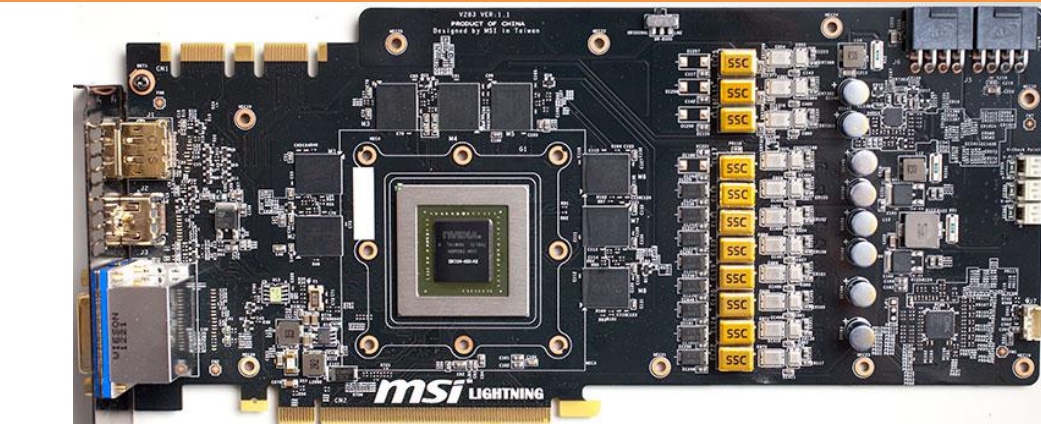


This product is intended for installation only by expert users. Please consult with a qualified technician for installation. Improper installation may result in damage to your equipment. EK Water Blocks assumes no liability whatsoever, expressed or implied, for the use of these products, nor their installation. The following instructions are subject to change without notice. Please visit our web site at [www.ekwb.com](http://www.ekwb.com) for updates. Before installation of this product please read important notice, disclosure and warranty conditions printed on the back of the box.

Before you start using this product please follow these basic guidelines:

1. Please carefully read the manual before through before beginning with the installation process!
2. Please remove your motherboard from the computer to assure safest mounting process in order to prevent any possible damages to your CPU and/or motherboard's circuit board (PCB).
3. The EK High Flow and EK-PSC type fittings require only a small amount of force to screw them firmly in place since the liquid seal is ensured by the rubber o-ring gaskets.
4. The use of quality, market proven corrosion inhibiting coolants is always strongly recommended for any liquid cooling system.

## STEP 1: GENERAL INFORMATION. Sample picture of MSI HD680 Lightning



## STEP 2.: PREPARING YOUR GRAPHIC CARD

1. REMOVING STOCK COOLER: Remove encircled screw on the I/O bracket:



## STEP 2 cont.: PREPARING YOUR GRAPHIC CARD

- 1.cont. REMOVING MSI FACTORY PROVIDED BACKPLATE: Remove all encircled screws attaching the aluminium backplate to the circuit board. All backplate assembly screws should be removed. There are 13 screws on the back of the graphics card (see photo below). Do not unplug the backplate power connector if you intend to re-use the backplate with the EK-FC680 Lightning water block (see STEP 3.3)!



- 1.cont.: Carefully detach metal heat spreader plate. This step may require some force as the thermal pads may adhere the backplate firmly to the components on the circuit board. We recommend users to slowly and carefully pry the metal heat spreader plate from the PCB using bare hands (tool-less approach).

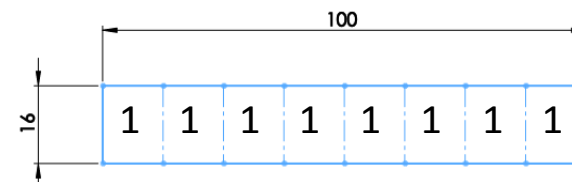


2. CLEANING THE PCB & APPLYING THERMAL COMPOUND. Carefully detach the original stock cooler after removing **all** screws securing it to the board. Wipe off the remains (by using non-abrasive cloth or *qtip*) of the original thermal compound until the components and circuit board are completely clean. Apply thermal compound: lightly coat **AMD** GPU chip with for example GELID GC-Extreme™ or Arctic Cooling MX-2™ / MX-4™ thermal grease. EKWB recommends to apply thermal grease in cross form for best performance (see sample picture).

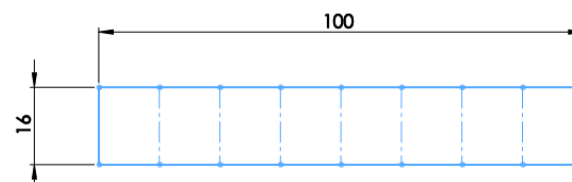


3. CUTTING THERMAL PADS. Your block comes with thermal pads, some of which are already pre-cut. Others have to be cut to smaller chunks in order to cover all the VRM components such as MOSFETs and drivers. PLEASE REMOVE THE PROTECTIVE FOIL FROM BOTH SIDES OF THE THERMAL PADS PRIOR TO INSTALLATION.

Replacement thermal pads: 1x Thermal Pad A – 0.5mm (100x16mm).



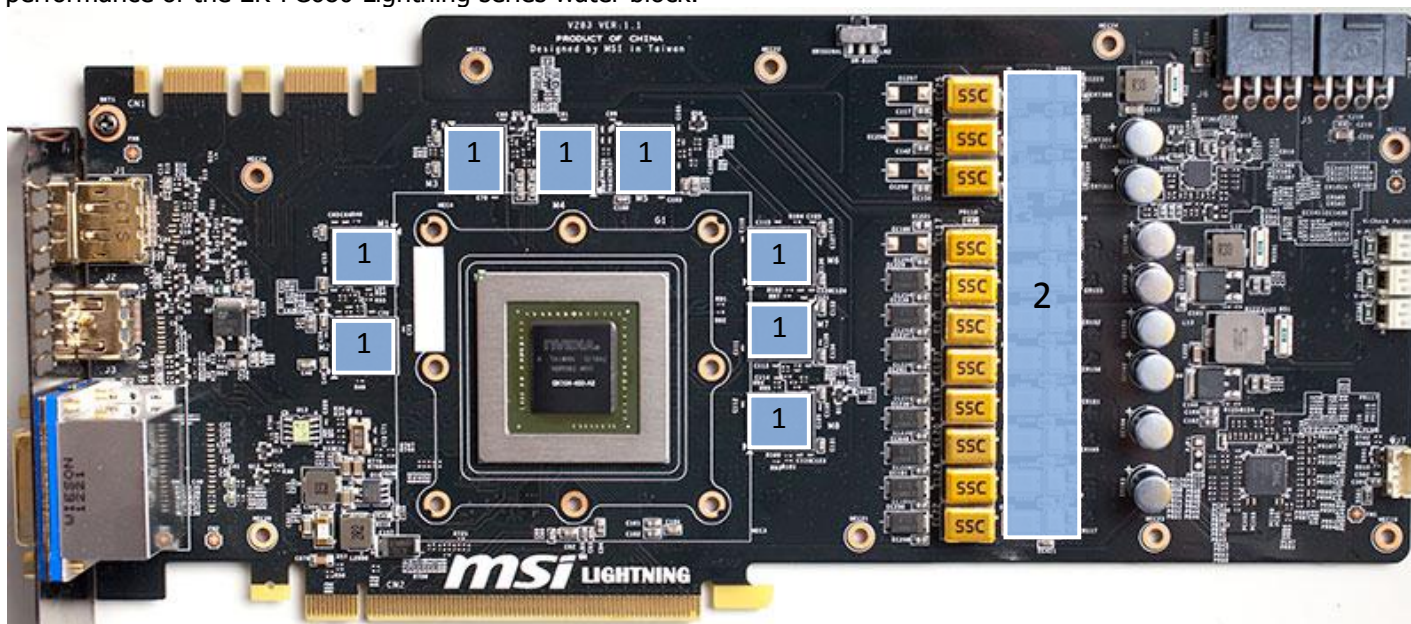
1: Thermal pad A –0.5mm  
(for memory IC):



2: Thermal pad A –1mm  
(for memory IC):

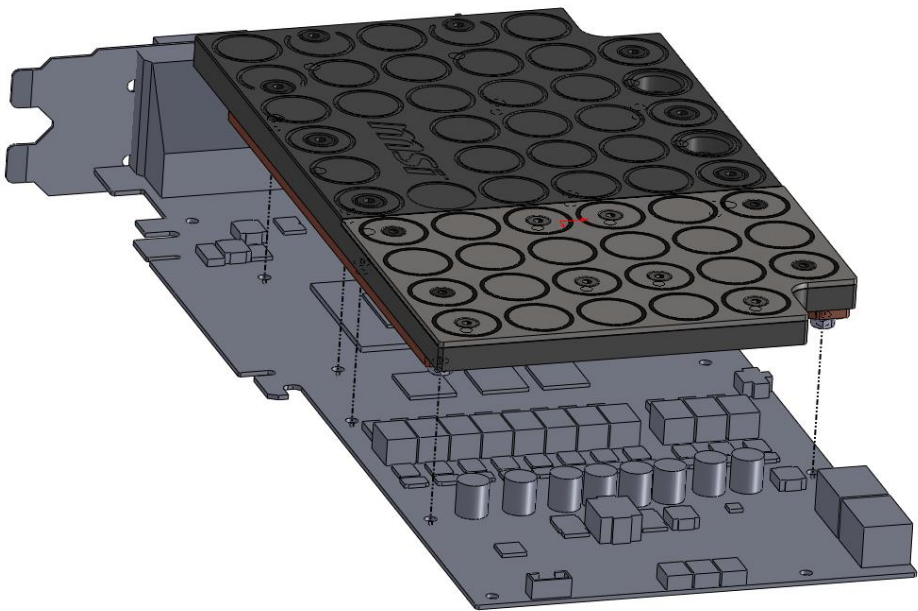
## STEP 3: INSTALLING WATER BLOCK

1. PLACING THERMAL PADS ON PCB. Place thermal pads on chips so that numbers on chips match size of thermal pads. EKWB made sure users have more than enough pads to cover all surfaces that need to be covered to make block fully functional). EKWB recommends using small drops of electrically non-conductive (for example: GELID GC-Extreme™ or Arctic Cooling MX-2™ / MX-4™) thermal grease on each phase regulator (that is being covered with thermal pad) in order to even further improve the thermal performance of the EK-FC680 Lightning series water block.

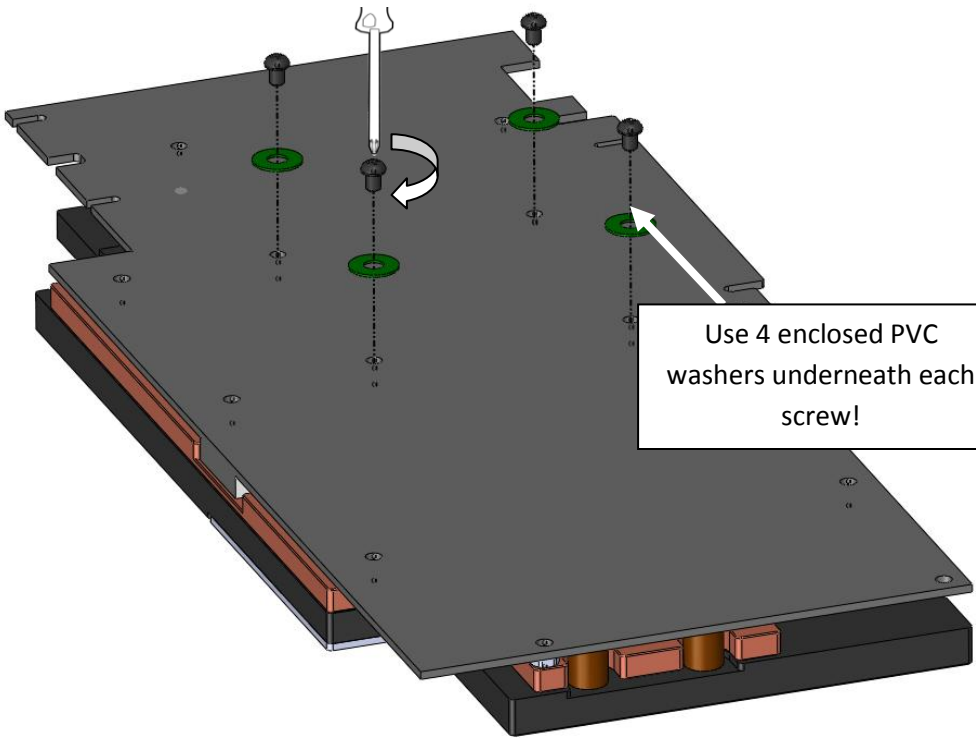




2. **PLACING BLOCK TO GRAPHIC CARD.** Carefully position the water block with preinstalled 2.5mm standoffs on to the graphics card. During this process please make sure you align mounting holes on PCB with holes on the water block. Also pay attention not to use too much force by pressing block down to PCB. Chip dies are prone to cracking.



3. **ATTACHING BLOCK TO GRAPHIC CARD.** By using Philips screwdriver screw in enclosed 4 (four) M2.5x4 DIN7985 screws around GPU core. If you wish not to re-install factory provided backplate, then reinstall the remaining 8 (eight) M2.5x4 DIN7985 screws using the same procedure.

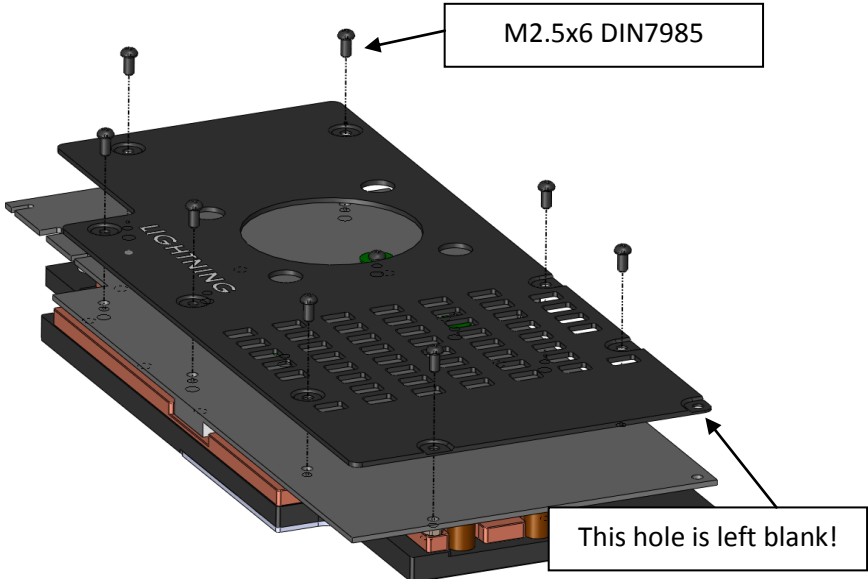


**STEP 4: CHECKING FOR CONTACTS**

Temporarily remove the water block to check for uniform surface contact between the block and the components, pay special attention to the VRM section of the graphics card. Check whether the water block makes contact with the VRM. Then repeat sub-steps in previous section to re-attach the block. **In case you fail to obtain good contact, please check again your thermal pad thickness or contact our support service.**

**STEP 5: ATTACHING STOCK BACKPLATE**

Gently fasten M2.5x6 DIN7985 screws over the backplate into pre-installed standoffs. There is no need to use excessive force on screws as you may over-tighten them and make damage to standoff/screw connection.

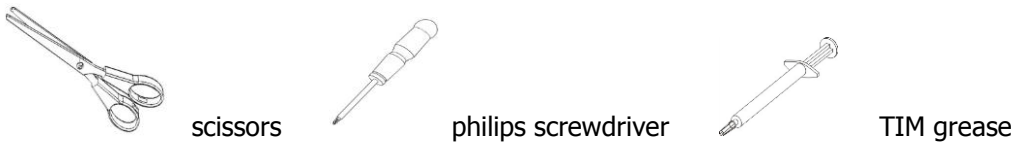


When reinserting MSI's GPU reactor, be careful to precisely reattach PCB and not force it downwards as you may bend the connection pins. Re-insert the lid to finish installation.



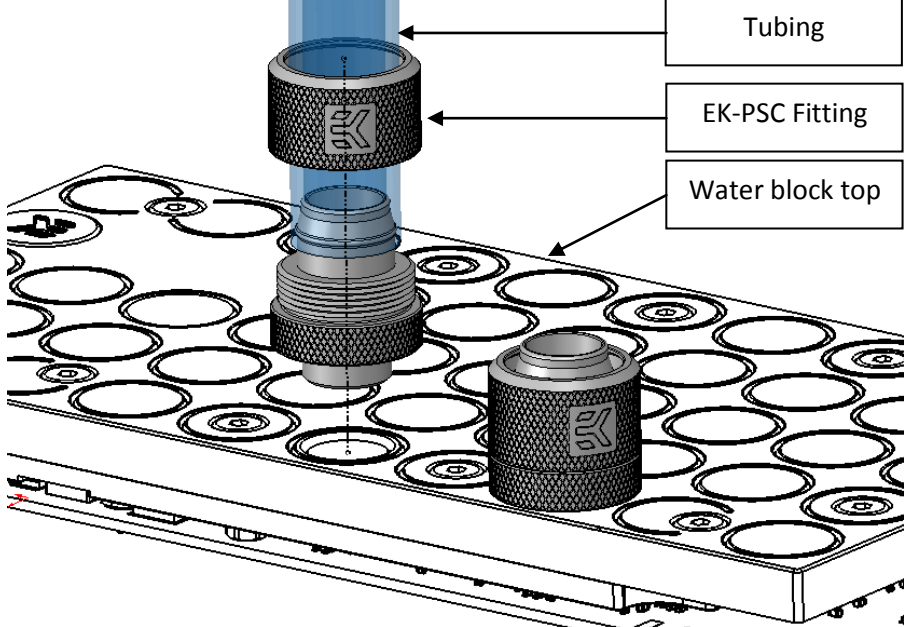
At this point you may carefully lift your graphics card with installed block and insert it in your PC's motherboard PCI-express expansion slot. Please bear in mind that your graphics card is probably heavier than when it was equipped with original heat sink fan assembly. One needs to be very careful when handling the graphics card. Avoid all unneeded manipulation of the VGA/water block assembly that might damage your card or water block during final installation.

**REQUIRED TOOLS AND MOUNTING SCREWS:**



**STEP 6: FITTING POSITIONING**

Screw in the fittings in the G1/4 threaded openings on plastic top of the water block. EKWB recommends using EK-PSC fittings with the EK-FC680 Ltg series water blocks. To ensure that the tubes are securely attached to the barb/fittings, please use hose clamps or an appropriate substitute. You can use any opening as an inlet/outlet port.



**INSTALLING EK-FC LINK:**

Alternatively you can install the enclosed EK-FC Link which allows installation of both EK-FC Bridge system as well as the use of G1/4 threaded fittings.

Please remove the middle M4x8 DIN7984 screw, install the EK-FC Link together with OR 14x1.5mm gaskets and secure it with enclosed M4x25 DIN7985 screw. Use enclosed 2.5mm Allen (hex) key!

Once installed you can install two (preferably angled) G1/4 threaded fittings or any EK-FC Bridge CSQ series interconnect (*serial* or *parallel*)

