Product manual is provided in the following languages :

- **English**
- **Korean**

❖ **To better understand the installation process, check out the flash movie at our website (www.zalman.co.kr).**

※ Please read this manual thoroughly before installation.

※ The specifications of this product and its components may change without prior notice.

※ Limited warranty : Parts and labor - 3 years (please see website for details)

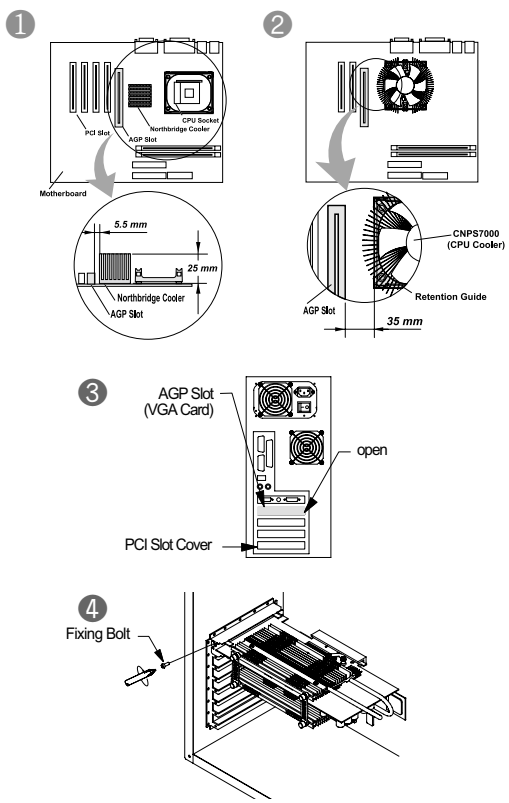
Cautions & Warnings

On Use

1. Please read this manual thoroughly before installation.
2. This product is designed to accommodate an Optional Fan (ZM-OP1). You can expect satisfactory cooling performance with this product alone, but If you want even more cooling, you can attach the Optional Fan (ZM-OP1).
3. If you are using a nVIDIA GeForce FX5800, an ATI Radeon 9800 Pro, a Matrox Parhelia, or a more advanced model, an Optional Fan (ZM-OP1, sold separately) must be installed.
4. After installing this product on a VGA card (Video Graphics Card), the PCI slot adjacent to the AGP slot will be unusable.
5. If you plan to install this product on a recently released VGA card, check for compatibility at Zalman's website (www.zalman.co.kr) before installation.
6. If the heatpipe is tampered with or scratched by a sharp object, it may not function properly. Please handle with care.
7. Zalman does not recommend VGA card overclocking. Zalman is not responsible for any damage from VGA card overclocking.
8. After installing the VGA card, avoid shaking or exerting excessive force on the heatsinks on each side of the card, for it may loosen the bolts in the Plate Spring.
9. To enhance the performance of this product, the use of a fan on the rear panel of the system's case is recommended.
10. Do not eat the enclosed Thermal Grease.

For installation

1. This product can be installed if the Northbridge Cooler is shorter than 25 mm from the board's base, or if taller be at least 5.5 mm away from the AGP slot.
2. If a Zalman CNPS7000 series Cooler is used, the CPU Retention Guide should be at least 35 mm away from the AGP slot to install this product.
3. When installing the VGA card equipped with this product into a computer system, opening up the PCI slot cover under the AGP slot can lower the VGA Chipset temperature by as much as 4~5 ℃.
4. Since this product weighs 350 g, always firmly fasten the VGA card onto the case with a screw. Special care should be taken while the computer is being moved. Zalman is not responsible for any damage arising while moving the computer.
5. If the components on the VGA card interfere in any way with this product, you cannot install this product. In such case, stop the installation and return the product.
6. Zalman is not responsible for any problems arising from incorrect installation.



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1. Features

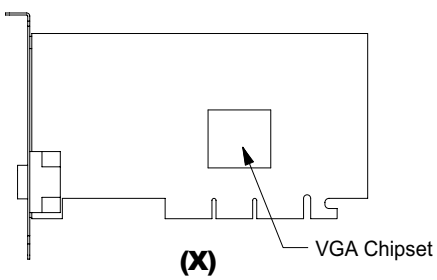
1) This product was designed to optimize heat dissipation for excellent cooling performance.
2) Dual heatpipes increase heat transfer speed and enhance the cooling efficiency.
3) The fanless design ensures complete noiselessness and maintenance-free operation.
4) RAM heatsinks for cooling the VGA RAM.
5) Compatibility with virtually all types of VGA cards allows reinstallation when upgrading the VGA card. (Incompatible with VGA cards that do not have original heatsink holes measuring 3mm in diameter, or VGA cards on which the ZM80D-HP interferes with the card's components.)
6) An Optional Fan (ZM-OP1, sold separately) can be attached to the heatsink directly without using a separate bracket.

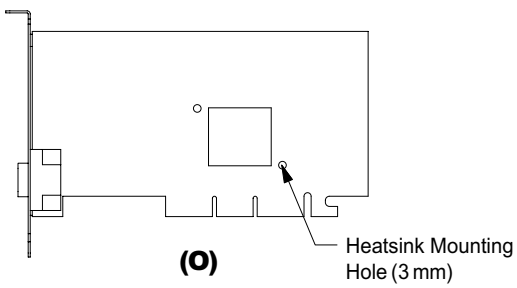
2. Specifications

1) Weight : 350 g
2) Heatpipe : Gold plated copper tube
3) Dissipation material : Anodized Aluminum
4) Heat Dissipation Surface Area : 1350 ㎠
5) VGA RAM Heatsink material : Anodized Aluminum
6) VGA RAM Heatsink weight :
   Frontside : 2.9 g (EA)
   Backside : 1.2 g (EA)

3. Compatible VGA Cards

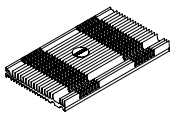
Compatible with all VGA cards with original Heatsink Mounting Holes.



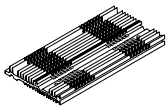


4. Components

Frontside Heatsink 1EA



Backside Heatsink 1EA



Heatpipe Cover 1EA

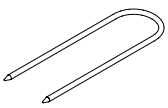
Frontside Heatsink Base 1 Set

A Type B Type

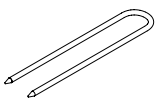
VGA RAM Heatsinks 1 Set

Frontside 4EA Backside 4EA

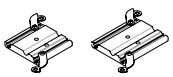
Heatpipe A 1EA



Heatpipe B 1EA

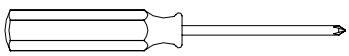


Backside Heatsink Base 1 Set



A Type B Type

Screw Driver 1EA



Assembly Parts 1 Set

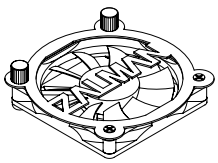
Plate Link Nipple	4 EA	
Washer	4 EA	
Bolt A (10 mm)	4 EA	
Bolt B (8 mm)	6 EA	
Nut A	2 EA	
Rubber Ring	2 EA	
Nipple	2 EA	
Plate Link	2 EA	
Thermal Grease	2 EA	

Spare Parts 1 Set

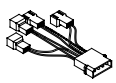
Fan Bolt (26 mm)	2 EA	
Washer	2 EA	
Bolt A (10 mm)	2 EA	
Bolt B (8 mm)	2 EA	
Bolt C	2 EA	
Nut A	1 EA	
Rubber Ring	2 EA	
Nut B	2 EA	
Nipple	1 EA	
Thermal Grease	1 EA	
Thermal Tape	2 EA	

Optional Components

- ZM80D-HP Optional Fan (ZM-OP1)

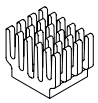


Fan Grill Assembly

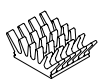


Multi Connector 1

- VGA RAM Heatsinks



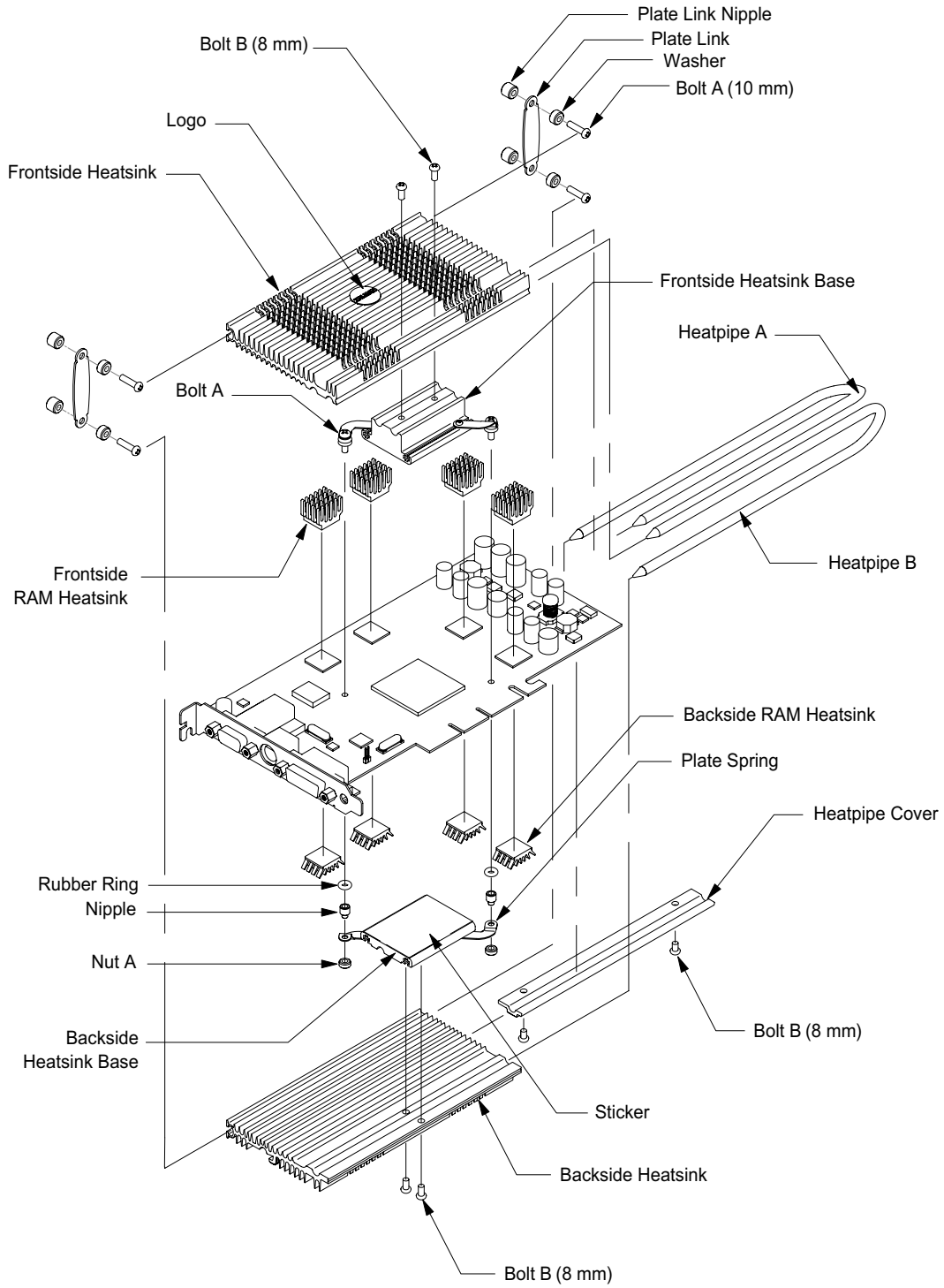
Frontside



Backside

- Thermal Tape

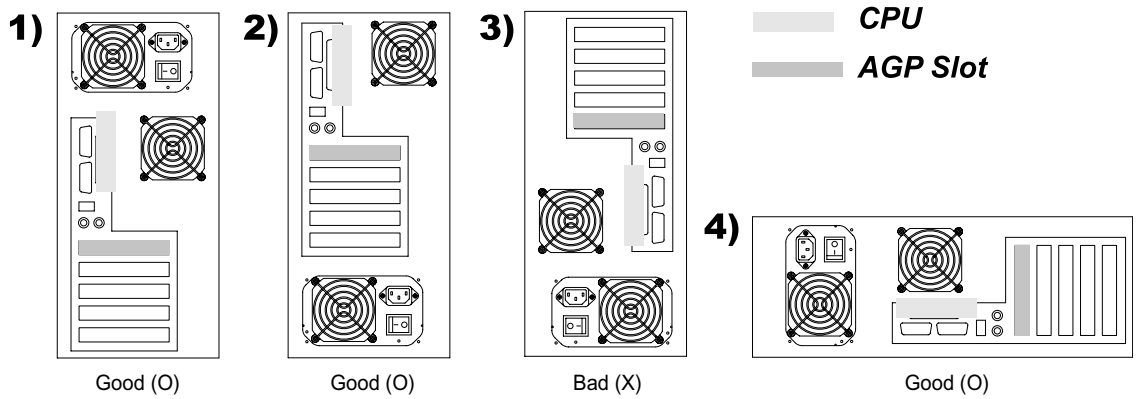
5. Exploded View



6. Installation

6.1 Verifying the Computer Case's Compatibility

Compare your computer case with the cases in the diagram for compatibility. The ZM80D-HP cannot be used in systems in which the VGA Chipset faces upwards. Such cases should not be flipped up-side-down to "correct" this incompatibility.



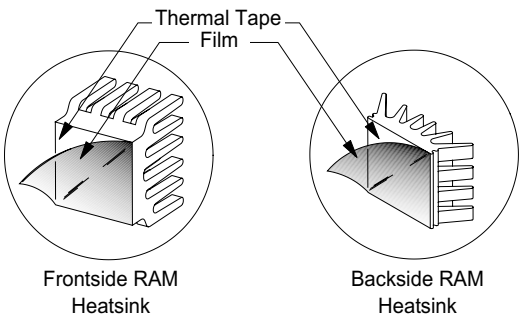
6.2 Attaching VGA RAM Heatsinks

1) Peel off the Film from the Thermal Tape on the bottom of the RAM Heatsinks.
2) Stick the RAM Heatsinks onto the VGA RAMs. There are two types of RAM Heatsinks - Frontside and Backside. Identify the proper heatsink and attach appropriately.
3) Press the RAM Heatsinks firmly with your finger for proper adhesion. (RAM Heatsinks can easily be detached. Please handle with care.)
4) If there are more than 8 RAMs on your VGA card, purchase additional RAM Heatsinks.

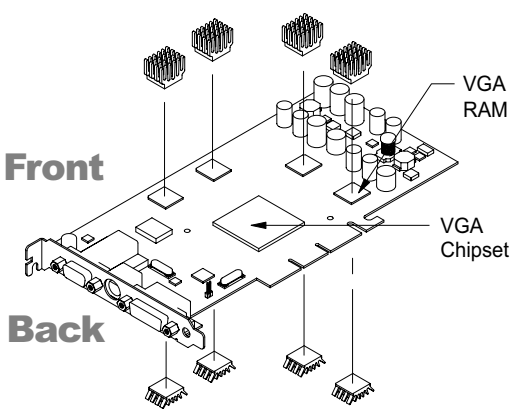
Note 1) Avoid getting grease or any kind of stain on the surface of the Thermal Tape. The Thermal Tape may not stick. Clean the surface of the RAM with acetone or alcohol before attaching.

Note 2) Thermal Tape loses adhesiveness after it has been used once. Try to attach properly on the first attempt.

Note 3) Thermal Tape cannot be reused after it has been detached from a surface. If you need more, purchase it separately.

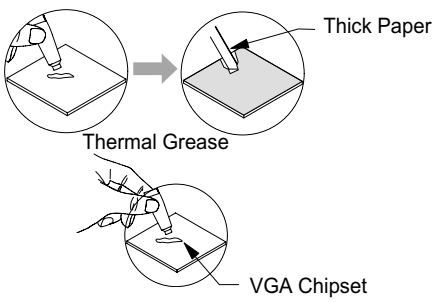


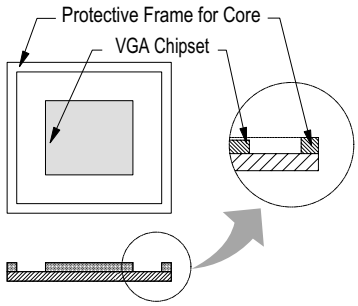
VGA RAM Heatsinks



6.3 Applying Thermal Grease on the VGA Chipset

1) Clean off the contact surface of the VGA Chipset thoroughly.
2) Evenly apply the Thermal Grease onto the VGA Chipset, using a piece of cardboard. Most VGA Chipset surfaces are slightly concave and require more Thermal Grease towards the center.

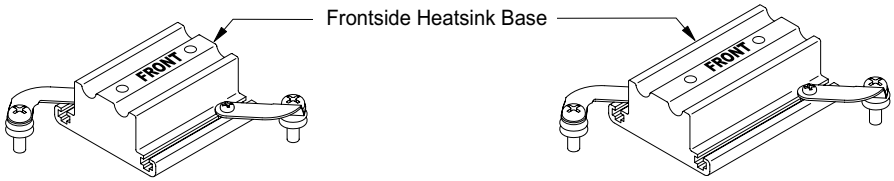




< Example : ATI Radeon 9700 PRO >

6.4 Selecting the Frontside Heatsink Base Assembly

There are two types of Frontside Heatsink Assembly - Type A and Type B. Use the Type B assembly for GeForce 4 Ti series. Use the Type A assembly for all other VGA cards. If the Type A heatsink assembly cannot be installed, then install the Type B heatsink assembly.

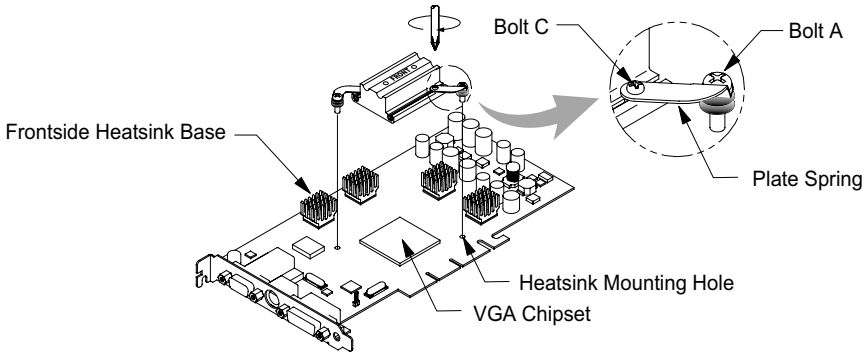


Type A **Type B**

6.5 Installing the Frontside Heatsink Base Assembly

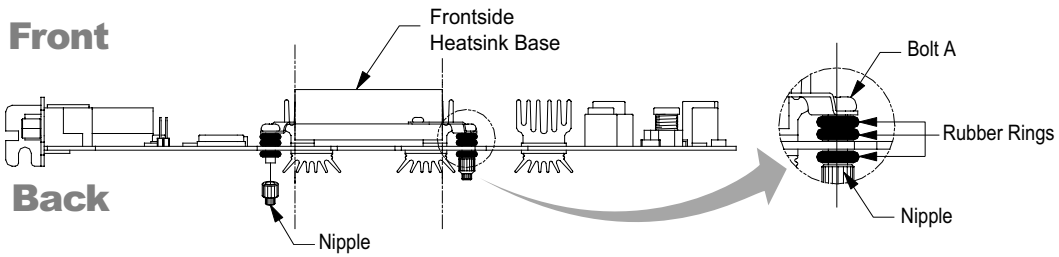
1) Clean off the contact surface of the Frontside Heatsink Base thoroughly.
2) The Frontside Heatsink Base Assembly should be centered and tightly pressed onto the VGA Chipset.
3) Unscrew Bolt C half a turn and position each Plate Spring to insert Bolt A into the Heatsink Mounting Hole.
(Caution! Do not unscrew Bolt C completely.)
4) Once the Frontside Heatsink Base Assembly is centered, tighten Bolt C completely.

Note) If the Plate Spring separates from the base assembly, reinstall the Plate Spring onto the Frontside Heatsink Base (Refer to installation step 6.24) and restart installation from 6.5 step 3).



6.6 Assembling the Rubber Rings and Nipples

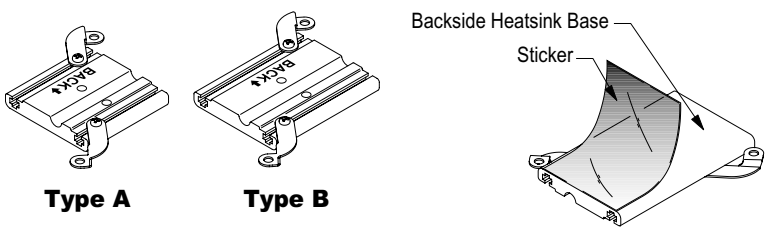
1) Slide the Rubber Ring onto each Bolt A protruding out of the back of the VGA card.
2) Screw a Nipple onto each Bolt A and tighten Bolt A with a screwdriver while holding the Nipple with one hand. **While switching back and forth between each Bolt A, tighten one full turn at a time for each Bolt A until both are tightened.**



6.7 Selecting the Backside Heatsink Base Assembly and Attaching the Sticker

1) The Backside Heatsink Base Assembly must be the same type as the Frontside Heatsink Base Assembly.
e.g.) If the Type A was selected as the Frontside Heatsink Base Assembly → select the Type A for the Backside Heatsink Base Assembly as well.
2) Stick the sticker onto the bottom surface of the Base Assembly as shown in the diagram.

Note) Stick only one sticker onto the Backside Heatsink Base. Do not stick a sticker onto the bottom surface of the Frontside Heatsink Base Assembly.

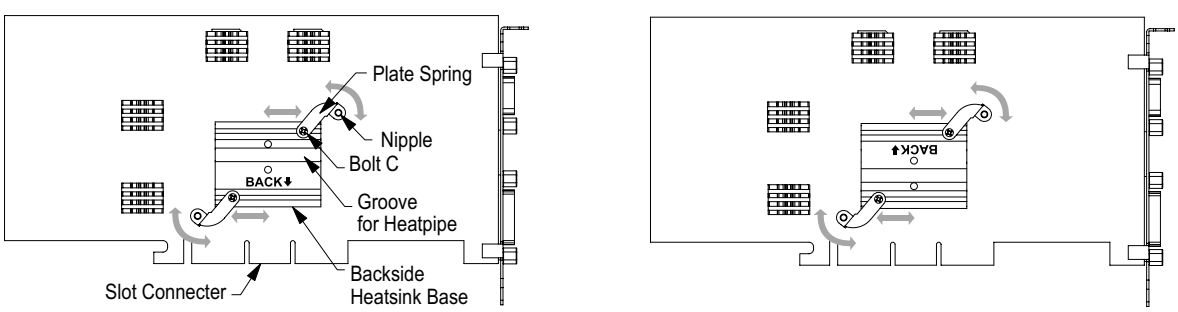


Type A **Type B**

6.8 Installing the Backside Heatsink Base Assembly (VERY IMPORTANT)

1) Install the Backside Heatsink Base so that the arrow of "BACK ↓ " points towards the Slot Connector.
2) Unscrew each Bolt C half a turn and position each Plate Spring hole to be in line with the axis of each Nipple.
3) After the Backside Heatsink Base Assembly is in place, insert each Plate Spring hole onto the Nipple then tighten Bolt C.

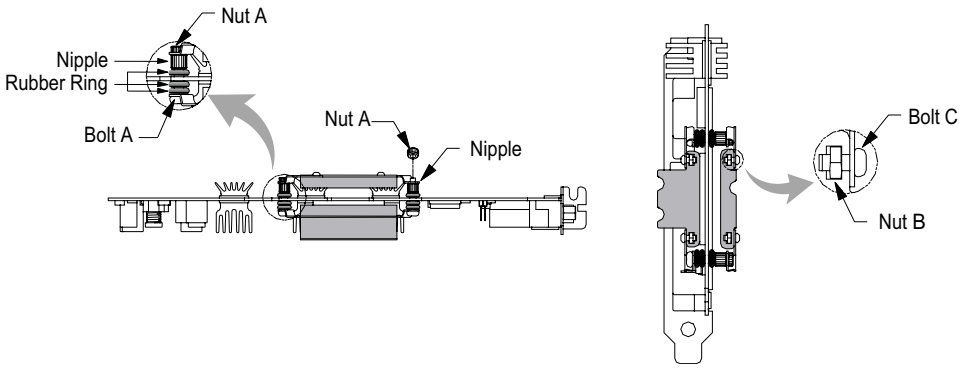
Note) The Plate Spring can easily be moved by slightly unscrewing Bolt C. Do not unscrew Bolt C completely.



(O) **(X)**

6.9. Installing the Backside Heatsink Base Assembly

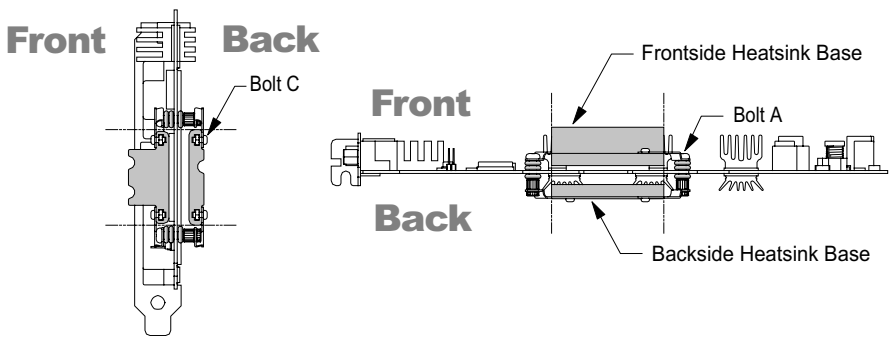
Tighten Nut A on the Nipple that now has the Plate Spring in place.



6.10 Confirming Proper Installation of the Two Heatsink Base Assemblies (VERY IMPORTANT)

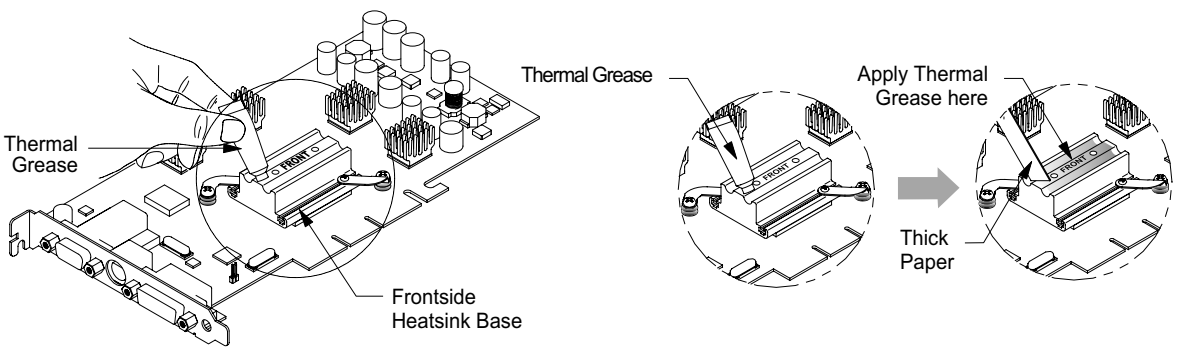
1) Viewing from the side, make sure that both Heatsink Base Assemblies are parallel with the VGA card, and that their edges are parallel to each other.
(If the Heatsink Base Assemblies are not aligned properly, the heatsinks cannot be installed properly.)

2) Tighten each Bolt A and Bolt C completely.



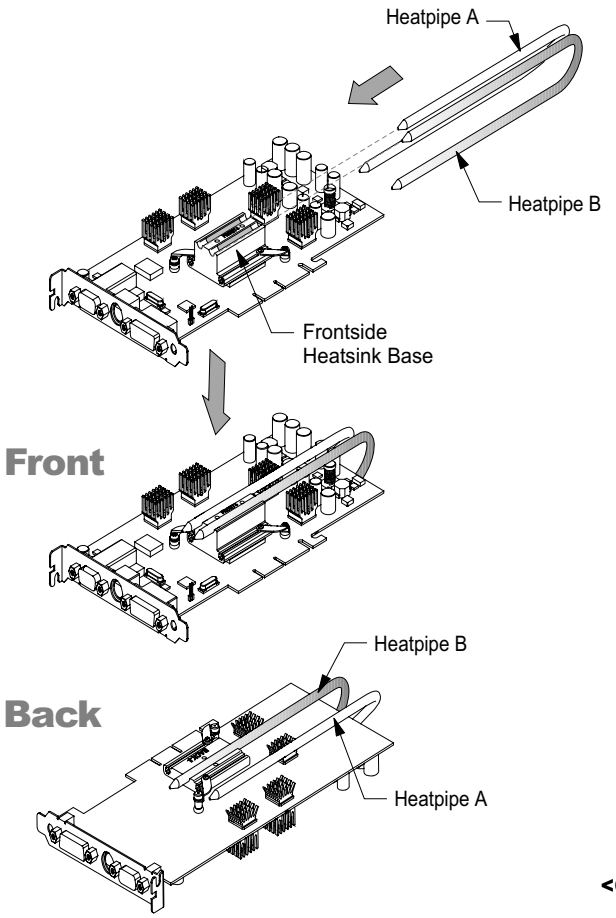
6.11 Applying Thermal Grease on the Frontside Heatsink Base

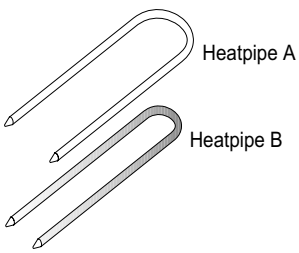
Evenly apply the Thermal Grease in the grooves of the Frontside Heatsink Base as shown in the diagram.

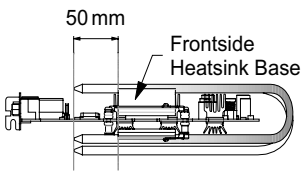


6.12 Installing the Heatpipe

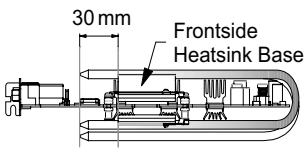
1) Slide in Heatpipe A and Heatpipe B into the grooves of the Base Assemblies.
2) For general VGA cards, the end of the Heatpipes should protrude approximately 50 mm from the end of the Frontside Heatsink Base, and for Geforce 4 Ti or FX59 ** series, they should protrude approximately 30 mm.







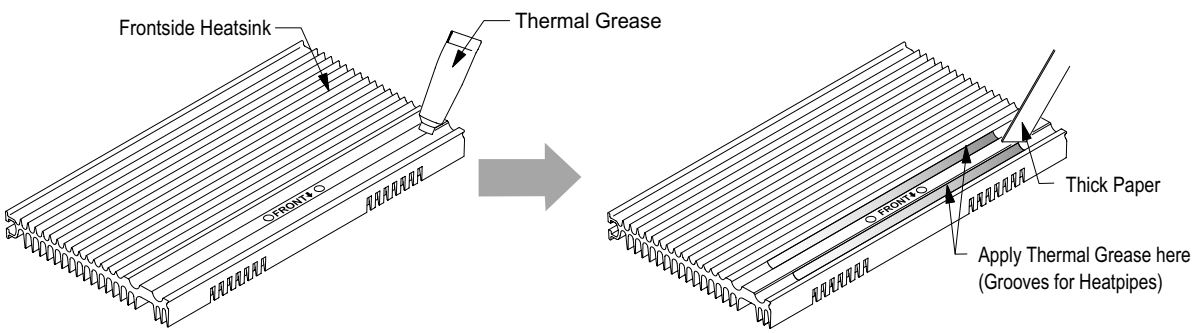
< General VGA Cards >



<GeForce 4 Ti and GeForce FX 59 series >**

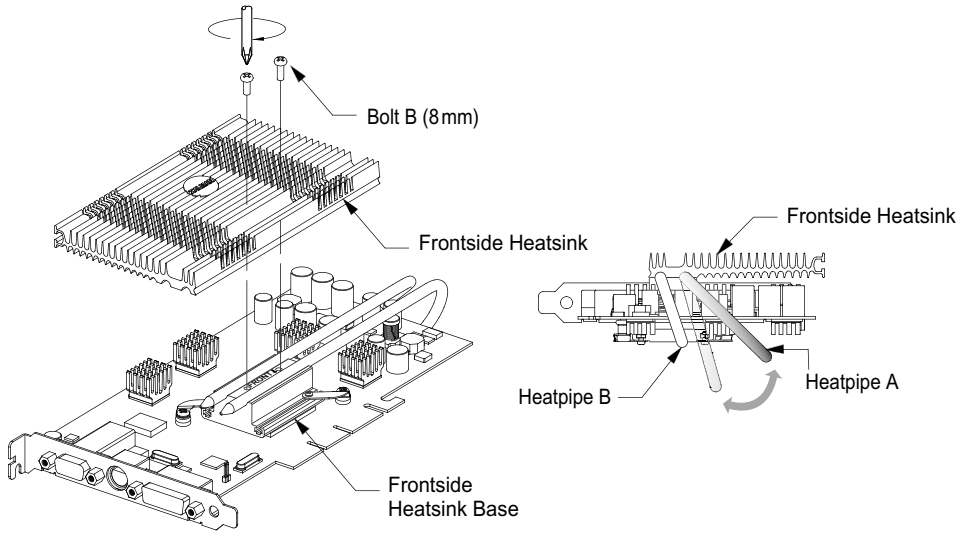
6.13. Applying the Thermal Grease on the Frontside Heatsink

Evenly apply Thermal Grease in the heatpipe grooves of the Frontside Heatsink as shown in the diagram.



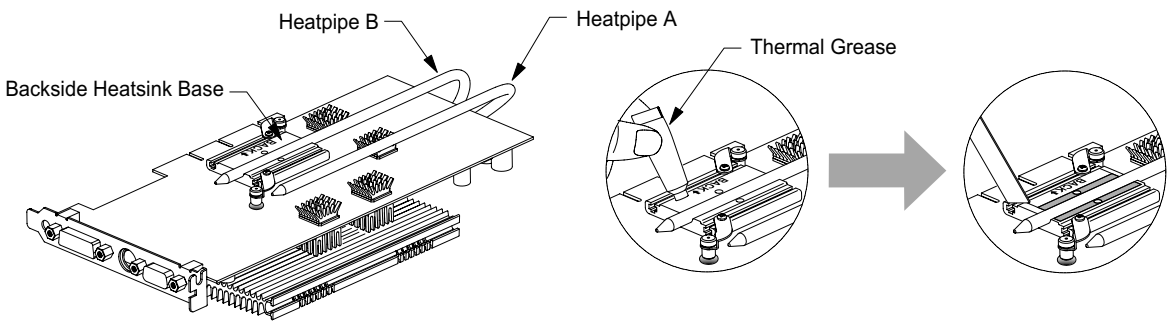
6.14 Installing the Frontside Heatsink

Loosely screw on the Frontside Heatsink onto the Frontside Heatsink Base. (Heatpipe A should be able to swing back and forth.)



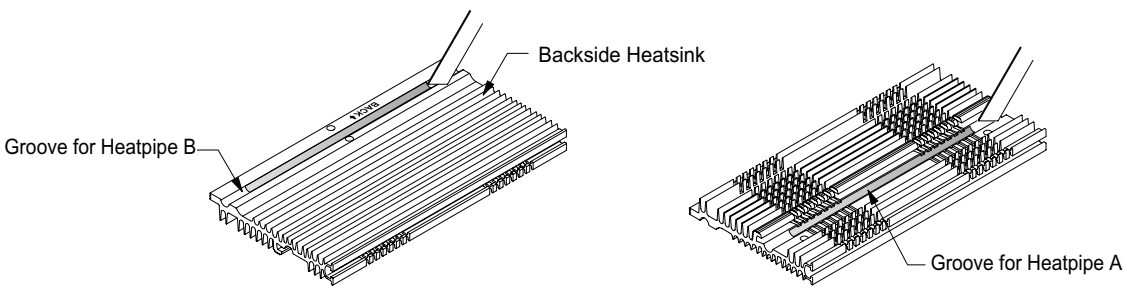
6.15 Applying the Thermal Grease on the Backside Heatsink Base

Evenly apply Thermal Grease on the Backside Heatsink Base as shown in the diagram.



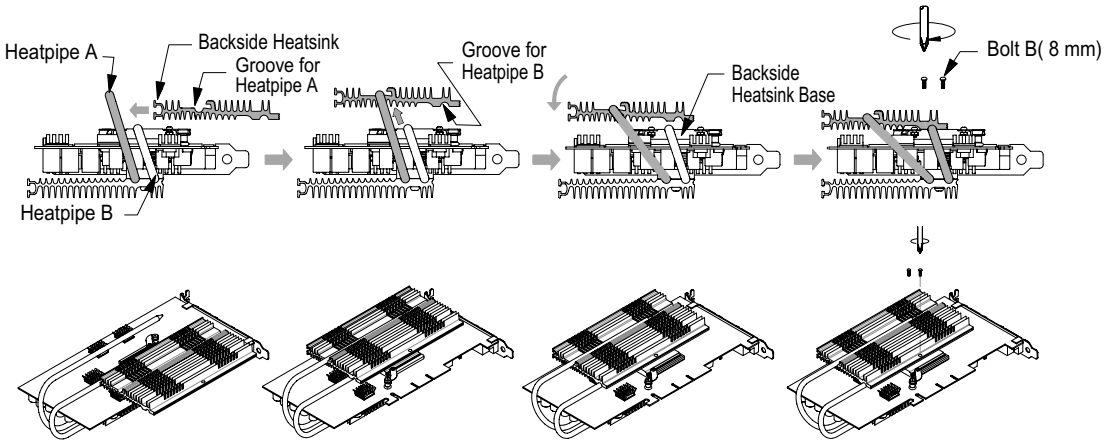
6.16 Applying the Thermal Grease on the Backside Heatsink

Evenly apply the Thermal Grease into the heatpipe grooves of the Backside Heatsink.



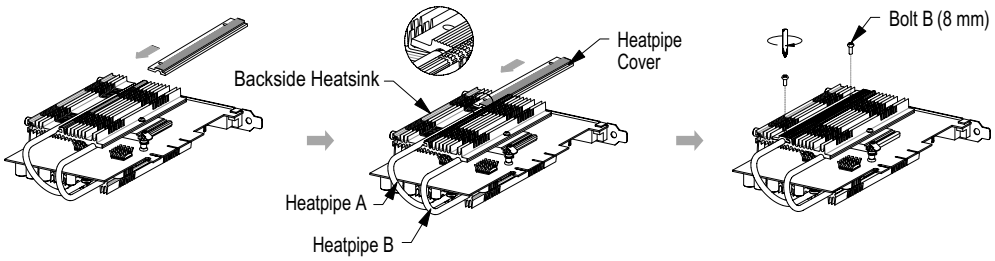
6.17 Installing the Backside Heatsink

1) Place the Backside Heatsink between Heatpipe A and the Backside Heatsink Base.
2) Place Heatpipe A into the groove for Heatpipe A on the Backside Heatsink.
3) With Heatpipe A in its groove, position the Backside Heatsink so that Heatpipe B is inserted in its groove on the Backside Heatsink.
4) Tighten the Backside Heatsink and the Backside Heatsink Base with Bolt B.



6.18 Installing the Heatpipe Cover

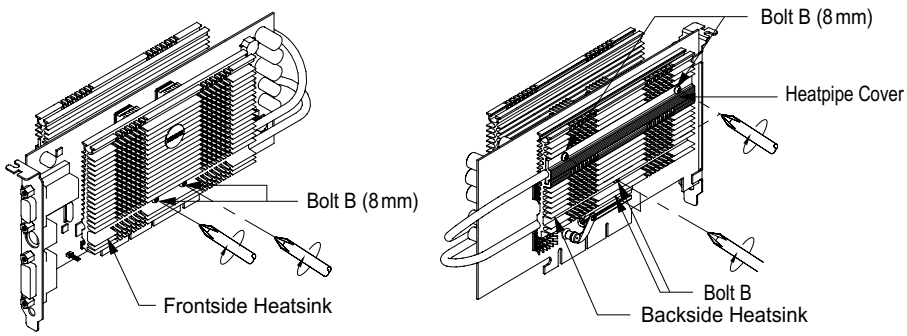
Insert the Heatpipe Cover as shown in the diagram. Tighten with Bolt B.



6.19 Tighten Bolt B for the Two Heatsinks Completely (VERY IMPORTANT)

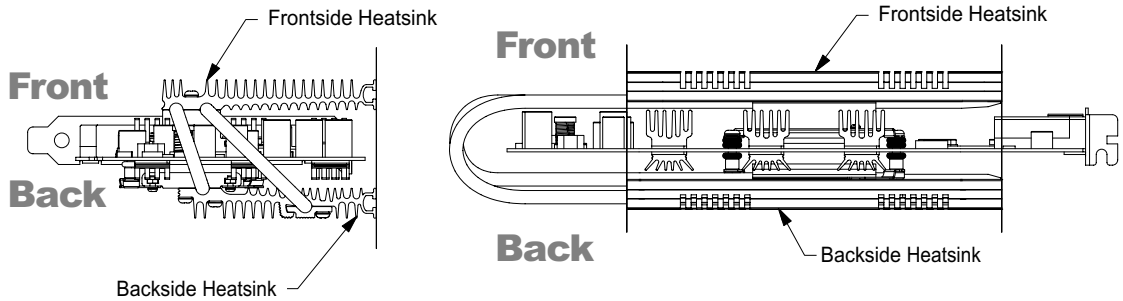
Tighten both heatsinks and the Heatpipe Cover by screwing Bolt B completely.

Note) If Bolt B is not tightened completely, it may result in decreased performance.



6.20 Confirming Proper Installation of the Frontside and Backside Heatsinks

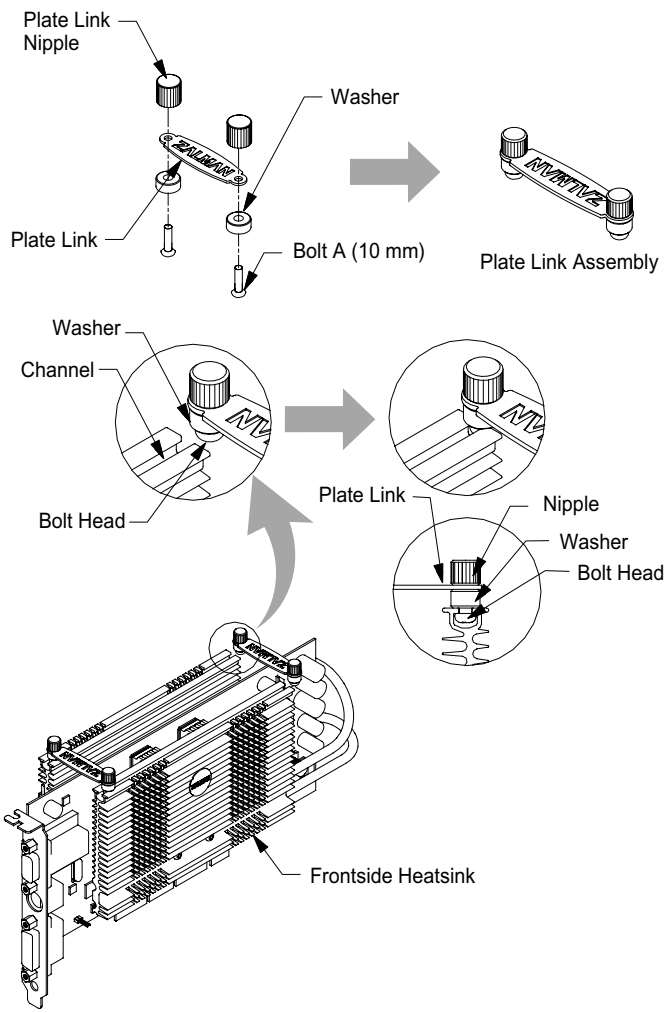
Make sure that both heatsinks are parallel with the VGA card, and that side edges of the heatsinks are aligned.
(If the heatsinks are not properly aligned, they need to be reassembled.)



6.21 Installing the Plate Links

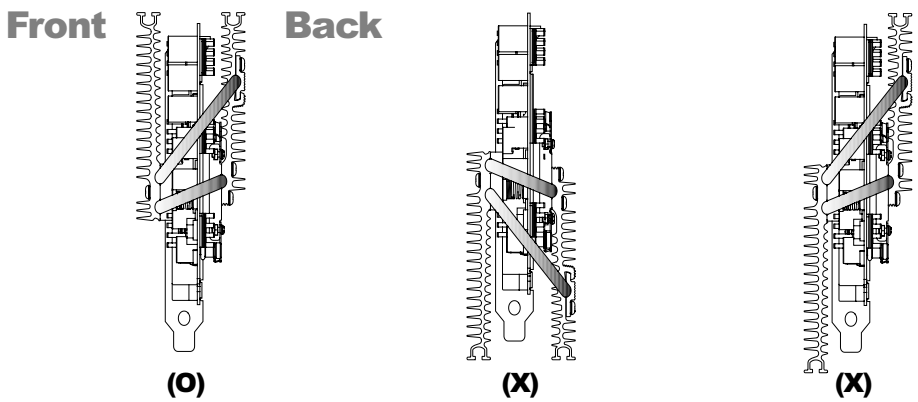
1) Assemble the Plate Link Nipples, the Plate Link, Washer and each Bolt A loosely together as shown in the diagram.

2) Slide in the Plate Link Assembly into the Channels on both of the Frontside and Backside Heatsinks, then tighten each Nipple. To add an Optional Fan (ZM-OP1), refer to installation step 7.



6.22 Confirming Installation

1) The heatpipes installed on the VGA card should look exactly like the diagram below labeled (0). Check the diagram to make sure they have been correctly installed.



2) Make sure the Thermal Grease has been applied properly.
Application areas : VGA Chipset, Frontside Heatsink heatpipe grooves, Frontside Heatsink Base heatpipe grooves, Backside Heatsink Base, Backside Heatsink heatpipe grooves.

3) Make sure that the Frontside Heatsink and Backside Heatsink are horizontally and vertically aligned. (Refer to installation step 6.20.)

4) An adhesive sticker should be stuck on the bottom of the Backside Heatsink Base. (Refer to installation step 6.7.)

5) The heatpipes must be tightly held between the heatsinks and the heatsink bases.

6.23 Installing the VGA card

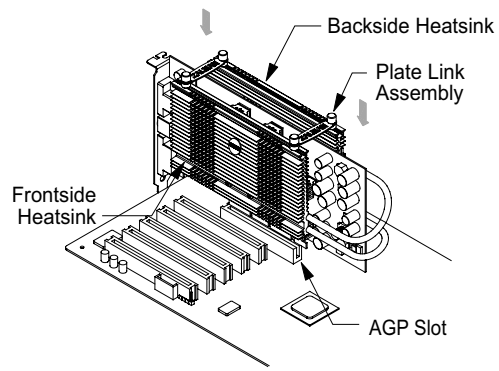
1) Install the VGA card with this product into the mainboard AGP slot.

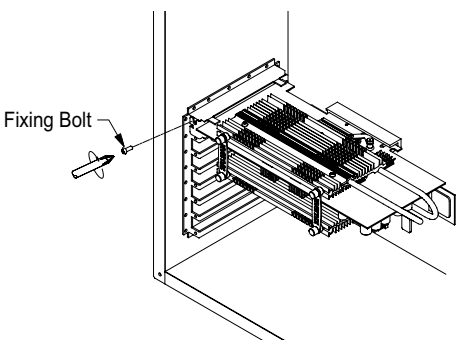
Note) When installing a VGA card with this product into the AGP slot, do not hold the heatsinks while pushing the card down. It may move the Plate Springs and Screws, causing installation problems. Hold and apply pressure only on the VGA card's circuit board.

2) Using a Fixing bolt, fasten the VGA card to the slot.

3) Connect the power connector if the VGA card has one.

4) After installing the VGA card, turn on the computer, and check whether the temperature of the heatsinks are similar. (Run your system for about 10 minutes before you check the temperature. Normally the temperature difference between the Frontside and Backside heatsinks is 3~5℃)





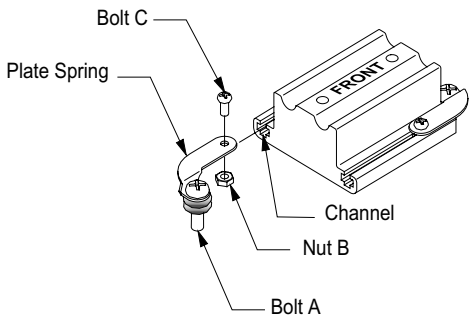
6.24 Reinstalling Separated Plate Springs onto the Heatsink Base

1) For the Frontside Heatsink Base :

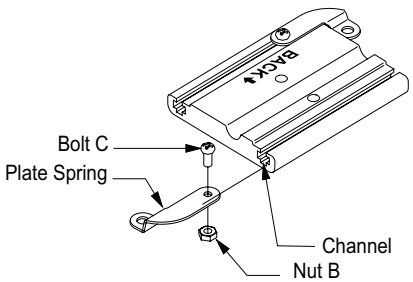
Assemble Bolt C and Nut B with the Plate Spring and insert this assembly into the side channel on the Frontside Heatsink Base.

2) For the Backside Heatsink Base :

Assemble Bolt C and Nut B with the Plate Spring and insert this assembly into the side channel on the Backside Heatsink Base.



< Frontside Heatsink Base >



< Backside Heatsink Base >

7. ZM80D-HP Optional Fan (ZM-OP1) Installation

1) Screw on the Fan Grill to the Fan with two Fan Screws. (The air flow direction of the Fan is indicated by an arrow.)

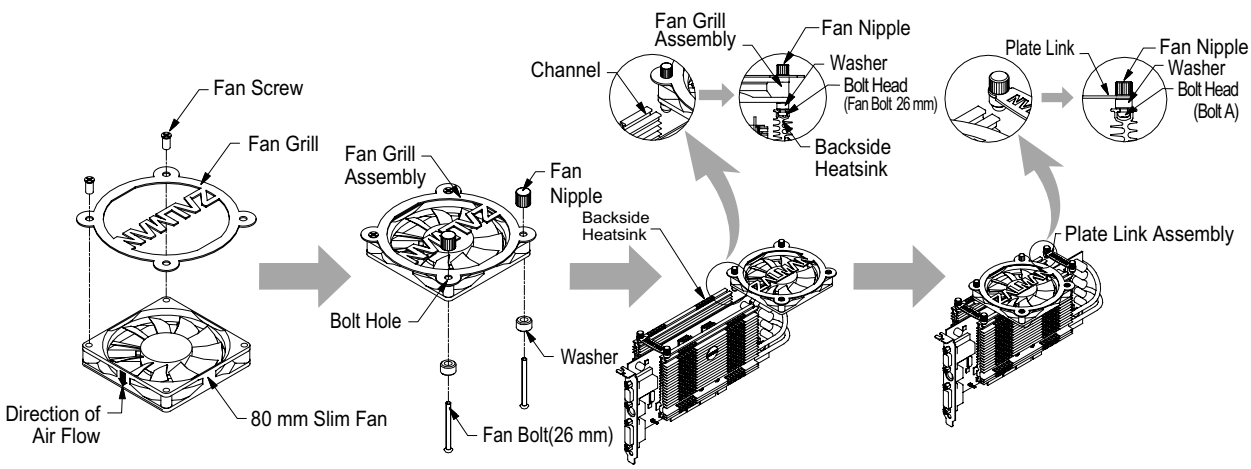
2) Insert Fan Bolt and Washer into Bolt Hole of the Fan Grill Assembly, then fasten the Fan Nipple loosely as shown in the diagram. (Fan Bolts and Washers can be found in ZM80D-HP Spare Parts package)

3) Remove the Plate Link Assembly.

4) Insert the Fan Grill Assembly into the Backside Heatsink Channel. The Fan Bolt head should be placed into the Channel on the heatsink.

5) Tighten the Nipple by hand to fix the Fan Grill Assembly onto the backside heatsink.

6) Reinstall the Plate Link Assembly into the two heatsink channels.



Zalman Noise Prevention System

To build a noiseless computer, use Zalman's Noiseless Power Supply (ZM400B-APS) CPU Coolers, Noiseless Northbridge Cooler (ZM-NB47J), Heatpipe HDD Cooler (ZM-2HC2), and Case Fan (ZM-F1) to achieve stable performance and maintain a noiseless environment.

POWER SUPPLY
ZM400B-APS

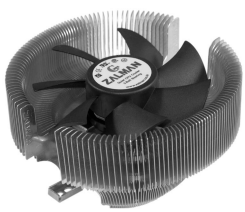
HDD COOLER
ZM-2HC2

NORTHBRIDGE COOLER
ZM-NB47J

NOISELESS FAN
ZM-F1

CNPS6000 Series

CNPS6500B Series



CNPS7000 Series