Build-Your-Own PC

User Group Workshop

- Part II -

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Introduction

- Welcome!
- Personal Safety
  - Working with electricity
  - Working with hand tools
  - Remove rings and watches

Introduction

- Component Safety
  - Static Electricity
    - Ground yourself
    - Protect your parts
  - Preparation
  - Gather Your Tools
    - Phillips-head screwdriver
    - Anti-static strap
    - Safety goggles

Overview

Tonight's Agenda

- Step 1: Open Case
- Step 2: Examine and Prepare Case
- Step 3: Attach Motherboard to Case
- Step 4: Install Memory
- Step 5: Install Processor and Cooling Unit
- Step 6: Mount Drives
- Step 7: Install Any Extras
- Step 8: Connect Wires
- Step 9: Initial Start-up and Testing
- Step 10: Final Assembly

Build Your Own Computer

Remove Side Panel

1st – Remove case from box

2nd – Locate and remove thumbscrews

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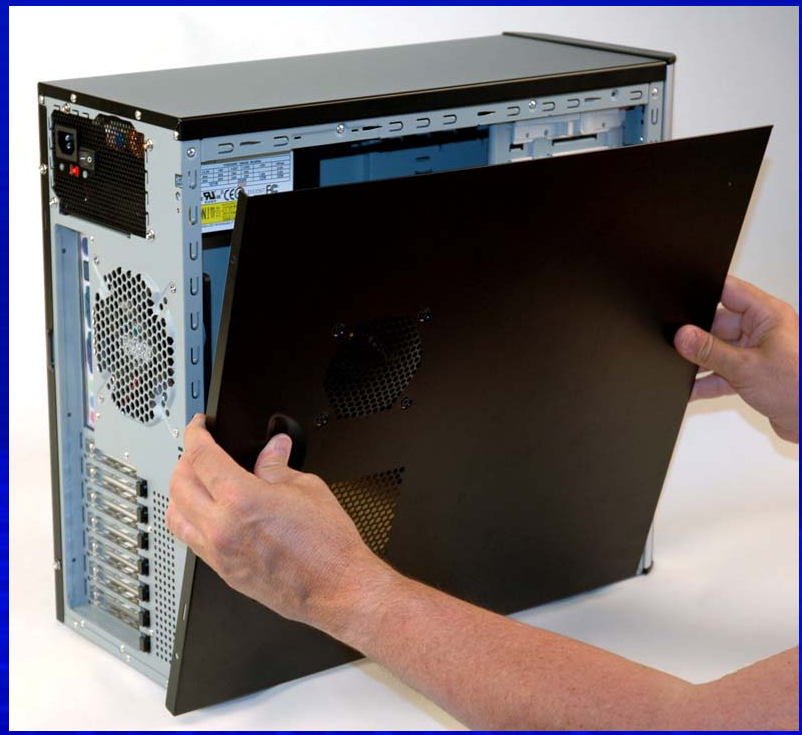
Open Case 1.

Build Your Own Computer

Remove Side Panel

3rd – Gently push panel towards the rear and remove



4th – Set aside panel somewhere safe and out of the way

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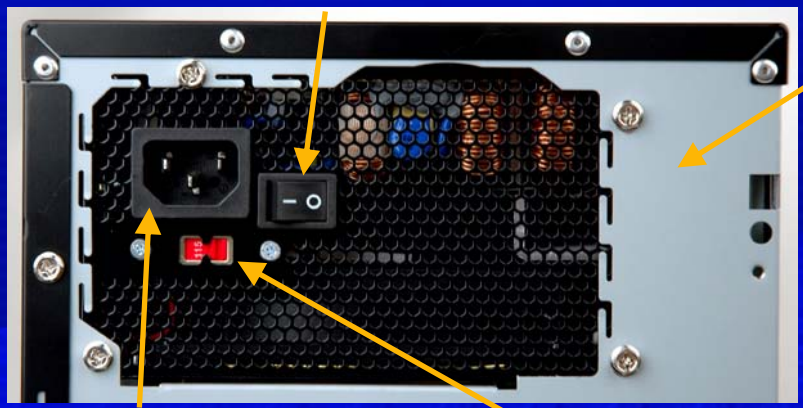
Examine Open Case

1st – Identify power supply; examine from behind

Main power rocker switch



Main power cord socket

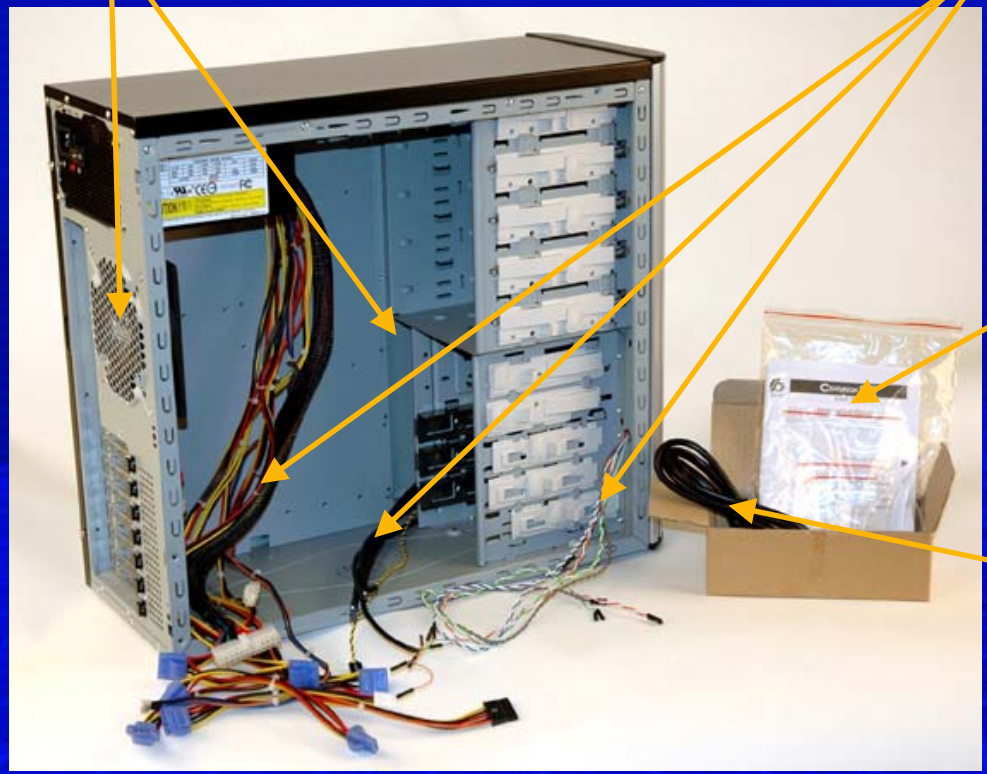
Voltage switch

Build Your Own Computer

Examine Open Case

2nd – Identify case fans

3rd – Identify and untie power leads and case leads



4th – Find and set aside parts bag

5th – Find and set aside power cord and ties

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Extract Front Case Fan Lead

1st – Find and extract the power lead and connectors for the front case fan

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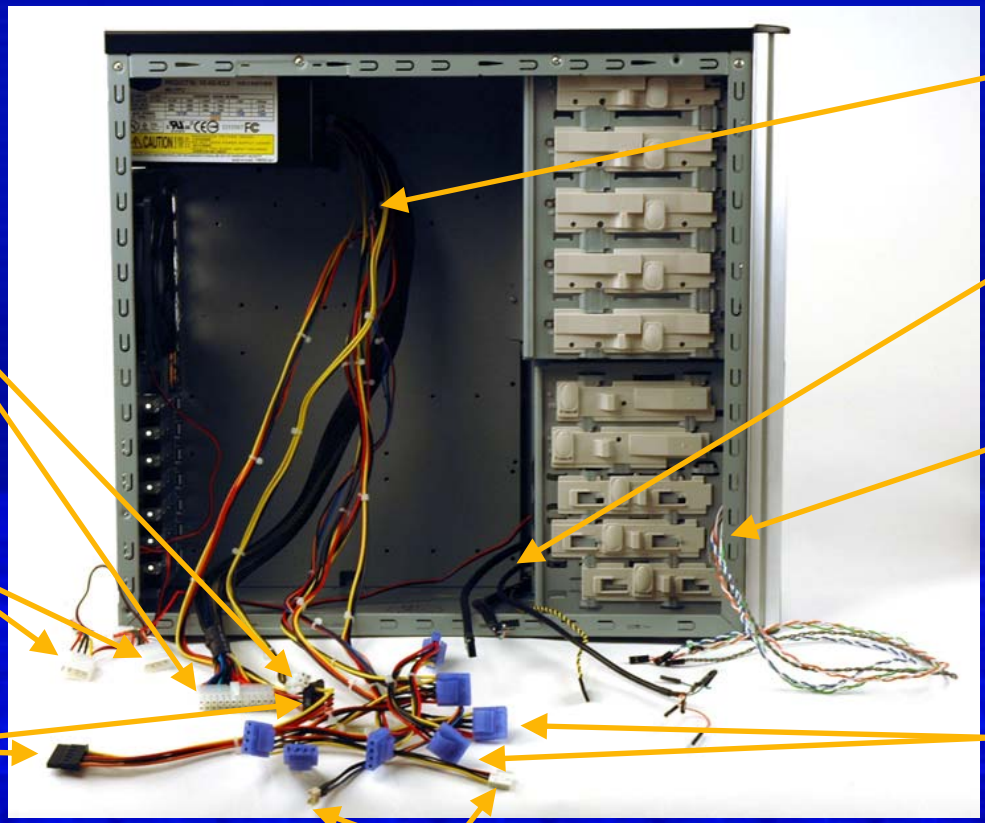
Examine Connectors

1st – Examine various types of connectors



Power supply leads

Front panel connectors

Front switches / LED connectors

Molex power connectors (CD/DVD, IDE HDD, SATA HDD backup)

Floppy power connectors

SATA Hard Disk Drive (HDD) power connectors

Case Fan power connectors

Motherboard power connectors

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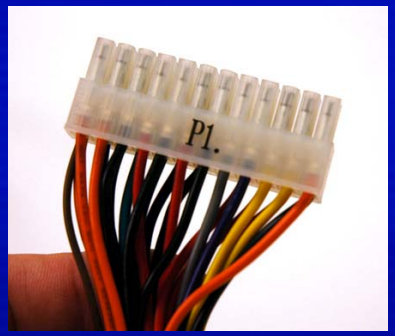
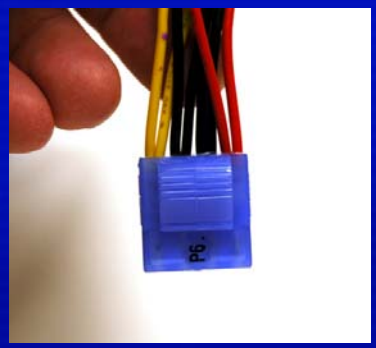
Examine Connectors

2nd – Find and identify power connectors

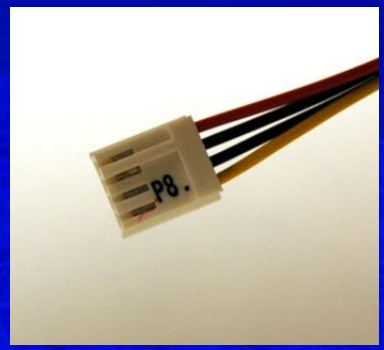


24-pin Motherboard power connectors

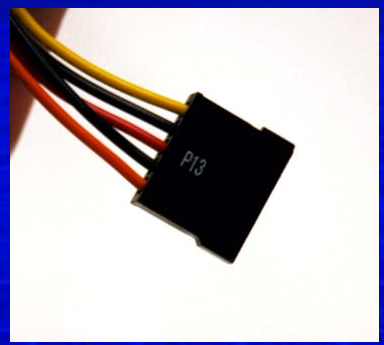


Molex power connector (CD/DVD, IDE HDD, SATA HDD backup)

Floppy power connector



4-pin



SATA Hard Disk Drive (HDD) power connector

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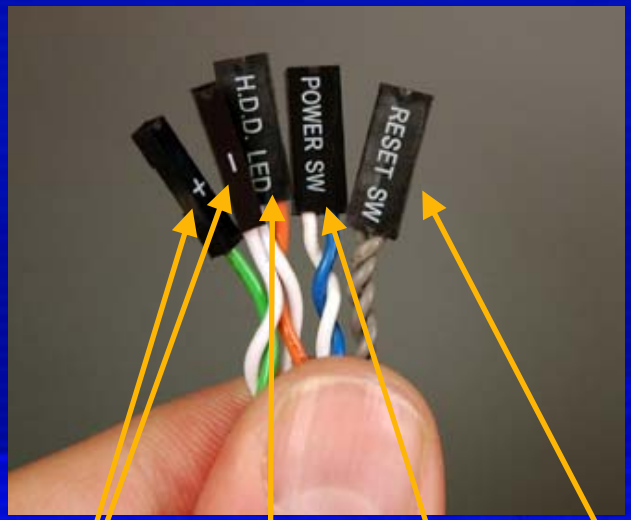
Examine Connectors

3rd – Find and identify front panel leads and connectors

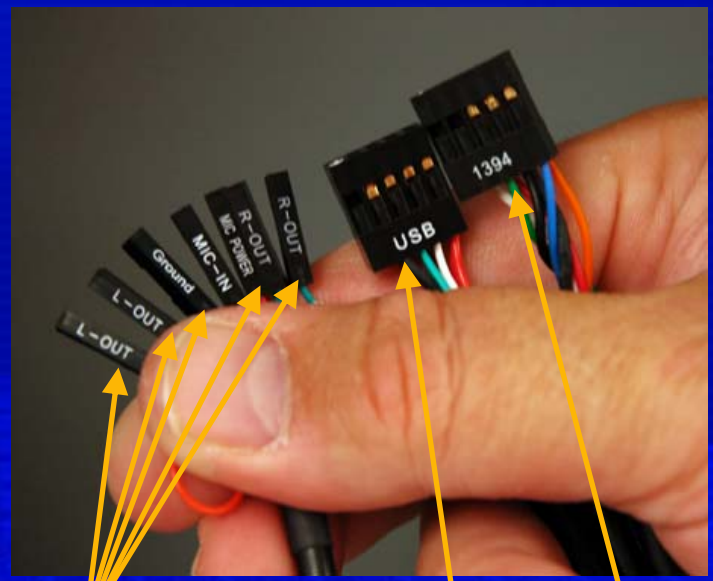


HDD L.E.D.

Reset Switch

Power L.E.D.

Power Switch



Audio (Headphone, Microphone)

USB

1394

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Examine Front Panel

1st – Find front switches

Power Switch

Reset Switch

2nd – Find front L.E.D.s

HDD L.E.D.

Power L.E.D.

3rd – Find front panel jacks

USB (2)

Microphone

Headphones

1394

Build Your Own Computer

Sort Case Parts

1st – Identify finer thread screws (for securing DVD and floppy drives)

2nd – Identify wider thread screws (for securing adapters and HDDs)

3rd – Identify which standoffs match each of the two thread types

4th – Sort the screws and standoffs

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Remove Front Panel

1st – Turn case on its side

2nd – Pull out to separate front panel from case

(Don't be timid; pry if necessary)

3rd – Leave front panel near case

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Remove CD/DVD Bay Cover Panel

1st – Unscrew the top panel on both sides

2nd - Push on the panel from the front until it pops out to the rear

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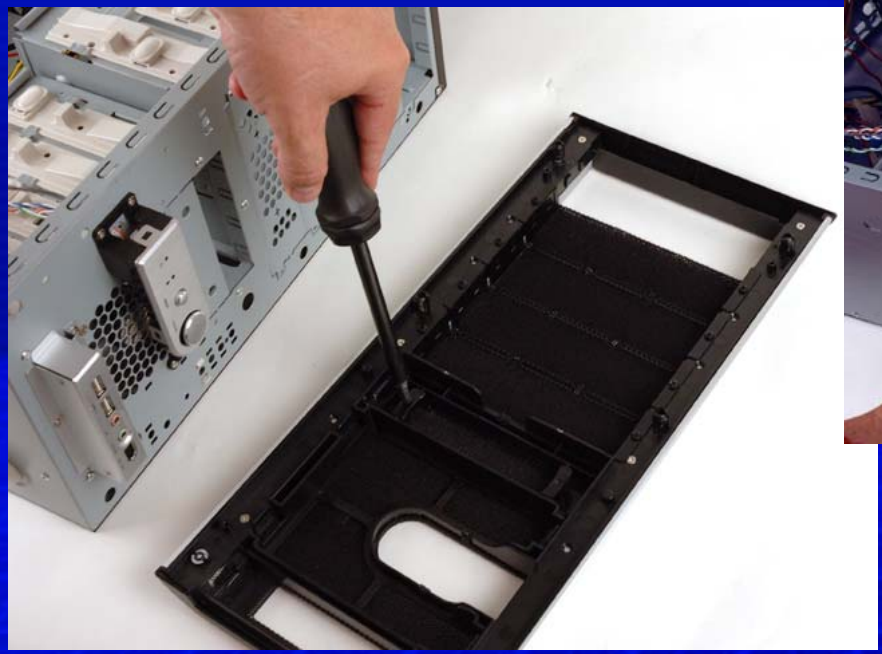
Remove Floppy Bay Cover Panel

1st – Repeat removal procedure for the floppy drive cover panel



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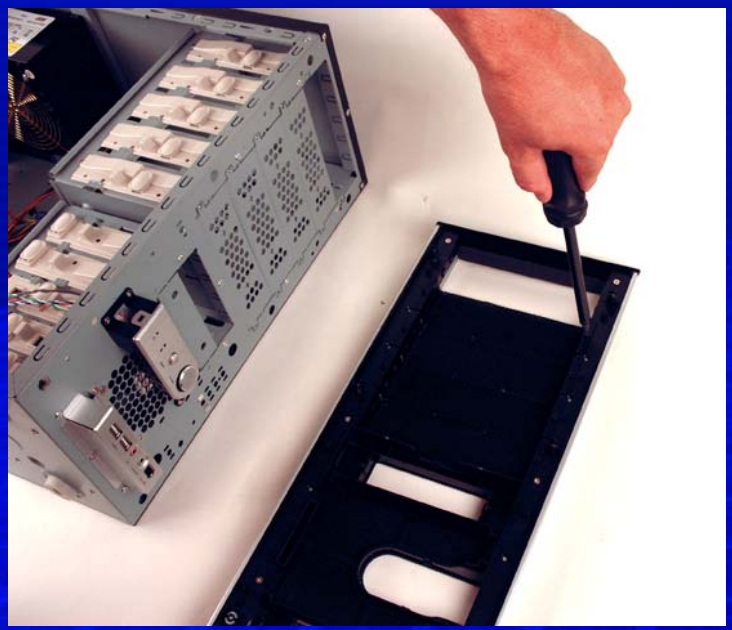
Remove Second CD/DVD Bay Cover Panel

1st – Repeat removal procedure for any additional CD/DVD drives you may be installing

If you purchased two CD or DVD drives



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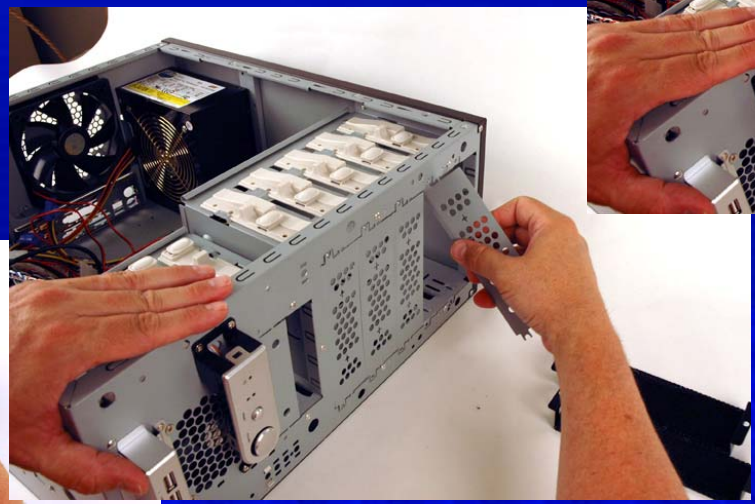
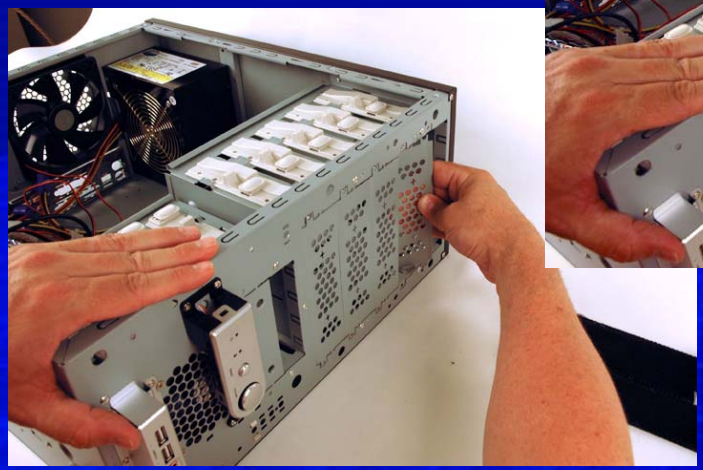
Remove Second CD/DVD Bay Metal Tab

1st – Twist out the metal drive bay tab and remove from case





CAUTION: Edges can be SHARP!

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Re-Attach Front Panel to Case

1st – Align front panel carefully and gently push until it snaps back into place

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Un-box Motherboard

1st – Open the motherboard box and briefly examine the contents

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Attach Motherboard to Case 3.

Build Your Own Computer

Un-box Motherboard

2nd – Remove the motherboard and place it in a safe place on top of its anti-static sleeve.

3rd – Find I/O panel and keep it handy.

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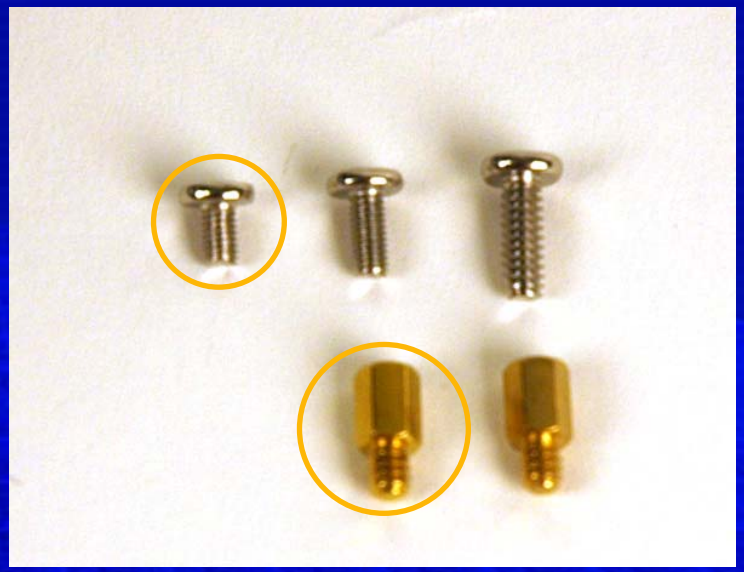
Prepare Case, Screws, and Standoffs

1st – Clear wires from area to receive motherboard

2nd – Find the appropriate quantity of screws and matching-thread standoffs



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Attach Motherboard to Case 3.

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Replace I/O Shield

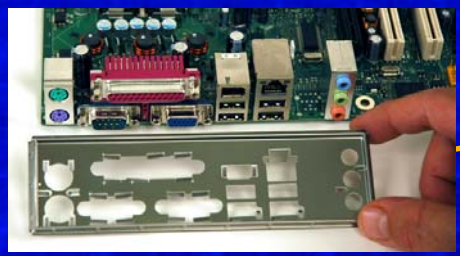
1st – Remove the existing shield by pushing in from the rear

Build Your Own Computer

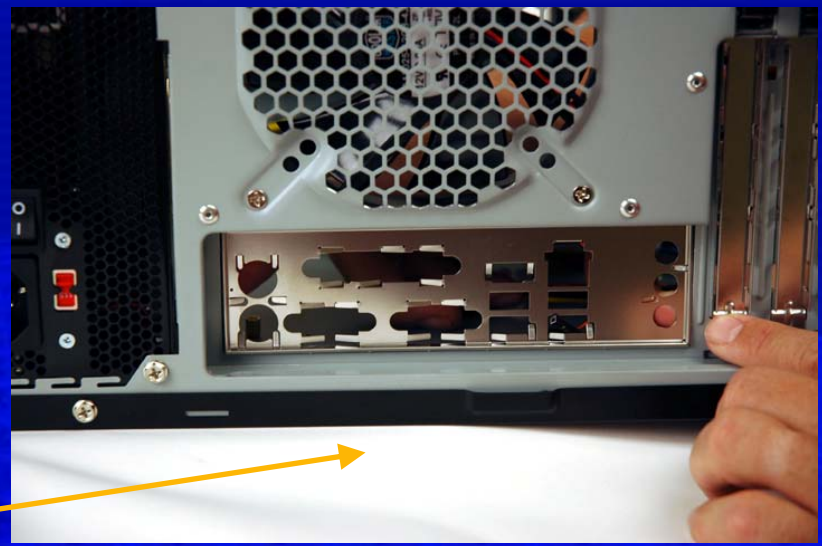
Replace I/O Shield

2nd – Be sure new shield lines up with motherboard I/O panel before installing

Note: Your I/O panel may look different



3rd – Carefully push the new shield into place, one corner and side at a time



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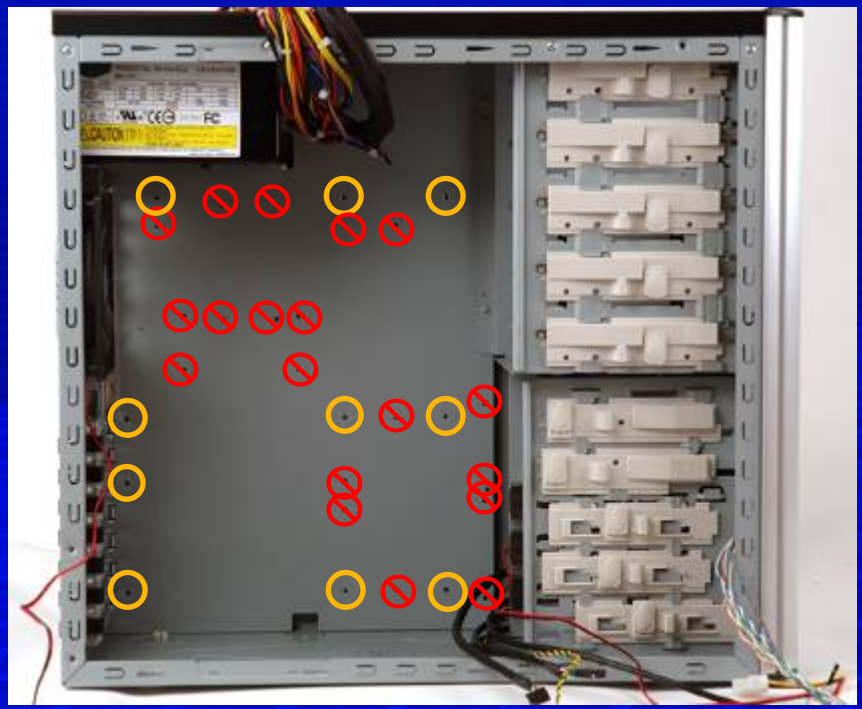
Attach Motherboard

1st – Identify mounting holes on motherboard and corresponding holes in case



2nd – By hand, screw brass standoffs into the appropriate threaded holes in case

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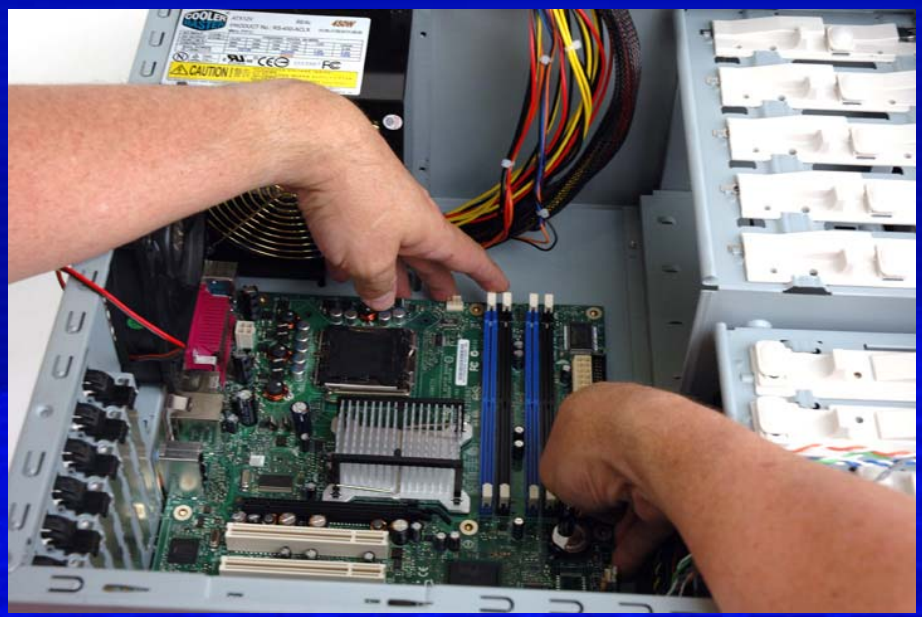
Attach Motherboard to Case 3.

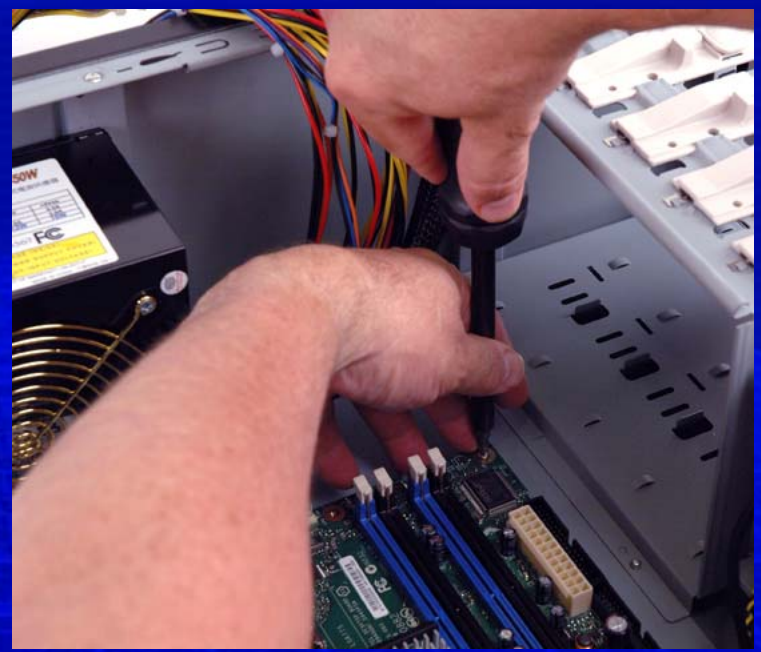
Build Your Own Computer

Attach Motherboard

3rd – Carefully position motherboard on standoffs, aligning rear panel with I/O shield



4th – Holding motherboard in place with one hand, tighten screw in top right standoff with the other hand



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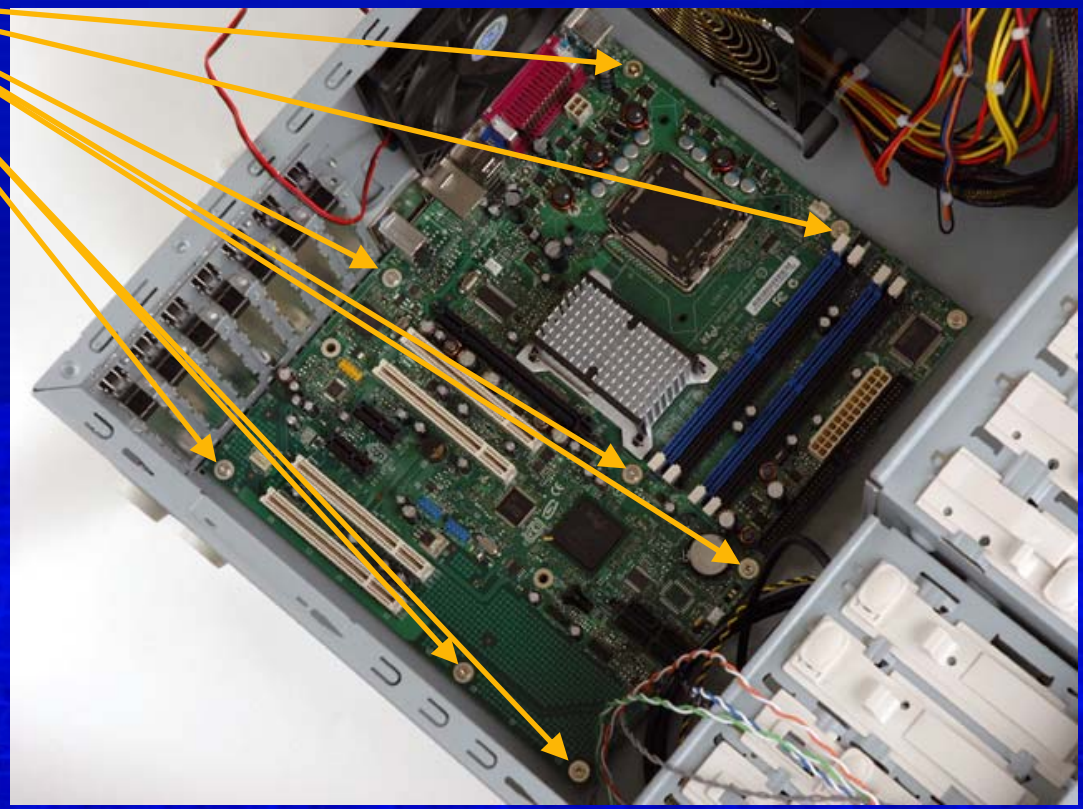
Attach Motherboard to Case 3.

Build Your Own Computer

Attach Motherboard

5th – Repeat for remaining screws and standoffs



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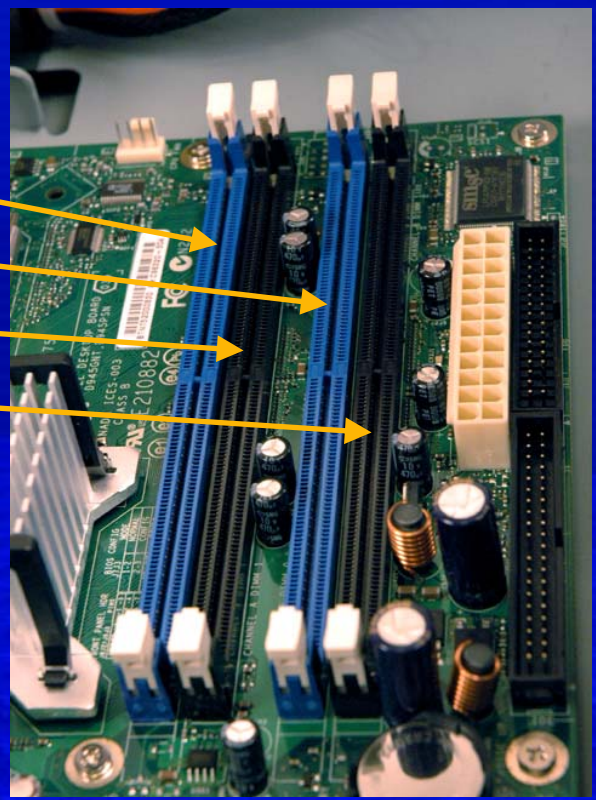
Attach Motherboard to Case 3.

Build Your Own Computer

Install Random Access Memory (RAM)

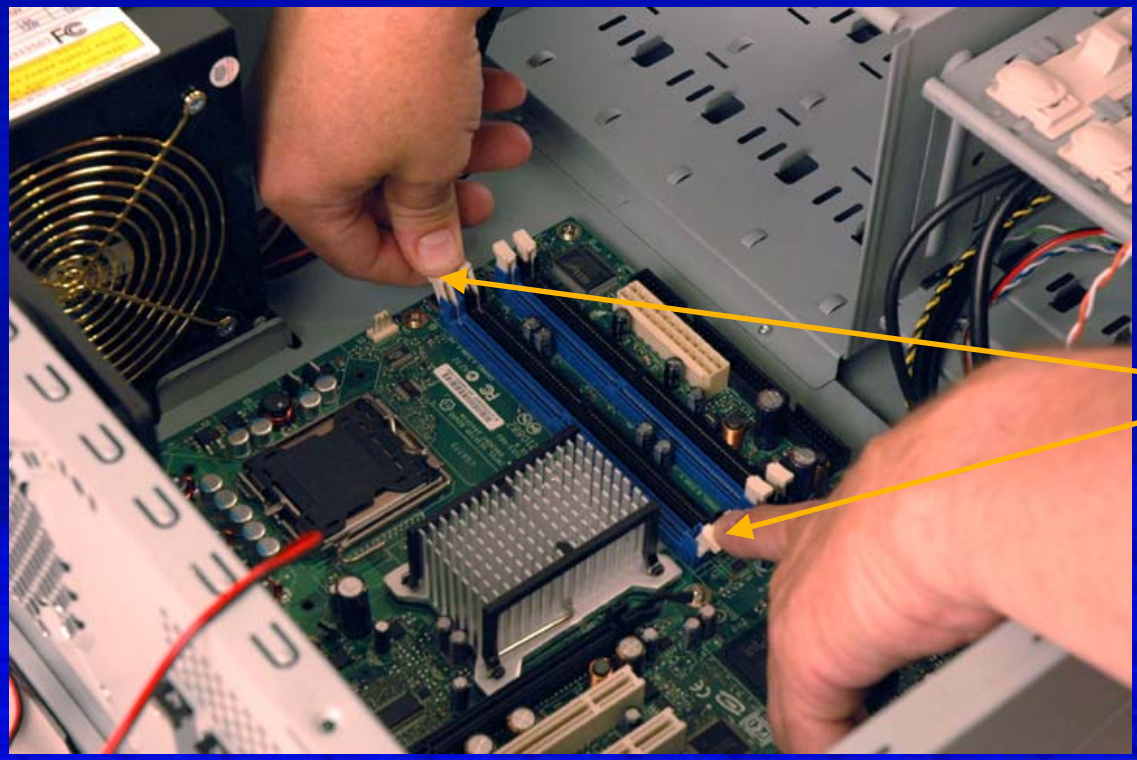
1st – Choose appropriate slot(s):

- First module
- Second
- Third
- Fourth



Build Your Own Computer

Install Random Access Memory (RAM)



2nd – Ensure locking levers are rotated outward and lowered

Build Your Own Computer

Install Random Access Memory (RAM)

3rd – Remove memory from anti-static packaging

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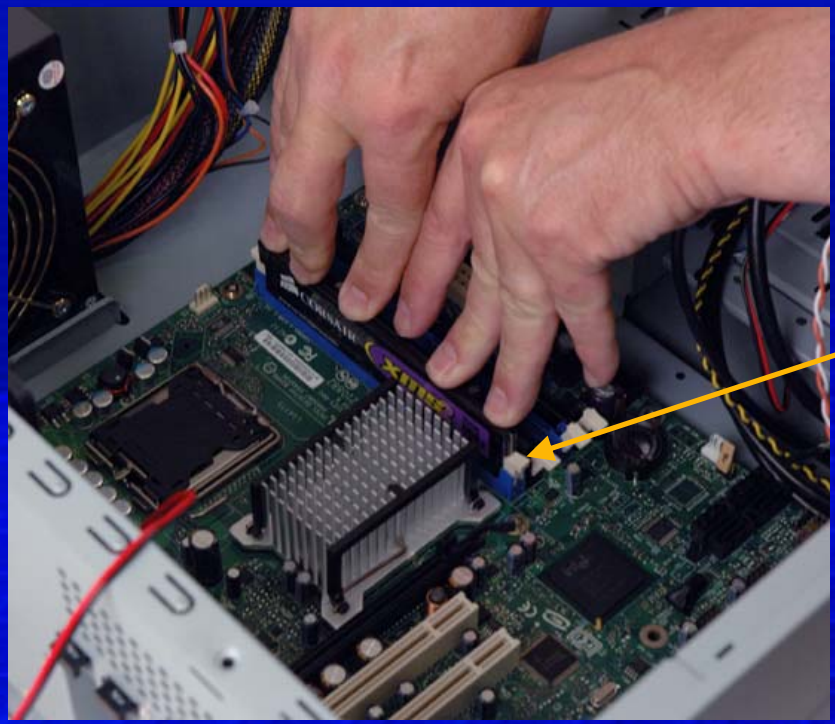
Install Random Access Memory (RAM)

4th – Align memory module with slot and push firmly into place



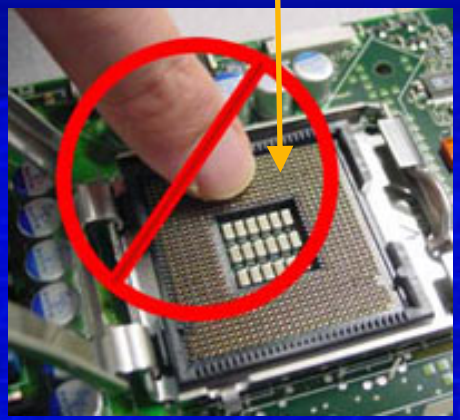
5th – If white locking levers on side did not click and raise automatically, manually lift them into the closed position, locking module in place

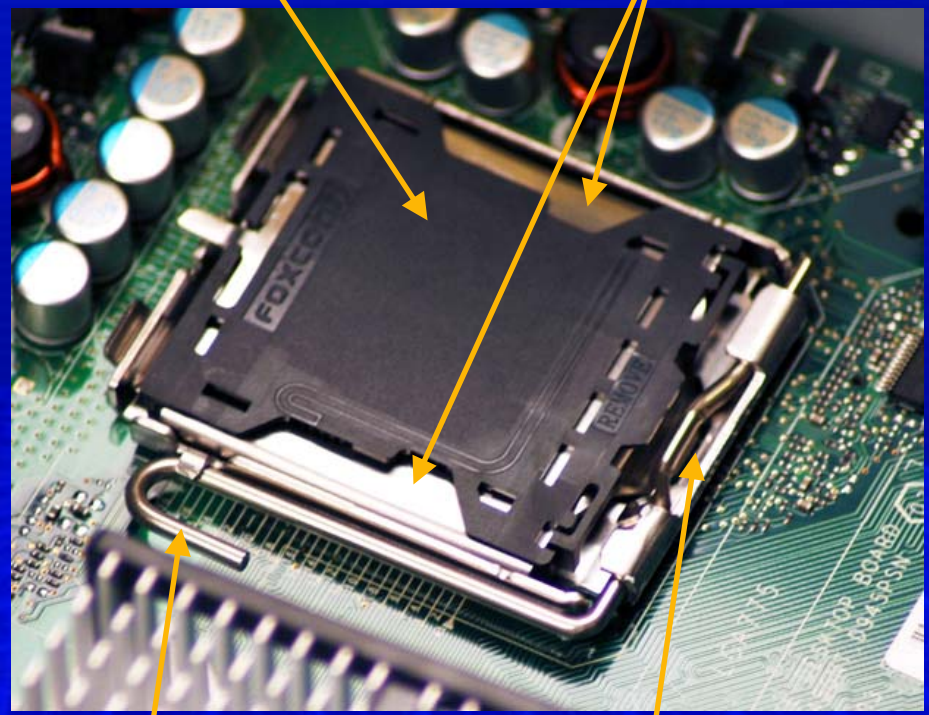
Build Your Own Computer

Install Processor

1st – Identify processor socket components

NEVER TOUCH Socket Contacts Beneath Load Plate Cover

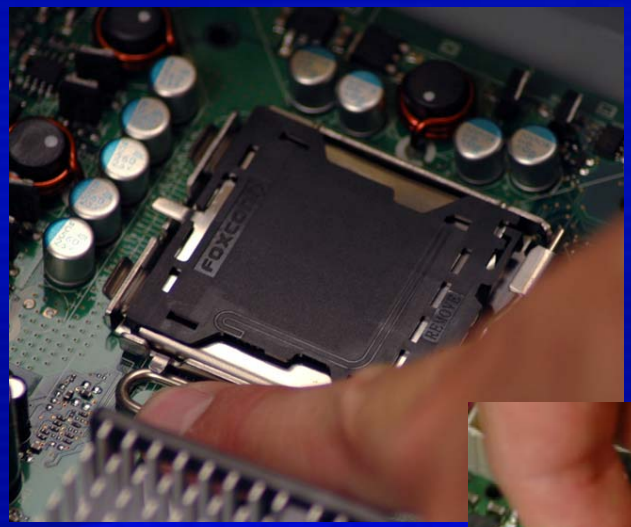


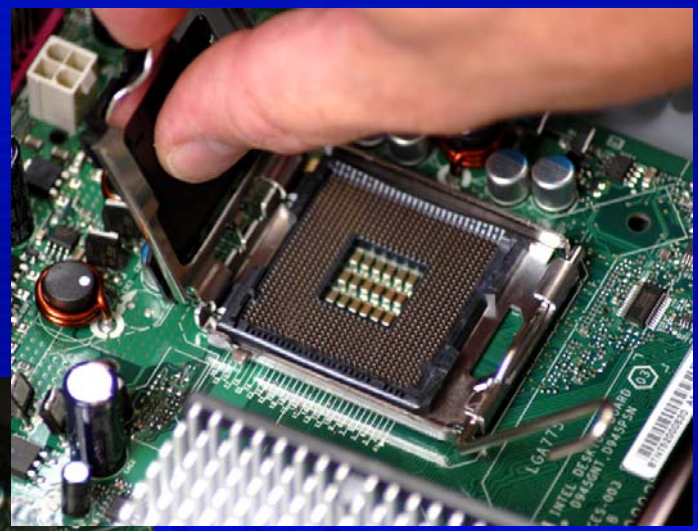


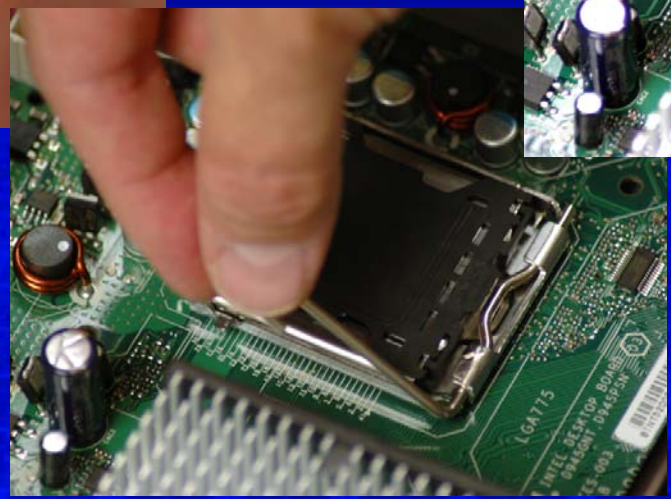
Build Your Own Computer

Install Processor

2nd – Lift open load plate and remove black load plate cover







Build Your Own Computer

Install Processor

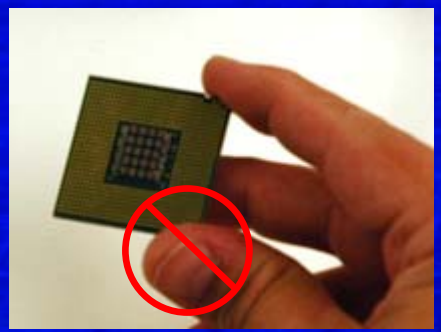
3rd – Open processor box

Build Your Own Computer

Install Processor

4th – Remove processor from packaging

DO NOT TOUCH
Gold Processor Contacts
- Hold Carefully by Edges Only!

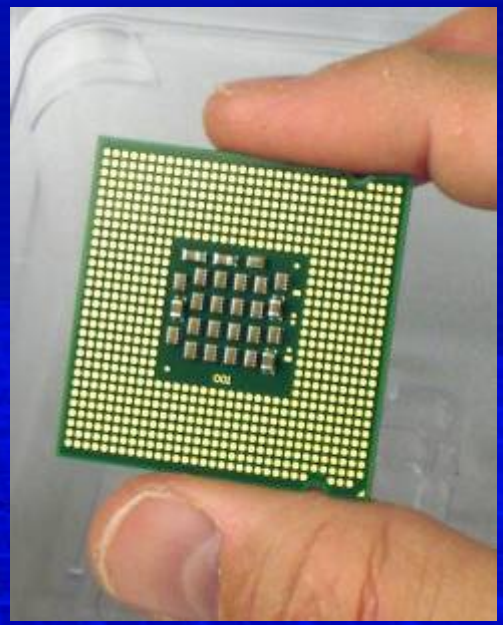


Build Your Own Computer

Install Processor

5th – Remove black protective cover; set aside with box

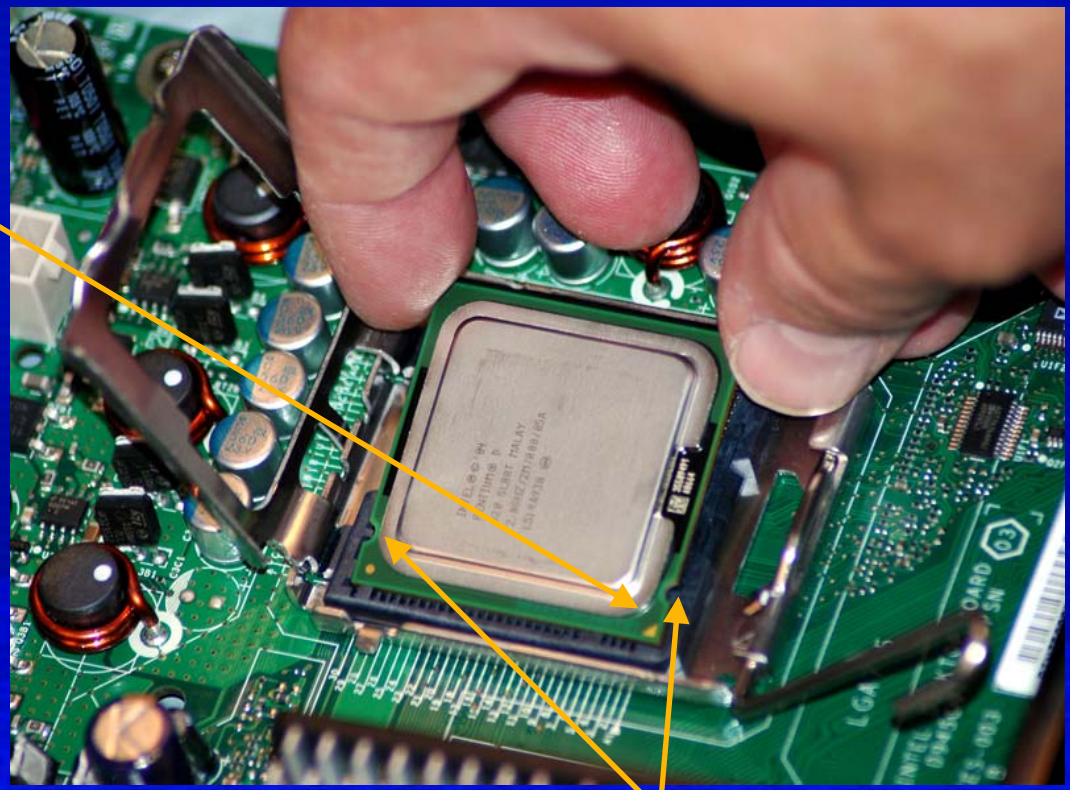
6th – Visually inspect gold processor contacts



Build Your Own Computer

Install Processor

7th – Hold processor with contacts down and align triangle mark as shown



8th – CAREFULLY align key notches on processor with orientation tabs on socket and GENTLY place processor in socket

Build Your Own Computer

Install Processor

9th – Before proceeding, carefully verify that processor is properly seated. If in doubt, seek a reliable second opinion.

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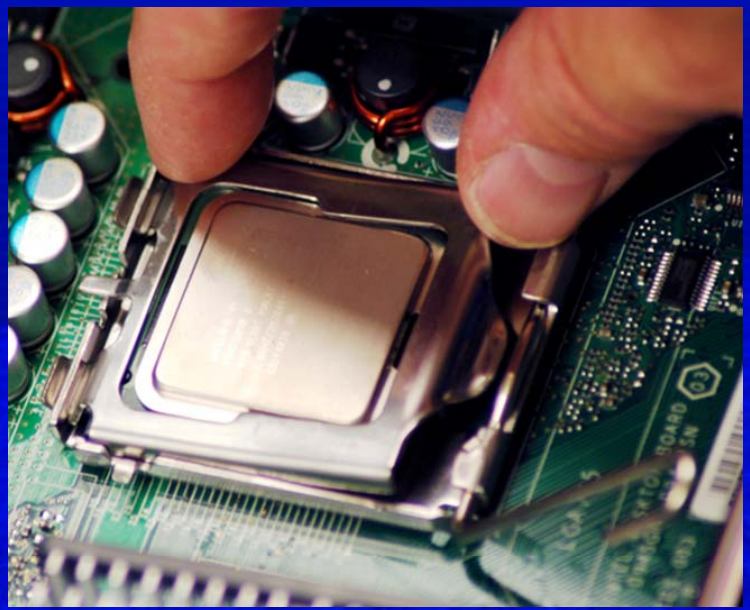
Install Processor

10th – Gently close the socket plate being sure that load plate tab engages with load lever



11th – Lower and lock load lever

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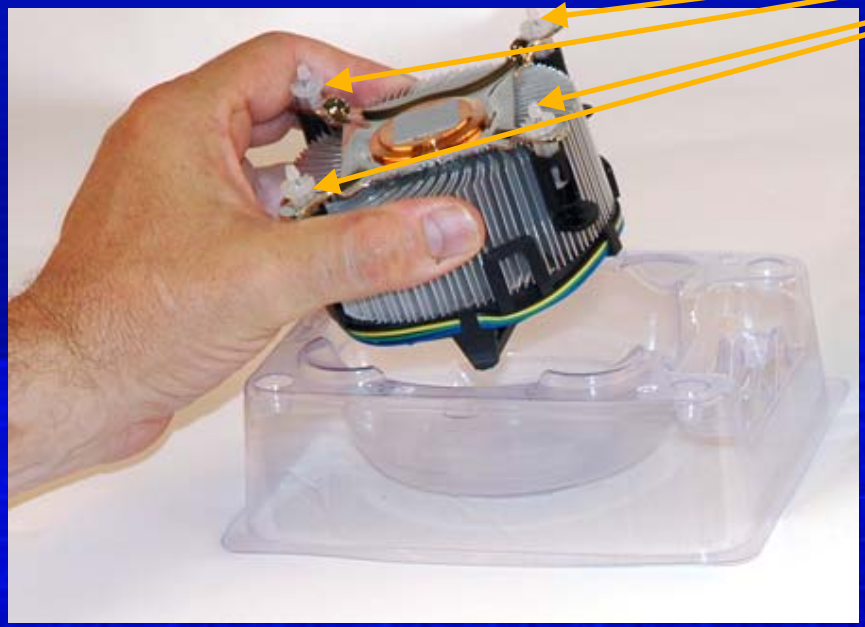
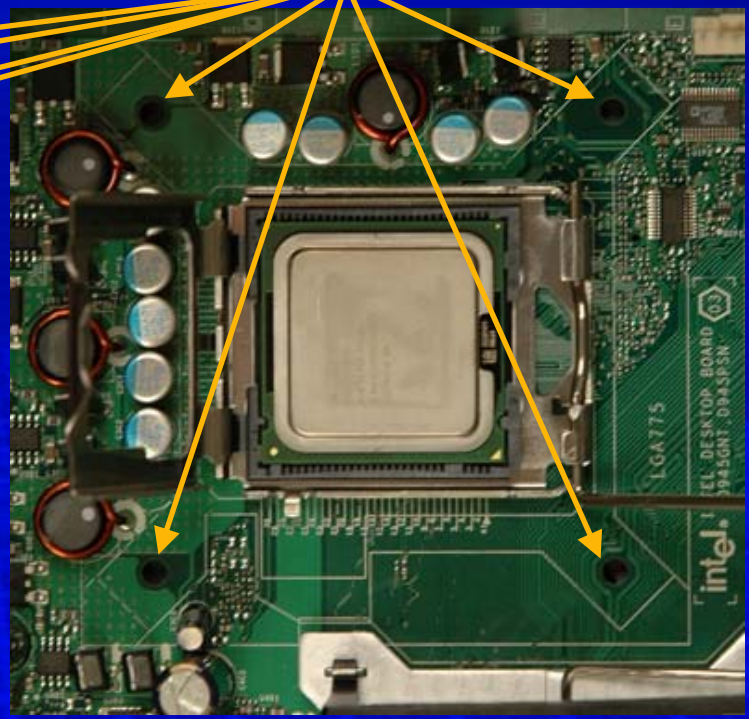
Install Cooling Unit

1st – Remove heat sink from clear plastic packaging

2nd – Identify and align four fasteners with corresponding through-holes in motherboard





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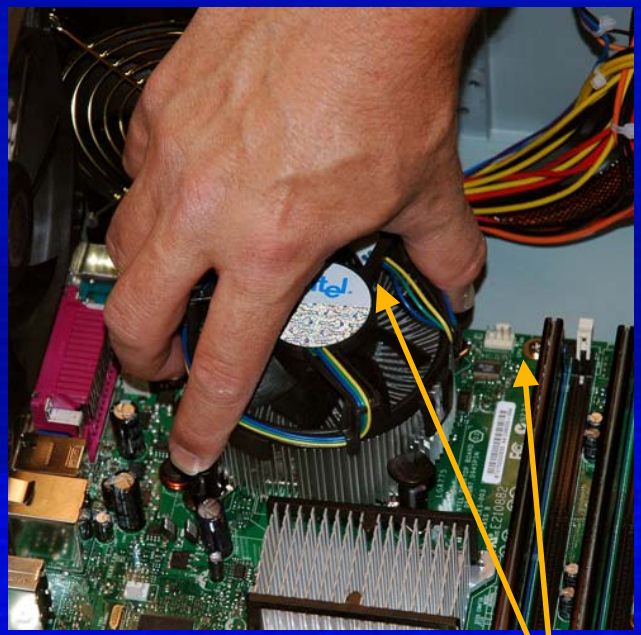
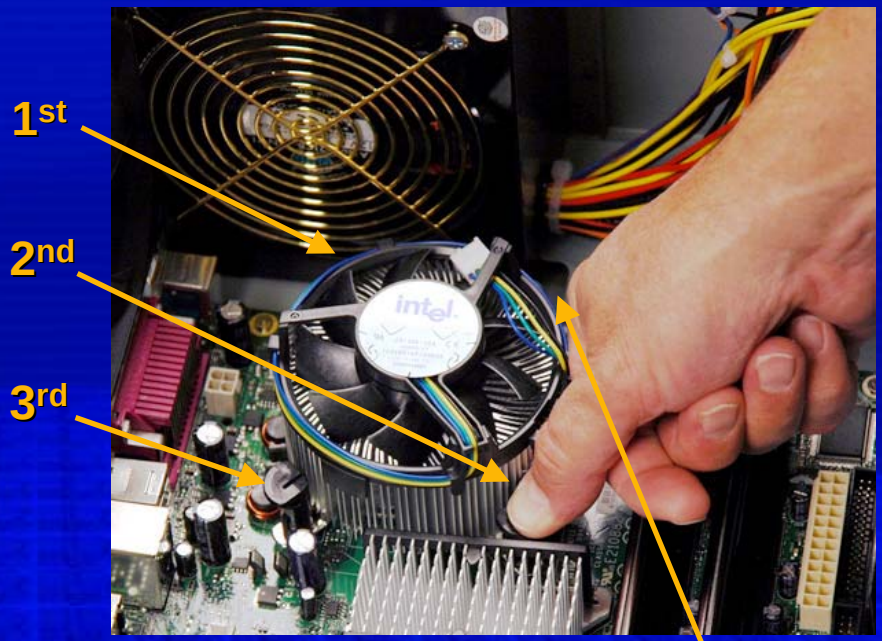
Install Cooling Unit

3rd – Orient and place on CPU socket as shown



4th – Press down on each fastener cap until it snaps into place. Verify proper seating.

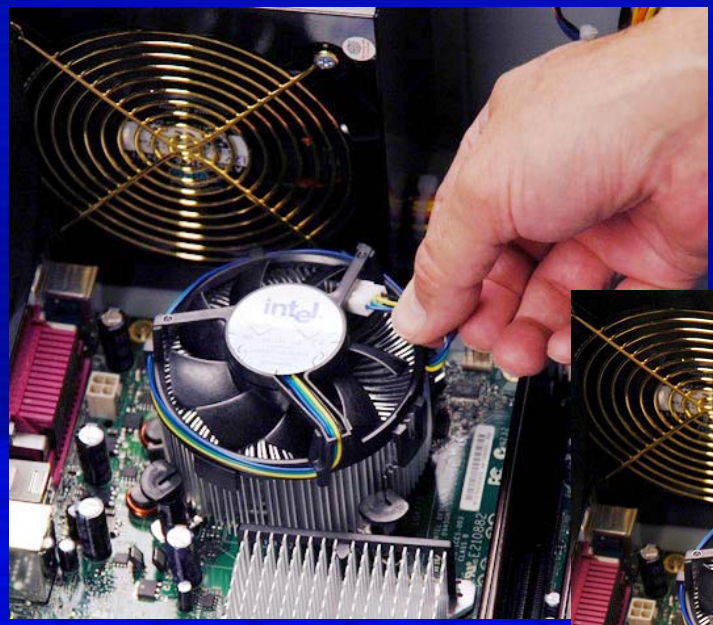


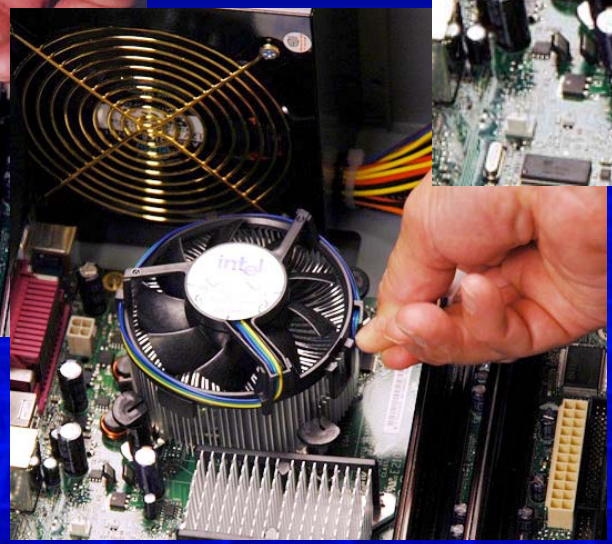
Pay special attention to be sure the CPU fan connector can reach the corresponding plug on the motherboard

Build Your Own Computer

Install Cooling Unit

5th – Free CPU fan connector from clasp and plug into motherboard





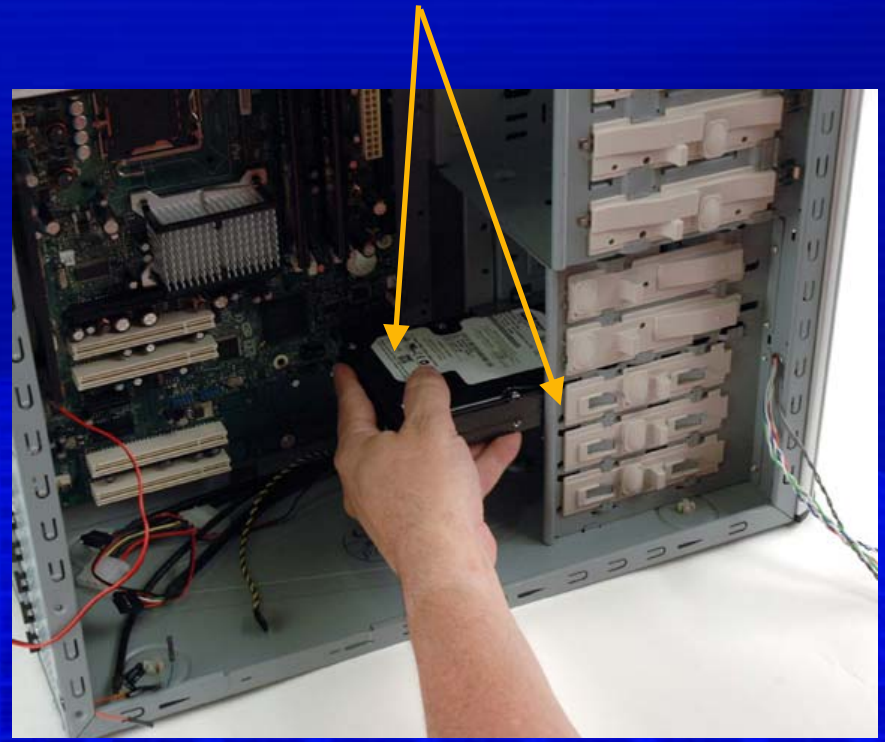
Be sure wire won't interfere with fan

Build Your Own Computer

Install and Attach Hard Disk Drive

1st – Carefully remove drive from anti-static sleeves

2nd – Slide hard disk drive into the appropriate 3.5” (smaller) bay



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Mount Drives 6.

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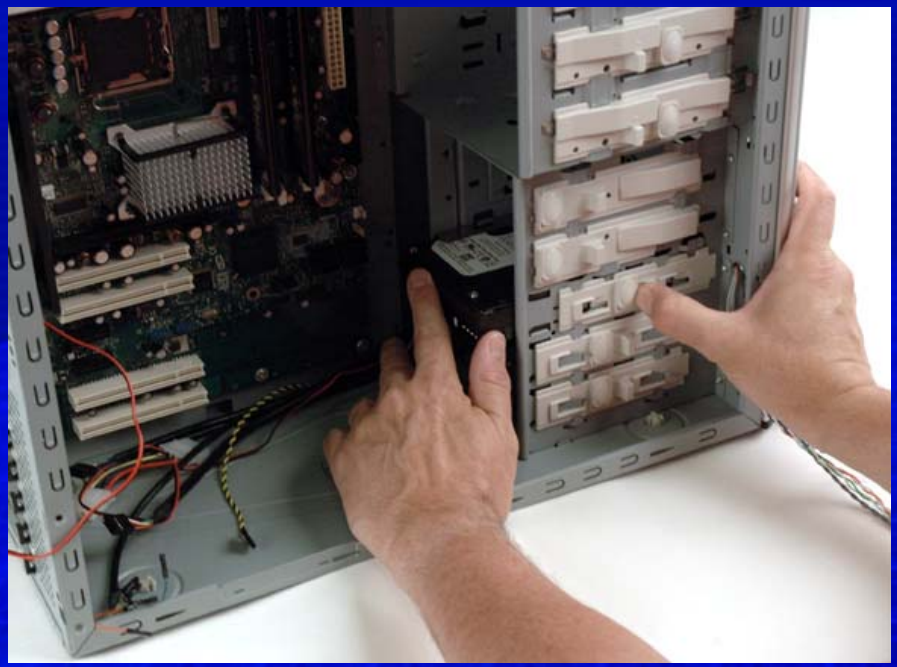
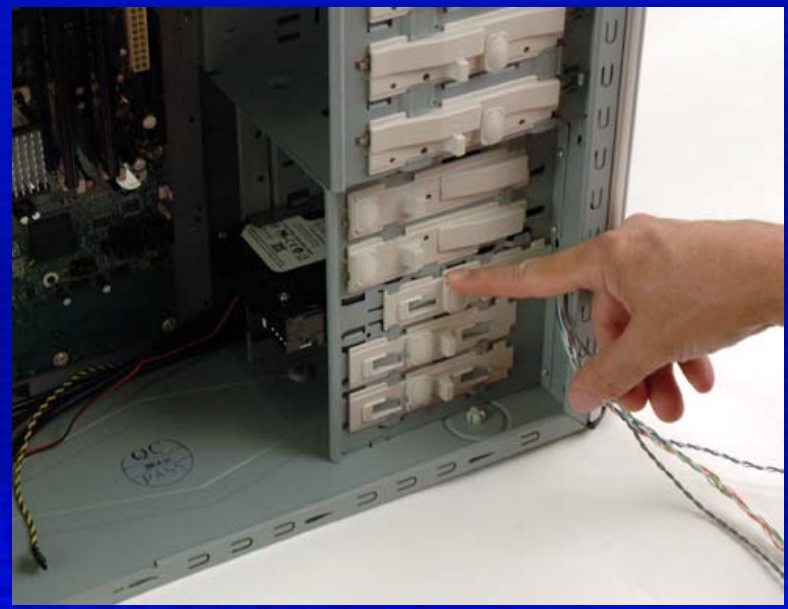
Install and Attach Hard Disk Drive

3rd – Secure hard disk drive to case by pushing latch forward and locking latch mechanism



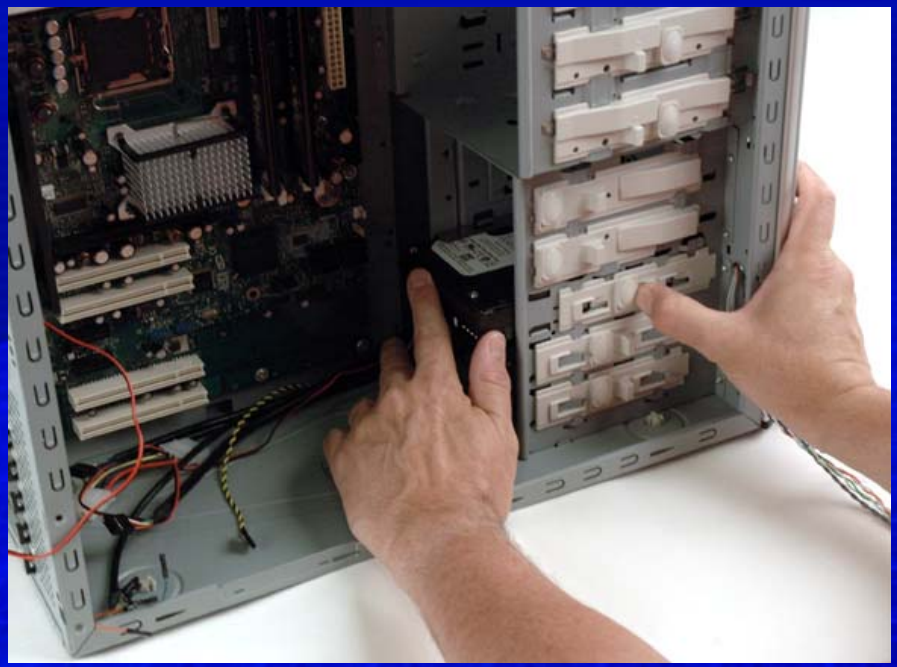


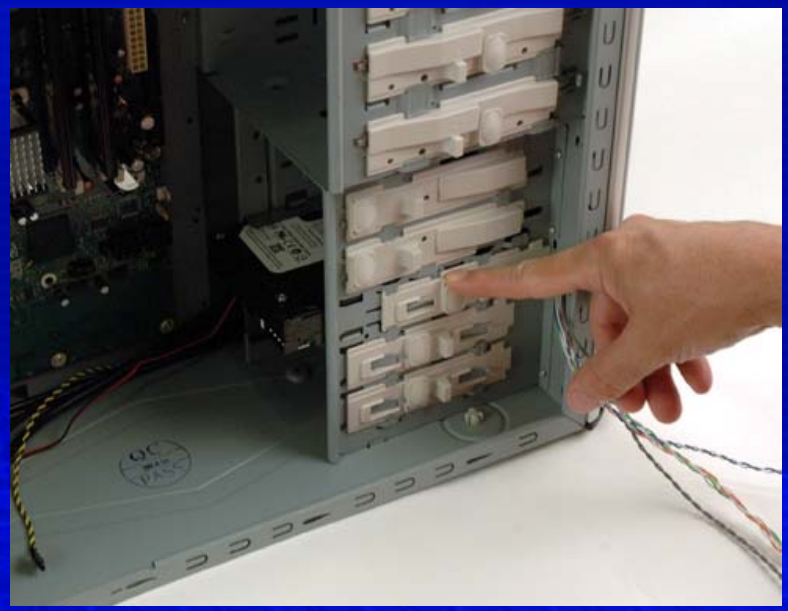
Build Your Own Computer

Install and Attach Other Hard Disk Drives

If you purchased two or more hard disk drives

1st – Repeat hard disk installation procedure for each hard disk you need to install.





Build Your Own Computer

Install and Attach CD / DVD Drive(s)

1st – Unbox CD / DVD drive(s). Check jumper(s) to be sure they're set to CSEL or CS (Cable Select).

Build Your Own Computer

Install and Attach CD / DVD Drive(s)

2nd – Slide first (or only) CD/DVD drive into the top 5.25” (larger) bay from the front

Build Your Own Computer

Install and Attach CD / DVD Drives

3rd – Secure CD / DVD drive to case by pushing latch forward and locking latch mechanism

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Install and Attach CD / DVD Drive(s)

If you purchased two CD or DVD drives

4th – Slide second CD/DVD drive into the next 5.25” bay

5th – Secure by pushing and locking latch

Build Your Own Computer

Install and Attach Floppy Drive

1st – Slide floppy drive into the 3.5” (smaller) bay from the front

Build Your Own Computer

Install and Attach Floppy Drive

2nd – Secure floppy drive to case by pushing latch forward and locking latch mechanism

Build Your Own Computer

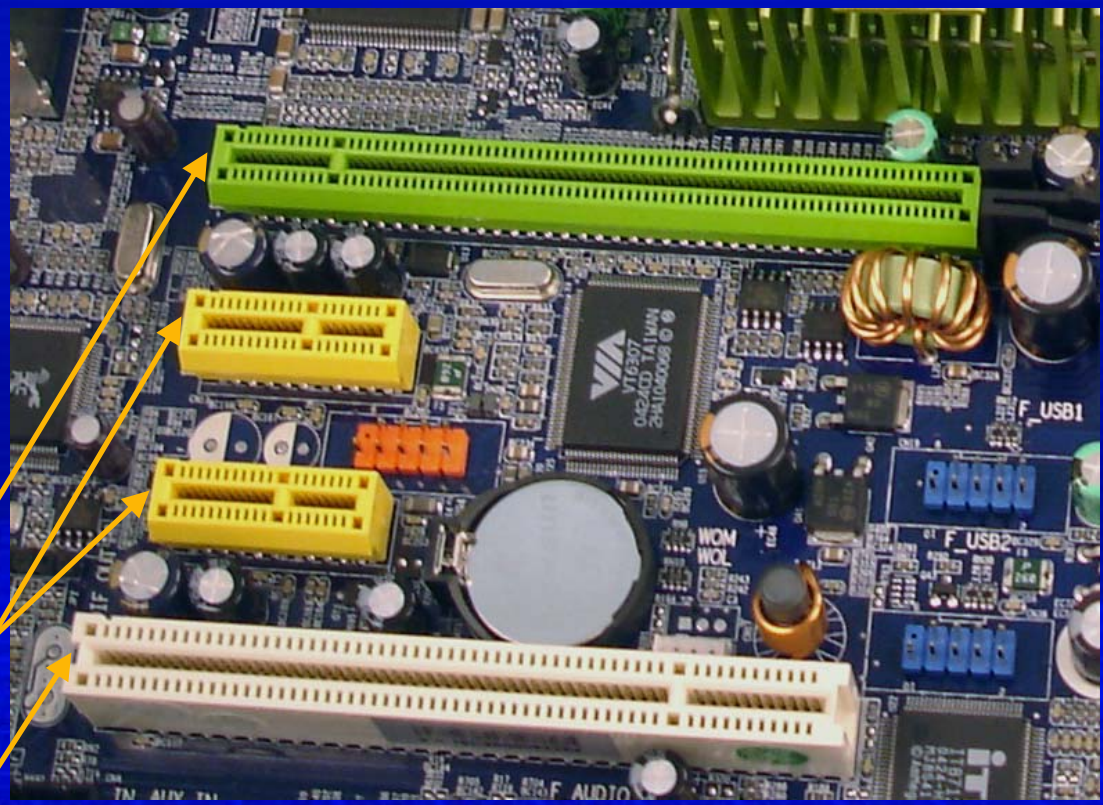
Install Optional Adapters

1st – *If you have an additional adapter, identify its appropriate slot. Use the following example to help make the match.*

PCI Express x 16 slot

PCI Express x 1 slots

PCI Expansion slot

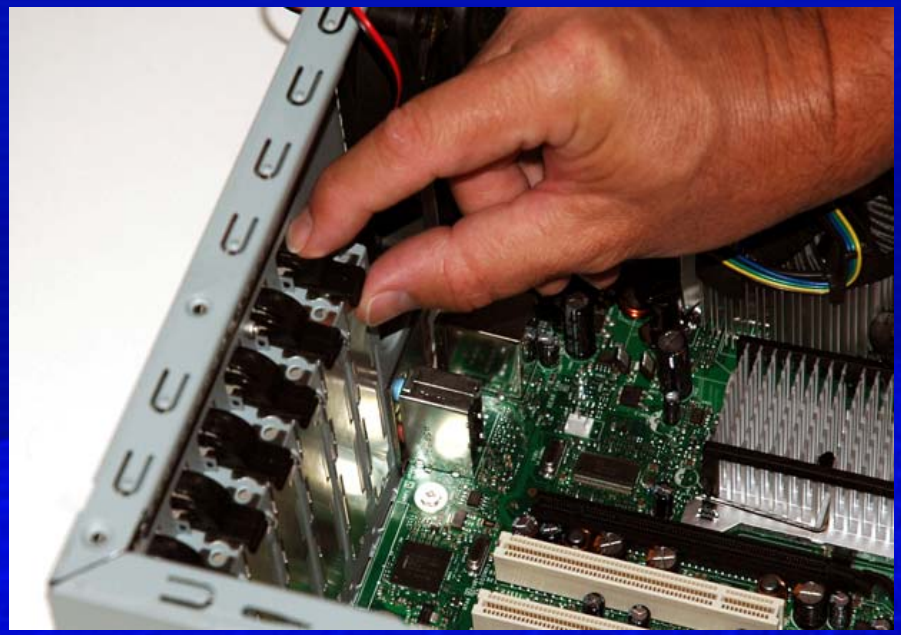


Build Your Own Computer

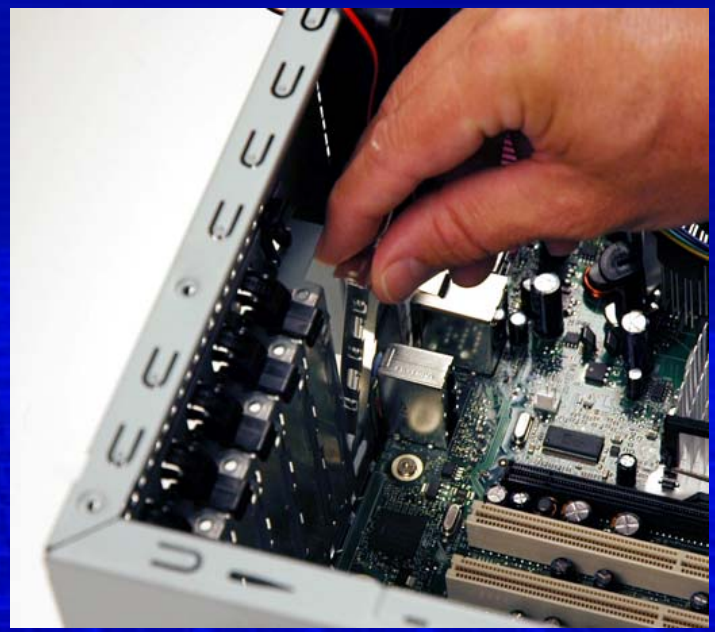
Install Extra Graphics Adapter

If you purchased an ultra high-performance graphics adapter

1st – Press down and lift rear I/O slot latch



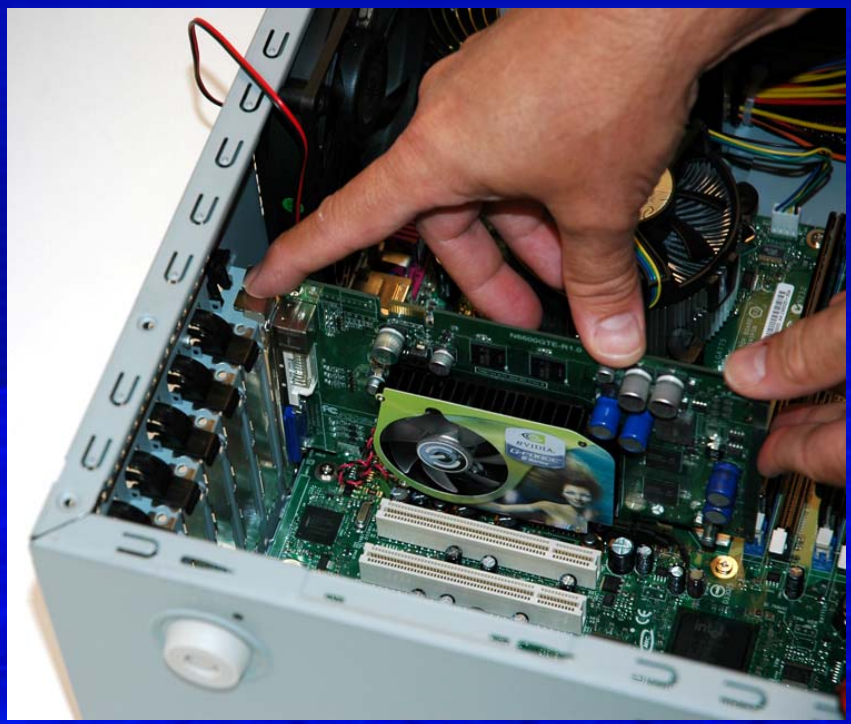
2nd – Remove rear I/O slot cover, leaving slot open



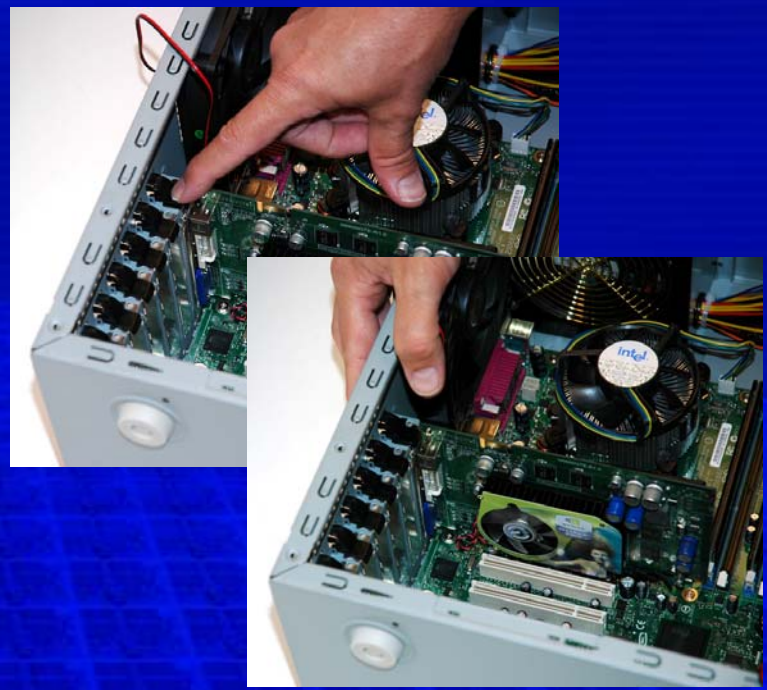
Build Your Own Computer

Install Extra Graphics Adapter

3rd – Carefully align adapter with PCI Express 16X slot and rear slot and gently press into place



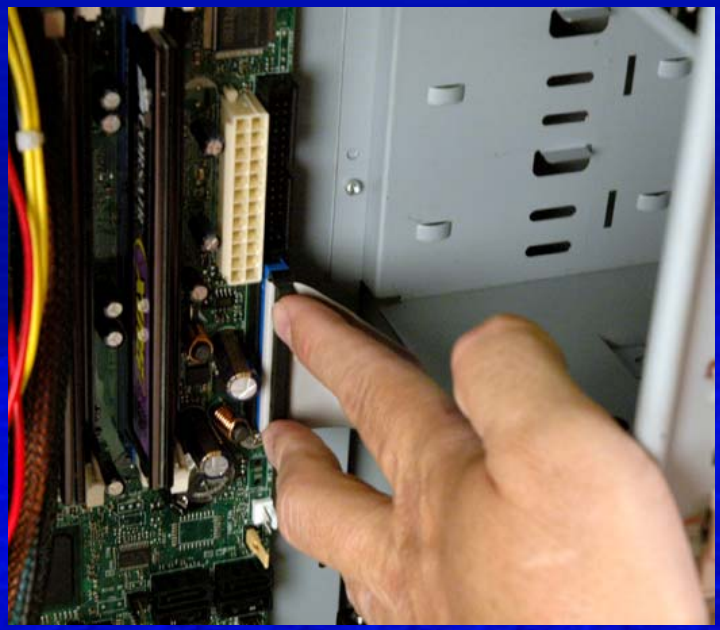
4th – Secure adapter by pressing on rear I/O slot latch until it snaps into place



Build Your Own Computer

Connect CD/DVD Drive(s) to Motherboard

1st – Plug blue connector at end of IDE ribbon cable into motherboard IDE interface



2nd – Plug the keyed connector(s) at the other end of the ribbon cable into the DVD drive(s)

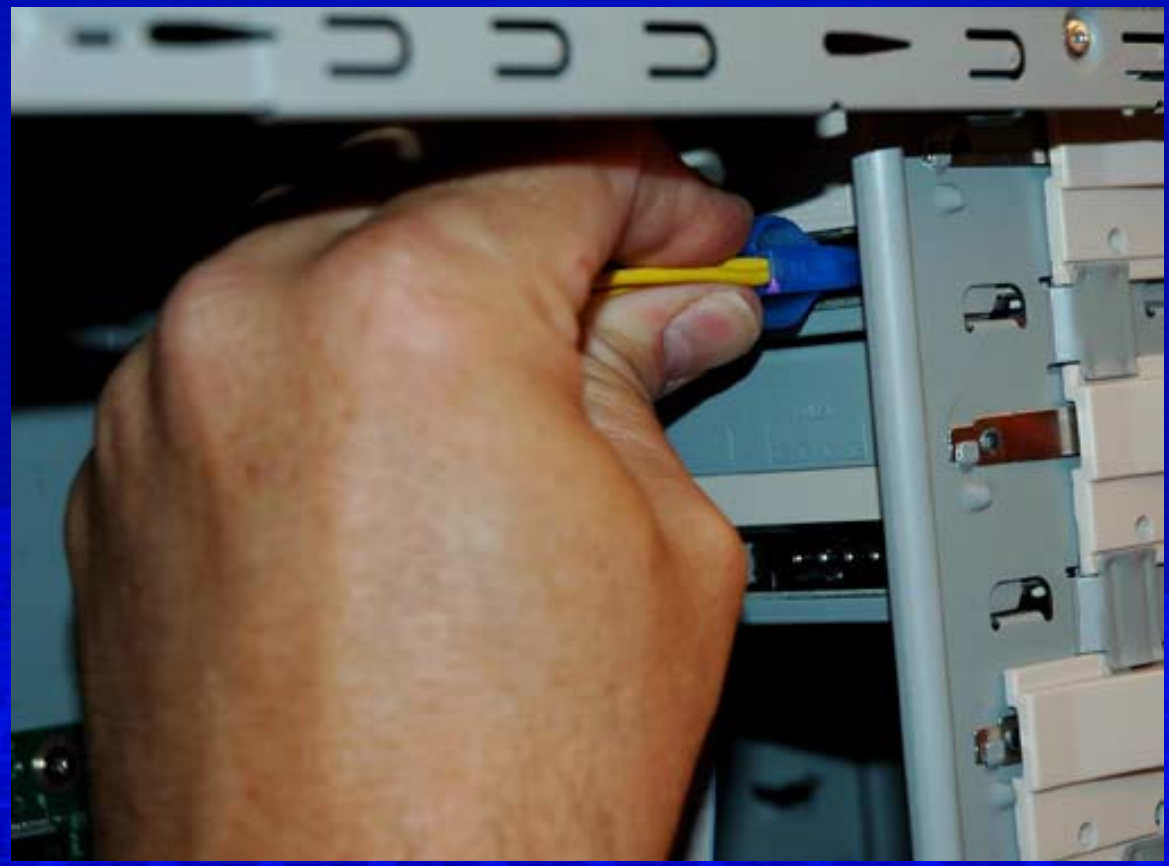
intel

Connect Wires 8.

Build Your Own Computer

Connect Power Leads to CD/DVD Drives

1st – Connect a four-pin Molex power lead from power supply into the back of each CD/DVD drive



Build Your Own Computer

Connect Floppy Drive to Motherboard

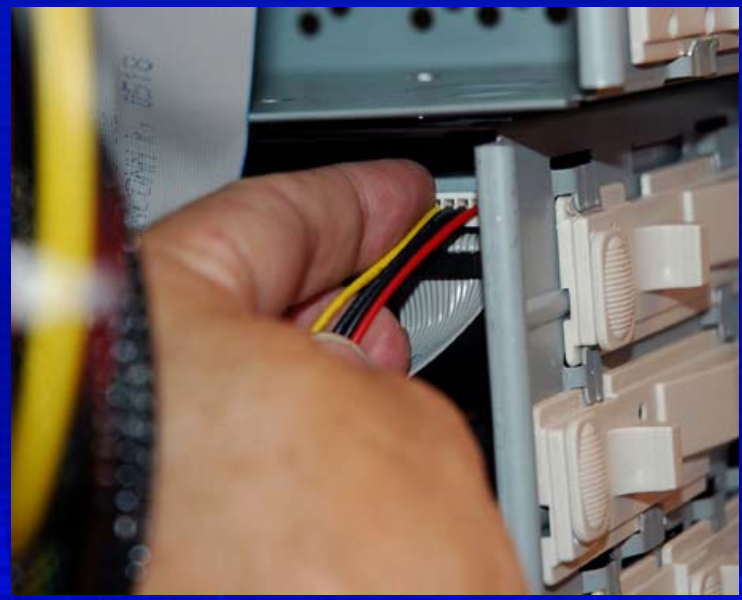
1st – Find floppy cable and plug twisted connector at end into back of floppy drive, with colored stripe towards the center of drive

2nd – Plug connector at other end of floppy ribbon cable into black interface next to power connector

Build Your Own Computer

Connect Power Lead to Floppy Drive

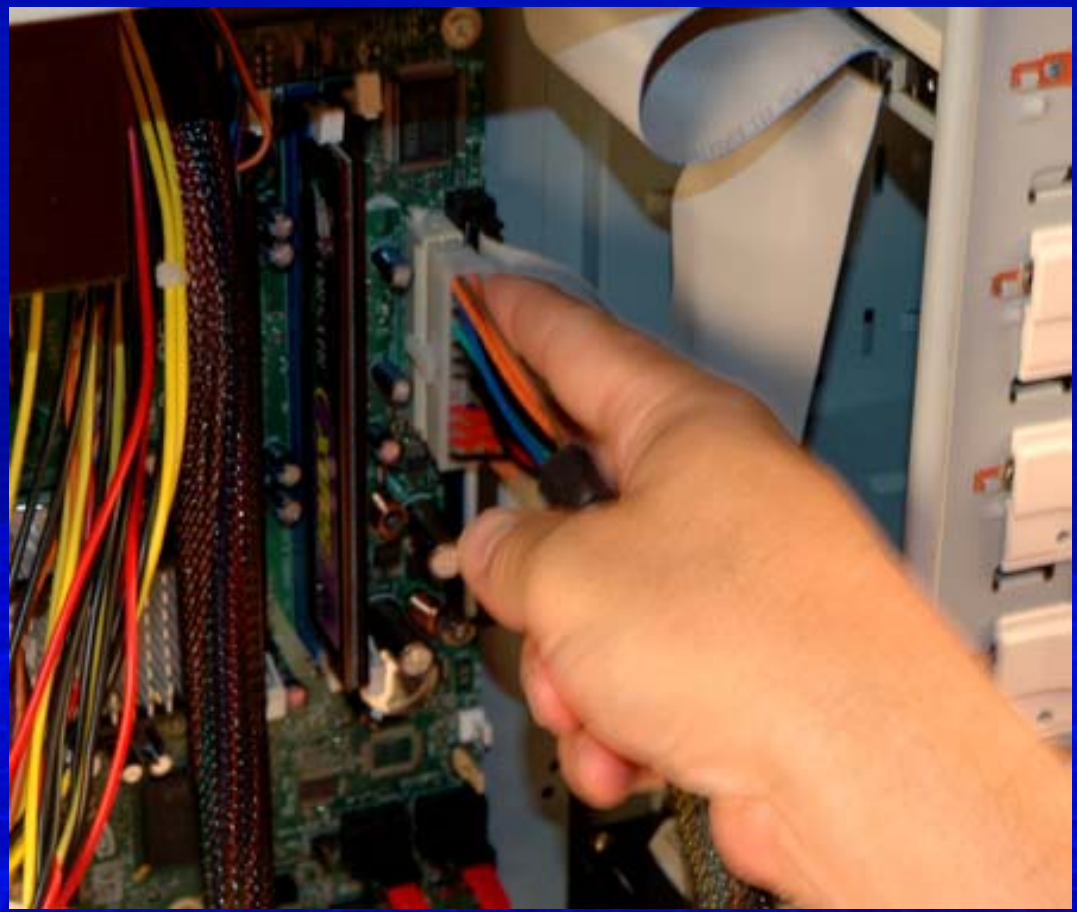
1st – Plug small white connector at end of power lead into the four-pin connector on the back of the floppy drive



Build Your Own Computer

Connect Power Leads to Motherboard

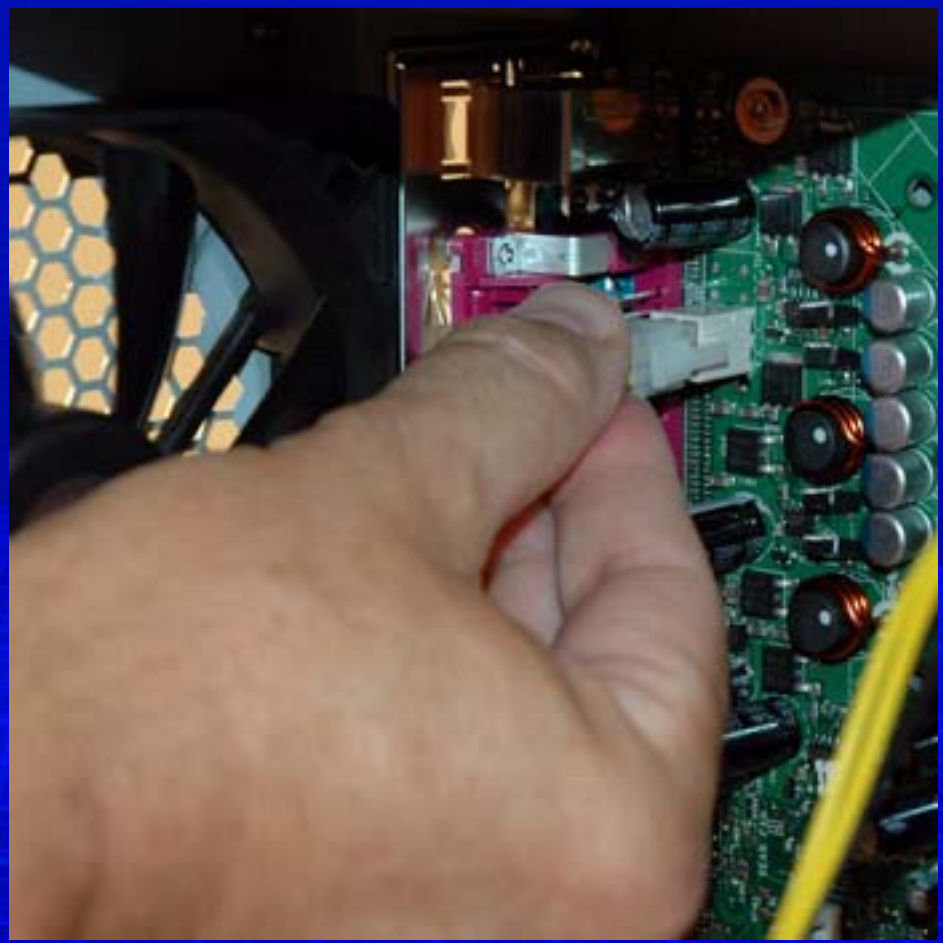
1st – Plug keyed 24-pin power lead into motherboard power interface between memory slots and floppy interface header



Build Your Own Computer

Connect Power Leads to Motherboard

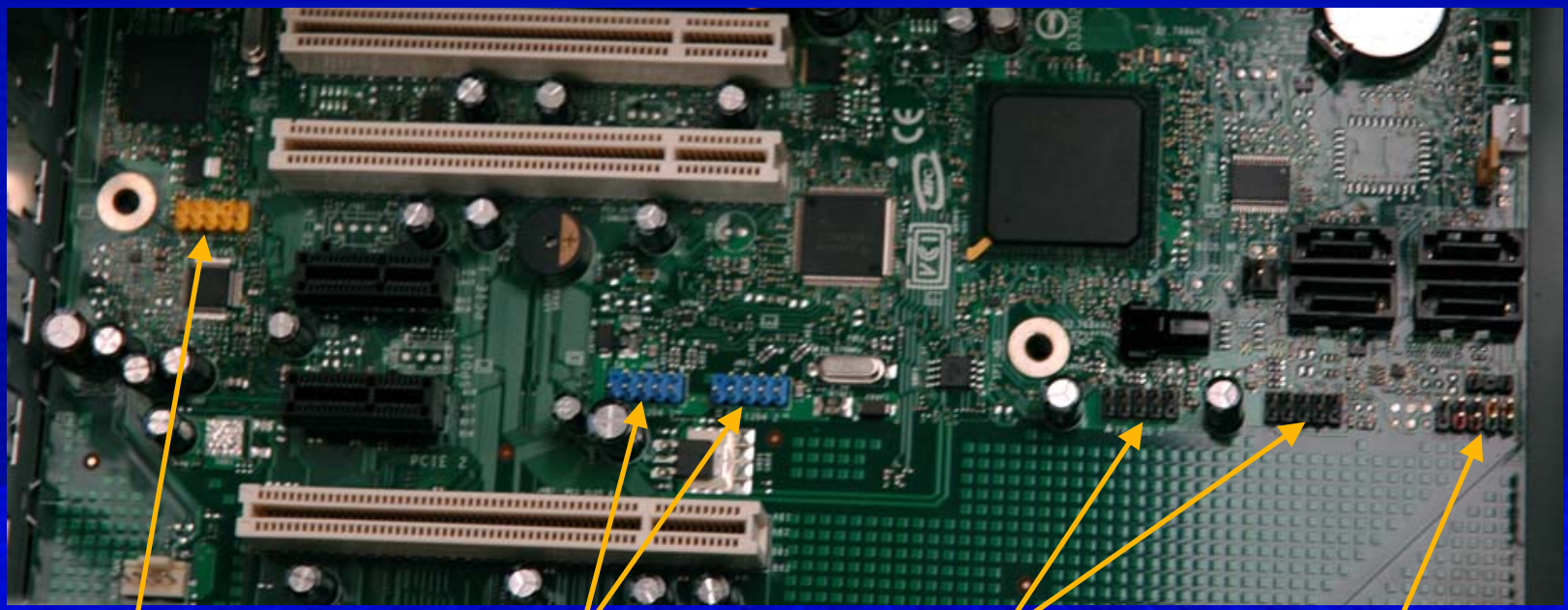
2nd –Plug 4-pin power lead into secondary motherboard power interface near rear I/O panel



Build Your Own Computer

Identify Front Panel Headers on Motherboard

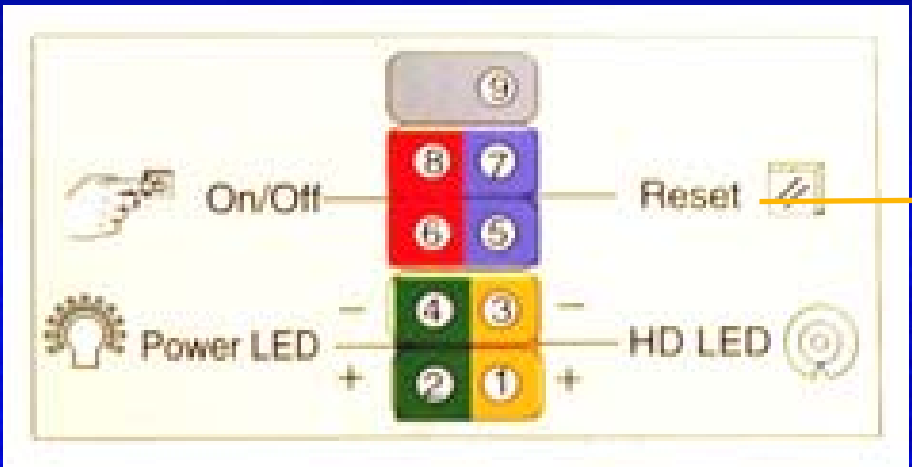
1st – Find the front panel headers on the motherboard

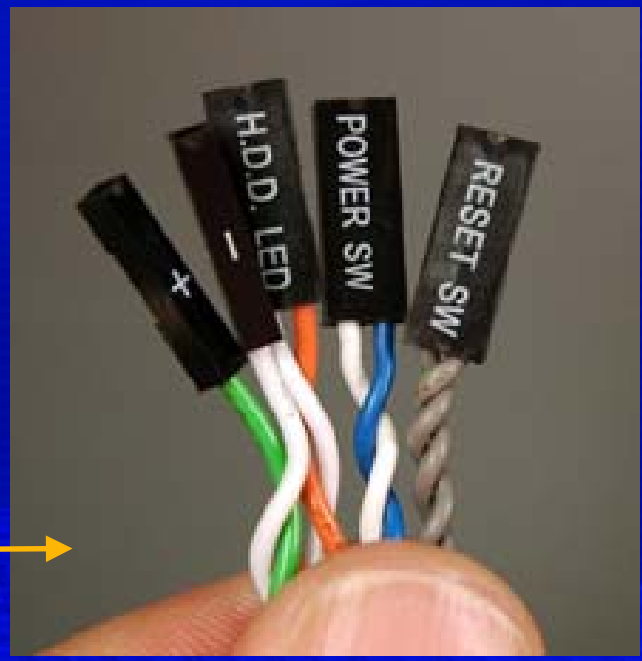


Build Your Own Computer

Connect Switch and LED Leads to Motherboard

1st – Identify the color-coded connections. Match On/Off with Power SW, Reset with Reset SW, HD with HDD LED, and Power LED with + and -



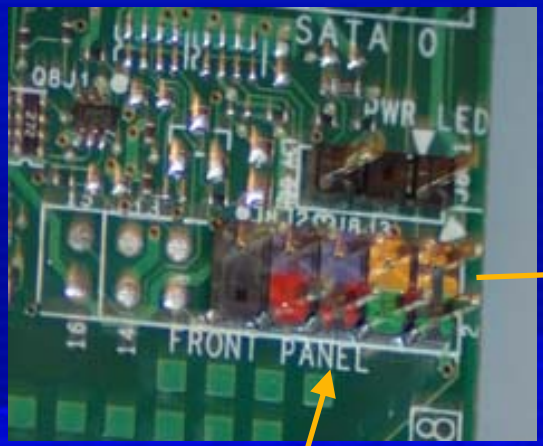


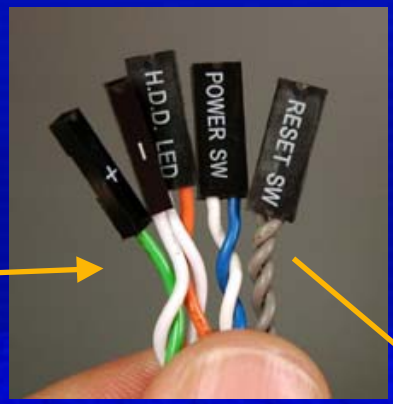
Note that header colors are not intended to correspond with wire colors

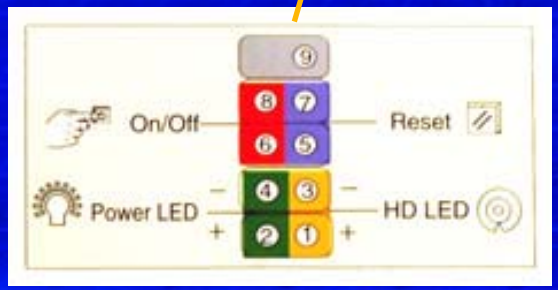
Build Your Own Computer

Connect Switch and LED Leads to Motherboard

2nd – Thread the carbon do-nut over the group of wires, then make the appropriate connections by plugging the respective connectors into the header.







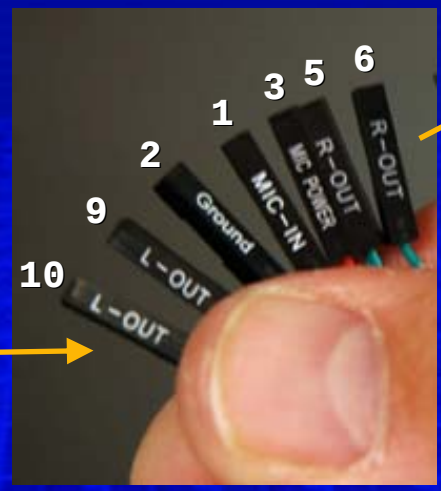
Build Your Own Computer

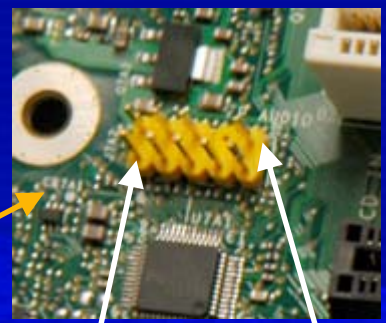
Connect Audio Leads to Motherboard

1st – Identify connections:

Pin 1 = Port1L = Mic-In
Pin 2 = GND = Ground
Pin 3 = Port1R = Mic Power
Pin 5 = Port2R = R-Out
Pin 6 = Sense1_Ret = R-Out
Pin 9 = Port2L = L-Out
Pin 10 = Sense2_Ret = L-Out

2nd – Make the appropriate connections; plug the connectors into the header.

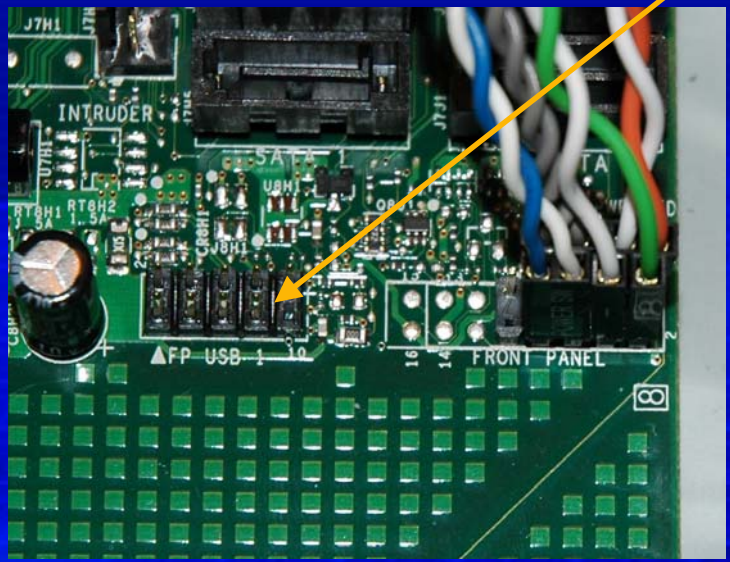


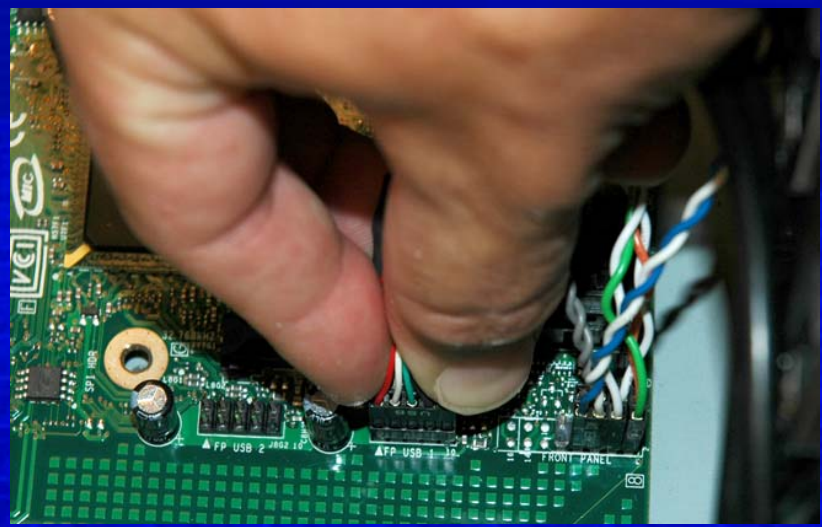


Build Your Own Computer

Plug USB Connector Into Motherboard

1st – Connect keyed USB front panel connector to USB1 interface on motherboard

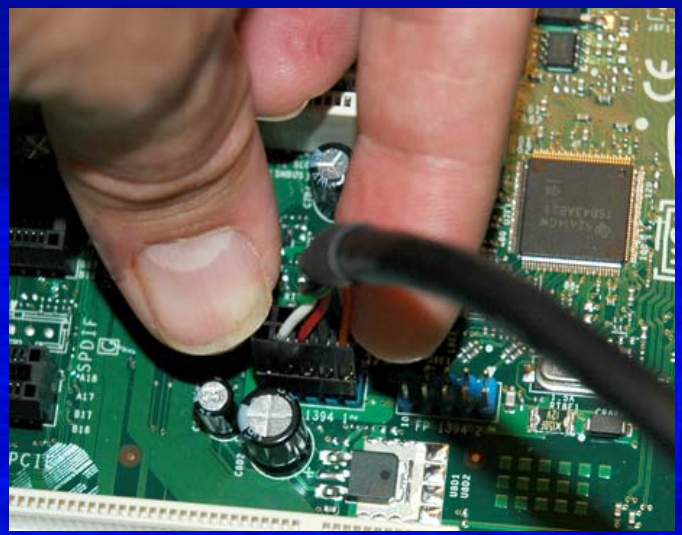


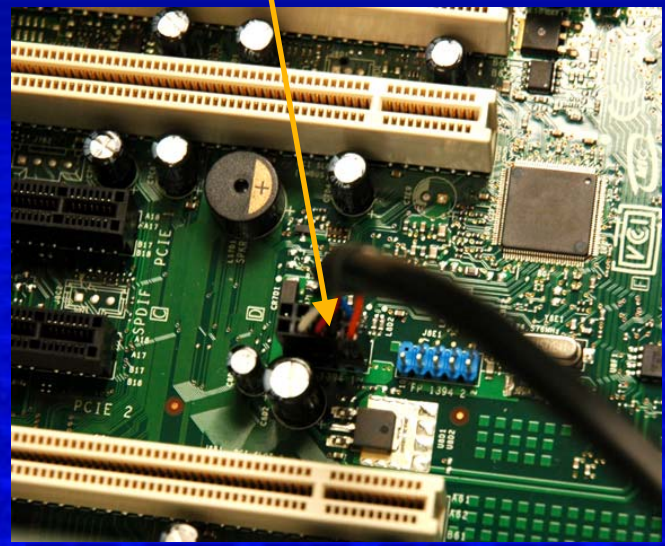


Build Your Own Computer

Plug 1394 Connector Into Motherboard

1st – Connect keyed 1394 front panel connector to 1394 interface on motherboard





Build Your Own Computer

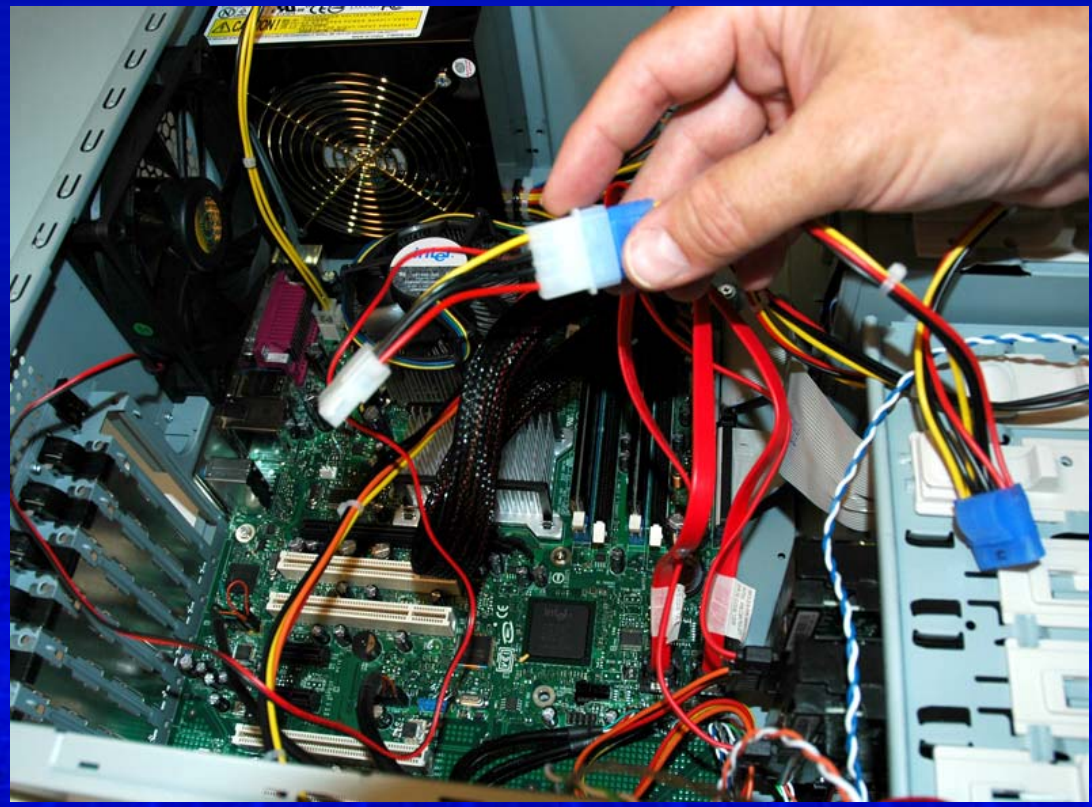
Connect Power Leads to Hard Disk Drives

1st – Plug a black power connector into each hard drive's power interface

Build Your Own Computer

Connect Case Fans to Power Leads

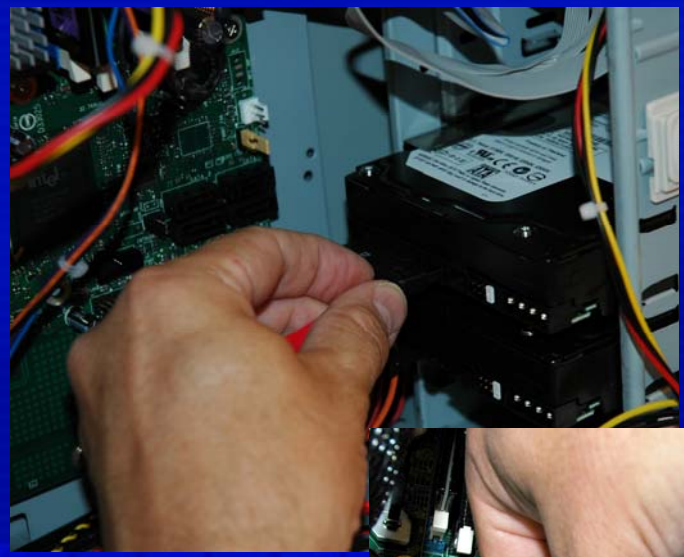
1st – Plug each case fan connector to an available Molex power lead



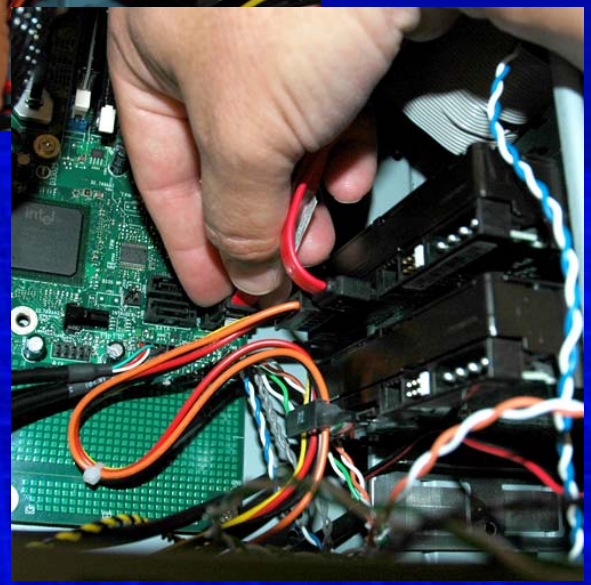
Build Your Own Computer

Connect Hard Disk Drive(s) to Motherboard

1st – Find the SATA data cable for each hard drive you purchased



2nd – Plug one end of each cable into the respective hard disk drive



3rd – Plug the other end of the cable into the appropriate motherboard SATA interface

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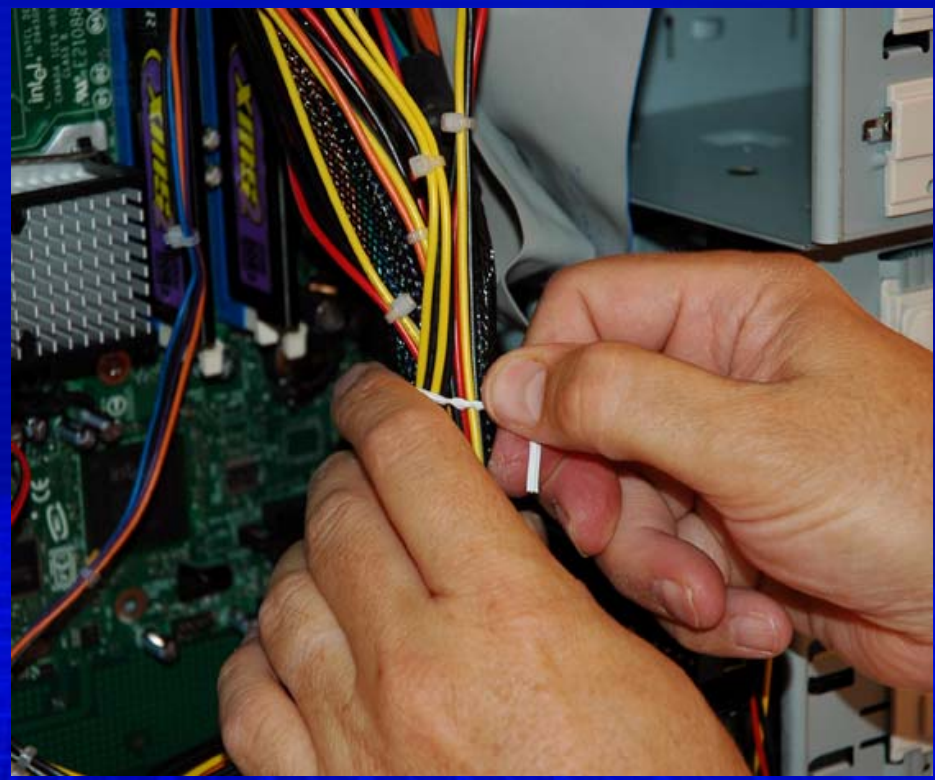
Connect Wires 8.

Build Your Own Computer

Tie Up Loose Wires

1st – Gather and tie loose wires within the case using twist ties or ratchet straps.



Be creative and find ways to keep the wires out of the way and out of sight.

Build Your Own Computer

Check Your Work

1st – Double-check your work to be sure all connections you have made are proper. When in doubt, ask.

Motherboard power

CPU Fan

Front Panel Connections

CD/DVD Drives

Case Fans

Hard Disk Drives

Build Your Own Computer

Check Your Work

2nd – Check to be sure all fans are clear of obstructions or hindrances

Build Your Own Computer

Connect the Keyboard and Mouse

1st – Unbox keyboard, mouse, transmitter, and batteries; install batteries

2nd – Plug in transmitter to PS/2 mouse and keyboard ports, and/or USB port

Build Your Own Computer

Connect the Monitor

1st – Plug in monitor to VGA port; tighten finger screws

2nd – Plug in monitor power cord to available power source

Build Your Own Computer

Prepare System Power

1st – Plug in power cord to PC and available power source

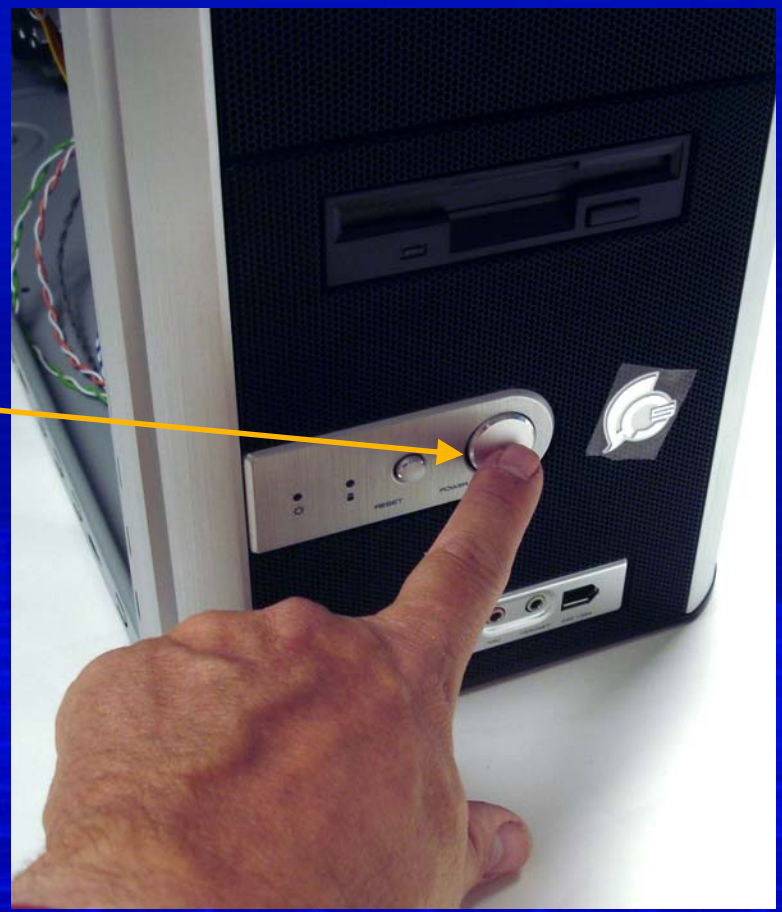
2nd – Be sure rocker switch is set to "ON" (|)

Build Your Own Computer

Start Your PC!

1st – Be sure monitor is on

2nd – Press the power switch to bring your new PC to life!



Build Your Own Computer

Synchronize Mouse and Keyboard

1st – Follow the included directions to synchronize your mouse and keyboard.

If you purchased a wireless keyboard and mouse

Typically, you'll press and release buttons on the transmitter plugged into the computer and the keyboard and mouse as shown above.

Build Your Own Computer

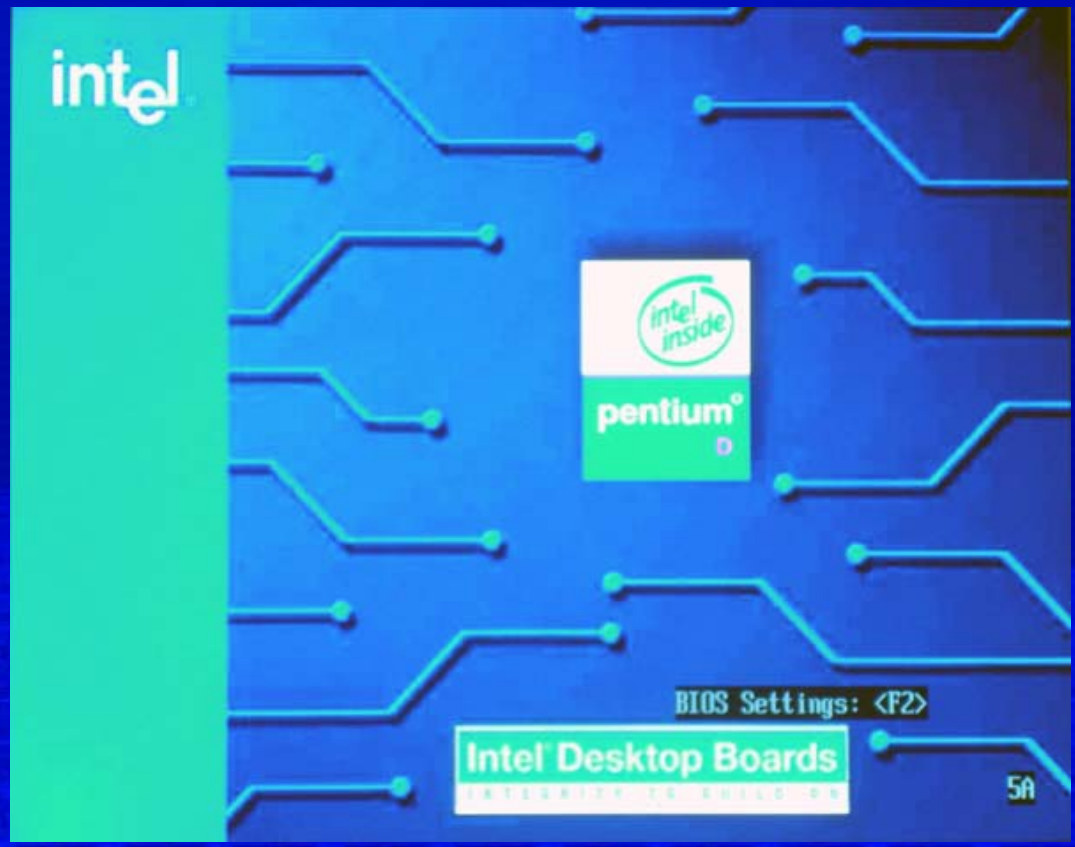
Enter BIOS Menu

1st – Press the Reset button on your new PC.

Build Your Own Computer

Enter BIOS Menu

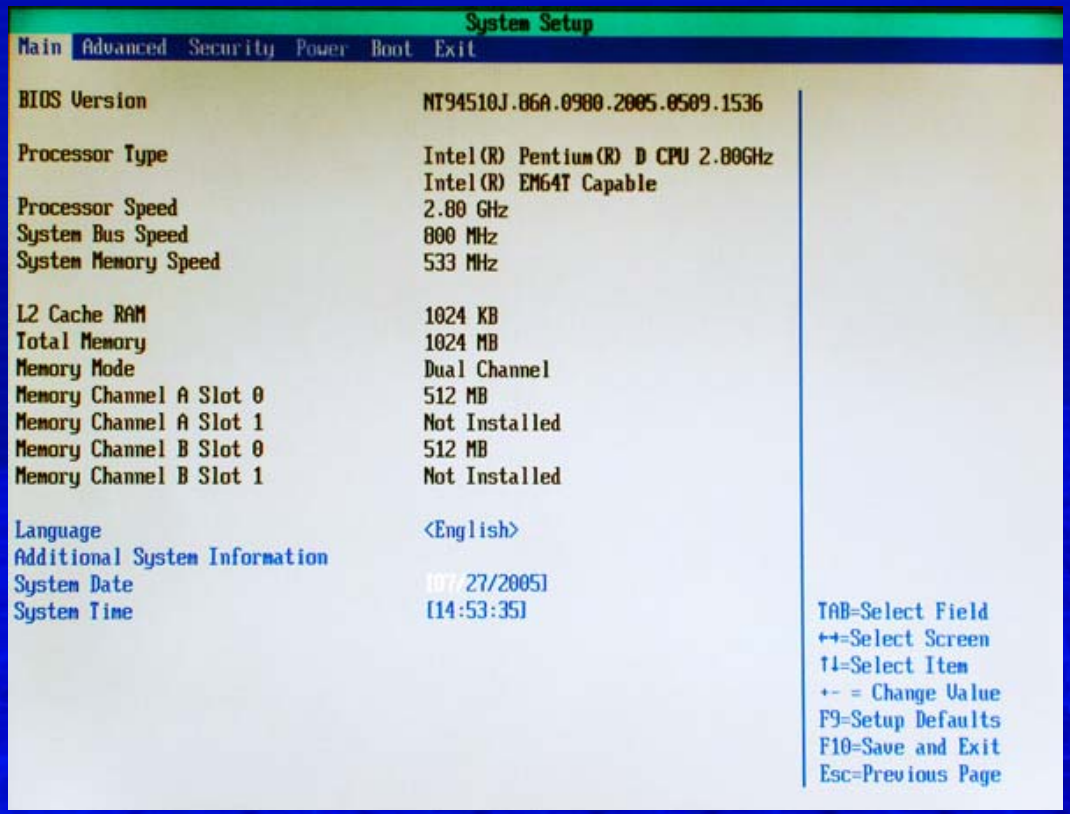
2nd – When you see the Intel splash screen, press the F2 key a time or two.



Build Your Own Computer

Enter BIOS Menu

3rd – Wait until the PC loads the BIOS screen; set the date and time

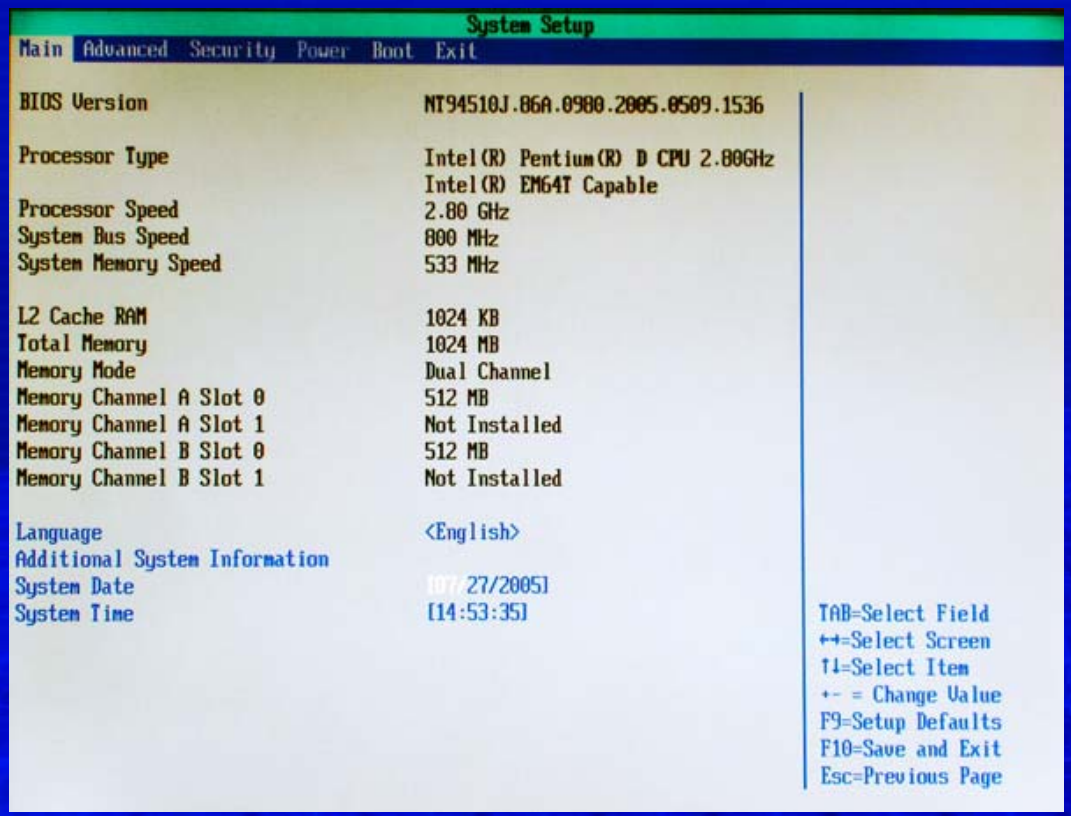


NOTE: If the screen stops and the BIOS screen is not displayed, then press Reset and try pressing F2 when you see the Intel splash screen again. If your system makes unusual noises, turn it off and seek help.

Build Your Own Computer

Enter BIOS Menu

4th – Explore BIOS without making any changes unless you are familiar with the settings.



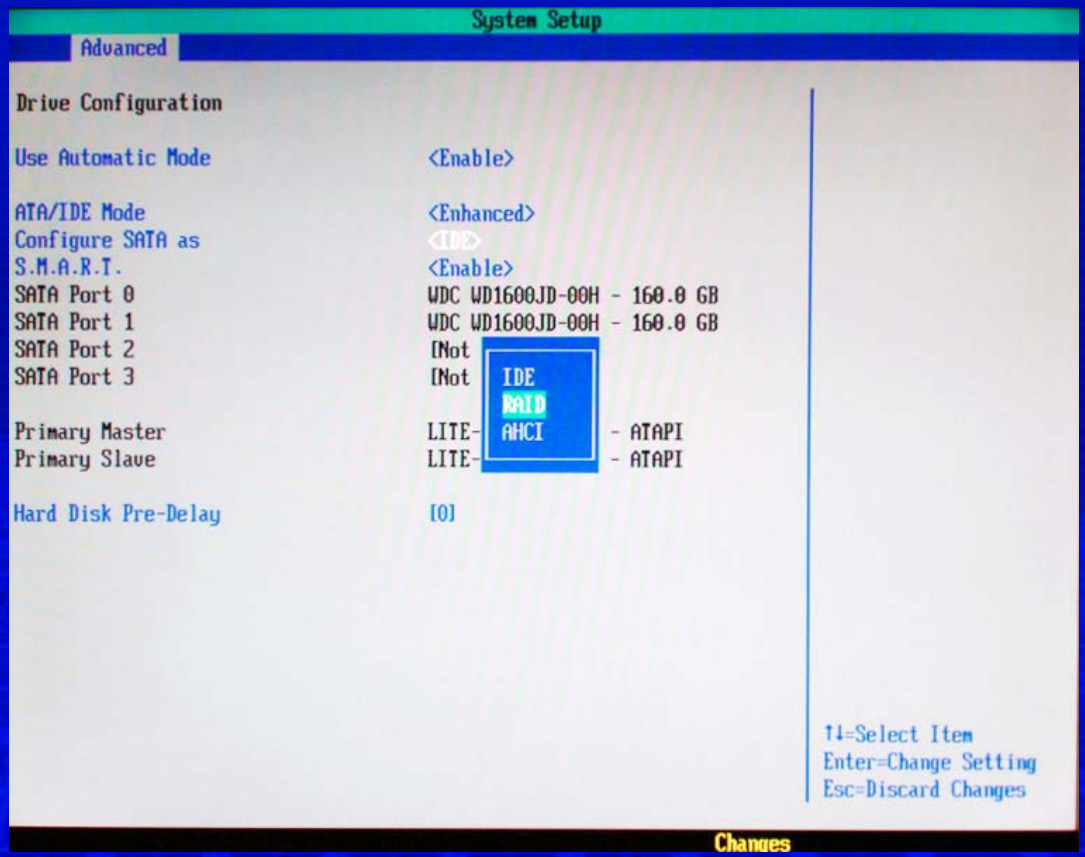
NOTE: This is no place to experiment. If you encounter difficulty, return to default settings by pressing F9 while in BIOS. Then "Save and Exit" by pressing F10.

Build Your Own Computer

Setup RAID

If you purchased two or four identical drives and would like to establish them in a RAID array

1st – Enter BIOS, Select Advanced / Configure SATA as / and RAID

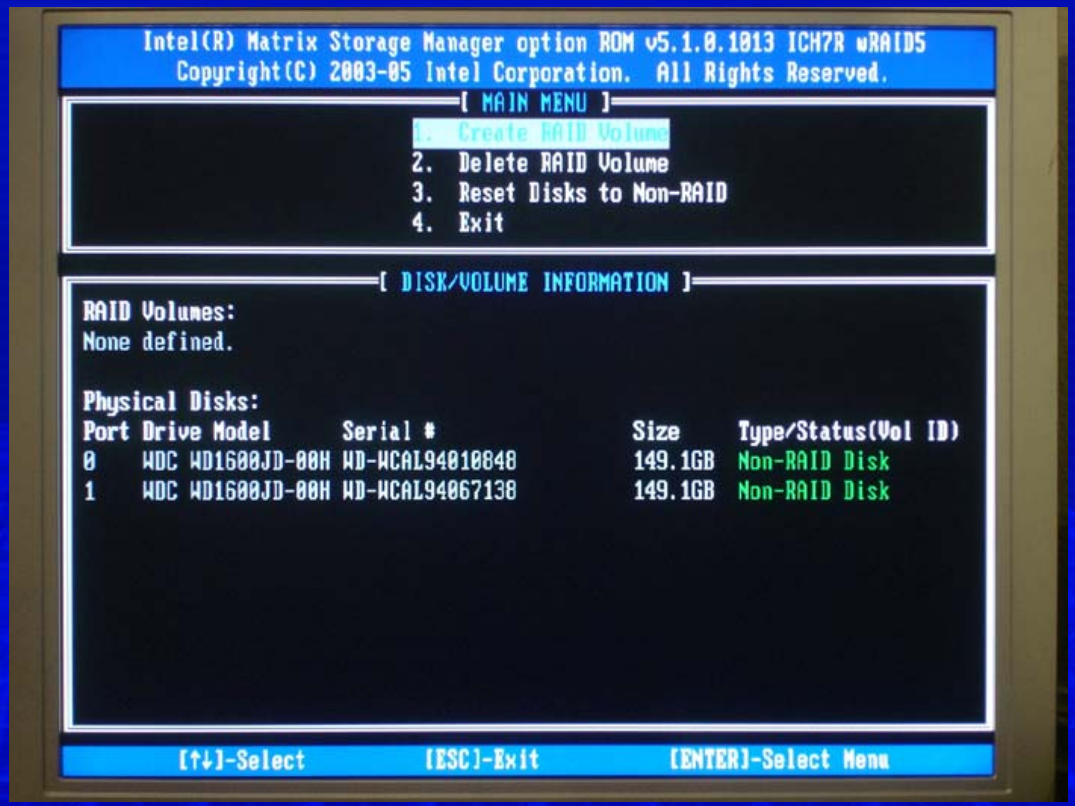


Build Your Own Computer

Setup RAID

If you purchased two or four identical drives and would like to establish them in a RAID array

2nd – After rebooting (press Reset if necessary), press Ctrl-I / Create RAID Volume, and Enter until the RAID volume is created. Press Y when asked.



Build Your Own Computer

Install Operating System

1st – Install your operating system by following the instructions that accompany Windows, or with the help of your user group.

Build Your Own Computer

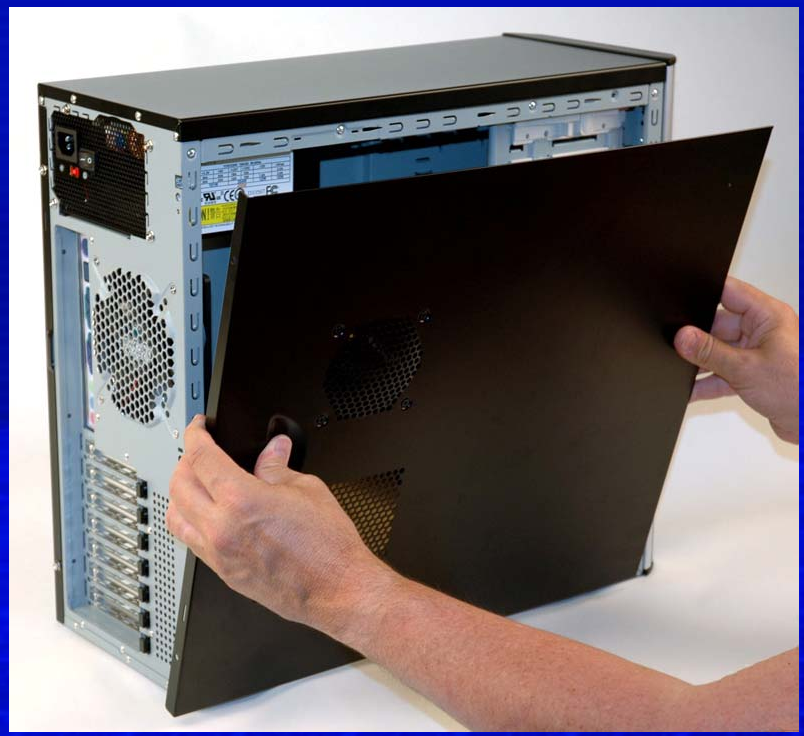
Replace Side Panel

1st – Turn off PC and disconnect cables

Build Your Own Computer

Replace Side Panels

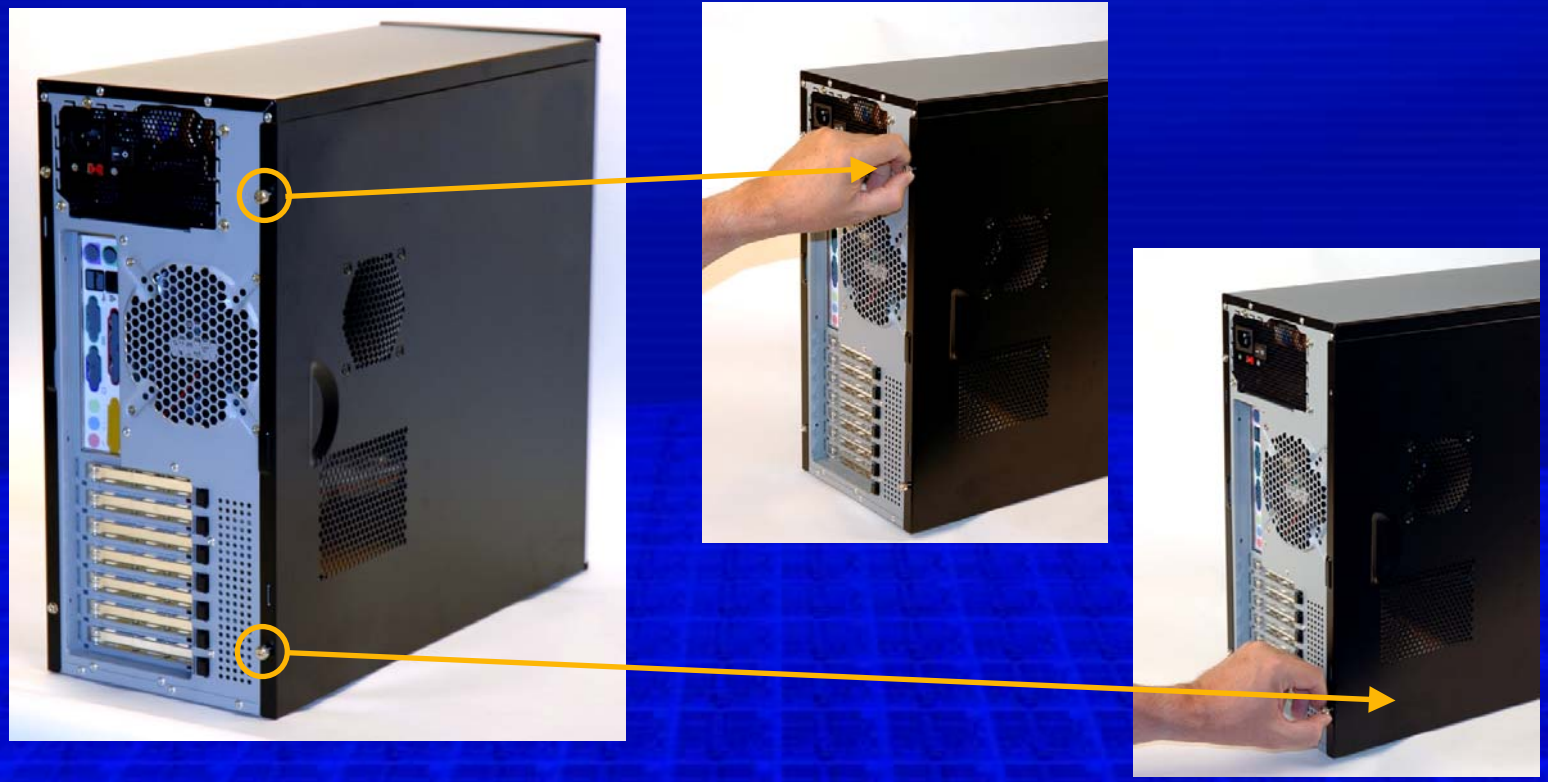
2nd – Insert and align side panel. Slide forward, making sure no cables are pinched in the process



Build Your Own Computer

Replace Side Panels

3rd – Find thumbscrews and secure side panel to case as before.



Build Your Own Computer

CONGRATULATIONS!

You have just Built-Your-Own PC, giving new meaning to the PERSONAL in Personal Computer!

Build Your Own Computer

Getting it Home Safely

1. Box it up in the original case container.
2. Secure it in your car so it won't fall over.
3. Cushion it in your car.
4. Ground yourself and your PC when you get it to its final spot.

Conclusion

Your Local PC User Group

1. Users Helping Users
2. Low-cost or no-cost help and support
3. Information from peers (newsletters)
4. Regular meetings, Q&As, and special interest groups
5. Access to special offers and prices

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