

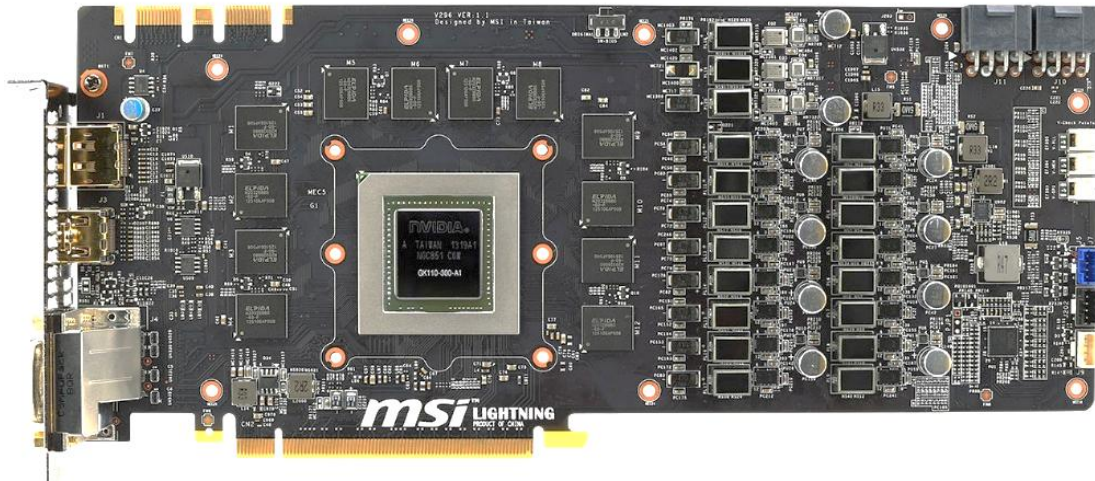
# Installation and mounting manual for EK-FC 780 GTX Lightning water block

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 corrosion inhibiting coolants is always recommended for any liquid cooling system.

## STEP 1: GENERAL INFORMATION. Sample picture of MSI N780 Lightning series graphics card.



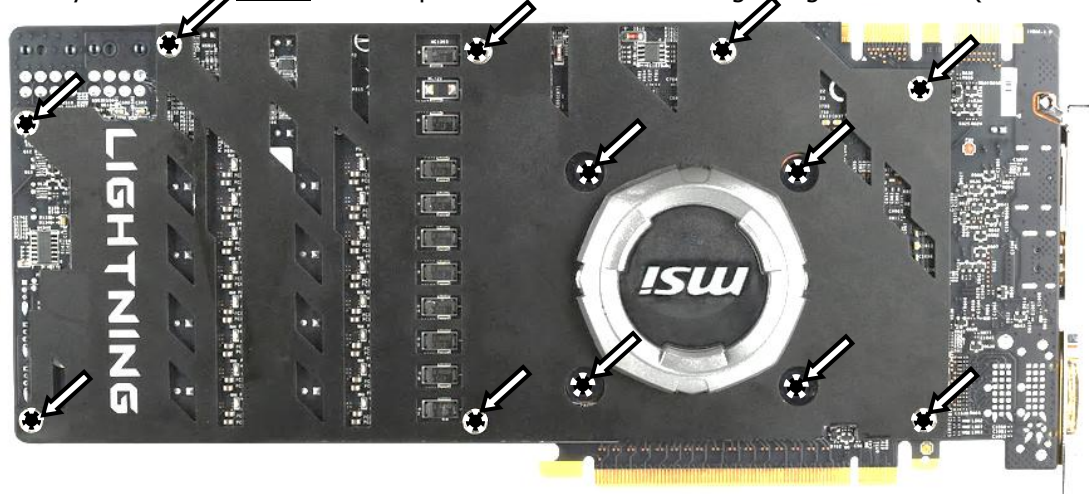
## STEP 2: PREPARING YOUR GRAPHIC CARD.

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

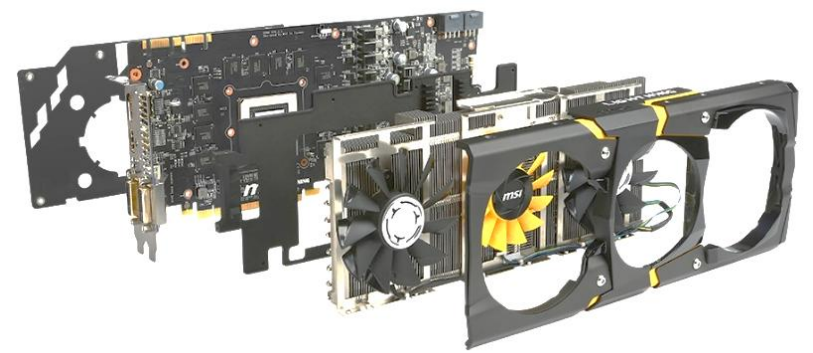


## STEP 2 cont.: PREPARING YOUR GRAPHIC CARD

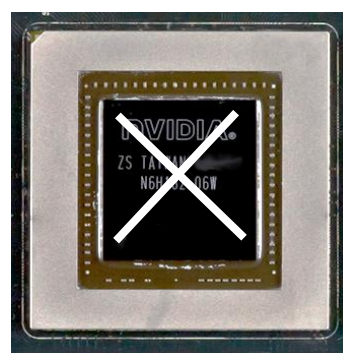
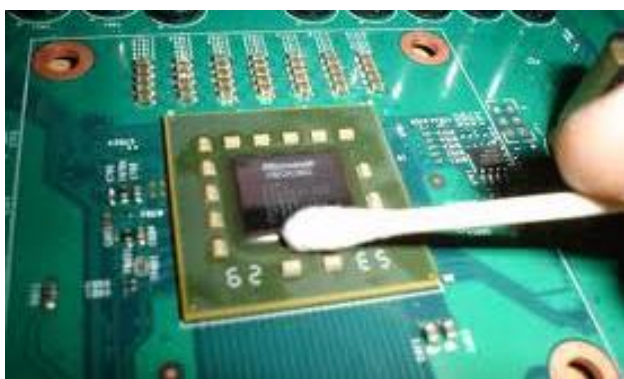
1.cont. REMOVING MSI FACTORY PROVIDED BACKPLATE: Remove all encircled screws attaching the aluminium backplate to the circuit board. All backplate assembly screws should be removed. There are 12 screws on the back of the graphics card (see photo below). **Do not unplug** the backplate power connector if you intend to **re-use** the backplate with the EK-FC780 Lightning water block (see STEP 3a)!



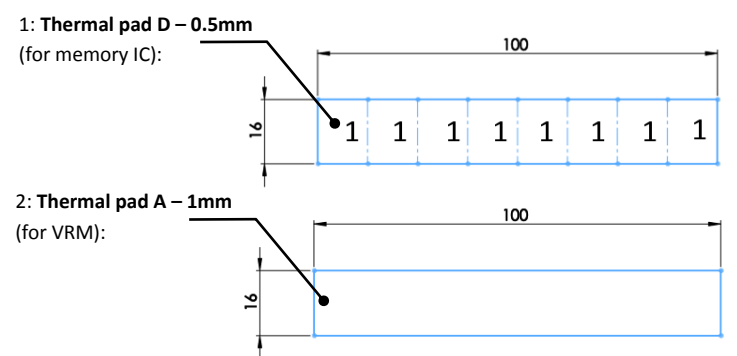
1.cont.: Carefully detach metal heat spreader plate. This step may require some force as the thermal pads may adhere the backplate firmly to the components on the circuit board. We recommend users to slowly and carefully pry the metal heat spreader plate from the PCB using bare hands (tool-less approach).



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 *q-tip*) of the original thermal compound until the components and circuit board are completely clean. lightly coat *Nvidia* GPU chip with enclosed EK-TIM Ectotherm thermal grease. EKWB recommends to apply thermal grease in cross form for best performance (see sample picture).

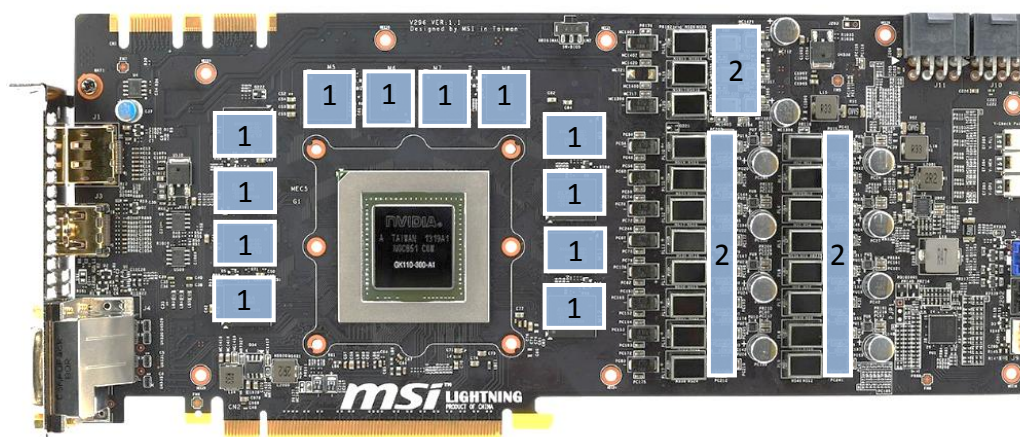


3. CUTTING THERMAL PADS. Your block comes with thermal pads, some of which are already pre-cut. Others have to be cut to smaller chunks in order to cover all the VRM components such as MOSFETs and drivers. PLEASE REMOVE THE PROTECTIVE FOIL FROM BOTH SIDES OF THE THERMAL PADS PRIOR TO INSTALLATION.

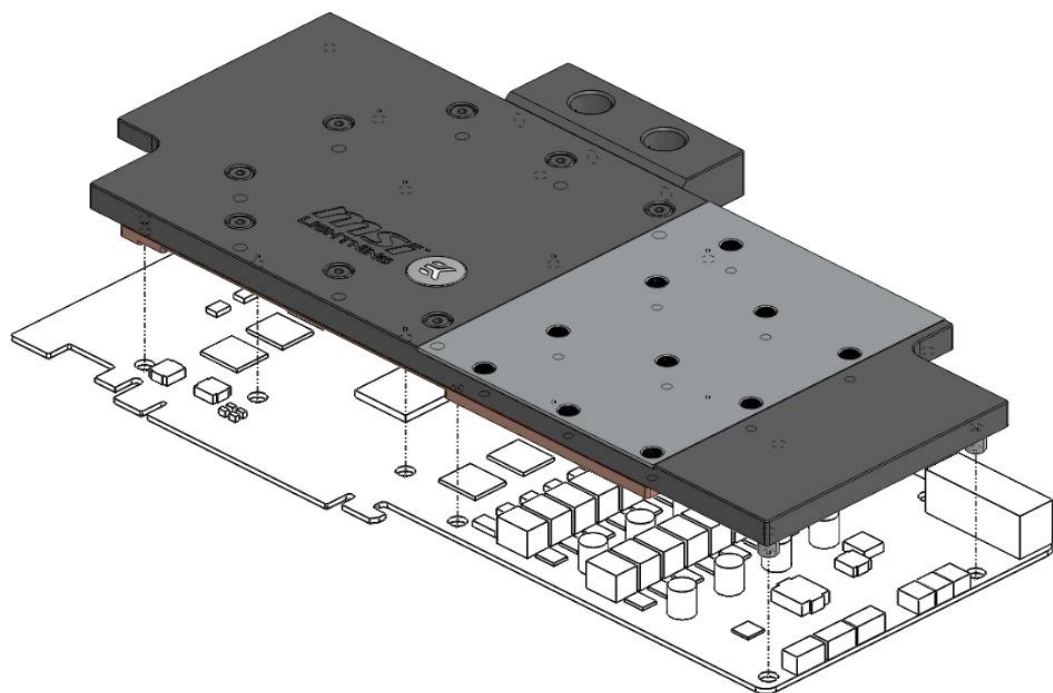


## STEP 3: INSTALLING THE WATER BLOCK

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: EK-TIM, Arctic Cooling MX-2™, MX-4™ or GELID GC-Extreme™) 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-FC780 GTX Lightning series water block.

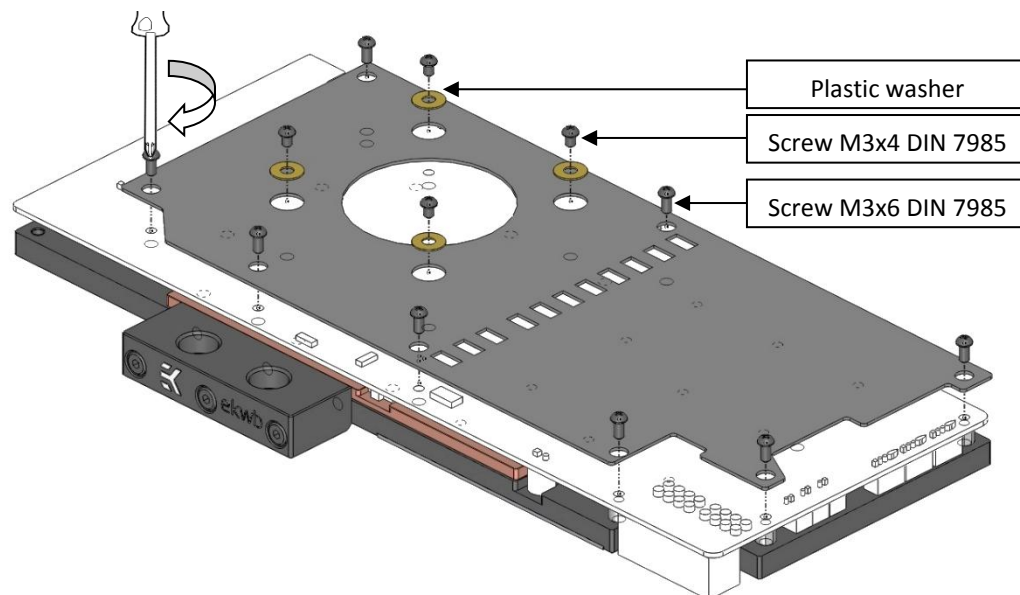


2. **PLACING THE BLOCK ON TO THE GRAPHICS CARD.** Carefully position the water block with preinstalled 2.5 mm standoffs on to the graphics card. During this process please make sure you align mounting holes on the PCB with holes on the water block. Also pay attention not to use too much force by pressing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



3a. **ATTACHING THE BLOCK AND MSI BACKPLATE TO GRAPHIC CARD.** By using Philips screwdriver screw in enclosed M3x4, M3x6 DIN7985 screws and washers. EKWB recommends the following procedure:

1. Screw in four (4) M3x4 DIN7985 screws around the GPU core. Do not tighten the screws firmly just yet.
2. Start screwing eight (8) M3x6 DIN7985 screws to secure the backplate to the water block.
3. Once all twelve (12) screws are in position tighten the screws completely.



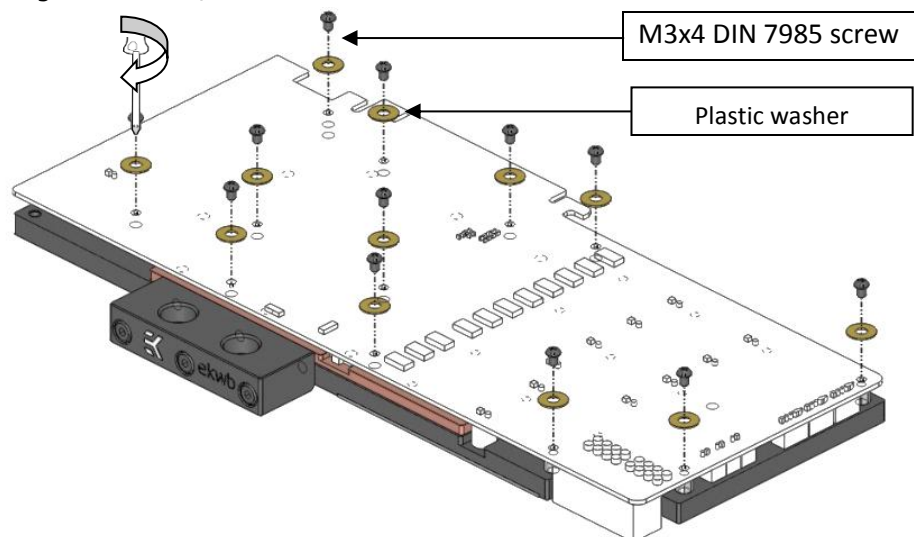
**Please note:** You may need to widen (re-drill) the holes on the backplate to 3mm using electric power drill in order to re-use the backplate!

#### STEP 4: CHECKING FOR CONTACTS

If necessary 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 intended integrated circuit. Then repeat sub-steps in previous section to re-attach the block. **In case you fail to obtain good contact, please check again that your thermal pad thickness or contact our support service at <http://www.ekwb.com/support>.**

#### STEP 3b: ATTACHING THE WATER BLOCK (W/O the Backplate)

Gently fasten M3x6 DIN7985 screws 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.



#### STEP 5: INSERTING THE CARD IN YOUR PC CASE

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 un-needed manipulation of the VGA/water block assembly that might damage your card or water block during final installation.

#### REQUIRED TOOLS:



scissors



Philips head screwdriver



thermal grease



power drill with 3mm drill bit (optional)

#### STEP 5: INSTALLATION OF FITTINGS AND TUBING

Screw in the two G1/4 threaded male fittings. Attach the liquid cooling tubes and connect the water-block(s) into the cooling circuit. **EKWB recommends using EK-CSQ fittings with the EK-FC 780 GTX Lightning 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.

**CAUTION:** In case of using connectors other than EK-CSQ series compression fittings, take special attention to the length of the fittings' male G1/4" thread. In case the thread is longer than 5 mm please use the enclosed 1.8 mm nickel plated spacer!

5mm is the maximum allowed G1/4" thread length!

