User's Manual for the Assembly of a Windows Personal Computer

– Prepared by –

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I. INTRODUCTION

Overview

Assembly of a Personal Computer (PC) begins with ensuring the collection of seven main parts. The seven main parts are as listed:

1. CPU (Central Processing Unit) and CPU Cooler
2. Motherboard
3. GPU (Graphics Processing Unit)
4. RAM (Random Access Memory)
5. PSU (Power Supply Unity)
6. Storage
7. Case

Not all brands of these seven main parts are interchangeably compatible. To maintain compatibility of the build, the use of third-party websites, like PC Part Picker, will alleviate the difficulty.

Certain hand tools and hardware will be needed to complete the build:

1. One Phillips head Screwdriver
2. Screws
3. Thermal Paste
4. 91% Rubbing Alcohol

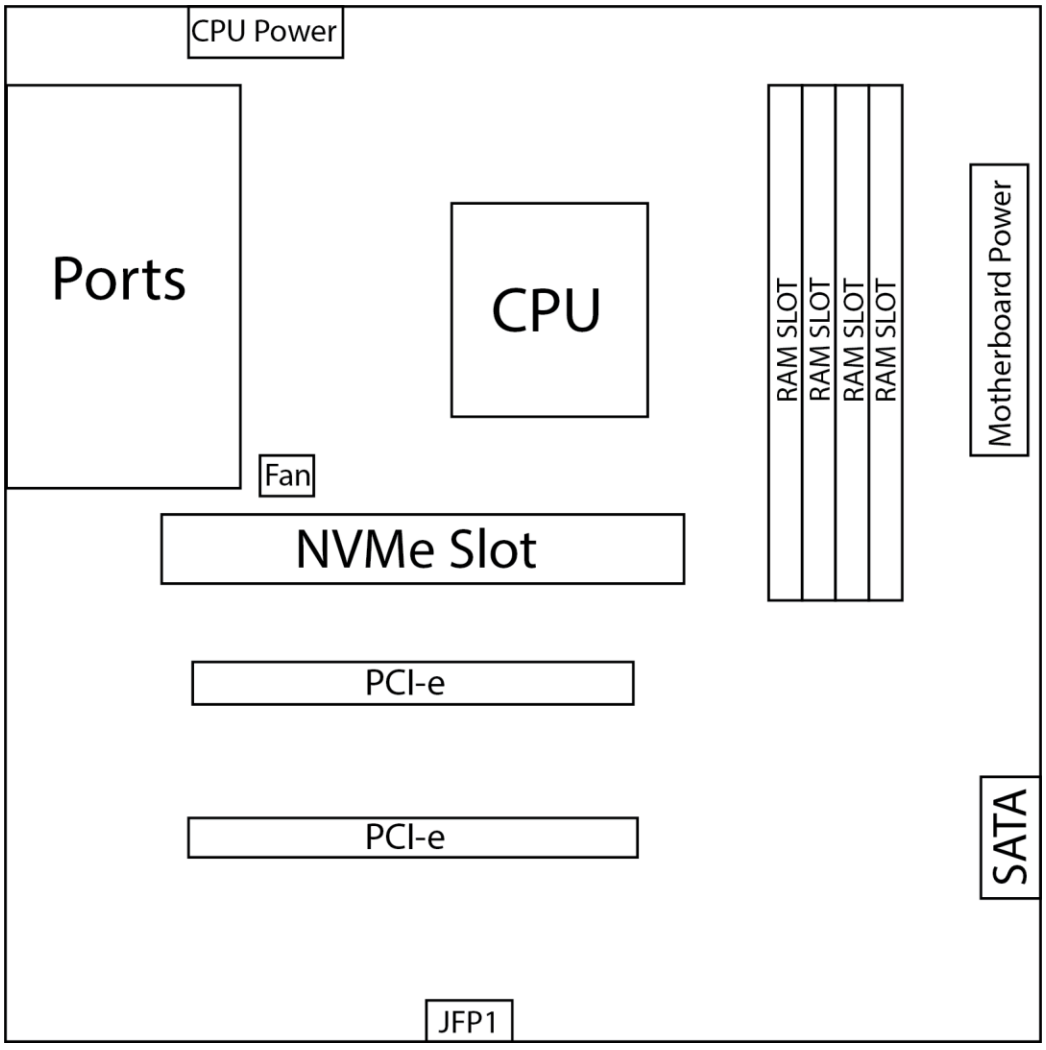
Other hardware needed is circumstantial to each build and will differ on varying needs.

WARNING

UNCONTROLLED ELECTRICAL SHOCKS TO PARTS WILL RENDER PARTS IRREPAIRABLE. THE BUILD UP OF STATIC ELECTRICITY THROUGH DAY-TO-DAY MOVEMENT IS ENOUGH TO DAMAGE PARTS. TO REDUCE THE CHANCE OF DAMAGE, LIMIT THE BUILD UP OF STATIC ELECTRICITY THROUGH GROUNDING ONESELF AND PLACING PARTS ON NON-CONDUCTIVE SURFACES.

Quick Reference Diagram

Use the Quick Reference Diagram to locate areas on the Motherboard.



II. ASSEMBLY

Assembly of the Build

Before assembly, ensure that each part has no visible damage, e.g., no bent pins on an AMD CPU or no bent pins in the CPU socket on an Intel CPU compatible motherboard.

1. Preparing the Motherboard
    a. Place the motherboard on a flat surface.
    b. Unlatch the CPU socket hinge and remove the socket cover.
    c. Leave the hinge unlatched for placement of the CPU.

2. Placement of the CPU onto the Motherboard
    a. Line up the golden triangle on the corner of CPU with the triangle on the CPU socket.
    b. Gently place the CPU into the socket keeping the triangles aligned.
        - **NOTE**: *Application of even light amounts of force when placing the CPU will damage the pins of either the CPU or the CPU socket.*
    c. Once correctly fitted to the socket, gently bring the CPU socket latch down and place underneath the lip to hold it into place.

3. Placement of the CPU Cooler onto the CPU
    a. Place a pea sized amount of thermal paste on top of the CPU.
    b. Line the holes of the brackets on the Cooler with the screw holes on the motherboard.
    c. Place the Cooler onto the CPU.
    d. Secure the Cooler to the motherboard.
        - **NOTE:** *Taking the cooler off the CPU to attempt placement again breaks the seal between the Cooler and CPU. It is necessary to clean the thermal paste off the CPU and begin from step 3a again.*

e. Plug the Cooler into a designated 3 or 4 pin connector on the Motherboard.

4. Placement of RAM into the Motherboard

    a. Fill RAM slots 2 and 4 first before filling slots 1 and 3.

    b. Push down on each side of the slot to unlock the mechanism.

    c. Push the RAM down into the slot until you hear a click.

    d. Repeat this for each slot and the remaining amount of RAM left.

5. Preparation of the Case

    a. Removal of the side panels is necessary to access the Case.

    b. Once the panels have been removed, ensure there are no obstructions for the Motherboard or on the floor of the case for the PSU.

6. Placement of the Motherboard into the Case

    a. Place the motherboard into the Case with its screw holes aligned on top of the Case's standoff screws.

    b. Secure the Motherboard to the Case.

7. Placement of the GPU into the Motherboard

    a. Locate the horizontal PCI-E (Peripheral Component Interconnect Express) slot.

    b. On one side of the PCI-E slot there is a latch, push it down to unlock it.

    c. Place the GPU into the slot and press down until you hear a click.

    d. Ensure the GPU's display ports are positioned at the back of the case.

    e. Secure the GPU to the rear of the case by aligning its bracket with the proper screw hole.

8. Placement of Storage into the Case

    a. Locate the Hard Disk Drive (HDD) bay, an area in the case for a 4.5-inch Solid State Drive (SSD), or a Non-Volatile Memory Express slot (NVMe) on the Motherboard.

        - **NOTE:** *The parts acquired and the location of these areas will vary.*

    b. Secure them to the Case with screws.

    c. Using SATA cables, connect HDDs and SSDs to SATA ports on the Motherboard.

9. Placement of the PSU into the Case

    a. The PSU's location is on the floor of the Case.

    b. Place the PSU flush with the rear of the case and secure it with screws to the back of the case.

10. Routing power as needed from the PSU

    a. Each cable will have a label, e.g., Motherboard, GPU, and CPU.

    b. Feed the power cables from the PSU to needed areas throughout the Case.

    c. Insert the CPU pin connector to the labeled port on the Motherboard.

    d. Insert the GPU pin connector directly to the GPU pin port.

    e. Connect the SATA power cables to Storage.

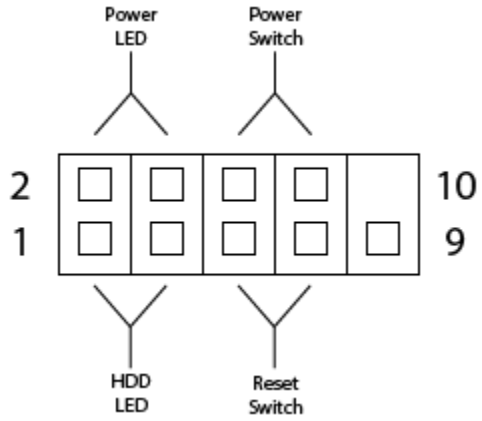
    f. Connect the 24-pin Motherboard power cable to the 24-pin port on the Motherboard.

11. Connecting the front panel of the Case to the Motherboard

    a. Locate the Front Panel Header, labeled as JFP1, on the lower section of the Motherboard.

    b. Connect the Front Panel Connectors to the header:

- Power LED connects to Ports 2 and 4.
- Power Switch connects to Ports 6 and 8.
- HDD LED connects to Ports 1 and 3.
- Reset Switch connects to Ports 5 and 7.



12. Build Test

a. Before placing the panels on the case, press the power button and ensure it boots up.

b. If not done automatically, selection of the boot drive is necessary:

- Connect peripherals, e.g., keyboard.
- On start up, press the F2 key or the DEL key to access the BIOS (basic input/output system).
- From the BIOS, select the Storage device that contains the Operating System (OS).

c. Follow through with first time OS set-up.

III. FREQUENTLY ASKED QUESTIONS (FAQ)

FAQ

1. If I have a CPU with integrated graphics, do I need a GPU?

Some CPUs have integrated graphics meaning the need for a GPU could be optional. To determine if your CPU has integrated graphics, consult the packaging and instructions that came with your CPU.

2. Will I need to buy screws?

If the parts were bought new, then screws will come as needed.

3. Will I need to buy Thermal Paste?

Thermal paste may come with your CPU or CPU cooler. If it is not included in the packaging, then it will need to be acquired.

4. Why is 91% rubbing alcohol recommended for the cleaning of electronics?

91% rubbing alcohol dries faster and lowers the possibility of shorting the electronics.

5. My storage device does not have windows pre-installed, what do I do?

If windows is not pre-installed on your storage device, the acquisition of a boot flash drive will be needed.

6. My RAM advertises it is dual channel, how do I activate it?

To activate dual channel RAM, place the RAM sticks in slots 2 and 4. Slots 1 and 3 can also be used for dual channel, but only after slots 2 and 4 are filled. Lastly, enable XMP (Extreme Memory Profile), or the AMD equivalent EXPO, within the BIOS.