



PWB411 and PWB421 Blade Servers



User Manual

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Note: This User Manual was derived from a SuperMicro User Manual, with permission from SuperMicro, to include ACE Computers specific documentation.



Preface

About this Manual

This manual is written for professional system integrators and PC technicians. It provides information pertaining to EPEAT for the ACE Computers EPEAT registered servers.

Notes

If you have any questions regarding this manual or server system, please contact our support team through Ace Computers Support page <https://acecomputers.com/support/>. This manual may be periodically updated without notice.

Please check the Ace Computers website for possible updates to the manual revision level.

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Chapter 1 – Testing/Compatibility Information

1. Operating Condition Class

The operating condition class is A2. Based on the results of testing, it was determined that as long as the server functions inside the Allowable Range as noted for “Operating Condition A2” (noted in the table below), there will be no material affect to the system and will continue to operate as intended for the entire lifecycle of the product.

The life expectancy of the server system is eight years on average. If the server runs for 24 hours a day, seven days a week for eight years, the operating hours that the server can operate in the allowable range for class A2 without becoming materially affected would be 70,080 hours.

Operating condition	Dry bulb temp °C		Humidity range, non-condensing		Max dew point (°C)	Maximum rate of change
	Allowable range	Recommend	Allowable range	Recommended range		
A1	15- 32	18-27	- 12 °C Dew Point (DP) and 8 % relative humidity (RH) to 17 °C DP and 60 % RH	- 9 °C DP to 15 °C DP and 60 %	17	5/20
A2	10-35	18-27	- 12 °C DP and 8 % RH to 21 °C DP and 80 %	Same as A1	21	5/20
A3	5-40	18-27	- 12 °C DP and 8 % RH to 24 °C DP and 85 %	Same as A1	24	5/20
A4	5-45	18-27	- 12 °C DP and 8 % RH to 24 °C DP and 90 %	Same as A1	24	5/20

2. Compatible Chassis’

The table below indicates the chassis that would qualify the associated blade server as being Energy Star qualified.

Blade Server	Compatible Chassis
PWB411	PWBC82H822
PWB421	

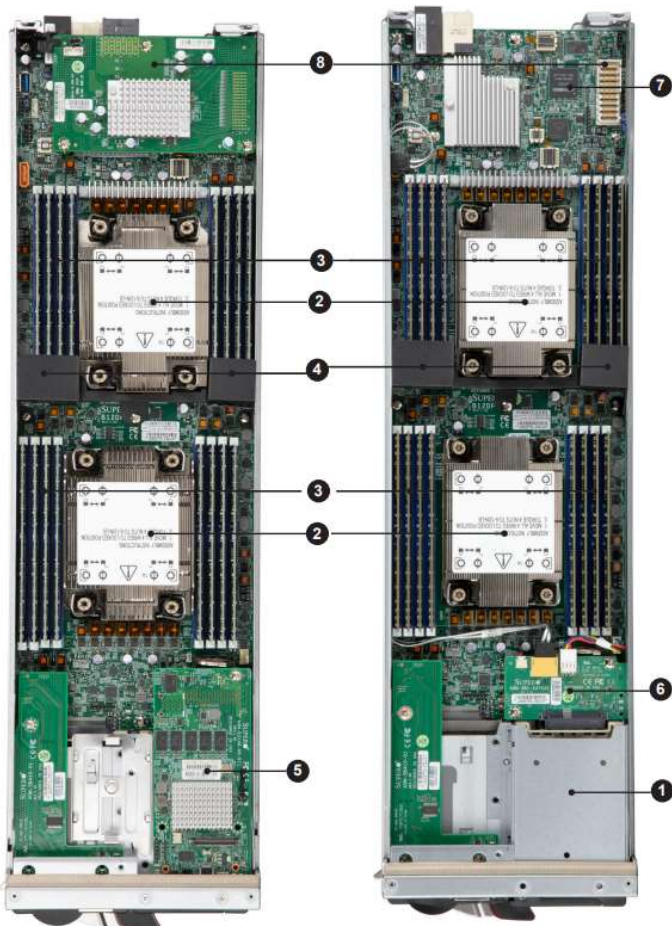
Chapter 2 - Illustrated System Disassembly Instructions

Chapter 8 is intended to provide guidance to recyclers on the presence of materials and components at the product/family level, per Article 15 of the EU WEEE Directive 2012/19/EU. The provided information should also help direct recyclers to proper methods for removing parts and general product disassembly instructions. This Chapter also outlines specific substances, mixtures, and components that must be removed from any separately collected electronic waste component and shall be disposed or recovered in compliance with Directive 2008/98/EC.

Please note: All the illustrations in the below disassembly instructions are for demonstration only. The system and components shown in this section are a representative sample.

CAUTION: Always power off the system and unplug the power cord(s) first before disassembling the system!

Representative Server Component Layout



Blade Components		
Item	Feature	Description
1	Drive	2.5" SATA storage drive
2	CPU	Processor and heatsink
3	Memory	DIMM Slots
4	Air Shrouds	Direct Air Flow
5	Module	Enables Broadcom RAID Controller
6	Module	Provides SATA for Third Drive
7	Chipset	Motherboard Chipset
8	Mezzanine	Add-on card provides one of: EDR, HDR, M.2 Storage, Omnipath 100Gbps, or 25GbE network speed

1. Data Storage Devices

Location: Servers are best known for their storage and interchangeability, this is most commonly done through front hard drive bays as noted in the photo below. Some servers may also have SSD storage, this type of storage can be found on the motherboard. It generally lays flat, parallel to the board, rather than at a right angle. Most common applications insert one end of the SSD into a slot on the motherboard while the alternate end is held in place with a small screw.

Type and number of fastenings: HDD = One (1) latch and four (6) Phillips screws, SSD = (1) Phillips screw.

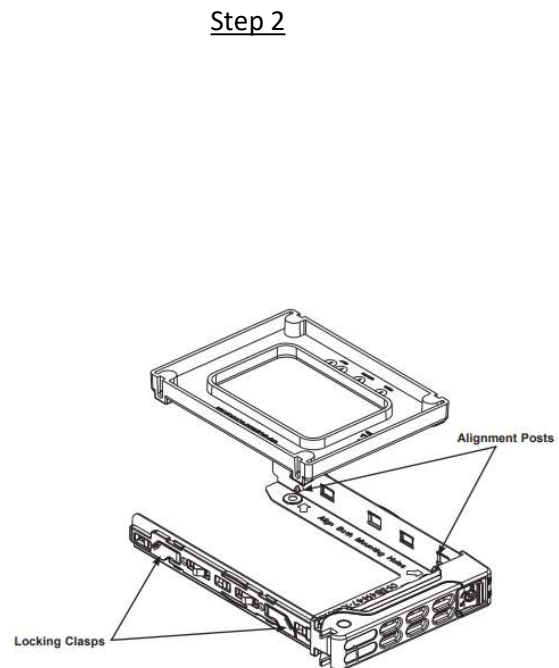
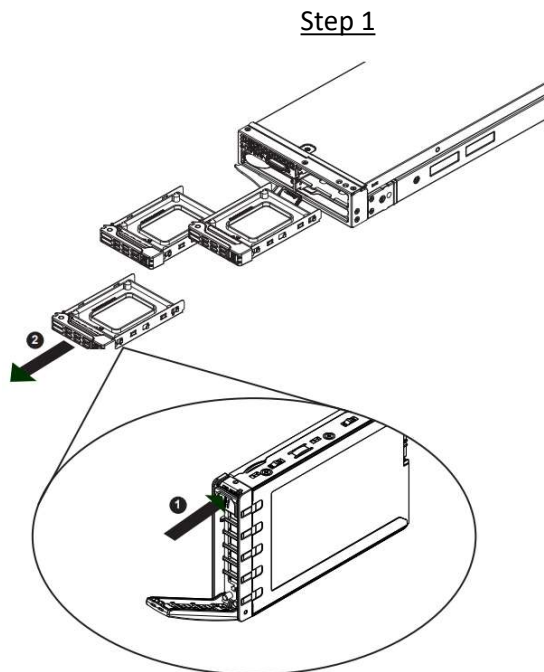
Tools required: Screwdriver with PH2 bit.

Procedure:

Step 1: HDD (3.5") = Push the release button on the carrier. Swing the handle fully. Grasp the handle and pull the drive carrier out of its bay, once the drive carrier is out of the bay, the Phillips screws can be removed.

Step 2: SSD (2.5") = Identify the SSD on the motherboard, remove the screw, and pull straight back in a parallel position to remove the SSD from the slot on the motherboard.

Selective Treatment/Special Handling Per Annex VII, Directive 2012/19/EU: There are two printed circuit board present that are greater than 10 square centimeters, one within the HDD and one within SSD that must be removed separately from the data storage device and shall be disposed or recovered in compliance with Directive 2008/98/EC.



2. Memory

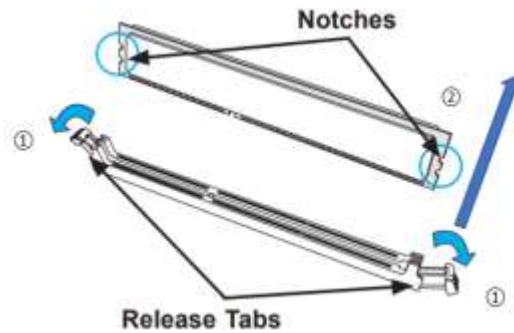
Location: Memory modules are found on the motherboard of the server, the number of memory modules may vary by unit configuration but are generally found in pairs of 2.

Type and number of fastenings: Two (2) latches per memory module.

Tools required: None.

Procedure: Press both release tabs on the ends of the memory module to unlock it. Once the module is loosened, remove it from the memory slot.

Selective Treatment/Special Handling Per Annex VII, Directive 2012/19/EU: The memory stick is a printed circuit board greater than 10 sq. cm and shall be disposed or recovered in compliance with EU Directive 2008/98/EC.



3. Processor

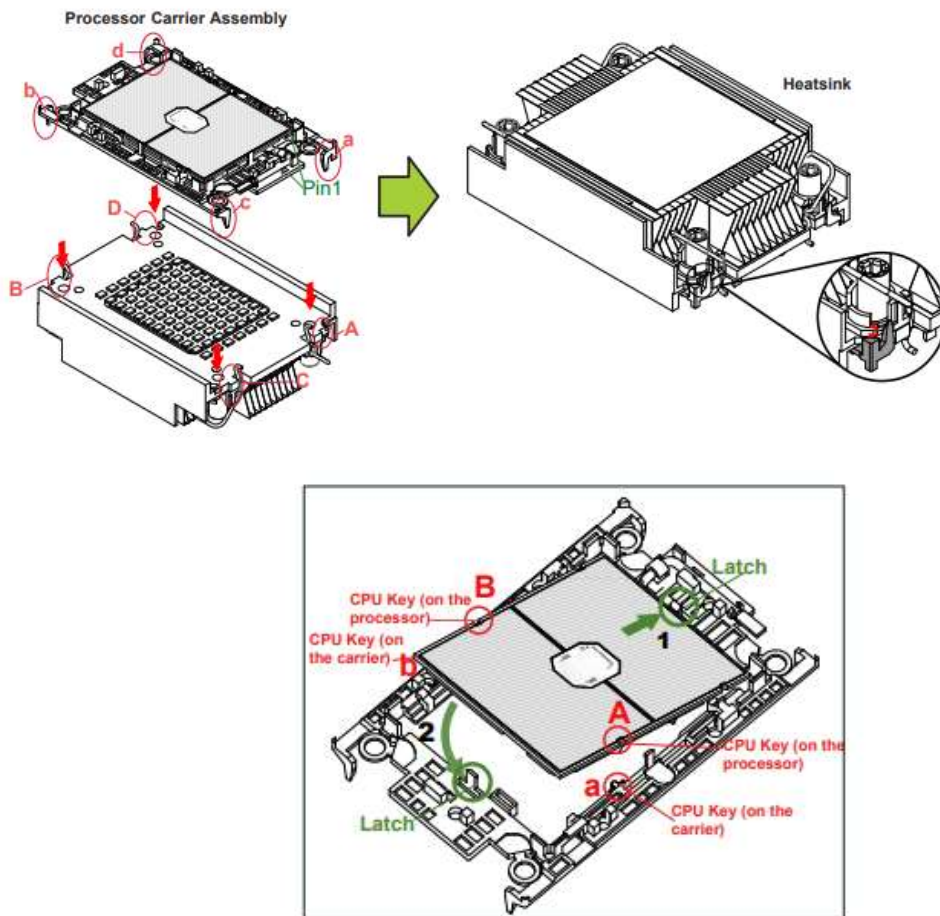
Location: The processor is found on the motherboard of the server. As shown in the photo below, the processor is located under the heat sink. The heatsink can look more like a fin type thermal transfer device, or a rotating fan with a thermal transfer plate. There can be more than one processor per motherboard.

Type and number of fastenings: Four (4) T30 Torx screws.

Tools required: Screwdriver with T30 Torx bit.

Procedure: Remove the screws as marked in the illustration below. After removing the screws, lift the processor heatsink module off the processor socket. Unsnap corners A and B, then C and D of the latch. Push the latch out from the bottom.

Selective Treatment/Special Handling Per Annex VII, Directive 2012/19/EU: The CPU does not contain any printed circuit boards.



4. Motherboard

Location: The motherboard is generally centrally located within the unit. Standard practice would be to remove all the components, peripherals, and add-ons from the motherboard before removal of the motherboard for processing.

Type and number of fastenings: 10 Phillips screws.

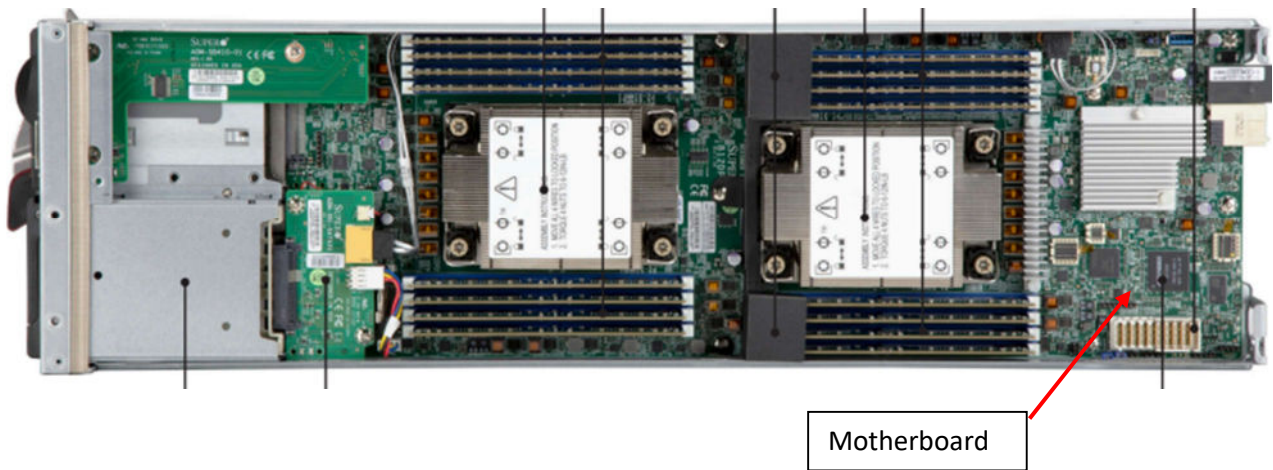
Tools required: Screwdriver with PH2 bit.

Procedure: Remove all 10 Phillips screws. Lift the motherboard from its base.

Selective Treatment/Special Handling Per Annex VII, Directive 2012/19/EU: The motherboard is a circuit board that is greater than 10 sq. cm and should be disposed or recovered in compliance with Directive 2008/98/EC.

A lithium battery resides on the motherboard. The battery must be removed separately from the motherboard and shall be disposed or recovered in compliance with Directive 2008/98/EC. Refer to section 9 for specific instructions on remove and disposal of LiON batteries.

- Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.



5. SSD Drive

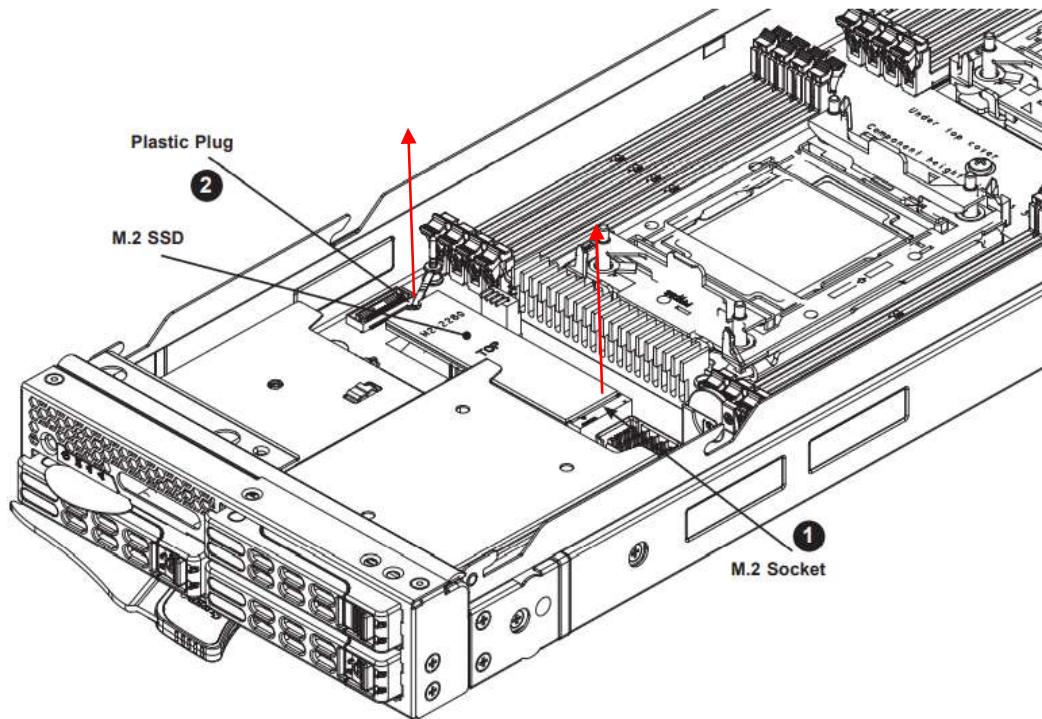
Location: Certain configurations of server may include a SSD drive. It is used for add-on types of components; it is attached directly to the motherboard.

Type and number of fastenings: One (1) socket located on the motherboard and one (1) plastic plug

Tools required: None.

Procedure: Remove the plastic plug from the SSD/Motherboard. Carefully pull the SSD card up and away from the Socket to remove from the motherboard.

Selective Treatment/Special Handling Per Annex VII, Directive 2012/19/EU: The SSD Drive is a circuit board greater than 10 sq. cm and shall be disposed or recovered in compliance with Directive 2008/98/EC.



6. Blade Chassis Cover

Location: The chassis cover is located on the upright, top side of the server, and it approximately 2/3 the size of the entire top, as noted in the illustration below.

Type and number of fastenings: One (1) Phillips Head Screw.

Tools required: Phillips Head Screw Driver.

Procedure: To remove the cover, remove the screw as illustrated below. Slide the Cover toward the rear and lift it off.

Selective Treatment/Special Handling Per Annex VII, Directive 2012/19/EU: None

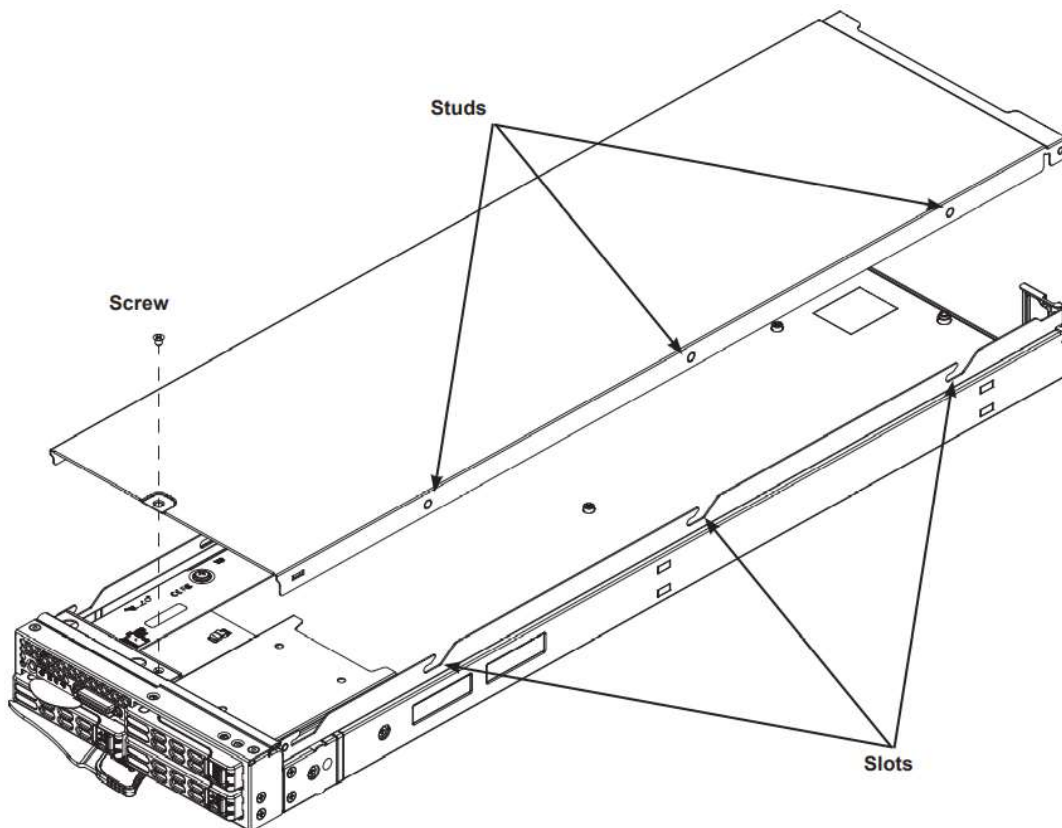


Figure 2-2. Removing the Cover

7. Batteries

Location: The battery is located on the motherboard, see illustration below.

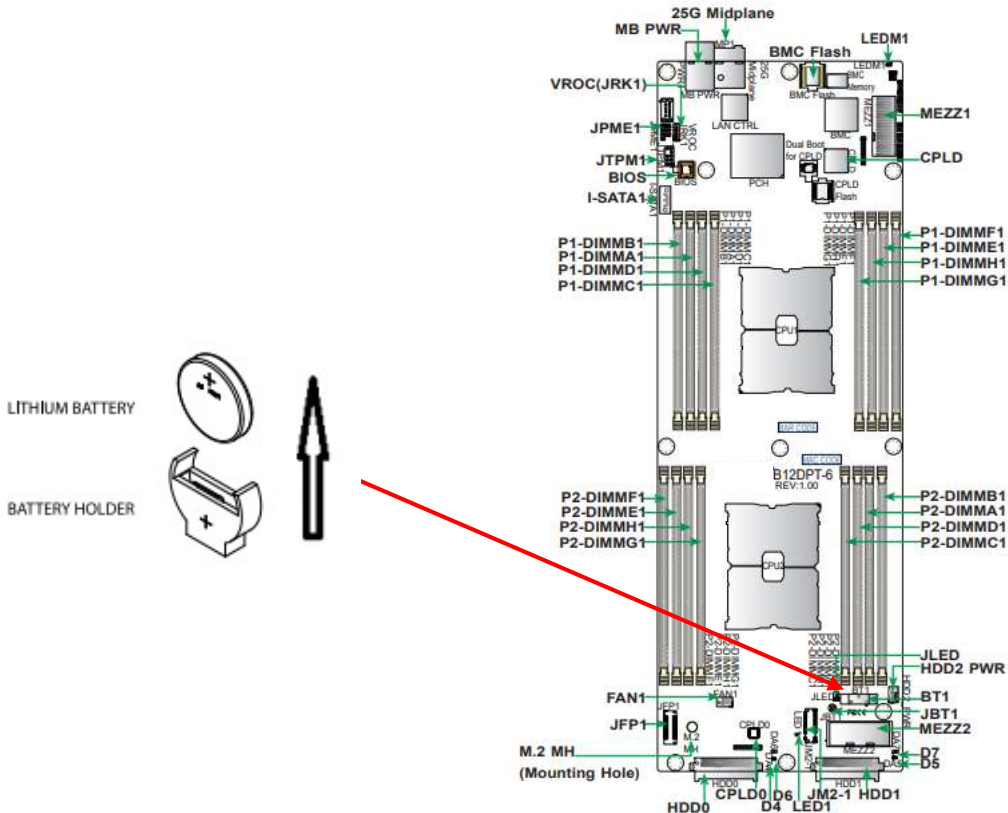
Type and number of fastenings: One (1) latch.

Tools required: None.

Procedure: Push aside the small clamp that covers the edge of the battery. When the battery is released, lift it out of the holder.

Selective Treatment/Special Handling Per Annex VII, Directive 2012/19/EU: A lithium battery resides on the motherboard. The battery must be removed from separately from the motherboard and shall be disposed or recovered in compliance with Directive 2008/98/EC. Removal instructions for the motherboard lithium battery are outlined below.

- Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.



Chapter 3 – Installation, Maintenance and Replacement Instructions

This chapter provides instructions on installing and replacing main system components. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

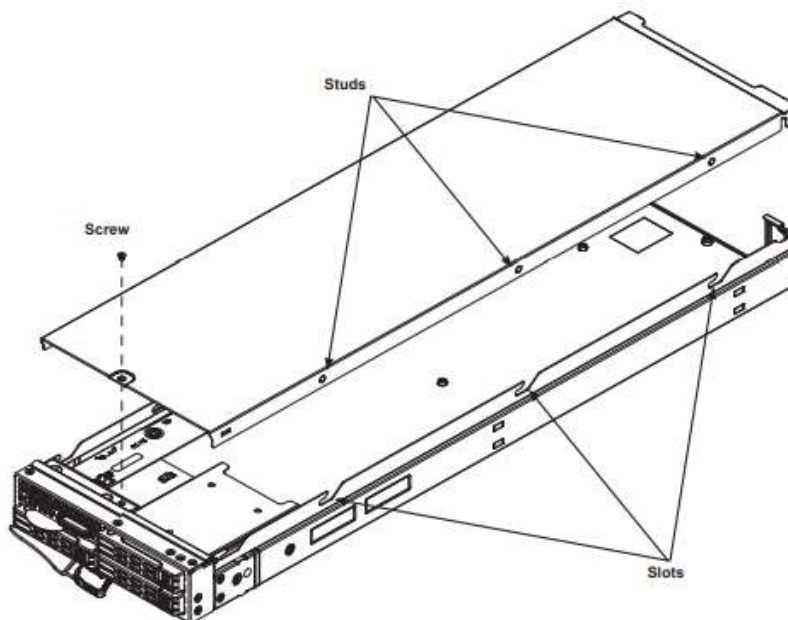
Installation or replacement of most components require that the power first be removed from the system. Please follow the procedures given in each section.

Additional information regarding replacement components/availability can be found in Chapter 5 below.

3.0 Accessing the System

The blade cover can be removed to access the mainboard and install processors, memory, modules, the onboard battery, etc.

- To remove the cover, remove the screw as illustrated below. Slide the cover toward the rear and lift it off.
- To replace the cover, fit the six studs on the inside of the cover into the slots of the chassis, then slide the cover toward the front of the blade to lock it into place. Replace the locking screw.



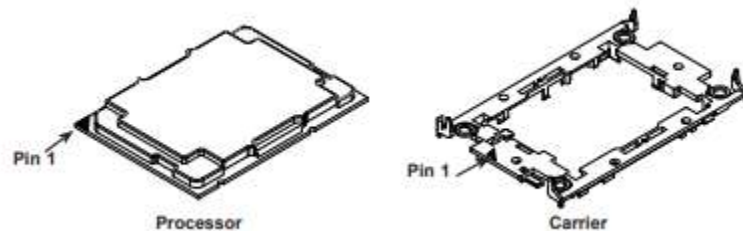
3.1 Processor and Heatsink (Replacement/Installation)

The processor (CPU) and processor carrier should be assembled together first to form the processor carrier assembly. This will be attached to the heatsink to form the processor heatsink module (PHM) before being installed onto the CPU socket.

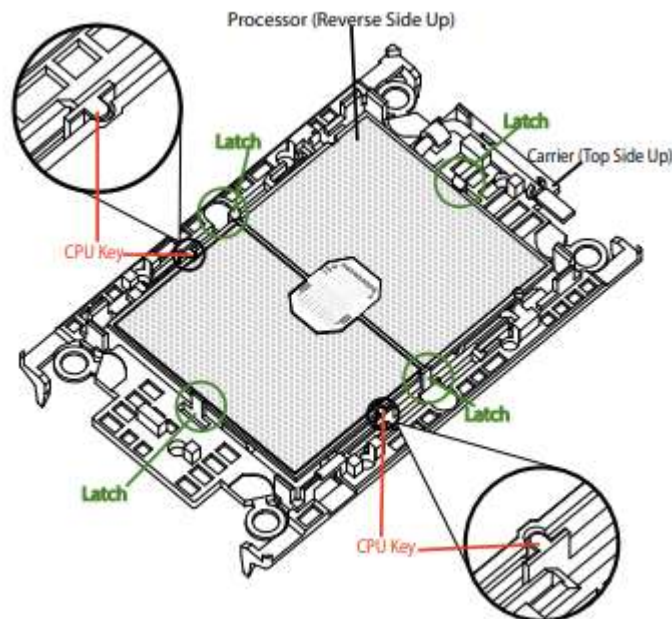
The Processor Carrier Assembly

The processor carrier assembly is comprised of the processor and the processor carrier.

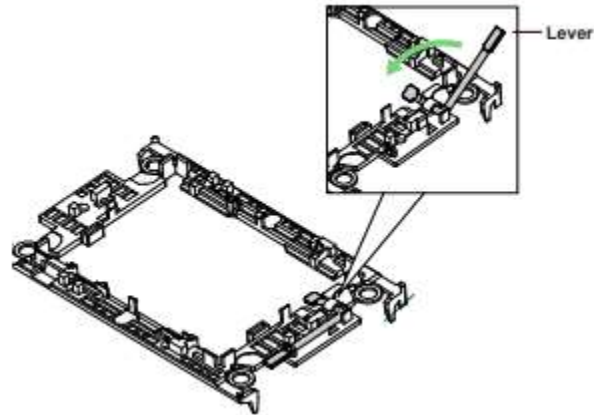
1. Hold the processor with the land grid array (LGA, gold contacts) facing down. Locate the gold triangle at the corner of the processor and the corresponding hollowed triangle on the processor carrier as shown below. These triangles indicate the location of pin 1.



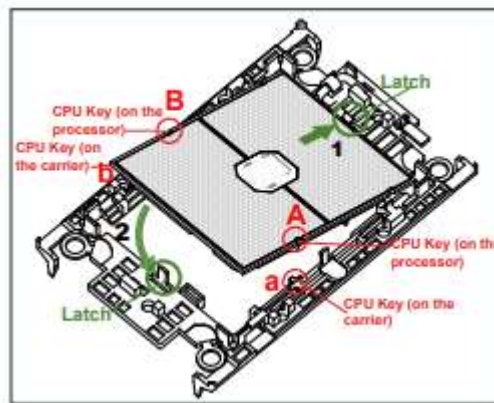
2. Turn the processor over (with the fold LGA up). Locate the CPU keys on the processor and the four latches on the carrier as shown below.



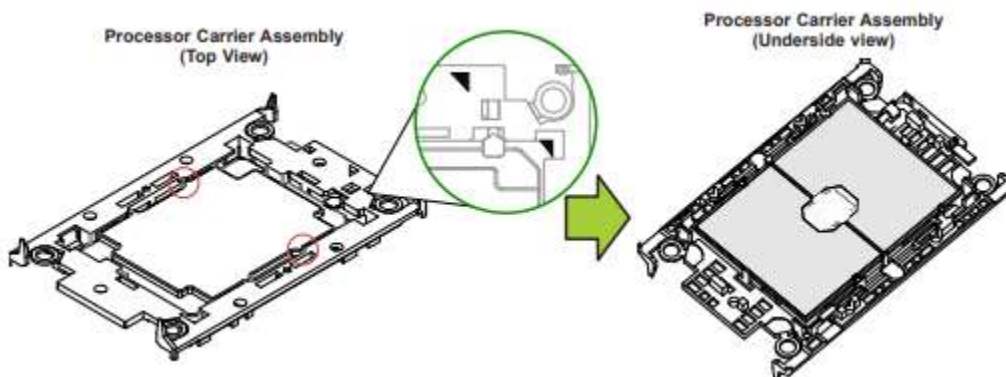
3. Locate the lever on the carrier and, if necessary, press it down as shown below.



4. Align the CPU keys on the processor (A & B) with those on the carrier (a & b) as shown below.



5. Carefully place one end of the processor under latch 1 on the carrier, and then press the other end down until it snaps into latch 2 and is properly seated on the carrier.

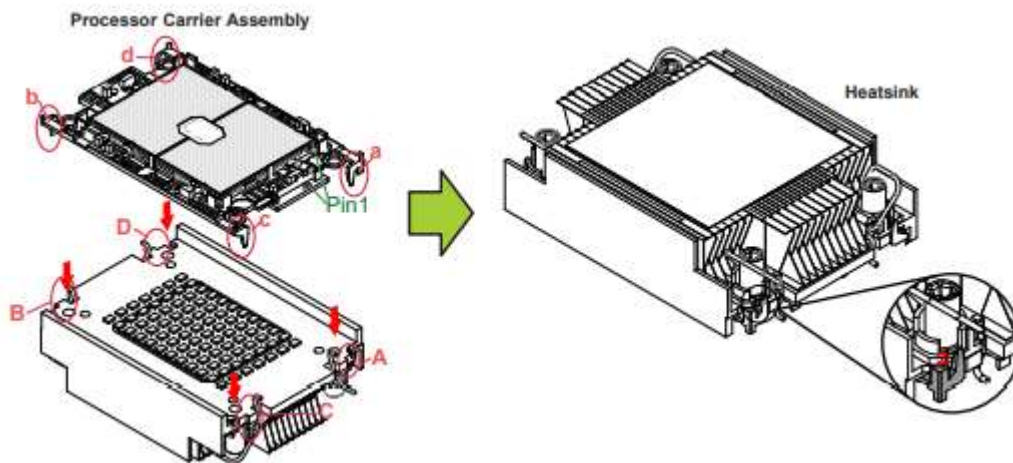


The Processor Heatsink Module (PHM)

After creating the processor carrier assembly, mount the heatsink onto the carrier assembly to form the processor heatsink module (PHM).

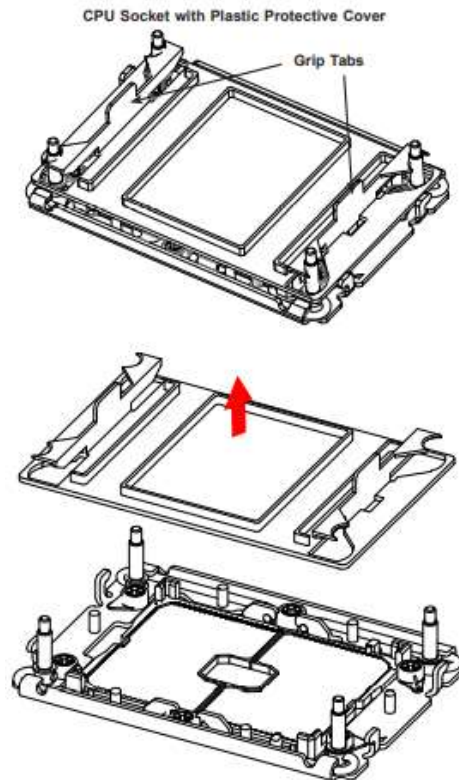
Note: If this is a new heatsink, the thermal grease has been pre-applied. Otherwise, apply the proper amount of thermal grease to the underside of the heatsink.

1. Turn the heatsink over with the thermal grease facing up. Note the two triangle cutouts (A, B) located at the diagonal corners of the heatsink as shown in the drawing below.
2. On the processor carrier assembly, find pin 1, as noted by triangles. Hold the processor carrier assembly over so that the gold LGA is facing up.
3. Align clip "a" (pin 1) on the carrier assembly with the triangular cutout A on the heatsink and b, c, d on the carrier assembly with B, C, D on the heatsink.
4. Push the carrier assembly onto the heatsink, making sure that all four clips on each corner are properly secured.

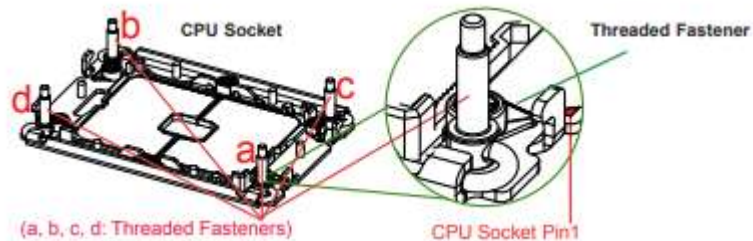


Installing the PHM into the CPU Socket

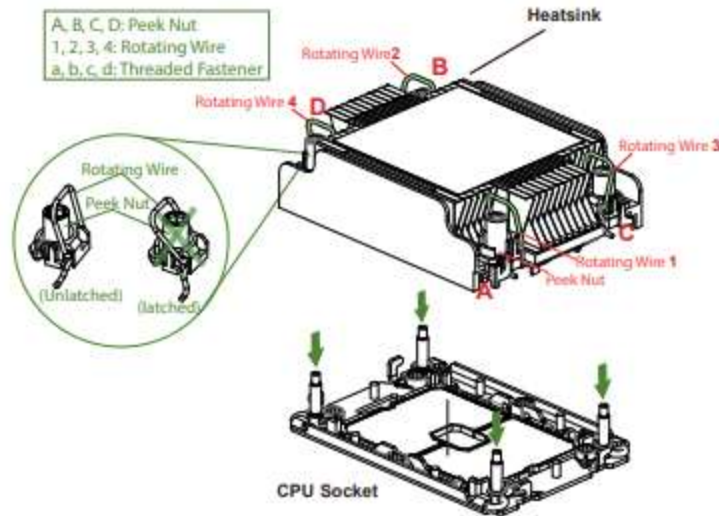
1. Remove the plastic protective cover from the CPU socket. Gently squeeze the grip tabs then pull the cover off.



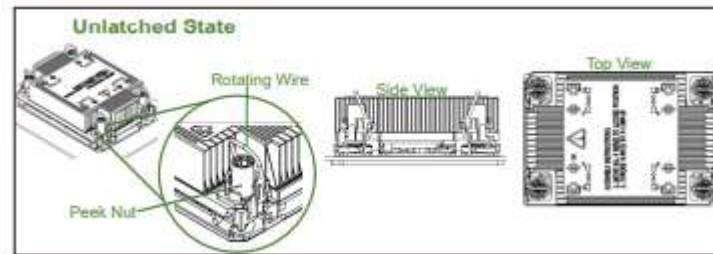
2. Locate the threaded fasteners (a, b, c, d) on the CPU socket.



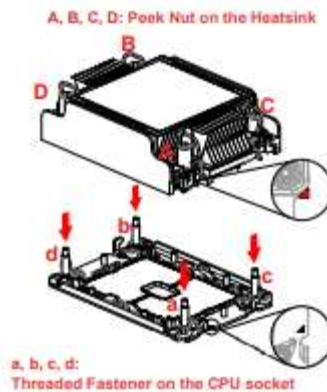
3. Locate four PEEK nuts (A, B, C, D) and four rotating wires (1, 2, 3, 4) on the heatsink as shown below.



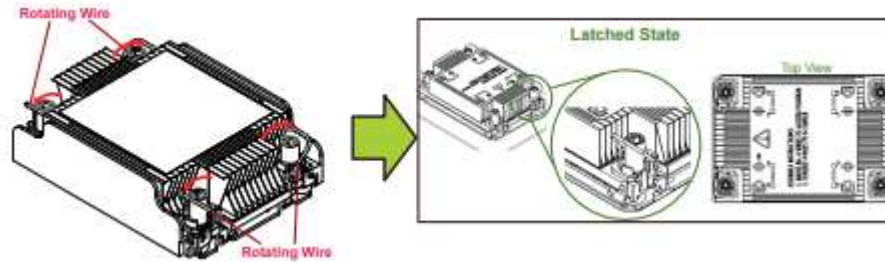
4. Check the rotating wires (1, 2, 3, 4) are in the unlatched position as shown.



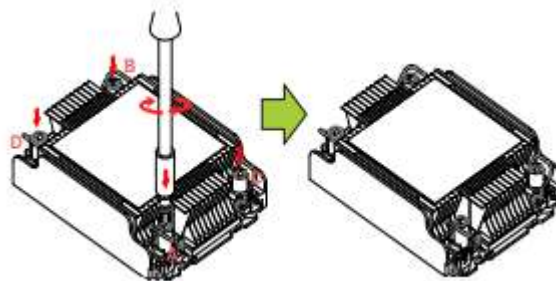
5. Align nut A (next to the triangles and pin 1) on the heatsink with threaded fastener "a" on the CPU socket. Also align nuts B, C, D on the heatsink with threaded fasteners b, c, d on the CPU socket.
6. Gently place the heatsink on the CPU socket, making sure that each nut is properly aligned with its corresponding threaded fastener.



7. Press all four rotating wires outward to latch the PHM onto the CPU socket.



8. With a t30-bit screwdriver, tighten all PEEK nuts in the sequence of A, B, C, and D with even pressure not greater than 12 lbf-in.



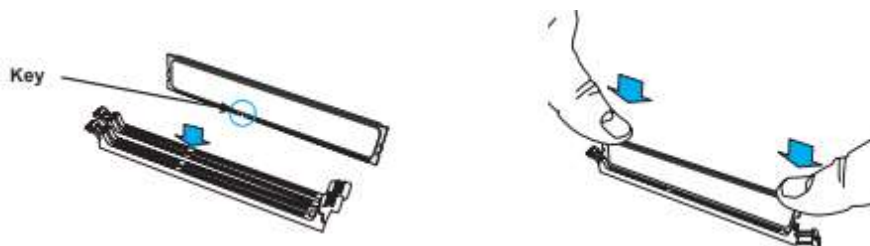
3.2 Memory (Replacement/Installation)

Type and number of fastenings: Two (2) latches per memory module.

Tools required: None.

Procedure:

1. Once you have followed the entire disassembly instructions under the Memory Disassembly Section (Chapter 2) above, unpack the new memory.
2. Ensure the notches on both sides line up with the release tabs, apply light pressure and push down to secure the memory notches into the release tabs (outlined below).



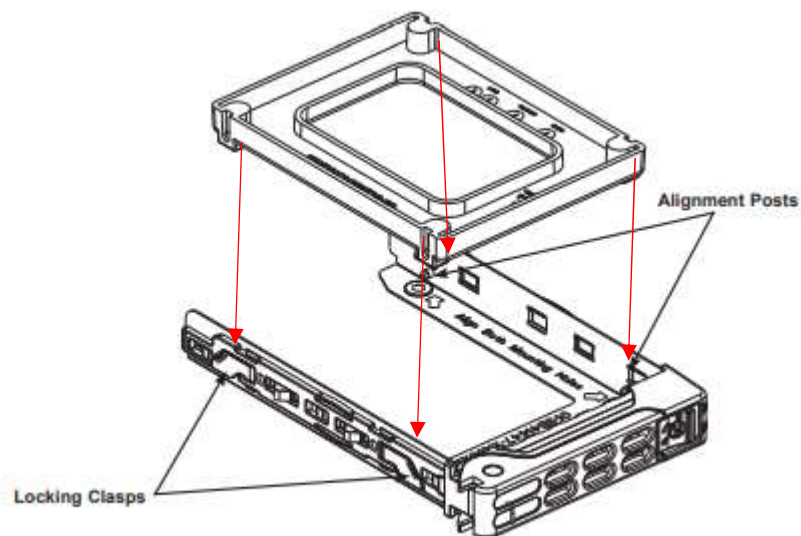
3.3 Data Storage Devices (Replacement/Installation)

Type and number of fastenings: HDD = two locking clasps, SSD = two locking clasps.

Tools required: None.

Procedure:

1. Remove the dummy drive, which comes pre-installed in the drive carrier. Pull out the two locking clasps on the left outside of the carrier and lift out the dummy drive.
2. Position the drive above the carrier with the PCB side facing down and the connector end toward the rear of the carrier.



3. Tilt the drive to insert it onto the two posts on the right inside of the carrier.
4. Pull out the two spring locking clasps and allow the drive to sit fully in the carrier, then close them to secure the drive.
5. Insert the drive carrier into its bay, keeping the release button on the right. When the carrier reaches the rear of the bay, the release handle will retract.
6. Push the handle until it clicks into its locked position.

3.4 SSD Drive (Replacement/Installation)

Type and number of fastenings: Plastic plug

Tools required: None.

Procedure:

1. Use industry-standard anti-static equipment, such as gloves or wrist strap, and follow precautions to avoid damage caused by ESD.
2. Insert the SSD into the socket on the motherboard. Then push it flat against the standoff.
3. Secure the SSD by firmly inserting the plastic plug into the standoff.

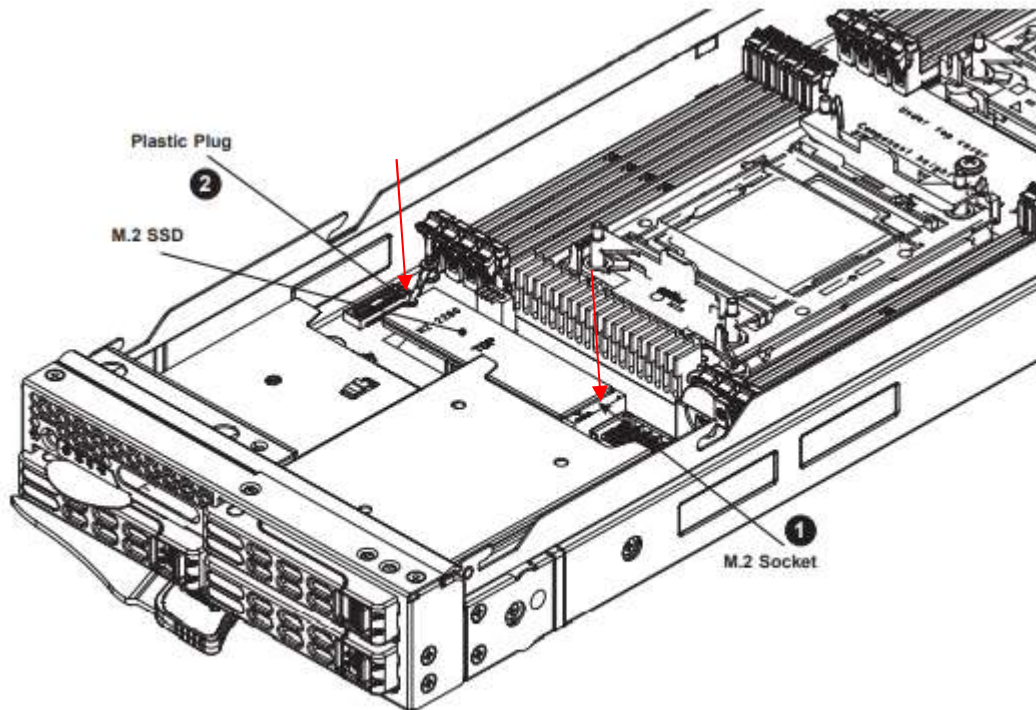


Figure 2-7. Installing M.2 SSD



Chapter 4 – Product Take-Back, End-Of-Life Processing, and E-Waste Program

Ace Computers offers a nationwide take-back service for proper end-of-life management of EPEAT-registered and Non-EPEAT registered products via Ace Computers and partnered with an R2-certified recycling facility.

For additional information and steps to take regarding our Product Take-Back, End-of-Life Processing, and E-Waste Program, please visit our website at <https://acecomputers.com/company/sustainability/> under the EPEAT Take-Back/EOL/E-Waste Program Tab.

Chapter 5 – Product Services

5.1 Where to Get Replacement Components/Product Services

If you need replacement parts or product service for your system, for self-replacement or for on-site replacement, please visit <https://acecomputers.com/support/> and fill out the Ace Computers Support Request form. If phone assistance is needed please call our Support Line 847-952-6999.

Note: Most parts/product services are available for at least 5 years after the date of sale. Replacement components at a minimum cover the following: power supply, fans, hard drives, memory, CPU, PCB assemblies, memory and all hardware.

5.2 Returning Merchandise for Service

Upon completion of the Ace Computers Support Request Form, indicated in Section 1.5, an Ace Computers Team Member will reach out to further assist with your technical questions. If it is determined that the best course of action is an inhouse repair at Ace Computers, the service technician will help facilitate the process of returning the server for repair.