Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***P770ZM*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

We suggest you completely review any procedure before you take the computer apart.

Procedures such as upgrading/replacing the RAM, optical device and hard disk are included in the User's Manual but are repeated here for your convenience.

To make the disassembly process easier each section may have a box in the page margin. Information contained under the figure # will give a synopsis of the sequence of procedures involved in the disassembly procedure. A box with a lists the relevant parts you will have after the disassembly process is complete. **Note**: The parts listed will be for the disassembly procedure listed ONLY, and not any previous disassembly step(s) required. Refer to the part list for the previous disassembly procedure. The amount of screws you should be left with will be listed here also.

A box with a will also provide any possible helpful information. A box with a contains warnings.

An example of these types of boxes are shown in the sidebar.

NOTE: All disassembly procedures assume that the system is turned **OFF**, and disconnected from any power supply (the battery is removed too).

Maintenance Tools

The following tools are recommended when working on the notebook PC:

- M3 Philips-head screwdriver
- M2.5 Philips-head screwdriver (magnetized)
- M2 Philips-head screwdriver
- Small flat-head screwdriver
- Pair of needle-nose pliers
- Anti-static wrist-strap

Connections

Connections within the computer are one of four types:

Locking collar sockets for ribbon connectors	To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Pressure sockets for multi-wire connectors	To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.
Pressure sockets for ribbon connectors	To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Board-to-board or multi-pin sockets	To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

Maintenance Precautions

The following precautions are a reminder. To avoid personal injury or damage to the computer while performing a removal and/or replacement job, take the following precautions:

1. **Don't drop it**. Perform your repairs and/or upgrades on a stable surface. If the computer falls, the case and other components could be damaged.
2. **Don't overheat it**. Note the proximity of any heating elements. Keep the computer out of direct sunlight.
3. **Avoid interference**. Note the proximity of any high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage components and/or data. You should also monitor the position of magnetized tools (i.e. screwdrivers).
4. **Keep it dry**. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.
5. **Be careful with power**. Avoid accidental shocks, discharges or explosions.
   - Before removing or servicing any part from the computer, turn the computer off and detach any power supplies.
   - When you want to unplug the power cord or any cable/wire, be sure to disconnect it by the plug head. Do not pull on the wire.
6. **Peripherals** – Turn off and detach any peripherals.
7. **Beware of static discharge**. ICs, such as the CPU and main support chips, are vulnerable to static electricity. Before handling any part in the computer, discharge any static electricity inside the computer. When handling a printed circuit board, do not use gloves or other materials which allow static electricity buildup. We suggest that you use an anti-static wrist strap instead.
8. **Beware of corrosion**. As you perform your job, avoid touching any connector leads. Even the cleanest hands produce oils which can attract corrosive elements.
9. **Keep your work environment clean**. Tobacco smoke, dust or other air-born particulate matter is often attracted to charged surfaces, reducing performance.
10. **Keep track of the components**. When removing or replacing any part, be careful not to leave small parts, such as screws, loose inside the computer.

Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). You must also remove your battery in order to prevent accidentally turning the machine on.

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.
Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Battery:

1. Remove the battery *page 2 - 5*

To remove the HDD:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 6*
3. Install the HDD *page 2 - 8*

To remove the M.2 SSD:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 6*
3. Remove the M.2 SSD *page 2 - 10*

To remove the Primary System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 11*

To remove the System Memory under the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 13*
3. Remove the system memory *page 2 - 14*

To remove and install the Processor:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 11*
3. Remove the processor *page 2 - 15*
4. Install the processor *page 2 - 17*

To remove the WLAN Module:

1. Remove the battery *page 2 - 5*
2. Remove the keyboard *page 2 - 11*
3. Remove the wireless LAN *page 2 - 18*

To remove and install the M.2 SATA:

1. Remove the battery *page 2 - 5*
2. Remove the system memory *page 2 - 11*
3. Remove the M.2 SATA *page 2 - 20*
4. Install the M.2 SATA *page 2 - 21*

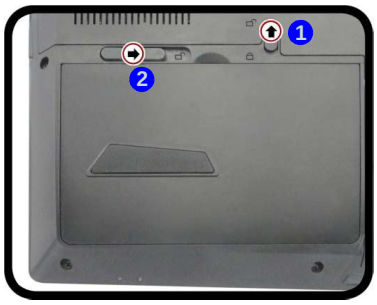
To remove and install the Video Card:

1. Remove the battery *page 2 - 5*
2. Remove the video card *page 2 - 22*
3. Install the video card *page 2 - 23*

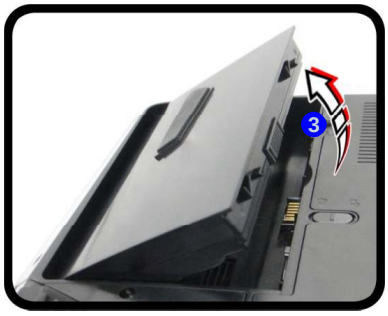
Removing the Battery

1. Turn the computer **off**, and turn it over.
2. Slide the latch 1 in the direction of the arrow (***Figure 1a***).
3. Slide the latch 2 in the direction of the arrow, and hold it in place (***Figure 1a***).
4. Lift the battery in the direction of the arrow 3.
5. Lift the battery 4 out of the compartment (***Figure 1c***).

a.



b.



c.

Figure 1
Battery Removal

a. Slide the latch and hold in place.
b. Lift the battery up toward the direction of the arrow.
c. Lift the battery out.

4. Battery

Figure 2
HDD Assembly Removal

a. Locate the HDD bay cover and remove the screws.
b. Remove the hard disk bay cover by sliding the cover at point 3.

Removing and Installing the Hard Disk Drive

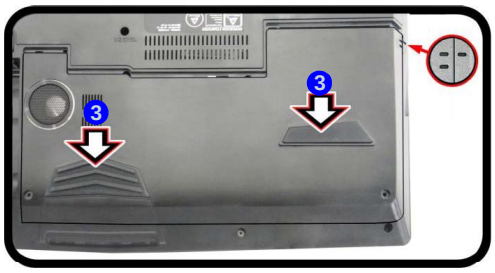
The hard disk drive can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 7mm/ 9.5mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new hard disk.

Hard Disk Removal Process

1. Turn **off** the computer, and remove the battery (*page 2 - 5*).
2. Locate the hard disk bay cover and remove screws 1 - 2 (*Figure 2a*).
3. Remove the hard disk bay cover by sliding the cover at point 3 (*Figure 2b*).

a.

b.



- 2 Screws

HDD System Warning

New HDD's are blank. Before you begin make sure:

You have backed up any data you want to keep from your old HDD.

You have all the CD-ROMs and FDDs required to install your operating system and programs.

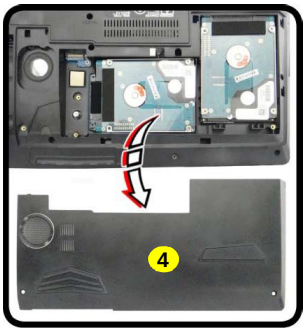
If you have access to the internet, download the latest application and hardware driver updates for the operating system you plan to install. Copy these to a removable medium.

4. Lift the hard disk bay cover 4 off the computer (*Figure 3c*)
5. Slightly lift and pull the HDD-1 assembly in the direction of the arrow 5 to remove the hard disk assembly 6 (*Figure 3d*).
6. Slightly lift and pull the HDD-2 assembly (if available) in the direction of the arrow 7 to remove the hard disk assembly 8 (*Figure 3e*).
7. Remove screws 9 - 12 and the adhesive cover 13 from the hard disk 14 (*Figure 3f*).
8. Reverse the process to install a new hard disk (do not forget to replace all the screws and covers).

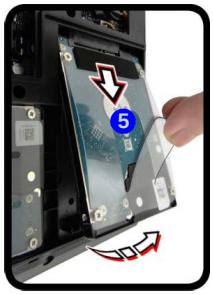
Figure 3
HDD Assembly Removal (cont'd.)

c. Remove the HDD bay cover.
d. Lift and pull the HDD-1 assembly in the direction of the arrow to remove the hard disk assembly.
e. Lift and pull the HDD-2 assembly in the direction of the arrow to remove the hard disk assembly.
f. Remove the screws and the adhesive cover.

c.

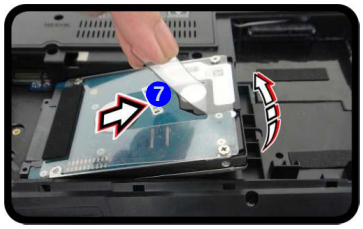


d.



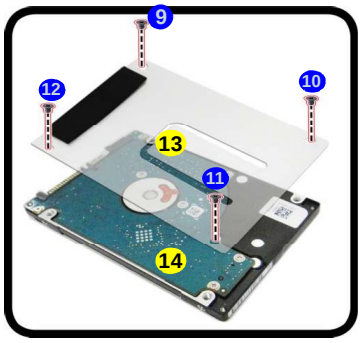
HDD-1

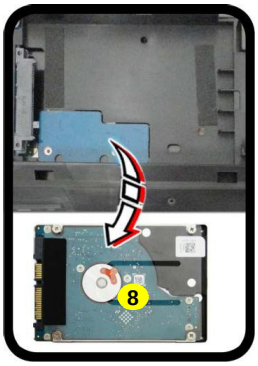
e.



HDD-2

f.





4. HDD Bay Cover
6. HDD-1 Assembly
8. HDD-2 Assembly
13. Adhesive Cover
14. HDD

- 4 Screws

Figure 4
HDD Assembly Installation

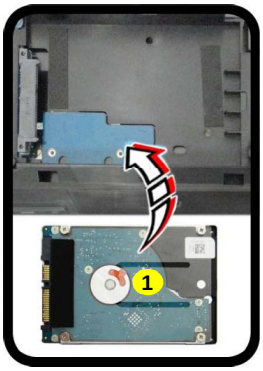
a. Insert the HDD-2 assembly in the direction of the arrow to install the hard disk assembly.
b. Place the rubber foam insert as shown
c. Insert the HDD-1 assembly in the direction of the arrow to install the hard disk assembly.

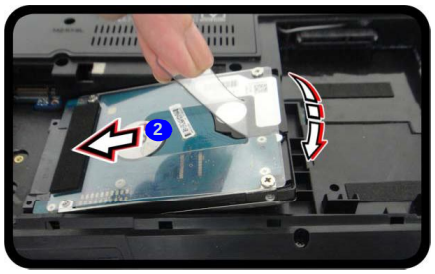
1. HDD-1 Assembly
4. HDD-2 Assembly

Hard Disk Installation Process

1. Turn **off** the computer, and remove the battery (***page 2 - 5***).
2. Insert the HDD-2 assembly 1 (if available) in the direction of the arrow 2 to install the it (***Figure 3a***).
3. After installing HDD-2 assembly, place the rubber foam insert 3 as shown (***Figure 3b***).
4. Insert the HDD-1 assembly 4 in the direction of the arrow 5 to install it (***Figure 3c***).
5. Replace the hard disk bay cover and screws (see ***page 2 - 6***).

a.





b.

HDD-2

c.

HDD-1

Hard Disk Size Note (Foam Rubber Insert)

Note that the hard disks pictured on the following pages are all 9.5mm(H) hard disk drives. In some cases 7mm(H) hard disk drives will be installed.

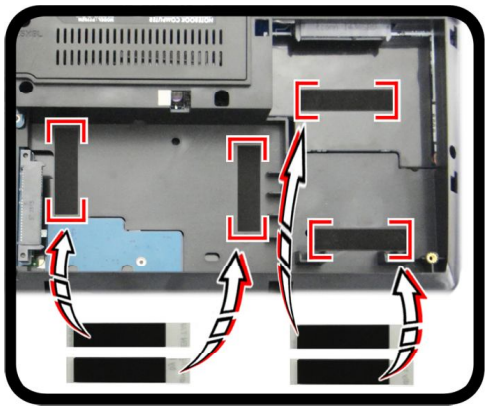


Figure 5
Foam Rubber Insert for 7mm(H) HDDs

- If you are replacing a 9.5mm(H) HDD with a 7mm(H) HDD then insert the foam rubber insert.
- If you are replacing a 7mm(H) HDD with a 9.5mm(H) HDD then remove the foam rubber insert.

Removing the M.2 SSD Module

Note that the **SSD** (if installed) is beside the HDD bay.

1. Turn **off** the computer, and turn it over, remove the battery (***page 2 - 5***).
2. Remove the screw 1 from the SSD (***Figure 6a***).
3. The M.2 SSD module 2 will pop-up (***Figure 6b***).
4. Lift the M.2 SSD module 2 up and off the computer (***Figure 6c***).
5. Reverse the process to install a new SSD (make sure that the hexagonal screw 3 is in the correct location depending upon the size of the module).

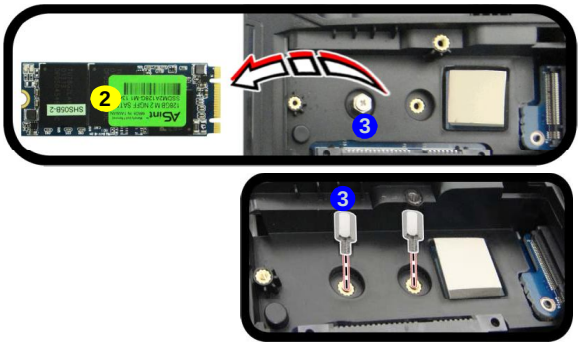
Figure 6
M.2 SSD Module Removal

a. Remove the screws.
b. The module will pop up.
c. Lift the module out.

a.

b.

c.



2. M.2 SSD Module
- 1 Screw

Removing the Primary System Memory (RAM)

The computer has **four** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) **DDR 3L** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

Note that **four SO-DIMMs are only supported by Quad-Core CPUs**; **Dual-Core CPUs support two SO-DIMMs maximum.**

Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard (not user upgradable). If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

Note that the RAM located under the keyboard is not user upgradable.

Memory Upgrade Process

1. Turn **off** the computer, and turn it over, remove the battery (***page 2 - 5***).
2. Remove screws 1 - 4.
3. Slide the bottom cover until the cover and case indicators 5 are aligned (***Figure 7a***).

a.

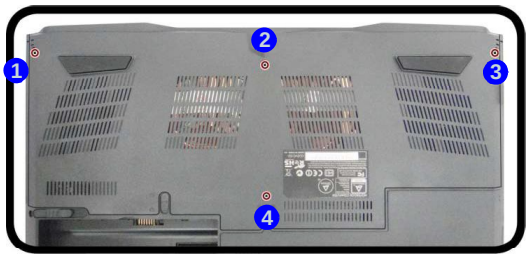


Figure 7
RAM Module Removal

a. Remove the screws. Slide the bottom cover until the cover and case indicators are aligned.

- Note that the size of screw 4 is M2.5 x 8L.

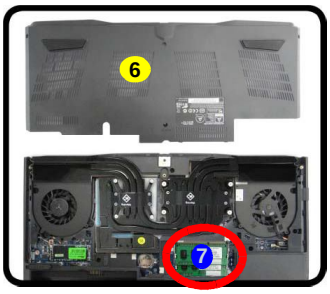
- 4 Screws

Figure 8
RAM Module Removal (cont'd.)

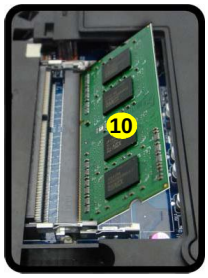
c. Lift the component bay cover off the computer case. The modules will be visible at point 7.
d. Gently pull the two release latches on the sides of the memory socket(s) in the direction indicated below.
e. The RAM module will pop-up, and you can remove it.

4. Lift the component bay cover 6 off the computer case. The modules will be visible at point 7 (***Figure 8c***).
5. Gently pull the two release latches (8 & 9) on the sides of the memory socket(s) in the direction indicated below (***Figure 8d***).
6. The RAM module 10 will pop-up, and you can remove it (***Figure 8e***).
7. Pull the latches to release the second module if necessary.
8. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
9. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE the module; it should fit without much pressure.
10. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
11. Replace the bay cover and screws.
12. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

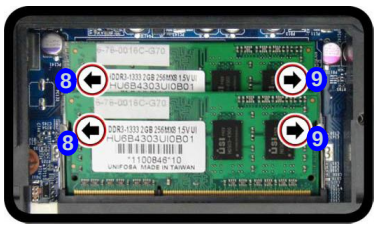
c.



e.



d.



6. Component Bay Cover
10. RAM Module

- 4 Screws

Contact Warning

Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

Removing the System Memory (RAM) from Under the Keyboard

The computer has **four** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) **DDR 3L** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

Two primary memory sockets are located under component bay cover (the bottom case cover), and two secondary memory sockets are located under the keyboard. If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

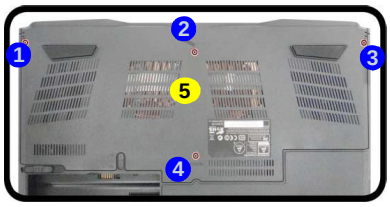
Memory Upgrade Process

1. Turn **off** the computer, and turn it over, remove the battery (*page 2 - 5*).
2. Remove screws 1 - 4 and the component bay cover 5 (*Figure 9a*).
3. Remove screws 6 - 8 from the bottom of the computer (*Figure 9b*).
4. Open it up with the LCD on a flat surface before pressing at point 9 to release the keyboard module (use an eject stick 10 to do this with a diameter no bigger than 2.5mm) while releasing the keyboard in the direction of the arrow 11 as shown (*Figure 9c*).

Figure 9
Keyboard Removal

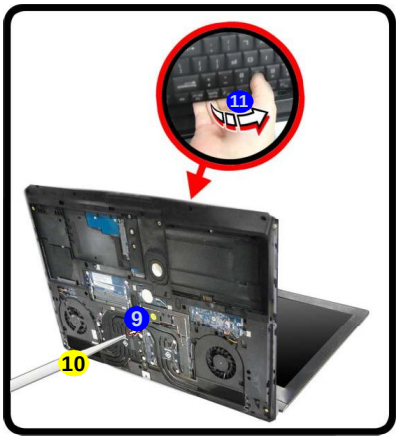
a. Remove the screws and component bay cover.
b. Remove the screws.
c. Eject the keyboard using a special eject stick to push the keyboard out while releasing the keyboard as shown.

a.



b.

c.



5. Top Cover Module
10. Eject Stick

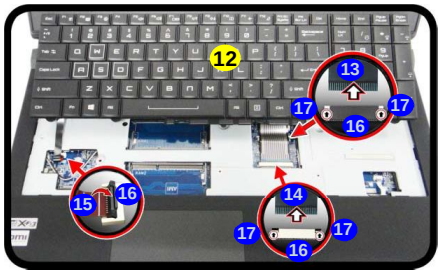
- 7 Screws

Figure 10
RAM Module Removal

d. Lift the keyboard up, and disconnect the keyboard ribbon cable from the locking collar socket.
e. Remove the keyboard and the memory sockets will be visible.
f. Pull the two release latches on the sides of the memory socket(s) in the direction indicated.

5. Carefully lift the keyboard 12 up, being careful not to bend the keyboard ribbon cables 13 - 15.
6. Disconnect the keyboard ribbon cables 13 - 15 from the locking collar socket 16 by using a small flat-head screwdriver to pry the locking collar pins 17 away from the base (***Figure 10d***).
7. Remove the keyboard and the memory sockets 18 & 19 will be visible.
8. Gently pull the two release latches (20 & 21) on the sides of the memory socket(s) in the direction indicated below.
9. The RAM module 22 will pop-up, and you can remove it.
10. Pull the latches to release the second module if necessary.
11. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
12. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE the module; it should fit without much pressure.
13. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
14. Replace the bay cover and screws.
15. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

d.



e.

f.

12. Keyboard
22. RAM Modules

Contact Warning

Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

Removing and Installing the Processor

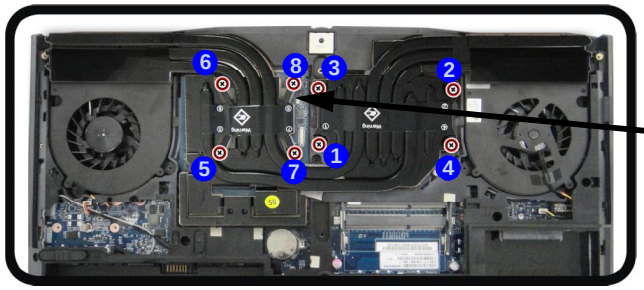
Processor Removal Procedure

1. Turn **off** the computer, remove the battery (*page 2 - 5*), and component bay cover (*page 2 - 11*).
2. Remove screws 1 - 8 from the heat sink unit in the order indicated on the label (i.e screw 8 first through to screw 1 last *Figure 11a*).
3. Carefully (it may be hot) remove the heat sink unit 9 (*Figure 11b*).

Figure 11
Processor Removal Procedure

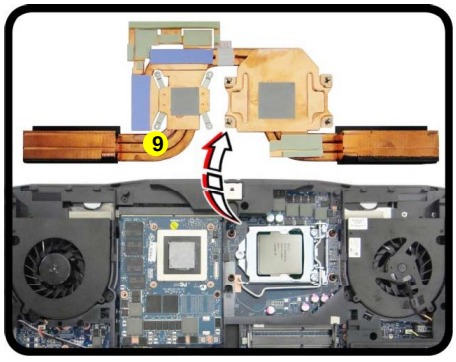
a. Remove the screws in the correct order.
b. Carefully remove the heat sink unit.

a.



Note:
Loosen the screws in the reverse order 8-7-6-5-4-3-2-1 as indicated.

b.



9. Heat Sink Unit

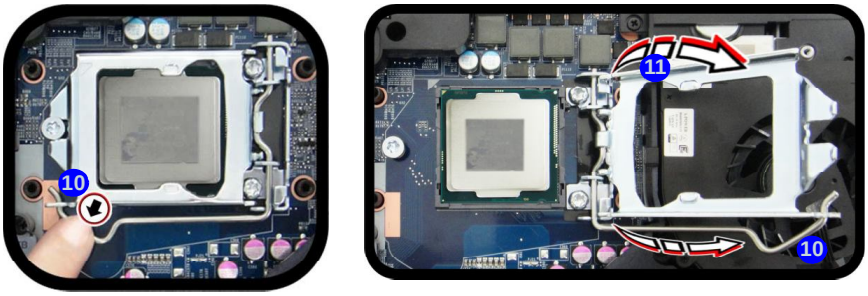
- 8 Screws

Figure 12
Processor Removal (cont'd)

c. Move the latch and bracket fully in the direction indicated to unlock the CPU.
d. Lift the CPU out of the socket.

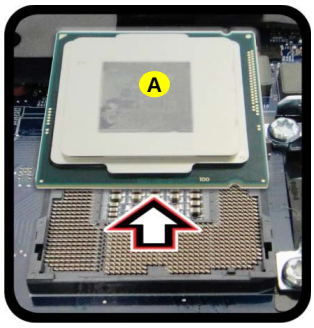
4. Press down and hold the latch 10 (with the latch held down you will be able to release it).
5. Move the latch 10 and bracket 11 fully in the direction indicated to unlock the CPU(***Figure 12c***).
6. Carefully (it may be hot) lift the CPU A up out of the socket (***Figure 12d***).
7. See ***page 2 - 17*** for information on inserting a new CPU.
8. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

c.



Unlock

d.



A. CPU

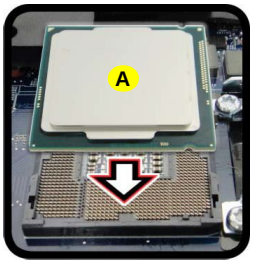
Caution

The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

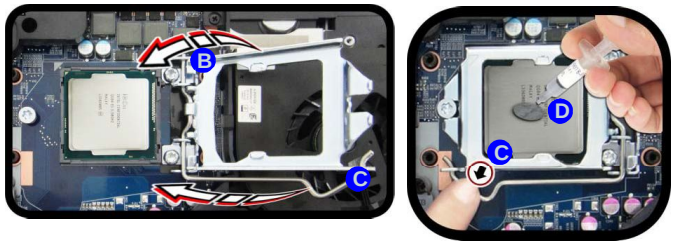
Processor Installation Procedure

1. Insert the CPU A; pay careful attention to the pin alignment (*Figure 13a*), it will fit only one way (DO NOT FORCE IT!).
2. Move the bracket B and latch C fully in the direction indicated to lock the CPU.
3. Apply the thermal grease D to the top of the CPU as shown (*Figure 13b*).
4. **Remove the sticker** E (*Figure 13c*) from the heat sink unit (if it is a new unit).
5. Insert the heat sink unit F as indicated in *Figure 13c*.
6. Tighten the CPU heat sink screws in the order 1 - 8 (the order as indicated on the label and *Figure 13d*).
7. Replace the CPU fan, component bay cover and tighten the screws (*page 2 - 15*).

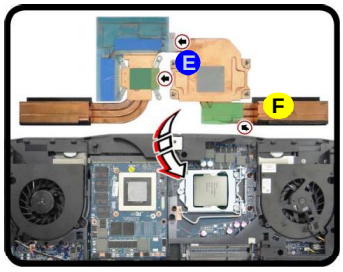
a.



b.



c.



d.

Note:
Tighten the screws in the order 1-2-3-4-5-6-7-8 as indicated.

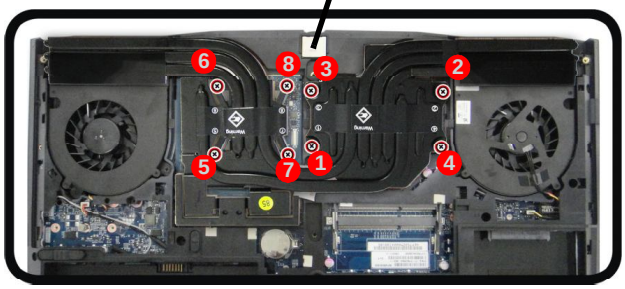


Figure 13
Processor Installation

a. Insert the CPU.
b. Move the latch and bracket fully in the direction indicated to lock the CPU. Apply thermal grease.
c. Remove the sticker from the heat sink unit and insert the heat sink.
d. Tighten the screws.

A. CPU
F. Heat Sink

- 8 Screws

Figure 14
Wireless LAN Module Removal

a. The Wireless LAN module will be visible at point 1 under the keyboard
b. Disconnect the cables and remove the screw.
c. The WLAN module will pop up.
d. Lift the WLAN module out.

Removing the Wireless LAN Module

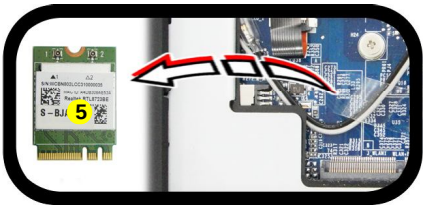
1. Turn **off** the computer, remove the battery (***page 2 - 5***) and the keyboard (***page 2 - 13***).
2. The Wireless LAN module will be visible at point 1 under the keyboard (***Figure 14a***).
3. Carefully disconnect cables 2 - 3, then remove screw 4 from the module socket (***Figure 14b***).
4. The Wireless LAN module 5 will pop-up (***Figure 14c***).
5. Lift the Wireless LAN module (***Figure 14d***) up and off the computer.

a.

c.

b.

d.



5. WLAN Module

- 1 Screw

Wireless LAN, Combo Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo, 3G and LTE modules are not labelled. The cables/covers (each cable will have either a black or transparent cable cover) are color coded for identification as outlined in the table below.

Module Type	Antenna Type	Cable Color	Cable Cover Type
WLAN/WLAN & Bluetooth Combo	WM 1	Black	Transparent
	WM 2	Gray	
	WM 3	White	

Cable 1 is usually connected to antenna 1 (Main) on the module, and cable 2 to antenna 2 (Aux).

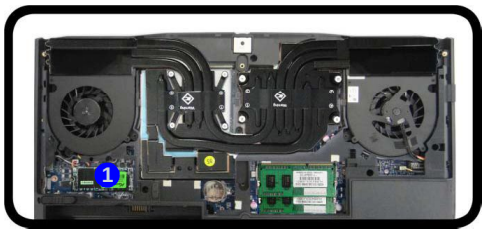
Figure 15
M.2 SATA Module Removal

a. Locate the module.
b. Remove the screw.
c. The module will pop-up.
d. Lift the module up off the socket.

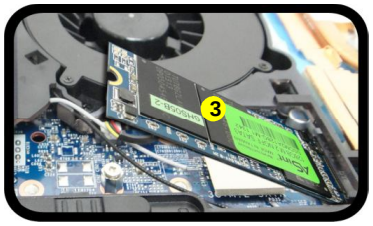
Removing the M.2 SATA Module

1. Turn **off** the computer, remove the battery (***page 2 - 5***), and component bay cover (***page 2 - 11***).
2. Locate the module; it is visible at point 1 (***Figure 15a***).
3. Carefully remove the screw 2 from the module (***Figure 15b***).
4. The M.2 SATA module 3 will pop-up (***Figure 15c***).
5. Lift the M.2 SATA module 3 up and off the computer (***Figure 15d***).
6. Reverse the process to install a new SSD (make sure that the hexagonal screw 4 is in the correct location).

a.

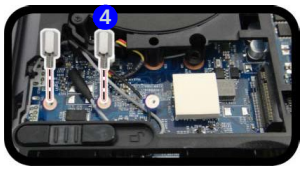


c.



b.

d.



3. MSATA Module

- 1 Screw

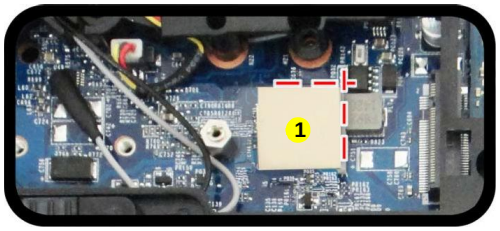
M.2 SATA Installation Procedure

1. Place the thermal pad 1 on the computer as shown (***Figure 16a***).
2. Insert the module 2 in the computer. Make sure that the hexagonal screw 3 is in the correct location (***Figure 16b***).
3. Tighten the screw 4 to secure it in place (***Figure 16c***).

Figure 16
M.2 SATA Module Installation

a. Place the thermal pad.
b. Insert the module.
c. Tighten the screw.

a.



b.

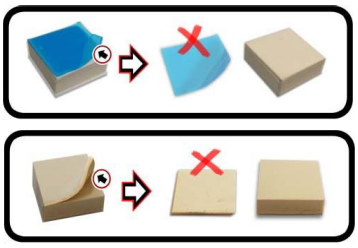
c.

Thermal Pad

Make sure you place the thermal pad's adhesive side down onto the computer surface as illustrated.

The usage of the thermal pad will depend upon the thickness of the module being used.

- If you are using the thinner module, then apply the whole thermal pad provided on the computer.
- If you are using the thicker module, separate the pad into its two parts. Use the larger part and place the adhesive side onto the computer (discard the smaller part that you have separated).



1. Thermal Pad
2. M.2 SATA Module

- 1 Screw

Figure 17
Video Card Removal Procedure

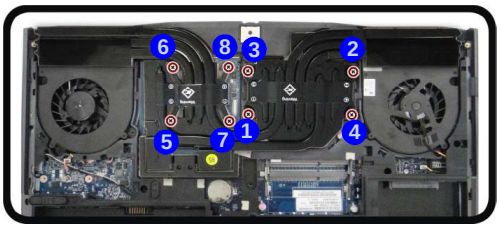
a. Remove the screws in the correct order.
b. Carefully remove the heat sink units.
c. Remove the video card screws. The video card will pop up.
d. Remove the video card.

Removing and Installing the Video Card

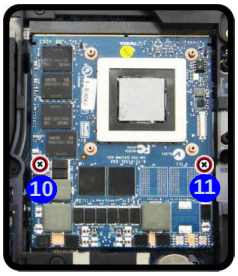
Video Card Removal Procedure

1. Turn **off** the computer, turn it over and remove the battery (*page 2 - 5*) and component cover (*page 2 - 11*).
2. Remove screws 1 - 8 from the heat sink unit in the order indicated on the label (i.e screw 8 first through to screw 1 last) (*Figure 17a*).
3. Carefully (**it may be hot**) remove the heat sink unit 9 (*Figure 17b*).
4. Remove screws 10 & 11 from the video card. The video card 12 will pop up (*Figure 17c*).
5. Remove the video card 12 (*Figure 17d*).

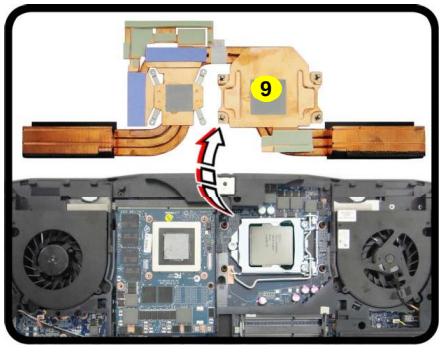
a.



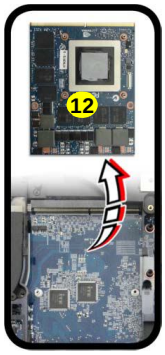
c.



b.



d.



Caution

The heat sink, and video card area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

9. Heat Sink Units
12. Video Card

- 10 Screws

Heat Sink Screw Removal and Insertion

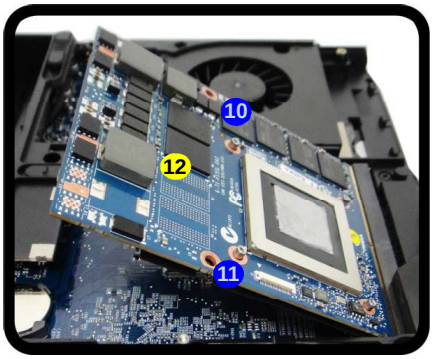
Remove the screws from the heat sink in the order indicated here: **8-7-6-5-4-3-2-1**.

When tightening the screws, make sure that they are tightened in the order: **1-2-3-4-5-6-7-8**.

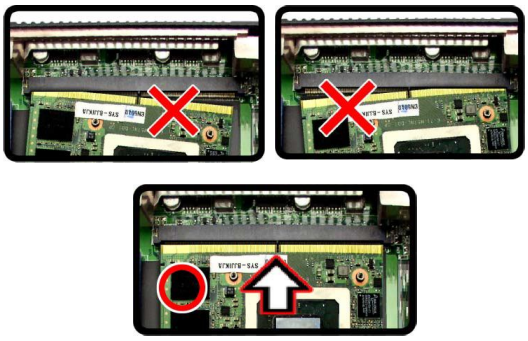
Installing a New Video Card

1. Prepare to fit the video card 12 into the slot by holding it at about a 30° angle (*Figure 18e*).
2. The card needs to be fully into the slot, and the video card and socket have a guide-key and pin which align to allow the card to fit securely (*Figure 18f*).
3. Fit the connectors firmly into the socket, straight and evenly.

e.



f.



4. DO NOT attempt to push one end of the card in ahead of the other.
5. The card's pin alignment will allow it to only fit one way. **Make sure the module is seated as far into the socket as it will go**. DO NOT FORCE the card; it should fit without much pressure.
6. Secure the card with screws 10 & 11 (*Figure 17 on page 2 - 22*).
7. Place the heat sink back on the card, and secure the screws in the order indicated in *Figure 17 on page 2 - 22*.
8. Reinsert the component bay cover, and secure with the screws as indicated in *Figure 9 on page 2 - 13*.

Figure 18
Installing a New Video Card

e. Insert the video card at a 30 degree angle.
f. Fit the connectors straight and even, and secure the card with the screws.

Caution

The heat sink, and video card area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

12. Video Card

- 2 Screws