

Quick Installation Guide

PENTAGRAM Freezone HP-60 AI VGA (P 7110)



Cautions and Warnings

1. After installing the cooler, turn on the computer, wait several minutes, and check whether the temperatures of the front and rear heatsinks are similar.

If the heatsinks have different temperatures, please make sure that:

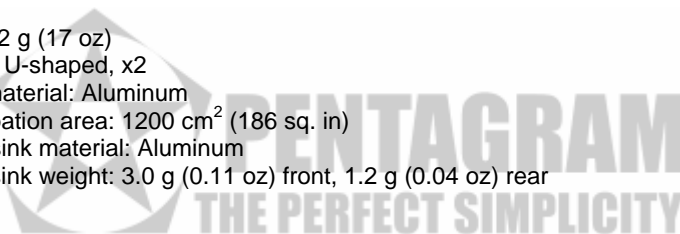
- a. the thermal grease is applied correctly;
 - b. the front heatsink base is in direct contact with the GPU;
 - c. the heatpipes are in contact with the heatsinks.
2. Overclocking your graphics card is not recommended. The manufacturer cannot be held responsible for any damage resulting from VGA overclocking.
 3. Read these instructions carefully before installing the cooler. If you do not feel confident about installing the product, please ask your local retailer for assistance. The manufacturer cannot be held responsible for any damage caused by the incorrect installation of the cooler on the graphics card.
 4. Handle the heatpipes with care. A heatpipe may lose its properties when hit or scratched with a sharp object.
 5. Do not pull or apply excessive force to the heatsinks after installing the card in your computer. This may cause the bolts that hold the heatsink bases to become loose.

Features

1. This product was designed to ensure optimum heat dissipation for superior cooling performance.
2. The dual heatpipe design accelerates heat dissipation and improves cooling efficiency.
3. Heatsinks are provided for VGA RAM modules.
4. The product is compatible with most graphics cards, and can be reused when the card is replaced (please note that the new card must meet the applicable requirements).
5. The fan can be attached directly to the heatsink, and does not require a separate bracket.

Specifications

1. Weight: 482 g (17 oz)
2. Heatpipes: U-shaped, x2
3. Heatsink material: Aluminum
4. Heat dissipation area: 1200 cm² (186 sq. in)
5. RAM heatsink material: Aluminum
6. RAM heatsink weight: 3.0 g (0.11 oz) front, 1.2 g (0.04 oz) rear



Installation Requirements

Please read the information below before purchasing the cooler to ensure that it can be installed on your graphics card.

The cooler kit is only compatible with graphics cards that have heatsink installation holes.

The product cannot be installed on graphics cards without installation holes.

1. The VGA cooler can only be installed if the northbridge cooler is lower than 25 mm (1 in). If a taller cooler is used, it must be located at least 5.5 mm (0.22 in) from the VGA slot.
2. Removing the bracket from the slot located below the graphics card may help reduce GPU temperature by 4 to 5 degrees Celsius (7 to 9 degrees Fahrenheit).
3. Due to the weight of the product (482 g or 17 oz), make sure that the card is firmly attached to the enclosure. Exercise caution when moving the computer.
4. In the event any graphics card components prevent the installation of the cooler, do not proceed with the installation and return the product.
5. The manufacturer cannot be held responsible for any damage caused by the incorrect installation or use of the product.



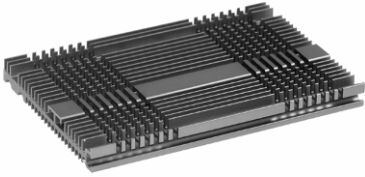
NOTE: All information and technical specifications provided in this manual are subject to change without notice and/or indication.

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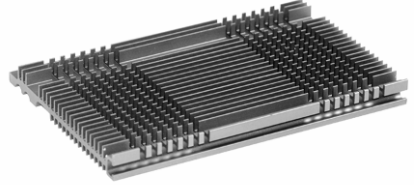
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Installation Components



Front heatsink



Rear heatsink



Front heatsink base



Rear heatsink base



RAM heatsinks (front)



RAM heatsinks (rear)



Plate link (x2)



Heatpipe (x2)



12 V fan



Fan guard



Accessory package



Fan bolt (x2)



Bolt A (x8)



Bolt B (x4)



Bolt C (x6)



Fan guard screw (x2)



Thermal grease



Plate link nut (x6)



Nut (x2)

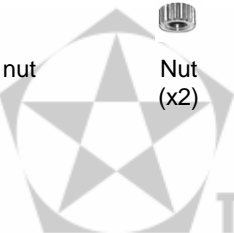


Nipple (x2)



Rubber ring (x12)

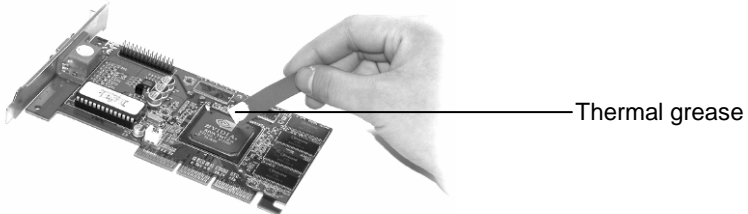
Screwdriver



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Installation

1. Applying thermal grease to the GPU
 - a. Clean the GPU surface thoroughly.
 - b. Apply the thermal grease evenly onto the GPU. In most cases, the GPU surface is slightly concave, therefore more grease should be applied at the center.



2. Selecting front heatsink base type
The package contains two types of heatsink bases: Type A and Type B. Type B is designed for cooler installation on graphics cards with GeForce 4 Ti series GPUs, and Type A can be used to install the product on all other cards. If you cannot use the Type A heatsink base, please use the Type B base.



Type A

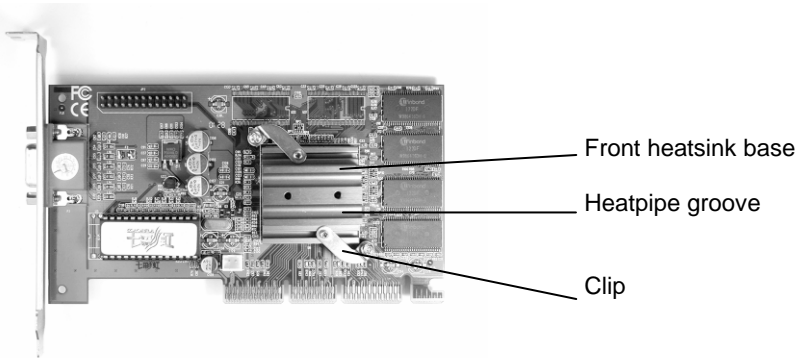


Type B



3. Installing the front heatsink base

- a.** Insert bolts C into the holes on the base assembly clips, and place two rubber rings on each of them.
- b.** Loosen the screws on the clips by half a turn.
- c.** Rotate and move the clips to allow bolts C to be inserted into the installation holes on the graphics card, and tighten the screws.



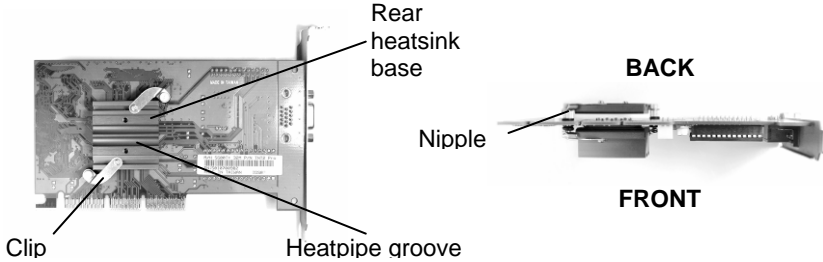
4. Placing rubber rings on nipples

- a.** Slide one rubber ring onto each bolt C protruding from the back of the graphics card, and then screw the nipples onto the bolts.
- b.** Using a screwdriver, tighten the nipples firmly to ensure that the front heatsink base is pressed against the graphics card. If the heatsink base does not touch the GPU surface after the bolts are tightened, replace bolts C with bolts A.

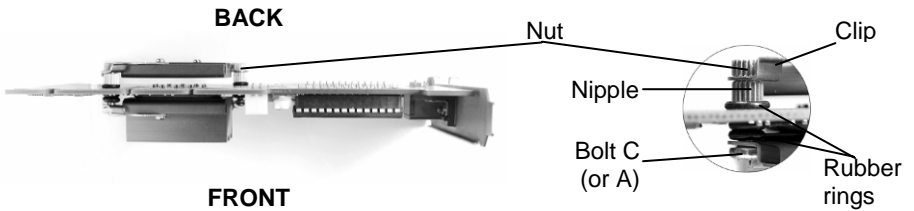


5. Installing the rear heatsink base

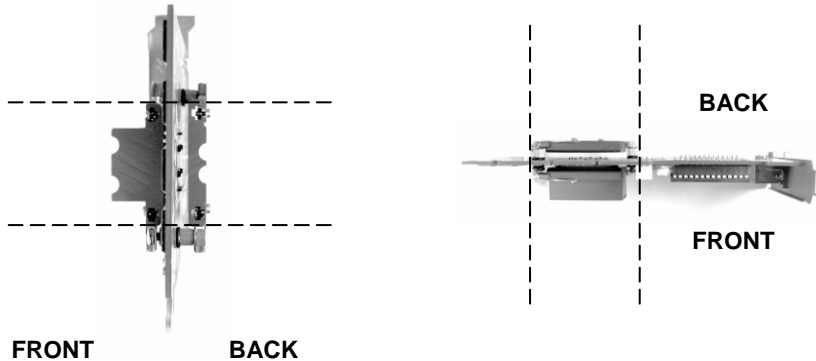
- a.** The rear heatsink base must be of the same type as the front heatsink base, i.e. if the Type A front heatsink base is used, then the Type A rear heatsink base must be used.
- b.** Loosen the screws on the clips by half a turn.
- c.** Rotate the clips so that they can be placed on the nipples, and tighten the screws.



- d.** Place the clips on the nipples and assemble the entire setup together using nuts.



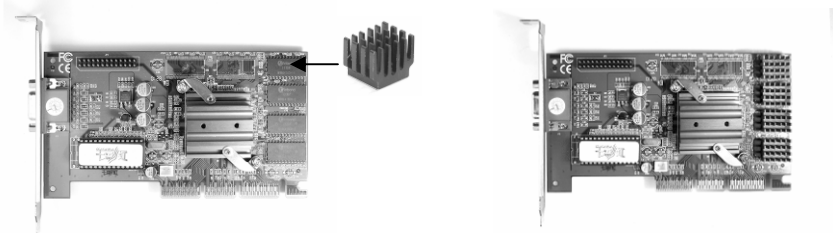
6. Ensuring correct installation of both heatsink bases
- a. Viewing from the side, make sure that both bases are installed in parallel to the VGA board and to each other.
 - b. Tighten all bolts C and screws.



7. Installing RAM heatsinks
- a. Remove the protective film from the thermal tape on the bottom of the heatsinks.

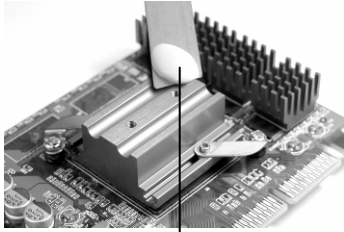


- b. Place heatsinks on RAM modules, paying attention to the difference between the front and rear heatsinks.
- c. Press the heatsinks against RAM modules (heatsinks can be removed easily).
- d. If there are more than eight RAM modules on the card, please purchase additional heatsinks.

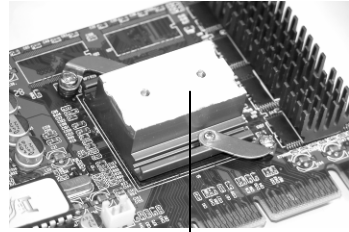


8. Applying thermal grease to heatsink bases

Apply the thermal grease evenly to the front heatsink base and the grooves in the rear heatsink base.



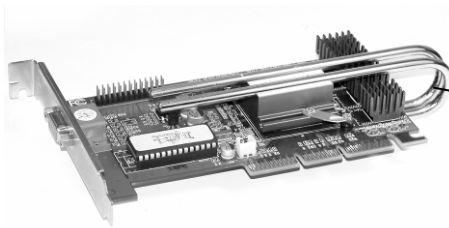
Thermal grease



Apply thermal grease here

9. Installing the heatpipes

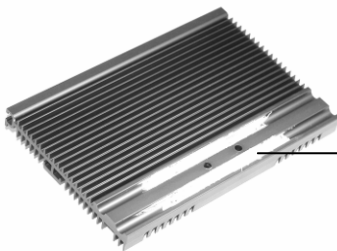
Insert the heatpipes into the grooves on both bases.



Heatpipes

10. Applying the thermal grease to the front heatsink.

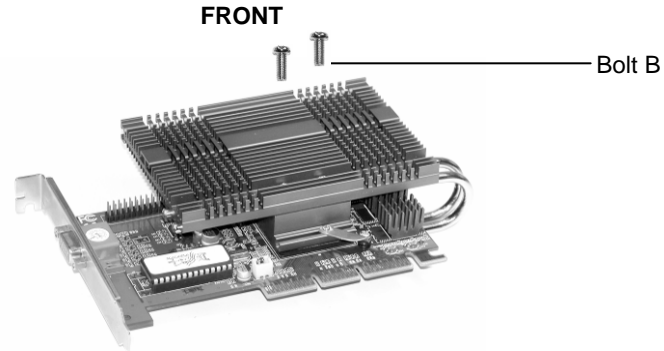
Apply the thermal grease evenly to the heatpipe grooves on the front heatsink.



Heatsink grooves (apply thermal grease here)

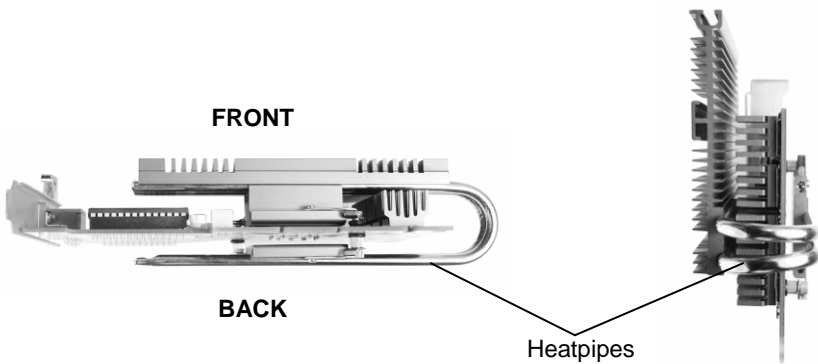
11. Installing the front heatsink

Place the front heatsink base and assemble the two parts together using bolts B.

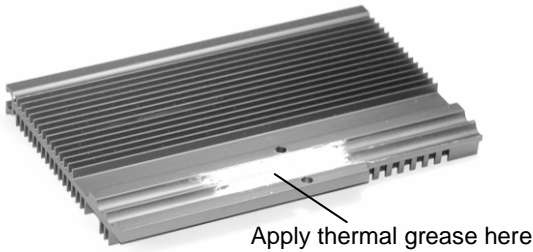


12. Verifying heatpipe placement

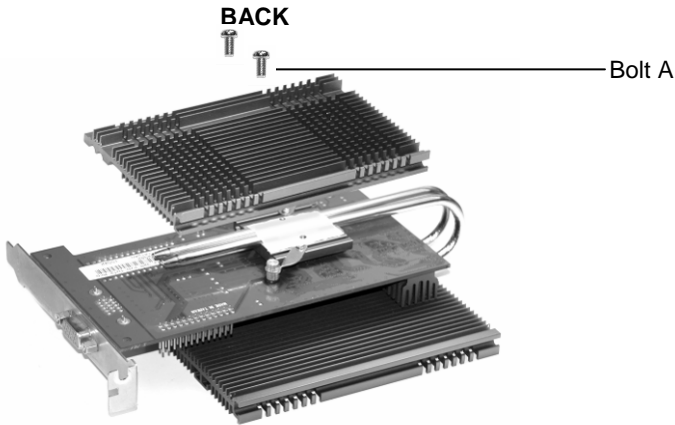
Make sure the heatpipes are placed as shown in the pictures below.



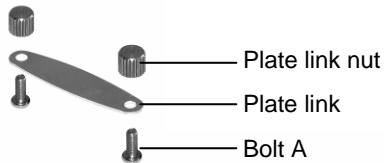
- 13. Applying thermal grease to the rear heatsink**
Apply the thermal grease evenly to the heatpipe grooves on the rear heatsink.



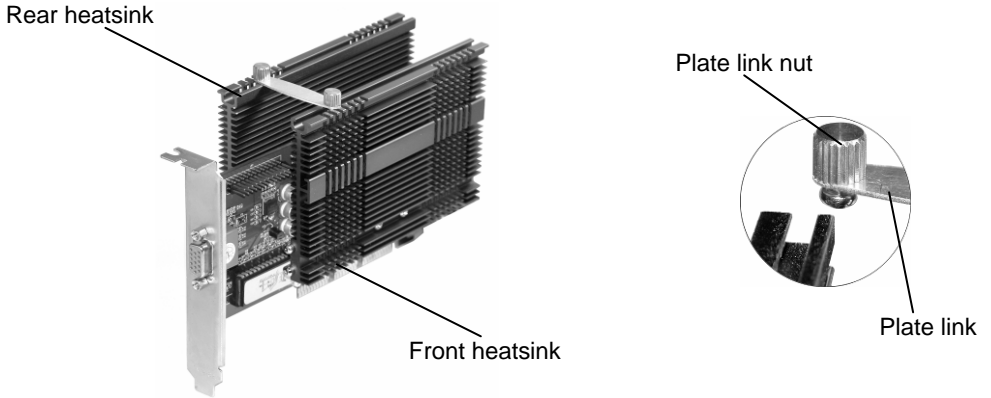
- 14. Installing the rear heatsink**
Place the rear heatsink over the rear heatsink base, ensure that heatpipes are placed in the grooves, and assemble the two parts together using bolts A.



- 15. Installing the plate link**
a. Assemble bolt A, the plate link and the plate link nut as shown in the picture.

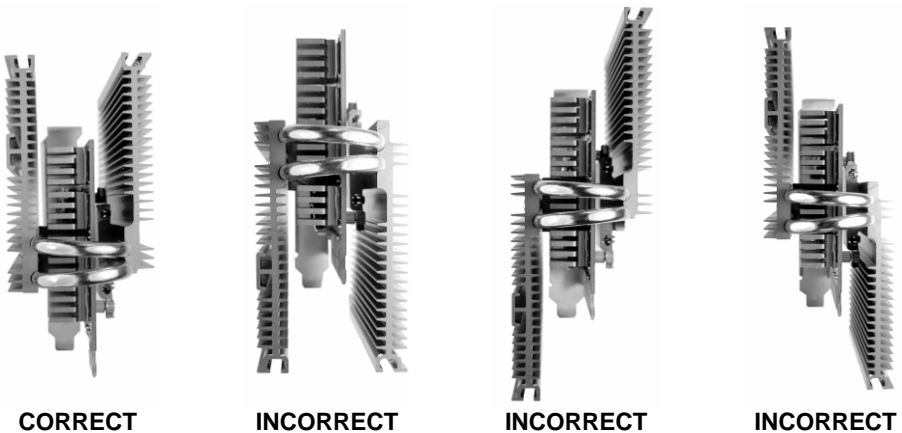


- b. Place the bolt heads in the slots on the front and rear heatsinks (the distance from the heatsink edge should be approx. 5 mm or 0.2 in), and tighten the nuts firmly by hand.



16. Ensuring correct installation of the heatpipes and both heatsinks

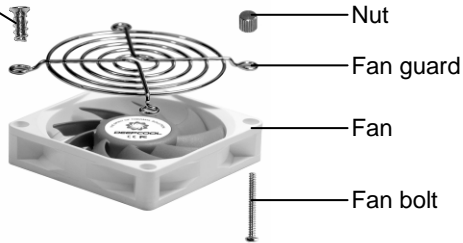
The heatpipes and heatsinks should be installed on the card as shown in the picture below. Make sure that both heatsinks are parallel to the graphics card, and that their edges are aligned.



17. Installing the fan

- a.** Assemble the fan, fan guard, fan guard bolt, fan screw and nut as shown in the picture. Do not tighten the nuts on the fan bolts completely.

Fan guard screw



- b.** Place the fan bolts head first into the slots on the rear heatsink and tighten the nuts firmly by hand.
- c.** Install the plate link on the other side of the heatsink as shown in Step 15.

