SERVICE MANUAL

P370EM / P370EM3

notebook

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***P370EM / P370EM3*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

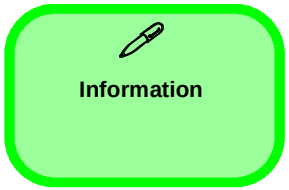
We suggest you completely review any procedure before you take the computer apart.

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). It is advisable to 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.

Removing the Battery

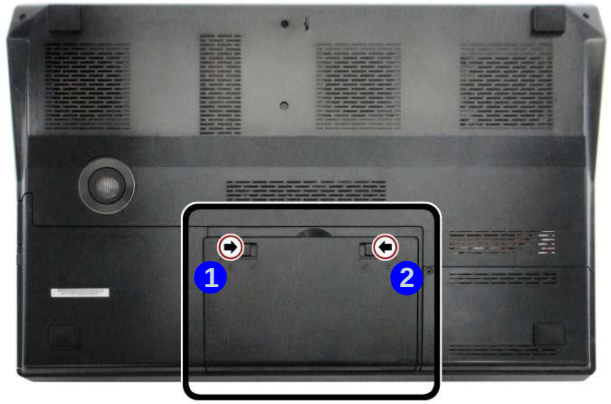
If you are confident in undertaking upgrade procedures yourself, for safety reasons it is best to remove the battery.

1. Turn the computer off, remove the AC/DC adapter and turn it over.
2. Slide the latch 1 - 2 in the direction of the arrow and carefully pull the battery 3 up.
3. Lift the battery 3 up (***Figure b***) and out of the battery bay.

Figure 1
Battery Removal

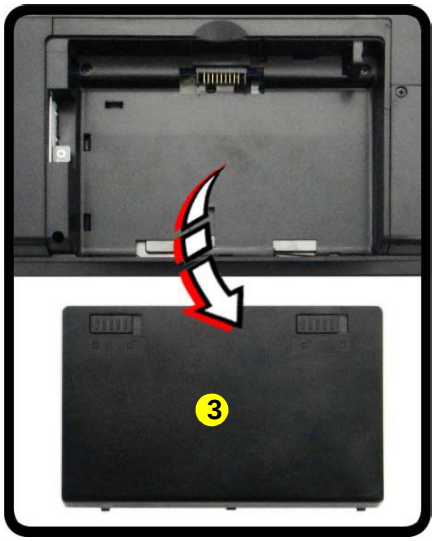
a. Slide the latch and hold it in place.
b. Pull the battery up.
c. Lift the battery out of the bay as indicated.

a.



b.

c.



3. Battery

•

Removing the System Memory (RAM)

The computer has three memory sockets for 204 pin Small Outline Dual In-line Memory Modules (SO-DIMM) DDR III (DDR3) supporting 1333/1600 MHz. The main memory can be expanded up to 16GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

Primary System Memory Upgrade Process

1. Turn off the computer, and turn it over to remove the battery (*page 2 - 5*).
2. Remove screws 1 - 4 and component bay cover 5 .
3. The RAM module will be visible at point 6 on the mainboard (*Figure 7b*).

a.

b.

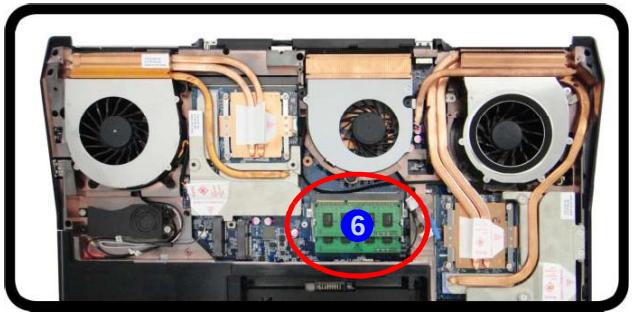


Figure 7
RAM-1 Module Removal

a. Remove screws and component bay cover.
b. Locate the module.

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.

5. Component Bay Cover

- 4 Screws

Figure 10
Processor Removal

a. Locate the heat sink.
b. Remove the CPU fan cables and screws. Lift up the CPU fan off the computer.
c. Remove the screws.
d. Remove the heat sink.

Removing and Installing the Processor

Processor Removal Procedure

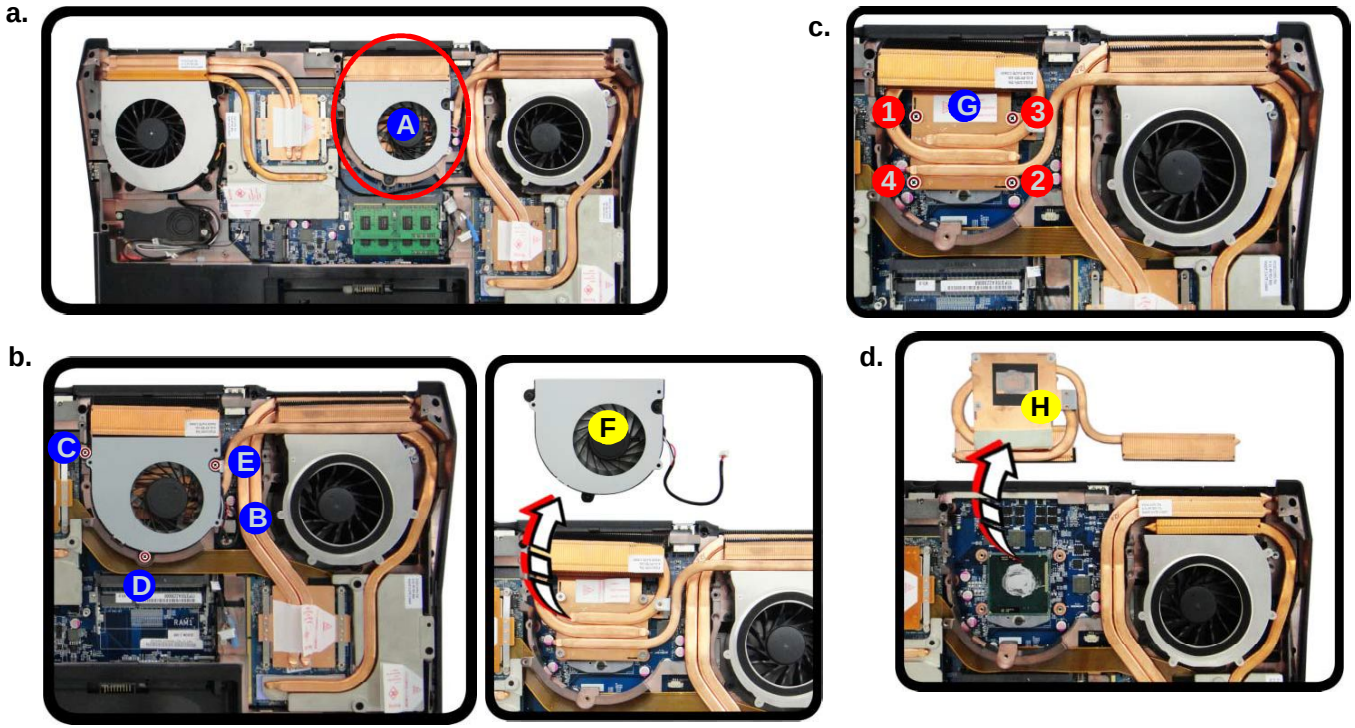
1. Turn off the computer, and turn it over to remove the battery (***page 2 - 5***), and component bay cover (***page 2 - 11***).
2. The heat sink fan and heat sink will be visible at point A on the mainboard.
3. Carefully disconnect heat sink fan cable B, and remove screws C - E. Lift up the heat sink fan F off the computer (***Figure 10b***).
4. Remove screws 4, 3, 2, 1 , the reverse order indicated on the label (***Figure 10c***) and carefully pull the tabs G to disconnect the heat sink.
5. Carefully (it may be hot) lift up the heat sink H off the computer (***Figure 10d***).

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.

F. Heat Sink Fan
H. Heat Sink

- 7 Screws



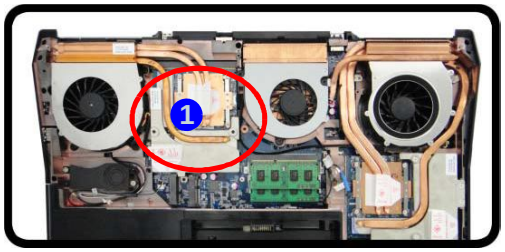
Removing the VGA-1 Card

1. Turn off the computer, and turn it over to remove the battery (*page 2 - 5*) and component bay cover (*page 2 - 5*).
2. The VGA-1 card will be visible at point 1 on the mainboard (*Figure 13a*).
3. Remove screws 2 - 5 from the heat sink **in the order indicated on the label** (and on the heat sink unit itself).
4. Carefully (**they may be hot**) remove the heat sink-1 6 from VGA assembly.
5. Remove screws 7 - 9 from the heat sink **in the order indicated on the label** (and on the heat sink unit itself).
6. Carefully (**they may be hot**) remove the heat sink-2 10 from VGA assembly.

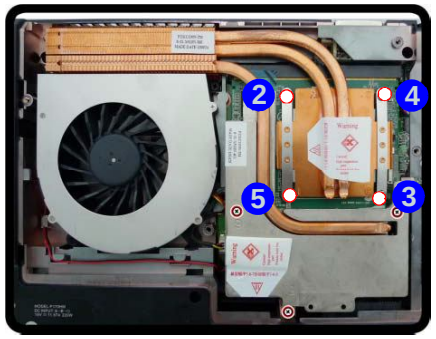
Figure 13
VGA-1 Card Removal

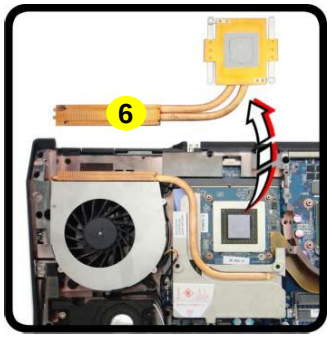
a. Locate the VGA card.
b. Remove the screws and VGA heat sink-1.
c. Remove the screws and VGA heat sink-2.

a.

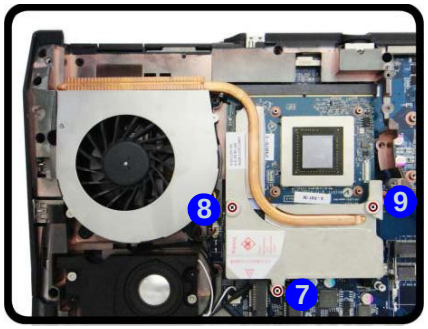


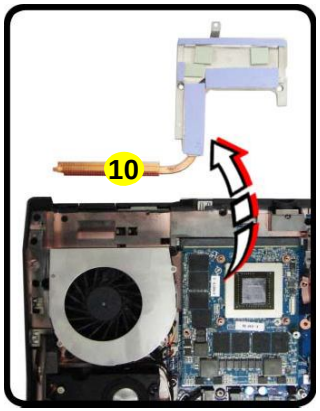
b.





c.





Heat Sink Screw Removal and Insertion

Remove the screws from the heat sink in the order indicated here: **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**.

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.

6. VGA Heat sink-1
10. VGA Heat sink-2

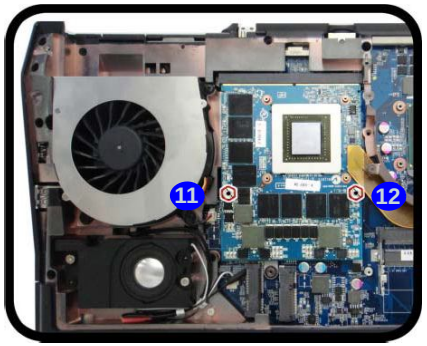
- 7 Screws

Figure 14
VGA-1 Card Removal (cont'd)

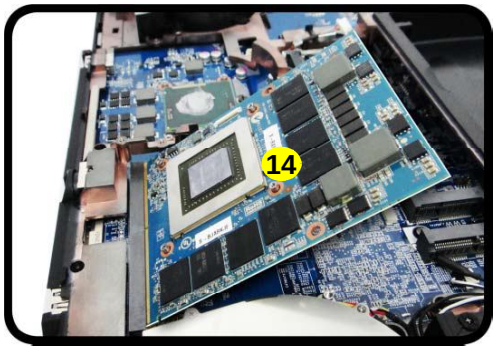
d. Remove the screws and disconnect the VGA cable if applicable.
e. Lift the VGA-1 card out.

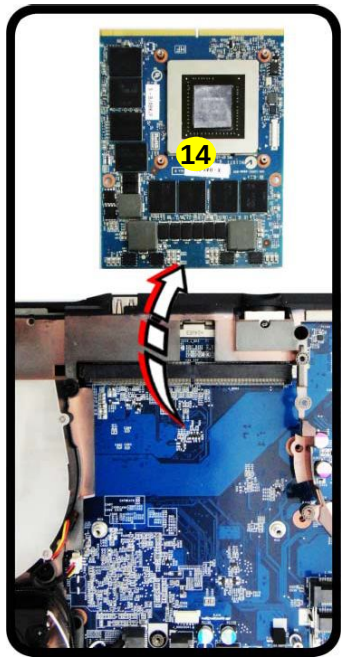
7. Remove screws 11 & 12 from the VGA-1 assembly.
8. If your system includes two video cards you will need to disconnect the cable 13 between the master and slave cards (do not forget to reconnect the cable if you are replacing two cards).
9. Carefully lift the VGA-1 card 14 off the mainboard.

d.

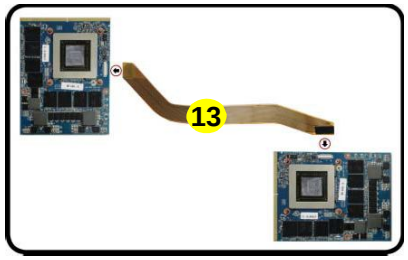


e.

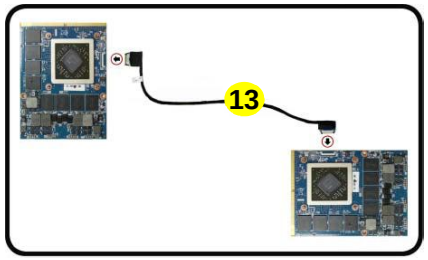




NVidia VGA Cable



AMD VGA Cable



13. VGA Cable
14. VGA-2 Card

- 2 Screws

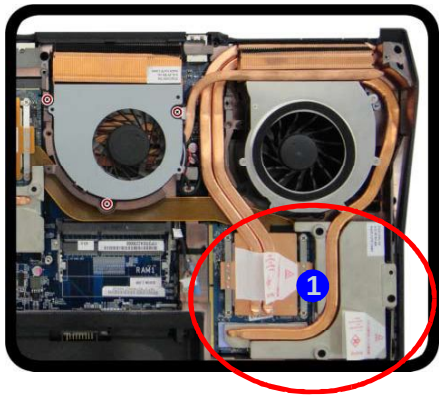
Removing the VGA-2 Card

1. Turn off the computer, and turn it over to remove the battery (*page 2 - 5*), component bay cover (*page 2 - 11*) and CPU (*page 2 - 14*).
2. The VGA-2 card will be visible at point 1 on the mainboard (*Figure 15a*).
3. Remove screws 2 - 5 from the heat sink-1 **in the order indicated on the label** (and on the heat sink unit itself).
4. Carefully (**they may be hot**) remove the VGA heat sink-1 6 .
5. Remove screws 7 - 9 from the heat sink-2 **in the order indicated on the label** (and on the heat sink unit itself).
6. Carefully (**they may be hot**) remove the VGA heat sink-2 10 .

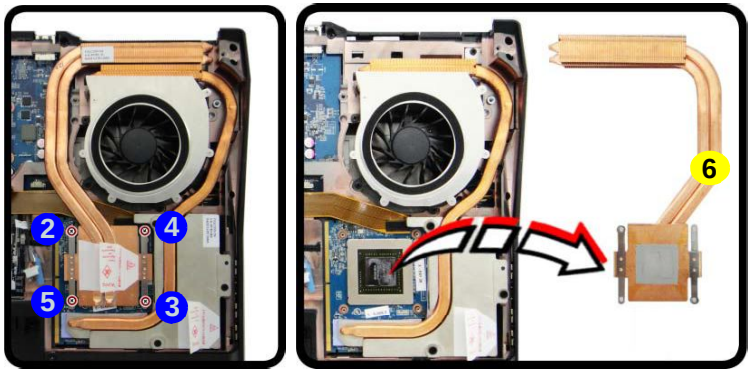
Figure 15
VGA-2 Card Removal

a. Locate the VGA cards.
b. Remove the screws and VGA heat sink-1.
c. Remove the screws and VGA heat sink-2.

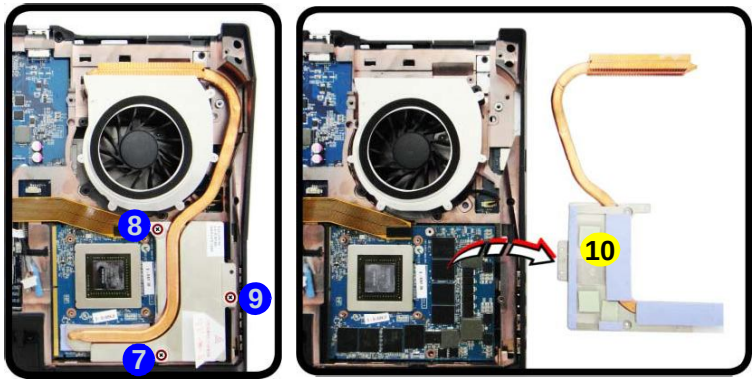
a.



b.



c.



Heat Sink Screw Removal and Insertion

Remove the screws from the heat sink in the order indicated here: **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**.

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.

6. VGA Heat sink-1
10. VGA Heat sink-2

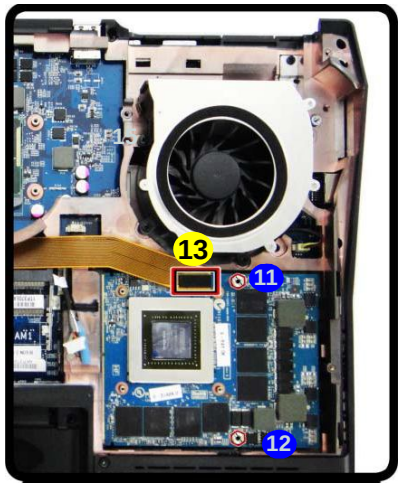
- 7 Screws

Figure 16
VGA-2 Card Removal (cont'd)

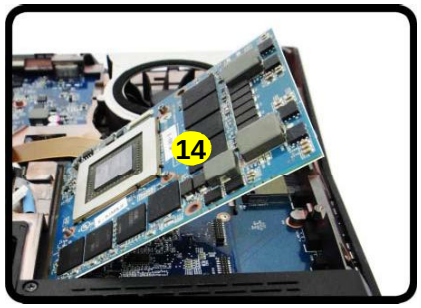
d. Remove the screws and disconnect the VGA cable.
e. Lift the VGA-2 card out.

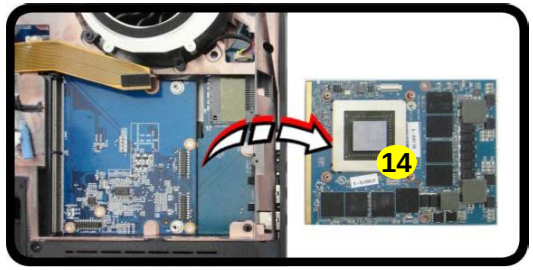
7. Remove screws 11 & 12 from the VGA-1 assembly.
8. Disconnect the VGA cable 13 between the master and slave cards (do not forget to reconnect the cable if you are replacing two cards).
9. Carefully lift the VGA-2 card 14 off the mainboard.

d.

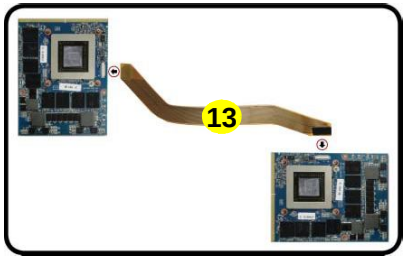


e.

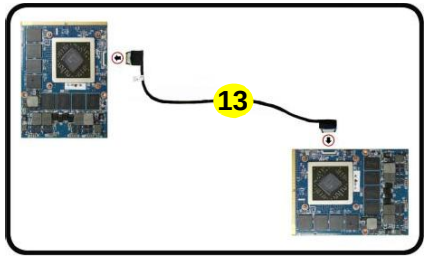




NVidia VGA Cable



AMD VGA Cable



13. VGA Cable
14. VGA-2 Card

- 2 Screws