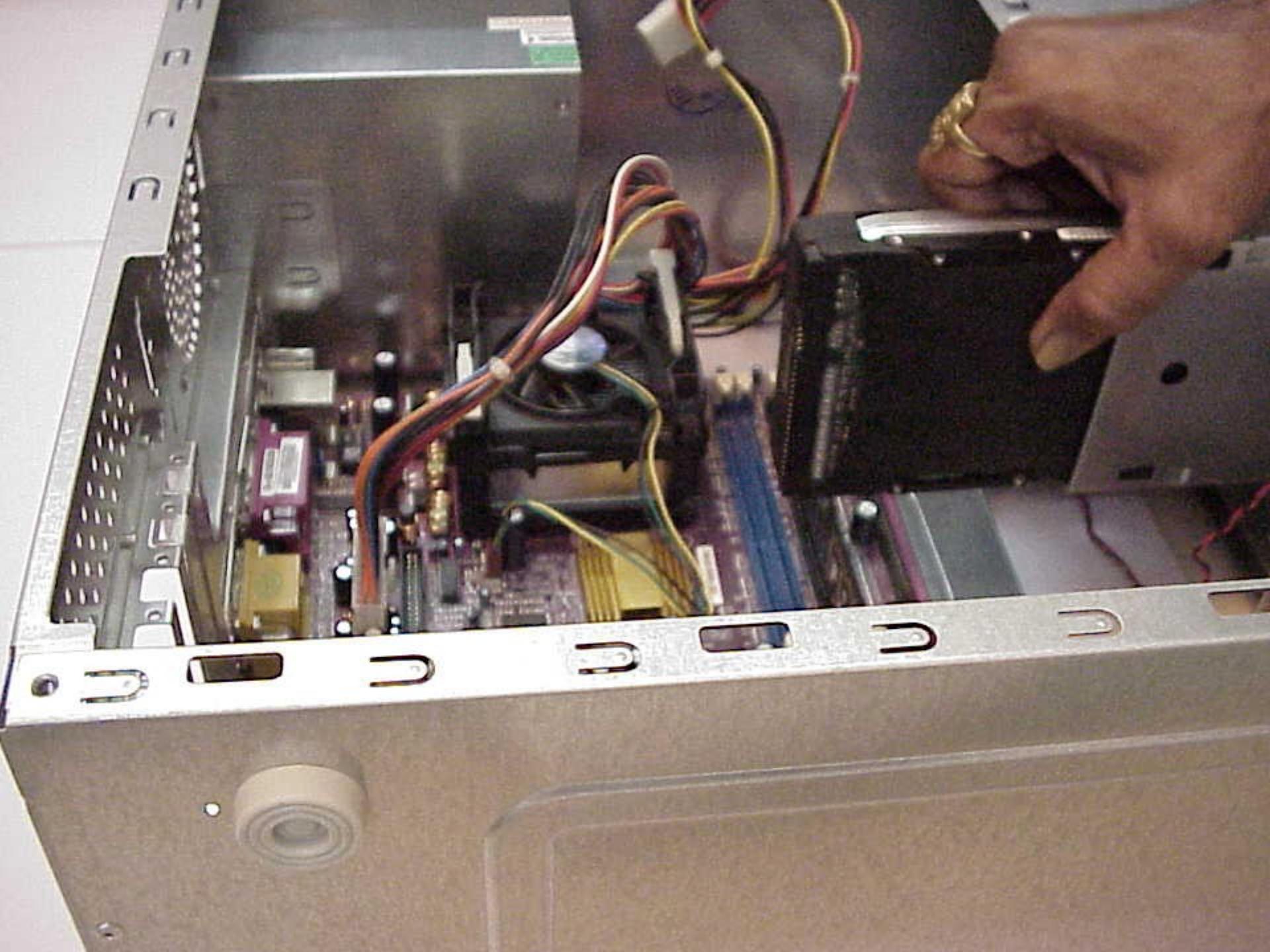
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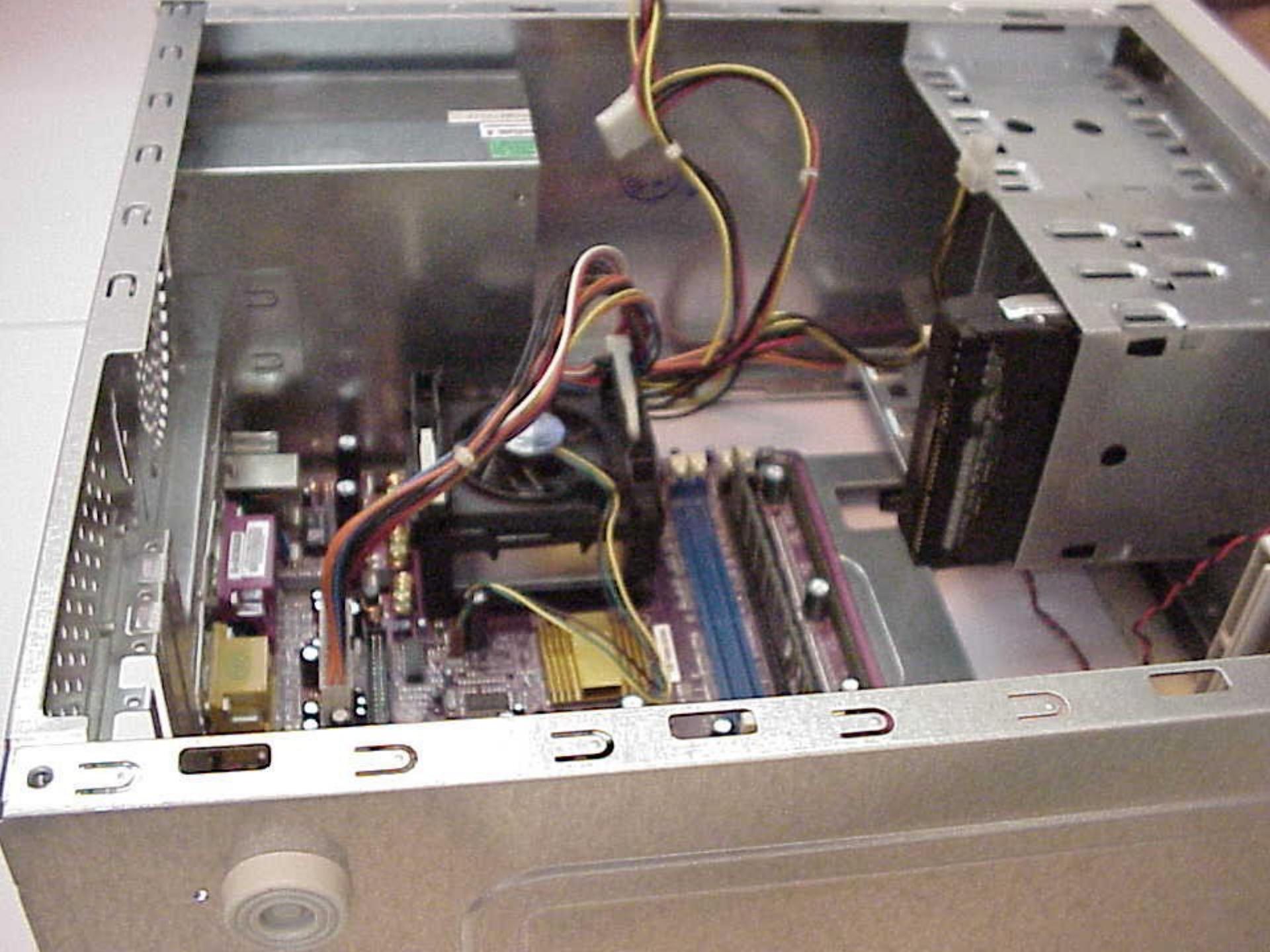


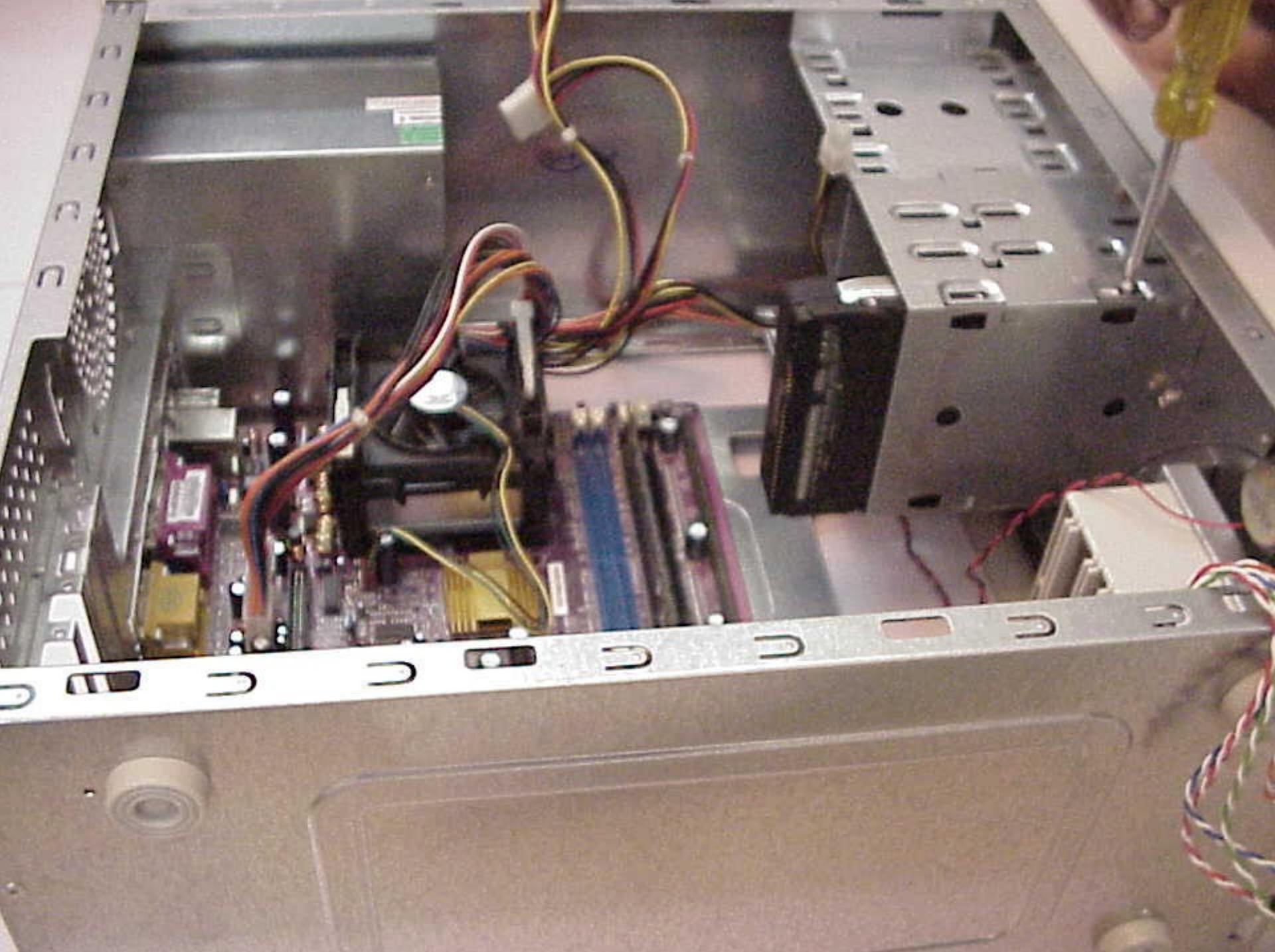


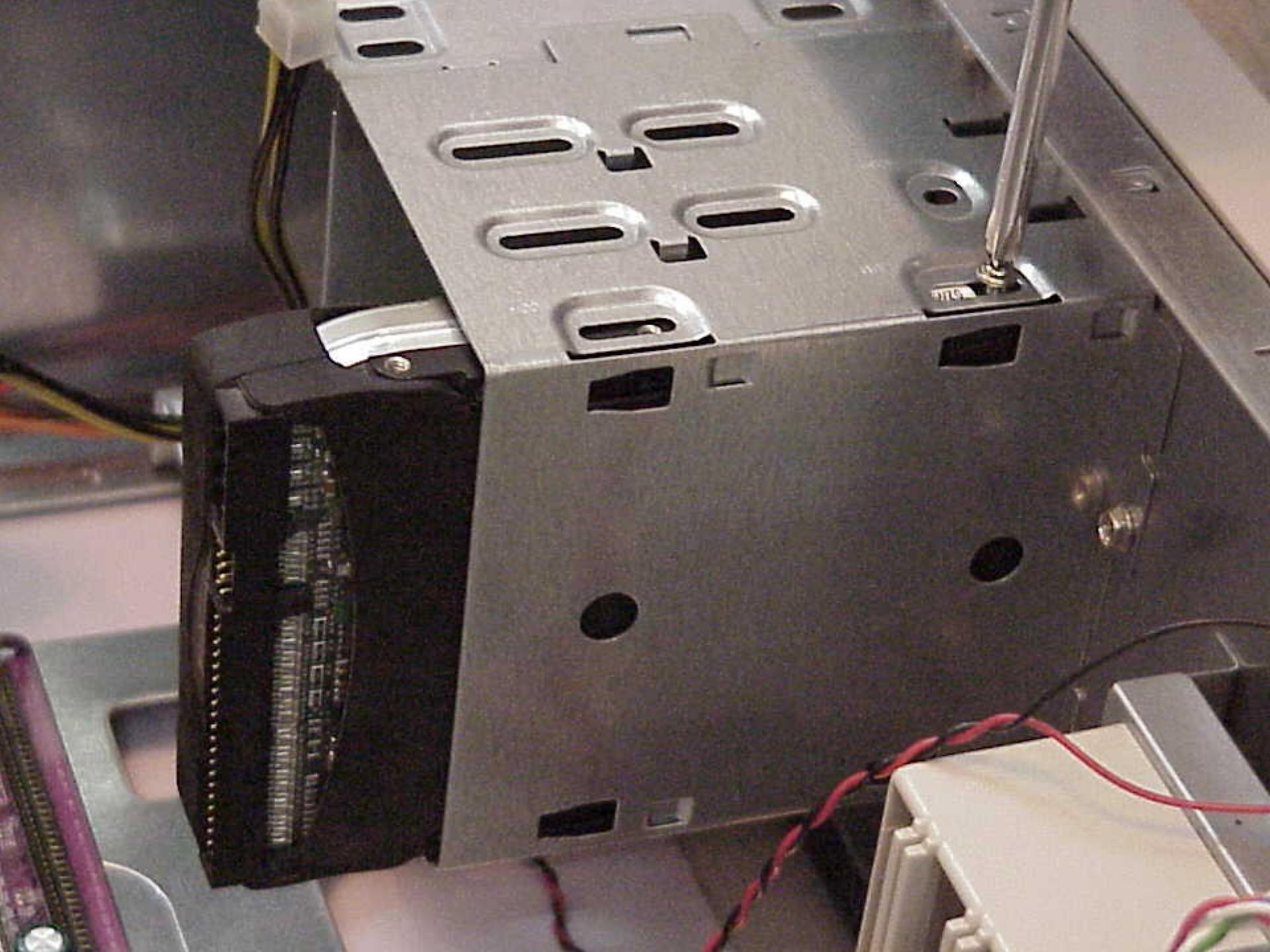
Installing the HDD

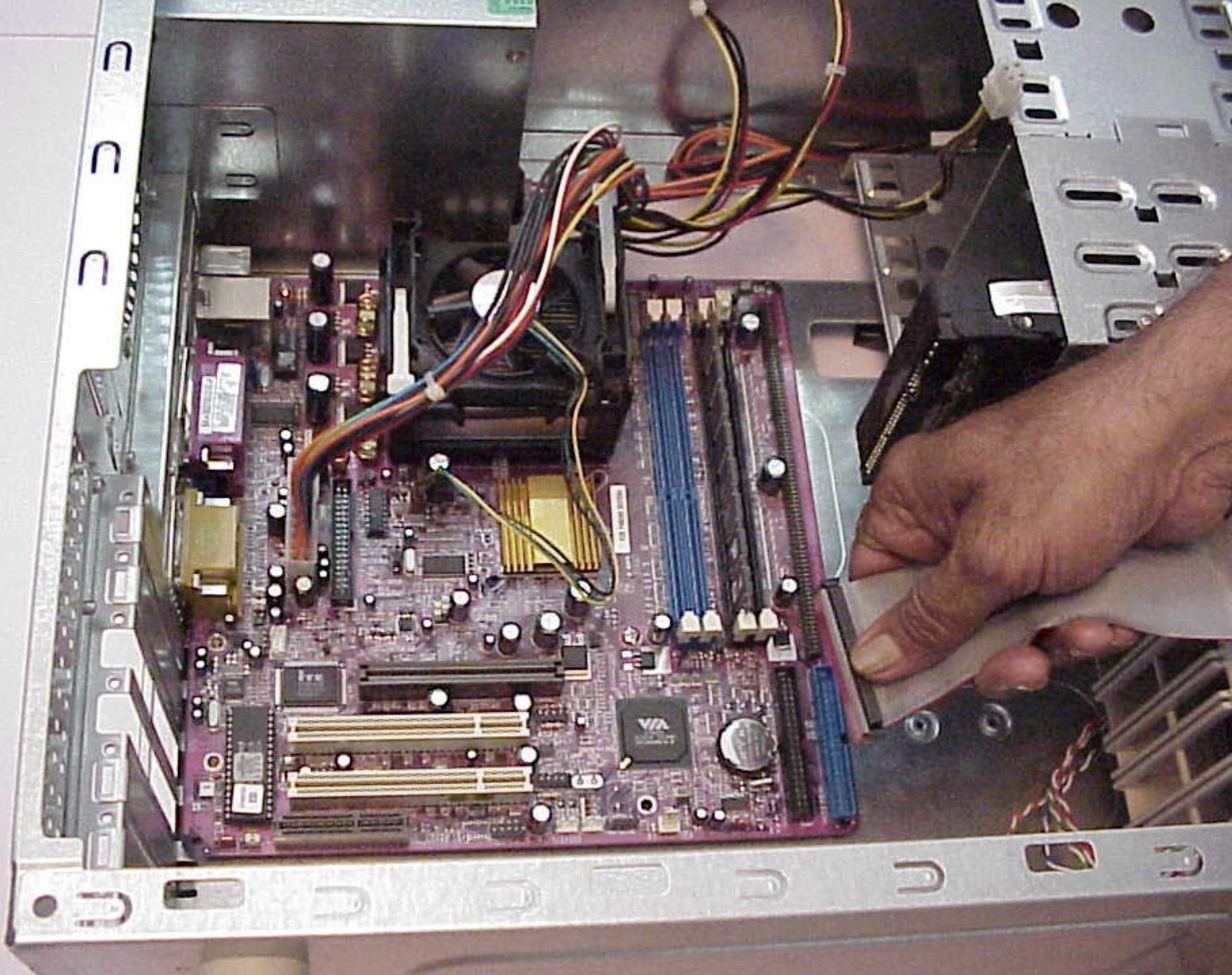


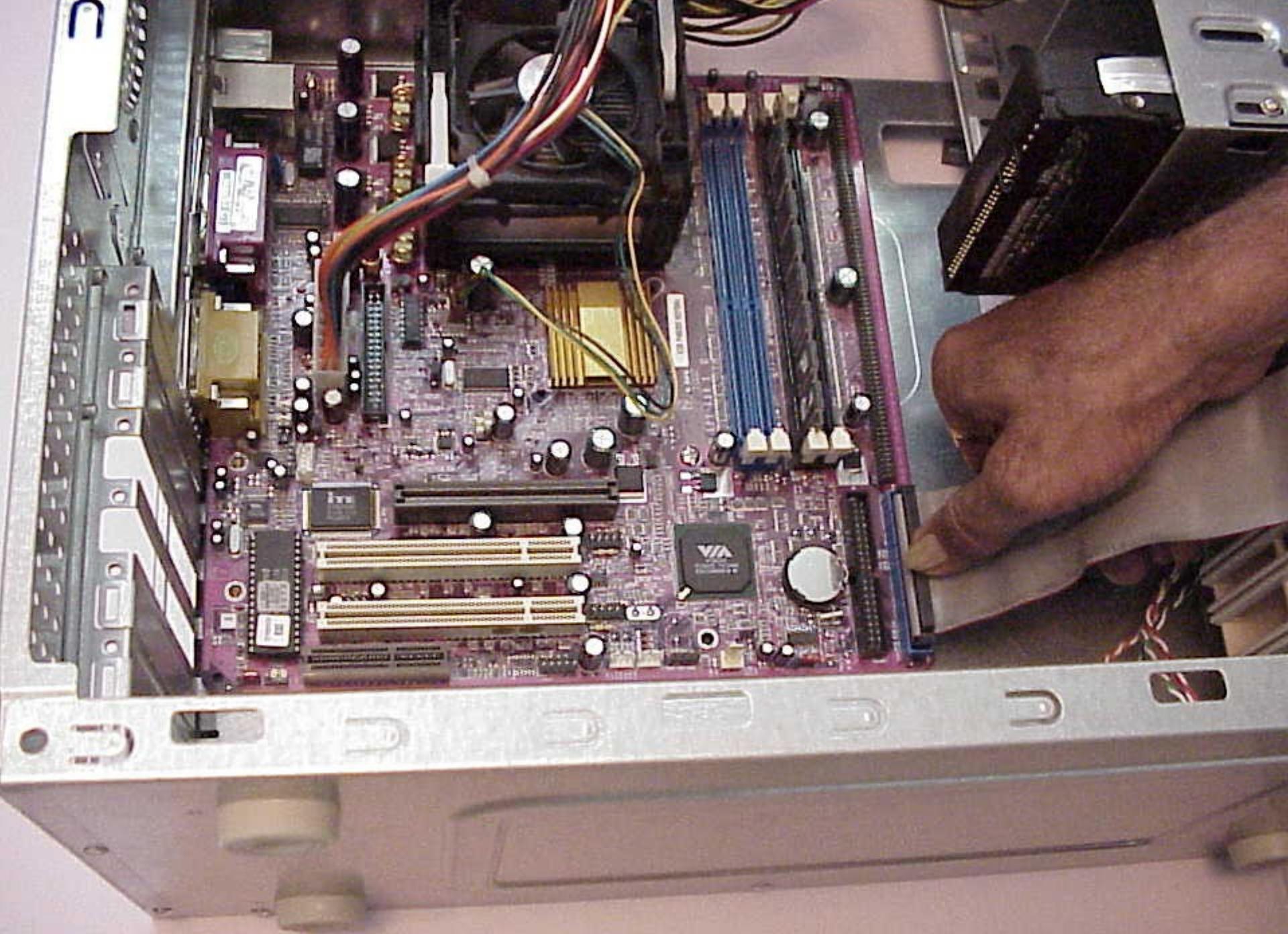


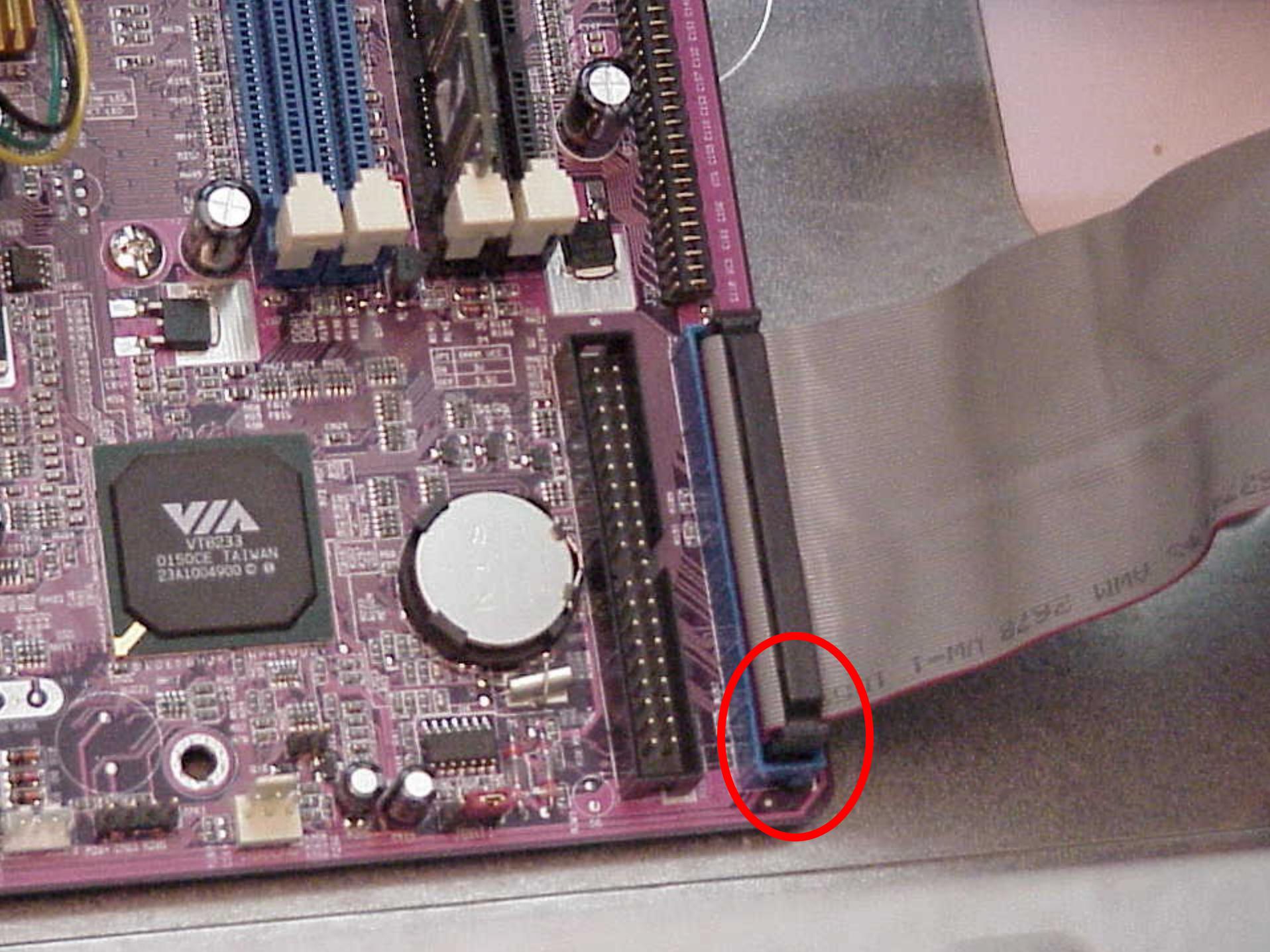


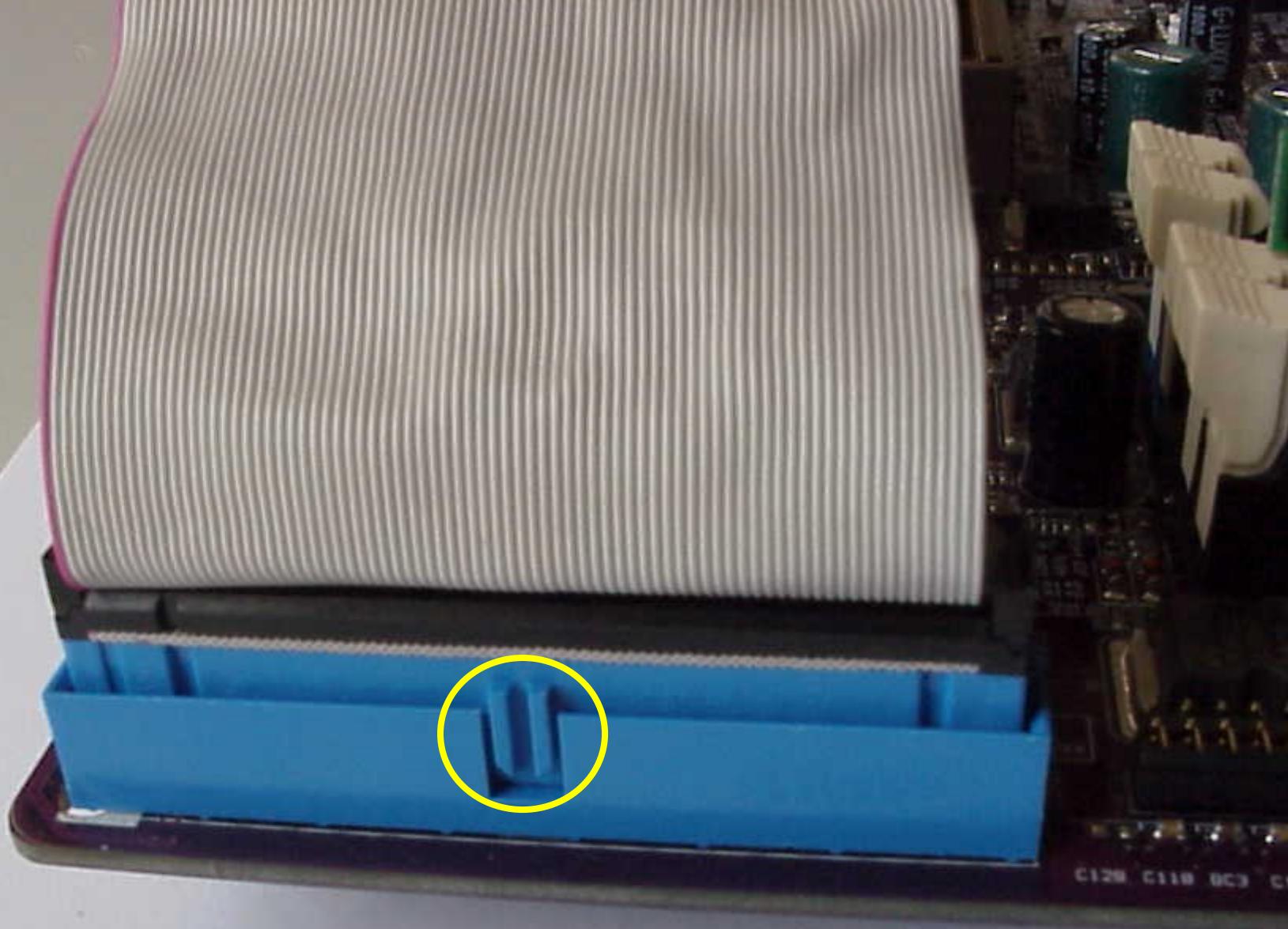


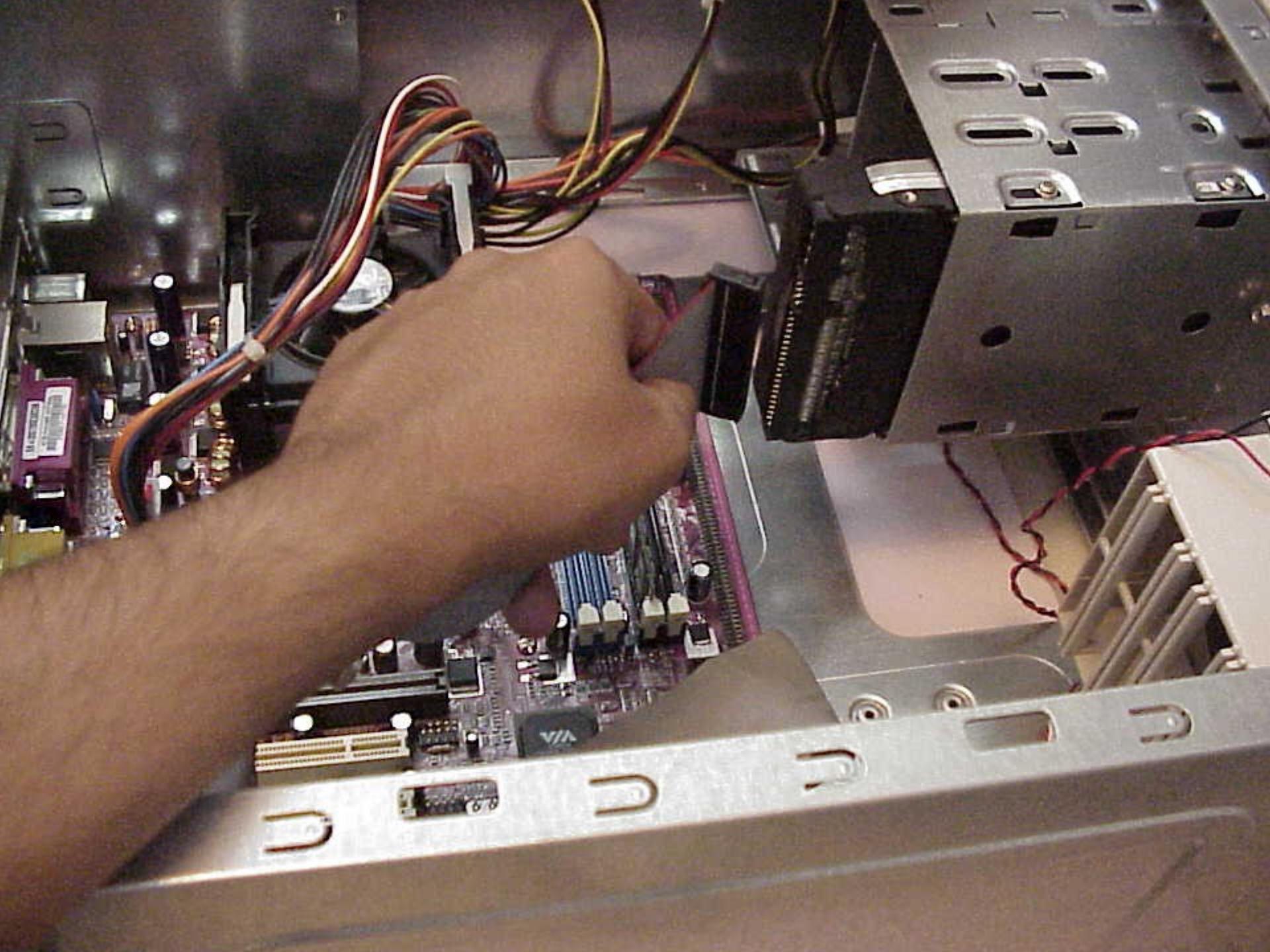


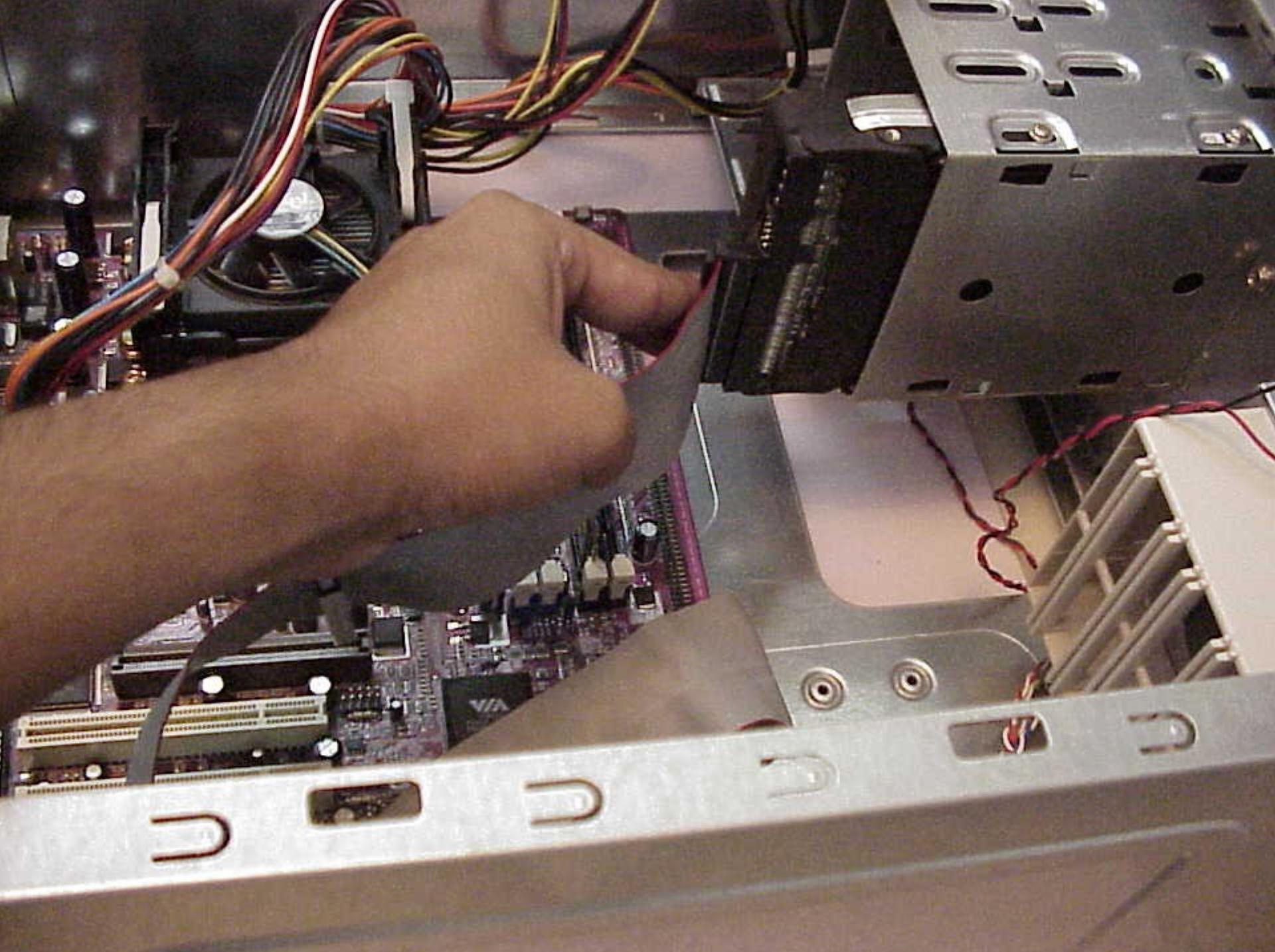


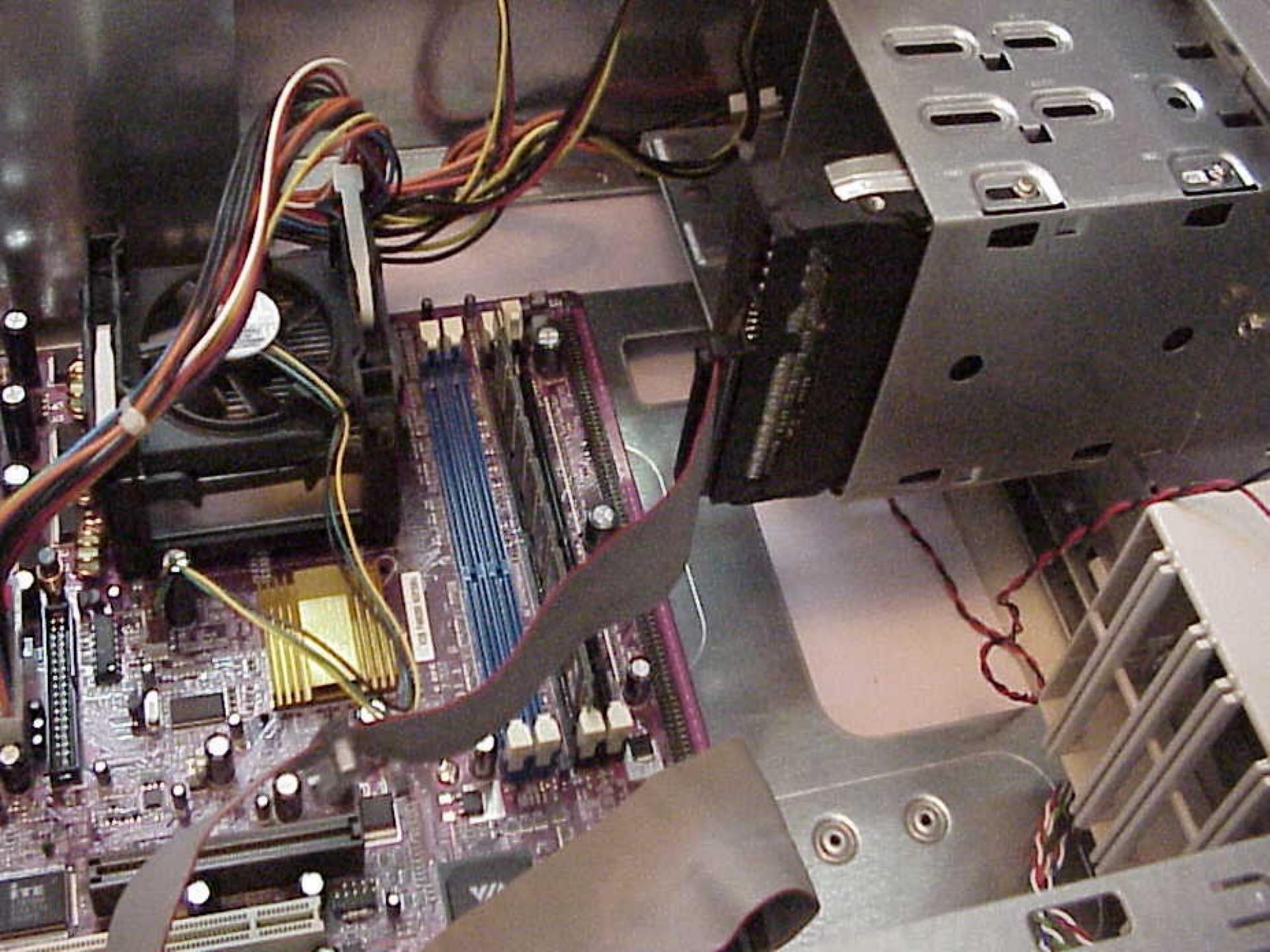












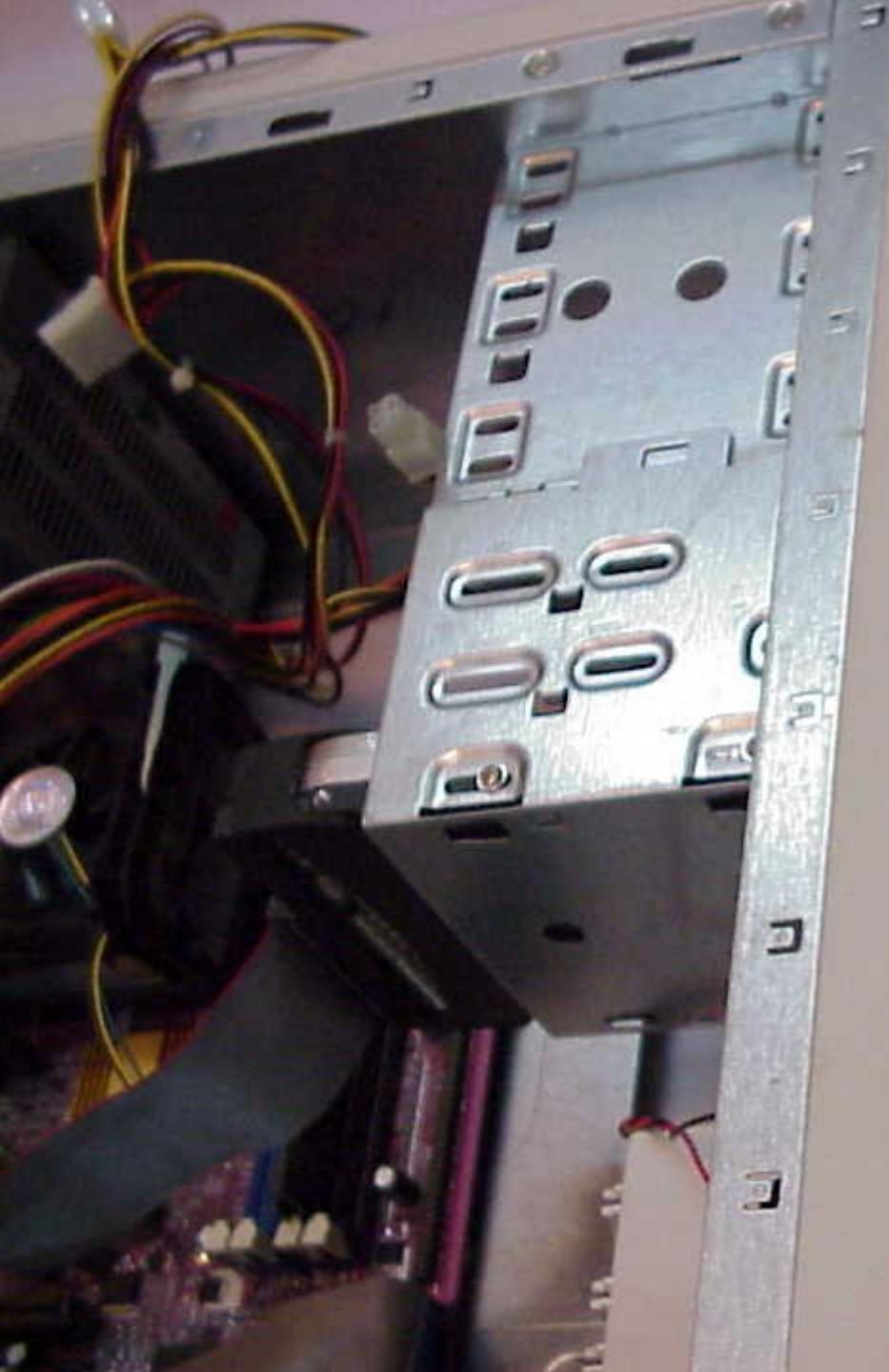


Installing the FDD

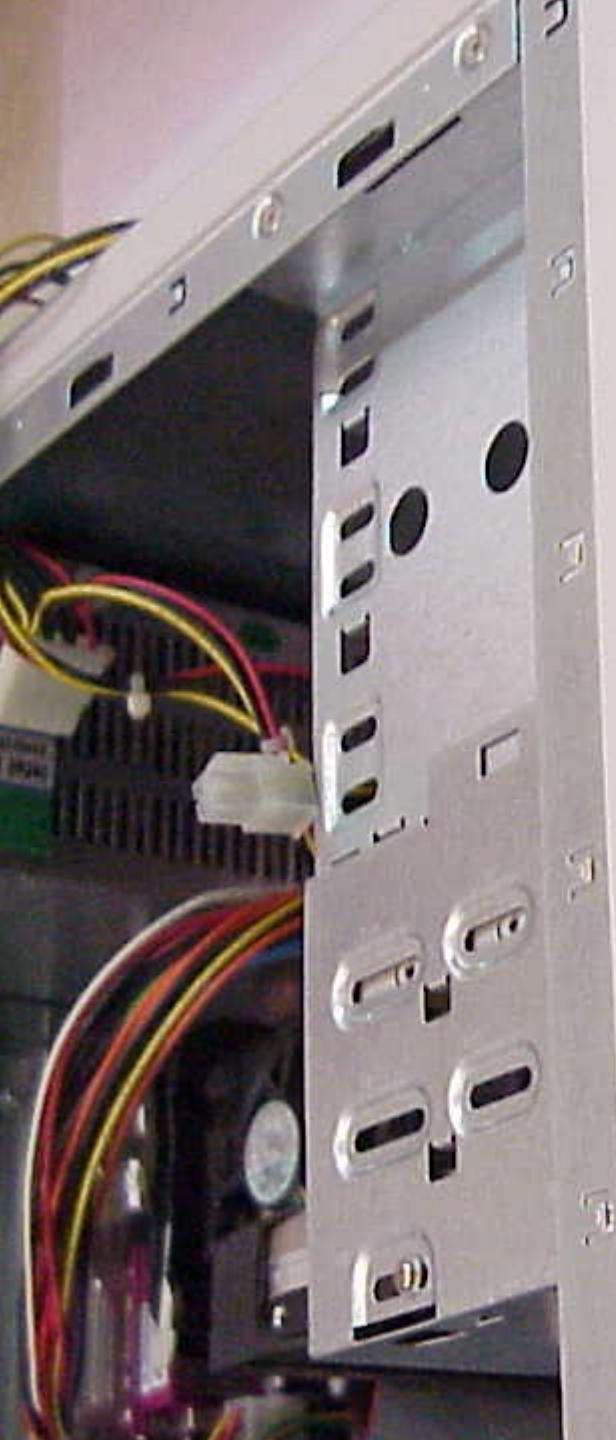


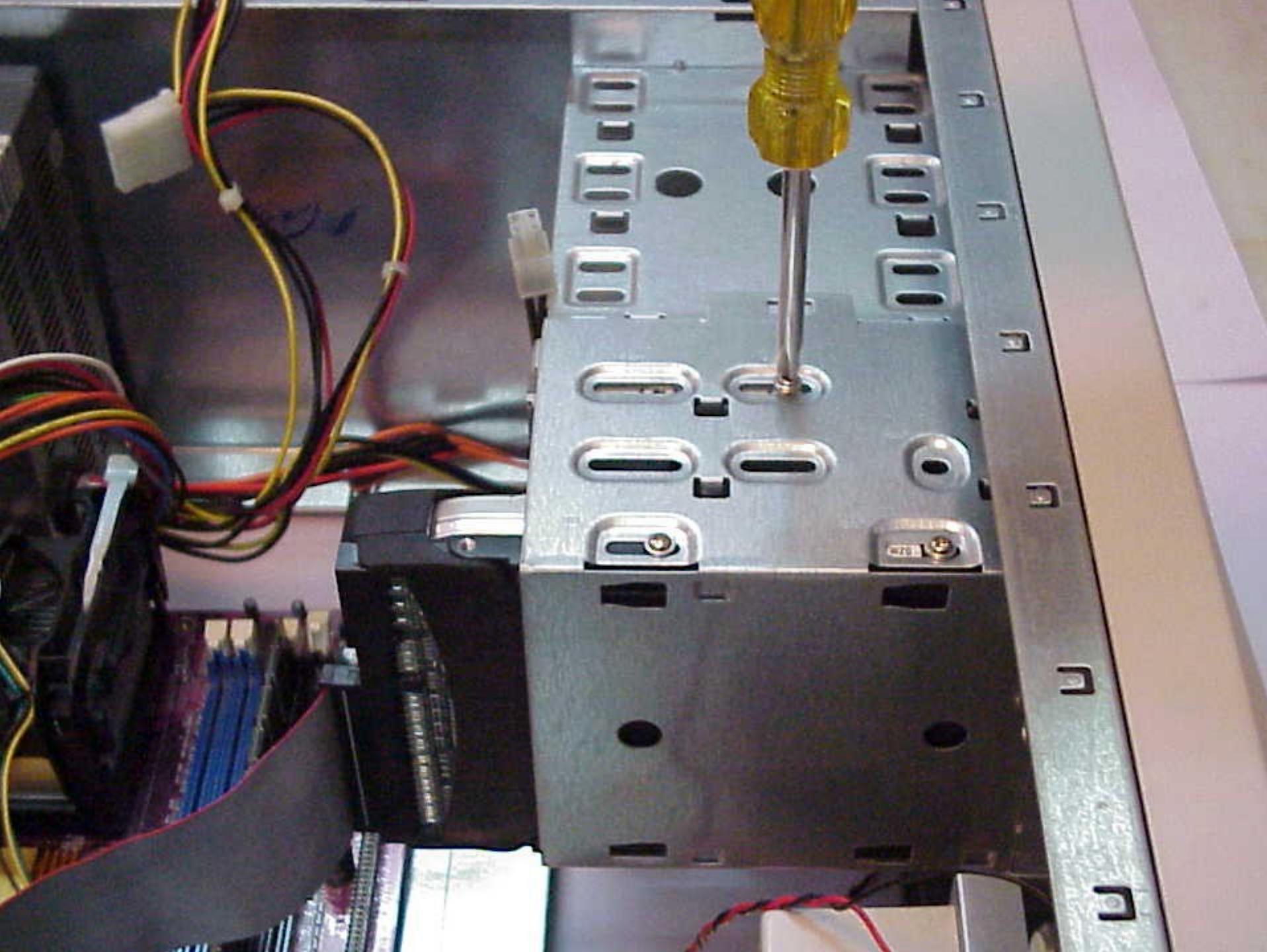


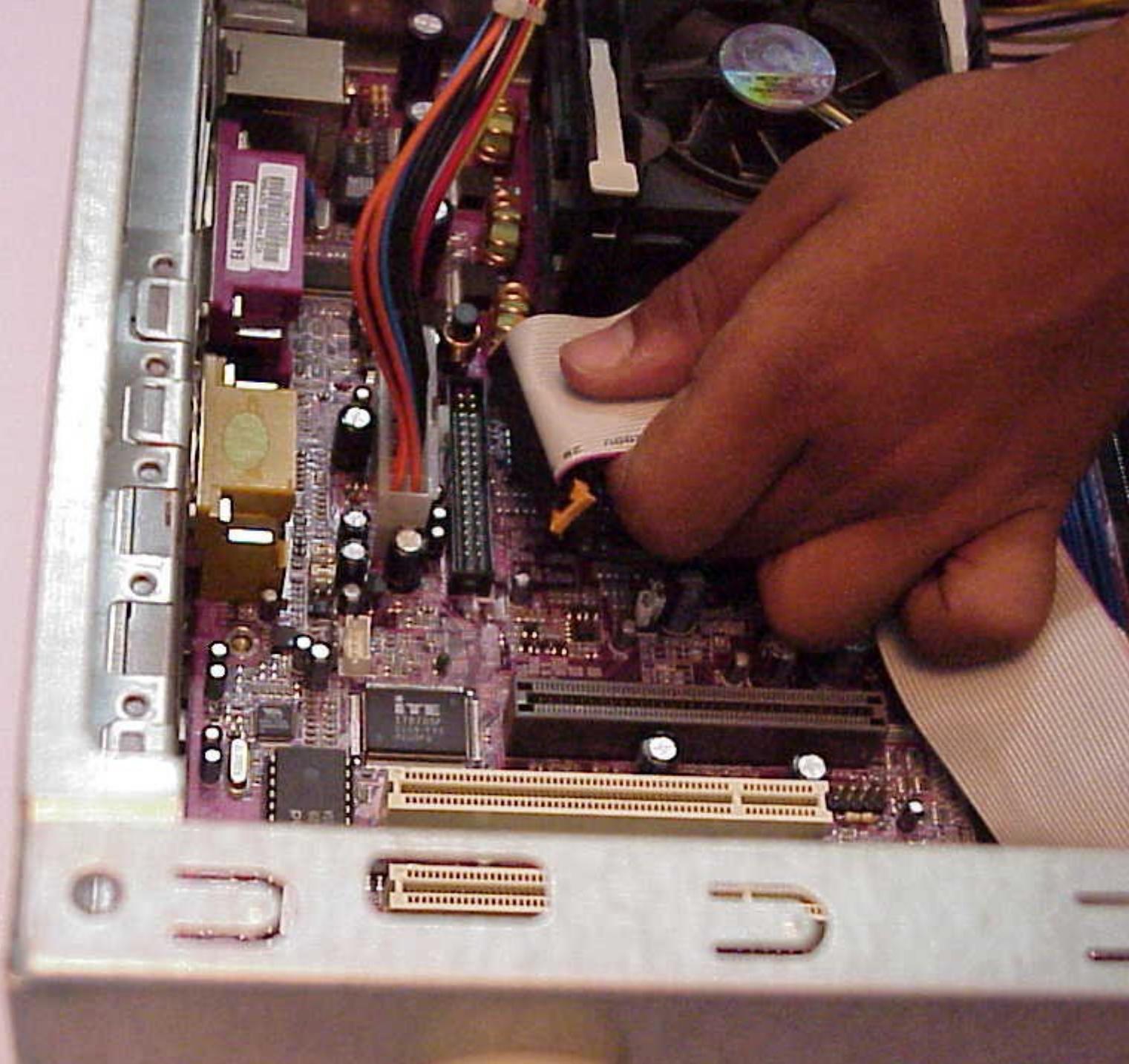


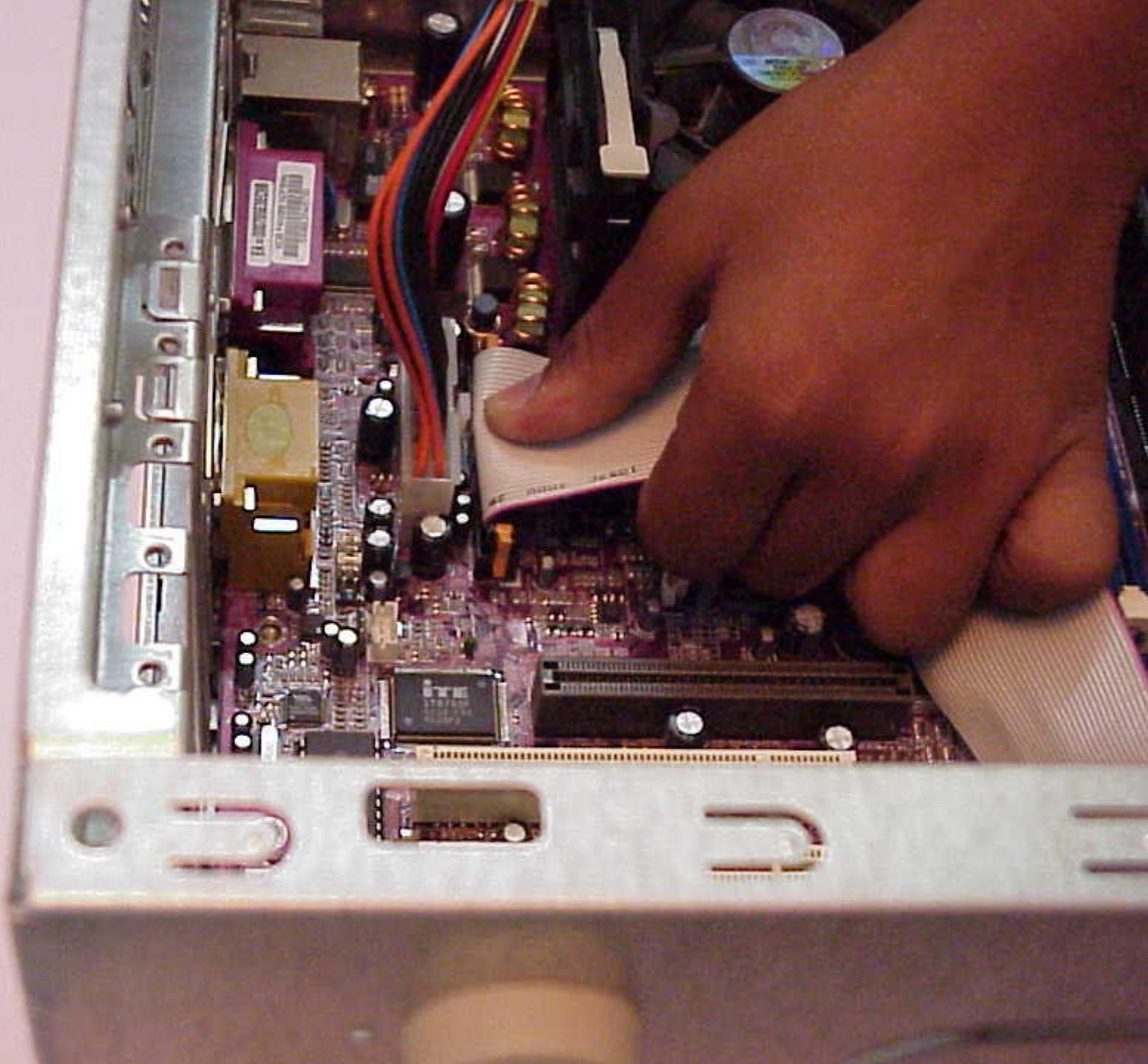








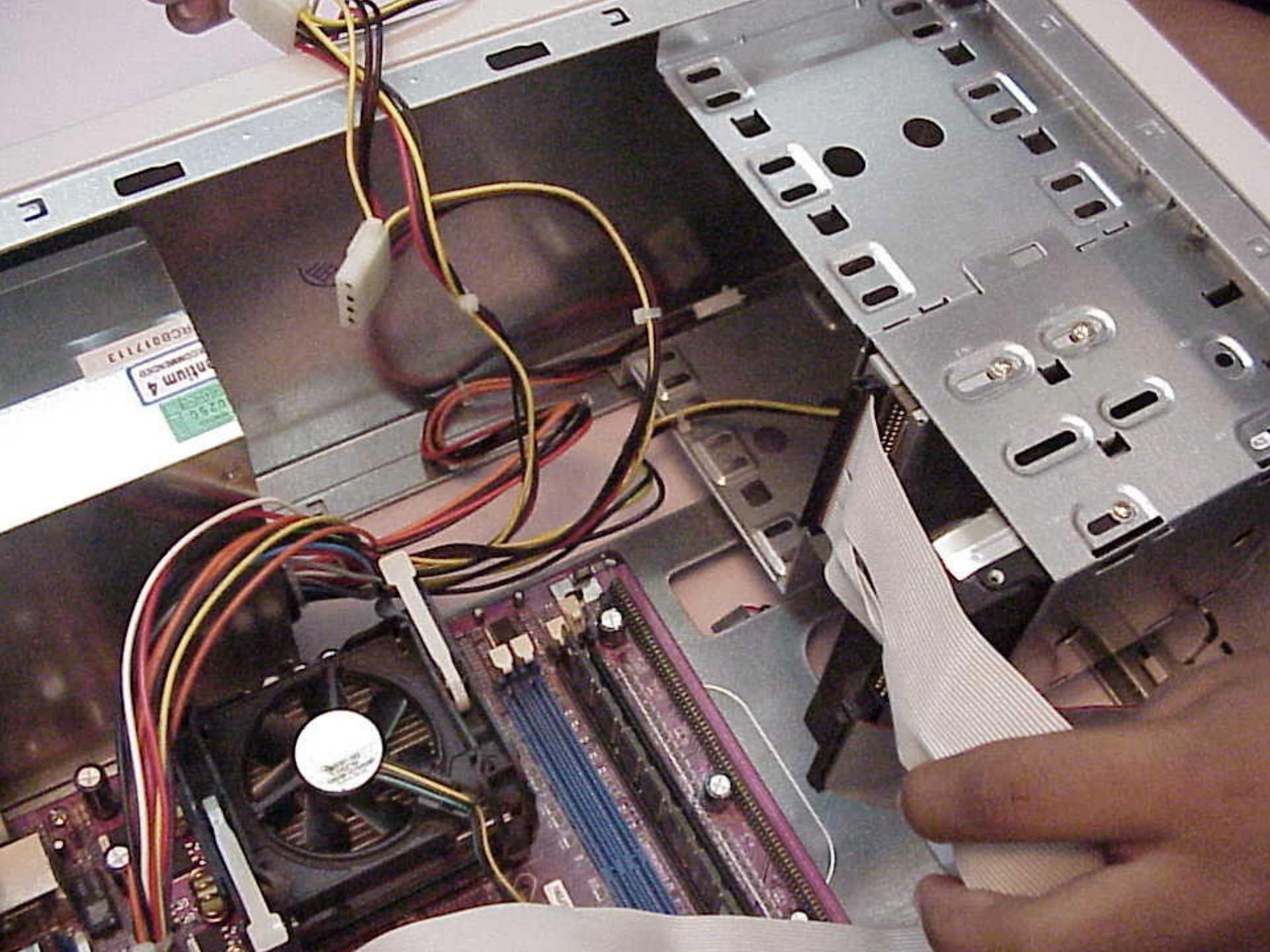


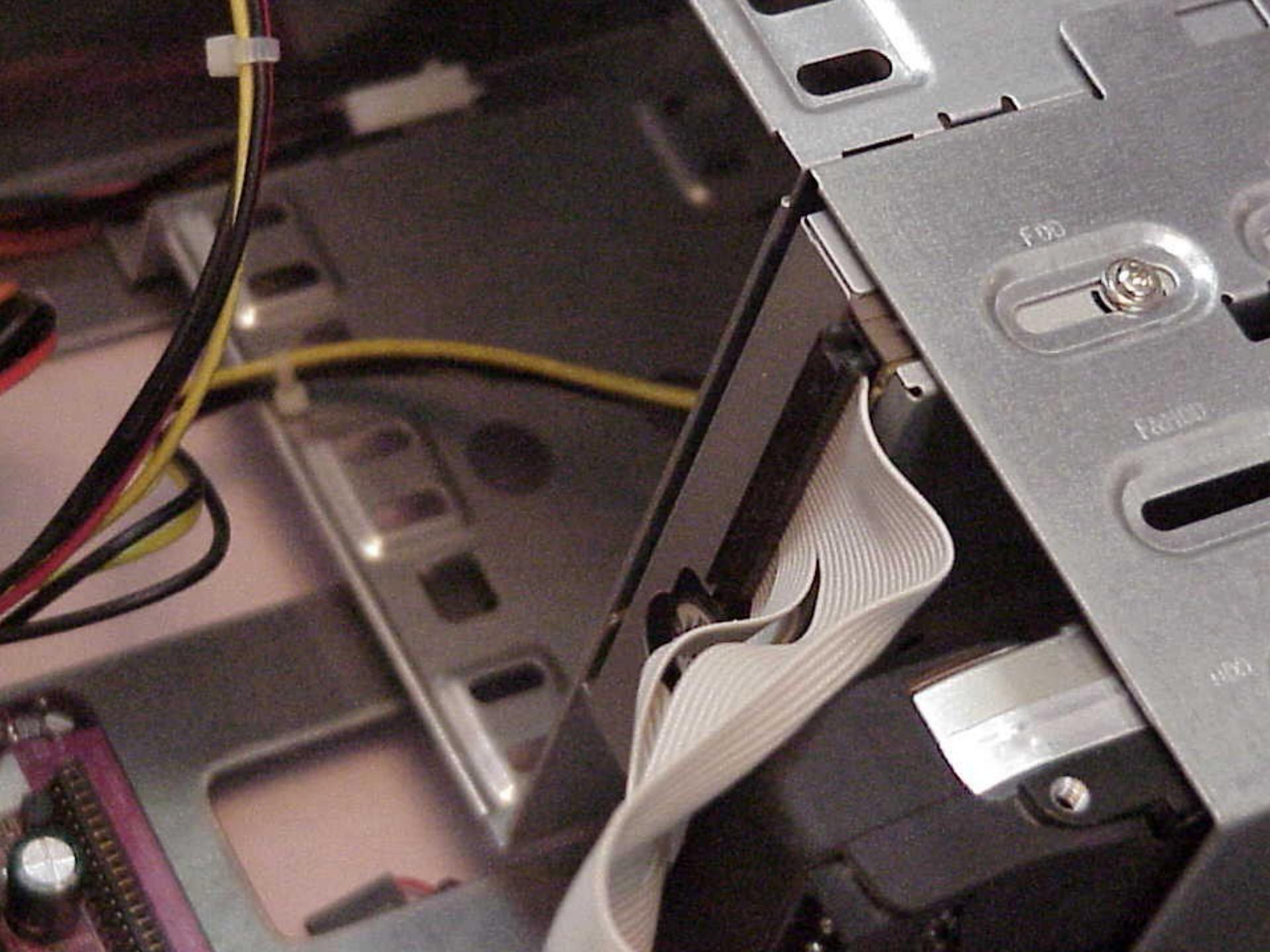


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Dose 2

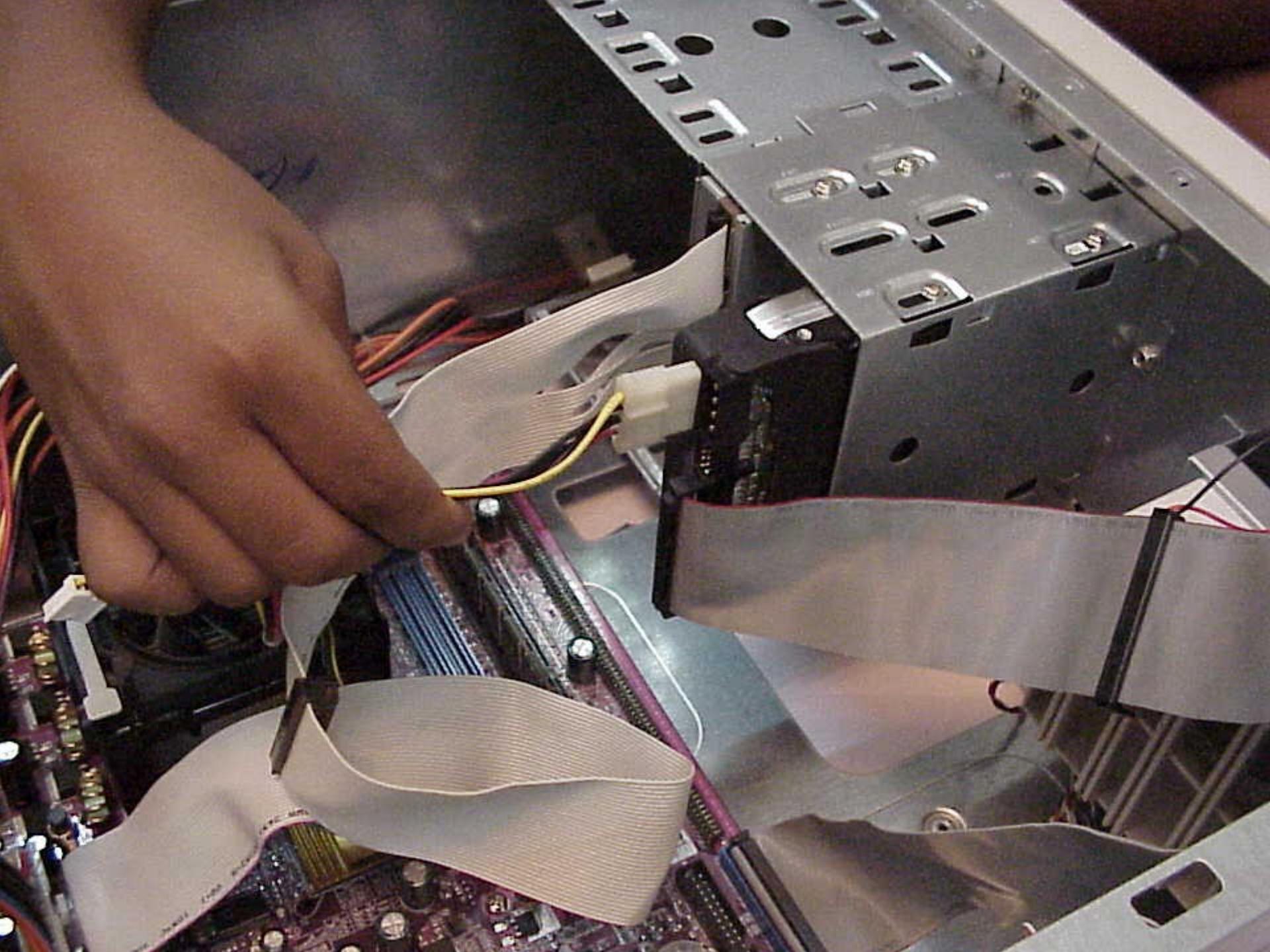
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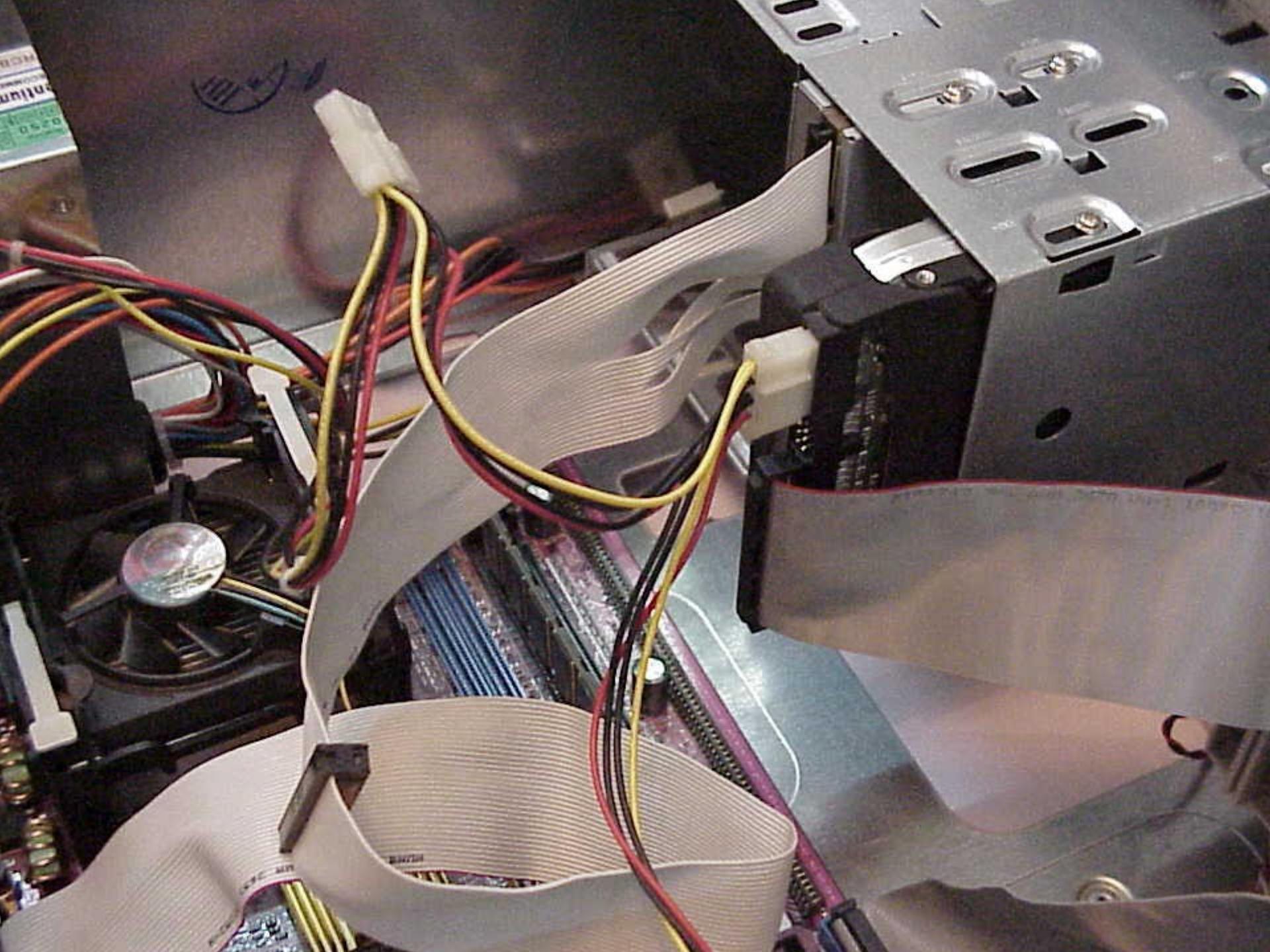
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IT8705F
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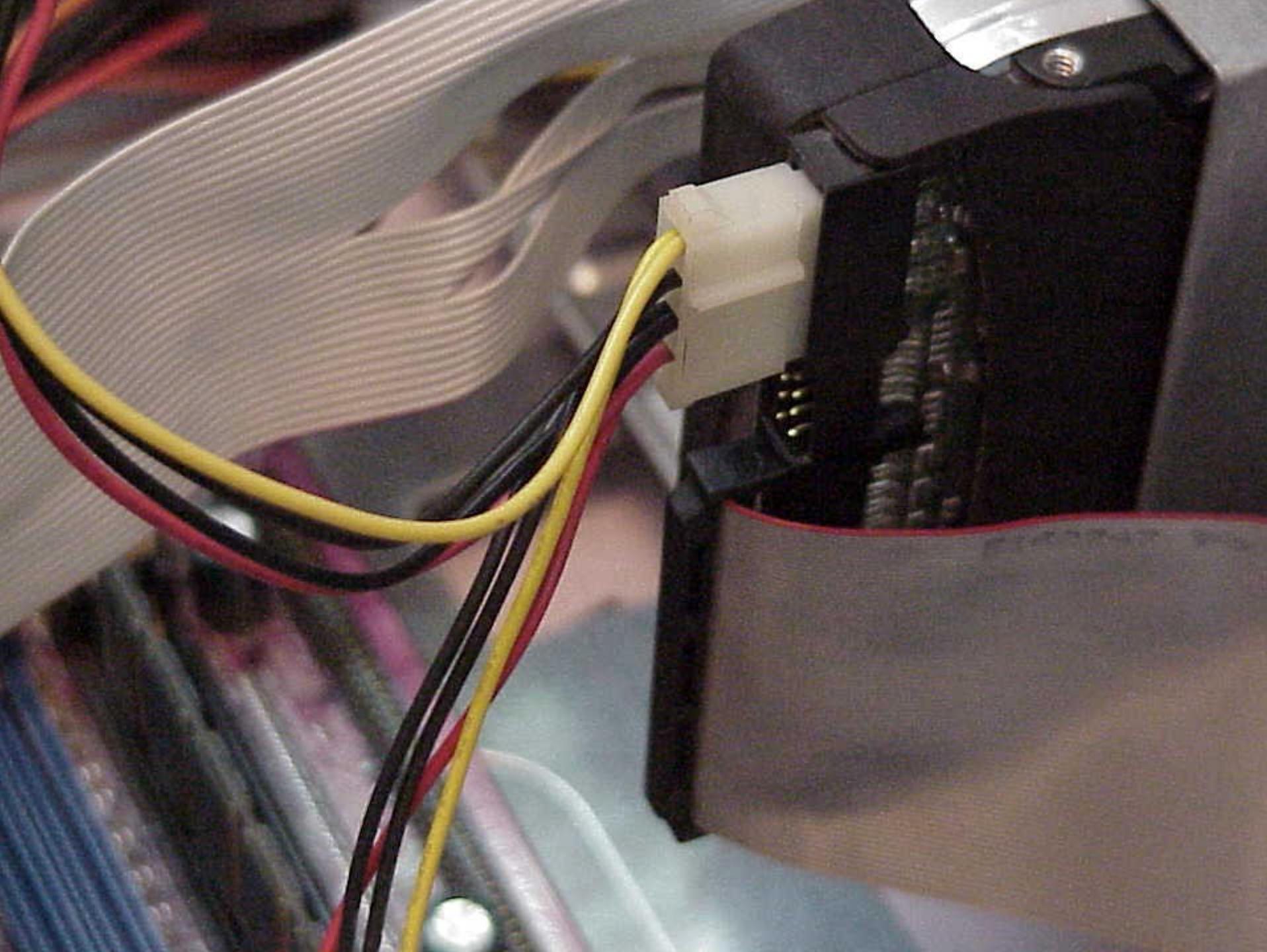


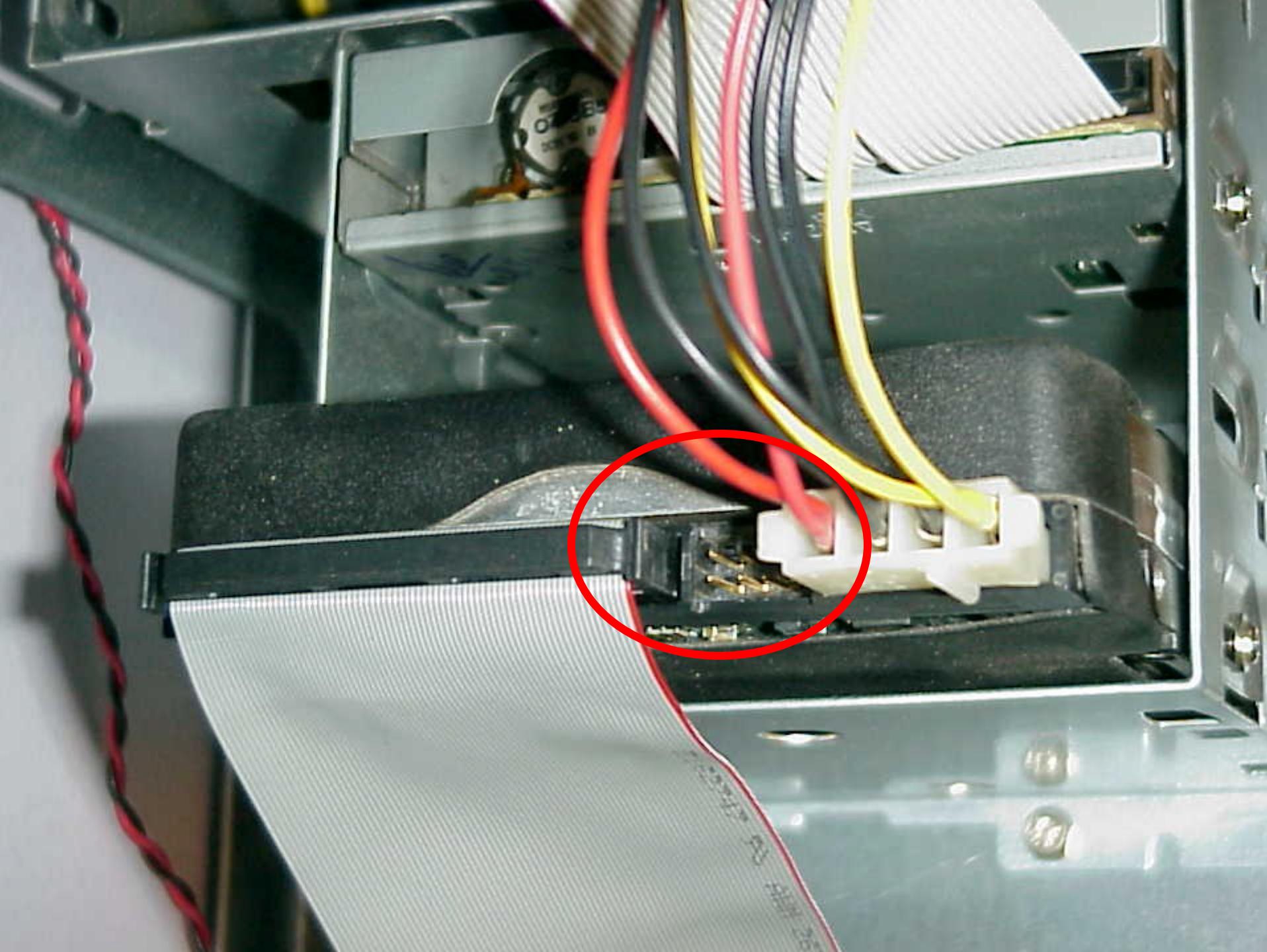


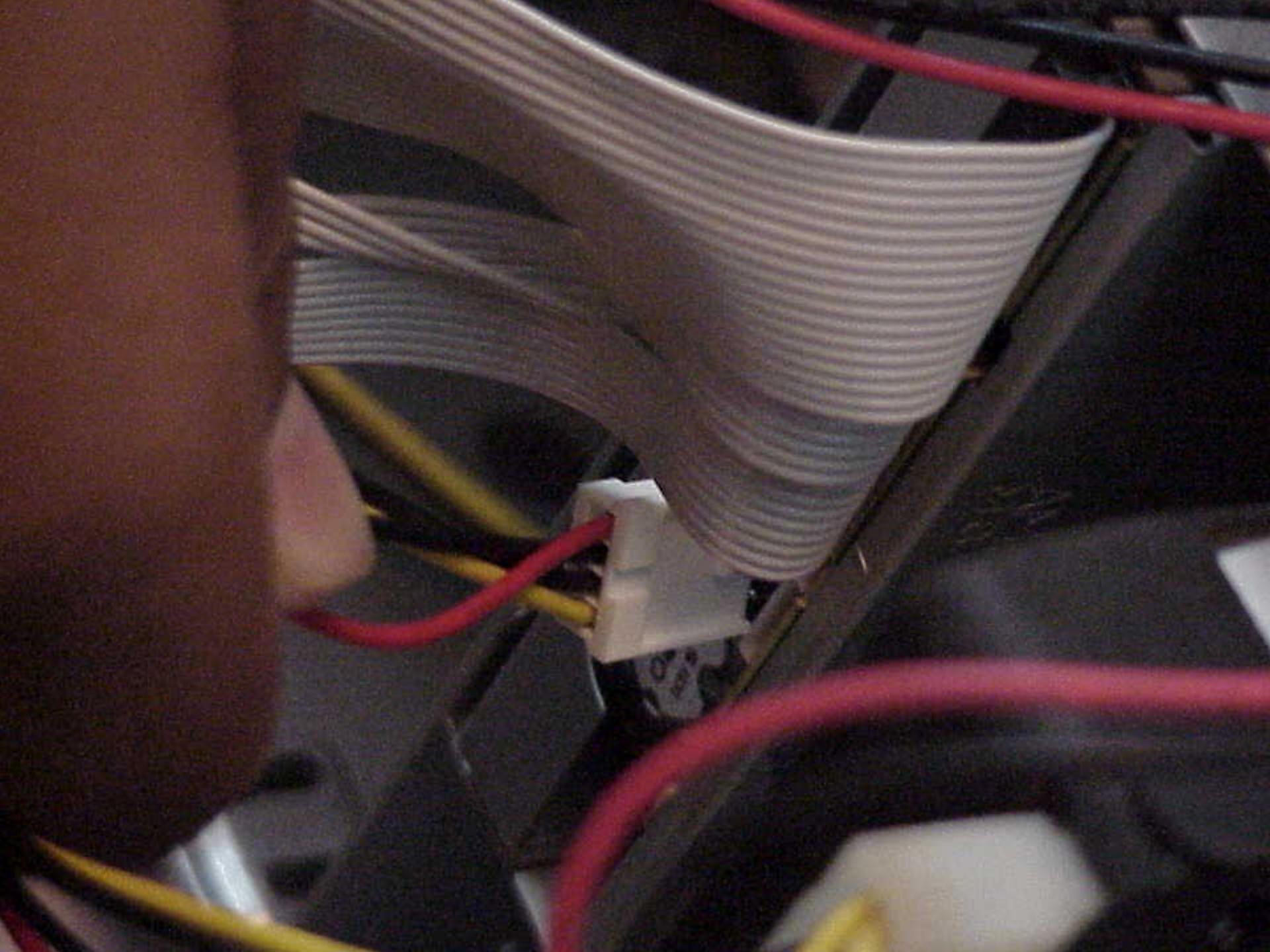
Powering the HDD & FDD

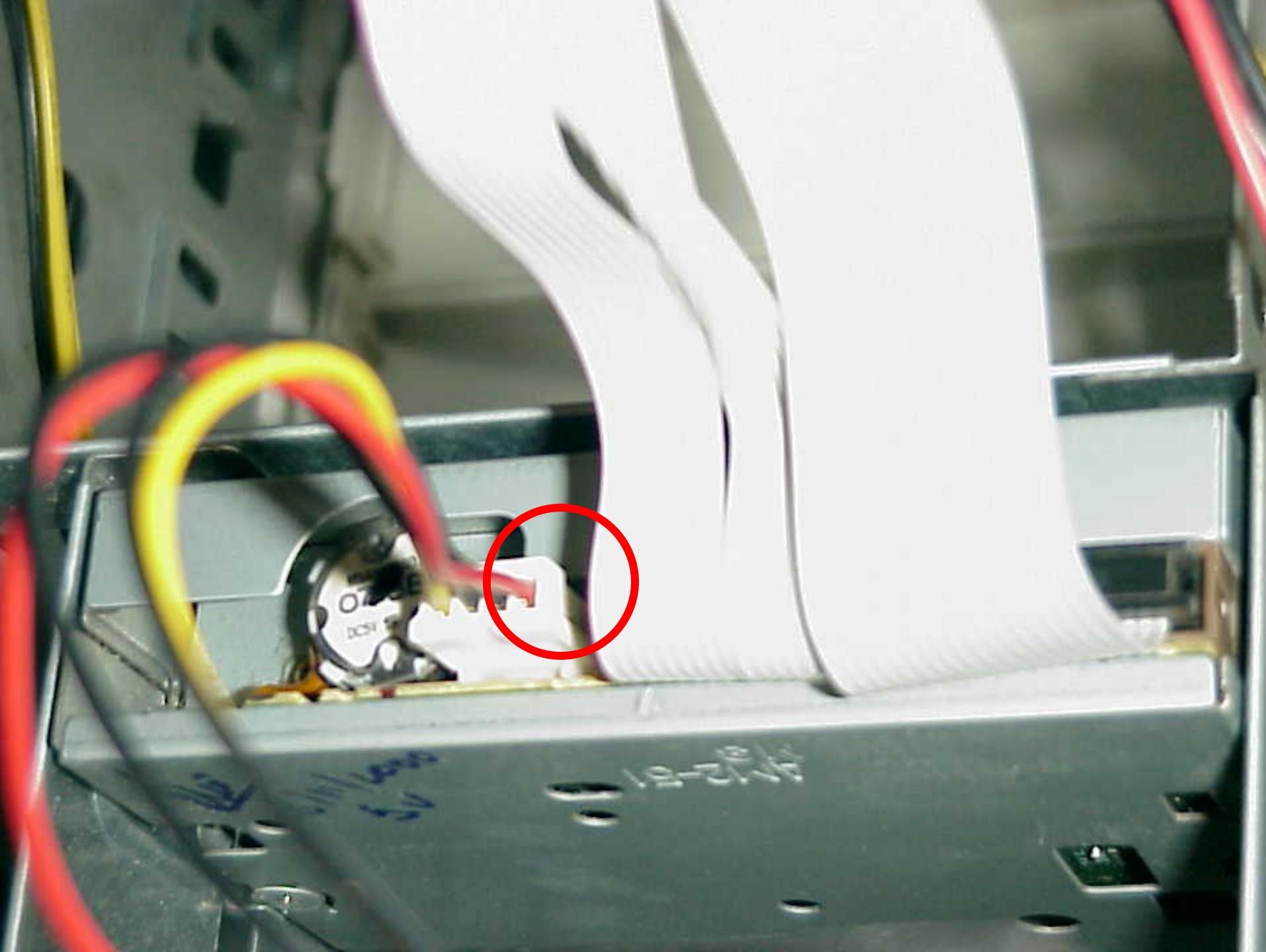










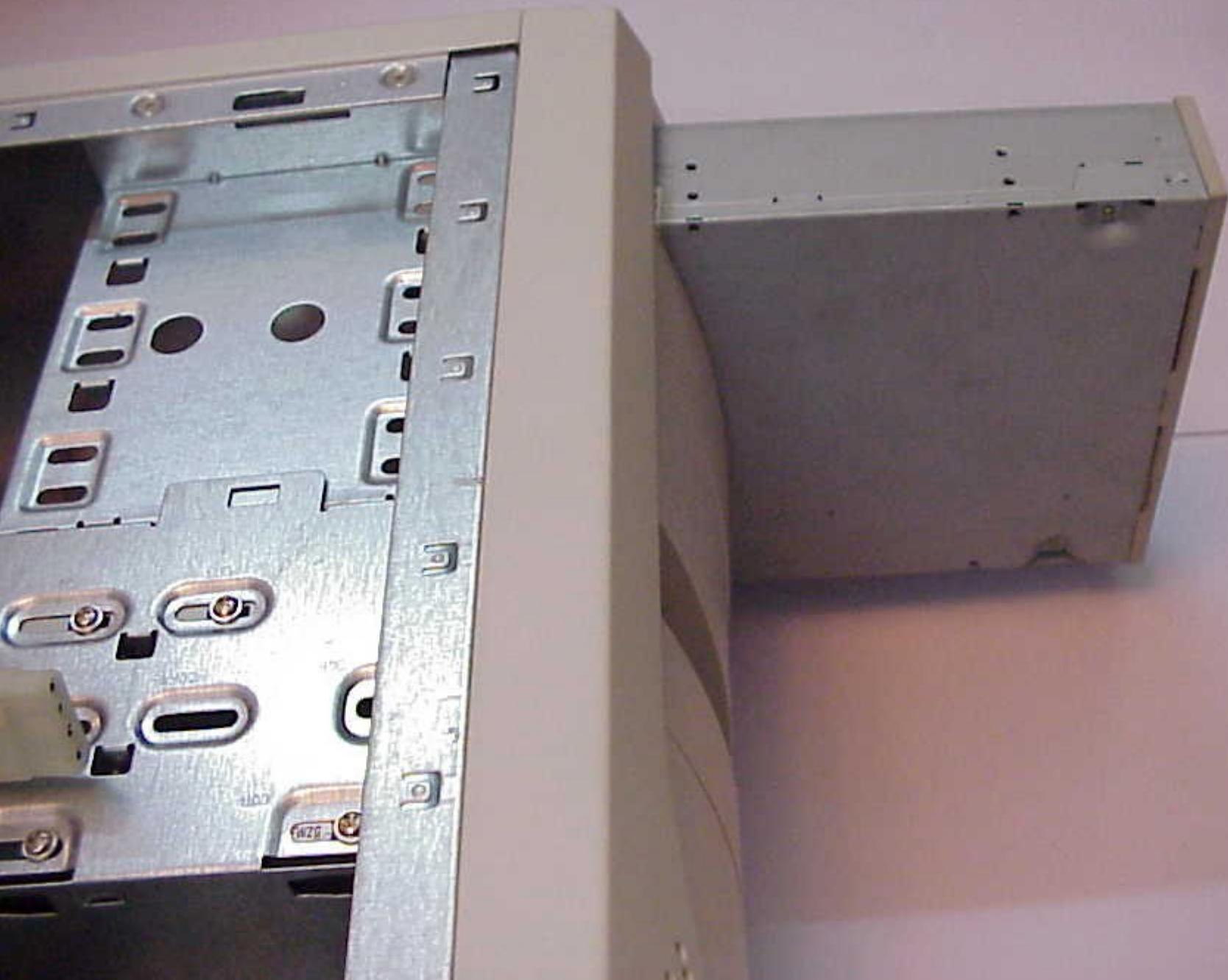


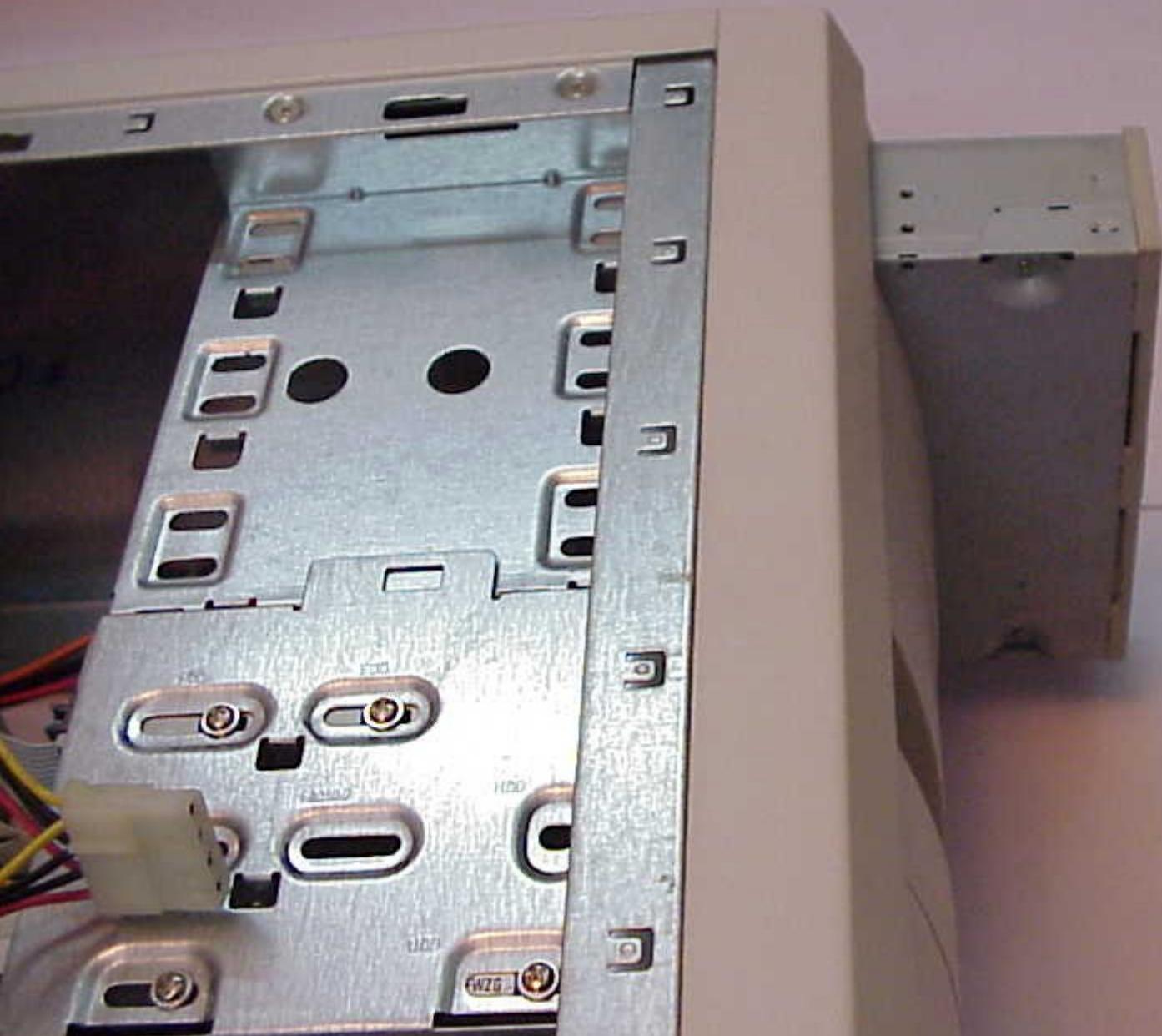
Installing the CDROM Drive







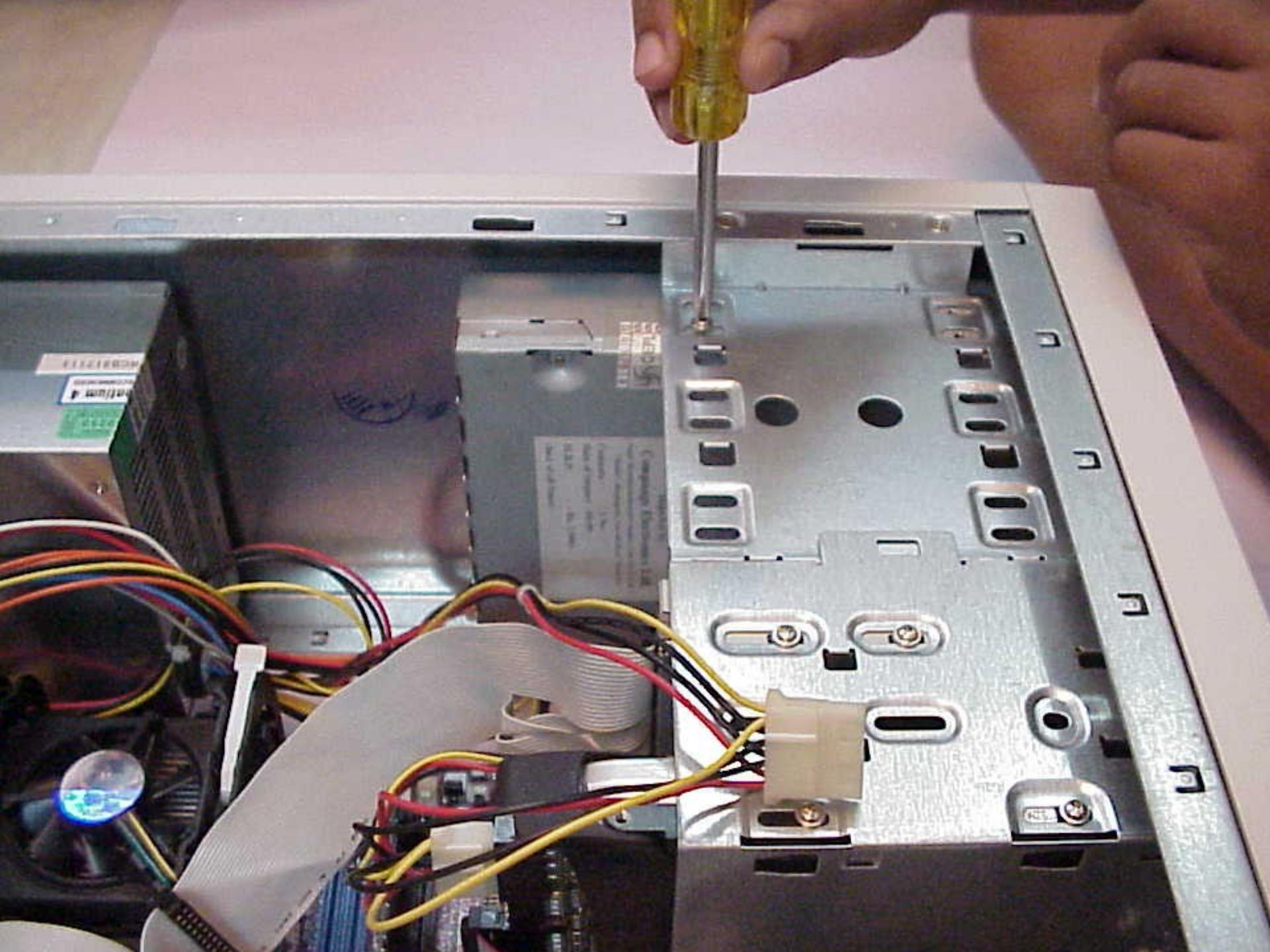




INFRARED

CREDENCE

INFRARED





CEPL

999
81910112

Compuage Elec

Sagar Manthan Industrial Co.

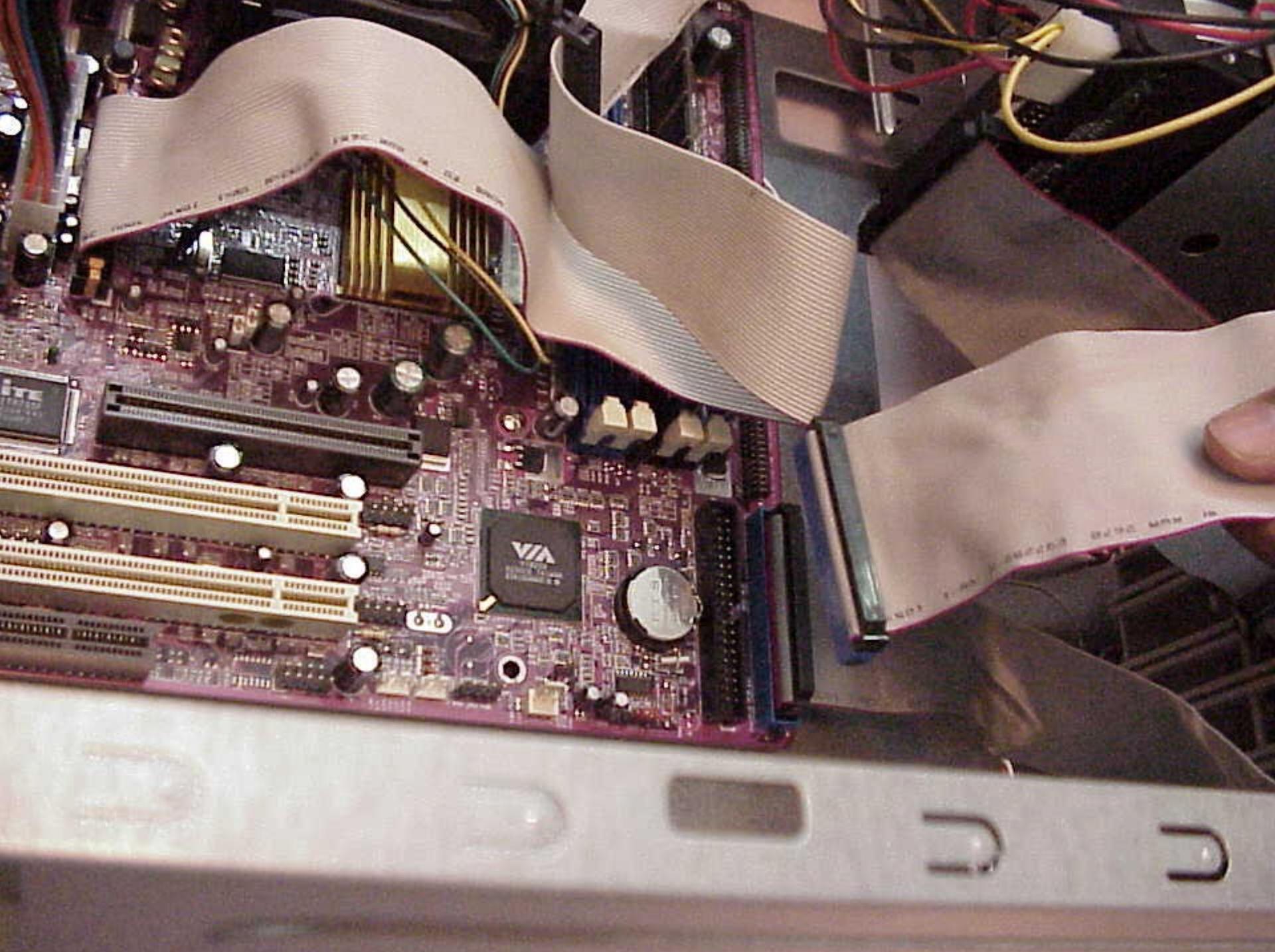
"Shubh", Bhoidaspur, Sagar

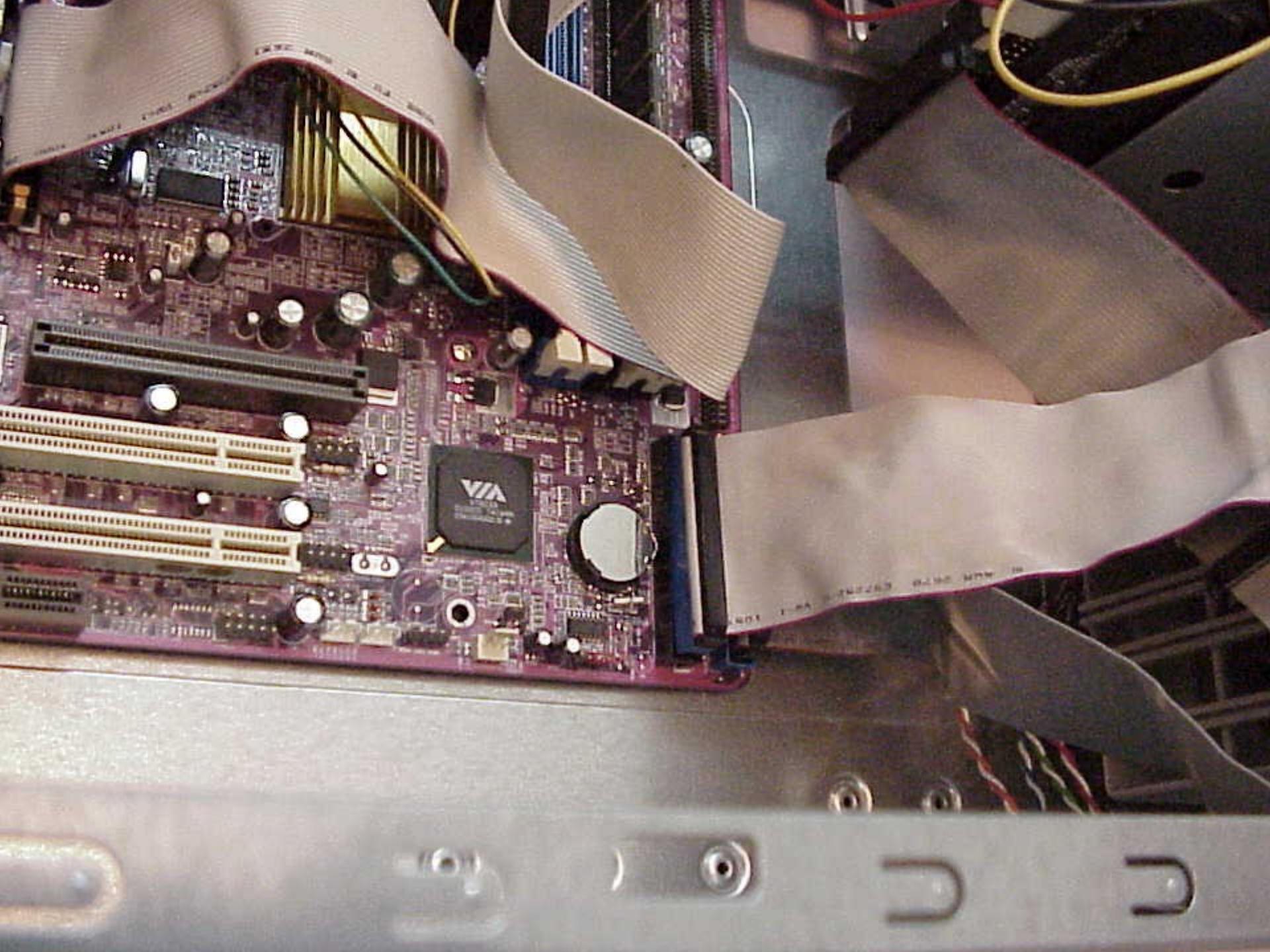
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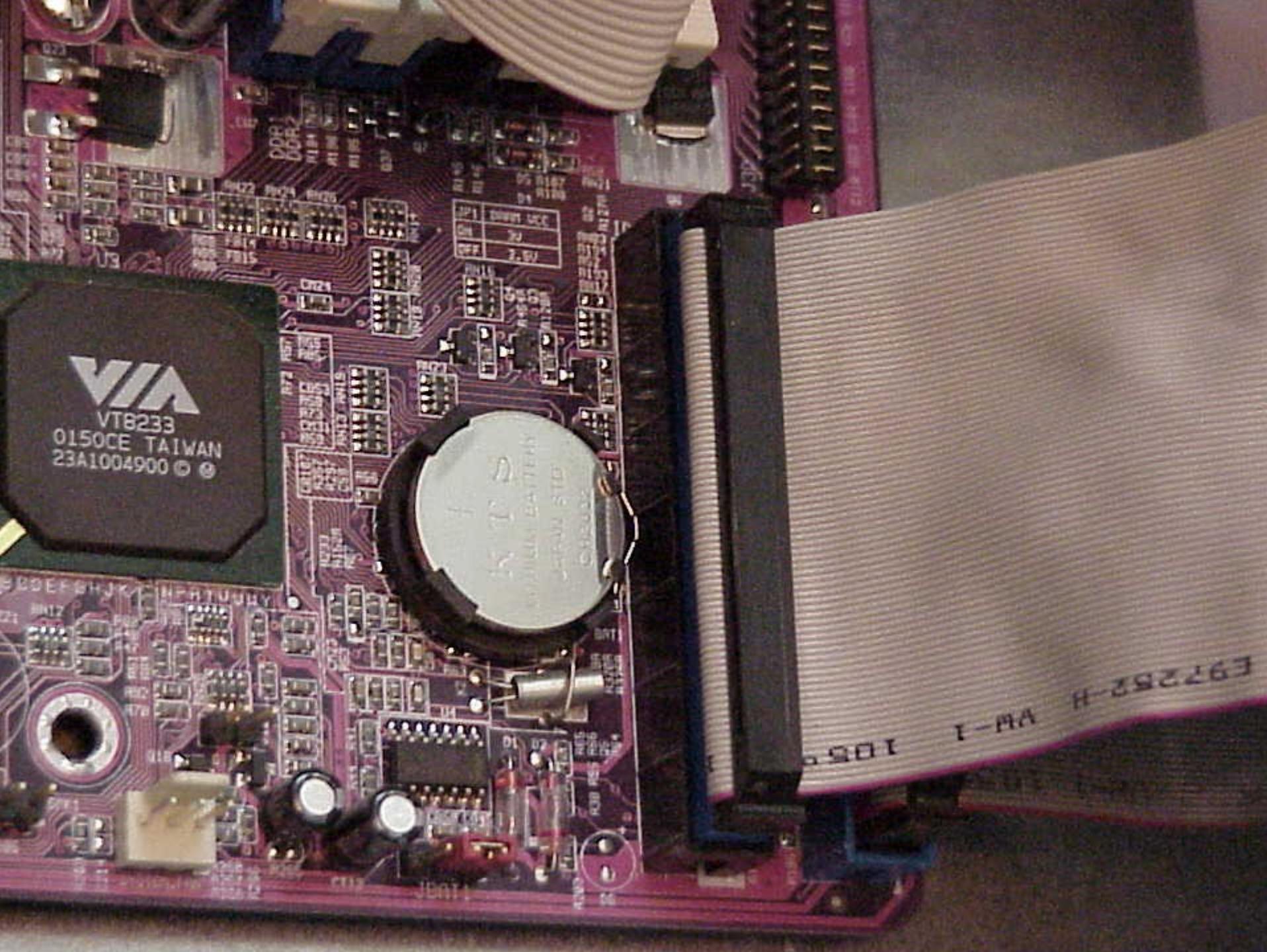
Date of Import : 09.01.2000

M.R.P. : Rs

(Incl. of all Taxes)







VIA

VT8233
0150CE TAIWAN
23A1004900 © 9

3.6V 1.8V 3.3V
LITHIUM BATTERY

GIGABYTE H-392263
T-PA

1000
1000

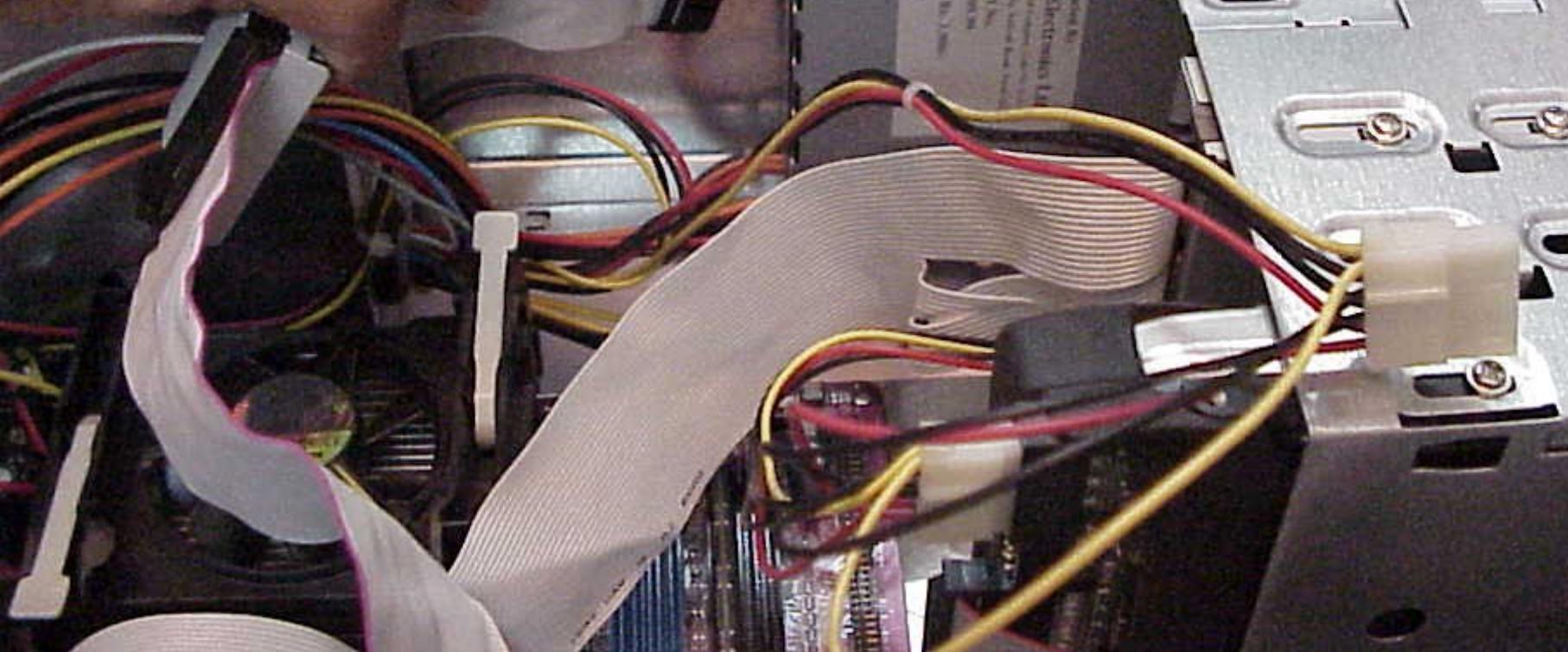
Computer Electronics I

Control No. 1000

Date of Input 10/10/00

W.E.P.

(Date of Birth)



8 | 9 | 10

Compuage Electro

Imported By :
Sugar Manthan

"Shahib" Industrial Complex

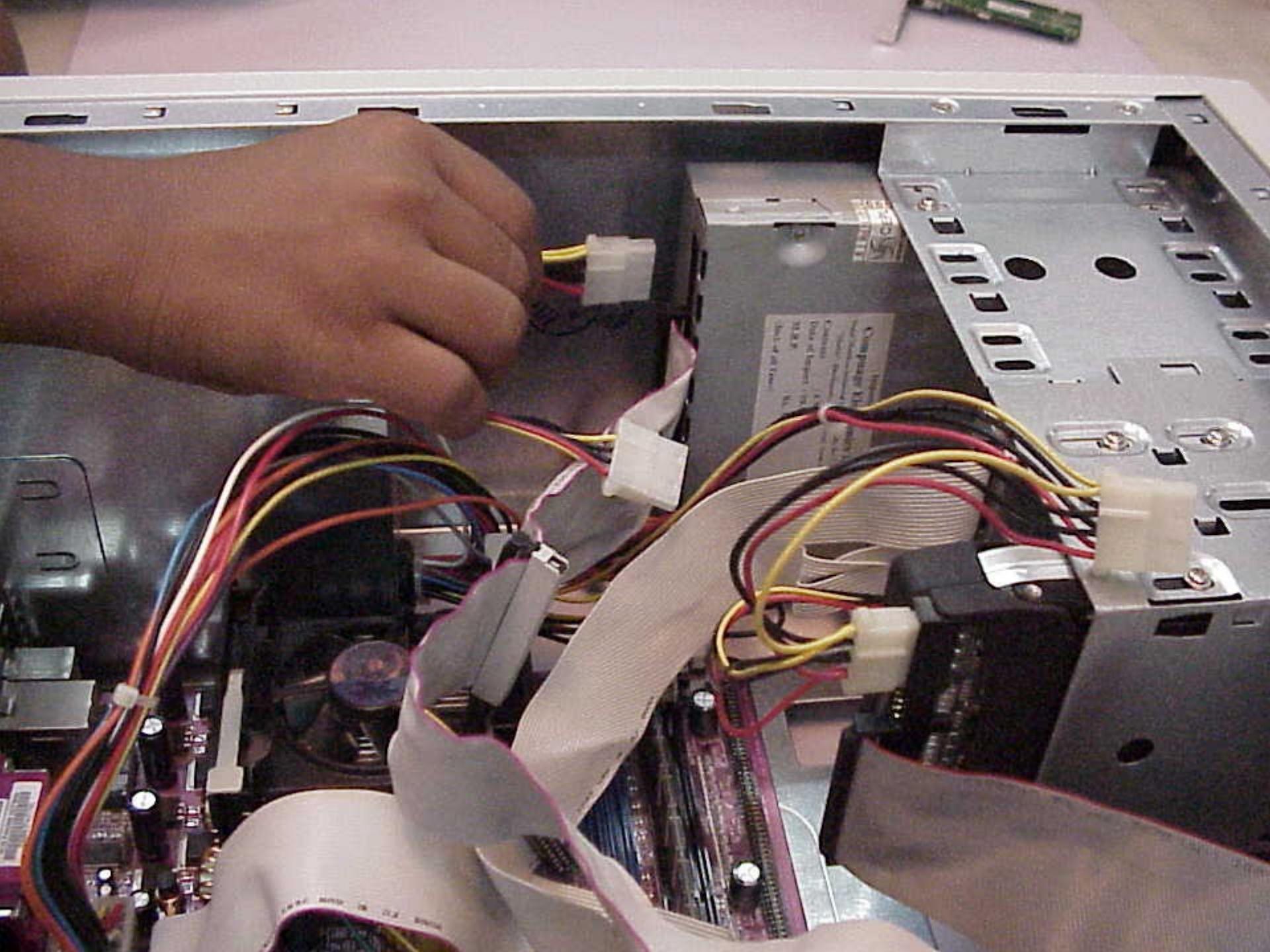
Contents : Bhaidaspur, Sativali

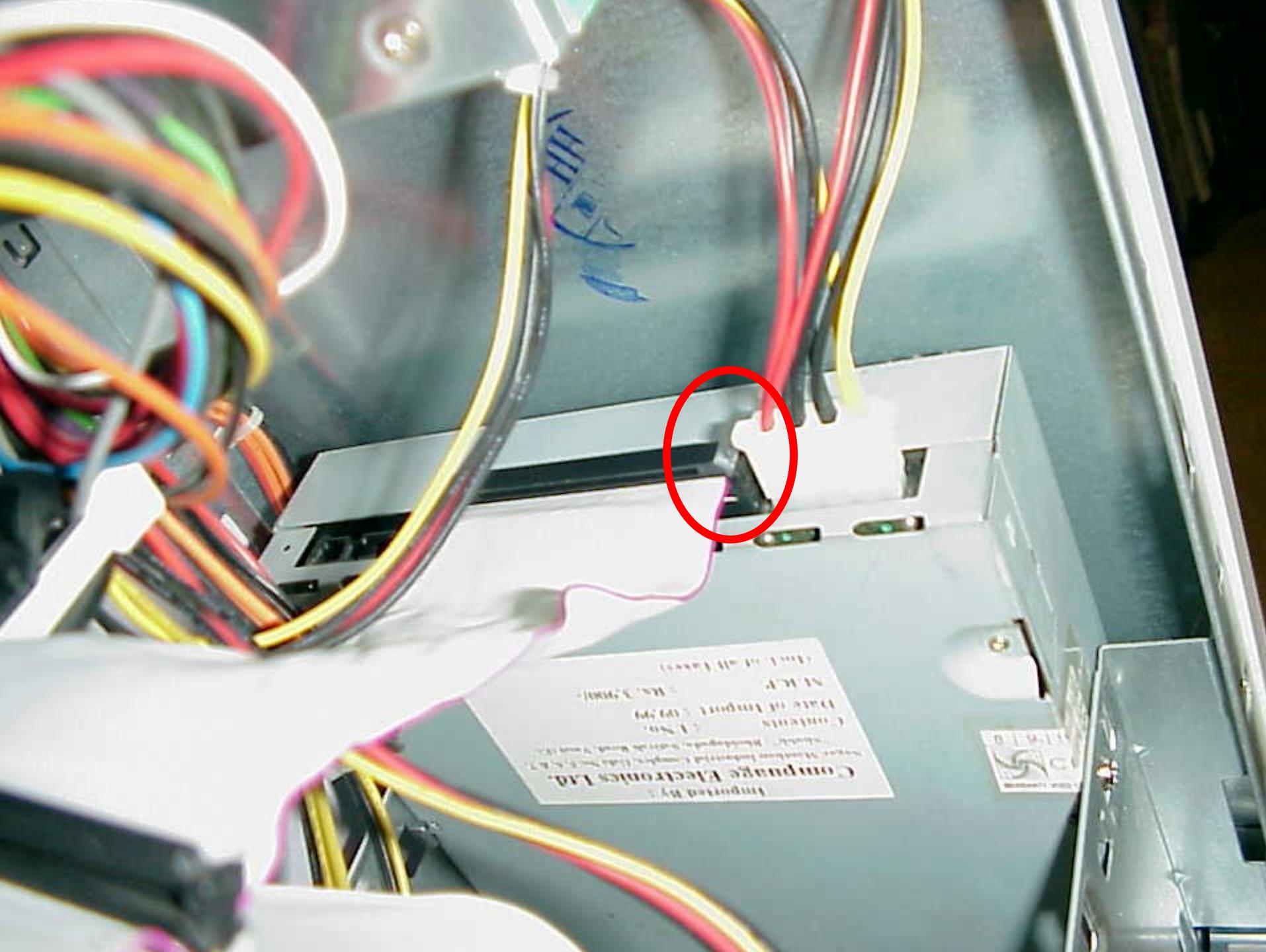
Ltd.
4,5,6, &
Vai (E).

Date of Import : 1 No.

M.R.P. : 09,99

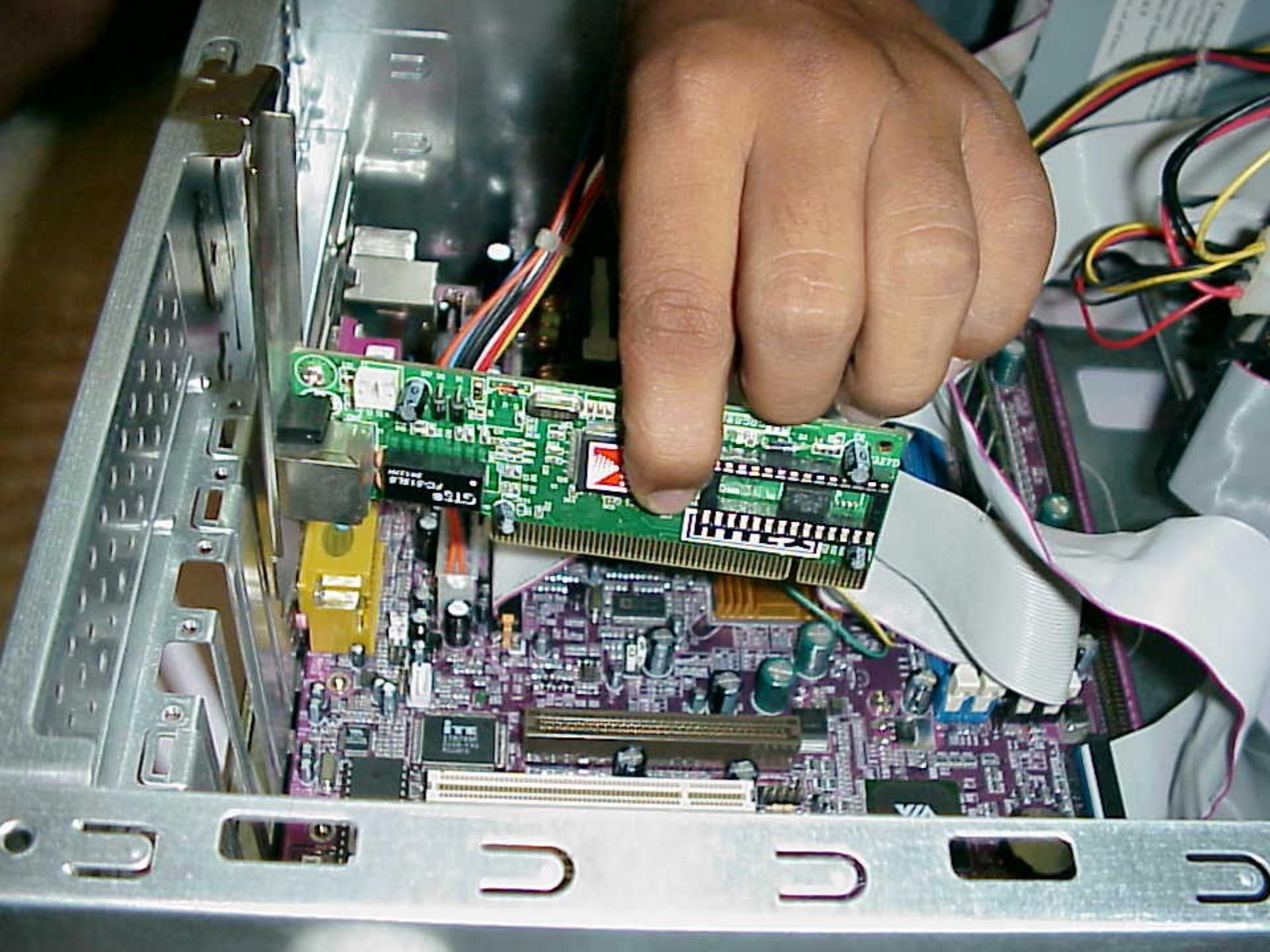
(Incl. of all Taxes) : Rs. 3,900/-

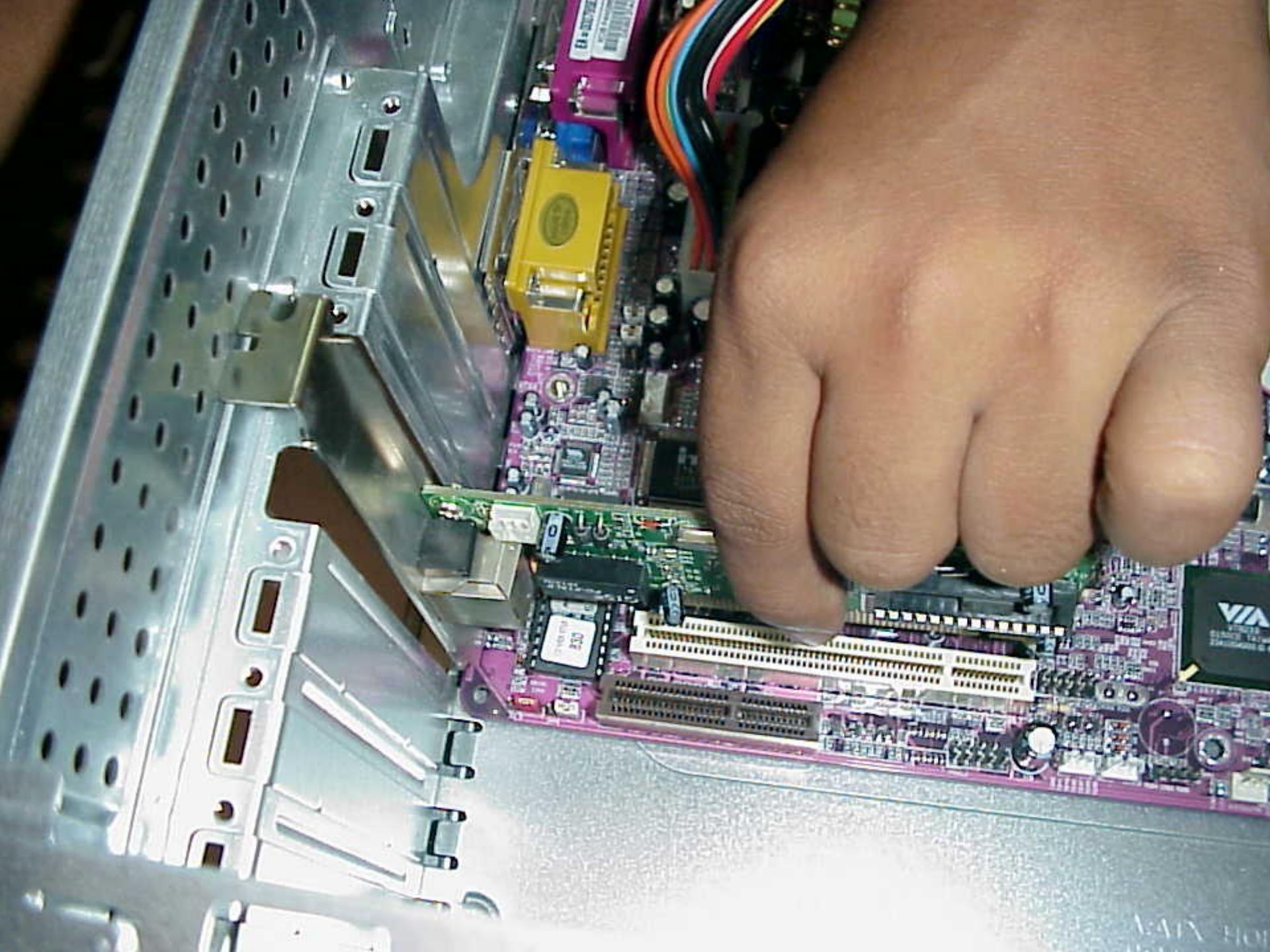


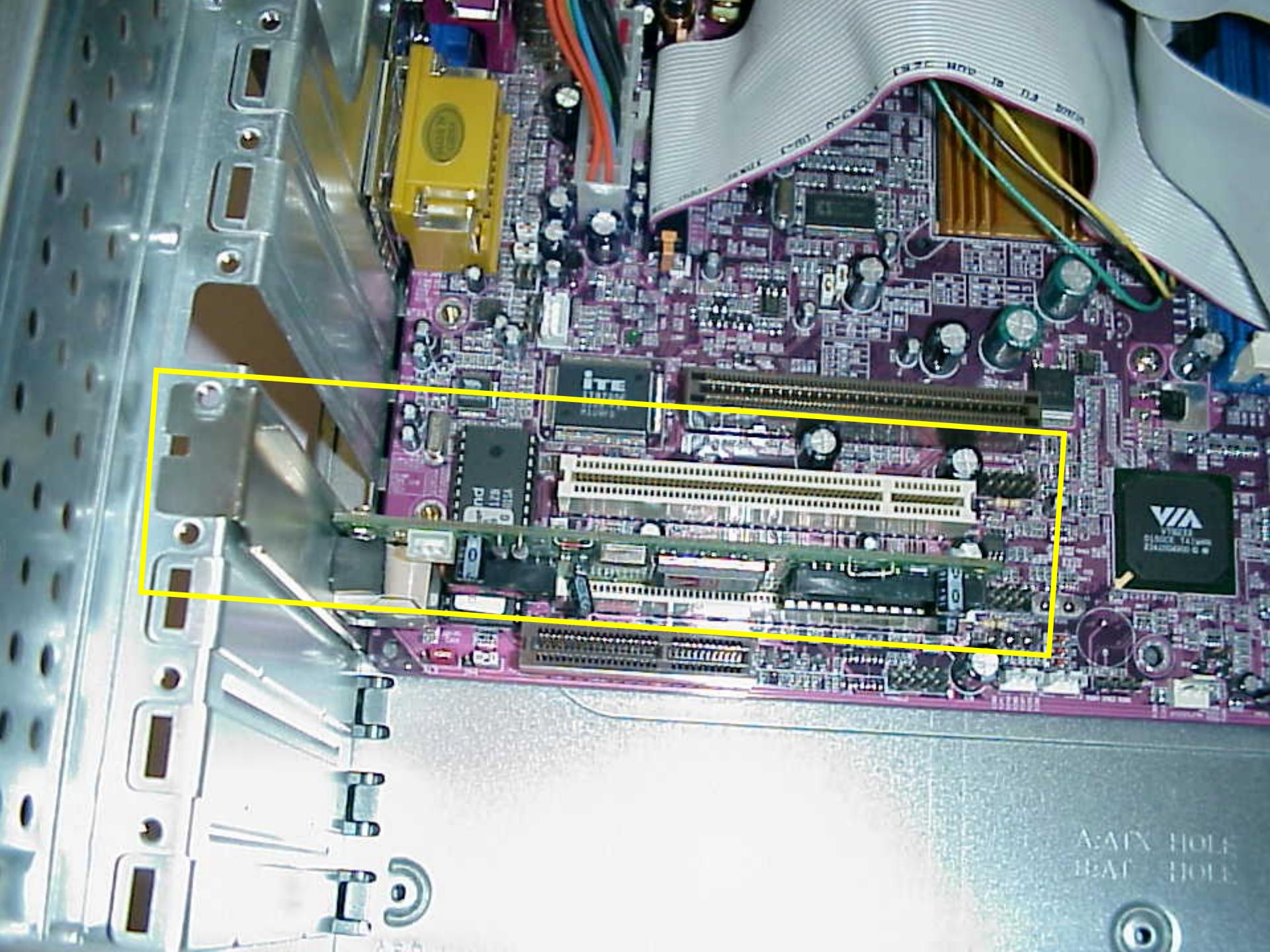


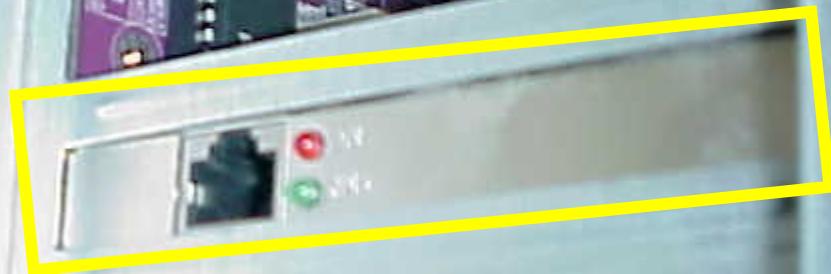
Imported by
Compuage Electronics Ltd.
Country of Origin - U.S.A.
Date of Import - 09/99
Model - MS-3980

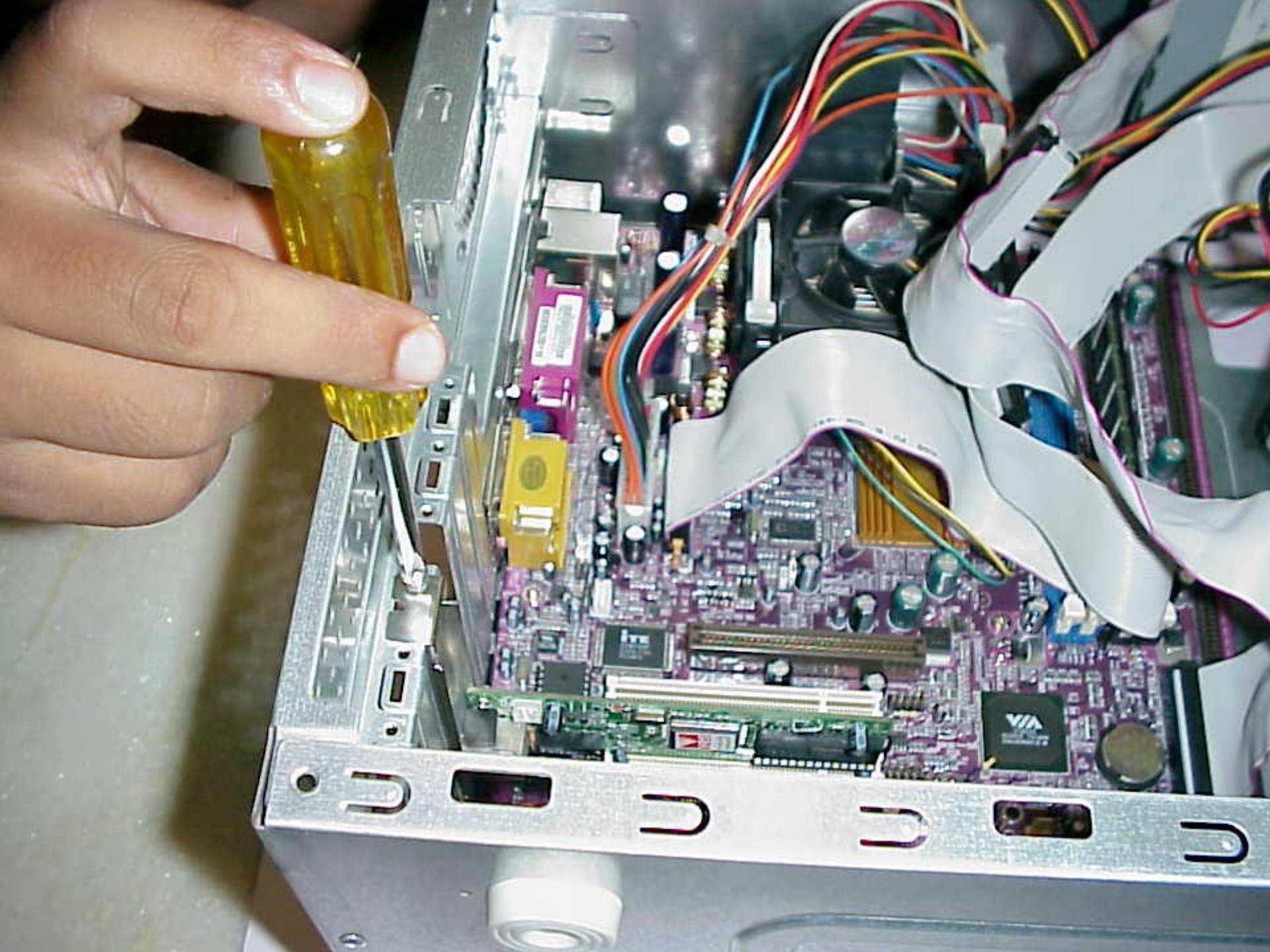
Installing the LAN Card







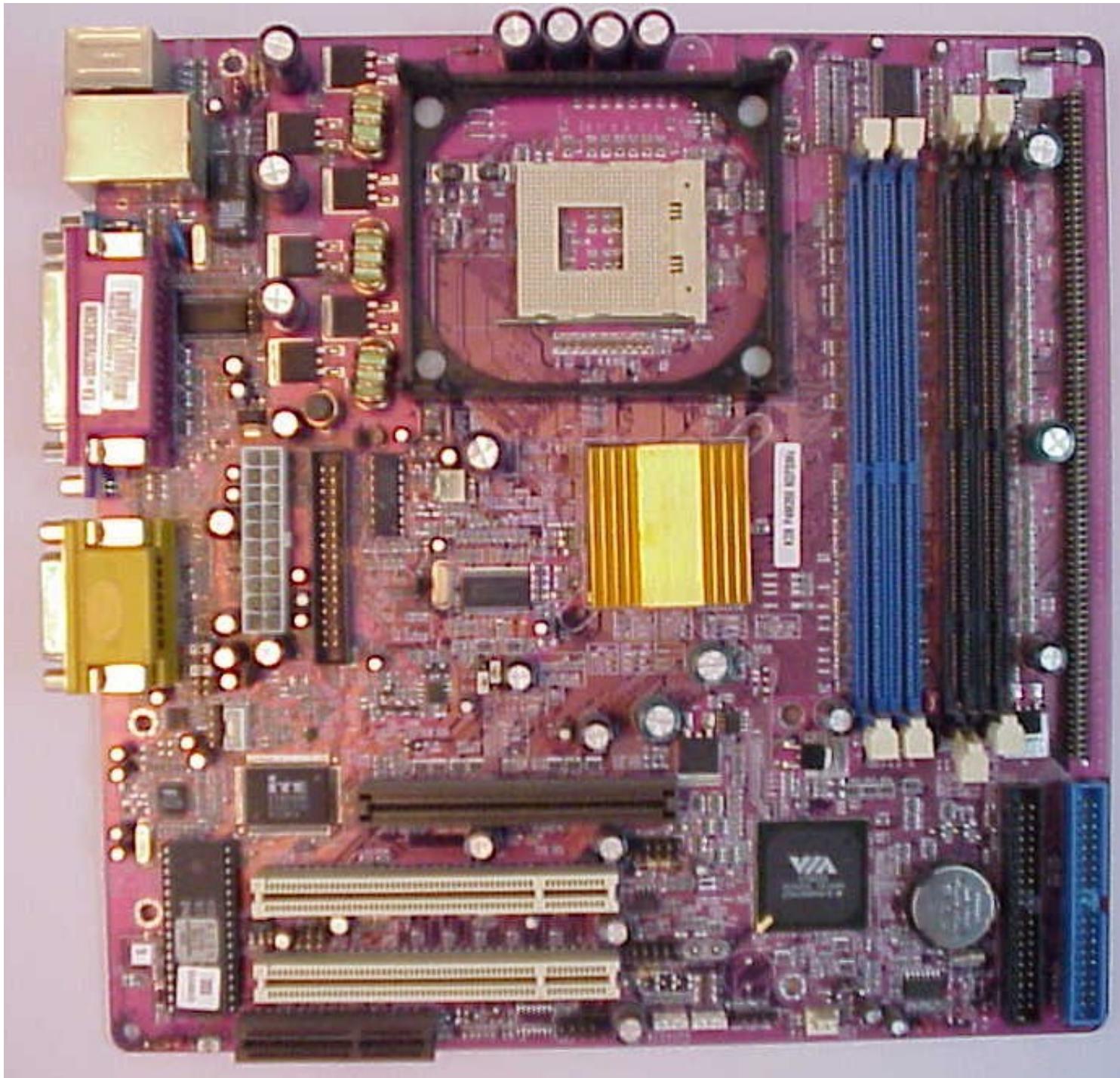






Test Yourself

**Try to identify the
components**



INTEL®©'01

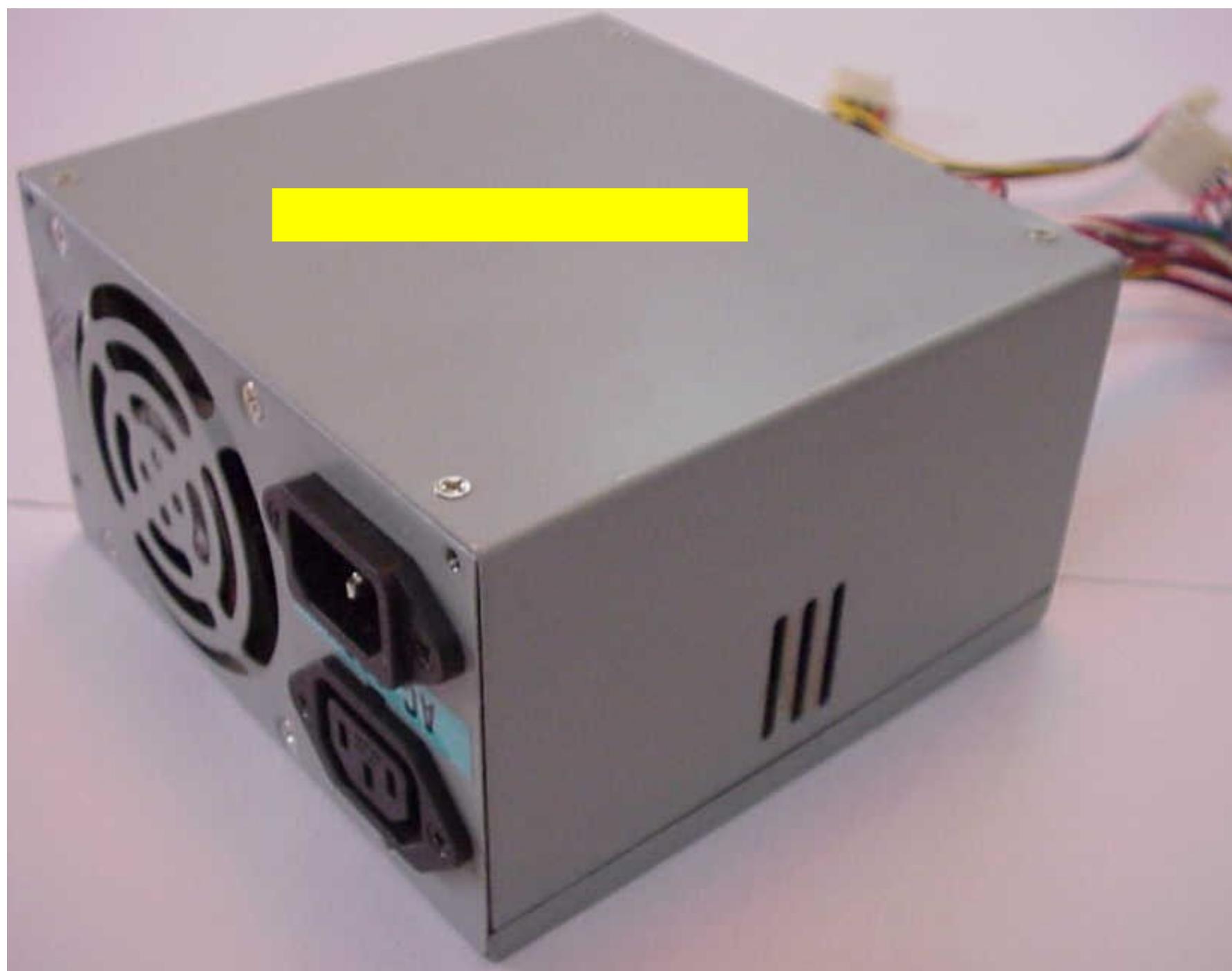
PENTIUM®4

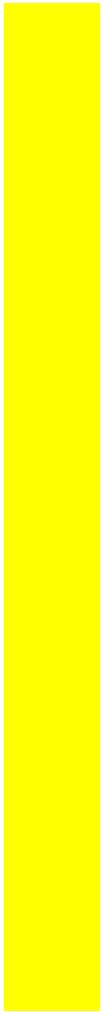
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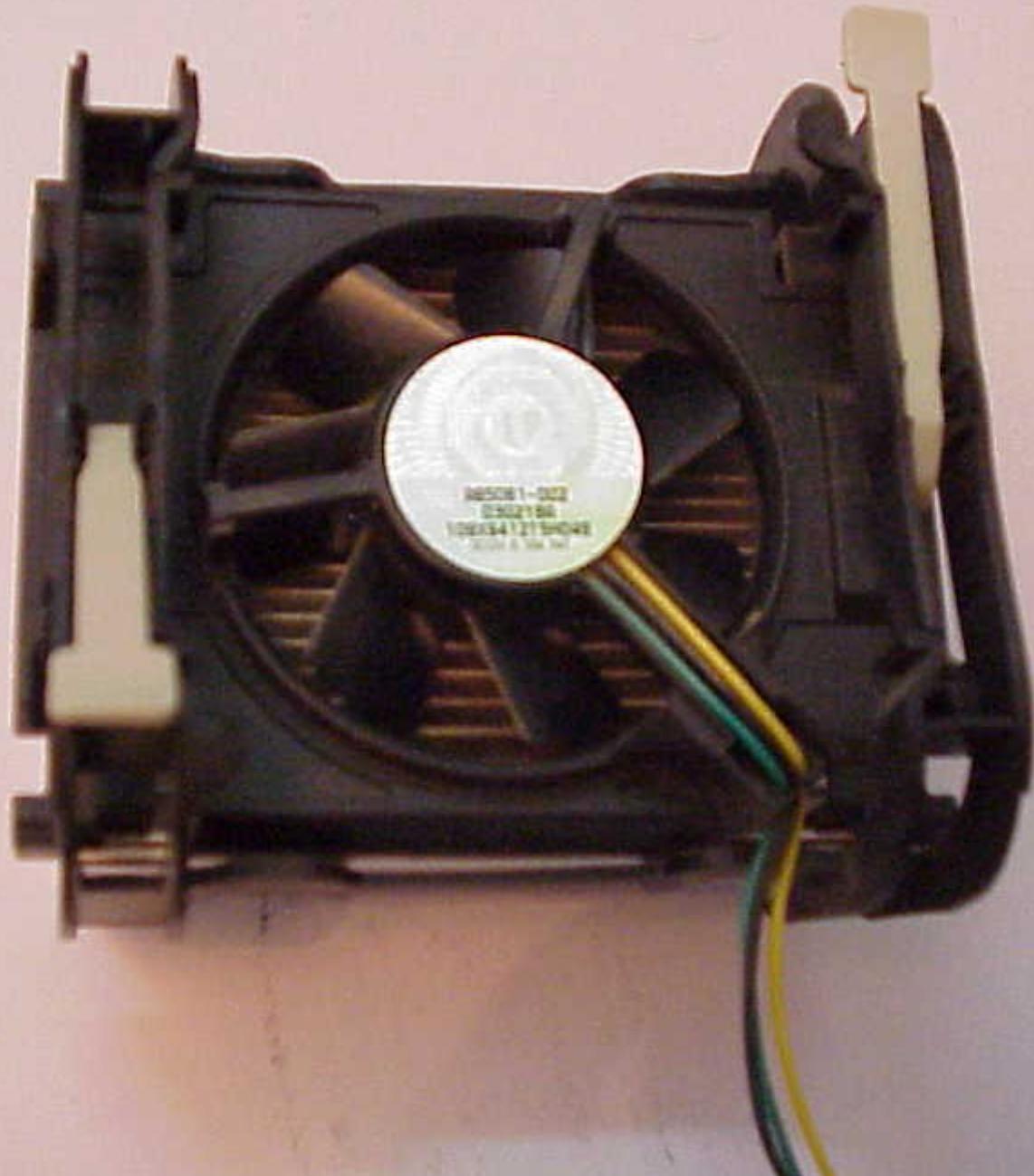
SL5VH COSTA RICA

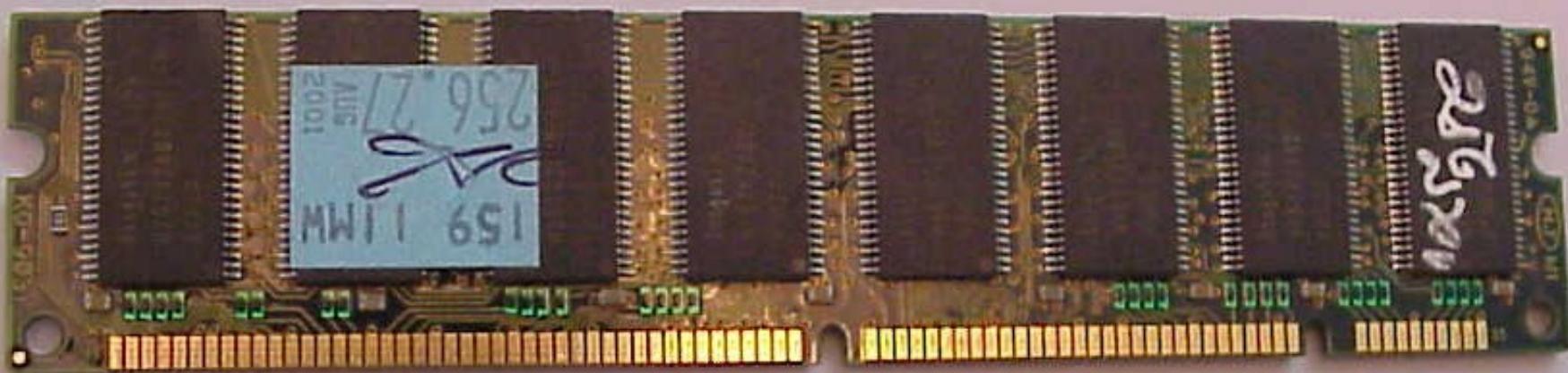
3227A588-0115











1. This device is designed to be used with a 12V DC power source.
2. Do not use with other power sources or voltages.
3. Power consumption is approximately 10W at 12V DC.
4. Power consumption is approximately 10W at 12V DC.

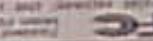


S/N: 3F0201LN



Windows®

SAMSUNG

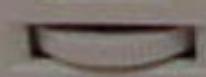


CD-MAXX 22E MODEL SC-152

SAMSUNG

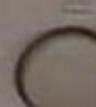
22K Max

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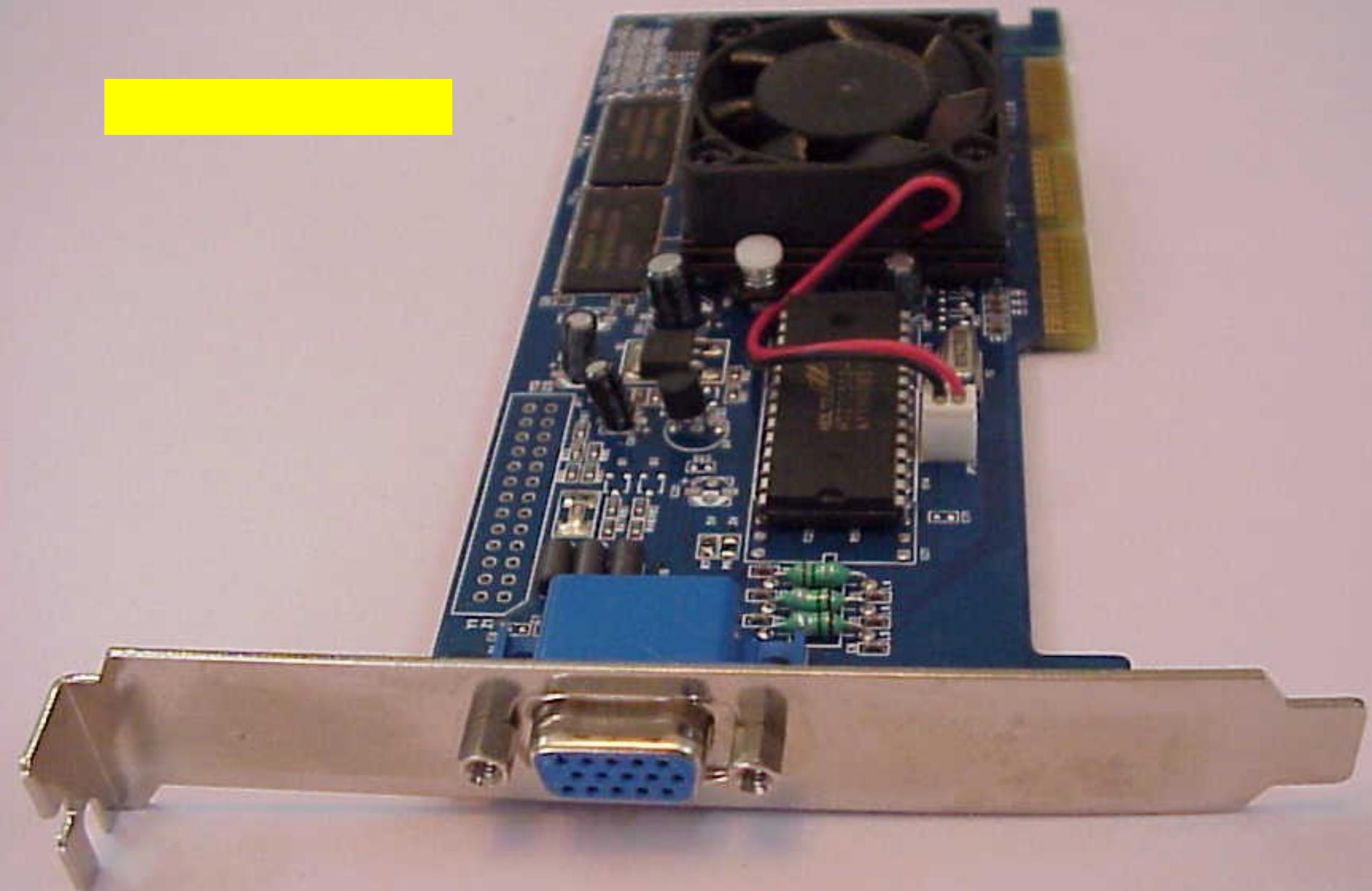


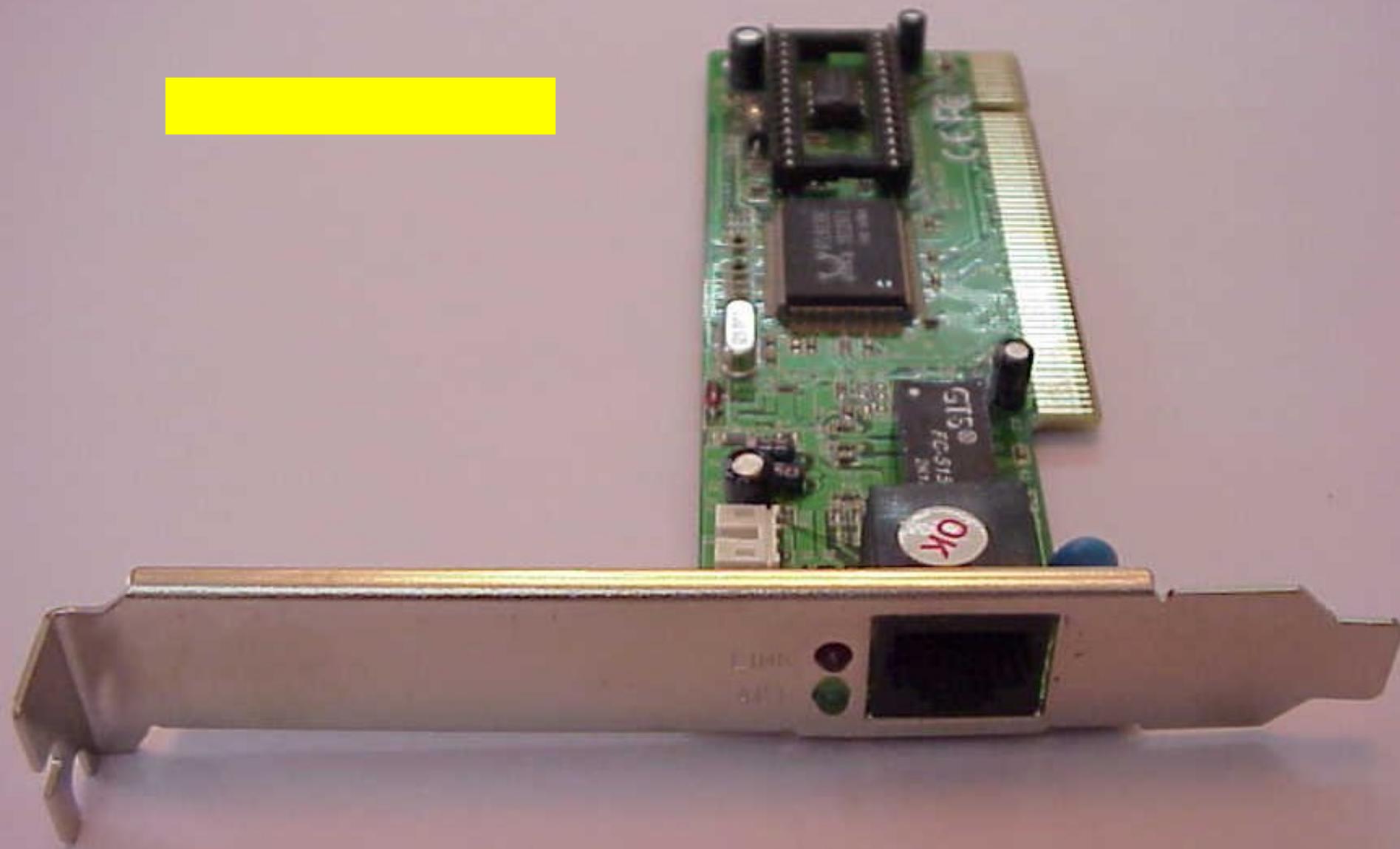
COMPACT
disc!
ReWritable

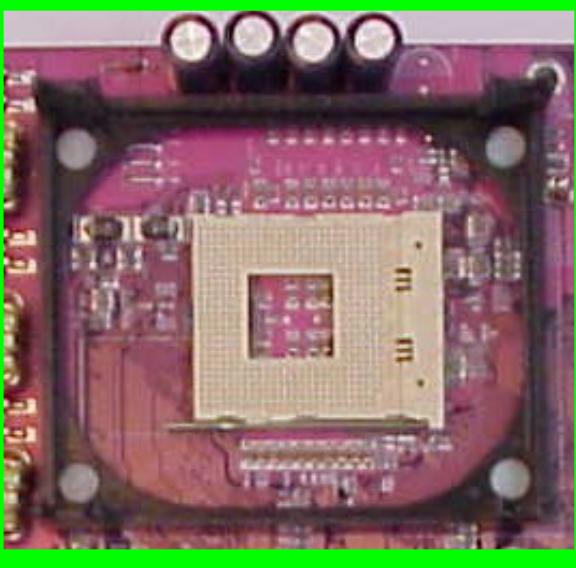
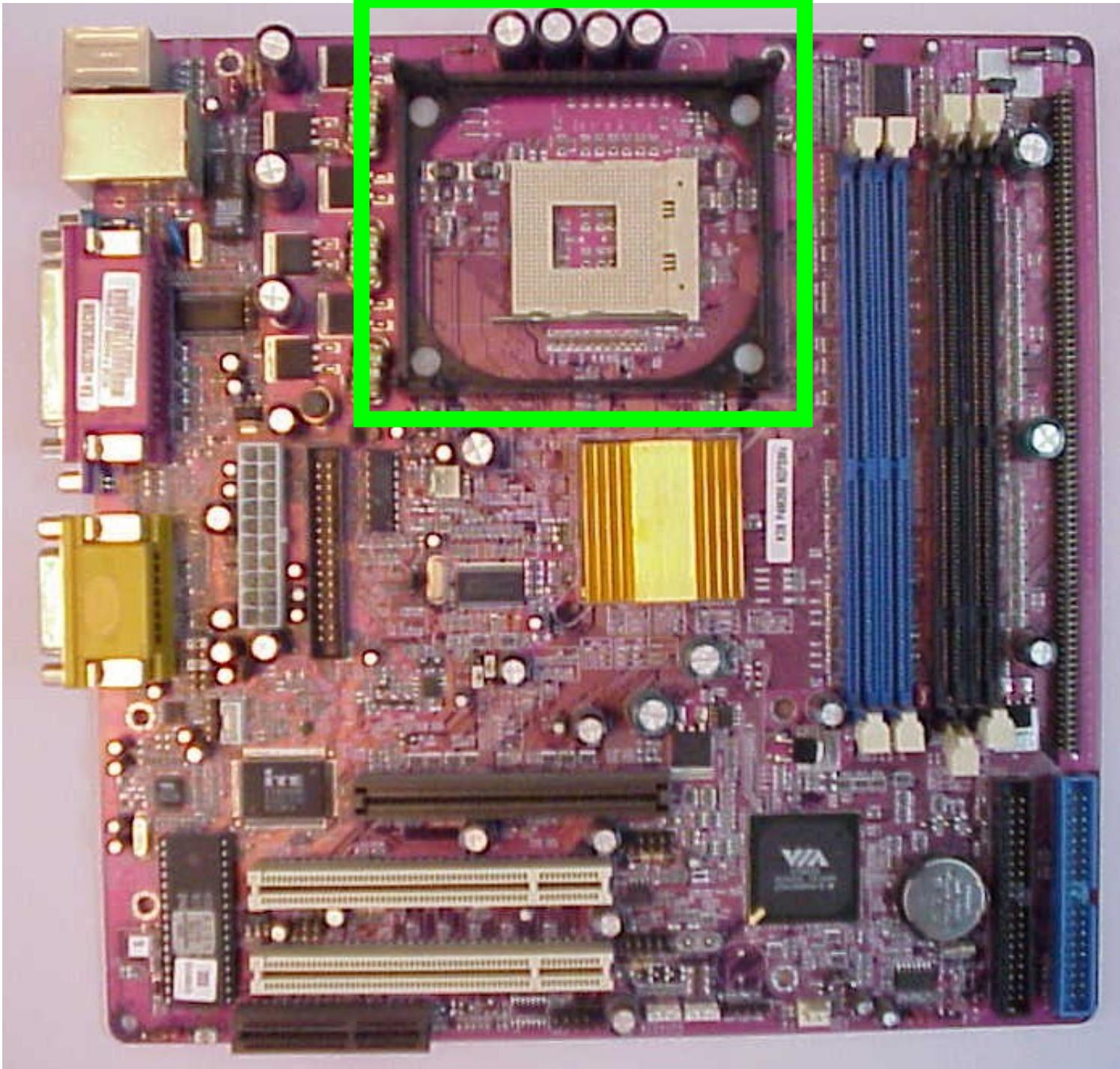
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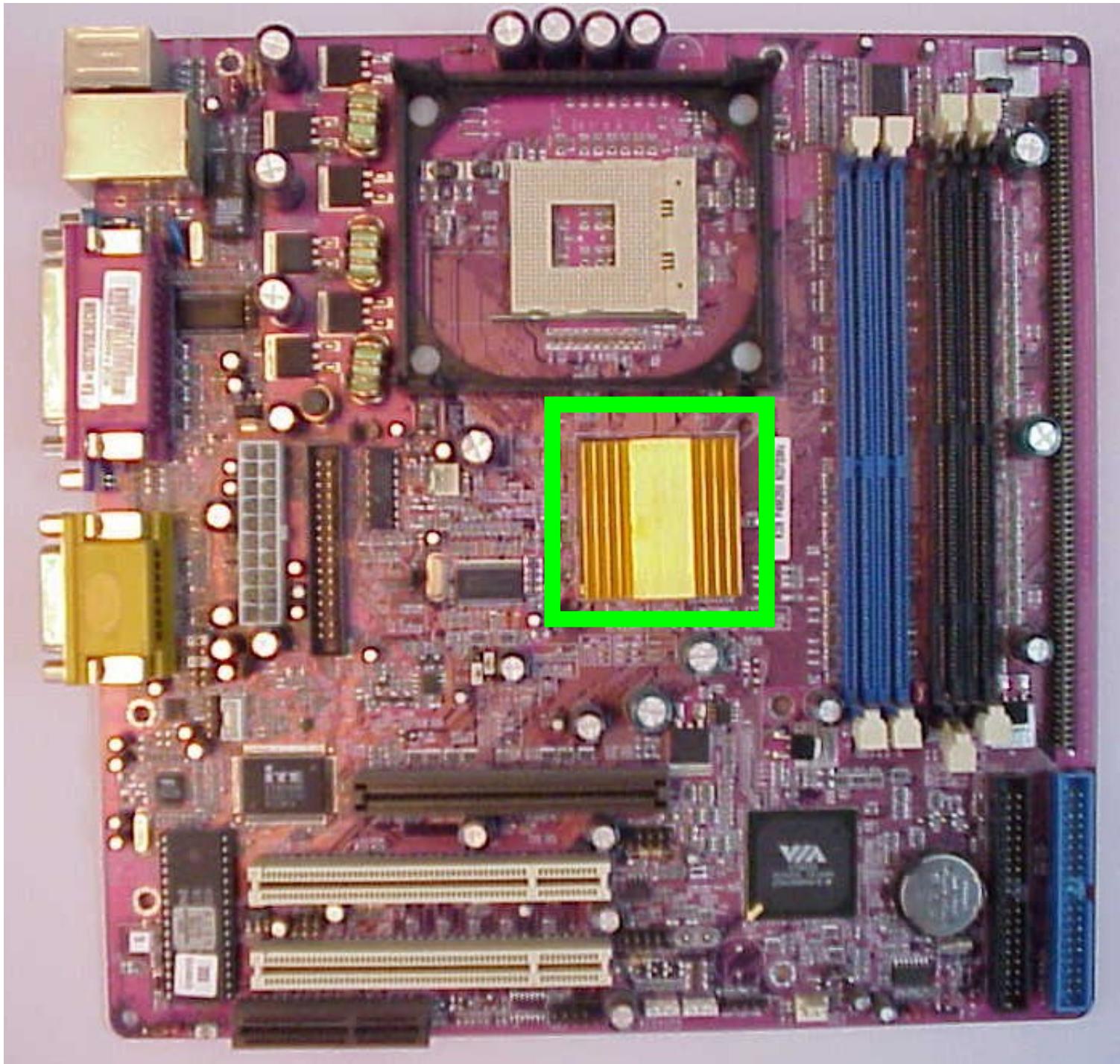


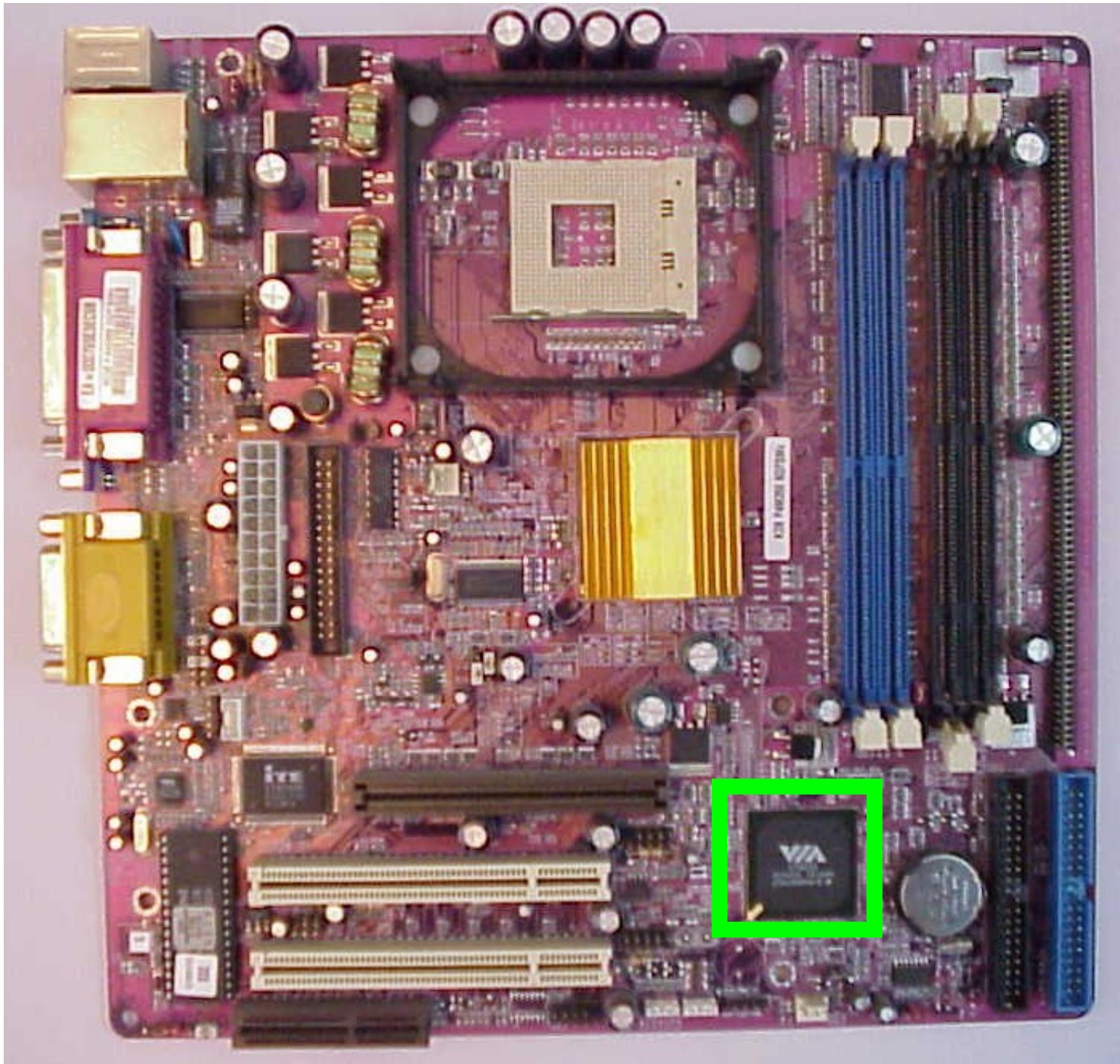


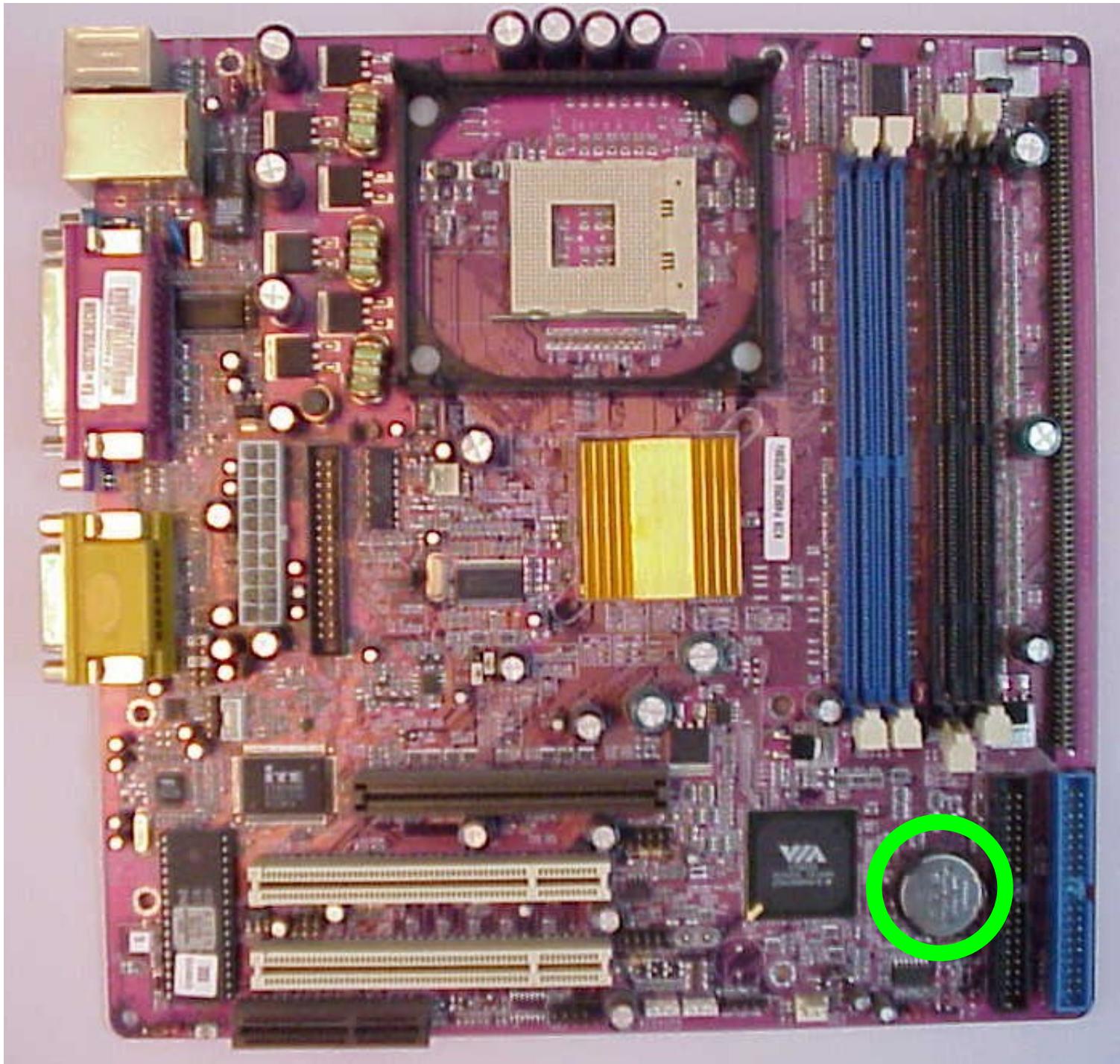


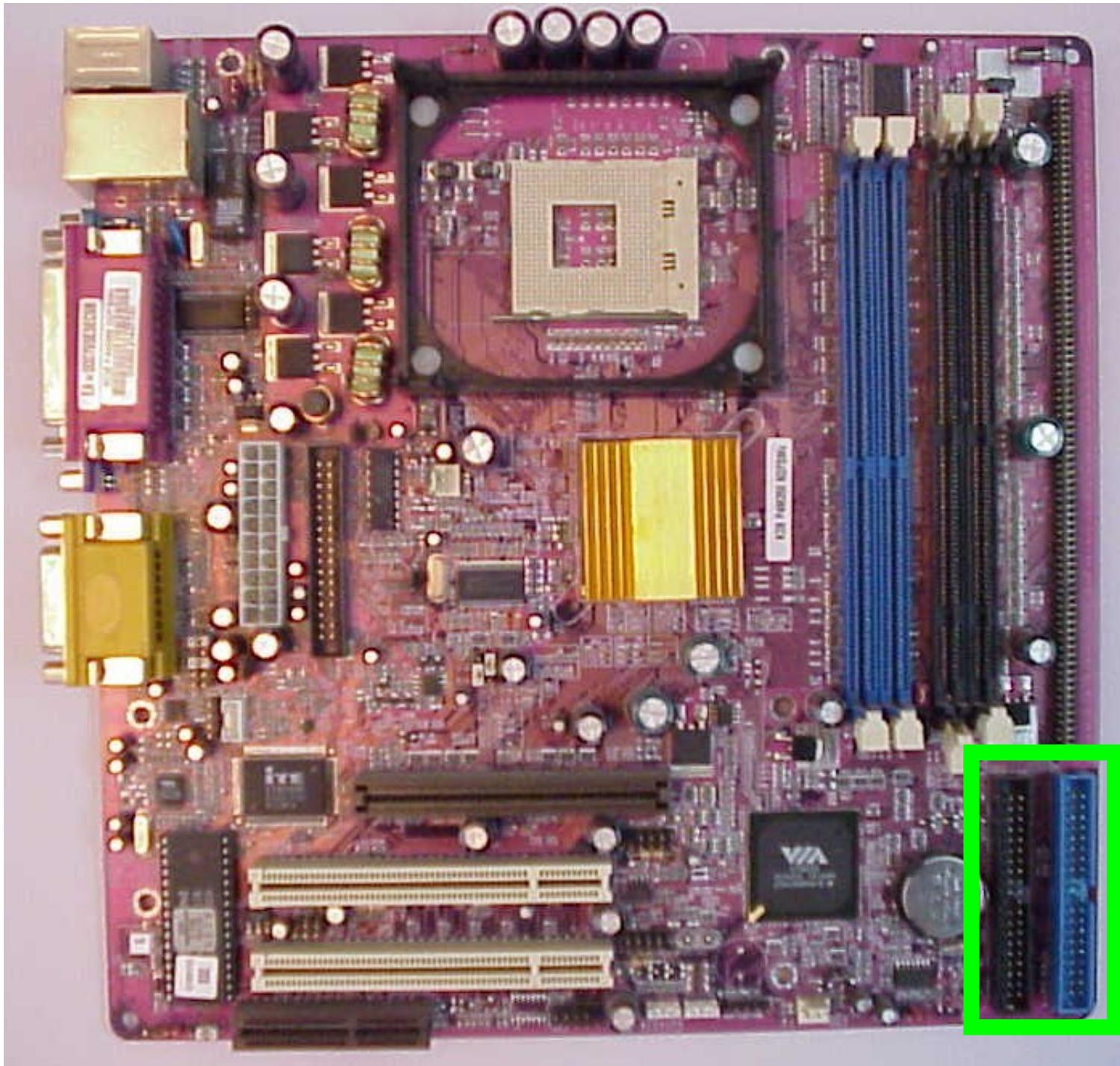


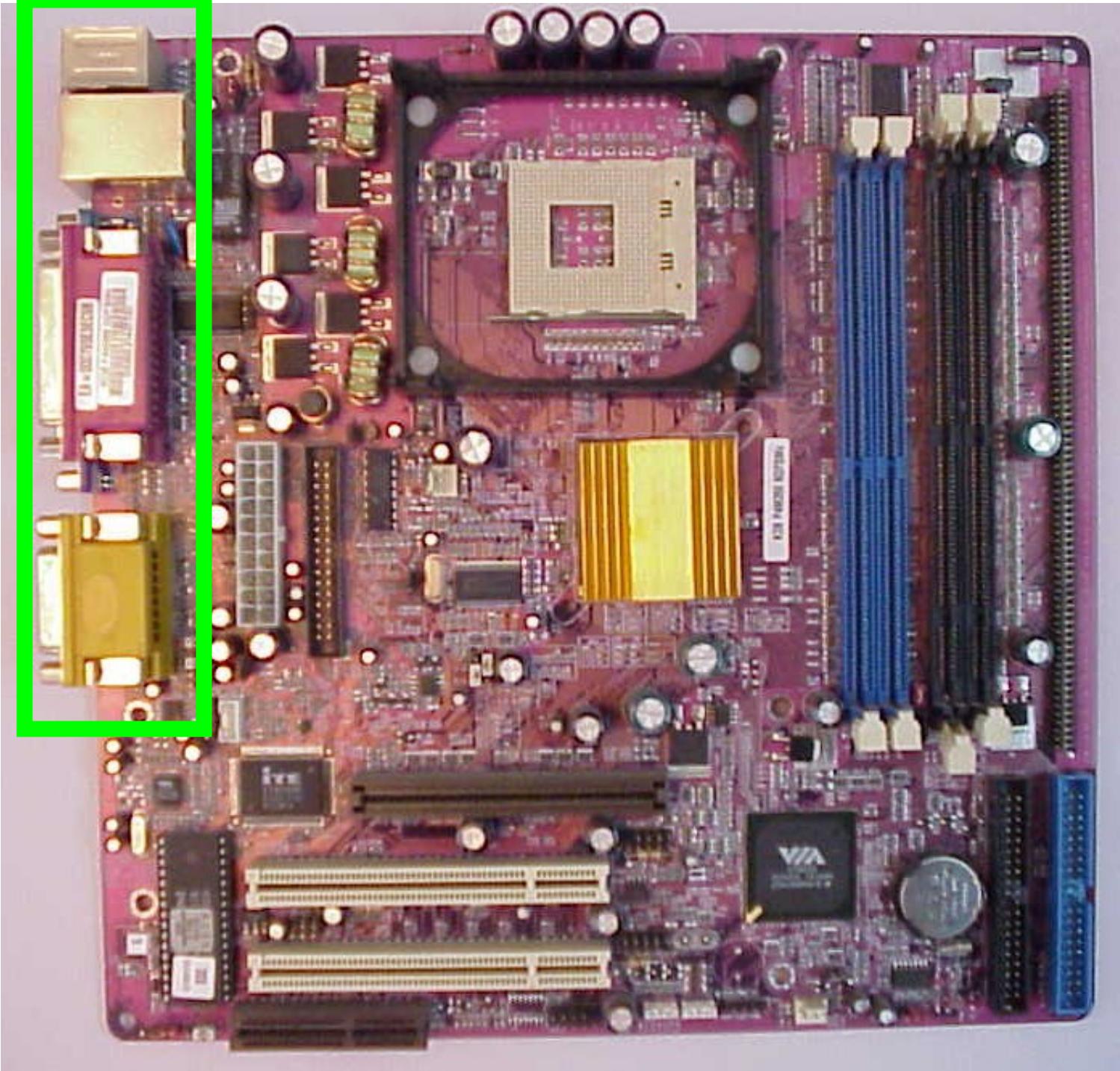


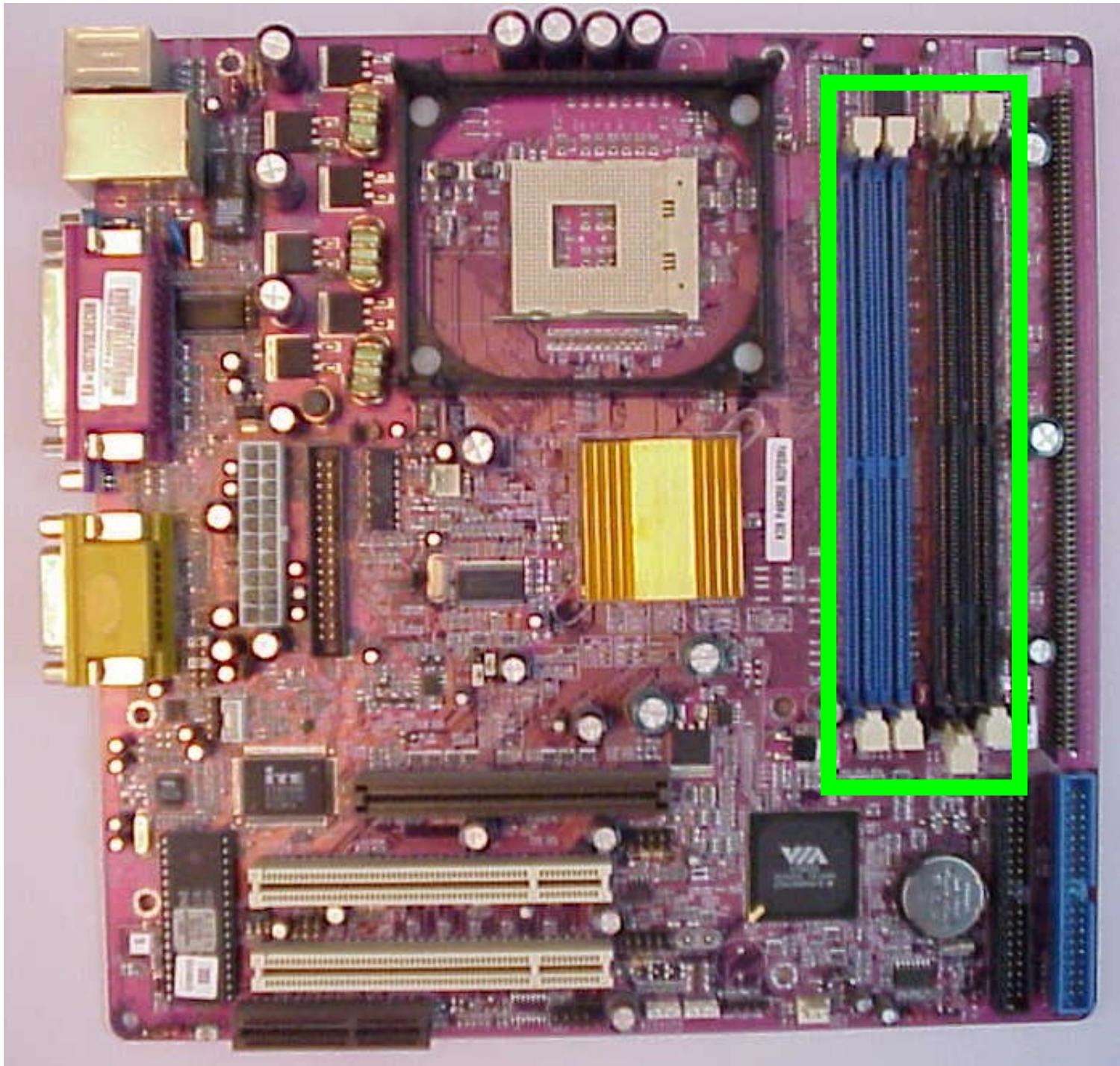


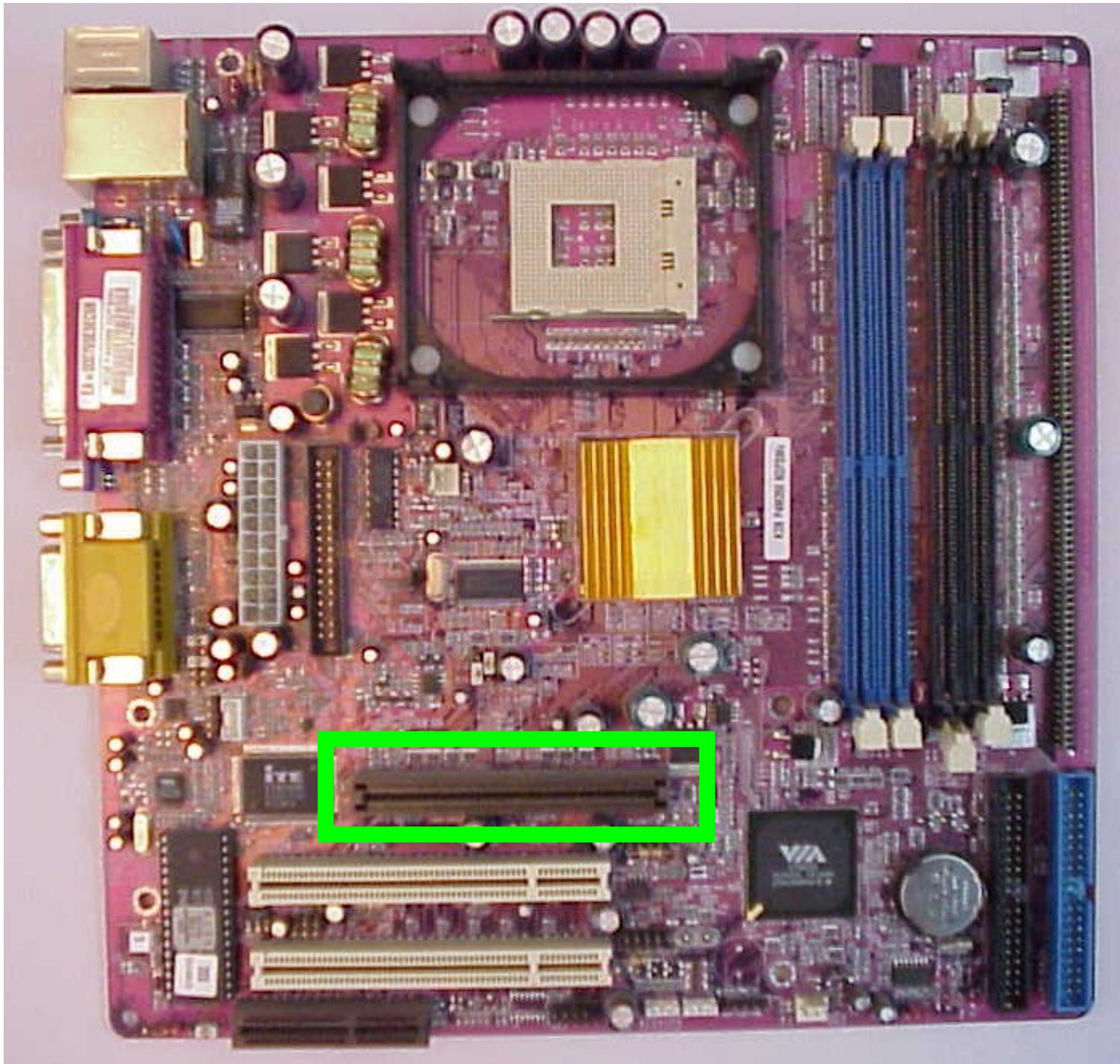


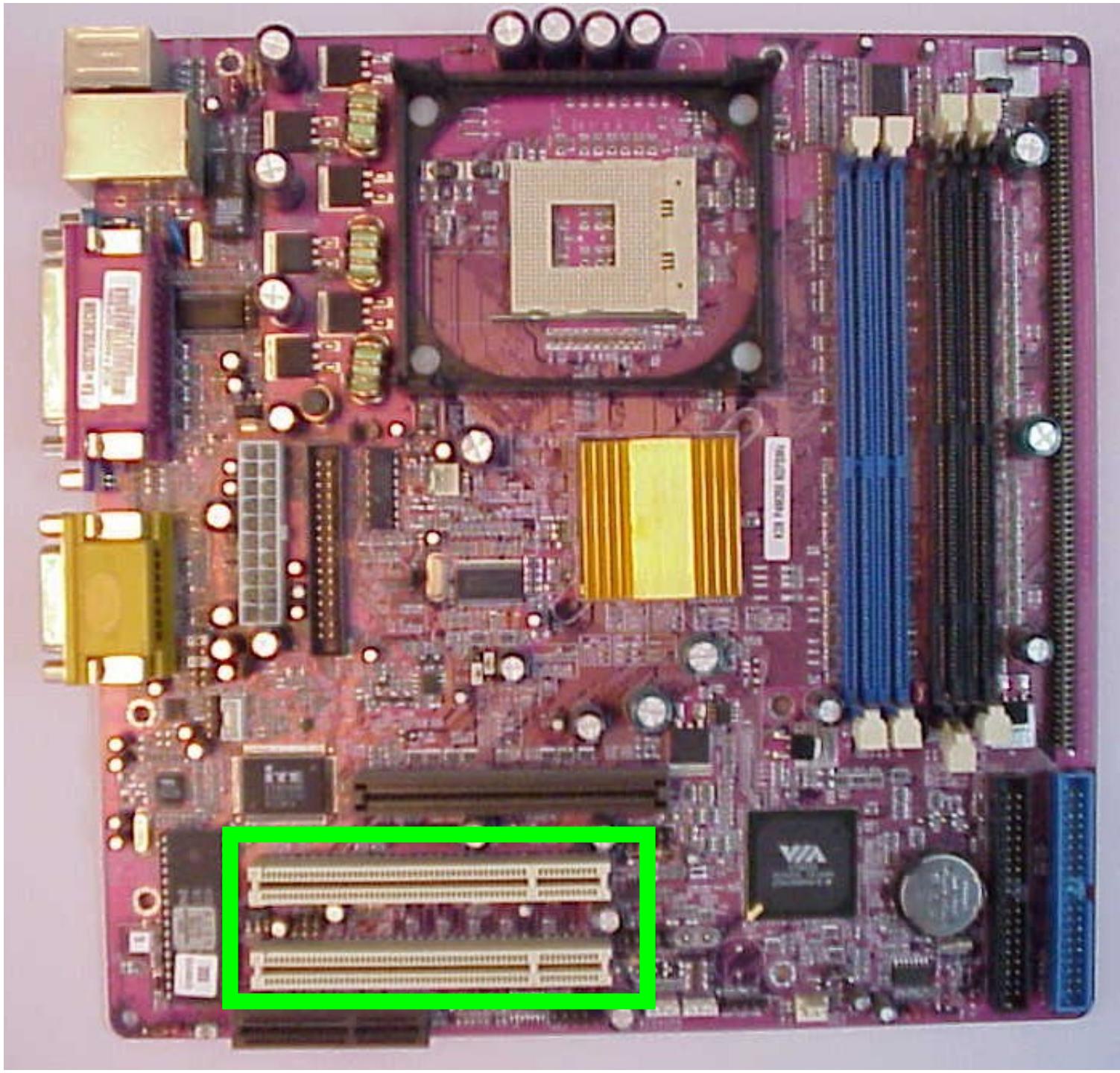


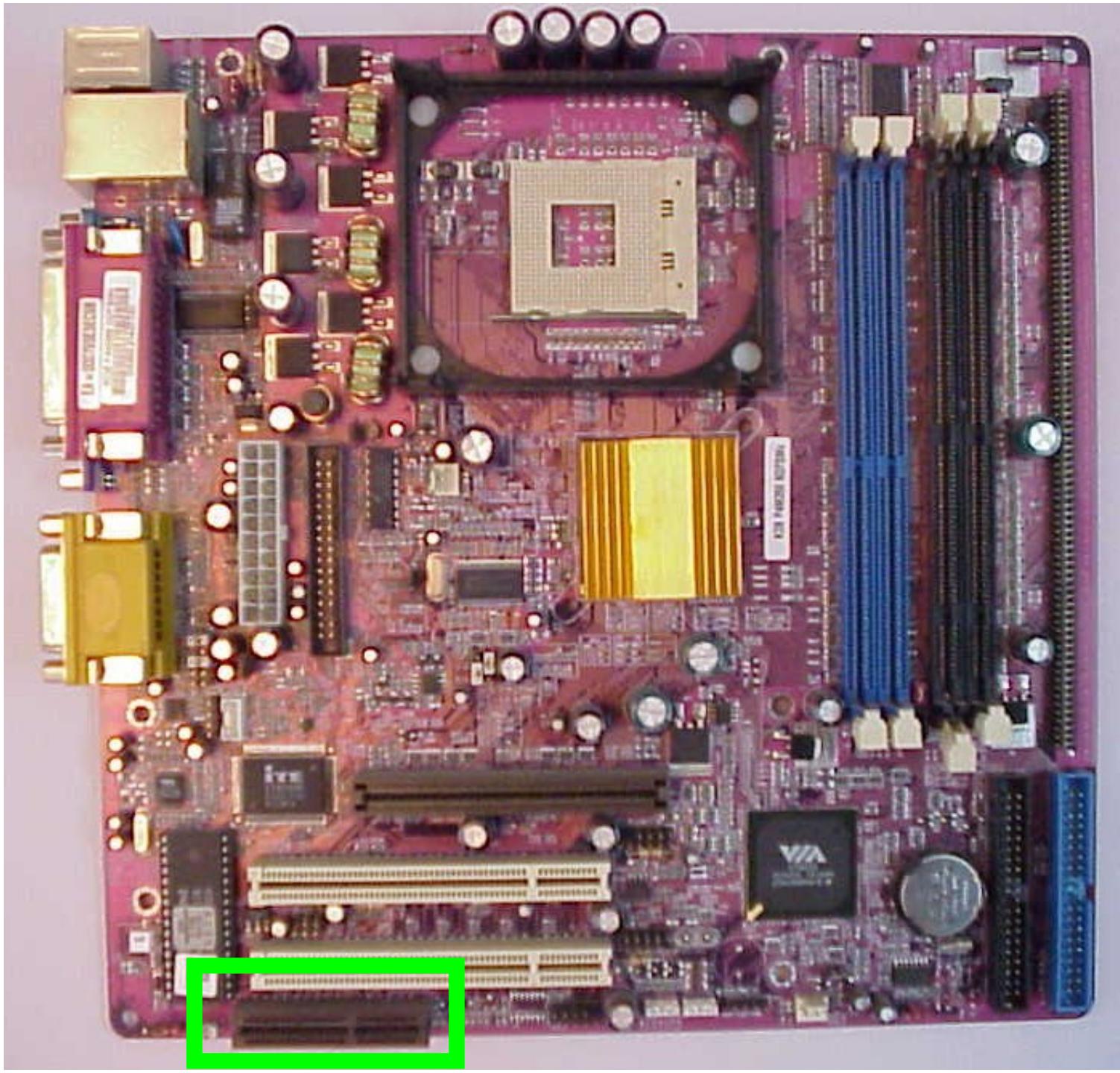


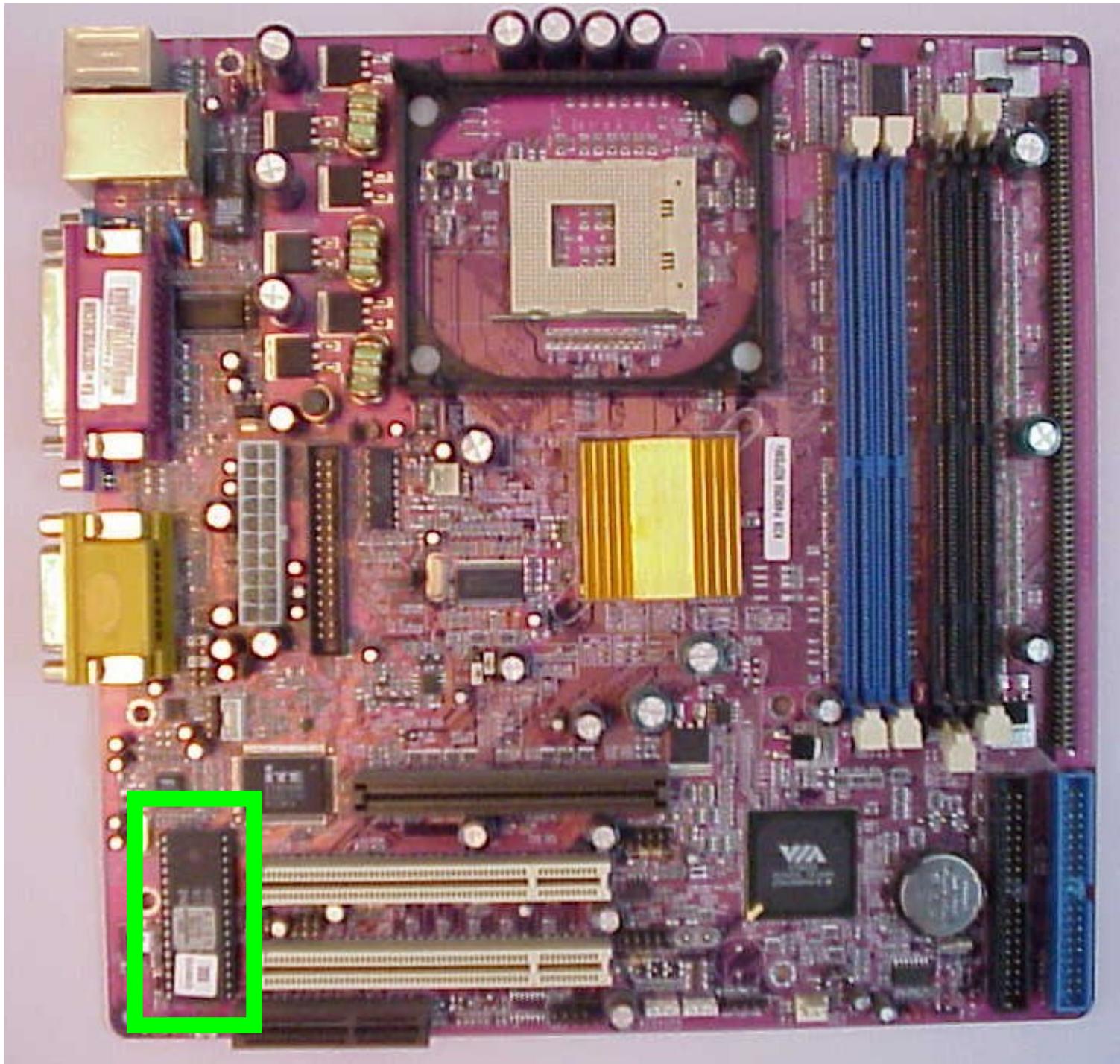


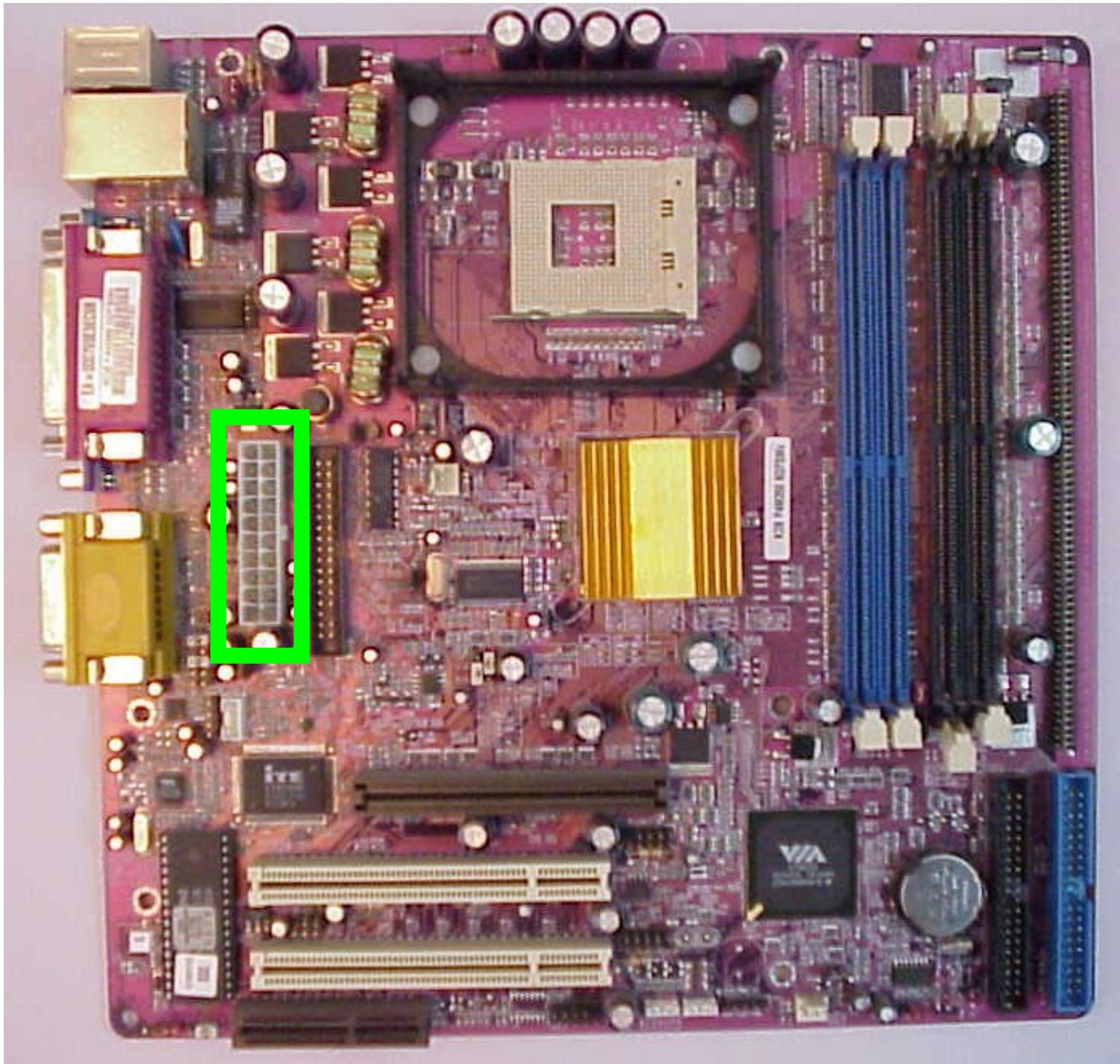


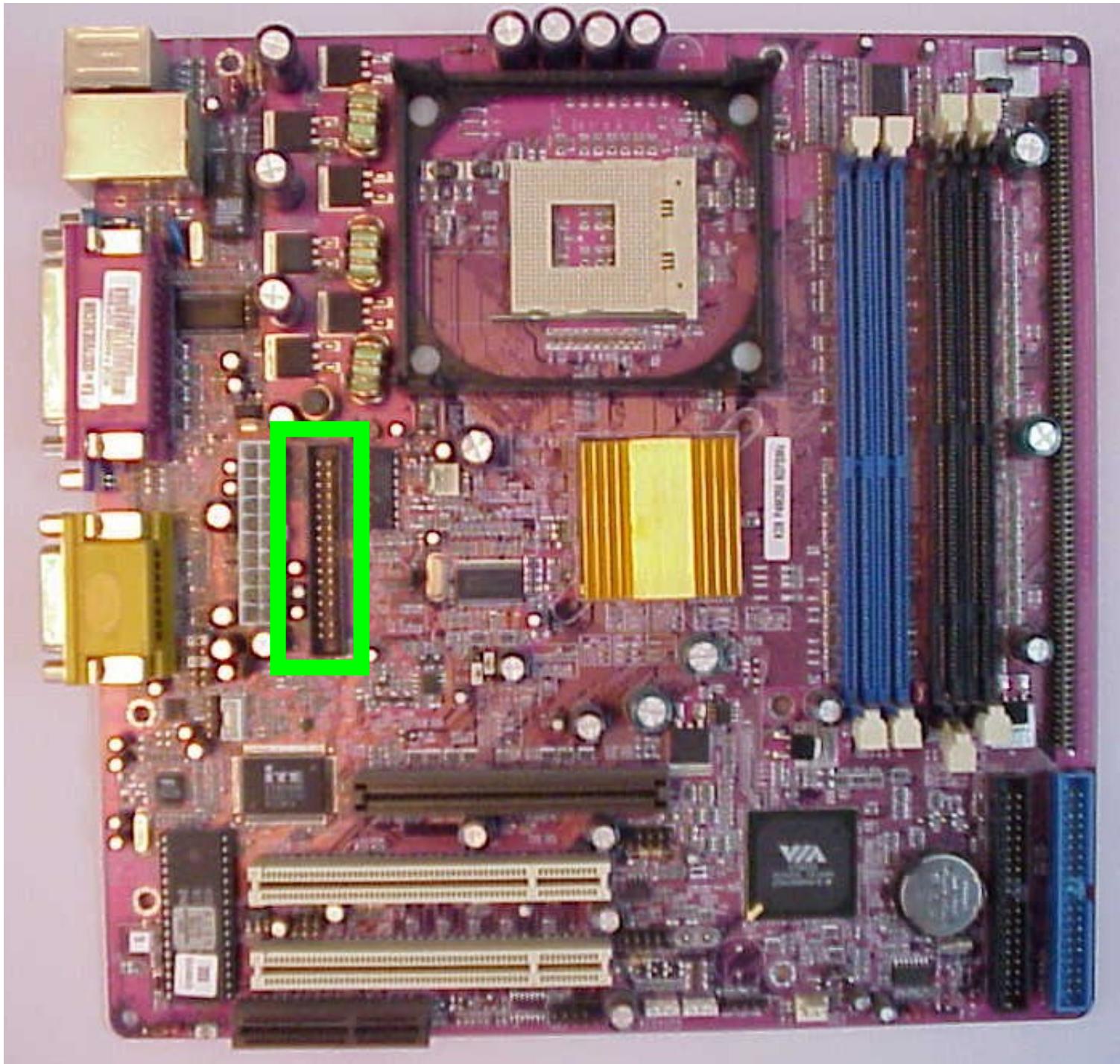


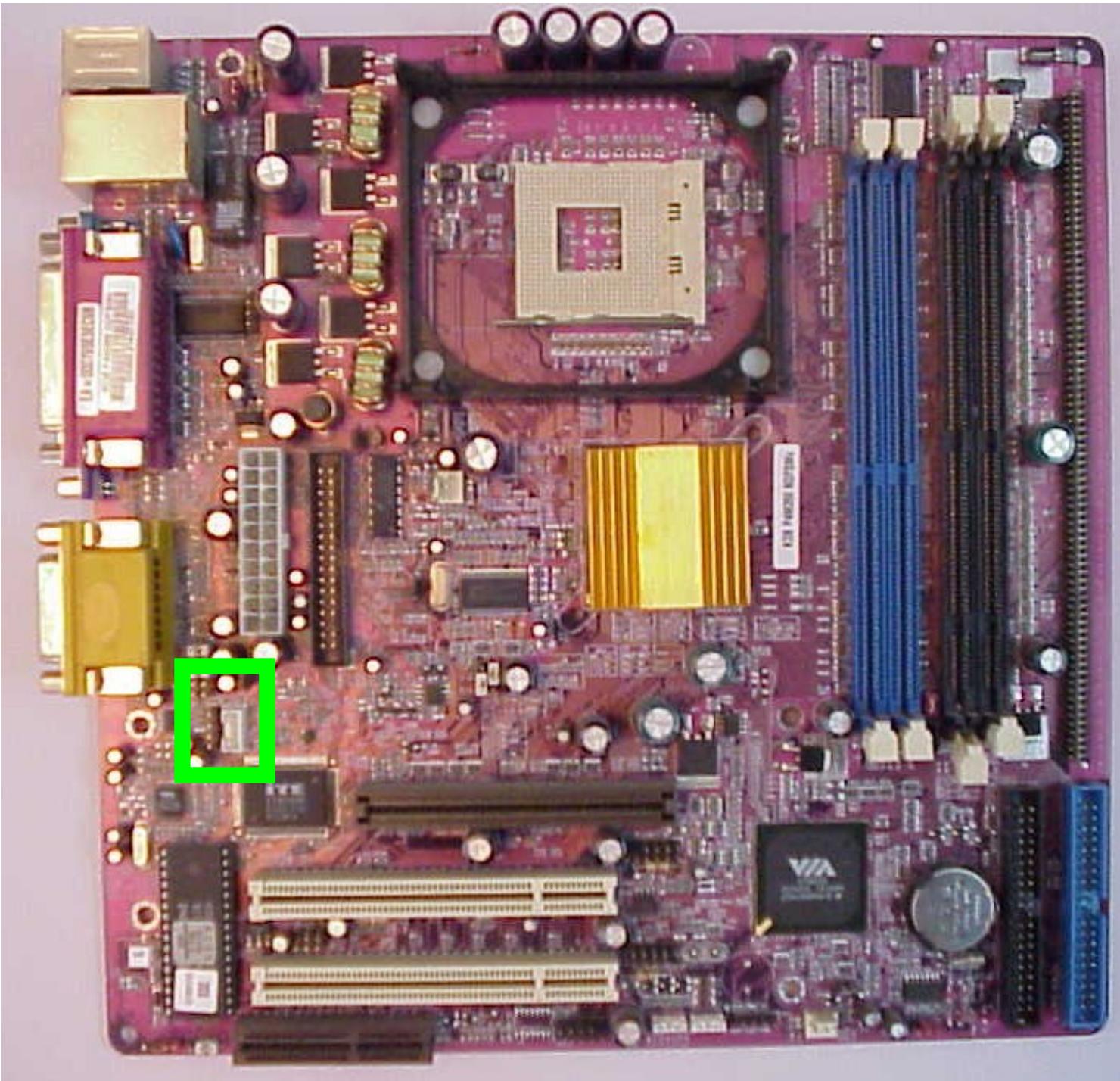


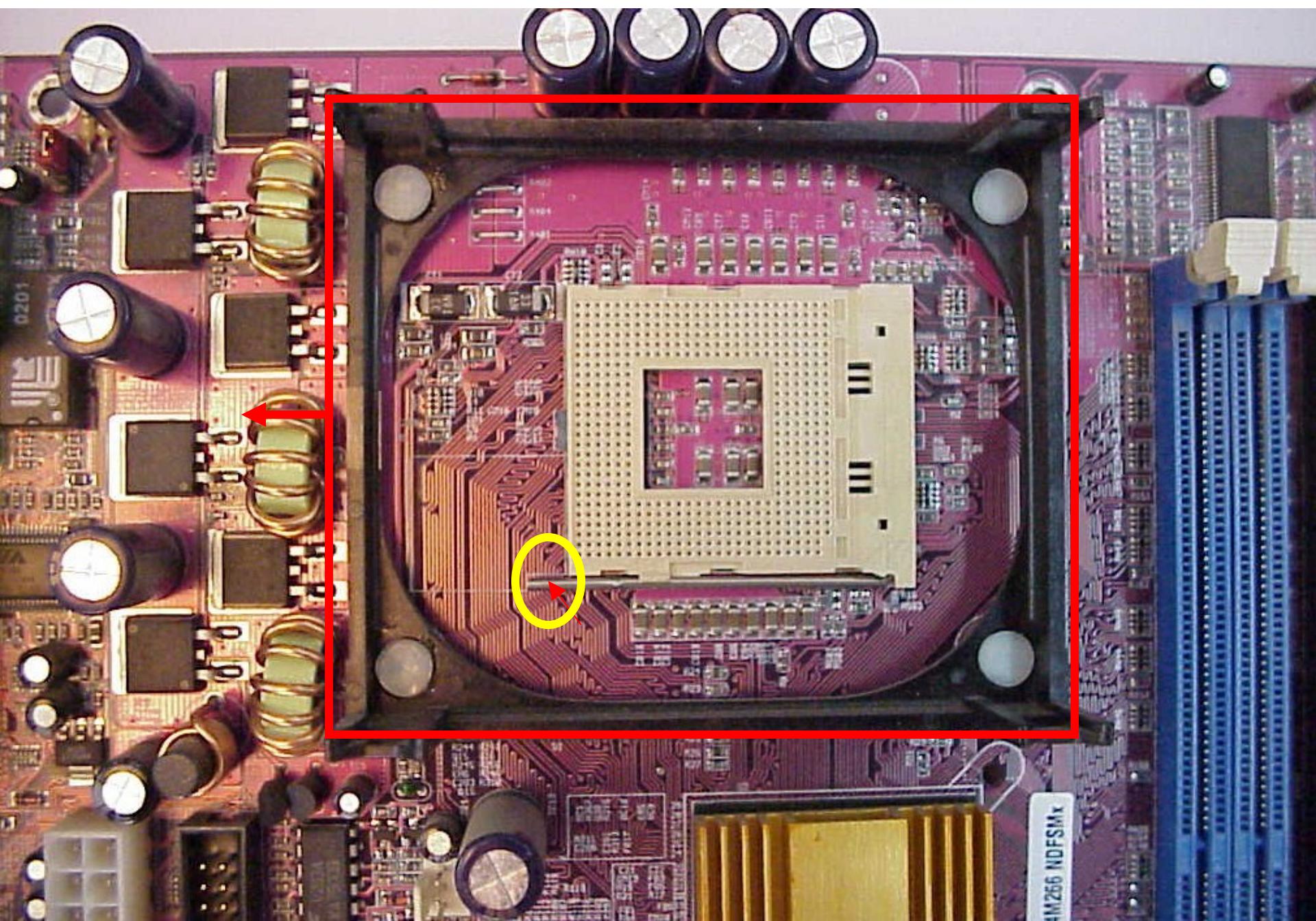






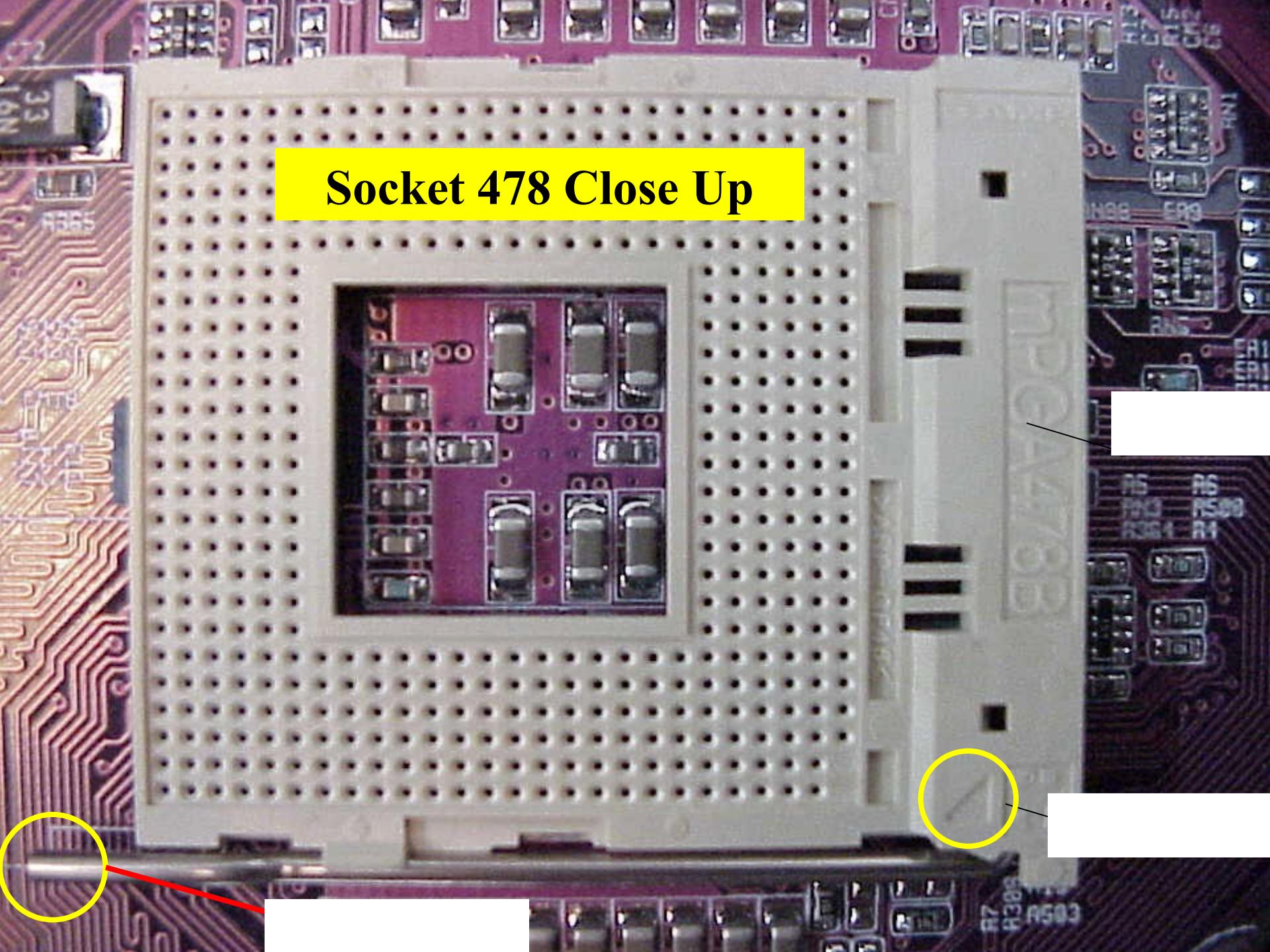


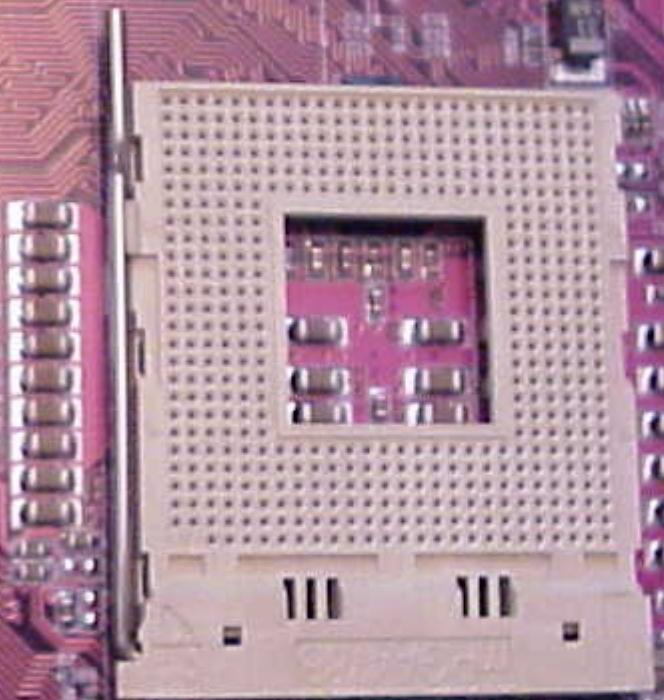
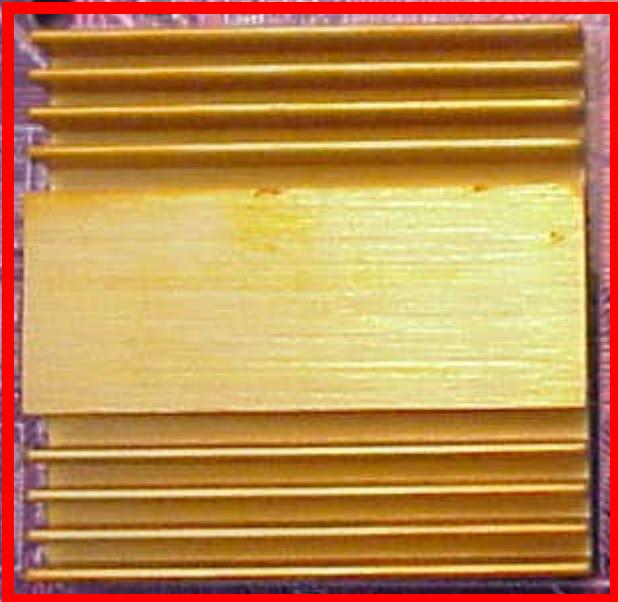




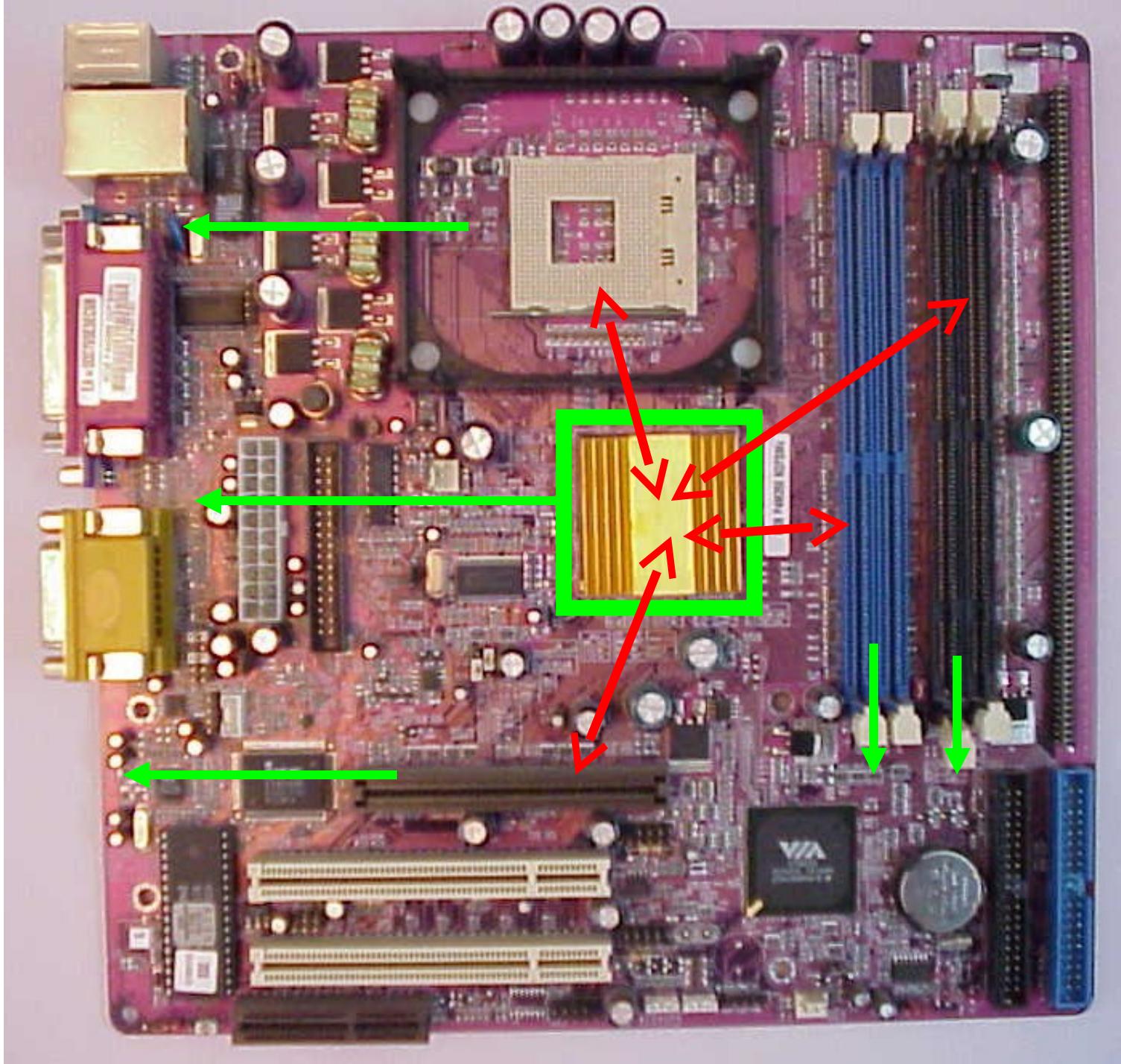
AM256 NDFSMx

Socket 478 Close Up





KOB P4M266 NDFSMx

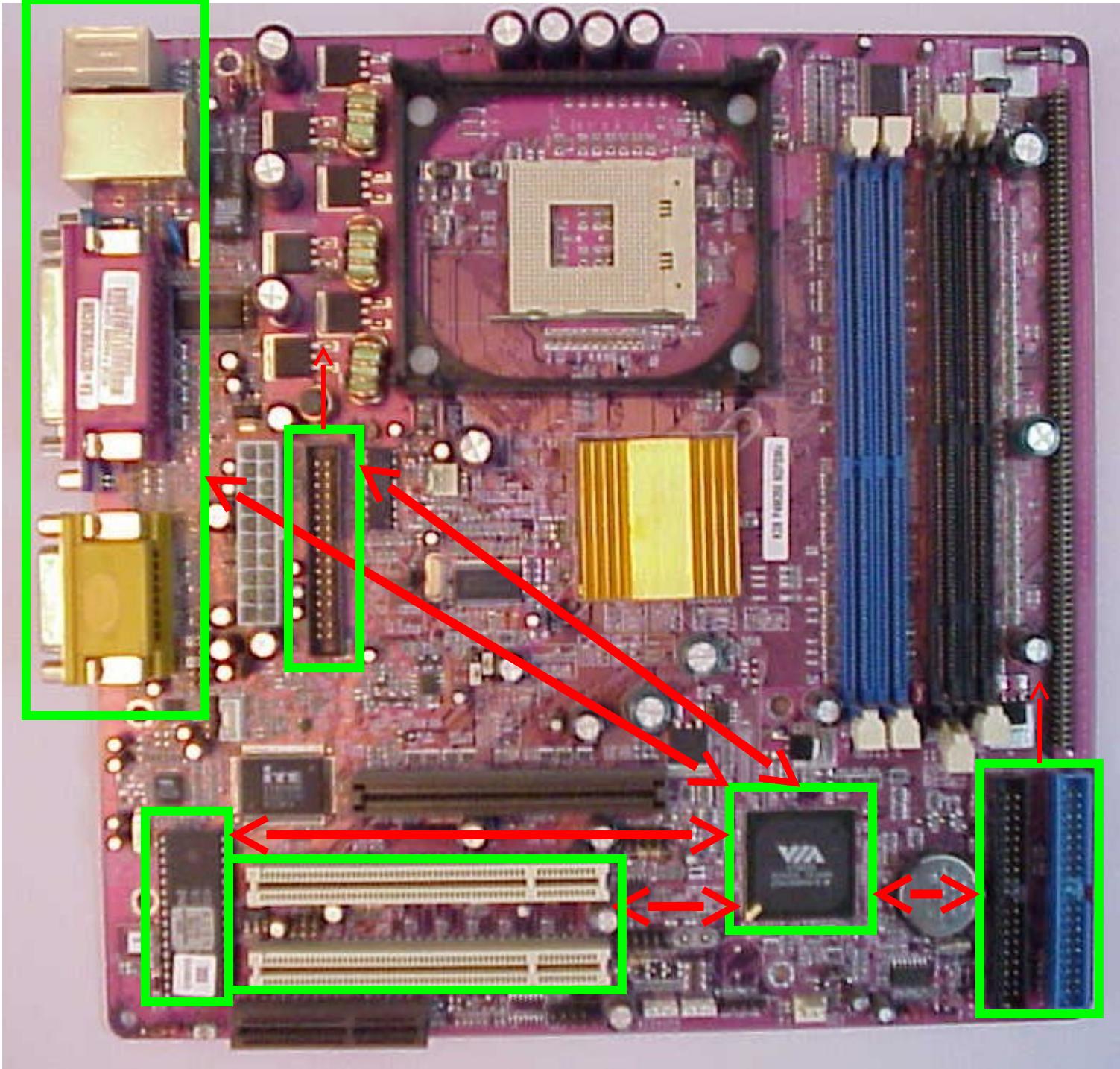


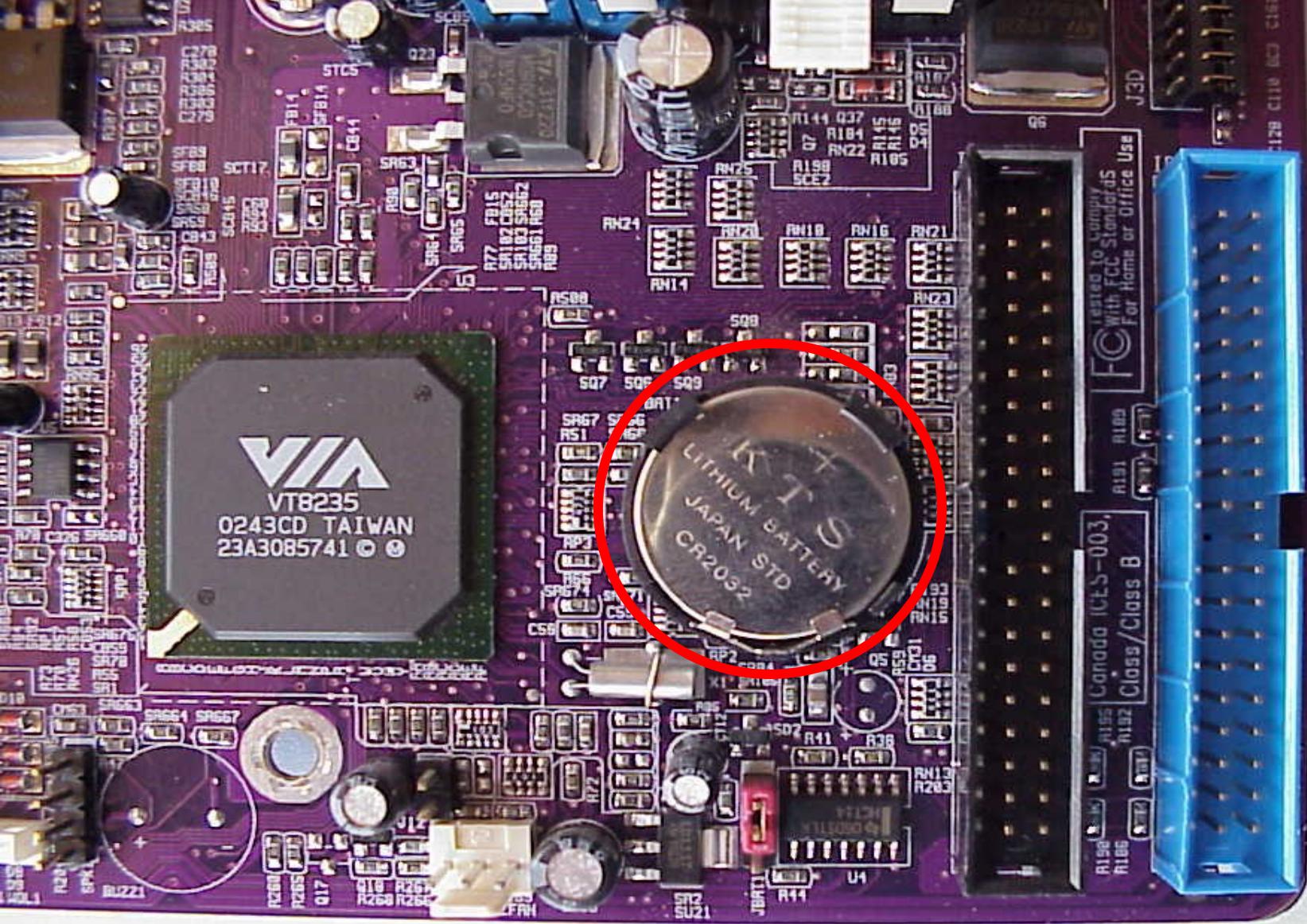


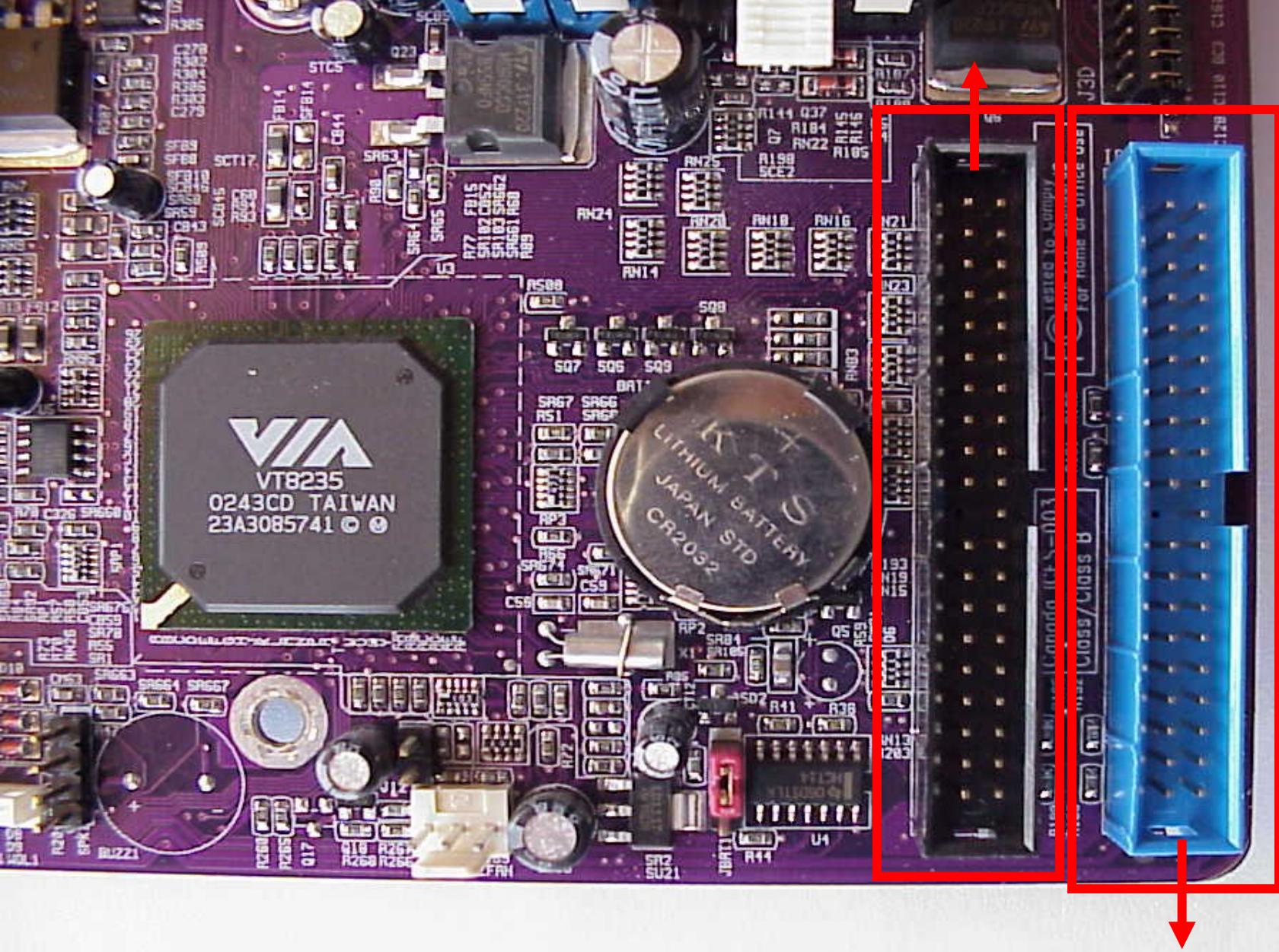
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With FCC Standards
For Home or Office Use

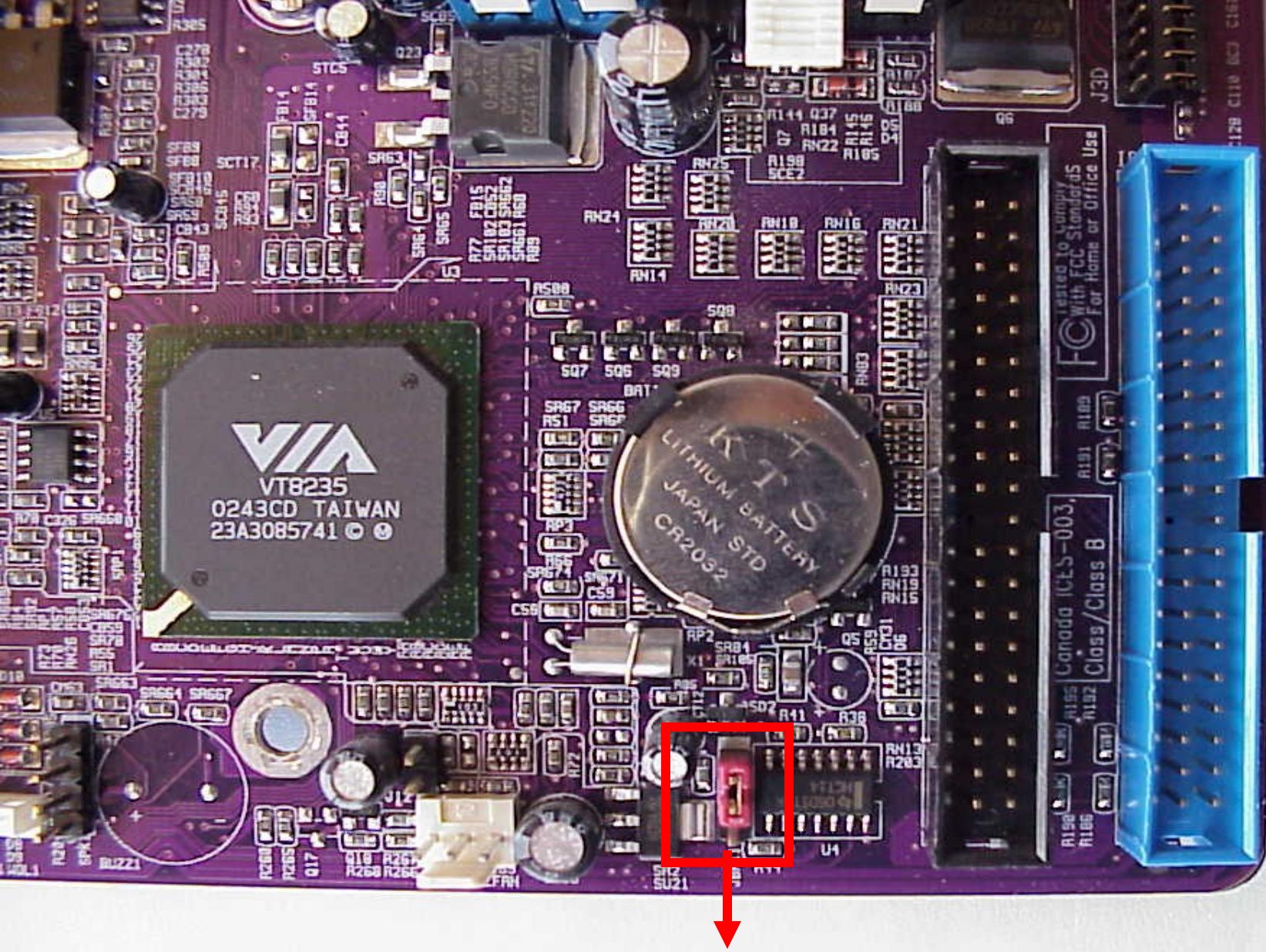
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Class/Class B

R100 R105
R102 R106
R103 R107



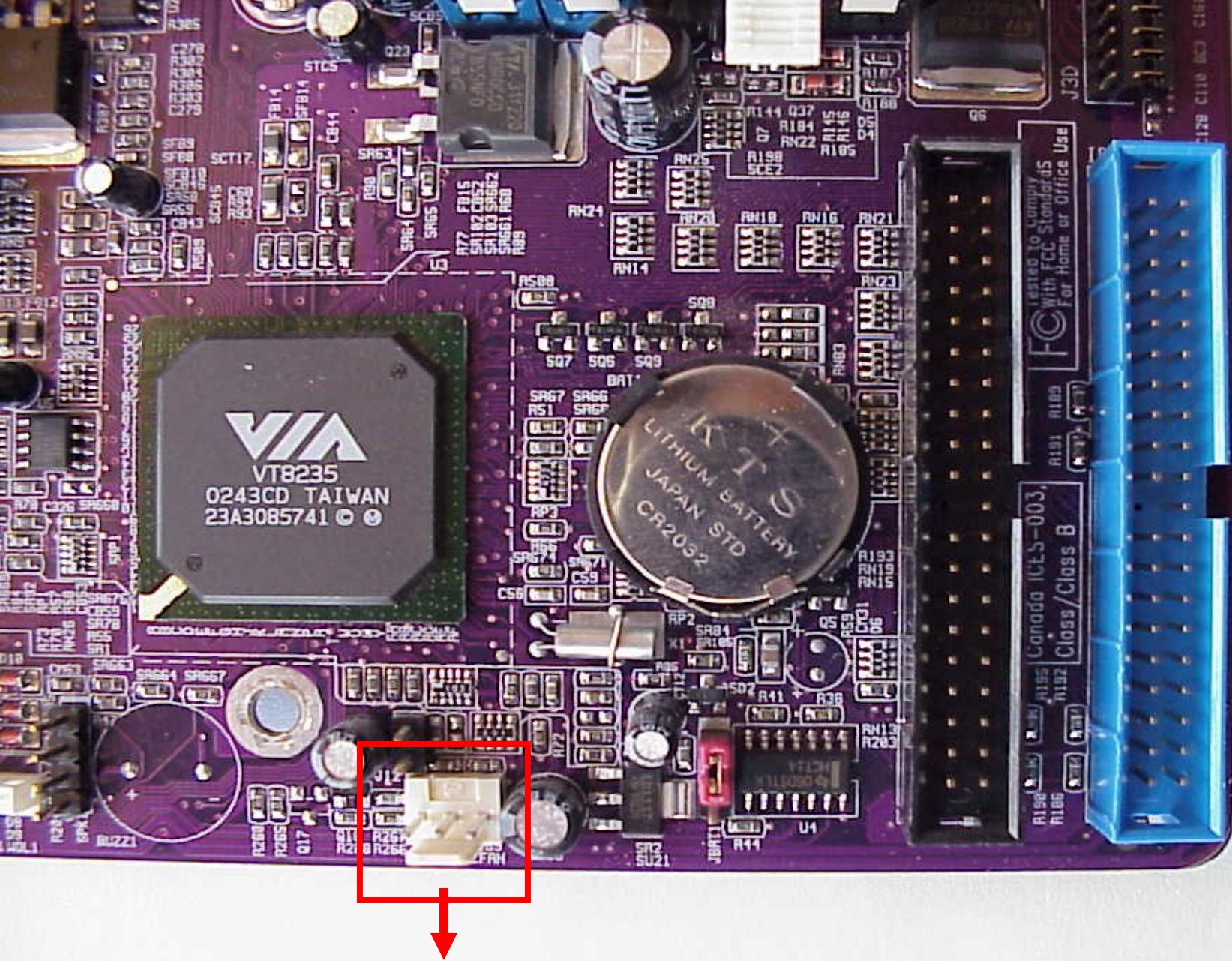






Tested to Comply
With FCC Standards
For Home or Office Use

Canada ICES-003,
Class/Class B

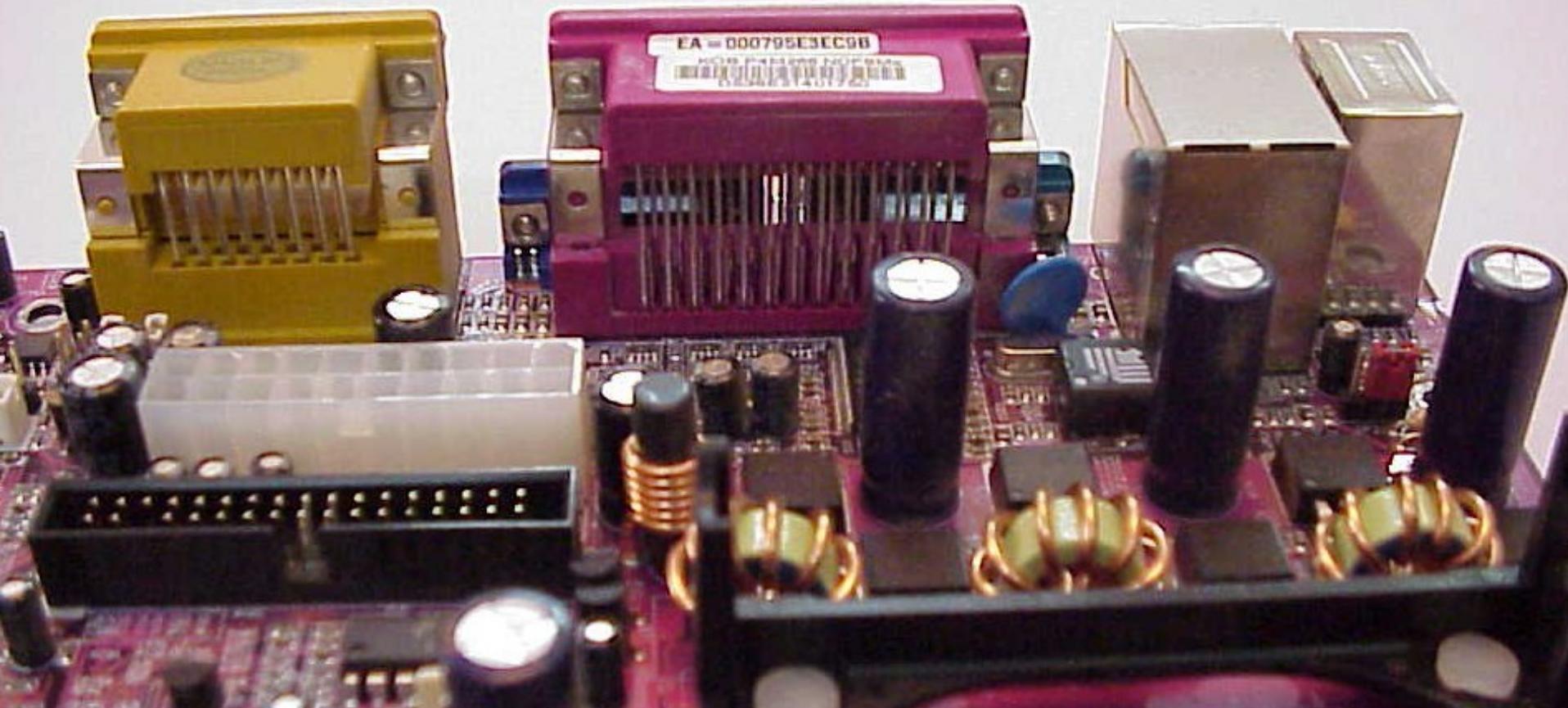


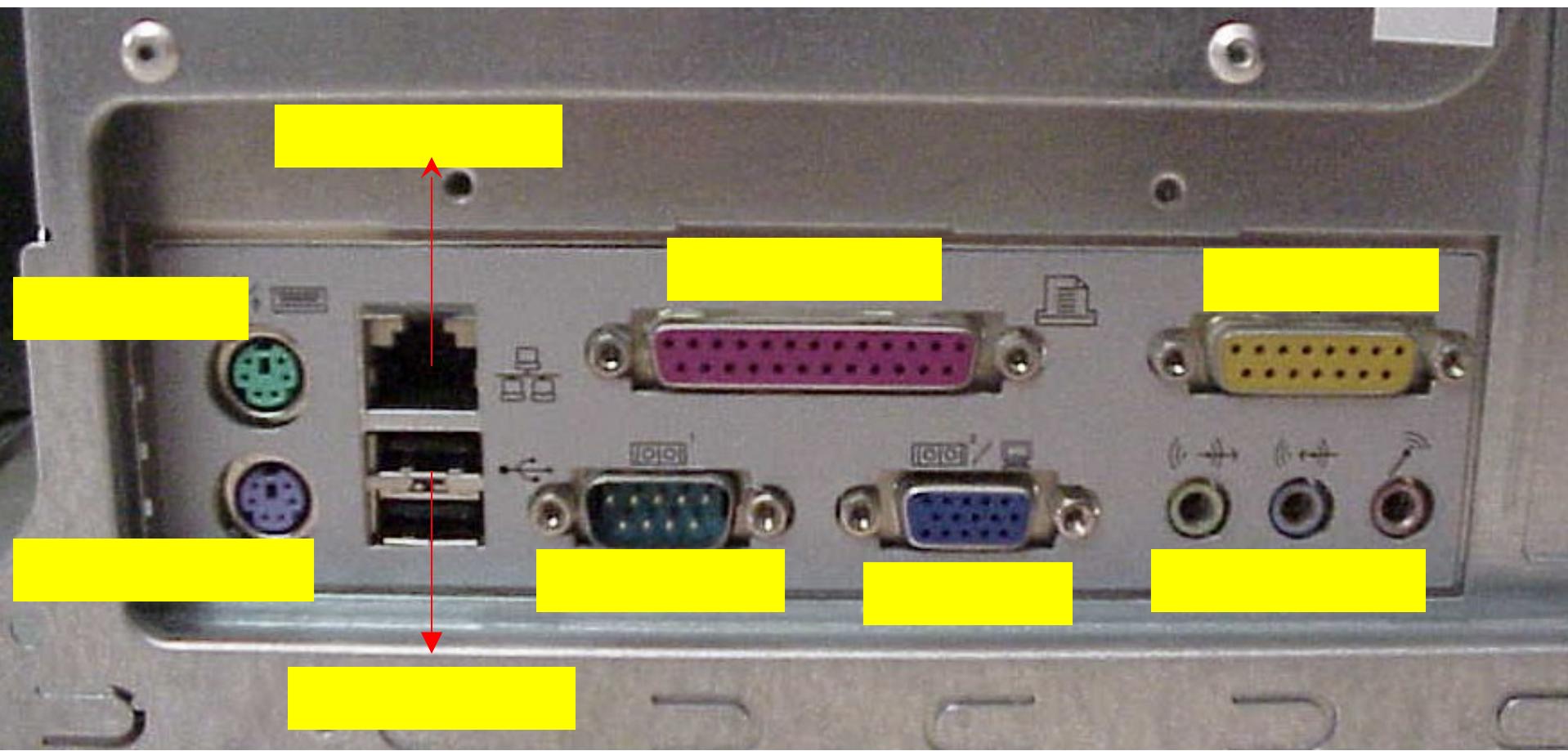
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For Home or Office Use

Canada ICES-003,
Class/Class B

R100 R105
R102 R104

J3D





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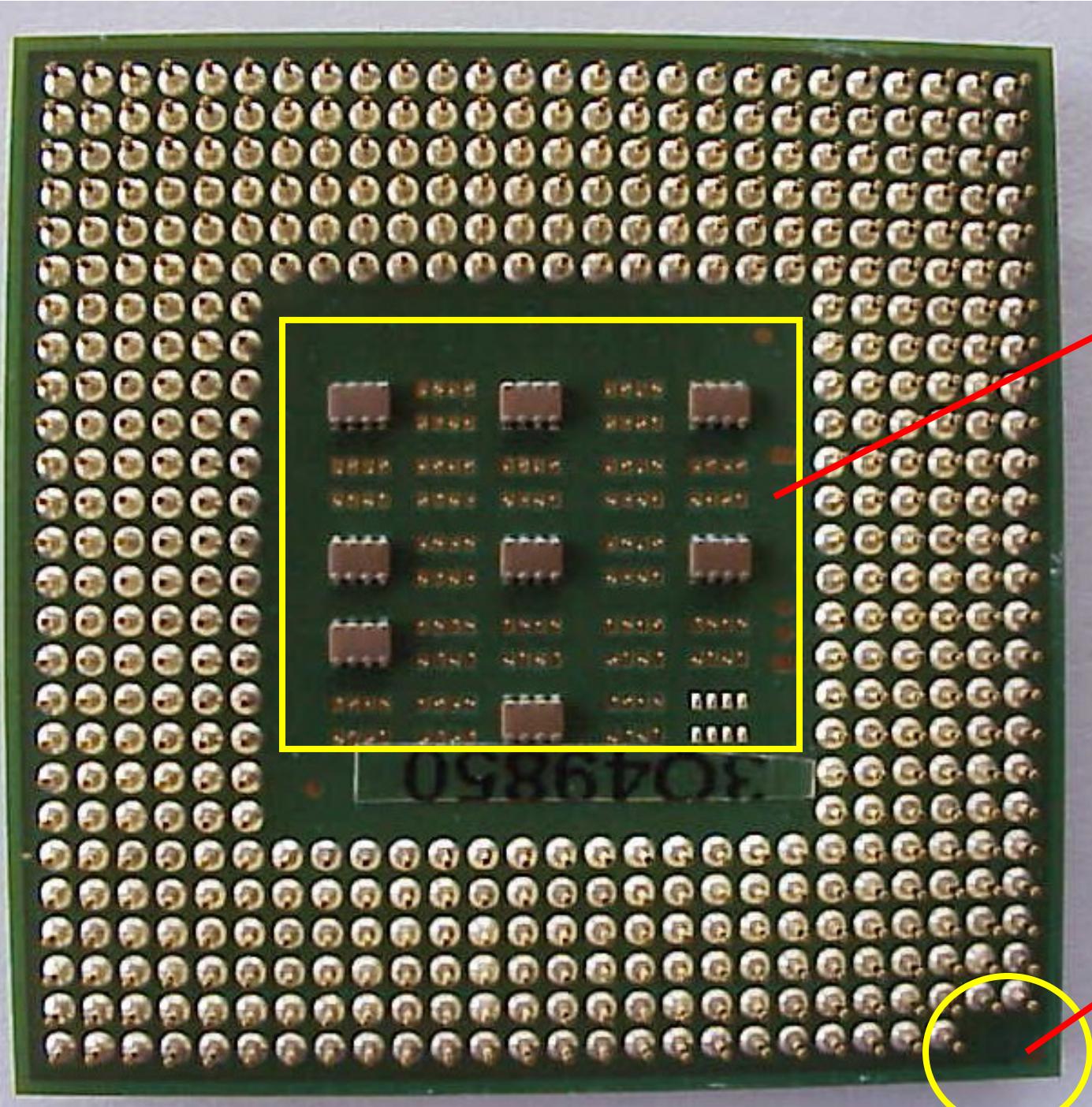
PENTIUM®4

1.6GHZ/256/400/1.75V

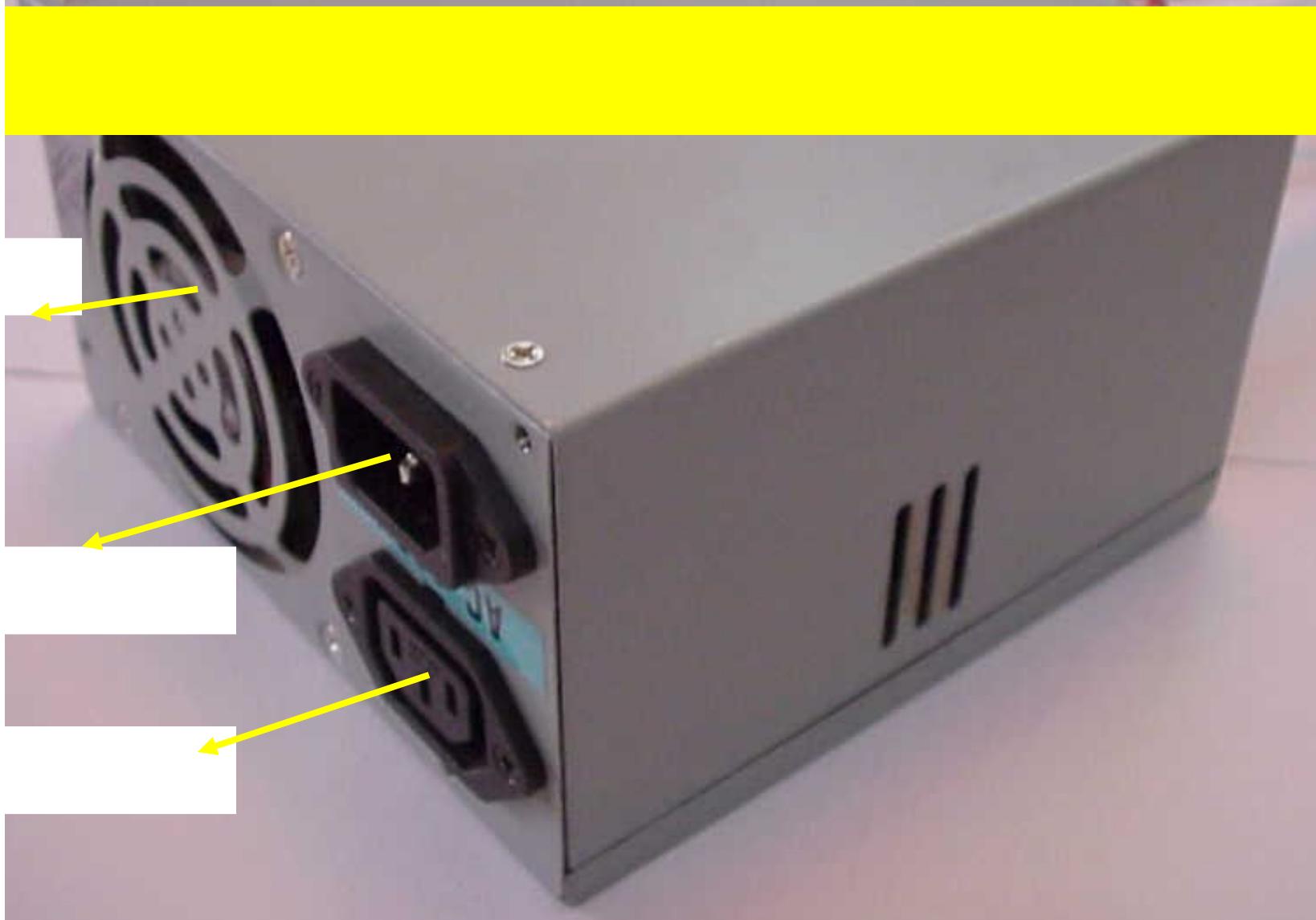
SL5VH COSTA RICA

3227A588-8115





SMPS



Red(R) +5V

Yellow(Y) +12V

Orange(O) 3.3V

Grey(Gr) Power
Good

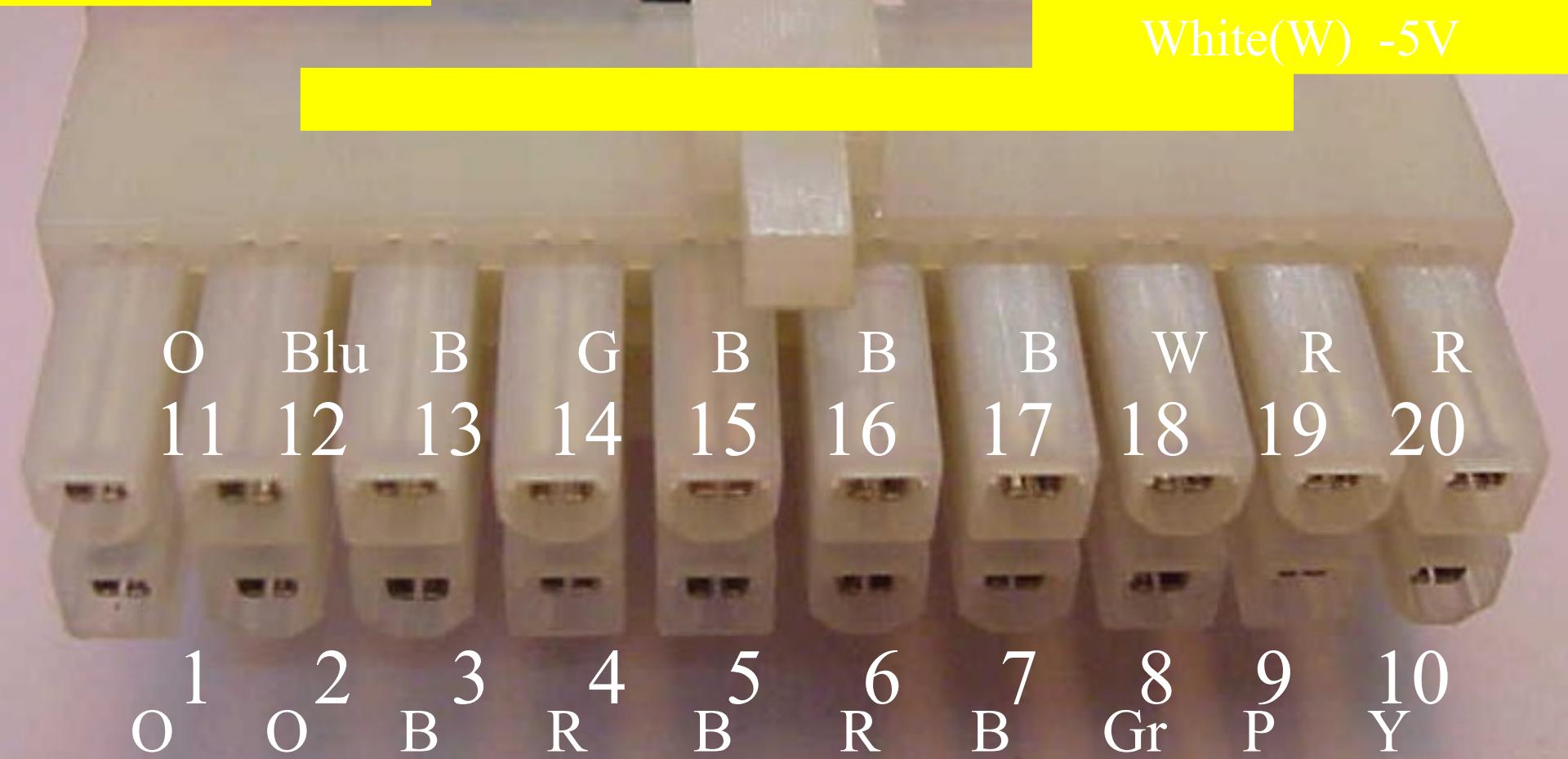


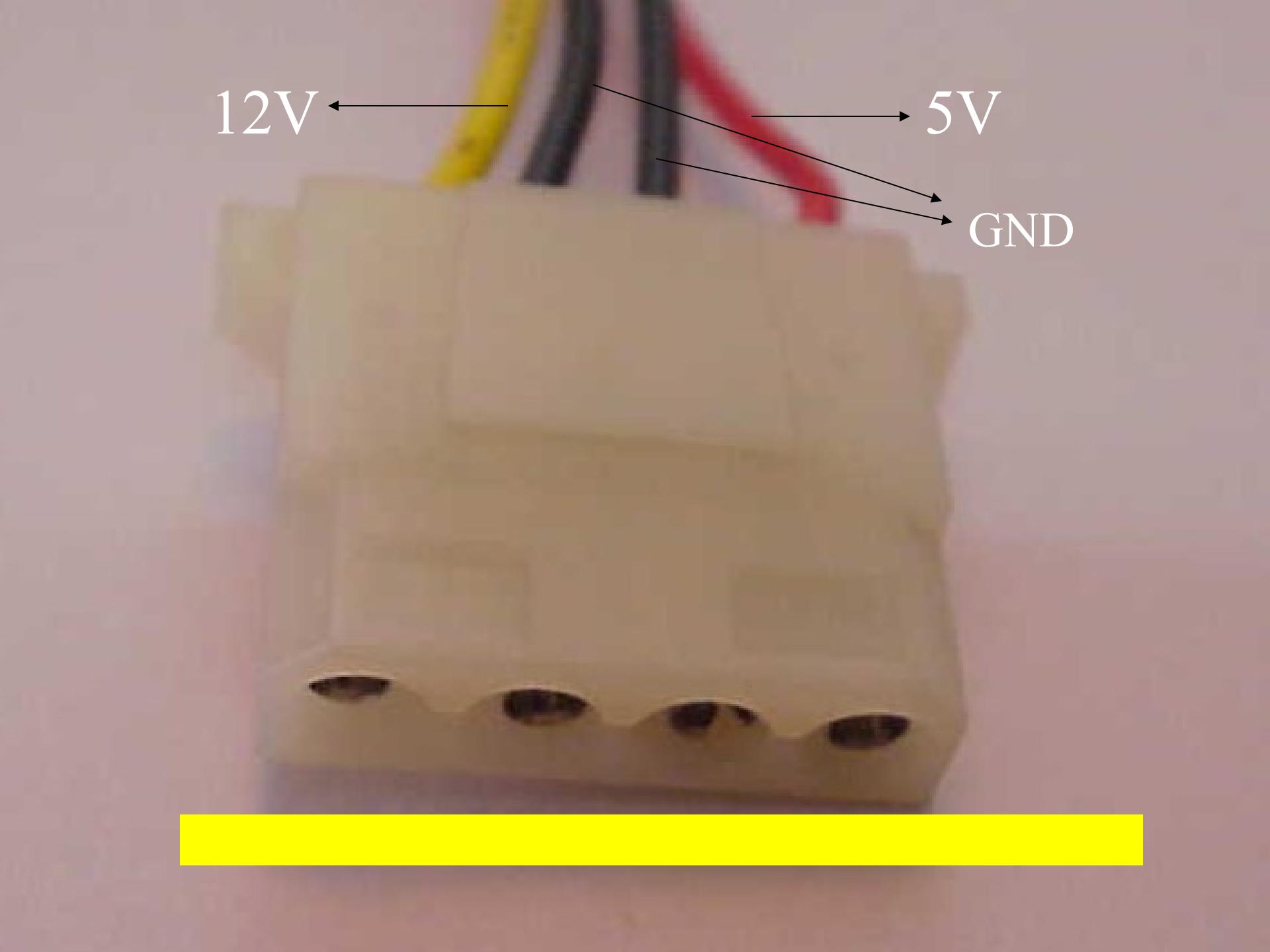
Purple(P) +5V Stand
By

Blue(Blu) -12V

Green(G) Power
Supply On

White(W) -5V

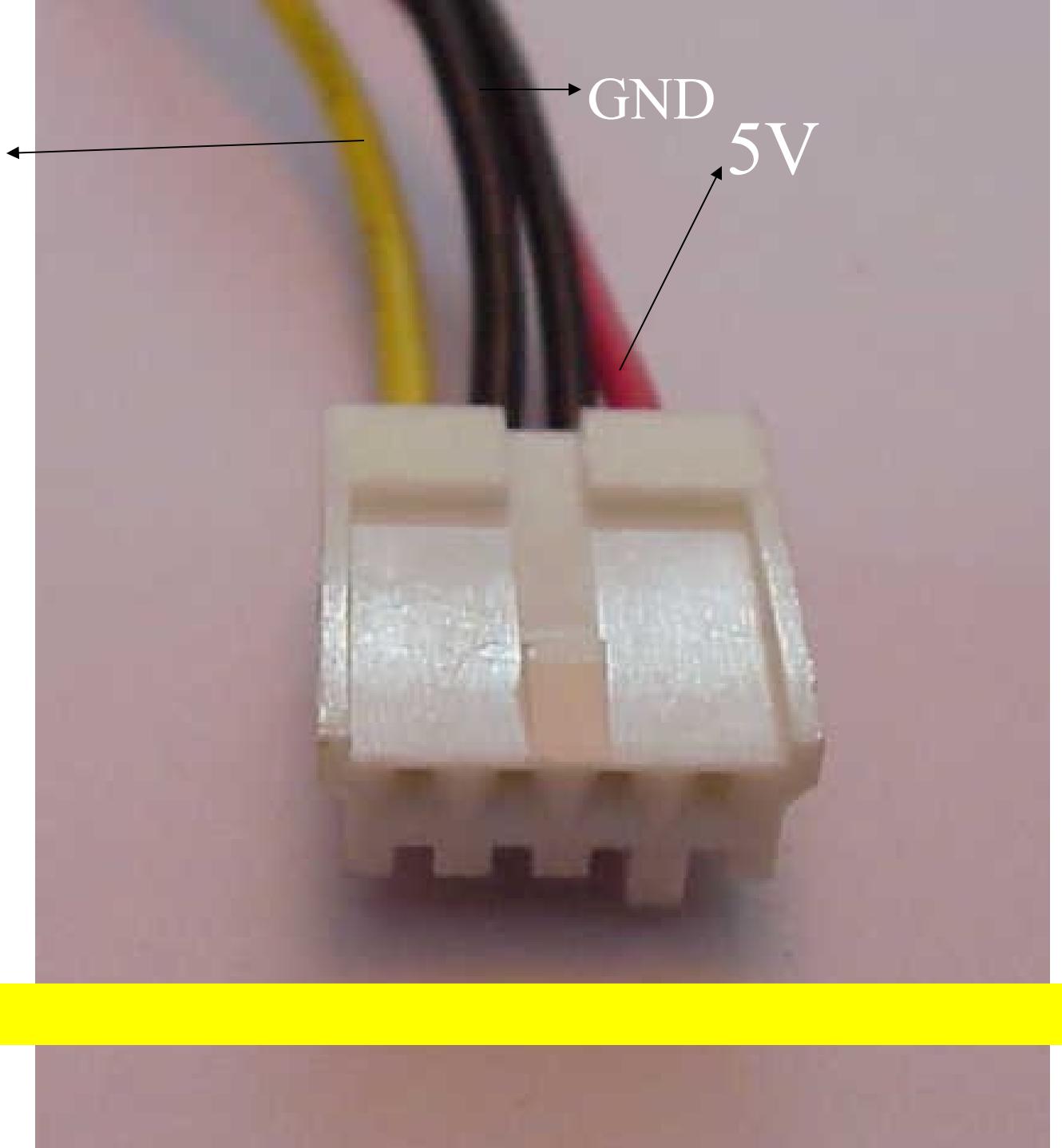




12V

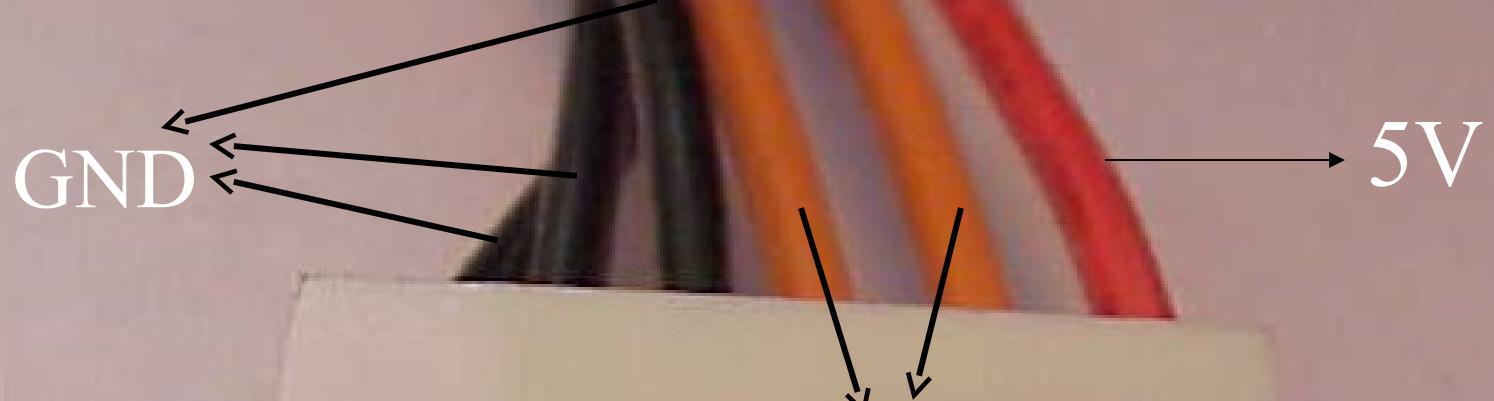
5V

GND



12V ←



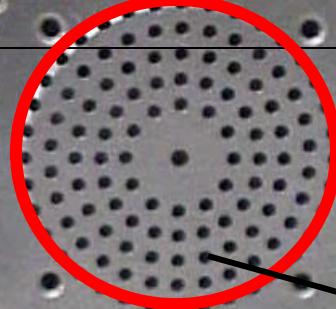


3.3V

P6
(P6)

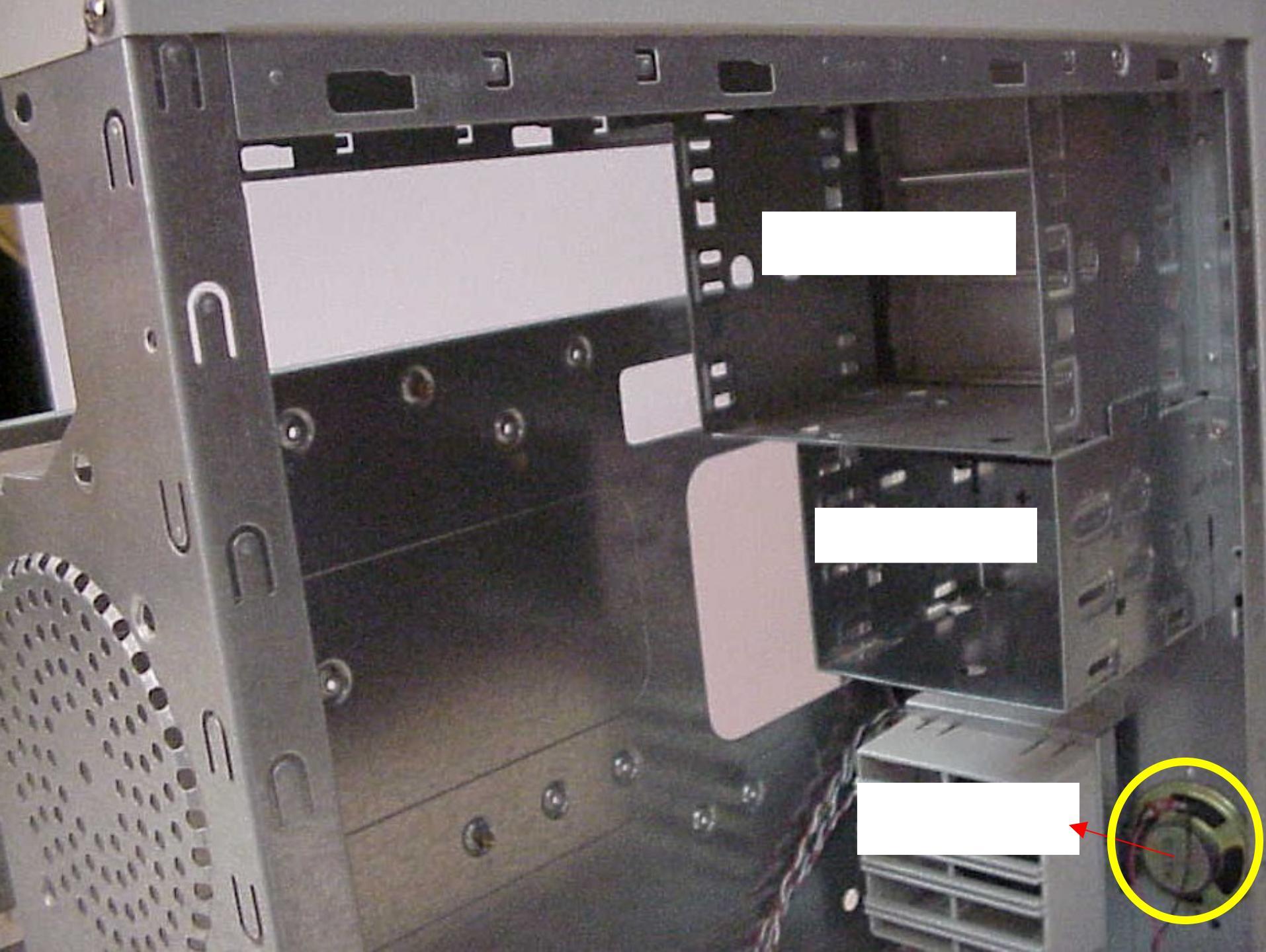


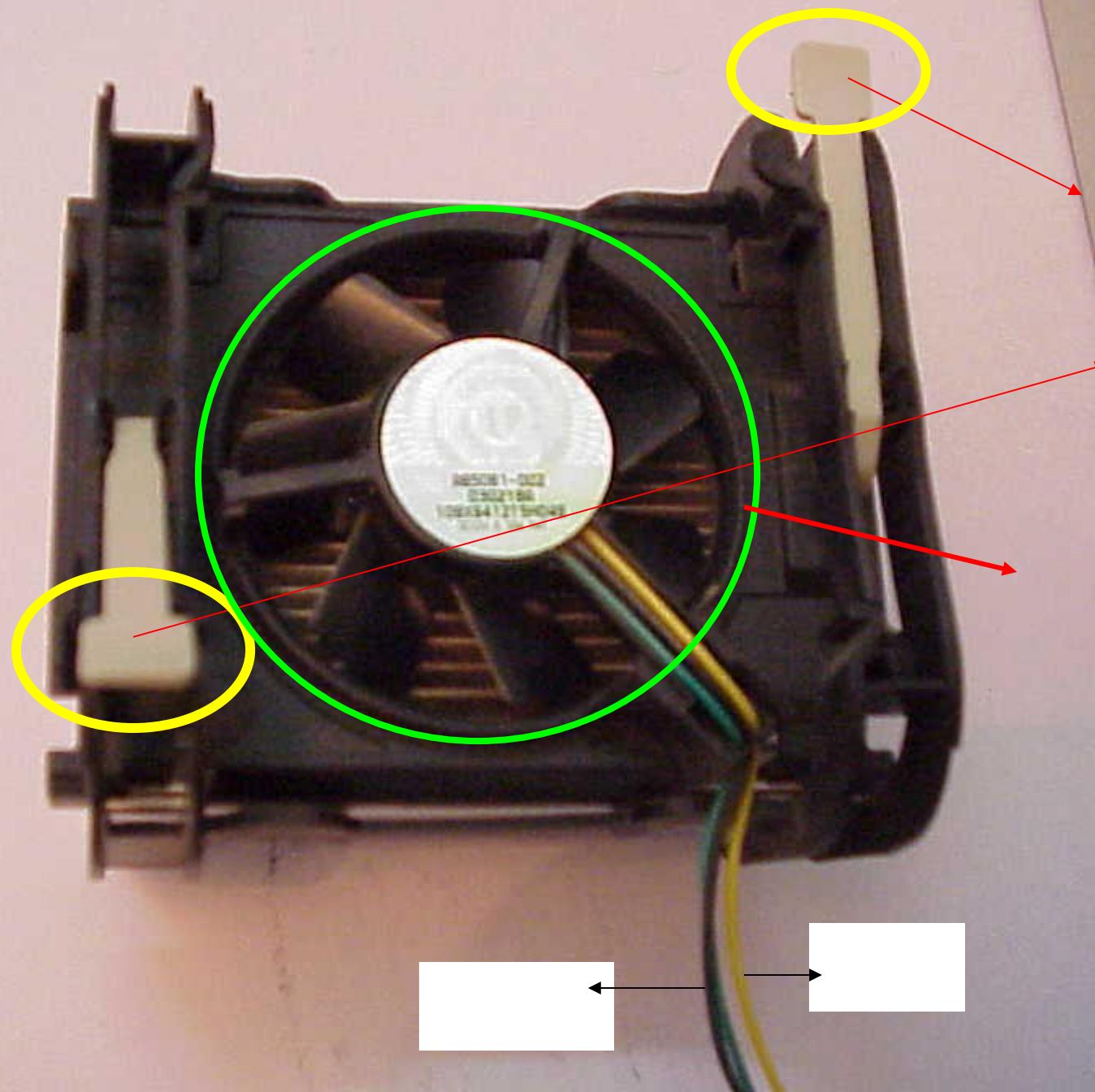
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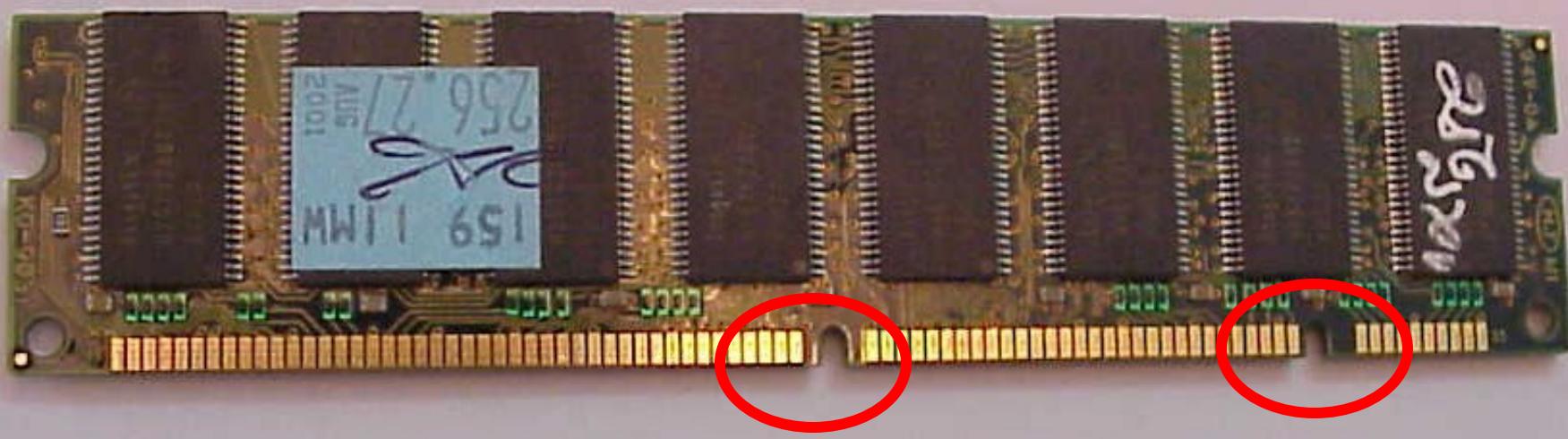


X-106

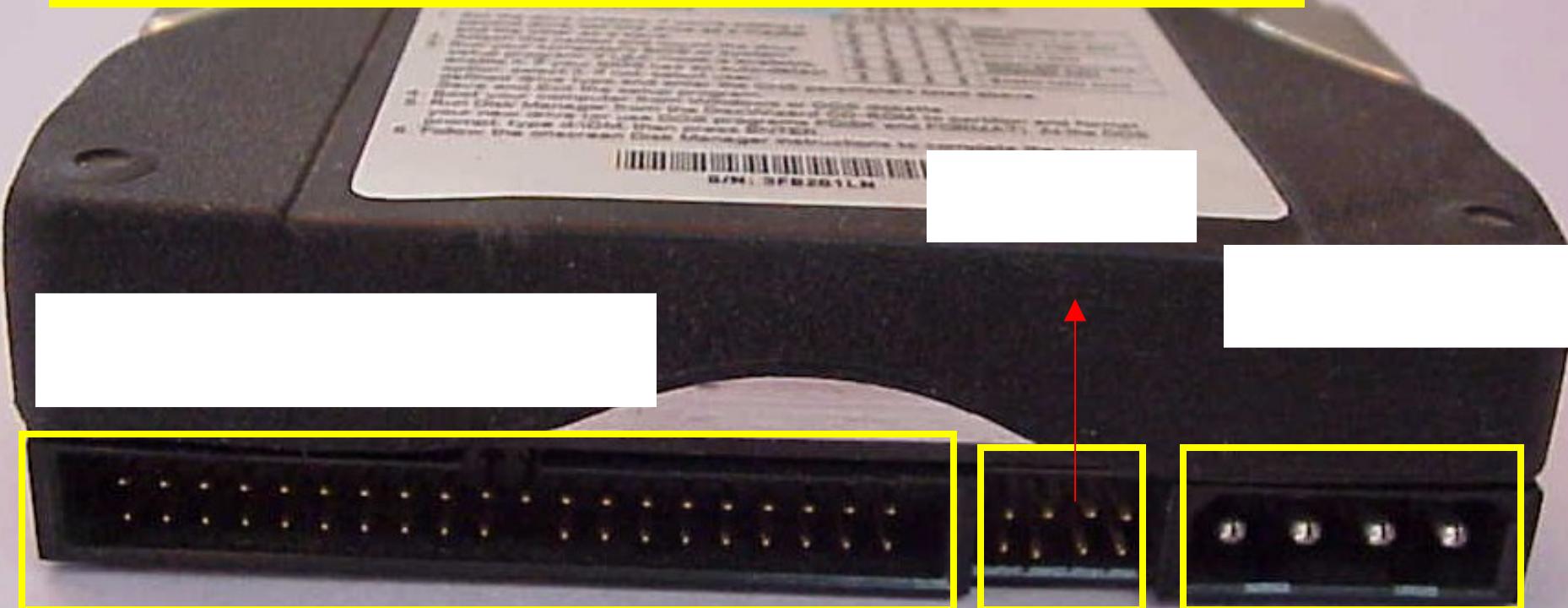
Frigidaire



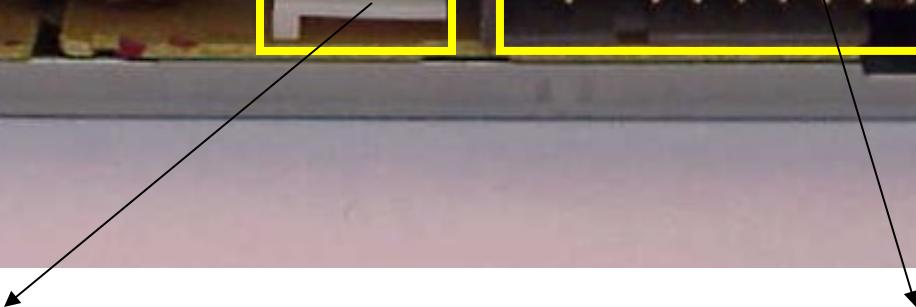




IDE –

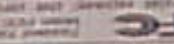






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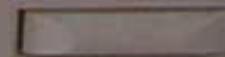
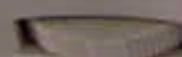


CD-MAXX 22E MODEL SC-152

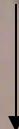
SAMSUNG

22K Max

disc



SAMSUNG



Speed of a CDD

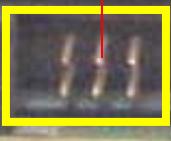


52X Max

52X =

COMPACT
disc

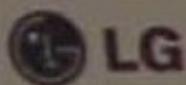




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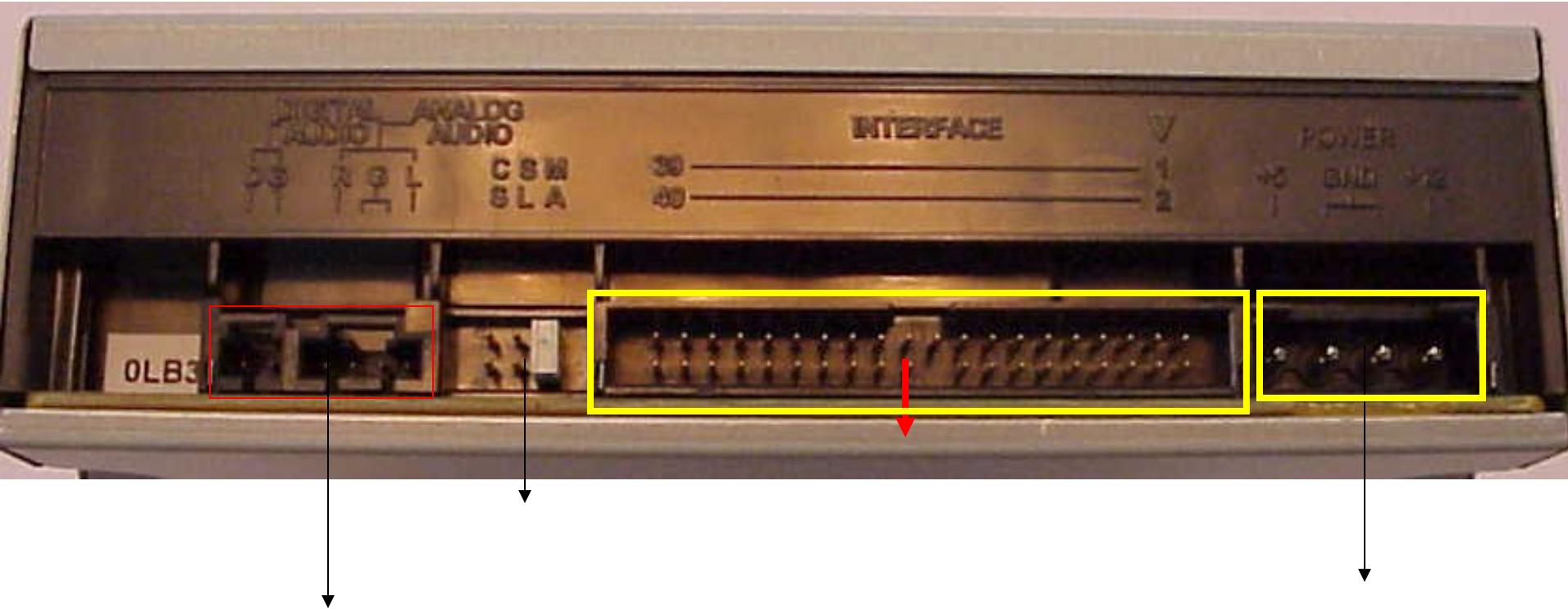
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COMPACT
disc!
ReWritable

52x24x 52x







LG

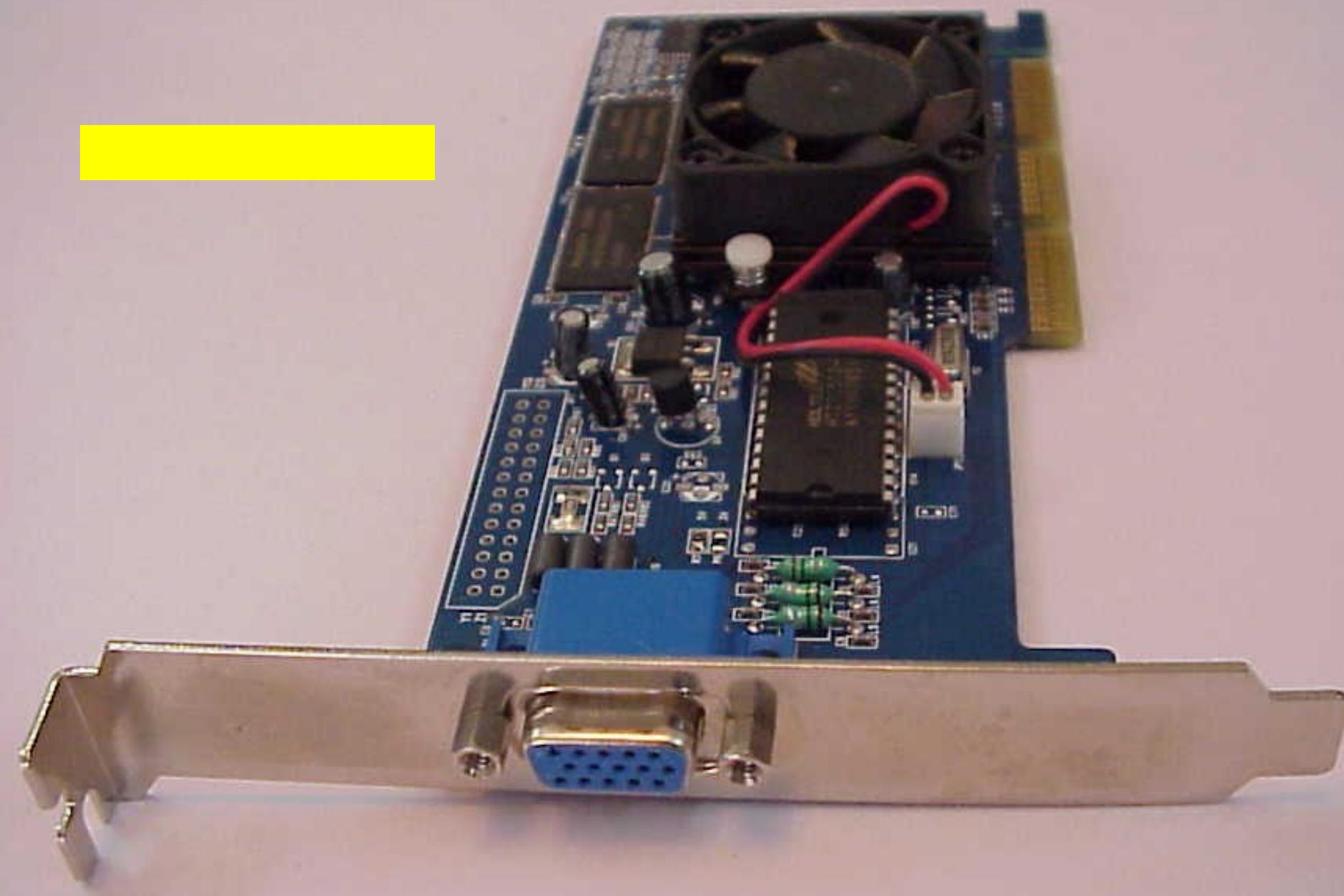


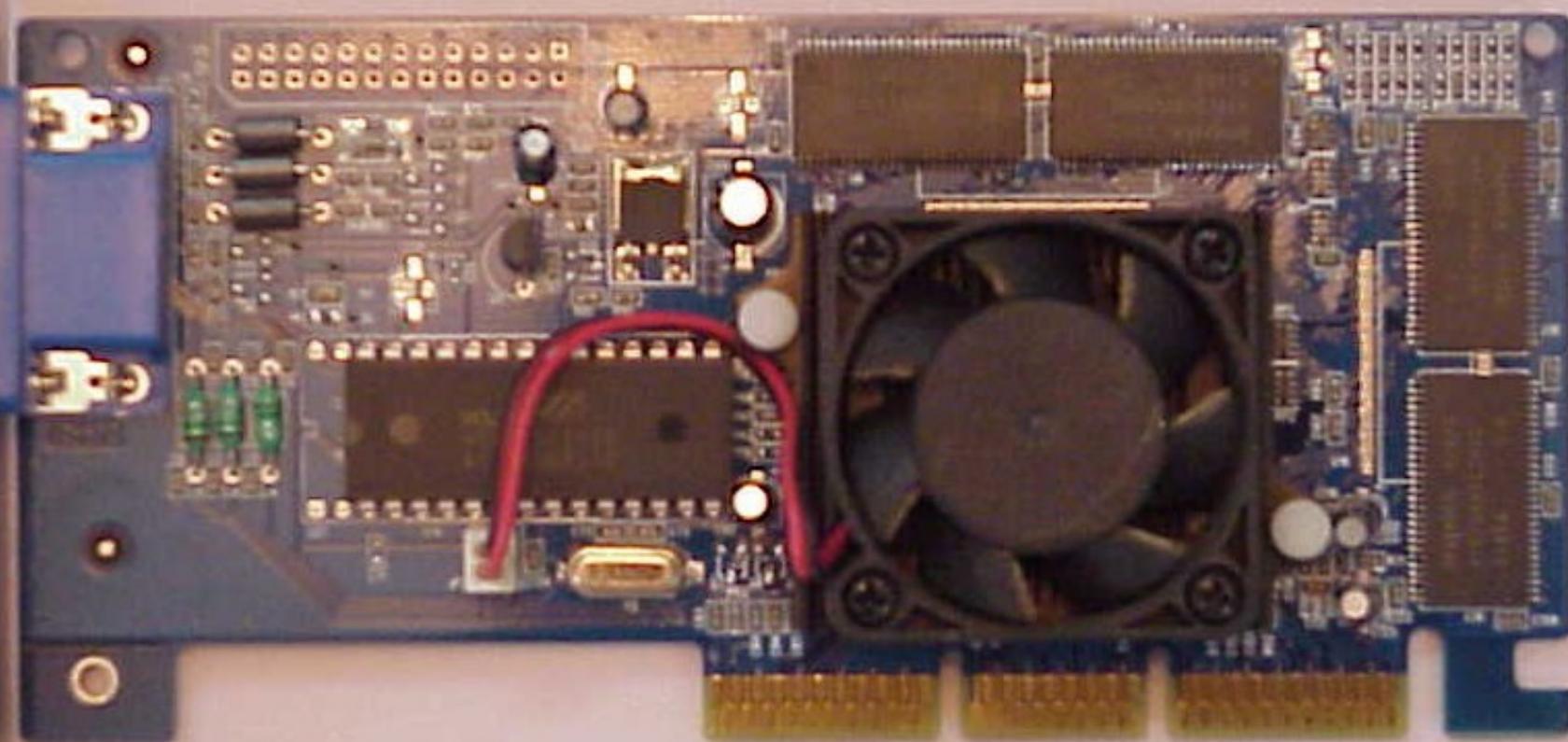
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disc!
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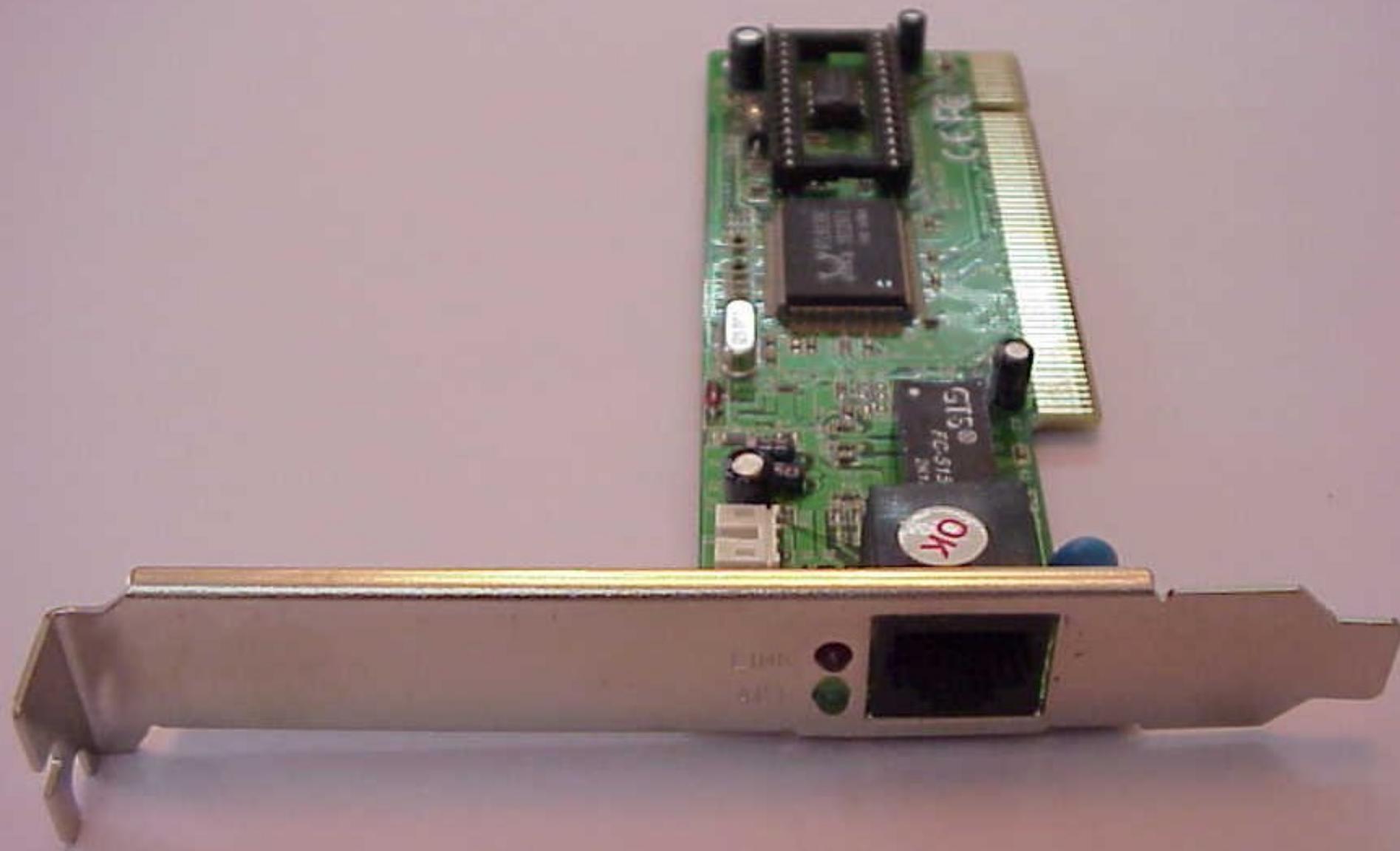
52x24x 52x







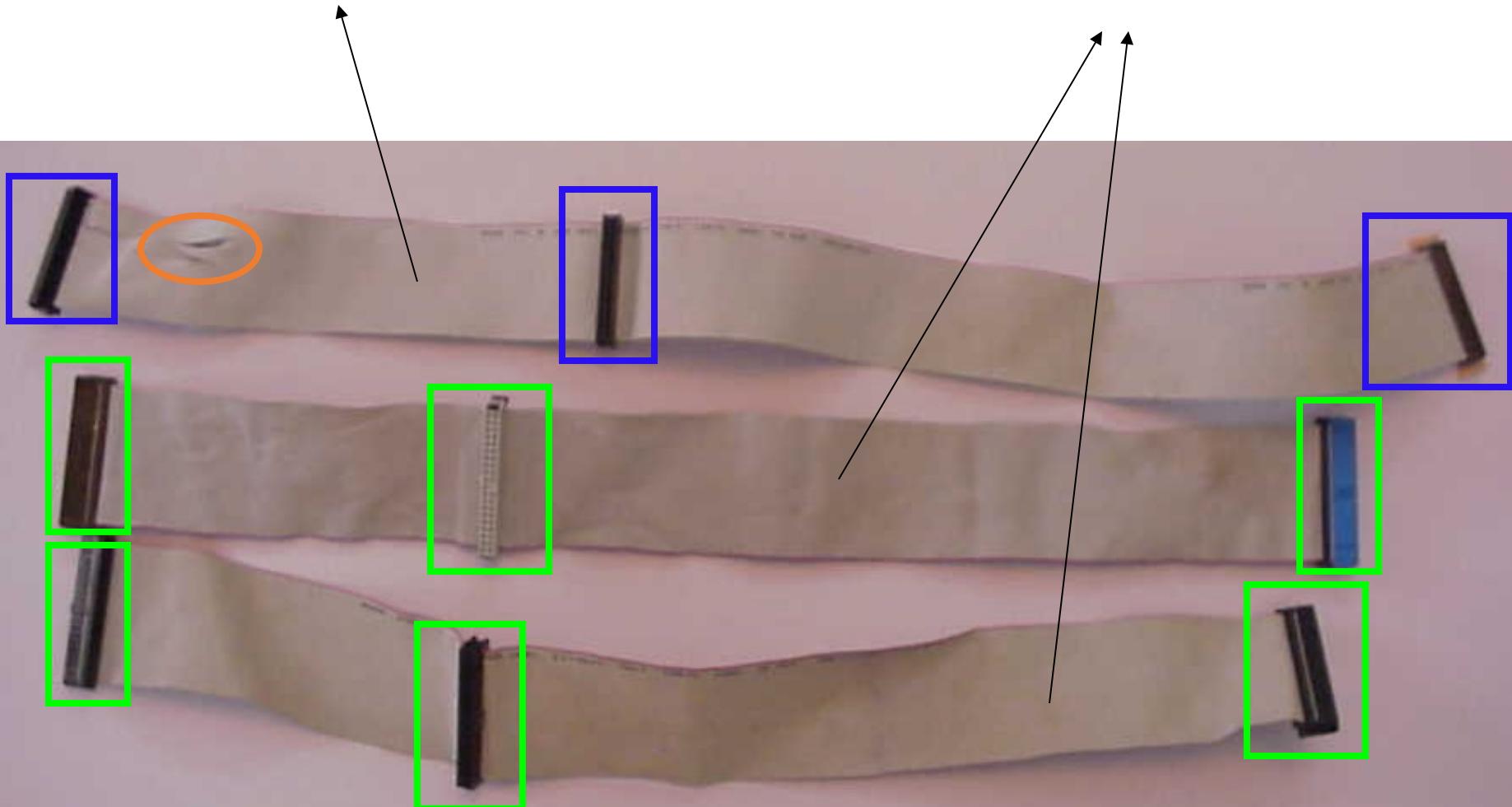




LINK

ACT





Conductor
Cable
Speed

Conductor
Cable
Speed

Thank You