

# Storage Configurator

Lenovo ThinkStation P3 Tower Gen 2, P3 Ultra Gen 2, and P3 Tiny Gen 2



# Table of Contents

Overview.....	3
Section 1 – Installing NVMe Devices in P3 Tower Gen 2.....	4
Section 2 – Installing NVMe Devices in P3 Ultra SFF Gen 2.....	10
Section 3 – Installing NVMe Devices in P3 Tiny Gen 2 .....	17
Section 4 – Installing SATA Drives in P3 Tower Gen 2 .....	21
Section 5 – Installing SATA Drives in P3 Ultra SFF Gen 2.....	32
Section 6 – Optical Disk Drive in P3 Tower Gen 2 .....	37
Section 7 – Appendix .....	38
Section 8 – Document Revision History .....	44



## Overview

The purpose of this document is to provide guidelines for users on how to optimally configure the system storage in the ThinkStation P3 Gen 2 series to ensure proper functionality.

Below is a table showing the drive type support of each system in the P3 Gen 2 series:

*Table 1 - P3 Gen 2 Series Storage Support*

System	M.2 NVMe	SATA	Notes
<b>P3 Tower Gen 2</b>	Supported, Max QTY: 4*	Supported, Max QTY: 4*	3.5" SATA or 2.5" SATA with adapter
<b>P3 Ultra Gen 2</b>	Supported, Max QTY: 4*	Supported, Max QTY: 1*	3.5" SATA or 2.5" SATA with adapter
<b>P3 Tiny Gen 2</b>	Supported, Max QTY: 3	Not Supported	

\*Max quantity varies by configuration. See relevant Sections for more information.

The following sections give detailed instructions on the installation of M.2 NVMe and SATA drives, as well as provide part numbers for required components needed for proper installation. ODD support in P3 Tower Gen 2 is discussed in [Section 6](#).

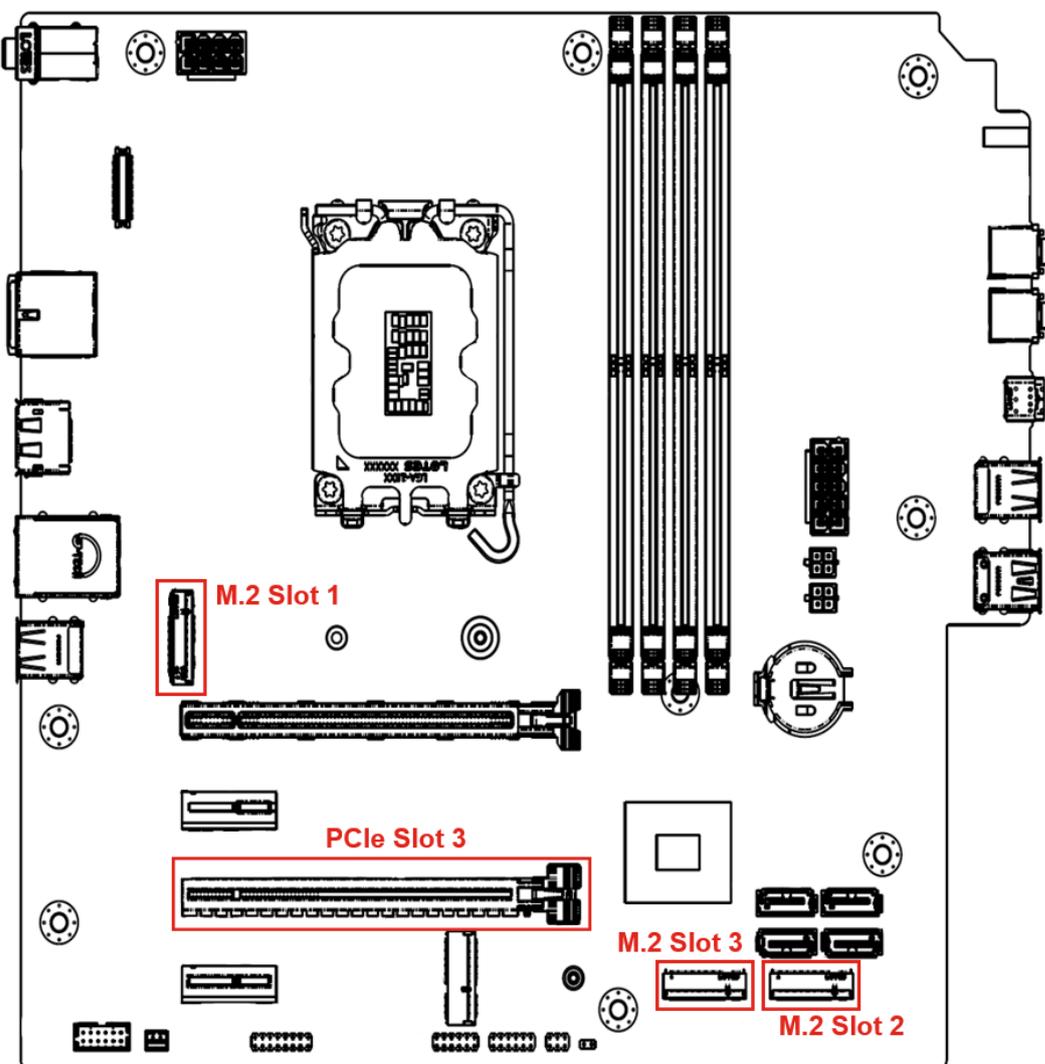
P3 Tower Gen 2, P3 Ultra SFF Gen 2, and P3 Tiny Gen 2 support RAID levels 0,1, & 5 for onboard NVMe drives. P3 Tower Gen 2 can support levels 0, 1, 5, & 10 for SATA drives, depending on system configuration. RAID configurations and setup instructions are discussed in the ThinkStation P3 Gen 2 RAID Configurator, available on the [Lenovo Support Site](#).

# Section 1 – Installing NVMe Devices in P3 Tower Gen 2

M.2 NVMe devices can be installed into the following locations on the ThinkStation P3 Tower Gen 2 motherboard below (see *Figure 1*).

Slot 1 supports Gen 5 drives, while Slots 2 and 3 support single and Gen 4 drives. An M.2 Add-In Card (AIC) can be installed in PCIe Slot 3 to support one drive at Gen 3 speeds.

*Figure 1 - P3 Tower Gen 2 Motherboard Diagram with NVMe Callouts*

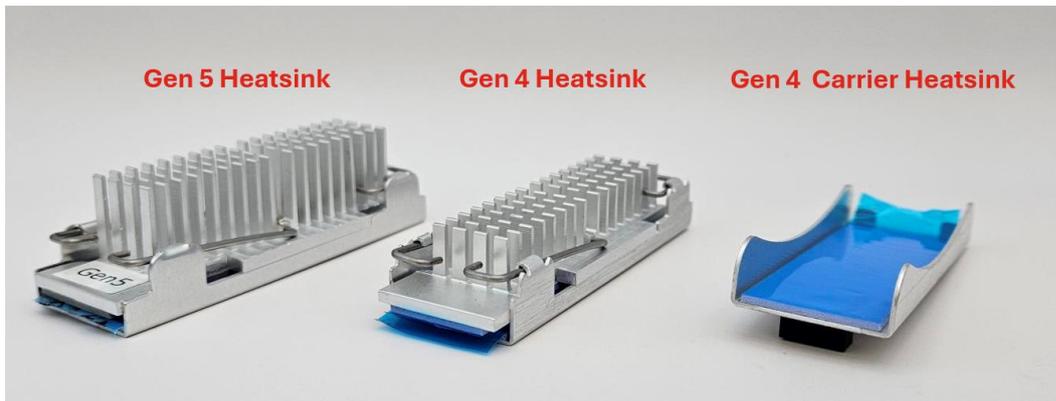


Below is a chart overview of the M.2 slots:

Table 2 - P3 Tower Gen 2 NVMe Overview

Slot	Supported Gen Speed	Required Onboard Heatsink
Slot 1	Gen 5	Gen 5 Heatsink
Slot 2 & 3	Gen 4	Gen 4 Heatsink Gen 4 Carrier Heatsink
PCIe Slot 3 (Add-In Card)	Gen 3	Integrated on AIC

Figure 2 - P3 Tower Gen 2 M.2 Heatsinks



**Note:**

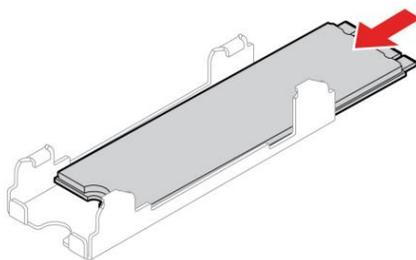
P3 Tower Gen 2 systems come equipped with only the necessary onboard M.2 parts required for the configuration when it was originally ordered from Lenovo. Below is an outline of which heatsink will be included in the system based on its original config:

- If an onboard Gen 5 drive is included, all onboard drives (including any Gen 4 drives) will be shipped with the Gen 5 heatsink.
- If the only onboard M.2 drives are Gen 4, then the following heatsink will be shipped based on storage capacity:
  - >512GB capacity → all onboard Gen 4 M.2 drives will be shipped with a Gen 4 heatsink.
  - <512GB capacity → all onboard Gen 4 M.2 drives will be shipped with a Gen 4 carrier heatsink.

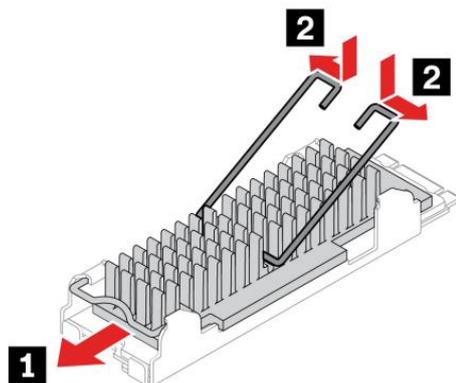
See the [Appendix](#) for more info about parts needed for M.2 storage upgrades.

**For M.2 NVMe drives in the onboard M.2 slots:**

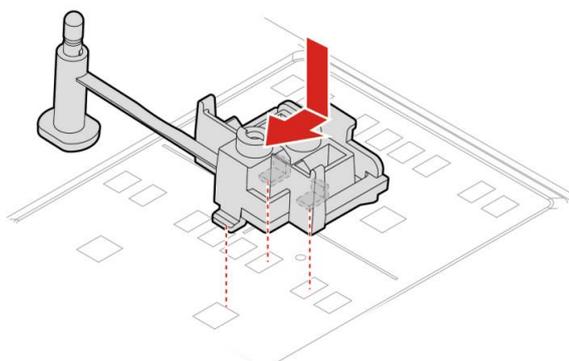
1. Remove the film that covers the thermal pad on the carrier, if any. Then, install the M.2 solid-state drive by sliding the drive in the carrier.



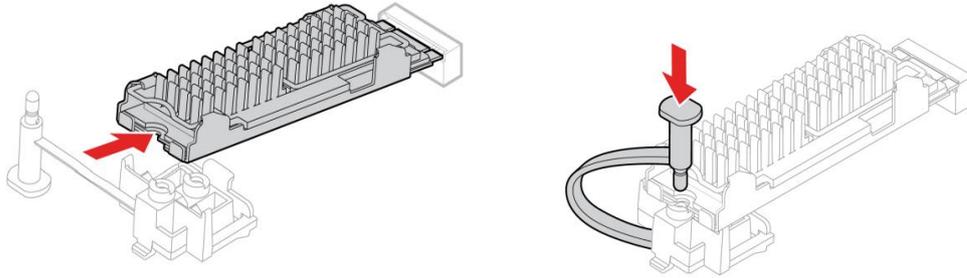
2. Remove the film that covers the thermal pad at the bottom of the heat sink, if any. Then, install the heat sink onto the M.2 drive in the carrier.



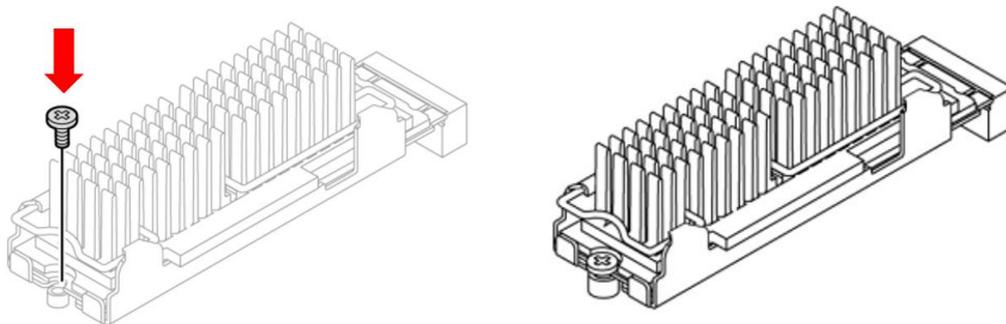
3. For Gen 4 M.2 drives: If one not already present, install the M.2 drive bracket into the system.



4. For Gen 4 M.2 drives: Install the drive into the Gen 4 M.2 slot and insert the stopper into the M.2 bracket to secure the drive.

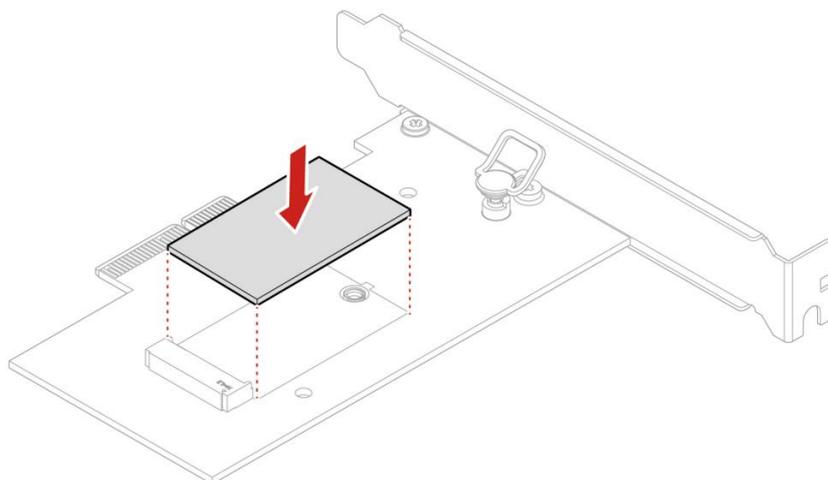


5. For Gen 5 M.2 drives: Insert the drive into the Gen 5 M.2 slot and secure the drive using the onboard screw.

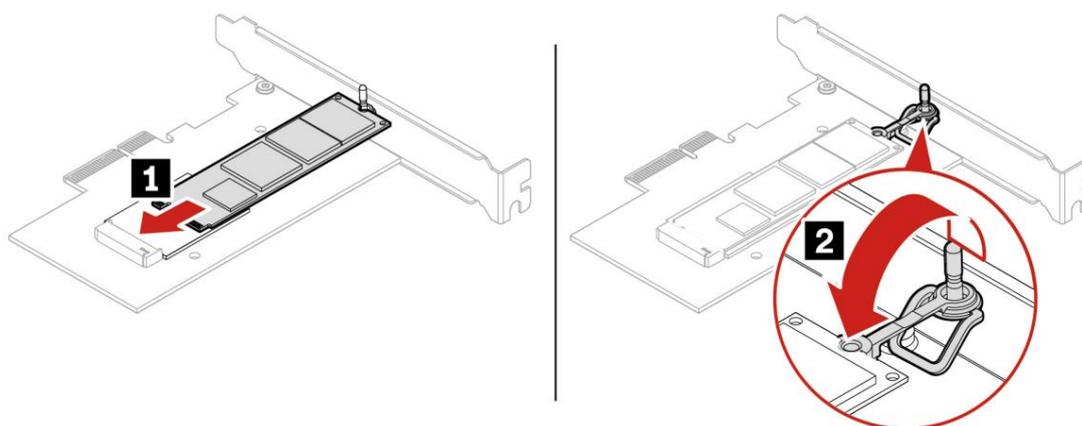


**For M.2 NVMe drives installed in the PCIe Add-in Card (AIC):**

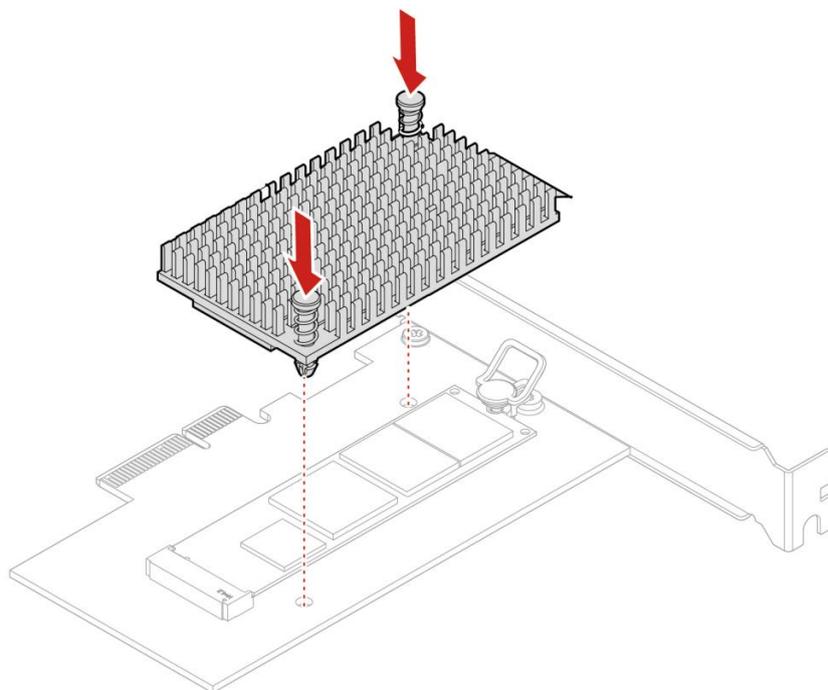
1. Ensure that a thermal pad is placed in position on the M.2 solid-state drive PCIe adapter.



2. Insert the new M.2 solid-state drive into the M.2 slot. Then, insert the plug of the retention latch into the hole to secure the new drive.



3. Position the heat sink on the M.2 solid-state drive PCIe adapter. Ensure that the two mounting studs in the heat sink are aligned with the holes in the M.2 solid-state drive PCIe adapter. Then, push the mounting studs downward to secure the heat sink to the adapter.



**Note:** The M.2 NVMe Add-in Card's option part number is [4XH0L08578](#). This kit will include the add-in card, thermal pad, and heatsink. See [Appendix](#) for more details.

## Section 2 – Installing NVMe Devices in P3 Ultra SFF Gen 2

M.2 NVMe devices can be installed into the following locations on the ThinkStation P3 Ultra SFF Gen 2 motherboard below (See *Figure 3*).

P3 Ultra SFF Gen 2 has two M.2 slots next to its CPU: One supports **Gen 5** M.2 2280 drives, the other **Gen 4** M.2 2280. On the other side of the motherboard (RAM Side), an additional **Gen 4** M.2 can be installed with a custom heatsink and fan assembly. All three slots use thermal pads capable of supporting double-sided drives.

P3 Ultra SFF Gen 2 also supports a single-sided drive in a low-profile AIC adapter, which runs at Gen 3 speed. This card is installed using a PCIe adapter in the system's MXM slot.

*Figure 2 - P3 Ultra SFF Gen 2 Motherboard (CPU Side) with NVMe Callouts*

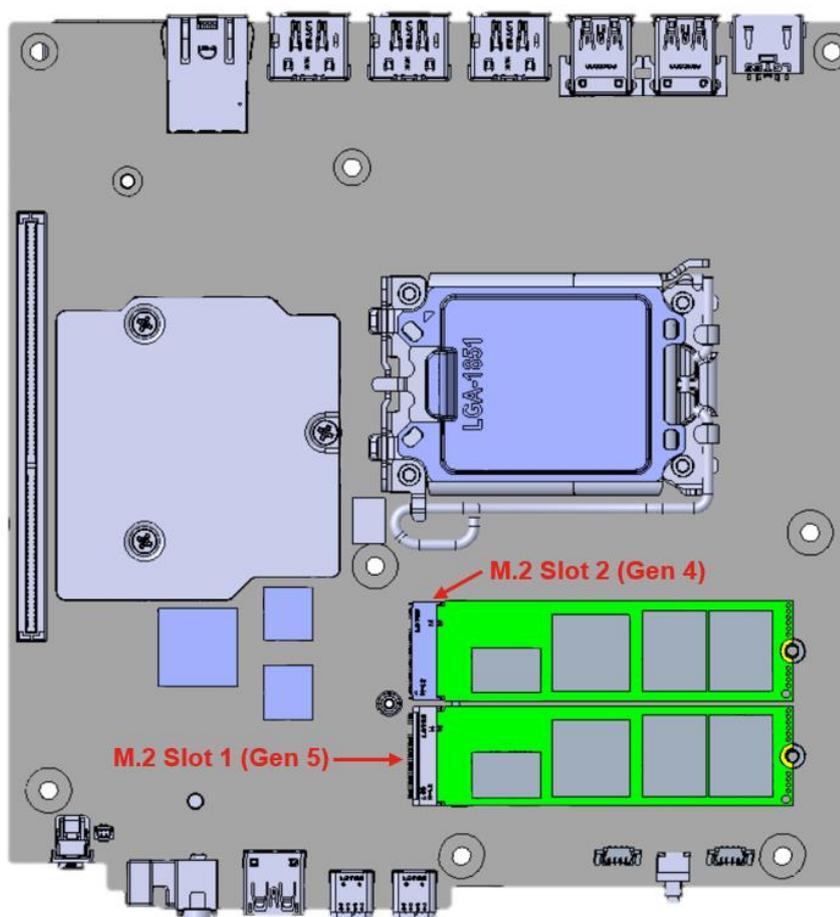
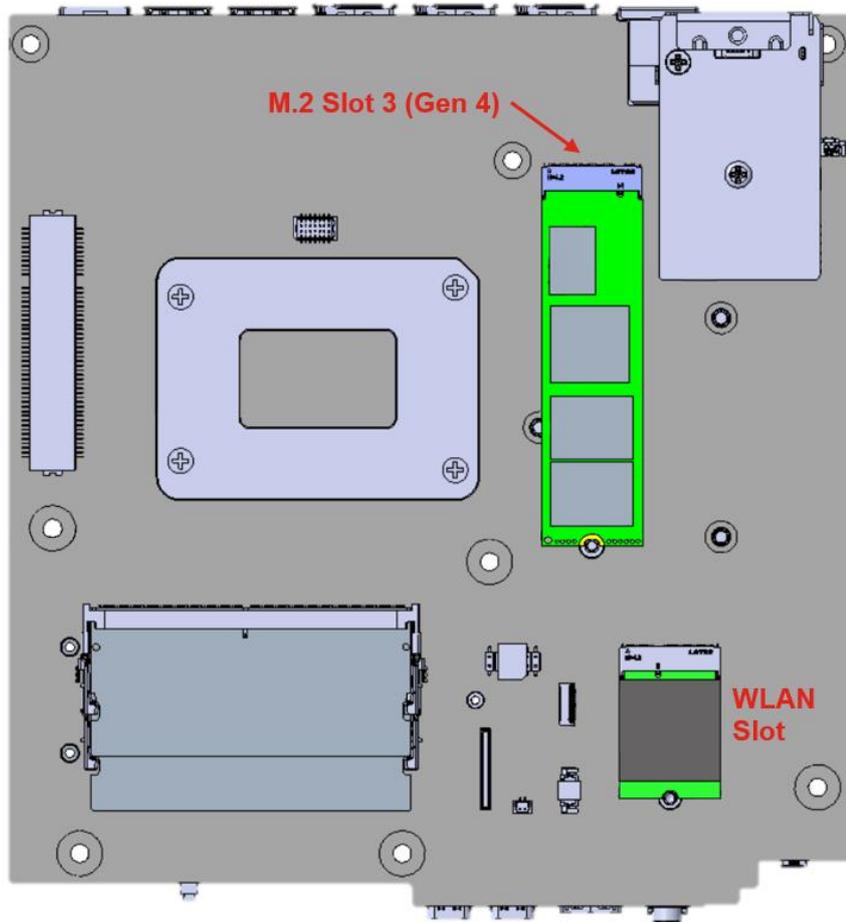
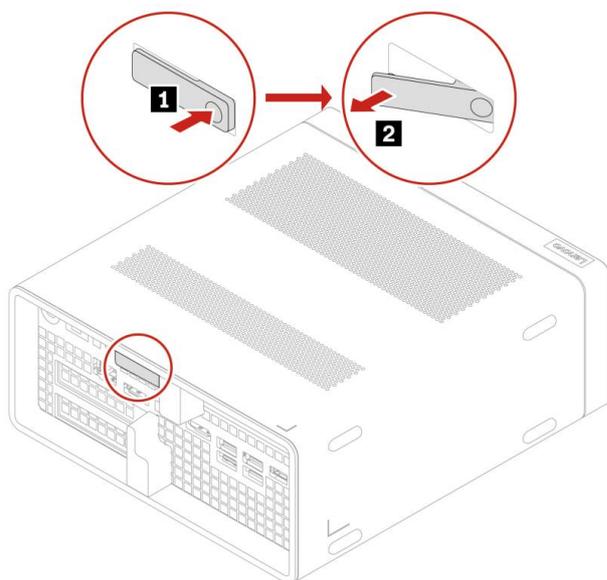


Figure 3 - P3 Ultra SFF Gen 2 Motherboard (RAM Side) with NVMe Callouts

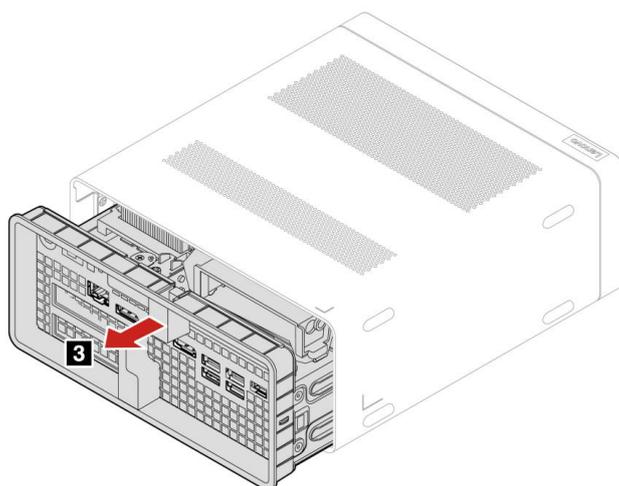


**Access the onboard M.2 NVMe slot (CPU SIDE):**

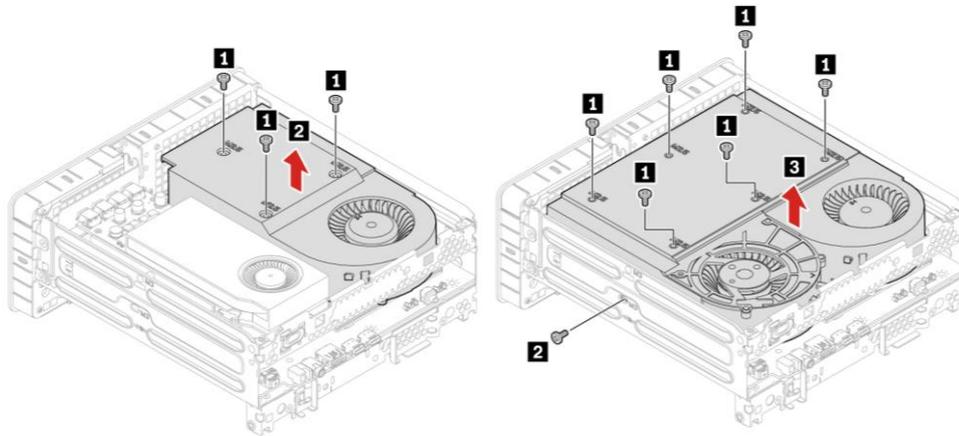
1. Power down the system. Remove the power cable and all attached devices and cables from the system. Locate the chassis opening lever on the back of the system. Push in one side of the lever and pull on the extended lever.



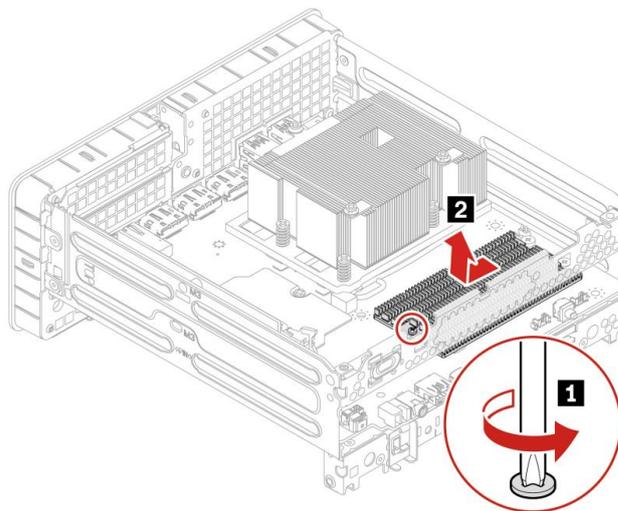
2. While pulling on the lever, hold the chassis body in place until the motherboard assembly slides out of the chassis shell.



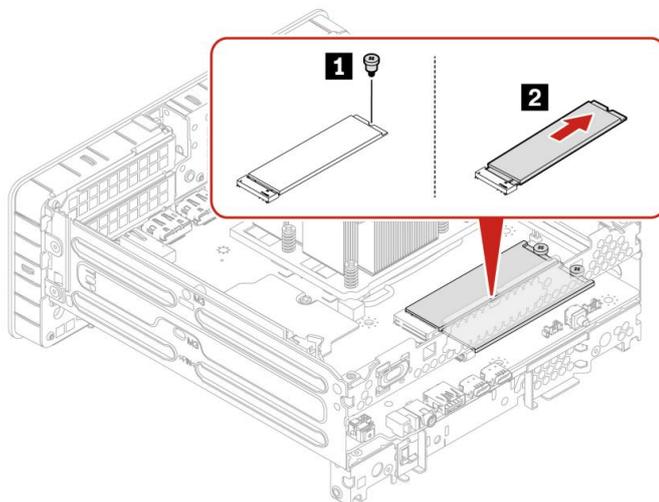
3. Remove the 3x screws holding the CPU fan (7x screws for the 125W CPU heatsink).



4. To remove the M.2 heatsink, remove the single screw.



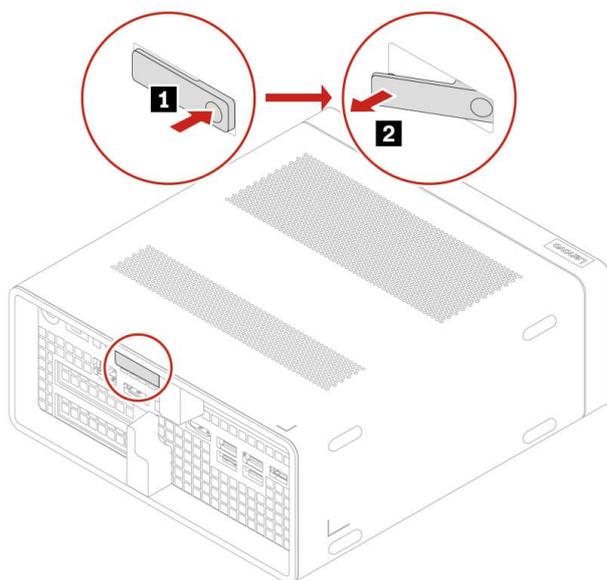
5. To remove a M.2 drive, remove the screw holding the M.2 drive. It may be necessary to gently pull up on the drive to free it from the heat sink pad underneath. When the drive is free, pull it sideways away from the slot as seen below.



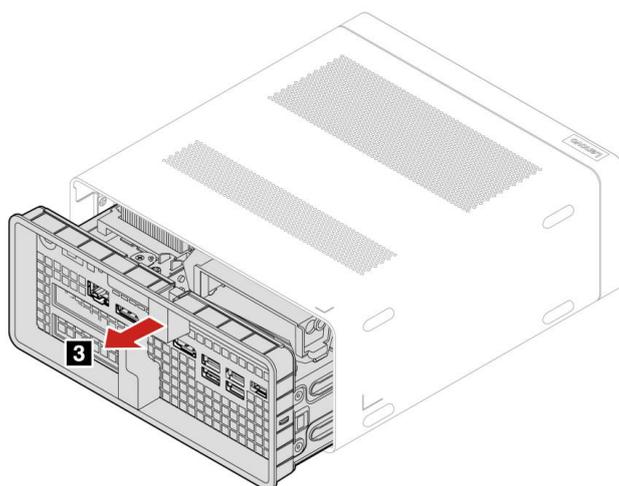
6. Reverse the steps to install a drive and reassemble the system.

**Access the onboard M.2 NVMe slot (RAM SIDE):**

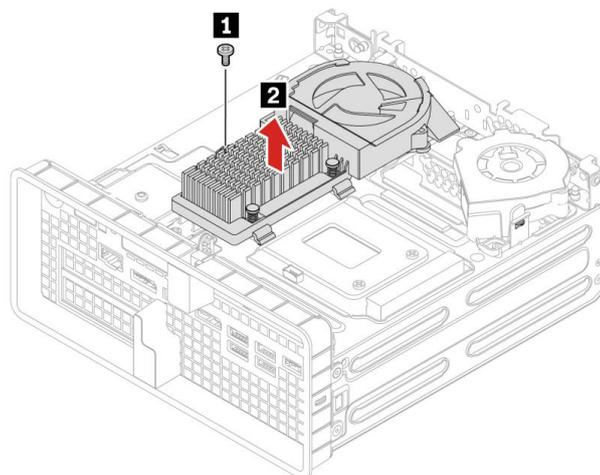
1. Power down the system. Remove the power cable and all attached devices and cables from the system. Locate the chassis opening lever on the back of the system. Push in one side of the lever and pull on the extended lever.



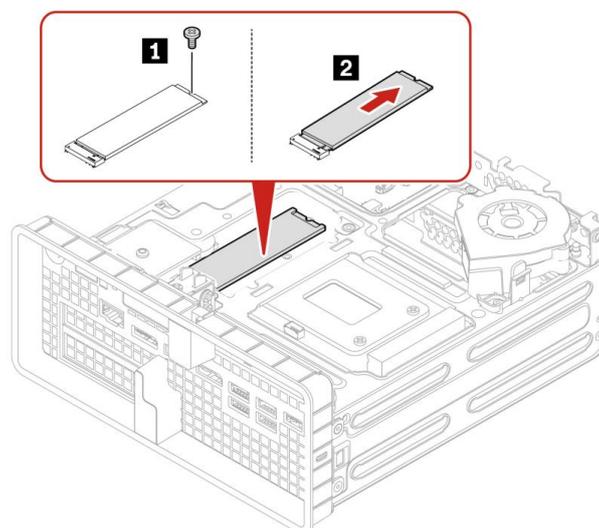
2. While pulling on the lever, hold the chassis body in place until the motherboard assembly slides out of the chassis shell.



3. The RAM-side M.2 NVMe heat sink is now accessible as seen in the image below. To remove the heat sink, remove the single screw and lift up on the heat sink.



4. To remove a drive, remove the screw holding the M.2 drive. It may be necessary to gently pull up on the drive to free it from the heat sink pad underneath. When the drive is free, pull it sideways away from the slot as seen below.



5. Reverse the steps to install a drive and reassemble the system.

## Section 3 – Installing NVMe Devices in P3 Tiny Gen 2

There are three M.2 slots in the P3 Tiny Gen 2, each supporting single-sided M.2 drives. The slot next to the CPU (Slot 1) is **Gen 5**, while the two on the other side of the motherboard are both **Gen 4**.

The steps to access these M.2 slots is explained in this section. P3 Tiny Gen 2 supports one M.2 2280 drive in each of the onboard slots.

Figure 6 - P3 Tiny Gen 2 M.2 Slot (CPU Side, CPU Heatsink Removed)

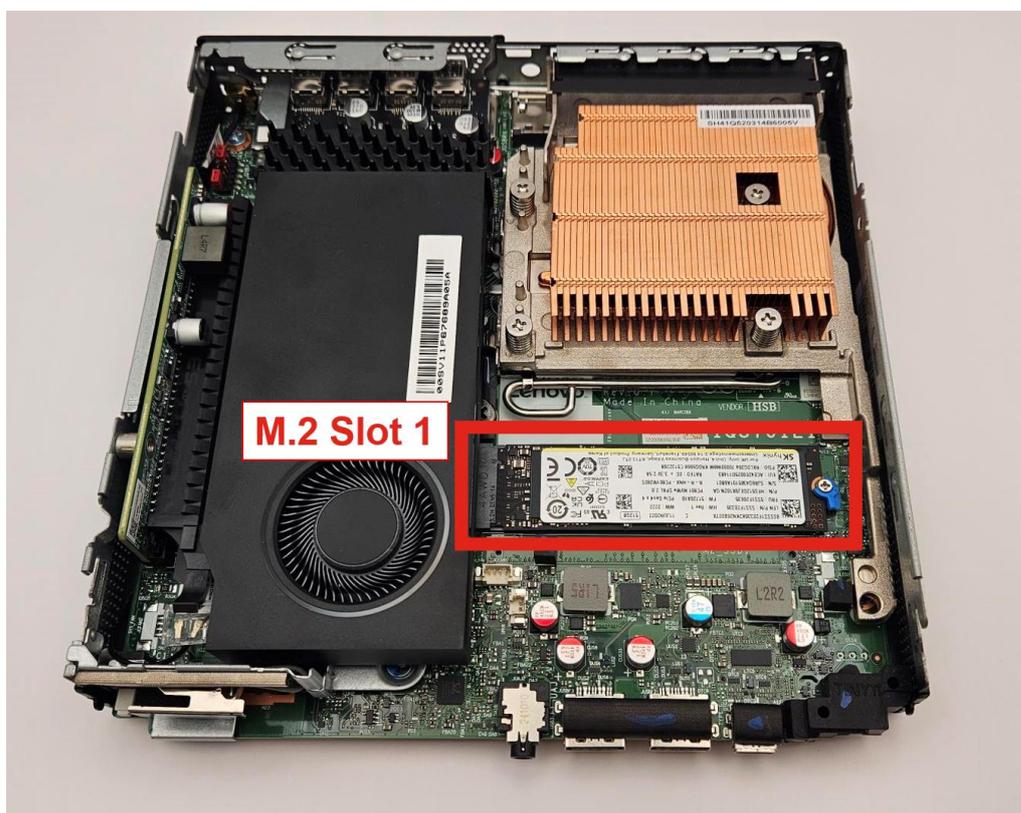
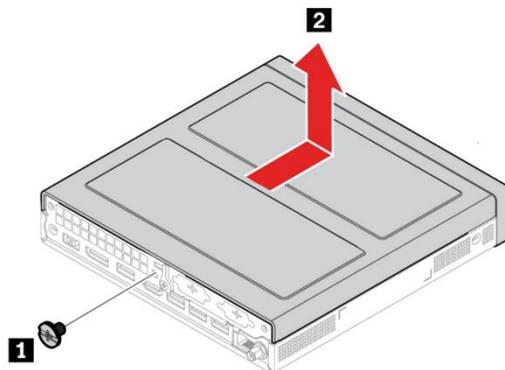


Figure 7 - P3 Tiny Gen 2 M.2 Slots (RAM Side)

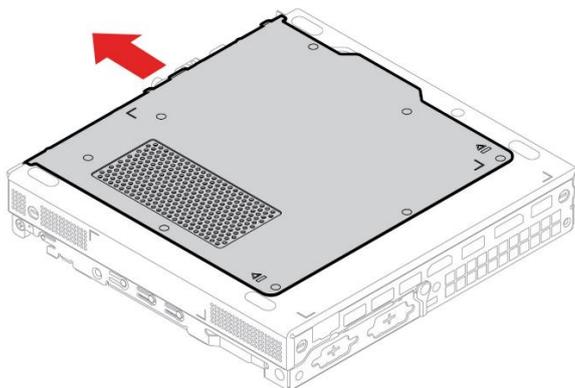


**Accessing the M.2 drives:**

1. Disconnect the power and all connected devices.
2. Remove the rear screw, (1) in the image.
3. Slide the cover forward and lift to remove it (2).

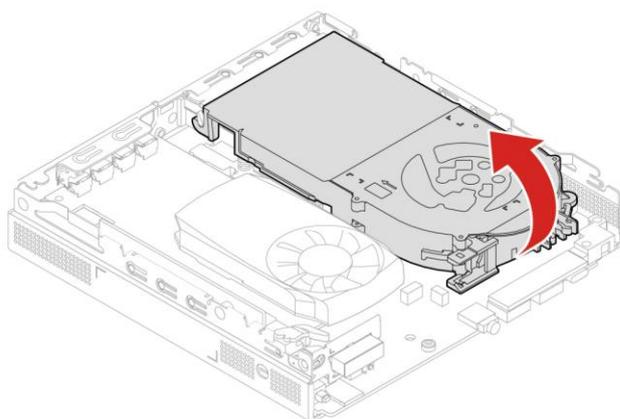


4. Turn the system over and slide the bottom plate towards the front of the system.

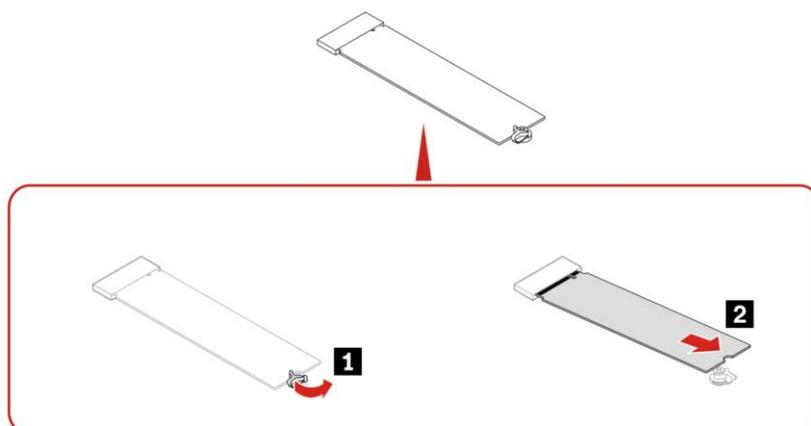


### **Removal and installation of the M.2 drives:**

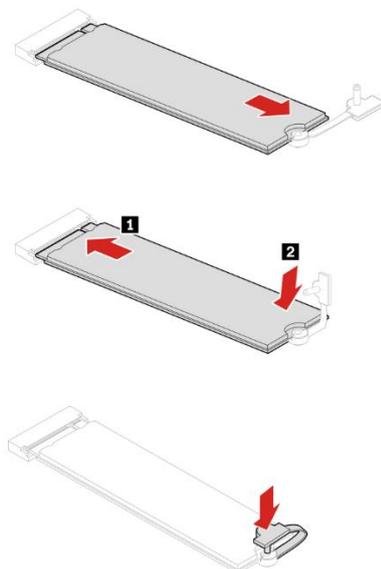
1. Lift the CPU fan and unplug attached cables from the motherboard.



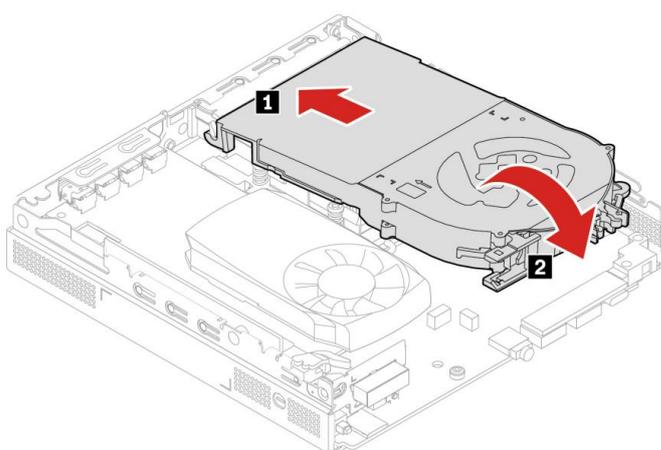
2. Locate the Gen 5 M.2 drive under the CPU fan and rotate the retention latch to remove the drive.



- For Gen 4 drives, lift the retention latch to remove the M.2 SSD. If it remains attached to the heat sink pad underneath it, pull up on it gently until it is free of the pad. Slowly slide the M.2 horizontally away from the M.2 slot. To install the M.2 drive(s), reverse the procedure.



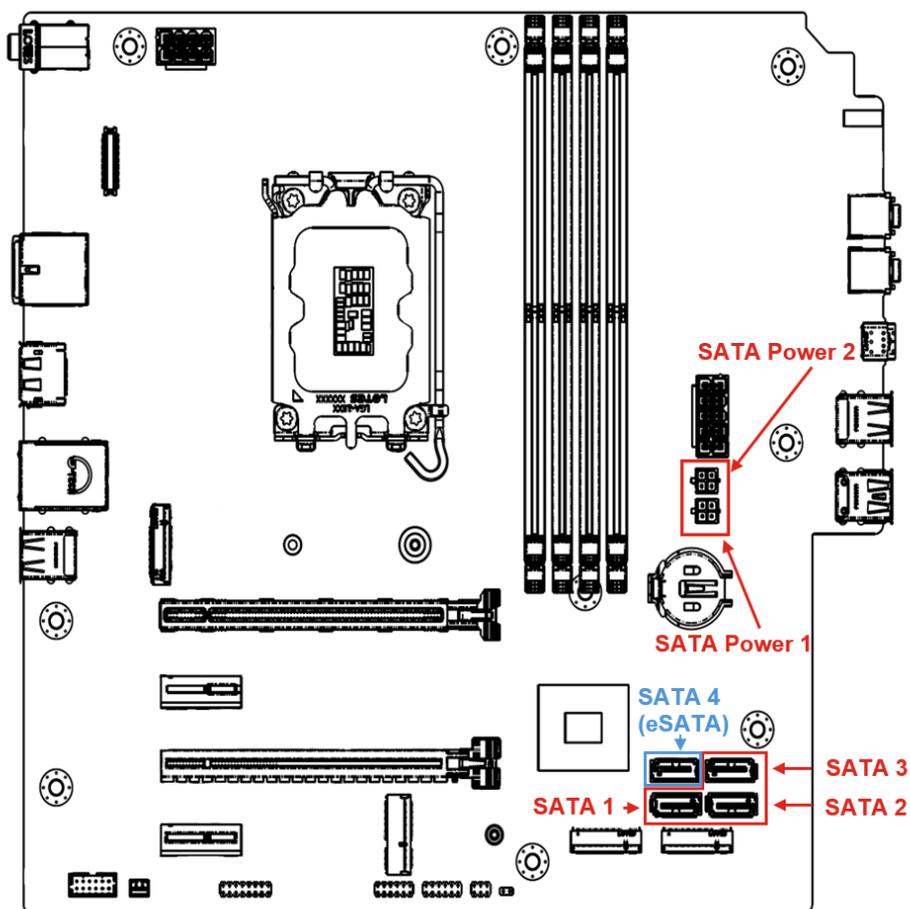
- Replace the CPU fan and plug in its cables. Reverse steps 1-4 of “Accessing the M.2 drives” to reassemble the system.



## Section 4 – Installing SATA Drives in P3 Tower Gen 2

The ThinkStation P3 Tower Gen 2 can hold a maximum of four SATA drives, depending on the rest of the system config. The P3 Tower Gen 2 motherboard has four SATA port connections, labelled SATA1, SATA2, SATA3, and SATA4 (eSATA) in the order they show up in the system BIOS.

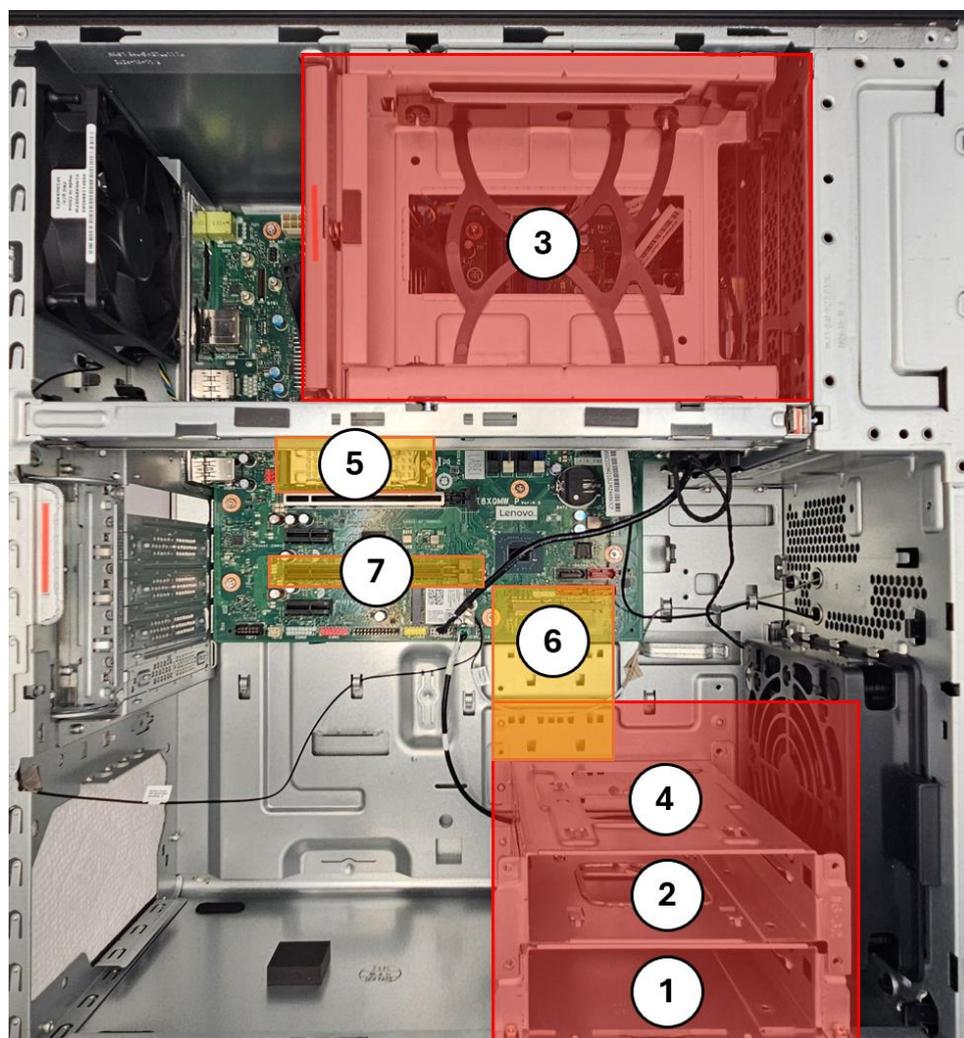
Figure 7 - P3 Tower Gen 2 Motherboard with SATA Callouts



## P3 Tower Gen 2 Internal Storage Drives Overview

Below is an overview of the SATA storage locations in the P3 Tower:

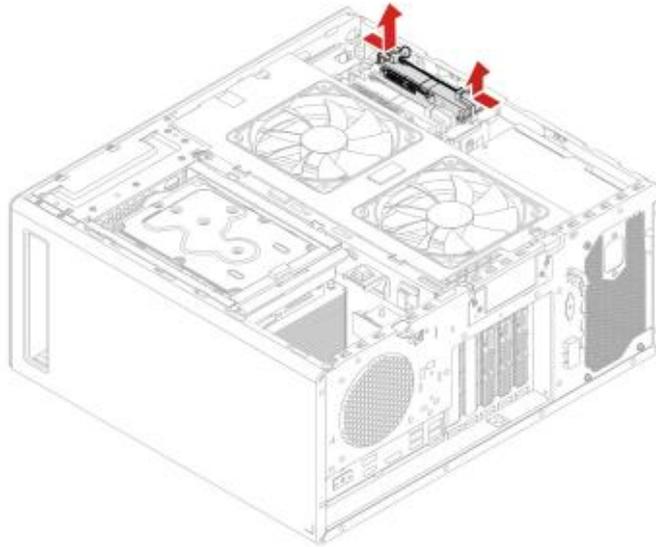
*Figure 8 - P3 Tower Gen 2 Chassis with Numbered Callouts*



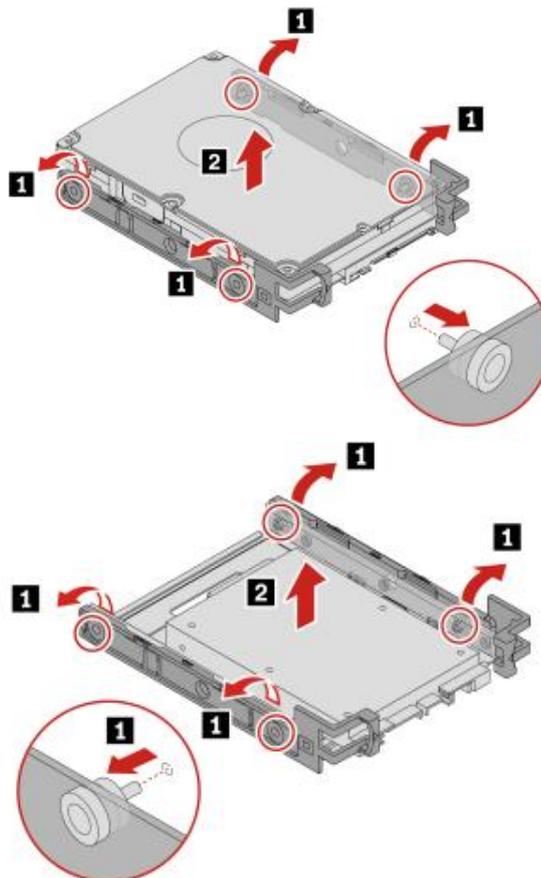
- 1 – SATA Bay 1 – 3.5” primary storage drive cage
- 2 – SATA Bay 2 – 3.5” storage drive cage
- 3 – SATA Bay 3 – 3.5” storage drive cage / FASE / ODD
- 4 – SATA Bay 4 – 3.5” storage drive cage (if installed, interferes with M.2 2280 drives in onboard Gen 4 slots)
- 5 – M.2 NVMe Gen 5 slot (primary)
- 6 – Two M.2 NVMe Gen 4 slots
- 7 – PCIe Slot 3 for additional M.2 SSD in Add-In Card

**Removal and installation of the bottom SATA Drives:**

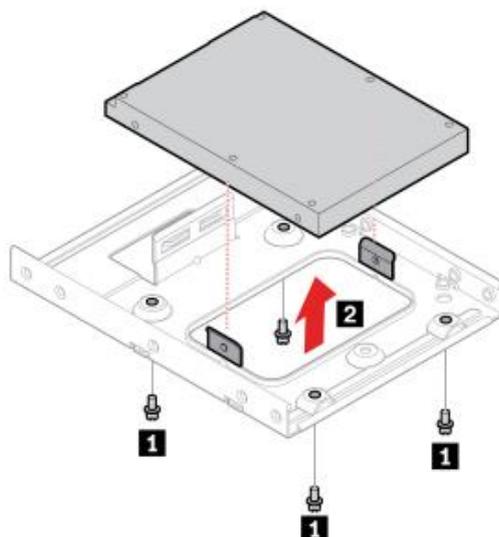
1. Disconnect power and data cables from the drive. Pinch the handles of the drive tray and pull up.



2. Remove the tray pins holding the SATA drive in each corner to separate the drive.



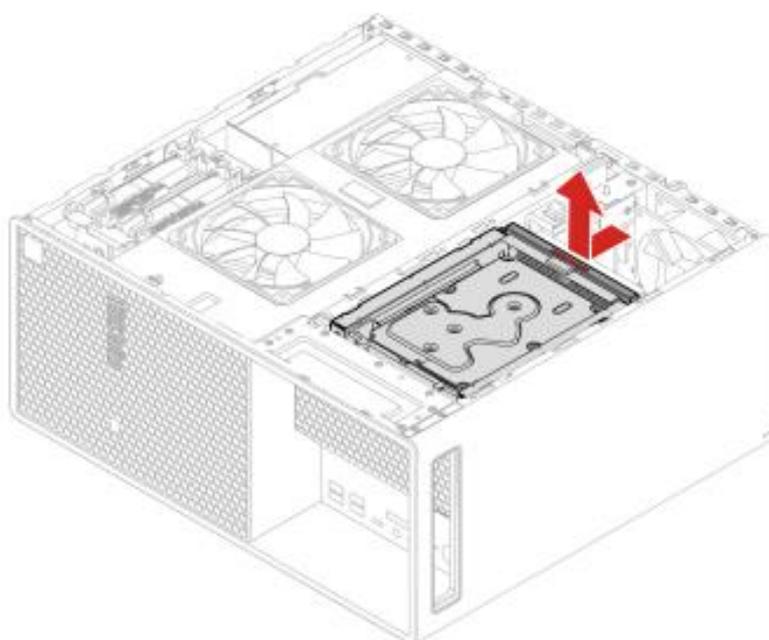
3. For 2.5" drives in the 3.5" adapter bracket, remove the screws holding the drive to the bracket.



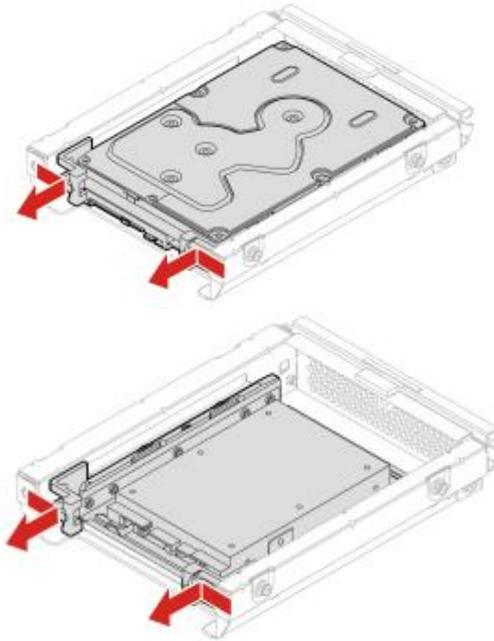
4. To install SATA drive, perform these steps in reverse.

### **Removal and installation of the top SATA Drives:**

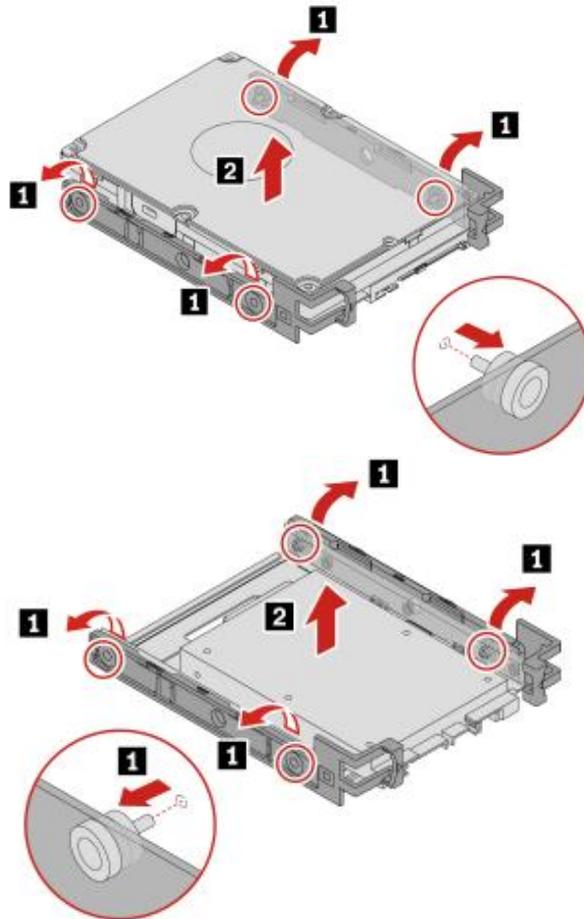
1. Disconnect power and data cables from the drive. Push on the marked lever on the rear of the drive cage and lift out of the chassis.



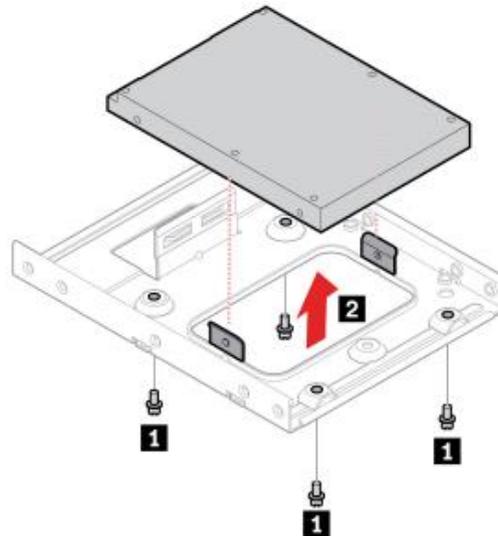
2. Pinch the handles of the drive tray and pull out of the drive cage.



3. Remove the tray pins holding the SATA drive in each corner to separate the drive.



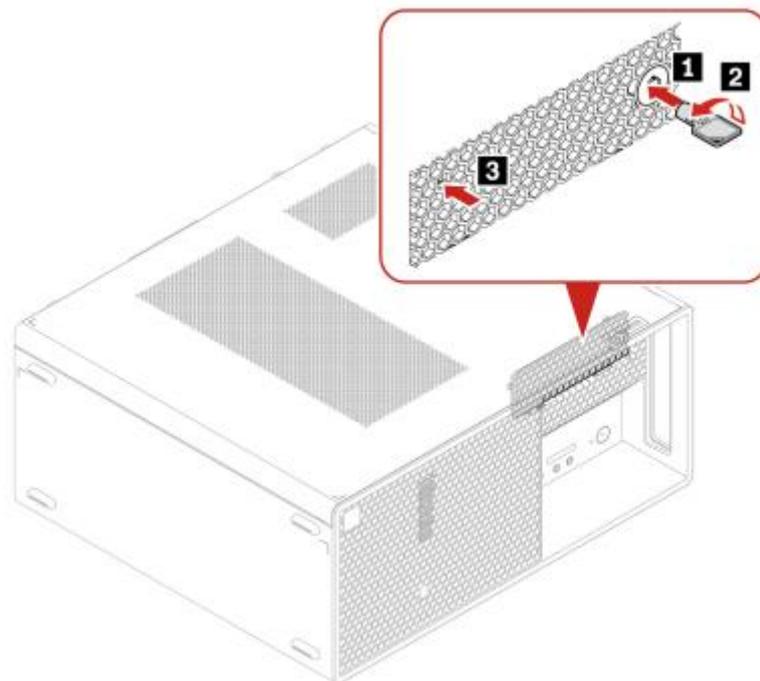
4. For 2.5" drives in the 3.5" adapter bracket, remove the screws holding the drive to the bracket.



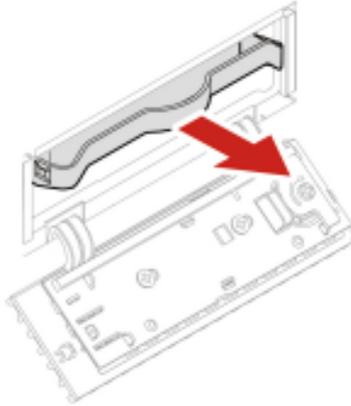
5. To install SATA drive, perform these steps in reverse.

**Removal and installation of the FASE SATA Drives:**

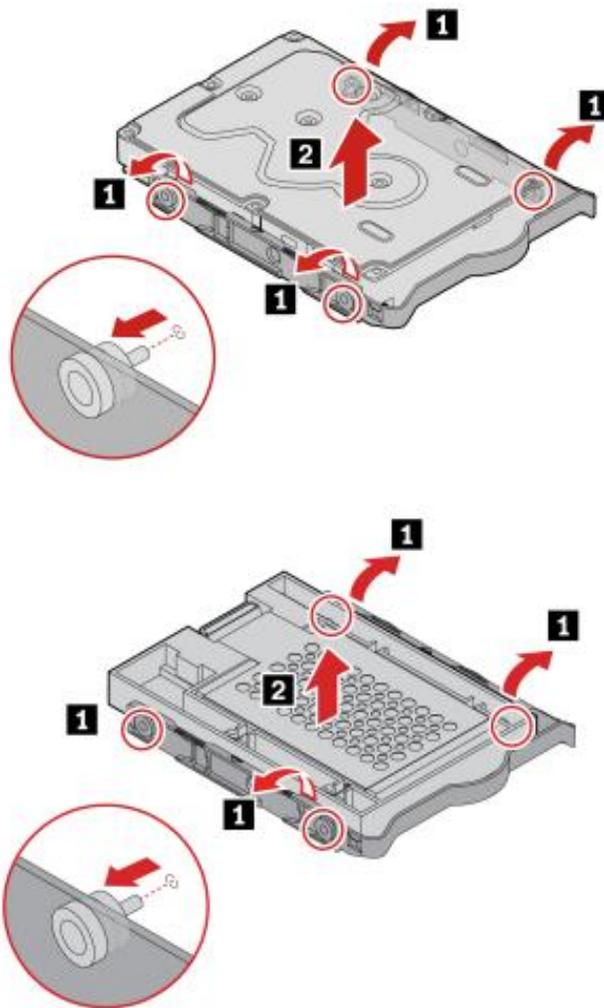
1. Unlock the front bezel door and press its left side to open.



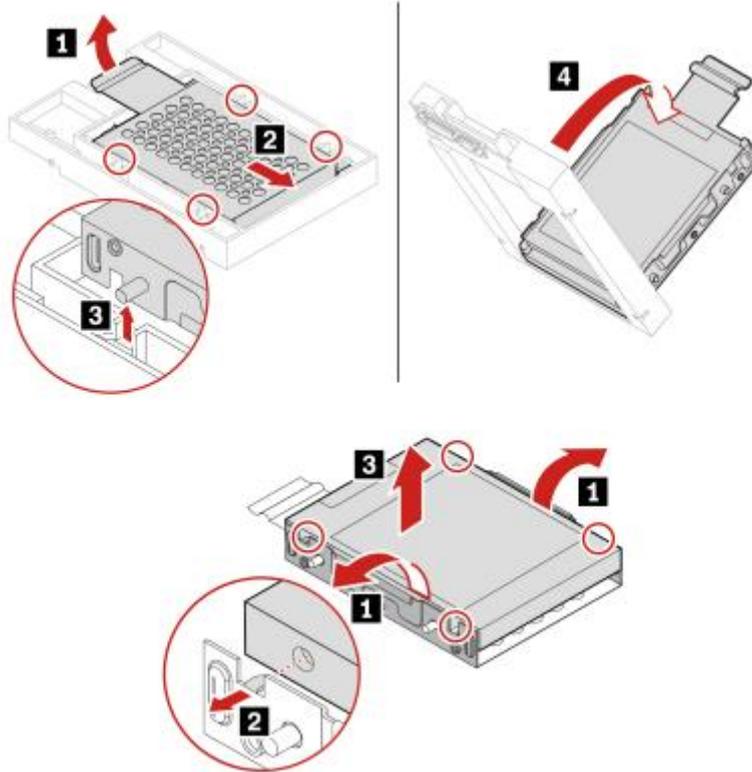
2. Once the door is open, pull the SATA drive out of the FASE.



3. Remove the tray pins holding the SATA drive in each corner to separate the drive.



4. For 2.5" drives in the 3.5" adapter bracket, lift the metal tongue and push toward the back of the bracket. Lift the drive out of the adapter bracket and remove the metal frame from the drive.



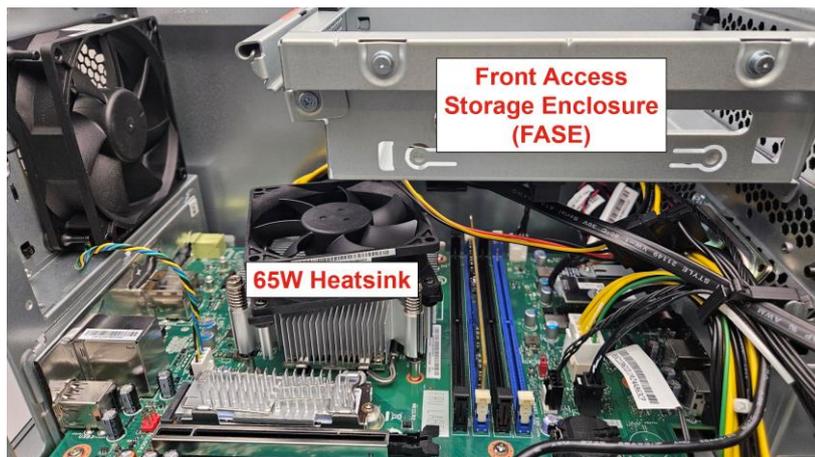
**Important P3 Tower Gen 2 SATA Notes:**

- The ability to maximize the number of SATA drives is requires the use of a “3<sup>rd</sup> HDD Enclosure” or “Front-Access Storage Enclosure” (FASE), depending on CPU SKU and fan heatsink (See *Table 2 & Figures 9 & 10*).

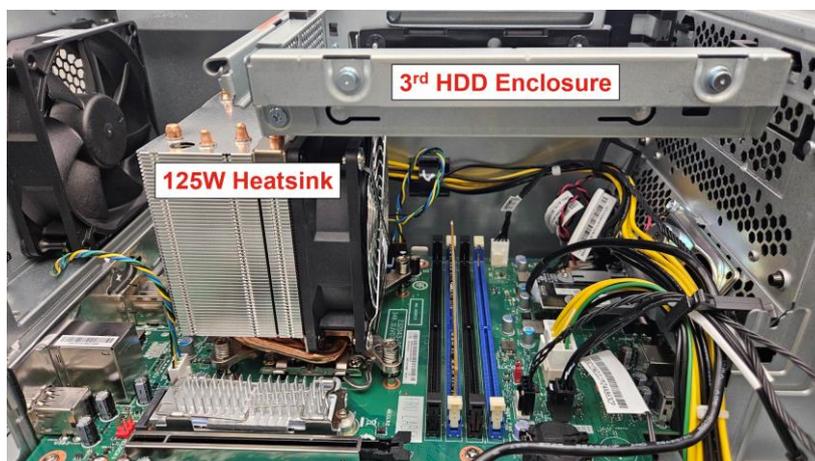
*Table 3 - P3 Tower Gen 2 CPU Heatsink & HDD Enclosure Compatibility*

CPU Heatsink	CPU	HDD Enclosure Capability
<b>125W Heatsink</b>	Ultra 9 285K	3rd HDD Enclosure
	Ultra 7 265K	
	Ultra 5 245K	
<b>65W Heatsink</b>	Ultra 9 285	3rd HDD Enclosure <u>OR</u> FASE
	Ultra 7 265	
	Ultra 5 245	
	Ultra 5 235	
	Ultra 5 225	

*Figure 9 - P3 Tower Gen 2 FASE Enclosure with 65W heatsink (Chassis beam removed for visibility)*

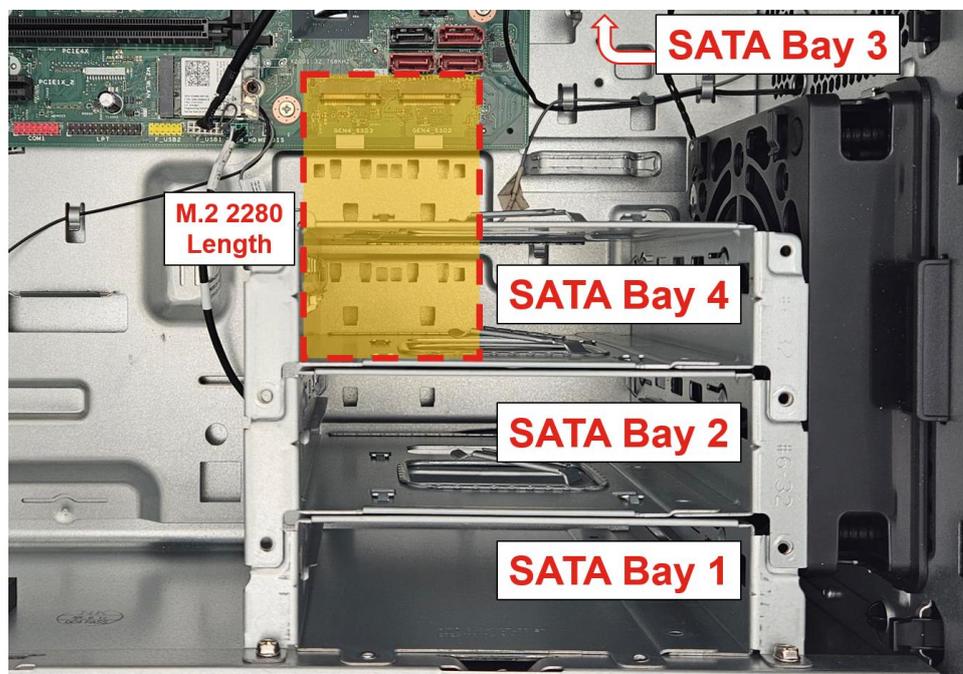


*Figure 10 - P3 Tower Gen 2 3rd Enclosure with 125W heatsink (Chassis beam removed for visibility)*



- The use of four SATA drives will utilize all the available SATA ports on the motherboard. Adding additional SATA drives to the system may impact certain lengths of M.2 drives installed in the onboard M.2 slots. SATA Bay #4 & M.2 2280 drives will physically interfere and cannot be installed at the same time (See Figure 11).

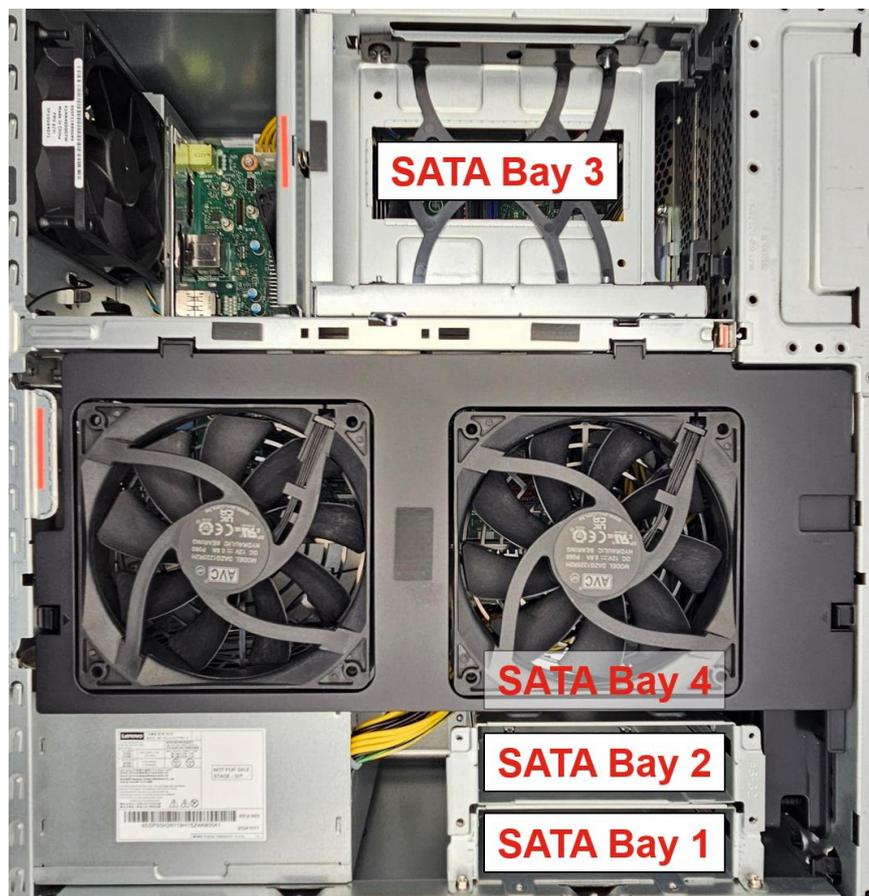
Figure 11 - P3 Tower Gen 2 SATA Bay overlaying M.2 NVMe 2280 (Power Supply removed for visibility)



- SATA port 4 is an eSATA port. This port is capable of hot-swapping SATA drives after the feature is enabled in BIOS, found under Devices→Storage Setup→"SATA Drive 4 Hot-Plug Support"→Enable/Disable. The FASE drive must be plugged into this port with enabled BIOS setting to fully operate.
- Due to the external accessibility of the FASE, Lenovo recommends only using the hot-swap feature with the FASE bay. Lenovo strongly recommends against accessing internal drives/components while the system is operating.
- The ODD bracket occupies the same space as the 3<sup>rd</sup> HDD / FASE. Whenever the ODD is installed in the system, the maximum number of SATA drives supported is two. See Section 8 for more details on ODD configurations.
- Windows 11 boot is not supported for rotational spinning HDDs.

- In systems with a side fan assembly, the maximum number of SATA drives is three (See Figure 11) due to physical interference between the side fan assembly and SATA Bay 4. At the time of this writing, the side fan assembly is factory-fit on ThinkStation P3 Tower Gen 2 on all models with a 750W or 1100W PSU configured. It is not included in 500W PSU models.

Figure 12 - P3 Tower Gen 2 with Side Fan Assembly



The table below lists option kits for upgrading the P3 Tower Gen 2 SATA storage available at the time of this writing. Remember the previous notes in this Section in regard to adding a 4<sup>th</sup> SATA bay, ODD, or FASE kit, as some option kits will not be physically compatible with certain system configurations. More information can be found in the [Appendix](#).

Table 4 - P3 Tower Gen 2 SATA Storage Options

SATA Option Kit	Option P/N
ThinkStation Storage Kit for P3 Tower	4XF1M24243
ThinkStation Front Access Storage Enclosure (FASE) for P3 Tower	4XF1M24244

## Section 5 – Installing SATA Drives in P3 Ultra SFF Gen 2

The P3 Ultra SFF Gen 2 can support one 3.5” or 2.5” SATA drive. Adding a SATA drive into a P3 Ultra SFF Gen 2 that does not already have one will require additional parts, including a HDD bracket, SATA power+data cable, and fan.

The SATA drive will also prevent the use of PCIe x8 slot and third M.2 slot, located on the side of the motherboard opposite the CPU.

Figure 13 - P3 Ultra SFF Gen 2 Motherboard with SATA Port Callout

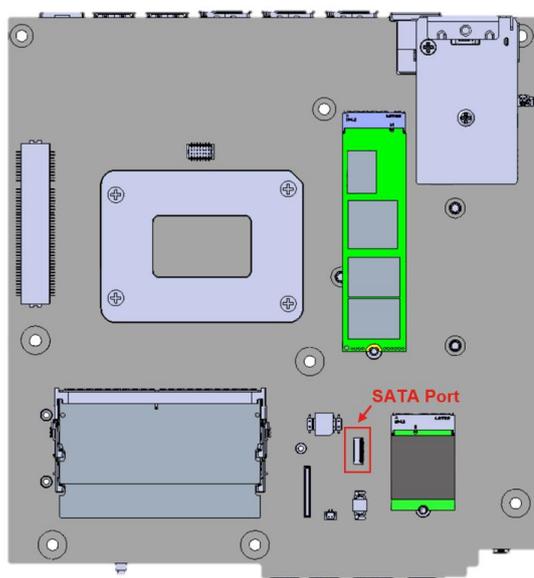
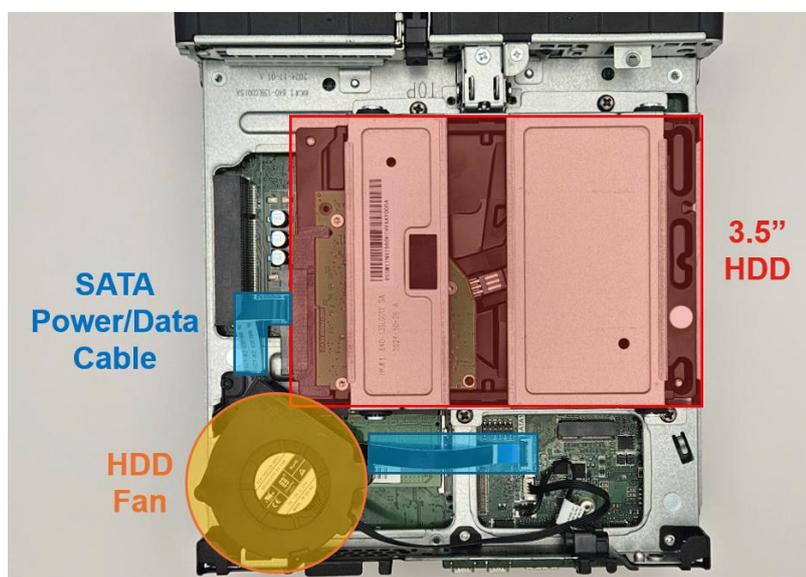
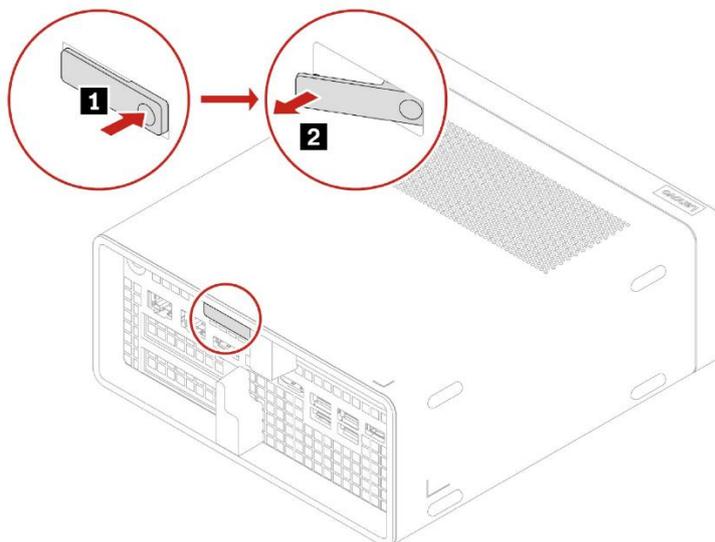


Figure 14 - P3 Ultra SFF Gen 2 Chassis with SATA Bracket Installed

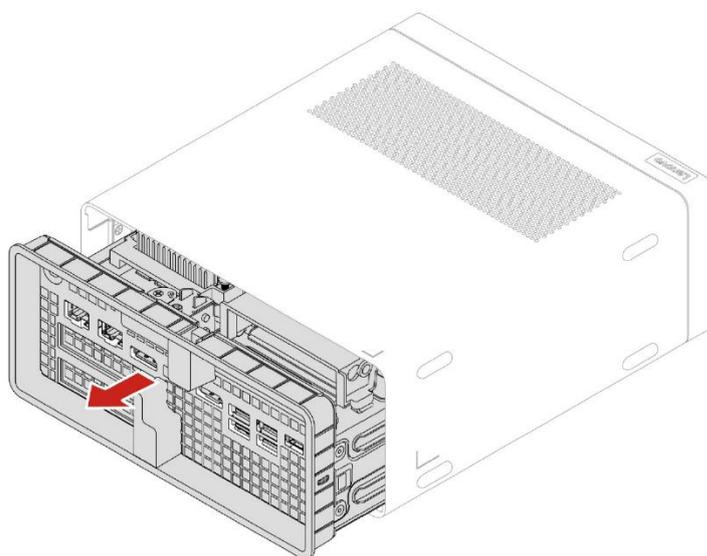


**Before installing any HDD:**

1. Power down the system. Remove the power cable and all attached devices and cables from the system. Locate the chassis opening lever on the back of the system. Push in one side of the lever and pull on the extended lever.

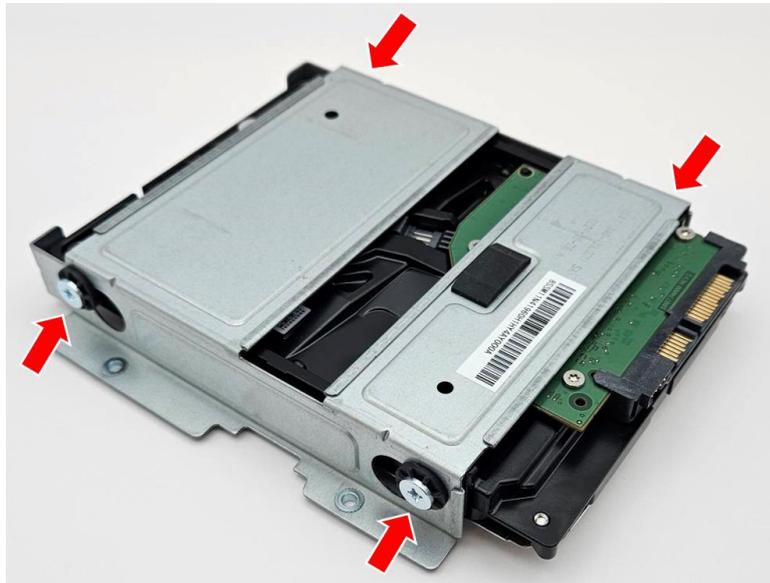


2. While pulling on the lever, hold the chassis body in place until the motherboard assembly slides out of the chassis shell.

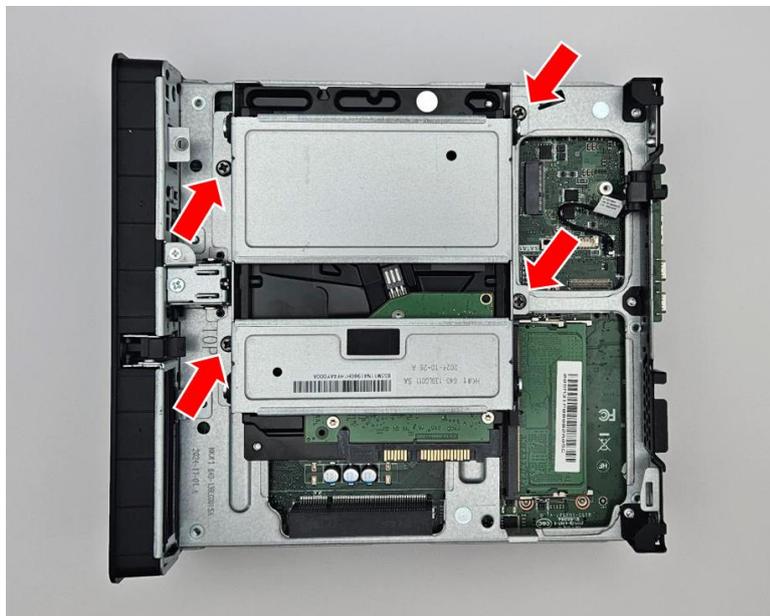


**Installing the HDD drive & bracket:**

1. Four screws are used to secure the 3.5" HDD (either the drive itself or a 3.5" adapter for a 2.5" drive) to the bracket.

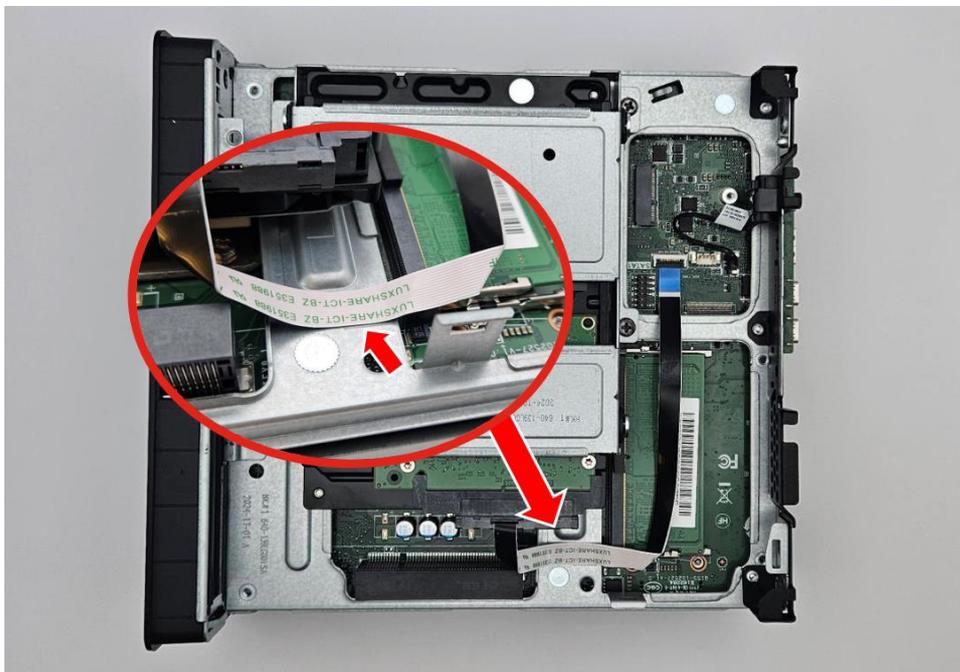


2. After the drive is installed in the bracket, it can be secured in the P3 Ultra SFF Gen 2 chassis with four additional screws in the locations indicated below:

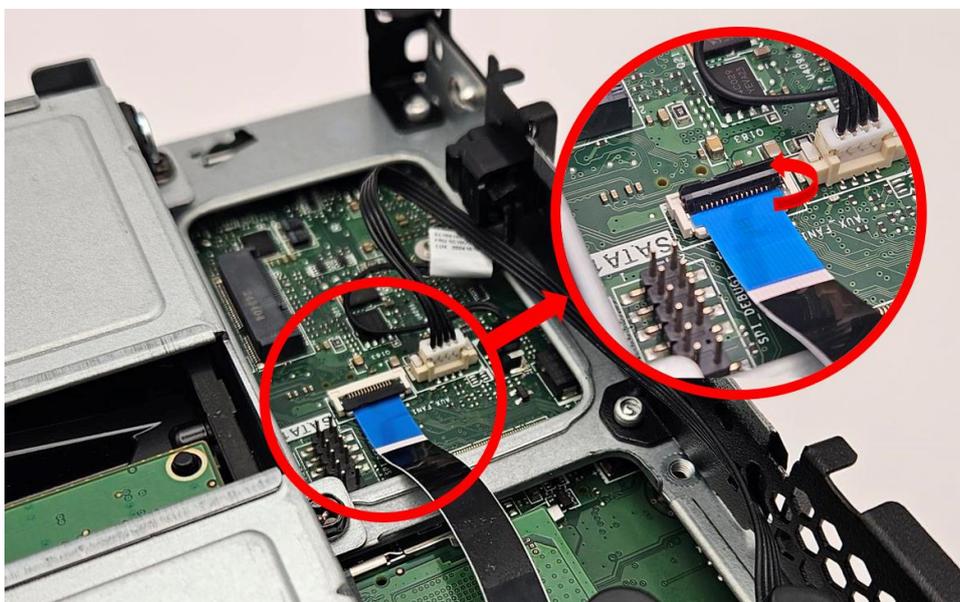


## Installing the SATA Cable:

1. The SATA connection is ribbon-style, so the cable and port should be handled with care. Start by plugging the cable into the SATA drive, then use the sticky pad to secure the chassis where indicated:

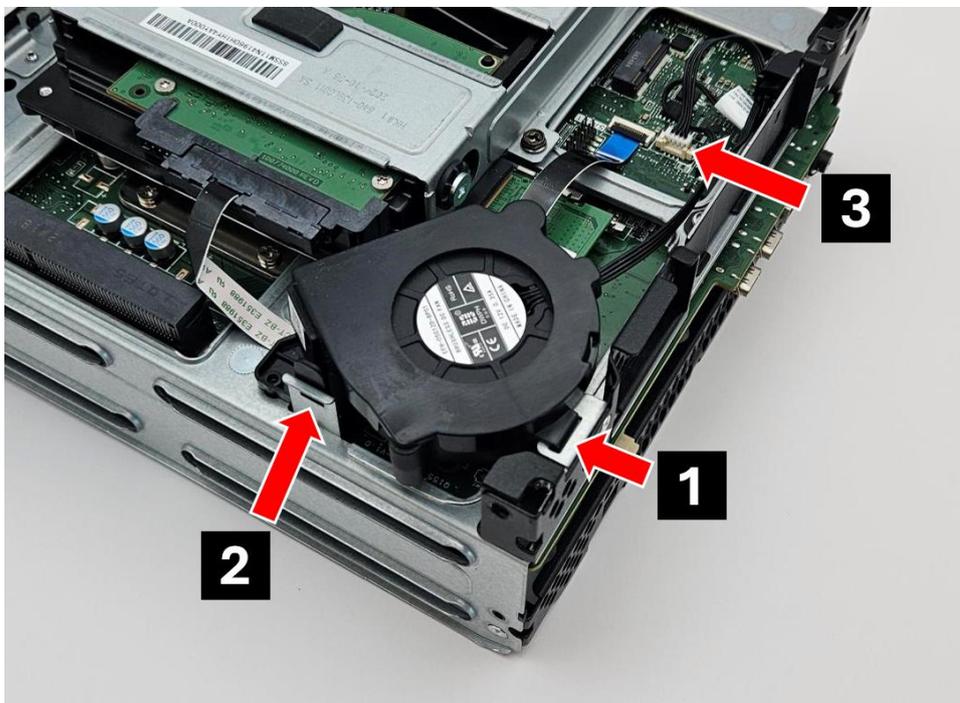


2. To connect to the motherboard, carefully handle the ribbon cable and lift the black flap on the motherboard port. Insert the ribbon connector into the port and close the black flap to secure.



### Installing the HDD fan:

1. The HDD fan is easily installed in the chassis above the memory modules. First insert the tab into the opening near the front of the chassis (1) and lock the fan clip (2). Plug the fan into the motherboard header (3).



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## Section 6 – Optical Disk Drive in P3 Tower Gen 2

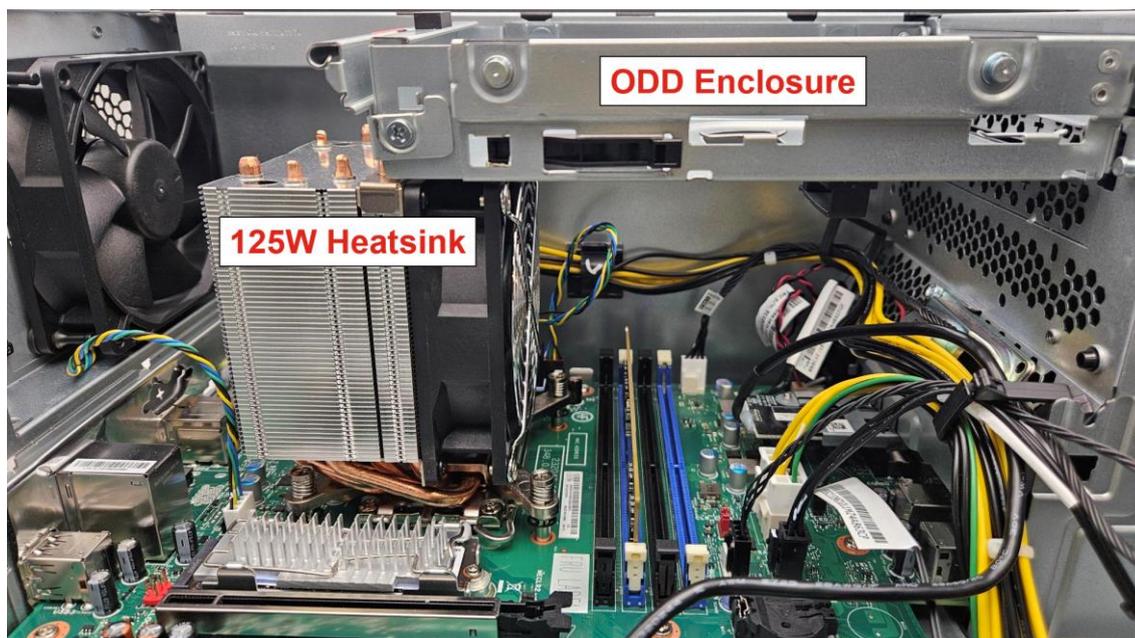
Unlike the first generation P3 Tower, all chassis models of P3 Tower Gen 2 offer Optical Disk Drive (ODD) compatibility.

Systems with the ODD bracket installed will have some limitations to the maximum number of SATA drives. The bracket occupies the same space as the 3<sup>rd</sup> HDD and FASE, which would limit the maximum number of SATA drives to two.

Similar to the 3<sup>rd</sup> HDD enclosure, the ODD bracket is compatible with either the 125W or 65W CPU coolers (See *Figure 18*).

All components required to install the ODD bracket in the system are listed in this document's Appendix.

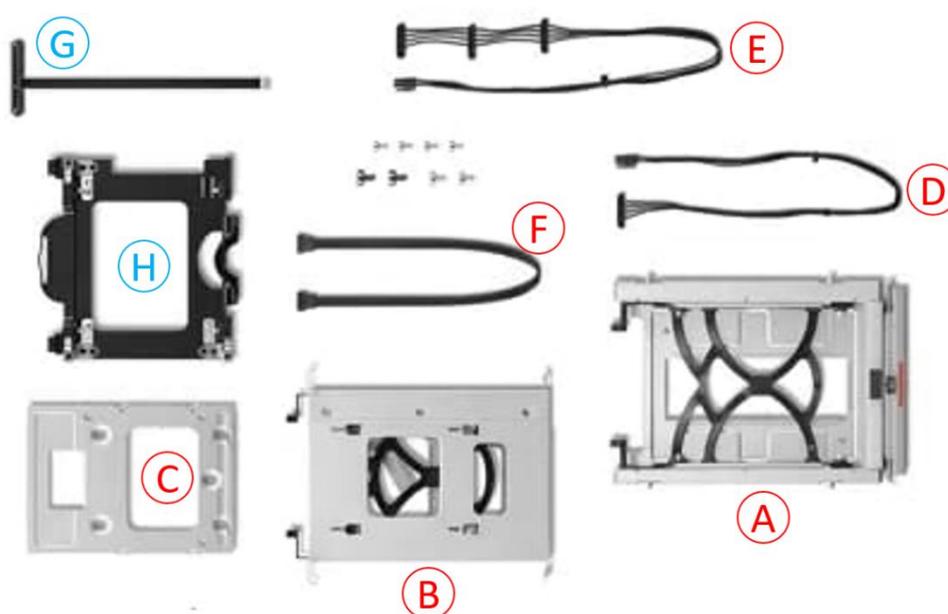
*Figure 18 - P3 Tower Gen 2 ODD Bracket with 125W CPU Cooler (chassis beam removed for visibility)*



## Section 7 – Appendix

This section contains breakdowns of the available option kits or parts required to upgrade an existing P3 Gen 2 system to accept additional storage.

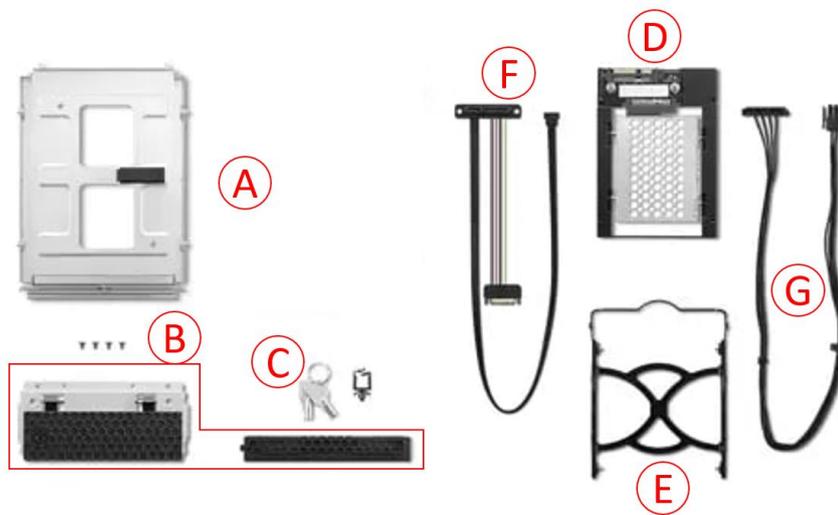
### ThinkStation Storage Kit for P3 Tower:



**(4XF1M24243) ThinkStation Storage Kit for P3 Tower** contains the following:

- A. Top 3.5" HDD Cage Kit (for 3<sup>rd</sup> HDD)
- B. Bottom 3.5" HDD Cage Kit (for 2<sup>nd</sup> or 4<sup>th</sup> HDD)
- C. 3.5" to 2.5" HDD Bracket
- D. Single-drop SATA Power Cable (380mm)
- E. Three-drop SATA Power Cable (320+40+40mm)
- F. Right-angle SATA Data Cable (450mm)
- G. **FOR P3 ULTRA SFF Gen 1** – SATA Data+Power Ribbon Cable
- H. **FOR P3 ULTRA SFF Gen 1** – 2.5" HDD Cage

**ThinkStation Front Access Storage Enclosure for P3 Tower:**



**(4XF1M24244) ThinkStation Front Access Storage Enclosure for P3 Tower** contains the following:

- A. FASE HDD Cage Hot-Swap Assembly
- B. Front Access Door & Blank Bezel
- C. 2x Keys for locking HDD front access
- D. 3.5" to 2.5" HDD Bracket
- E. 3.5" HDD Tray
- F. Data+Power SATA Cable (520+150mm)
- G. Single-drop SATA Power Cable (380mm)

## ThinkStation PCIe to M.2 Riser Card (High & Low Profile):



**(4XH0L08578) ThinkStation PCIe to M.2 Riser Card (HP)** contains the following:

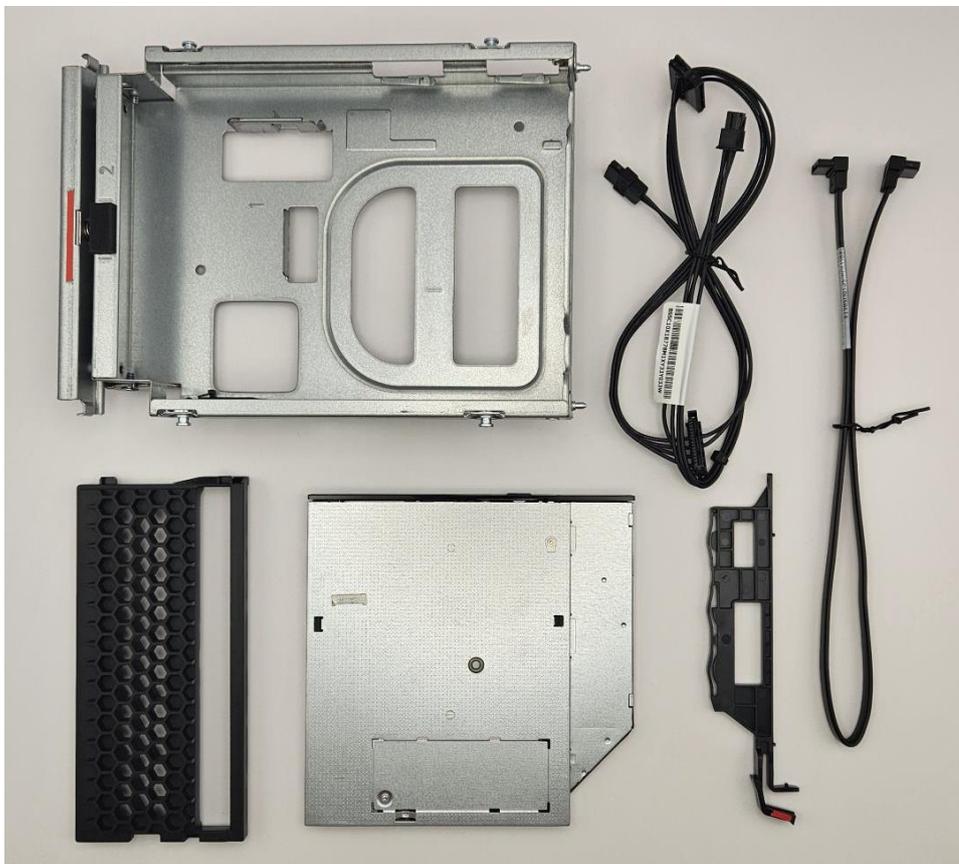
- PCIe to M.2 Riser Card (HP) with Thermal Pad
  - FRU# 01AJ832
- M.2 Push Pin Heatsink Module
  - FRU# 01EF519

**(4XH0L08579) ThinkStation PCIe to M.2 Riser Card (LP)** contains the following:

- PCIe to M.2 Riser Card (LP) with Thermal Pad
  - FRU# 5C50W00883
- M.2 Push Pin Heatsink Module
  - FRU# 01EF519

**ThinkStation P3 Gen 2 Tower ODD Bracket Kit + DVD Burner Kit:**

Installation of ODD in P3 Tower Gen 2 requires each of the following:



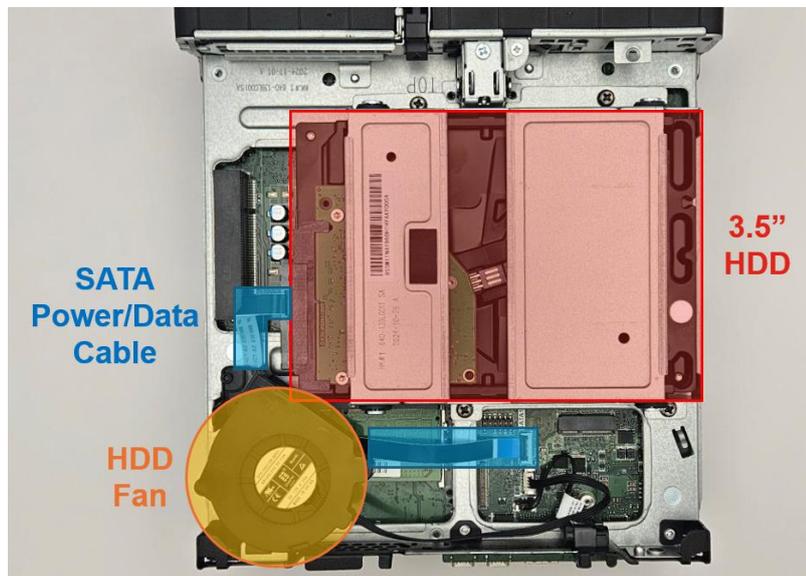
**(4XF1T09231) ThinkStation Slim ODD Bracket Kit for P3 Tower Gen 2**

- A. Slim ODD Cage Kit
  - a. ODD Bezel
  - b. Slim ODD Latch
- B. 450mm SATA cable with dual right-angle connectors

**(4XA1L13934) ThinkStation Slim 9mm DVD Burner**

- A. Slim ODD
- B. SATA HDD + ODD Power cable (300mm + 210mm)
- C. *Contains other parts not needed for P3 Tower Gen 2*

## ThinkStation P3 Ultra SFF Gen 2 HDD Parts:



- 3.5" HDD Bracket – FRU# **5M11N44148**
  - 4x HDD screws and 4x bracket screws included
- HDD Fan – FRU# **5M11N44149**
- SATA Cable – FRU# **5C10U58853**

## ThinkStation P3 Ultra SFF Gen 2 M.2 Heatsink (RAM Side)

FRU# **5M11N44150**



## M.2 NVMe Gen 4 M.2 2280 Heatsinks:



**(4XF1C39743)** ThinkCentre M.2 2280 SSD Kit III contains:

- A. M.2 2280 Gen 4 Heatsink
- B. M.2 2280 Gen 4 Carrier Heatsink
- C. M.2 Bracket with stopper

## For Lenovo-supported Gen 5 M.2 2280 drives:

- Gen 5 M.2 Heatsink for single Gen 5 M.2 drives
  - FRU **5H40U93218**
- M.2 bracket with stopper (FRU or use one from above option kit)
  - FRU **5M10U50407**

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## Section 8 – Document Revision History

Version	Date	Author	Updates
v1.0	6/23/25	Chris C	Initial Release