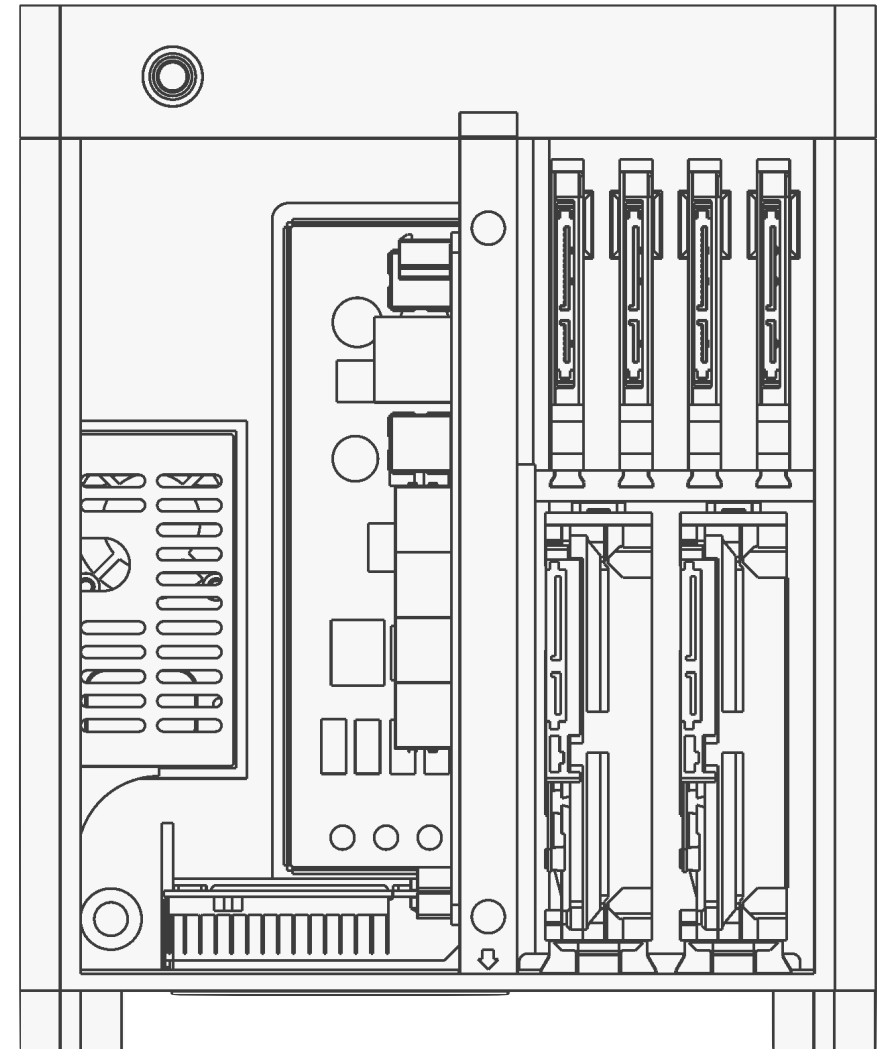
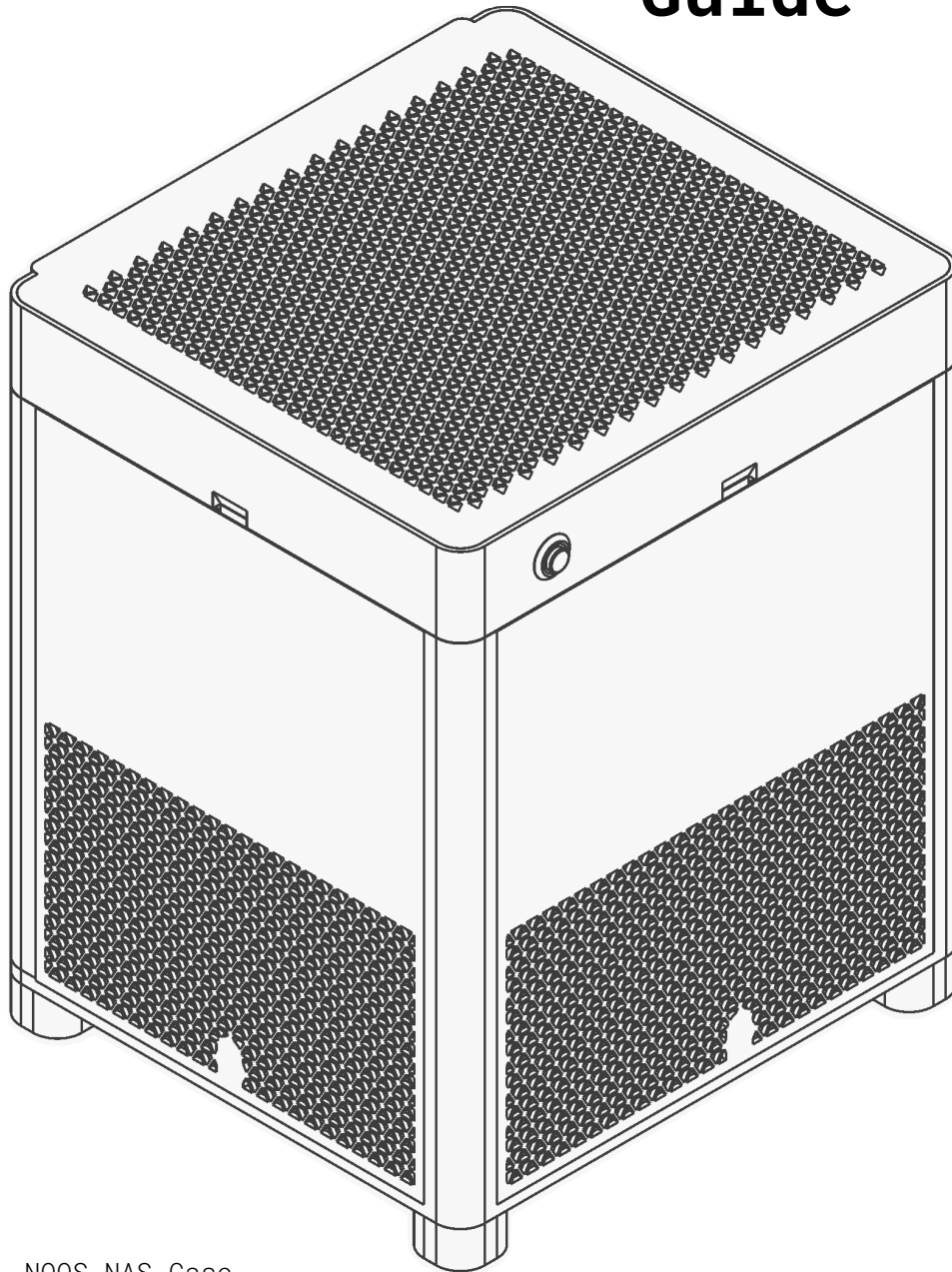


# 3D Printed NAS Case – Assembly & Printing Guide – Base version



# Table of Contents

- 1.** [Introduction](#)
- 2.** [Overview](#)
- 3.** [Bill of Materials & Tools](#)
- 4.** [Suggested Components](#)
- 5.** [3D Printed Parts & Printing Settings](#)
- 6.** [3D Printing Orientation Overview](#)
- 7.** [Assembly Steps](#)
  - [Step 1 - Installing the Heat-Set Inserts](#)
  - [Step 2 - Installing the Silicone Damping Bumpers](#)
  - [Step 3 - Adding Round Magnets on Side Panels](#)
  - [Step 4 - Adding Round Magnets on Vertical Supports](#)
  - [Step 5 - Attaching the Side Panels to the Back Panel](#)
  - [Step 6 - Inserting Magnets into the Vertical Supports](#)
  - [Step 7 - Assembling the SSD Bracket Support](#)
  - [Step 8 - Mounting the Vertical Supports on the Base](#)
  - [Step 9 - Attaching the Back Panel and Feet](#)
  - [Step 10 - Securing the SSD Brackets](#)
  - [Step 11 - Installing Magnets and Power Button](#)
  - [Step 12 - Installing the SSDs](#)
  - [Step 13 - Installing the Motherboard and I/O Shield](#)
  - [Step 14 - Installing the PSU and SATA Cables](#)
  - [Step 15 - Installing the HDDs](#)
  - [Step 16 - Installing the Fan Module](#)
  - [Step 17 - Installing the Cooling Fan](#)
  - [Step 18 - Installing the Dust Filters](#)
  - [Step 19 - Installing the Side Panels](#)
- 8.** [Final Checklist](#)
- 9.** [Where to Go Next](#)
- 10.** [Thank You & License](#)

# 1. Introduction

This guide has been created to help makers and DIY enthusiasts build a fully functional 3D printed NAS case. It provides everything you need: from the required hardware and printable parts to step-by-step assembly instructions.



## Important - Please Read Before Starting

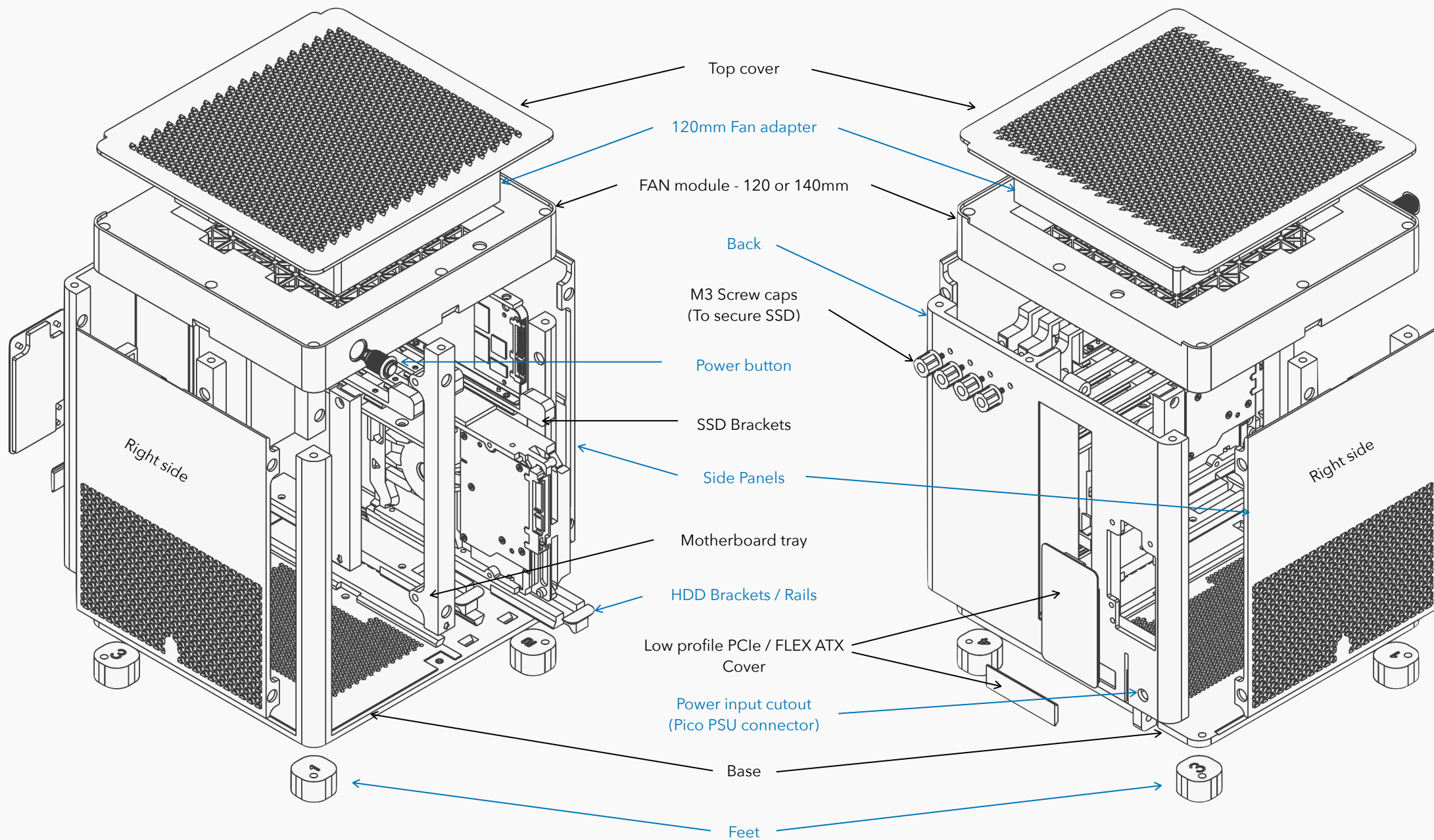
- This NAS case is **compatible only with PicoPSU or Flex ATX power supplies**. Standard ATX power supplies cannot be used.
- It supports **6 storage bays: 2 bays for 3.5" HDDs** and **4 bays for 2.5" SSDs**.
- The design is intended for **Mini-ITX motherboards** only.
- The cooling system supports **one 120 mm or 140 mm fan**, with a maximum thickness of **28 mm**.

You will find **suggested hardware components** to complete your NAS build, ensuring optimal compatibility and performance.

Whether you are an experienced maker or a beginner, this document will walk you through the entire process so you can enjoy a custom, efficient, and elegant storage solution for your home or workspace.

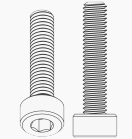
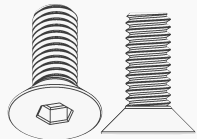
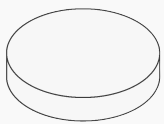
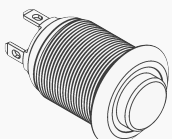
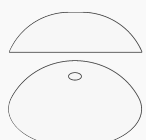
| Feature                    | Specification                                      |
|----------------------------|----------------------------------------------------|
| <b>Motherboard Support</b> | Mini-ITX only + Low profile PCIE Slots             |
| <b>Storage Bays</b>        | 6 total - 2 × 3.5" HDD + 4 × 2.5" SSD              |
| <b>Power Supply</b>        | PicoPSU or Flex ATX only (ATX not supported)       |
| <b>Cooling</b>             | 1 × 120 mm or 140 mm fan (maximum thickness 28 mm) |
| <b>Design</b>              | Fully 3D printed case, modular assembly            |
| <b>Target Use</b>          | DIY NAS for home or small office storage           |
| <b>Printing volume</b>     | Minimum 210x210x210mm                              |
| <b>Materials</b>           | PETG or ABS                                        |

## 2. Overview



### 3. Bill of Materials & tools

Affiliate links, choose the correct reference

|                                                                                     |                                                                                     |                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
|    |    | 24x M3-10mm                                                           |
|    |    | 4x M3-14mm                                                            |
|    |    | 12x 6-32 Phillips Screw 5/16" Flat Head<br>(4x more if FLEX PSU used) |
|    |    | 28x Heat insert M3xL5xOD5 or<br>M3xL4xOD5                             |
|   |   | 40x Round Magnets 8x2mm                                               |
|  |  | 1x LED Metal Button Ø12mm                                             |
|  |  | 4x Silicon damping bumper 10x3mm                                      |

| Tools                         | Purpose                                                                  | Affiliate links                                                                       |
|-------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Soldering iron</b>         | for installing heated inserts                                            |    |
| <b>Allen key set</b>          | For assembling screws                                                    |    |
| <b>Utility knife / cutter</b> | To clean up small print imperfections or remove excess material          |    |
| <b>Super glue</b>             | For securing magnets                                                     |    |
| <b>Electric screwdriver</b>   | Can make the assembly faster and easier                                  |   |
| <b>Needle-nose pliers</b>     | Useful for gripping, bending or placing small components in tight spaces |  |

### 3. Bill of Materials & tools (Affiliate links)

|                                                                                   | Quantity | Materials & Tools                      | Amazon Link            | Aliexpress Link            |
|-----------------------------------------------------------------------------------|----------|----------------------------------------|------------------------|----------------------------|
|  | 24       | M3-10mm                                | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|  | 4        | M3-14mm                                | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|  | 16       | 6-32 Phillips Screw 5/16" Flat Head    |                        | <a href="#">Aliexpress</a> |
|  | 28       | Heat insert M3xL5xOD5 or M3xL4xOD5     | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|  | 40       | Round Magnets 8x2mm                    | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|  | 1        | LED Metal Button Ø12mm                 | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|  | 4        | Silicon damping bumper 10x3mm          | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                                                                                   | 1        | Soldering iron                         | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                                                                                   | 1        | Allen key set                          | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                                                                                   | 1        | Utility knife                          | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                                                                                   | 1        | Super glue                             | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                                                                                   | 1        | Electric screwdriver                   | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                                                                                   | 1        | Needle-nose pliers                     | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                                                                                   |          | M3 screw kit (not mandatory)           | <a href="#">Amazon</a> |                            |
|                                                                                   | 1        | Tip Set of 7 Soldering Tips for insert | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |

## 4. Suggested Components

The following components are **suggested** to ensure good compatibility and performance with this 3D printed NAS case.

You are free to adapt them according to your needs and available hardware.

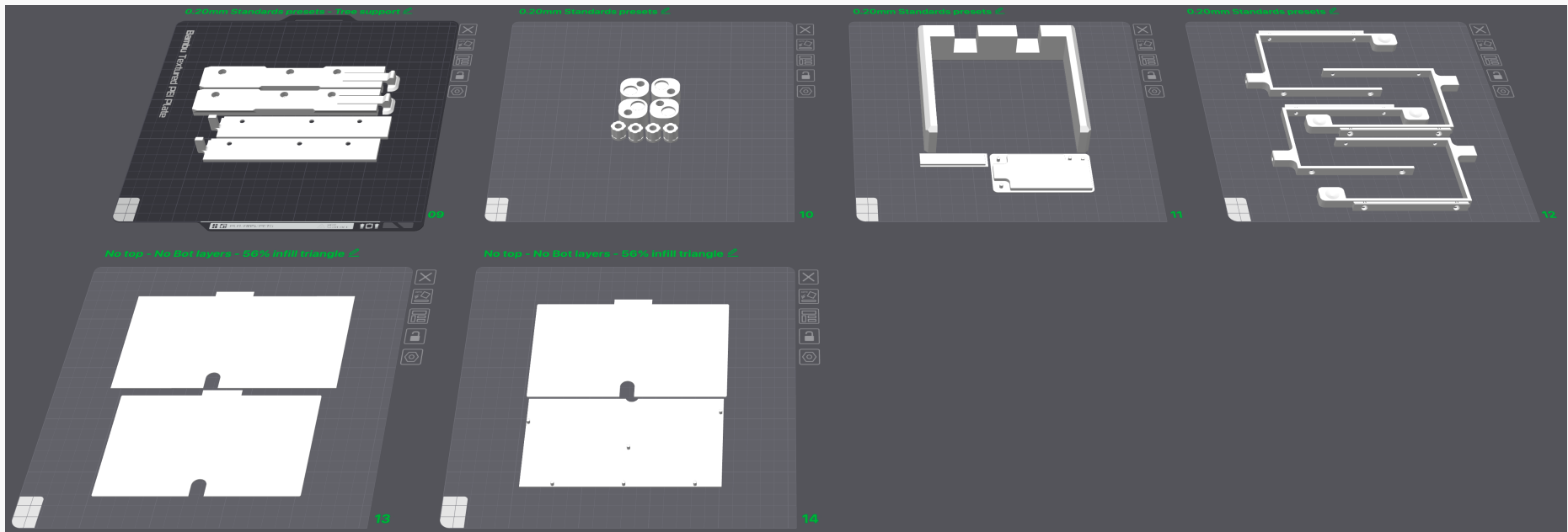
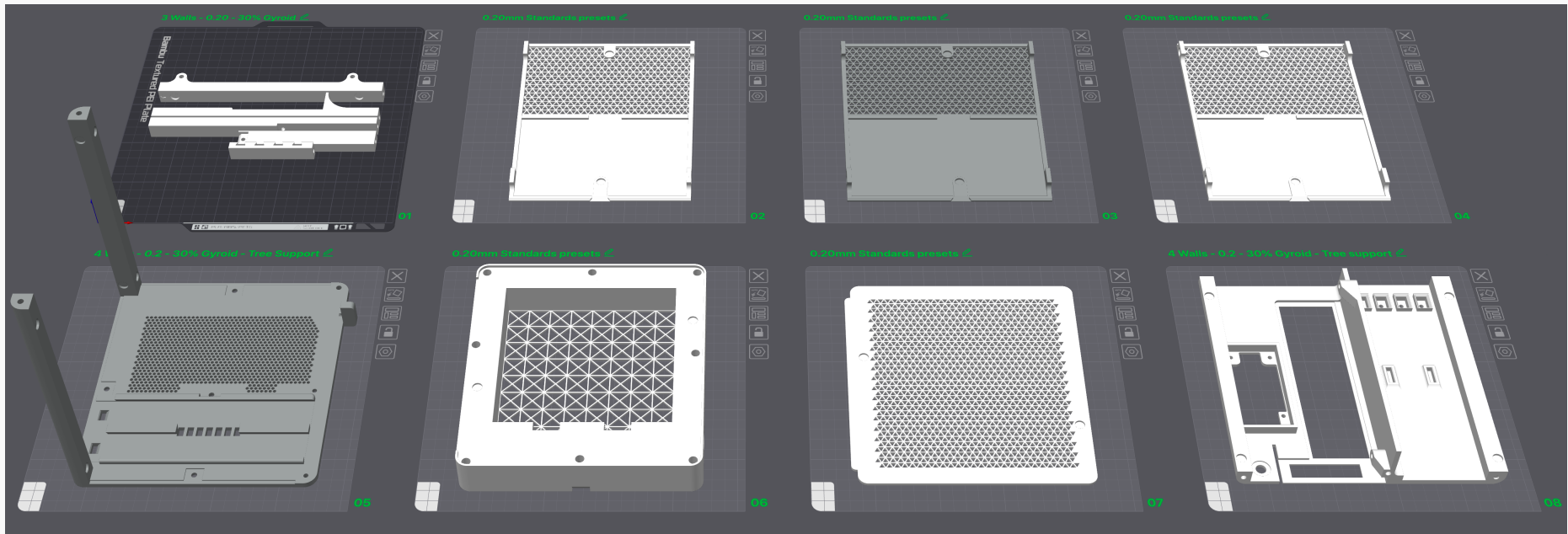
| Component                   | Suggested Option(s)                          | Notes                                                                                                             | Amazon Link            | Aliexpress Link            |
|-----------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------|
| <b>Motherboard</b>          | Mini-ITX (e.g. Intel N100 / N150)            | Must be Mini-ITX size                                                                                             | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
| <b>PSU</b>                  | PicoPSU                                      | One with 2 Sata. Can only connect 2 HDD and no SSD without upgrade.                                               | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                             | Flex ATX                                     | ATX and SFX <b>not supported</b> ; case includes cover if Flex slot not used. Better if more than 2xHDD           | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
| <b>Storage</b>              | <b>1.-</b> 2 × 3.5" HDD                      | Orient HDD connectors to the front.                                                                               | <a href="#">Amazon</a> |                            |
|                             | <b>1.-</b> 4 × 2.5" SSD                      | Orient SSD connectors to the front.                                                                               | <a href="#">Amazon</a> |                            |
| <b>Cables</b>               | 90° Sata Cable                               | 90° <b>angled SATA connectors</b> (at least on the HDD side) for easier installation and better cable management. | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
| <b>RAM</b>                  | 8-32 GB DDR4/DDR5 (depending on motherboard) | Enough for light to medium NAS workloads<br>For N100 : 16Go - SODIM 4800MHz                                       | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
| <b>Cache drive</b>          | NVMe SSD (e.g. 1-2 TB)                       | Optional but improves performance                                                                                 | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
| <b>Cooling (Only 1 fan)</b> | 120 mm fan (max thickness 28 mm)             | Fan must be mounted in exhaust mode                                                                               | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |
|                             | 140 mm fan (max thickness 28 mm)             | Fan must be mounted in exhaust mode                                                                               | <a href="#">Amazon</a> | <a href="#">Aliexpress</a> |

## 5. 3D Printed Parts & Printing Settings

- A **Bambu Studio 3MF project file** is included.  
All parts are already arranged and oriented correctly on separate build plates.
- **Material : PETG recommended, around 1.1Kg**  
  
You only need to adjust the printing parameters according to your printer and material.
- **Layer height:** 0.2 mm for all parts.
- **Standard profile:** The majority of the parts can be printed using the same profile (recommended infill 15–20%, 2 perimeters, no supports unless specified).
- The dust filters are designed to be **permeable** and should **not be printed solid**.
- Stronger settings required for the following parts:
  - Back panel
  - Base
  - **Motherboard & PSU support brackets** (vertical support parts for the motherboard tray, Flex PSU, and SSD brackets)

| Part                               | Layer Height | Infill          | Top/Bottom Layers     | Perimeters | Supports      | Notes                                    |
|------------------------------------|--------------|-----------------|-----------------------|------------|---------------|------------------------------------------|
| <b>Standard parts</b> (most)       | 0.2 mm       | 15–20%          | Default (enabled)     | 2-3        | If needed     | Use standard profile                     |
| <b>Back panel</b>                  | 0.2 mm       | 25–30% Gyroid   | Default (enabled)     | 3-4        | Tree Supports | Structural part, must be strong          |
| <b>Base</b>                        | 0.2 mm       | 25–30% Gyroid   | Default (enabled)     | 3-4        | Tree Supports | Structural part, must be strong          |
| <b>Motherboard support bracket</b> | 0.2 mm       | 25–30% Gyroid   | Default (enabled)     | 3-4        | No            | Holds motherboard tray                   |
| <b>Flex PSU mounting bracket</b>   | 0.2 mm       | 25–30% Gyroid   | Default (enabled)     | 3-4        | No            | Holds Flex PSU securely                  |
| <b>SSD bracket support</b>         | 0.2 mm       | 25–30% Gyroid   | Default (enabled)     | 3-4        | No            | Holds SSD bracket                        |
| <b>Dust filters</b>                | 0.2 mm       | 56% (triangles) | <b>Disabled (0/0)</b> | 2          | No            | Airflow permeability – grid pattern only |

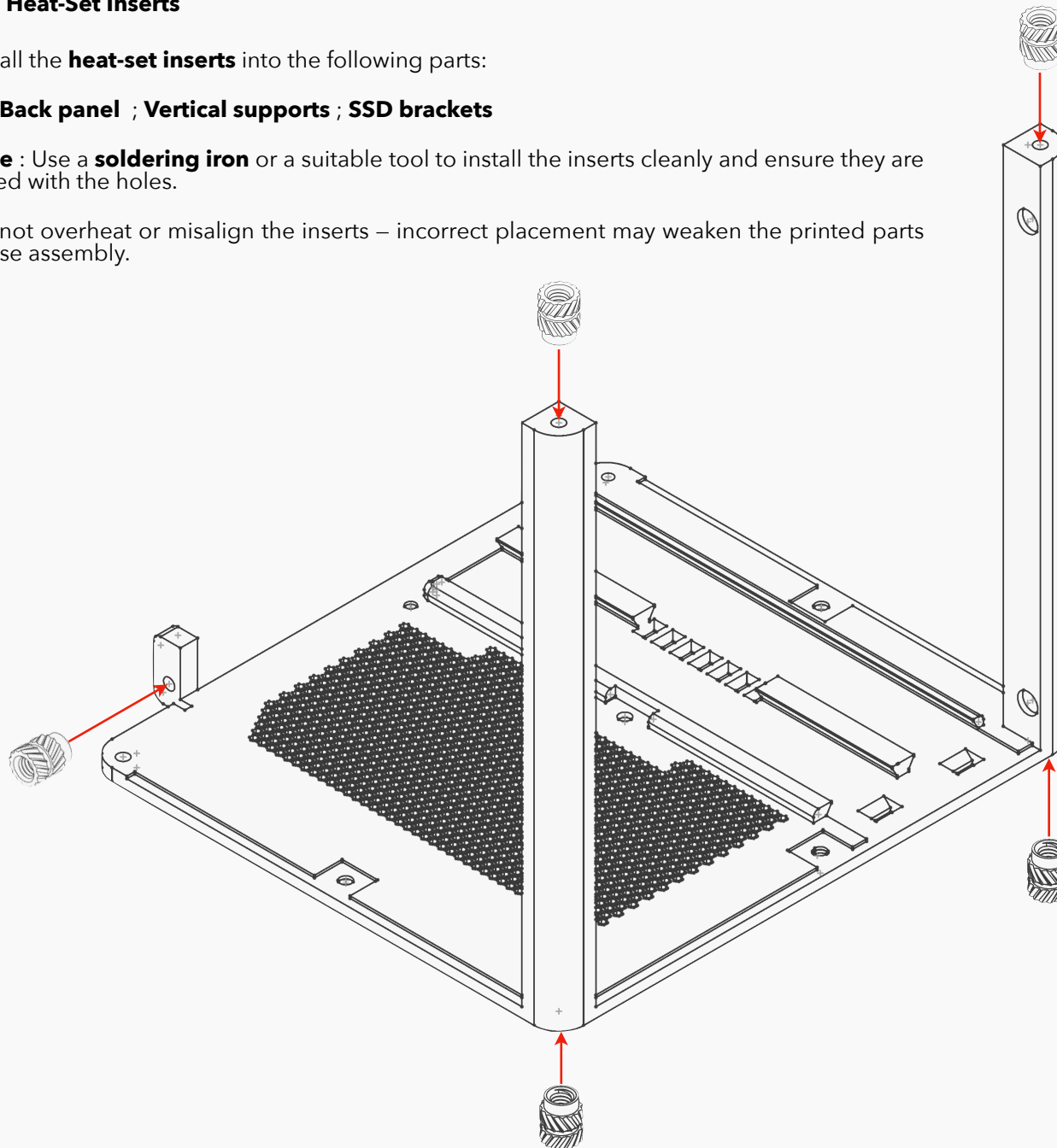
## 6. 3D Printing Orientation Overview



## 7. Assembly Steps

### Step 1 - Installing the Heat-Set Inserts

- **Action** : Insert all the **heat-set inserts** into the following parts:
  - **Base ; Back panel ; Vertical supports ; SSD brackets**
- **Important note** : Use a **soldering iron** or a suitable tool to install the inserts cleanly and ensure they are perfectly aligned with the holes.
- **Warning** : Do not overheat or misalign the inserts – incorrect placement may weaken the printed parts and compromise assembly.



#### BASE

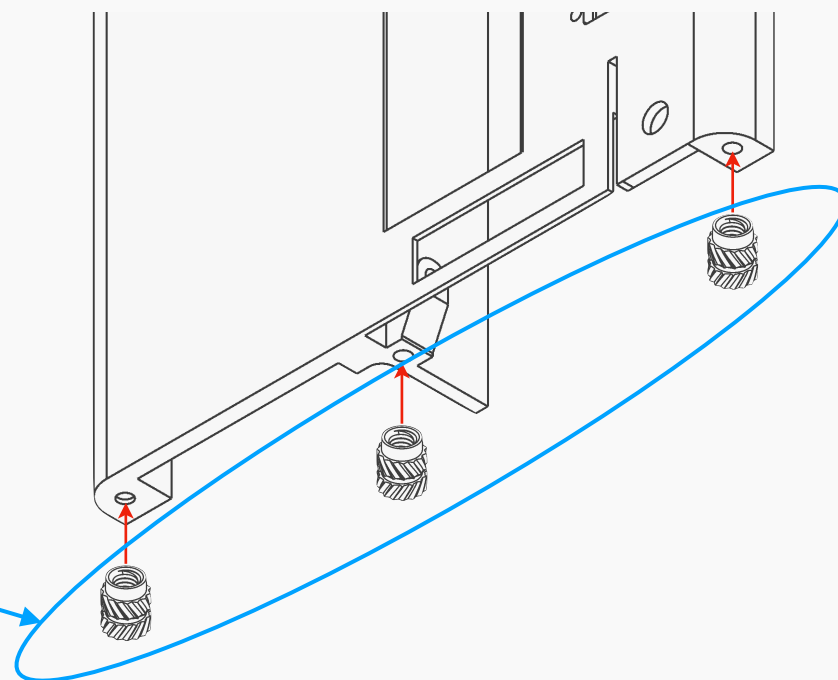
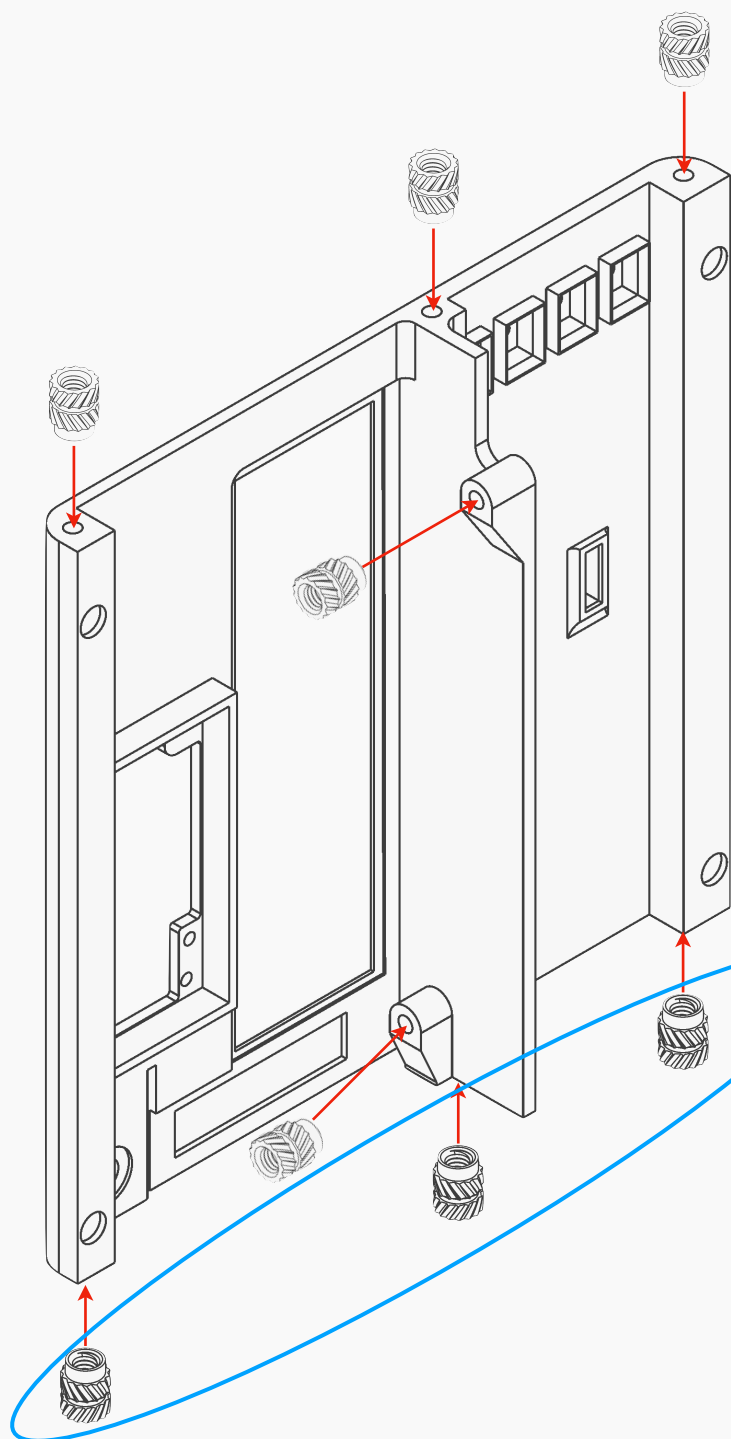


5x Heated inserts

## BACK



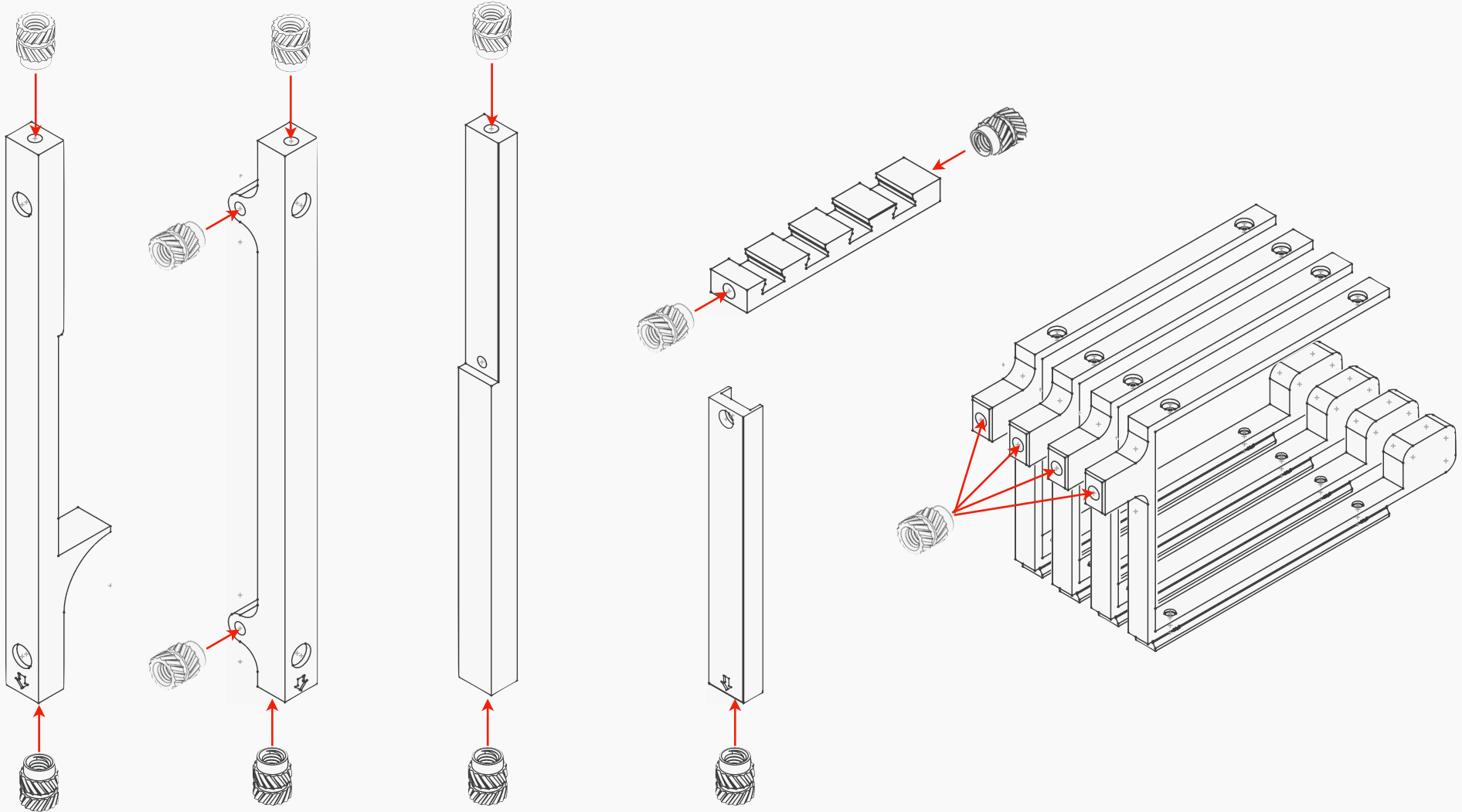
8x Heated inserts



## Vertical supports & SSD brackets



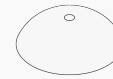
15x Heated inserts



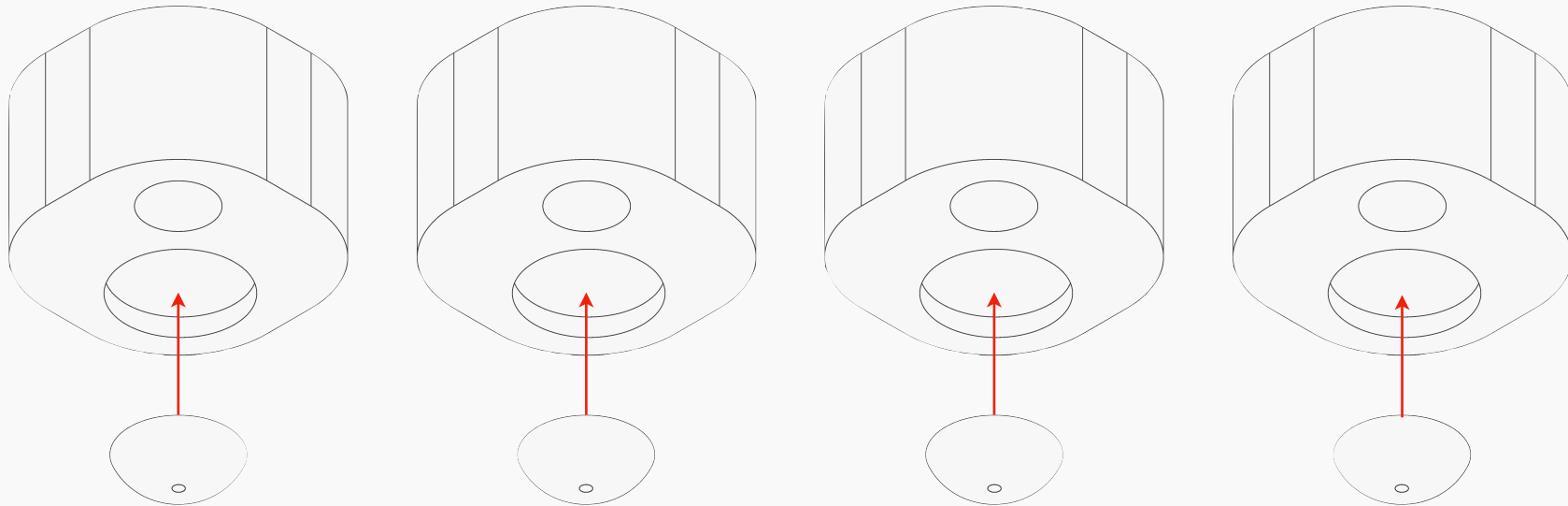
## Step 2 - Installing the Silicone Damping Bumpers

- **Action** : Attach the **silicone damping bumpers** under each foot.

4 FEET



4X Silicon damping bumper 10x3mm

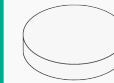


### Step 3 - Adding round magnets on side panels.

When installing the magnets, pay close attention to **polarity**:

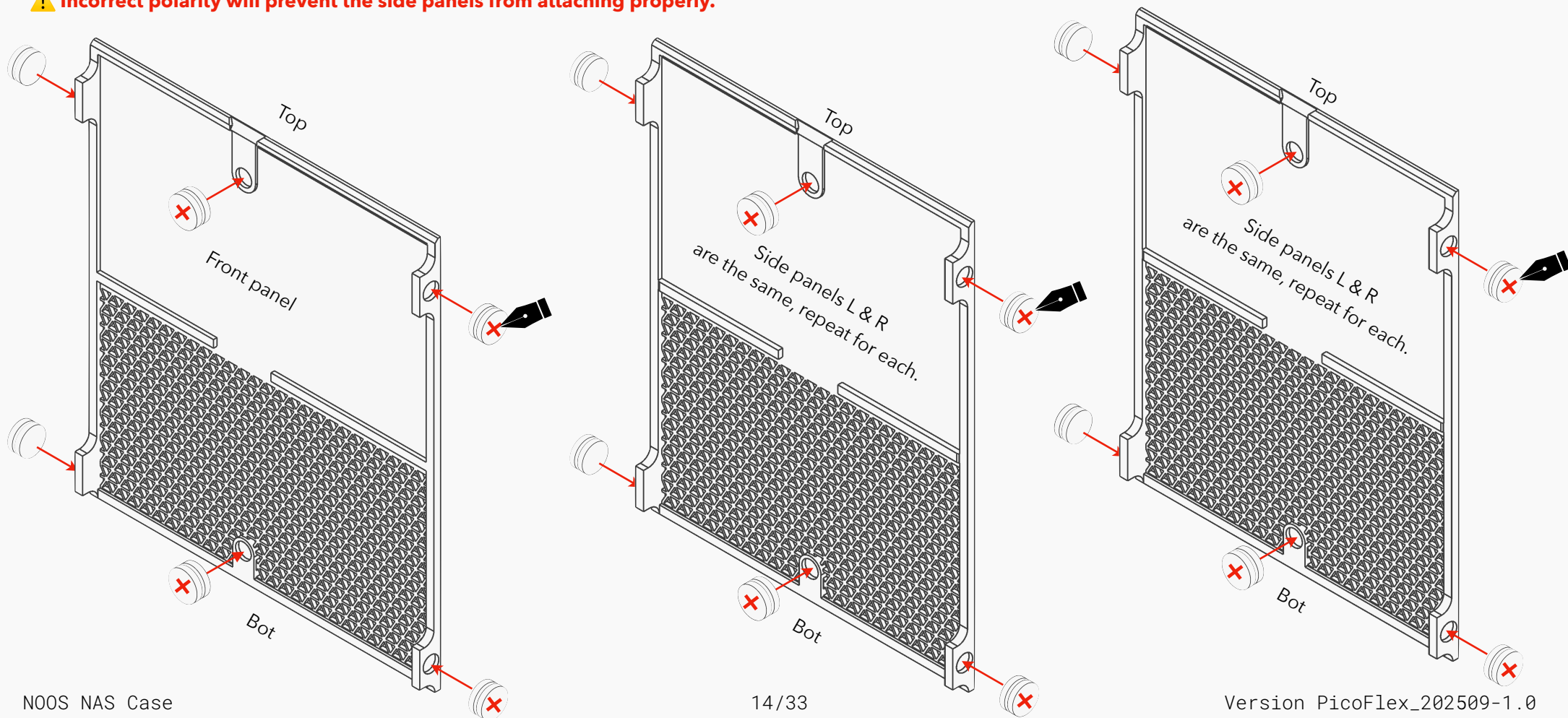
- All magnets on the **side panels and frond panel** must be oriented in the **same direction**.
- Place **two magnets per slot**: the first one stays in place, and the second one is used as a **reference for correct polarity when placing it on the base**.
- Mark the **outer face of the second magnet** before inserting it. When installing the side panels on the base, these marks should face **inward**, ensuring perfect alignment.
- You can use glue to hold the magnets

#### SIDE PANELS & FRONT PANEL



36x Round Magnets 8x2mm

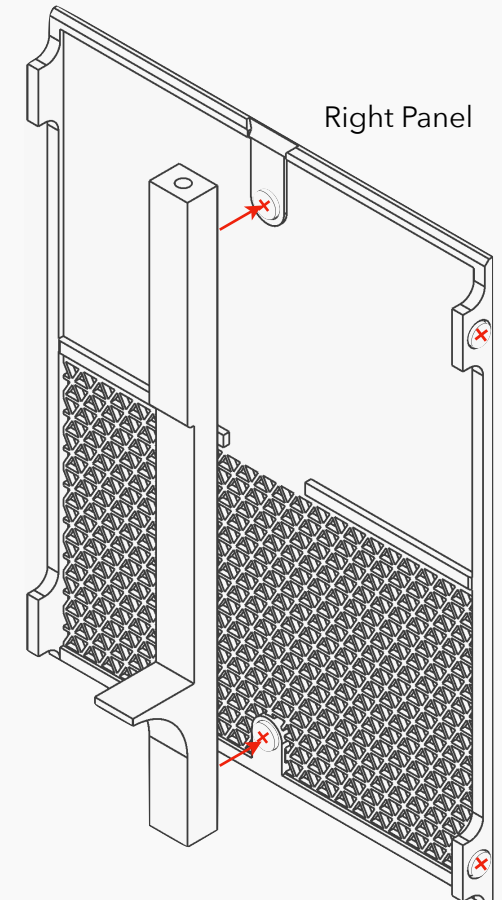
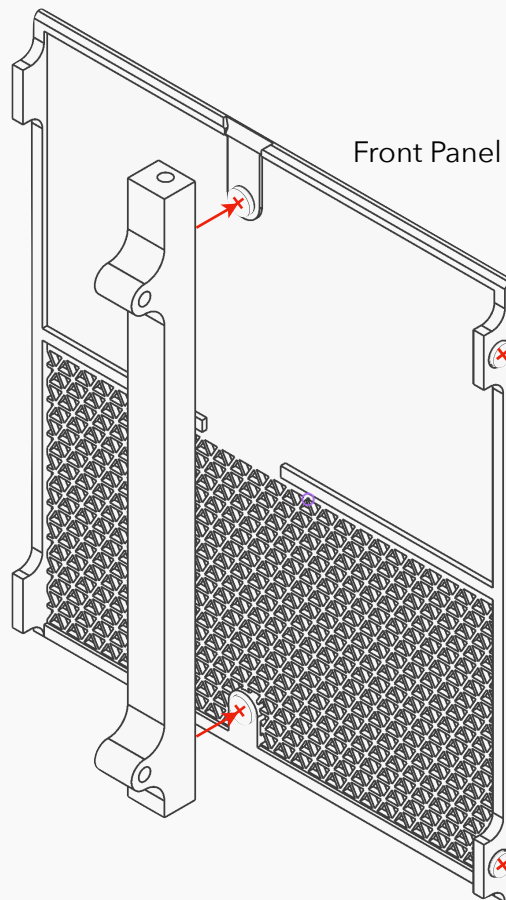
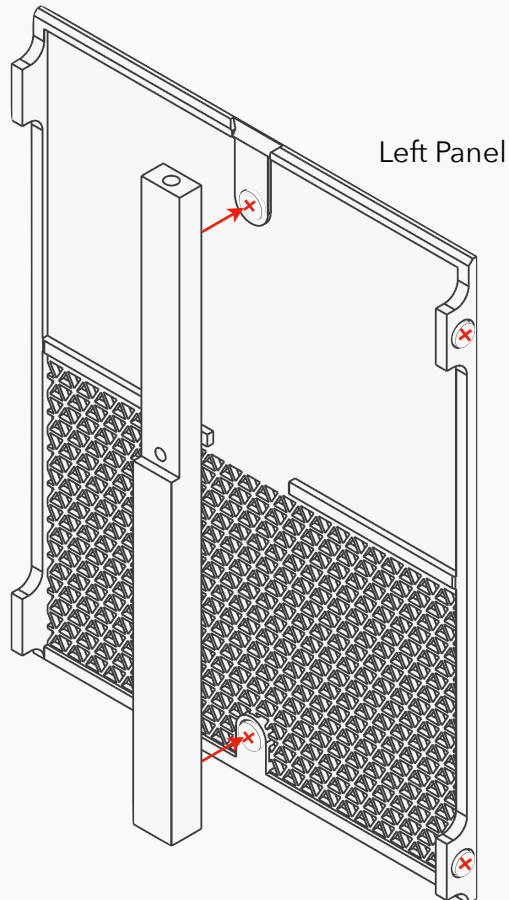
⚠ **Incorrect polarity will prevent the side panels from attaching properly.**



#### Step 4 - Adding round magnets on vertical supports.

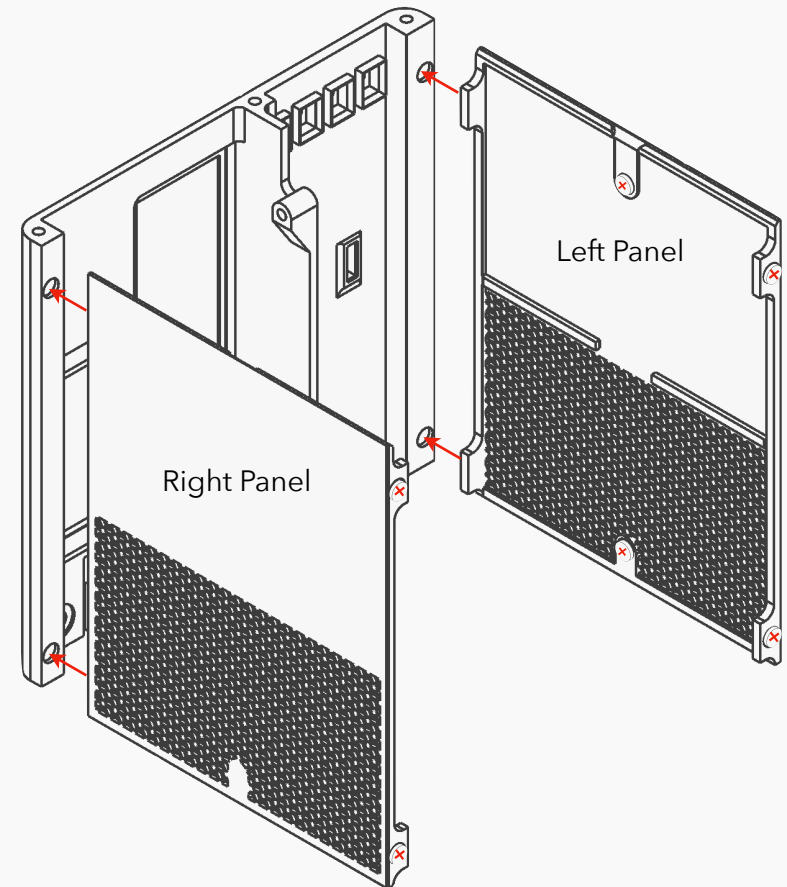
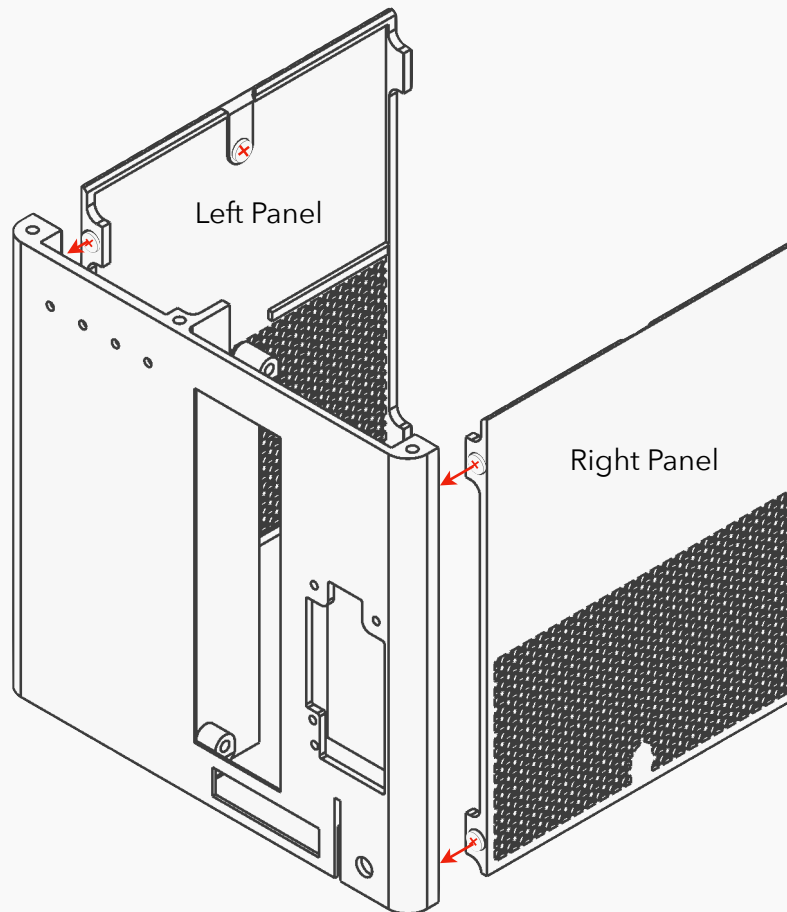
- Take the vertical supports corresponding to each side panel and the front panel:
  - **Left side** → SSD bracket support
  - **Front panel** → Motherboard support
  - **Right side** → Flex PSU support
- Place the vertical supports onto their associated side panels to ensure that the magnets align correctly.
- Remember: the **mark on the second magnet must face inward**.
- Each vertical support has an **arrow indicator**: make sure the arrow is oriented **downward** during installation.

⚠ Incorrect orientation of the supports or magnet polarity will prevent proper assembly of the panels.



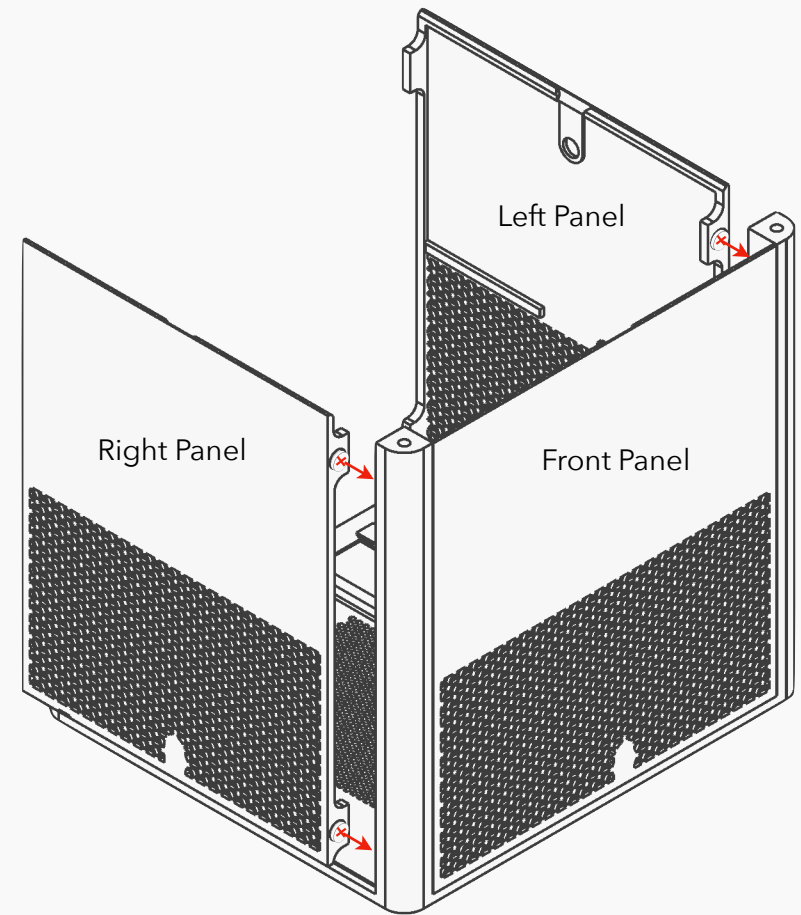
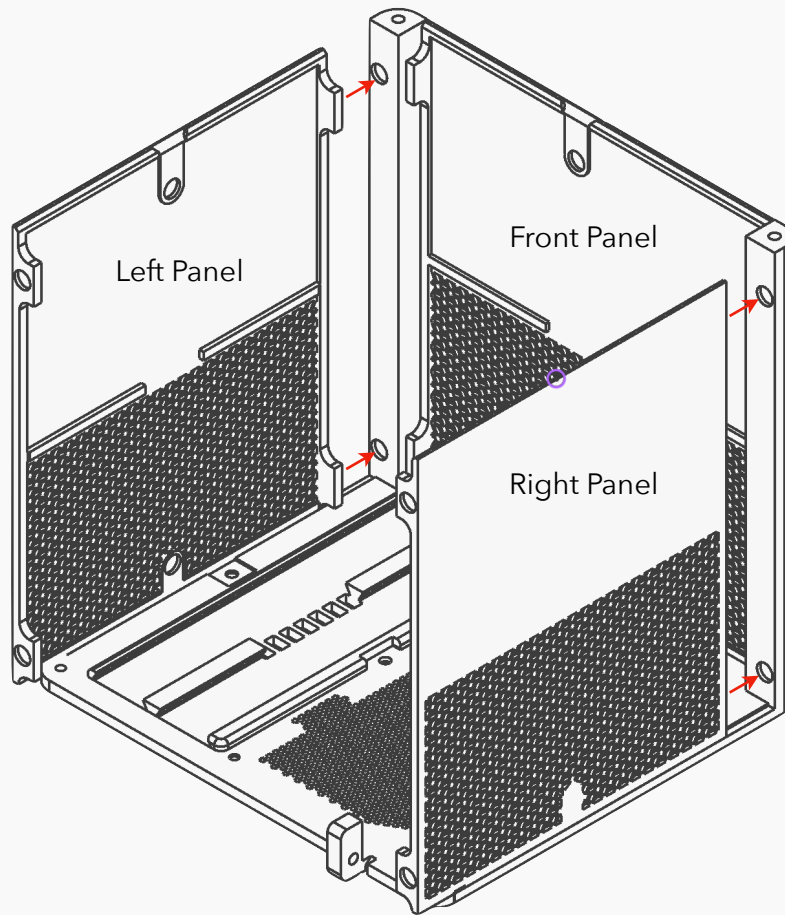
## Step 5 - Attaching the Side Panels to the Back Panel

- **Action** : Insert the magnets from the **left** and **right side panels** into the **back panel**.
  - **Right panel** = PSU and motherboard side
  - **Left panel** = HDD/SSD bays side
- **Important note** : Use the **marked magnets** from the side panels and ensure the mark faces **inward** toward the back panel.
- **Warning** : Make sure you don't confuse the left and right panels. Incorrect orientation or magnet polarity will prevent proper alignment.



## Step 6 - Inserting Magnets into the Vertical Supports

- **Action** : Repeat the same process as in the previous step. Insert the magnets from the **side panels** (Left, Right and Front panel) into the **vertical supports** already mounted on the Base.
- **Important note** : Ensure that the **polarity is consistent** and that the **marked side (cross)** of the magnets faces **inward**, inside the vertical supports.
- **Warning** : Misaligned polarity or reversed magnets will prevent the panels from attaching correctly later in the assembly.



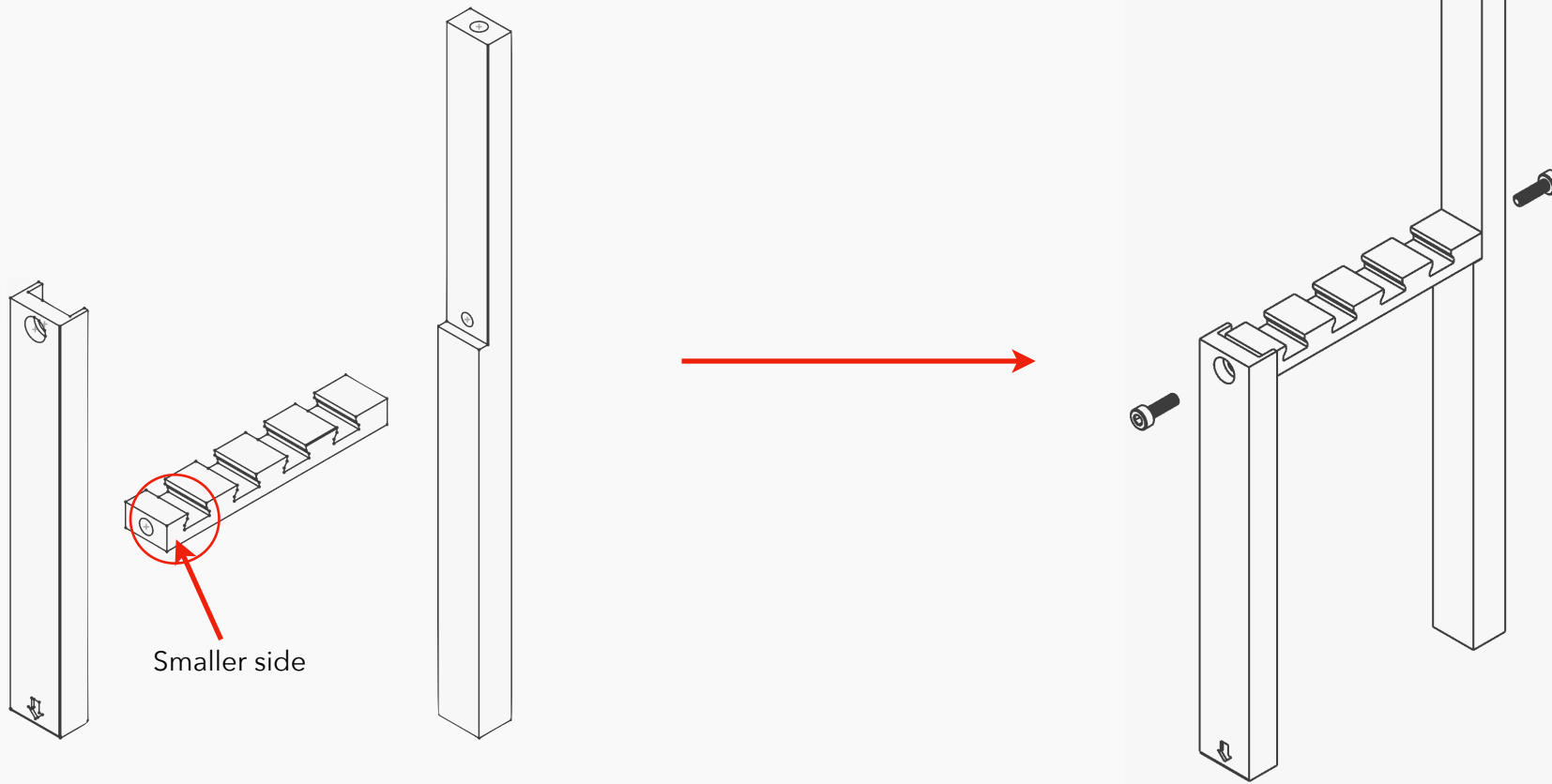
## Step 7 - Assembling the SSD Bracket Support

- **Action** : The SSD bracket support consists of **three parts**. Assemble them together using **two M3 × 10 mm screws**.
- **Important note** : Refer to the provided diagram for correct alignment and orientation of the three parts.
- **Warning** : Do not overtighten the screws – excessive force may damage the printed parts.

### Vertical support - SSD brackets



2x M3-10mm



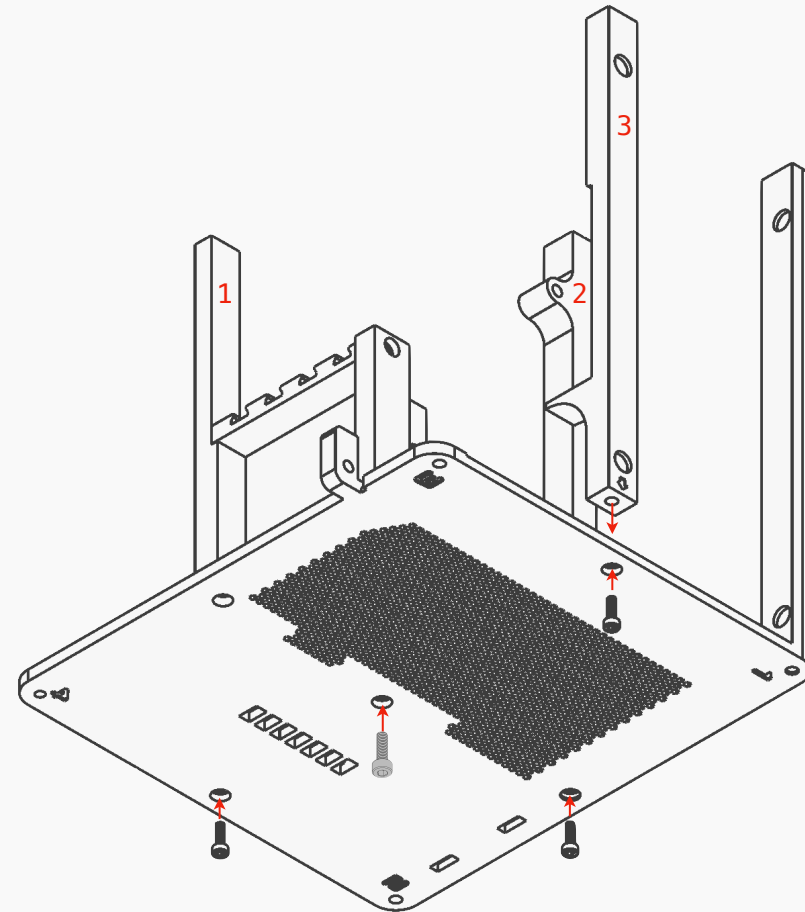
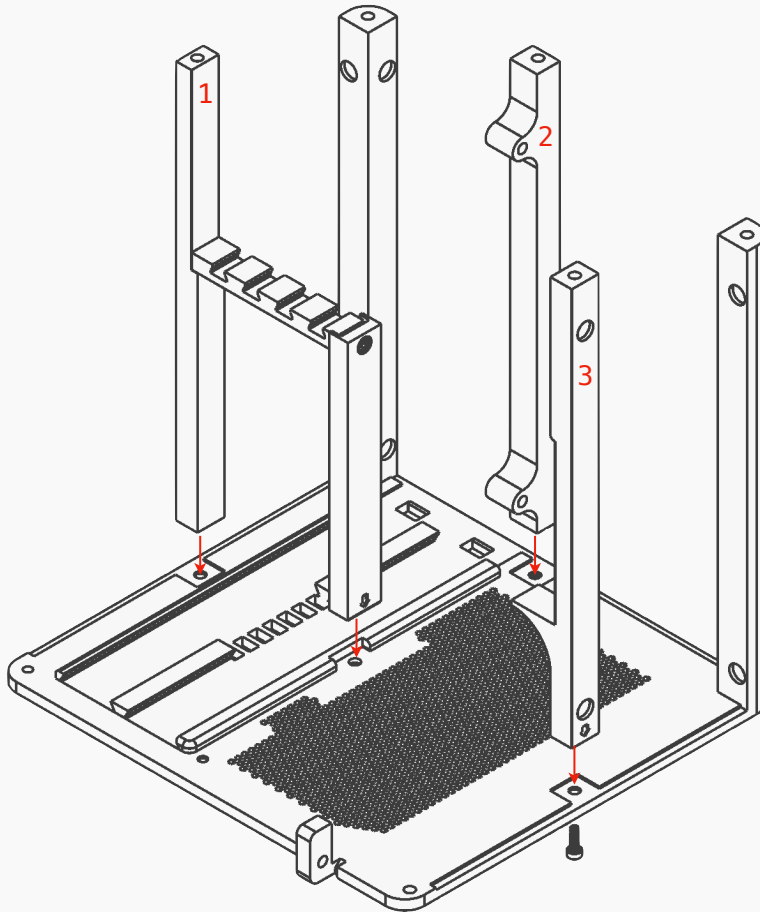
## Step 8 - Mounting the Vertical Supports on the Base

- **Action** : Attach the three vertical supports (**SSD support, Flex PSU support, and Motherboard support**) to the **Base** using a total of **4x M3 × 10 mm screws**.
- **Important note** : Each vertical support has an **arrow indicator**. Make sure the arrows are oriented **downward** and pointing to the **outer side** of the case.
- **Warning** : Incorrect orientation of the supports will prevent the correct installation of the brackets and panels later in the assembly.

### Vertical supports & Base



4x M3-10mm



## Step 9 - Attaching the Back Panel and Feet

- **Action** : Assemble the **Back panel** with the **feet**. Each foot is **numbered** and must be placed in its **corresponding position** under the Base.
- **Important note** : Secure the assembly using **4 × M3 × 14 mm screws** for the feet, and **1 × M3 × 10 mm screw** in the center of the Back panel.
- **Warning** : Make sure each foot is **placed on its correct number**. Incorrect positioning will cause instability of the NAS case.

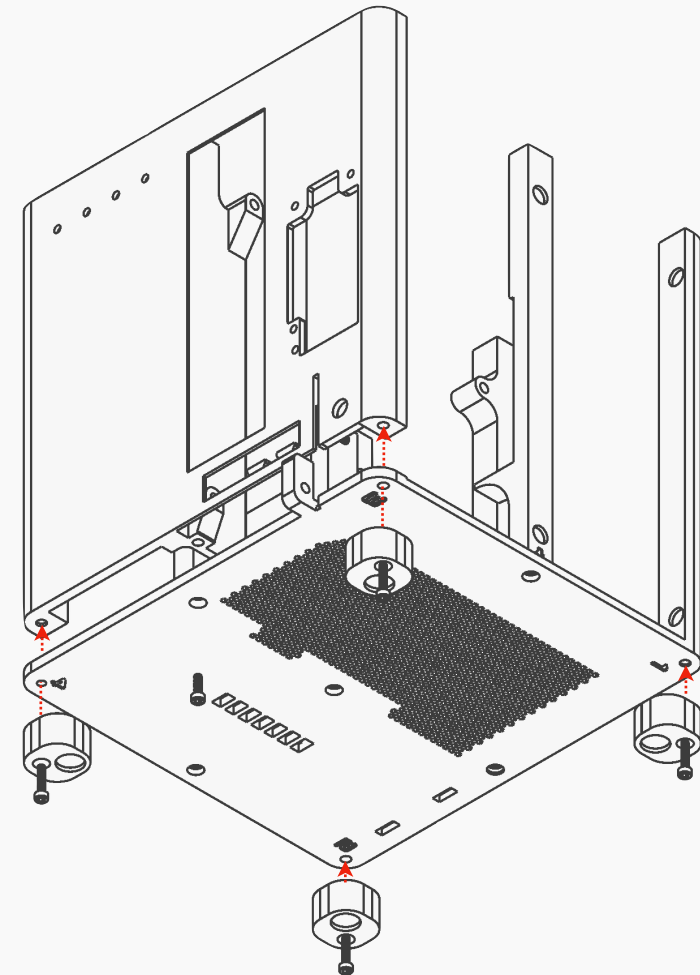
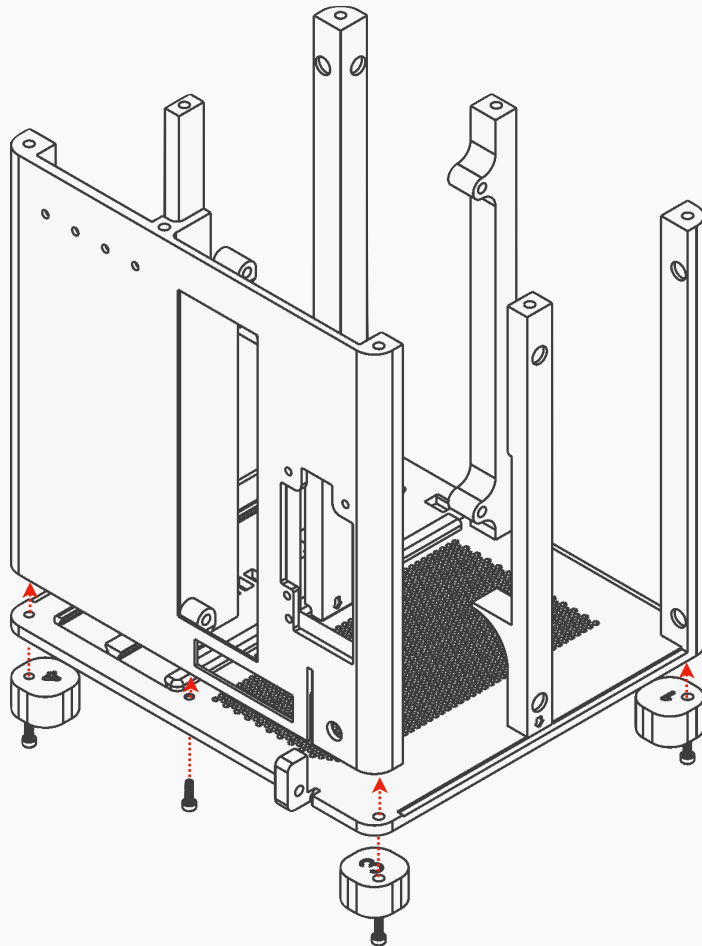
### Base & Back & Feet



1x M3-10mm



4x M3-14mm



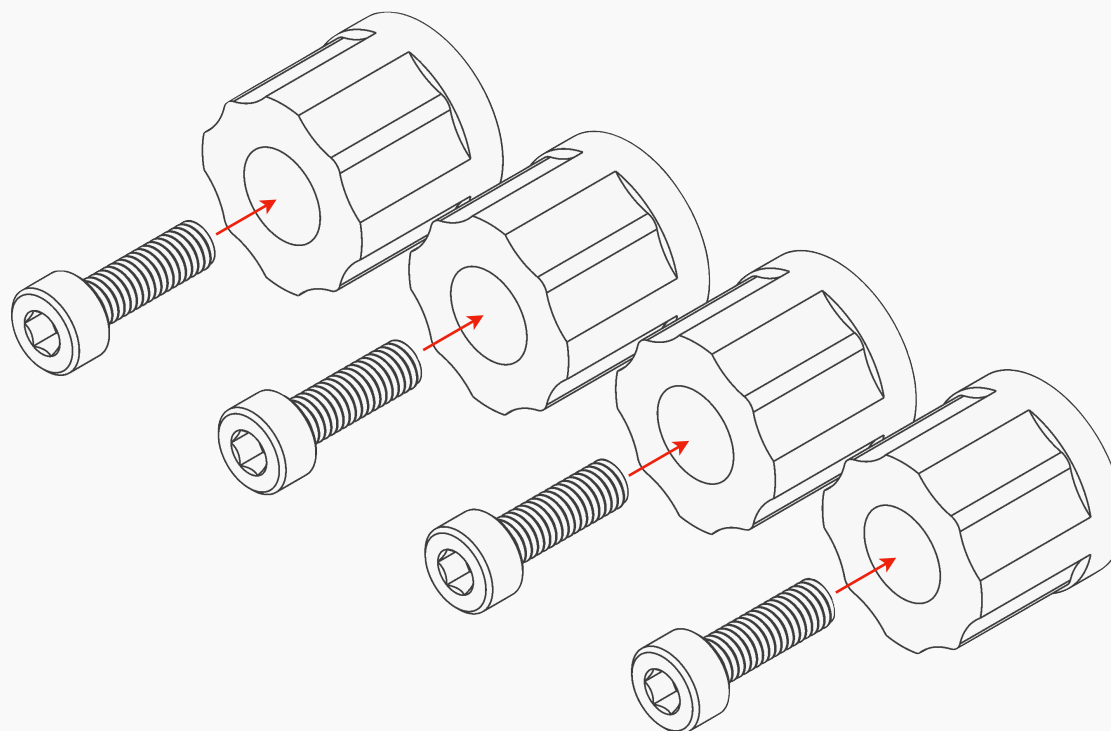
## Step 10 - Securing the SSD Brackets

- **Action** : Insert **4 × M3 × 10 mm screws** into the **four screw caps**. These screws hold the **SSD brackets** in place.
- **Note** : The screw caps have a **tight tolerance**, so installing the screws may require some extra care and pressure.

### Screw caps



4x M3-10mm



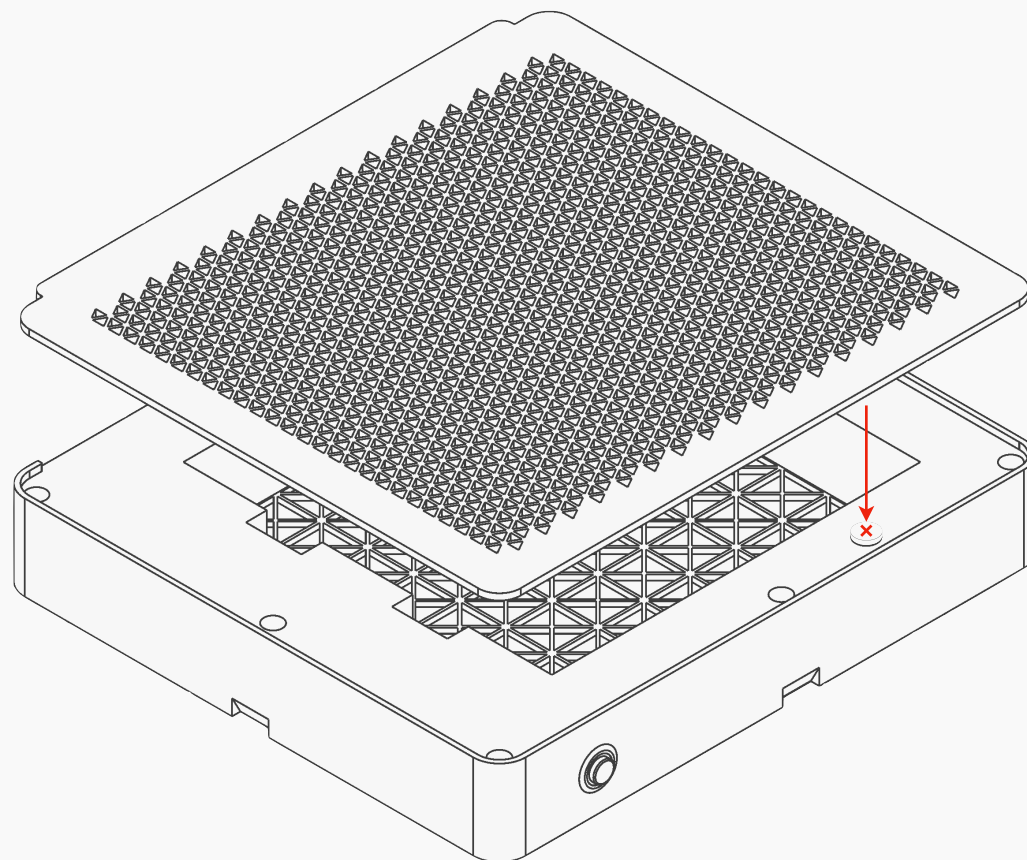
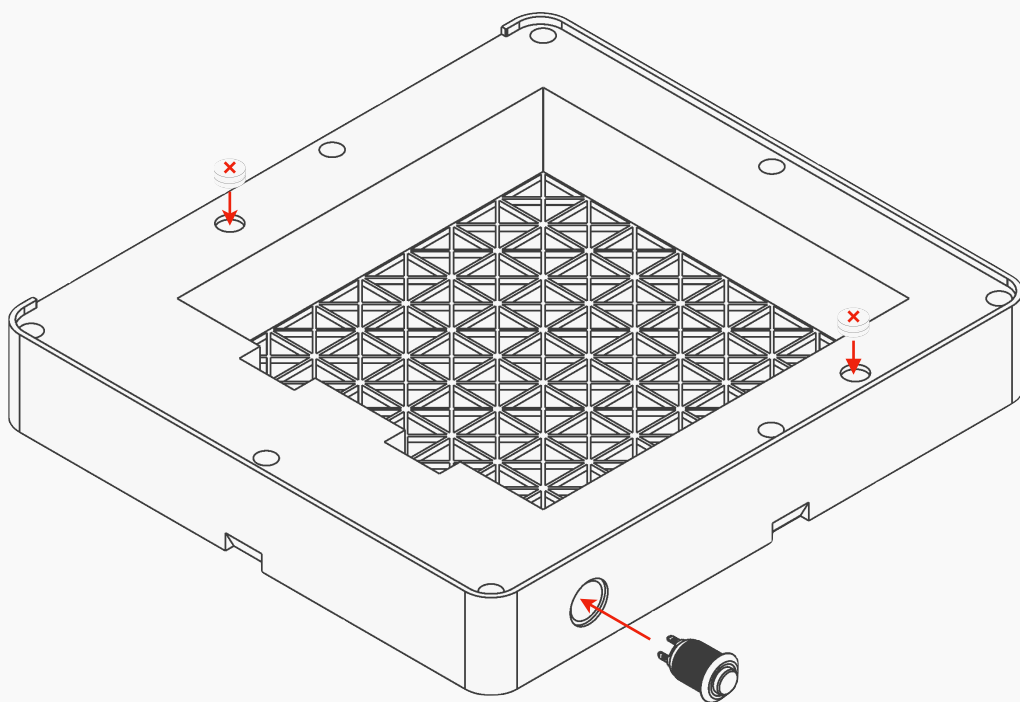
## Step 11 - Installing Magnets and Power Button

- **Action :** Install the **remaining magnets** on the **fan module** and the **top cover**.
  - Always check the **polarity**.
  - Place **two magnets per slot** on the **fan module** to ensure the correct orientation for the magnets on the **top cover**.
- **Action :** Install the **power button** on the fan module.
  - First, pass the **cable** through the hole.
  - Then, push the **button** firmly into place.

### SIDE PANELS & FRONT PANEL

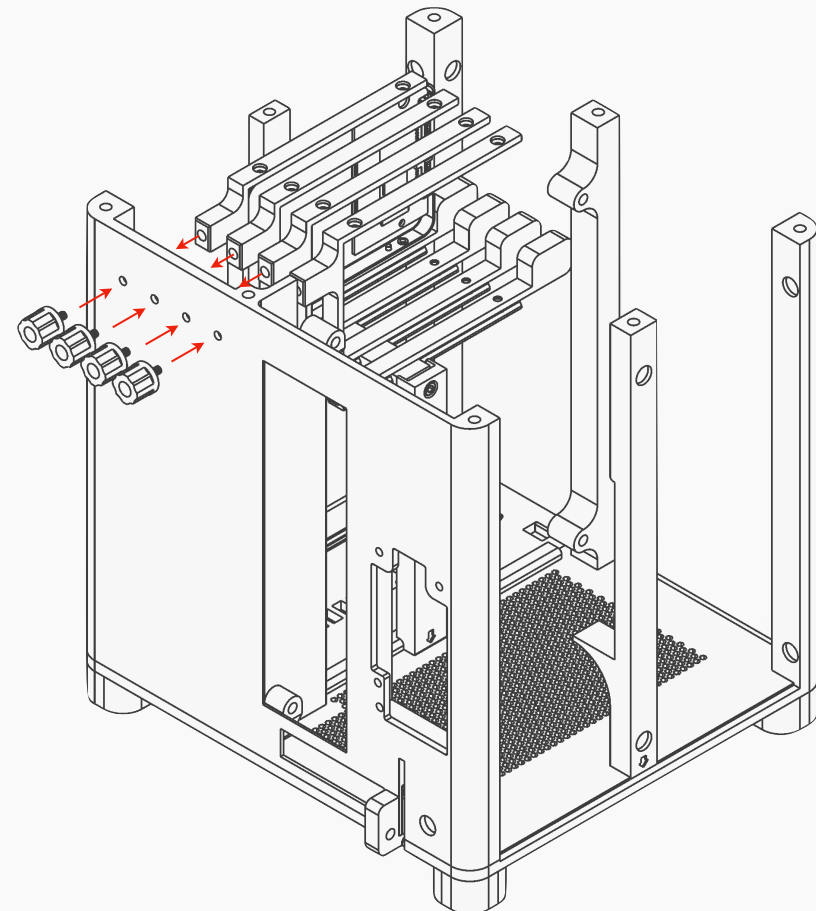
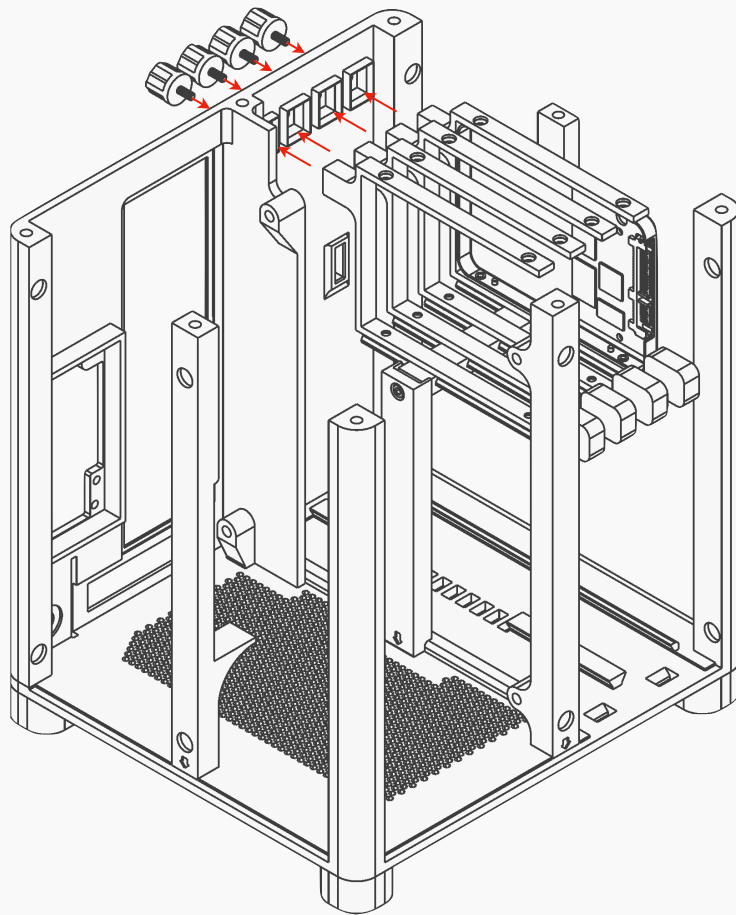


2x Round Magnets 8x2mm



## Step 12 - Installing the SSDs

- **Action** : If SSDs are used, insert them into their **brackets**.
- **Action** : Slide the brackets into the **dedicated rails** inside the case.
- **Action** : Secure each bracket by tightening the **rear mounting screws** at the back of the case.



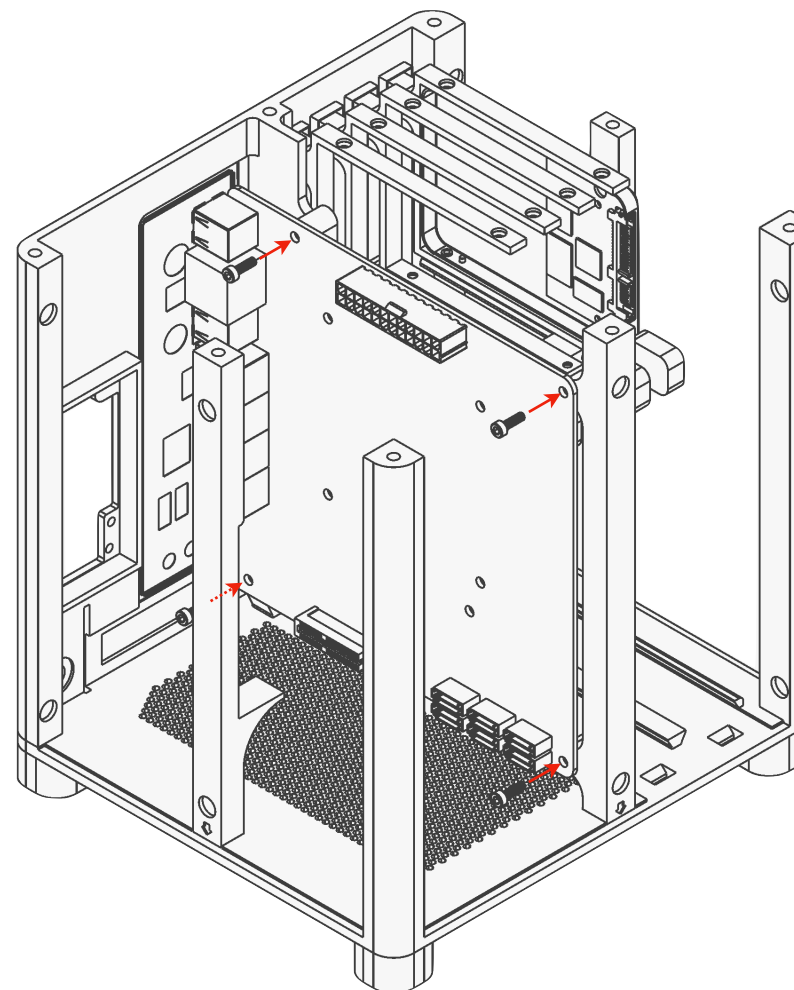
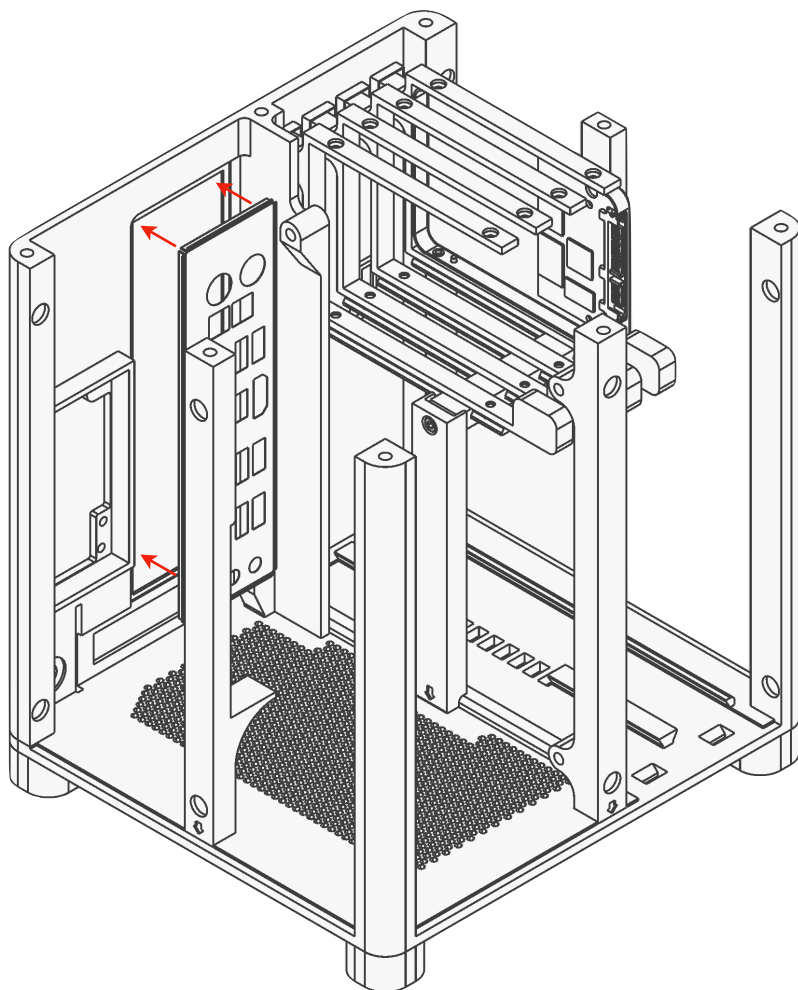
### Step 13 - Installing the Motherboard and I/O Shield

- **Action** : Install the **I/O shield** from the inside of the case.
- **Note** : Make sure the orientation is correct before placing the motherboard. The I/O shield is **optional** since the case is plastic, but it provides a cleaner look.
- **Action** : Place the **motherboard** in position and secure it with **4 × M3 × 10 mm screws**.

#### Motherboard

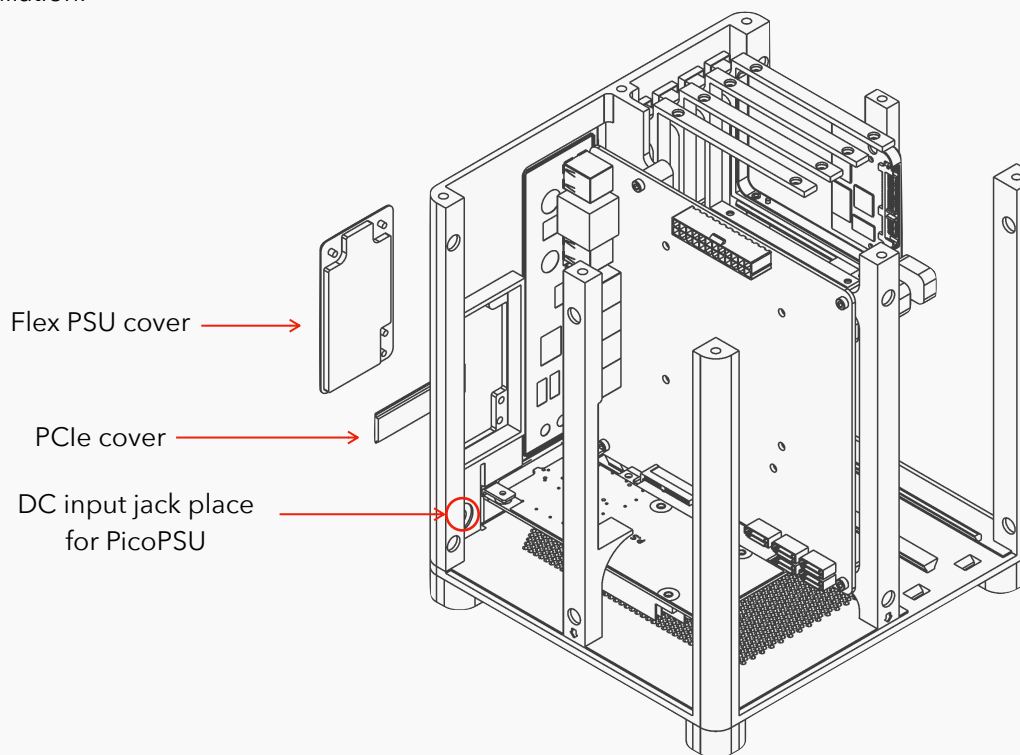


4x M3-10mm



## Step 14 - Installing the PSU and SATA Cables

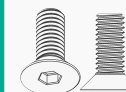
- **Action** : Install the chosen **power supply**:
  - **PicoPSU** → Plug it directly into the motherboard. The DC input jack is located at the bottom; insert it and secure it with screws from the outside.
  - **Flex PSU** → Place it against the **back panel** from the **inside** of the case, then secure it by tightening the screws from the **outside**. The unit also rests on its vertical support.
- **Action** : If no Flex PSU is used, install the **cover plate** provided for the Flex PSU slot. This cover is mounted from the **outside** of the case.
- **Action** : Once the PSU (or cover plate) is in place, connect the **SATA power and data cables** that will link the HDDs to the motherboard and the PSU.
- **Note** :
  - Space is limited, so it is strongly recommended to install the SATA cables **before placing the HDDs**.
  - Use **90° angled SATA connectors** (at least on the HDD side) for easier installation and better cable management.
  - If a **PCIe card** needs to be installed, it is best to do so **before mounting the Flex PSU**. You may need to temporarily remove the Flex PSU vertical support during installation.



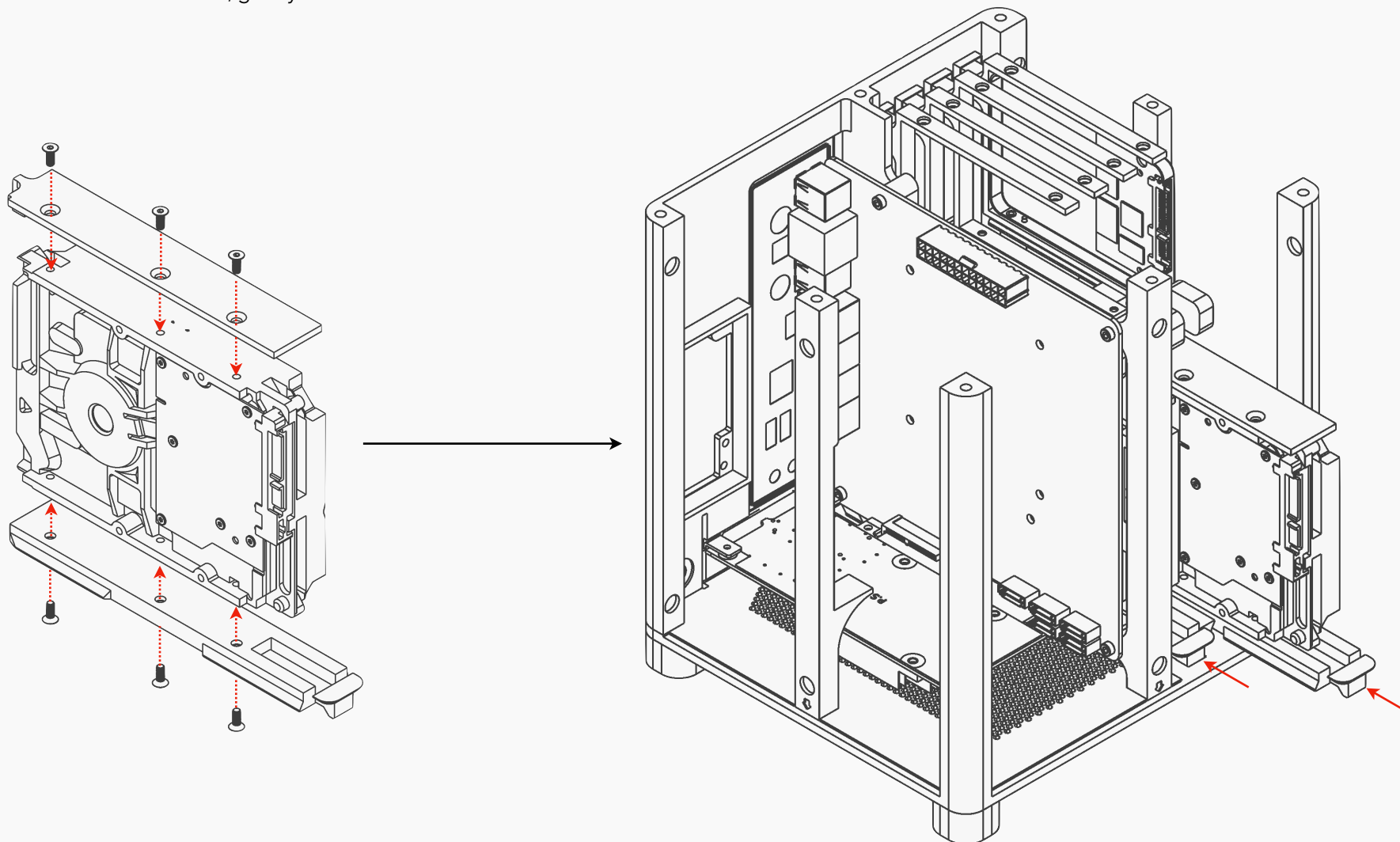
## Step 15 - Installing the HDDs

- **Action** : Mount the **HDDs** onto their **brackets**, making sure the **connectors are facing the front** of the NAS.
- **Action** : Slide each bracket into its **dedicated rail** inside the case.
- **Action** : Push the bracket fully to the back until the rail locks in place. The rail is secured when the **front latch tab** snaps into its slot.
- **Note** : To remove a bracket later, gently lift the **latch tab** to unlock the rail and slide the bracket back out.

### HDDs brackets



12x 6-32 Phillips Screw  
5/16" Flat Head



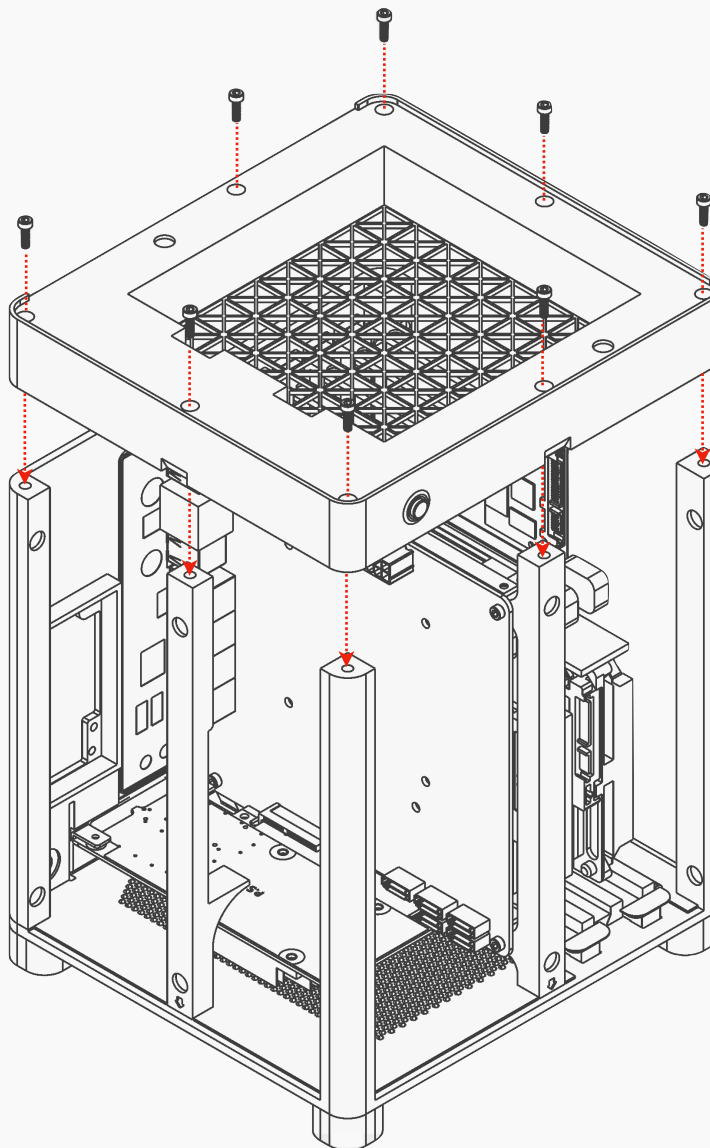
## Step 16 - Installing the Fan Module

- **Action** : Place the **Fan module** on top of the case to close it.
- **Action** : Make sure the orientation is correct – the **power button** must face the **front side**.
- **Action** : Secure the module using **8 × M3 × 10 mm screws**.

### FAN Module

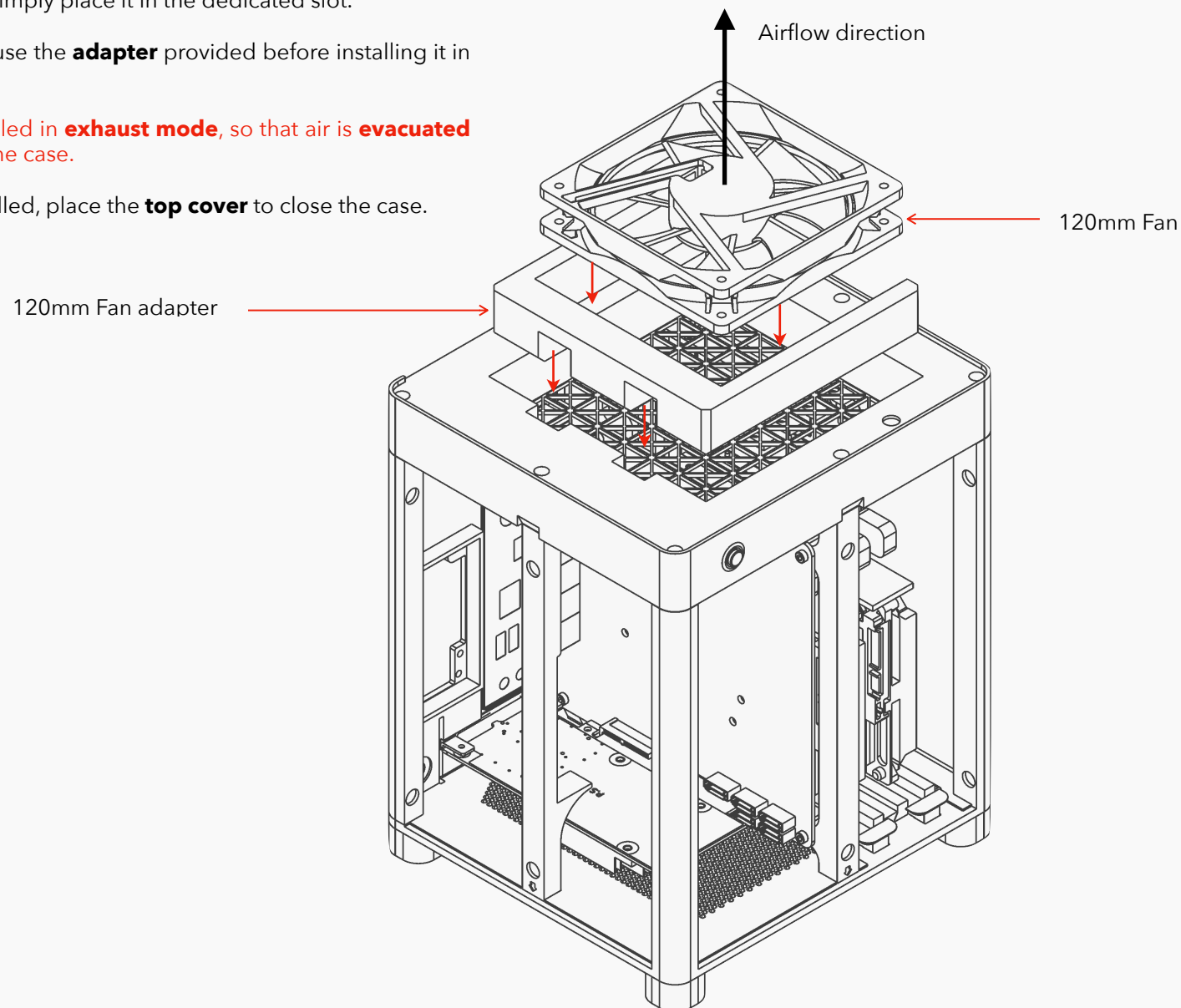


8x M3-10mm



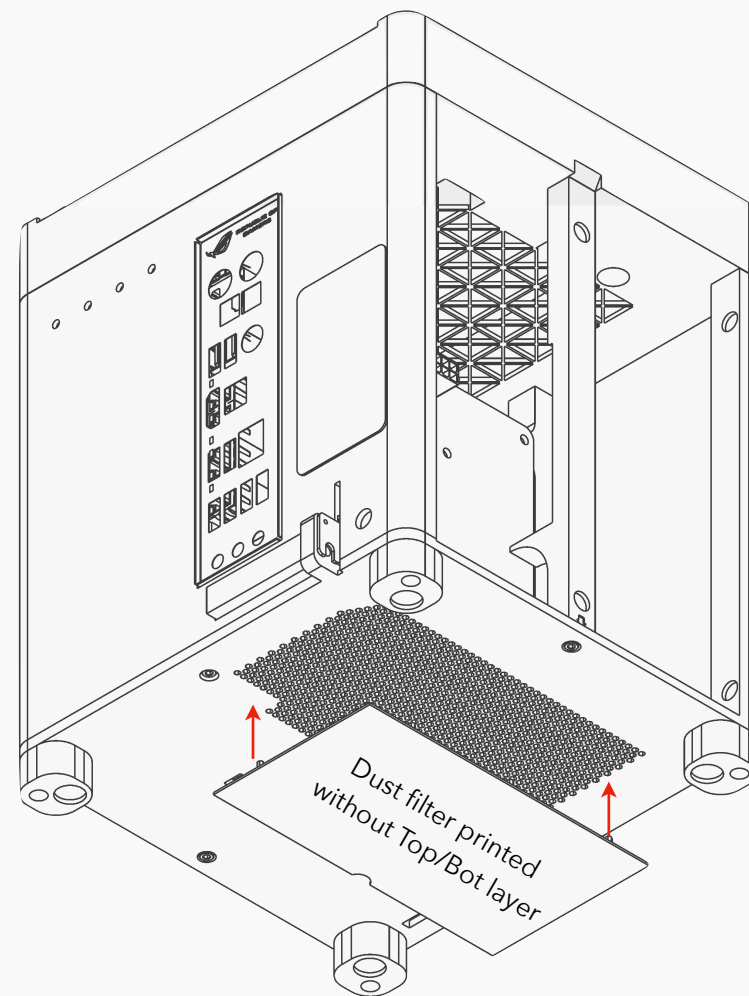
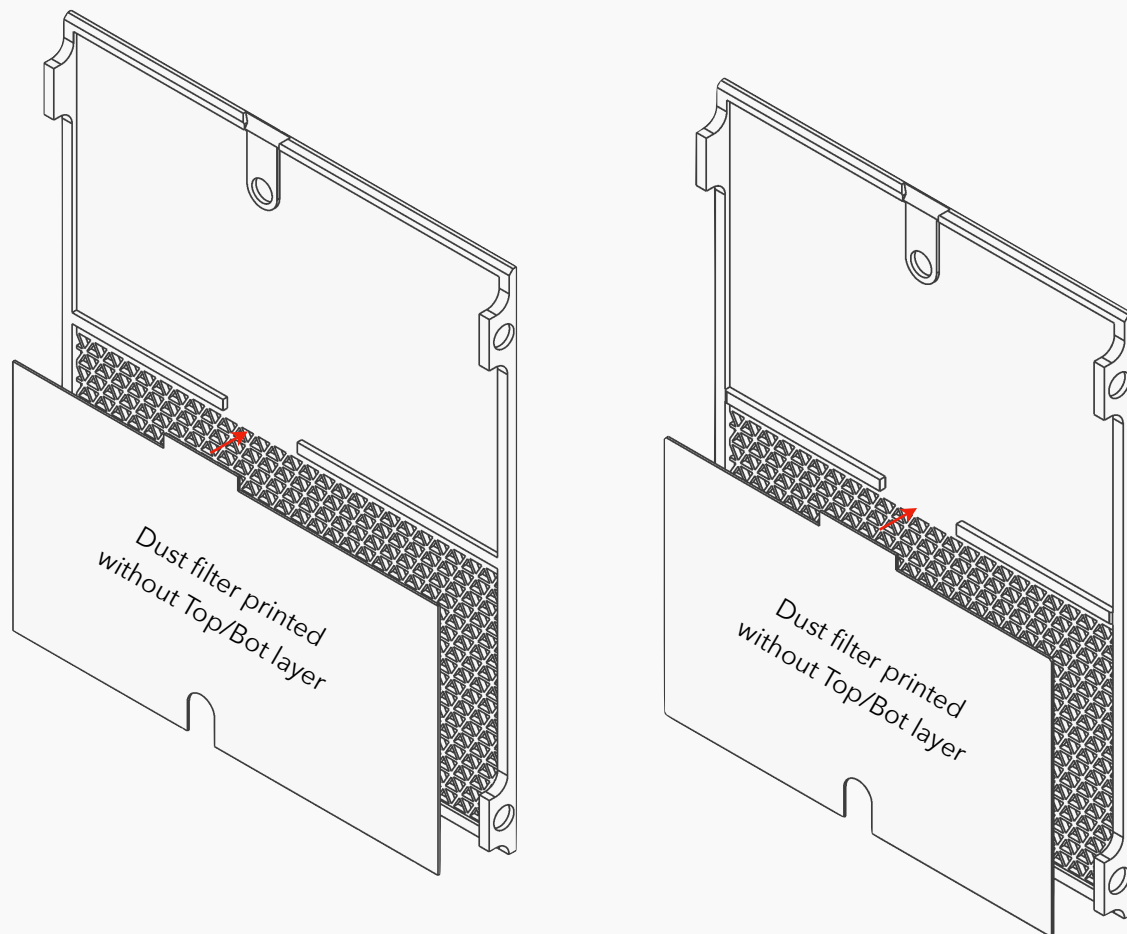
## Step 17 - Installing the Cooling Fan

- **Action** : Install a **120 mm or 140 mm fan** in the fan module.
- **Action** : Make sure the **fan cable is routed toward the motherboard side**.
- **Action** : For a **140 mm fan**, simply place it in the dedicated slot.
- **Action** : For a **120 mm fan**, use the **adapter** provided before installing it in the slot.
- **Note** : The fan must be installed in **exhaust mode**, so that air is **evacuated upward** through the top of the case.
- **Action** : Once the fan is installed, place the **top cover** to close the case.



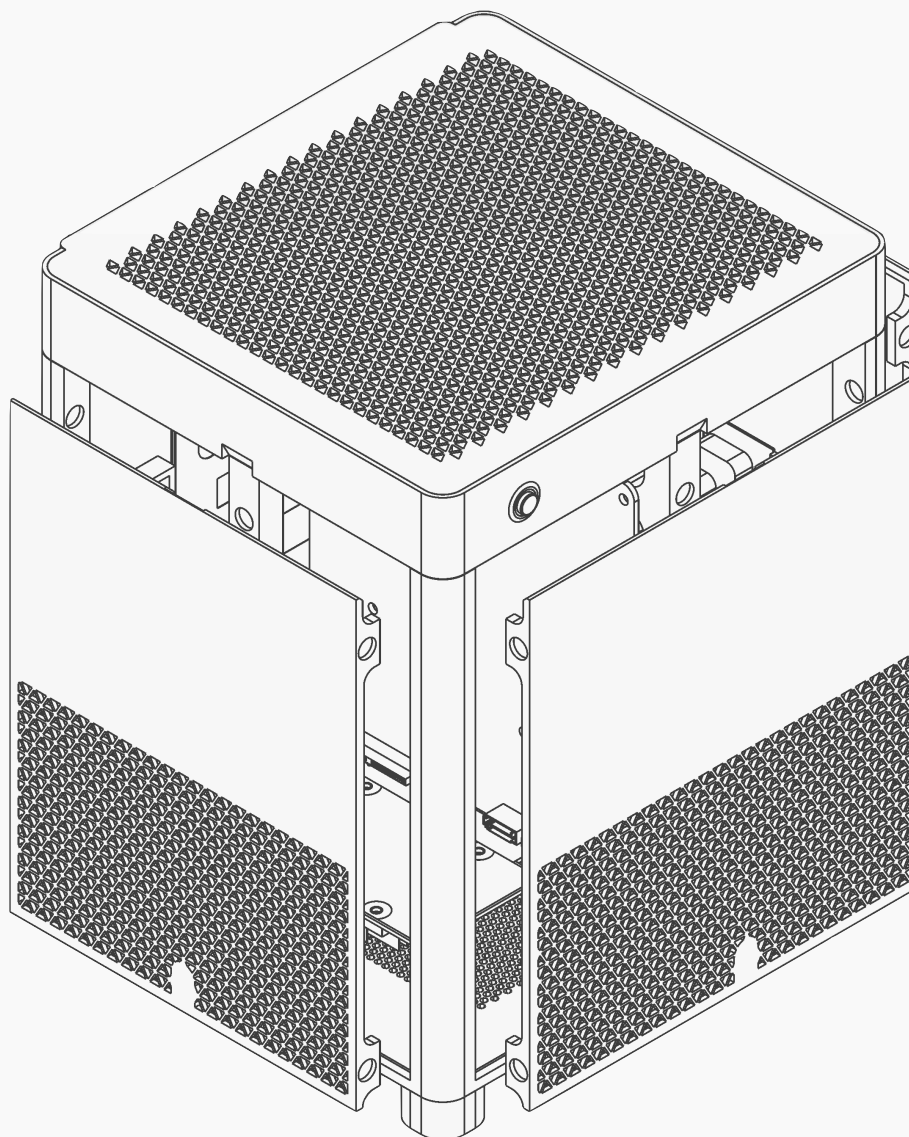
## Step 18 - Installing the Dust Filters

- **Action** : Install the **dust filters** on each **side panel**.
- **Action** : Place the additional **dust filter** under the **Base**.
- **Note** : Dust filters are **optional**, but they help reduce dust accumulation inside the NAS.



## Step 19 - Installing the Side Panels

- **Action** : Install the **side panels** onto the NAS.
- **Action** : Once installed, check that everything is correctly aligned and securely in place.
- **Note** : If you notice misalignment between the **vertical supports** and the **fan module**, simply loosen the screws between the two parts, adjust the alignment, and then retighten the screws.



## 8. Final Checklist

Make sure the following points are completed and verified before starting your NAS:

- **All screws** are tightened and all inserts are properly seated.
- **Motherboard** is correctly installed and aligned with the I/O shield (if used).
- **PSU (PicoPSU or Flex PSU)** is firmly secured and the input jack is accessible.
- **SATA data and power cables** are connected to all drives and the motherboard.
- **SSDs** are properly mounted in their brackets and secured in the rails.
- **HDDs** are fully inserted, locked in place, and oriented with connectors facing the front.
- **Fan** is installed in **exhaust mode**, blowing air upward out of the case.
- **Top cover and side panels** are installed and aligned correctly.
- **Dust filters** are installed (if used).
- **Power button** is connected and firmly seated in the fan module.

⚠ Only power on the NAS once everything above has been verified.

## 9. Where to Go Next

Congratulations – your **3D printed NAS case assembly is now complete!**

This guide has focused on the **hardware assembly only**.

To get your NAS up and running, you will need to install and configure the software of your choice.

Here are some useful resources to help you with the next steps:

- **Unraid** → [Official documentation](#) and community guides on YouTube.
- **TrueNAS** → [Official website](#) with detailed setup tutorials.
- **OpenMediaVault** → [Project page](#) for Debian-based NAS setup.
- **DIY NAS Communities** → Reddit (/r/homelab, /r/DataHoarder) and Discord groups for tips and real-world builds.

Depending on your hardware, you may want to explore:

- RAID configuration (redundancy vs storage efficiency)
- Cache drive setup (using NVMe for faster performance)
- Docker containers and virtualization for extended use cases

# Thank You

Thank you for following this guide and building your own **3D printed NAS case**!  
I hope this project helps you enjoy a reliable and customized storage solution.

If you have feedback or suggestions, feel free to reach out – every contribution helps improve the project.

## License

This project is shared under the **Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)** license.

-  You are free to download, print, and share this project for **personal, non-commercial use only**.
-  You are **not allowed** to modify the files or redistribute derivative versions.
-  You are **not allowed** to use this project for commercial purposes.

If you share your build online, please **credit the original author** and link back to the project page.

