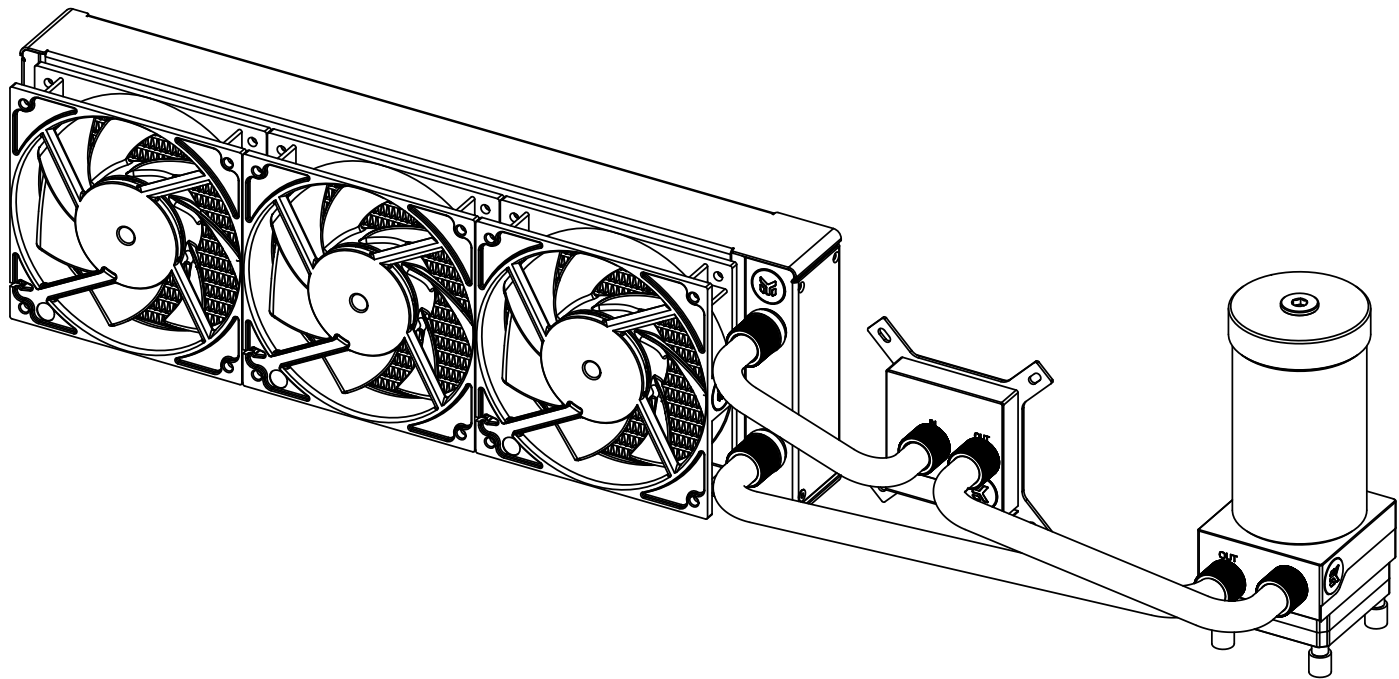




Liquid Cooling Starter Kit

Classic D-RGB / **S240** / **S360** / **P240** / **P360**



We are EK® - the leader in computer liquid cooling solutions. Our company emerged in 2003, bearing the name of its founder Edvard König. Over the years, we expanded our product portfolio to become the most comprehensive provider of liquid cooling products and engineering solutions, marketed under the EK brand.

EK gained a strong reputation among computer enthusiasts seeing as we helped them transform ordinary computers into extraordinary machines. Our products are recognized for elegant design, attention to detail, operational effectiveness, and outside-the-box approach. Today, EK products are available worldwide, and the company holds several partnerships with some of the most recognized brands. Our vision is to lead the way in making computers better.



Safety Precautions

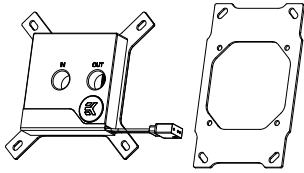
1. Keep and store the product away from the reach of children.
2. Check the component list and condition of the product before installation. If there is any problem, contact the shop where you have purchased the product to get a replacement or refund.
3. EKWB d.o.o. is not responsible for any damages due to external causes, including but not limited to improper use, problems with electrical power, accident, neglect, alteration, repair, improper installation, improper testing.
4. CPU and motherboard are subject to damage if the product is incorrectly installed.
5. This product is a CPU liquid cooling solution kit, comprising of individual original EK parts. Combining this liquid cooling unit with parts other than EK products, may lead to warranty loss.
6. The product warranty period is 24 months.

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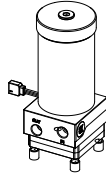
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SCOPE OF DELIVERY

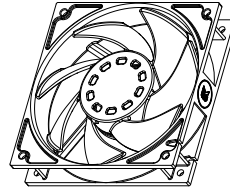
CPU Water Block
With Accessories



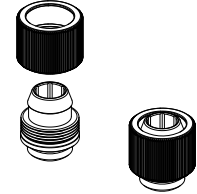
Pump-Reservoir Combo
With Accessories



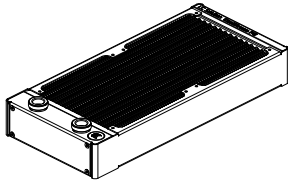
D-RGB Fans



Compression Fittings



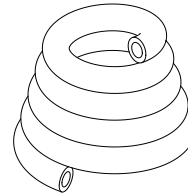
Radiator With Screws



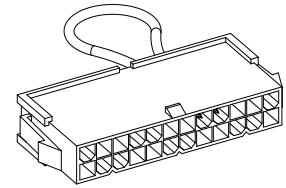
Coolant - Concentrate
100mL



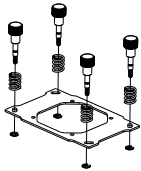
Tube



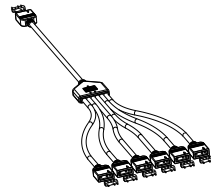
ATX Bridging Plug



AMD Mounting Kit
Classic (1x)



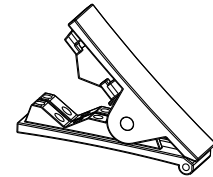
D-RGB Splitter Cable (1x)



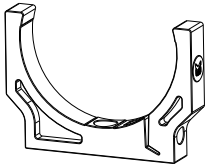
Angled Fitting (2x)



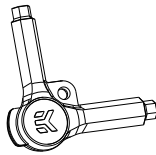
Soft Tube Cutter (1x)



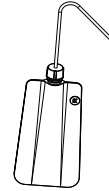
EK-RES X3 Holder (1x)



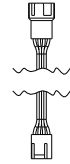
Multi Allen Key (1x)



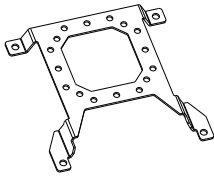
Filling Bottle 500ml (1x)



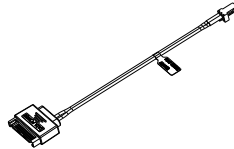
Pump Cable Extension
500mm (1x)



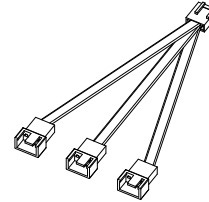
UNI Bracket



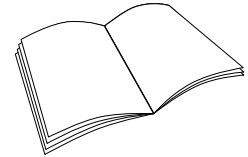
Cable Pump Testing
Adapter (1x)



Fan Cable Y-Splitter

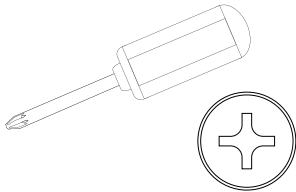


Installation Manual

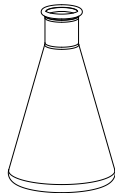


REQUIRED TOOLS

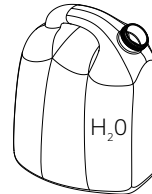
Phillips Head Screwdriver



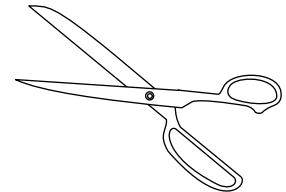
Mixing Bottle



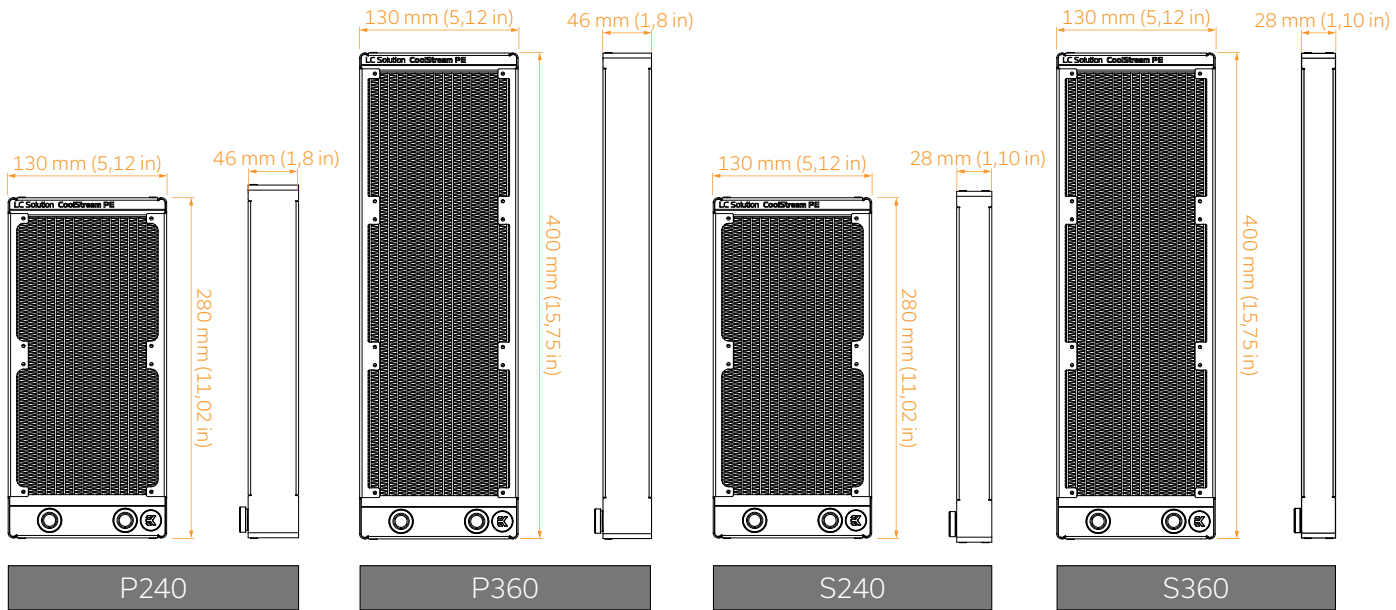
1L Bottle of Distilled Water



Pair of Scissors



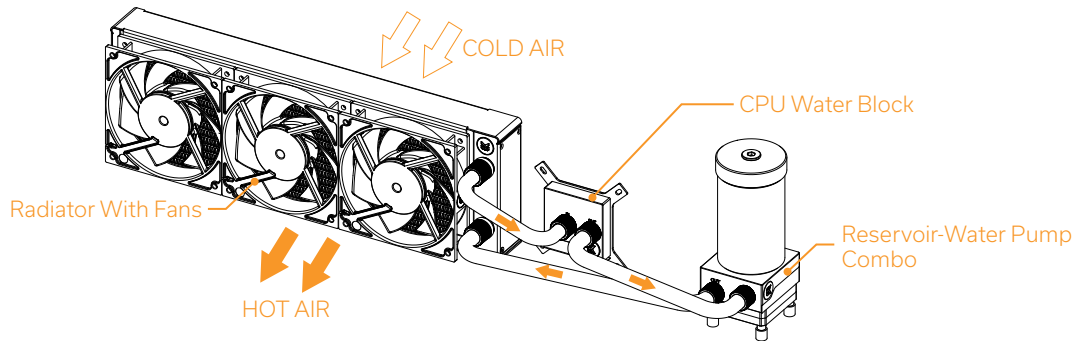
RADIATOR SPACE CONSTRAINT REQUIREMENTS



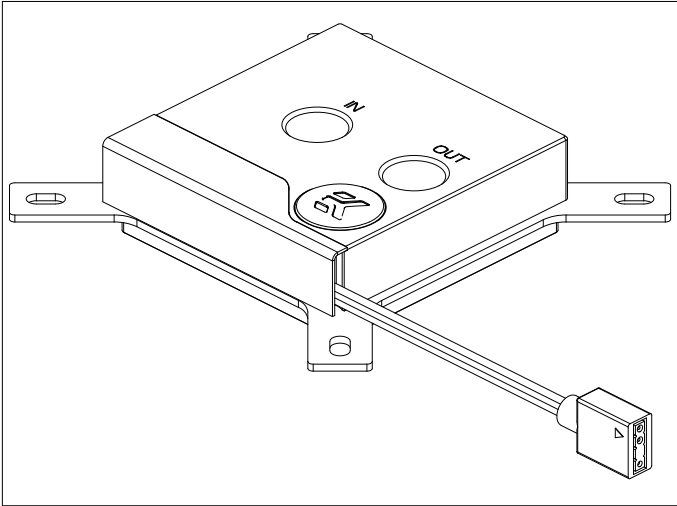
INSTALLATION TIPS FOR NOVICES

1. To lower the shipping cost, we have decided to enclose the coolant concentrate only. Therefore, you need to provide 1 liter (1L) of distilled water. You can find it at every gas station or supermarket.
2. **Never run this system on tap water** and always use the enclosed cooling concentrate in the right ratio.
3. **Never use alcohol, alcohol derivatives, or alcohol-based solvents in the system.** Using alcohol might result in permanent damage to water cooling KIT components, especially acrylic parts of the system.
4. It is best practice to do a proper 24-hour leak test before using your computer.
5. **If you spot any leaks, turn the power off immediately.**
6. Optimize tube length to prevent excessive bending and kinking of the tubing.
7. **Never let your pump run dry.** If this is happening for a prolonged period, you risk destroying the water pump's bearing, ultimately rendering the pump useless.
8. You are encouraged to periodically clean the radiator assembly as it will collect dust over time. It's best to be done with a soft wide-tip brush and a vacuum cleaner. See chapter **Universal Cleaning Guide**.

LIQUID COOLING SYSTEM



GENERAL INFORMATION ON WATER BLOCK COMPATIBILITY



This CPU liquid cooling unit is pre-assembled for use with modern Intel desktop-socket type motherboards. By default (out of the box) this water block supports the following CPU sockets:

- Intel® Socket LGA-115x / LGA-1200
- Intel® Socket LGA-2066/LGA-2011(-3)
- AMD® Socket AM4*

*requires replacing the Intel® mounting plate with an AMD® one.



This product is also fully compatible with AMD® AMx/FMx sockets but requires a user to replace factory installed Intel mounting plate with an AMD® one. The following sockets are then compatible:

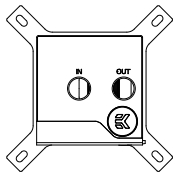
- AMD® Socket AMx
- AMD® Socket FMx

The AMD Mounting kit with a mounting plate is already enclosed inside this Kit!

INSTALLING THE WATER BLOCK

ENCLOSED IN THE BOX

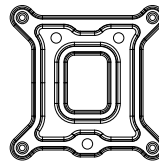
CPU WATER BLOCK WITH ACCESSORIES



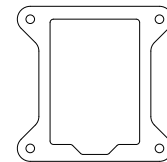
CPU Water Block



Thermal Grease



Steel Backplate - LGA 115x

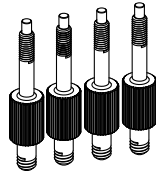


Rubber Backplate Distancer - LGA 115x

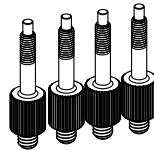
MOUNTING KIT FOR INTEL® SOCKET MOTHERBOARDS



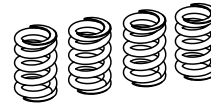
Thumb Nut



Mounting Screw - LGA 115x



Mounting Screws - LGA 20xx

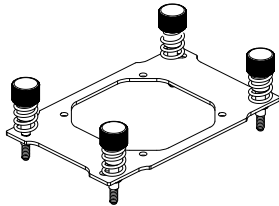


Mounting Springs - Intel®



Washers M4 x 0.8 mm

MOUNTING KIT FOR AMD® SOCKET MOTHERBOARDS



LGA-2011(-3) SOCKET MOTHERBOARDS

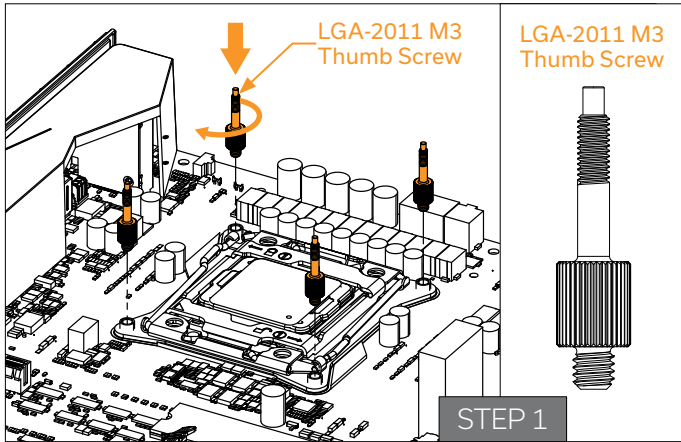
STEP 1

Prepare the foil bag with the mounting mechanism that is enclosed with the CPU water block.

Install four (4) specific LGA 2011 M3 thumb screws into four threaded stubs on the LGA 2011 socket's integrated latch mechanism (ILM). The screws are to be installed using no tools (i.e., pliers).



It is recommended to remove the motherboard from the chassis before proceeding with the CPU water block installation due to space constraints in various PC cases.



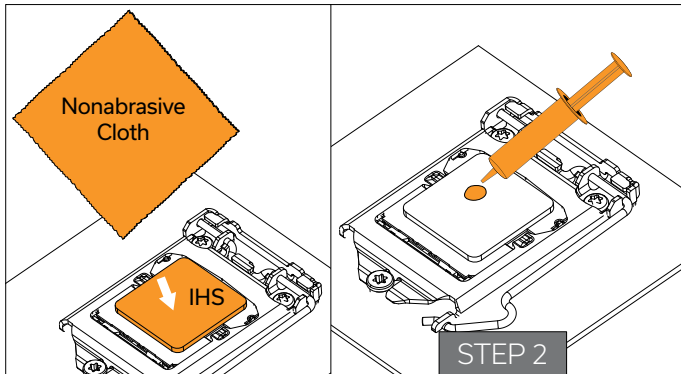
STEP 2

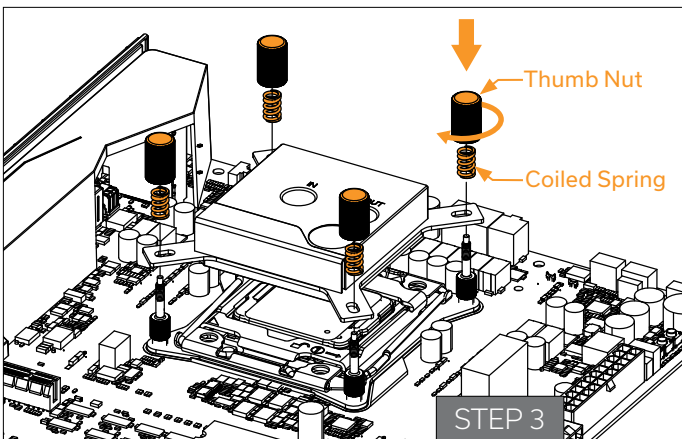
Cleaning the CPU: Wipe the CPU's contact surface with a nonabrasive cloth or Q-tip (as shown in the image).

Applying Thermal Compound: On the clean CPU IHS - Integrated Heat Spreader, apply a blob or line of enclosed thermal compound (see sample image on the left).



EK recommends the quantity of about two rice grains of thermal compound. There is no need to cover the whole IHS. Applying too much thermal grease will disrupt cooling performance!





STEP 3

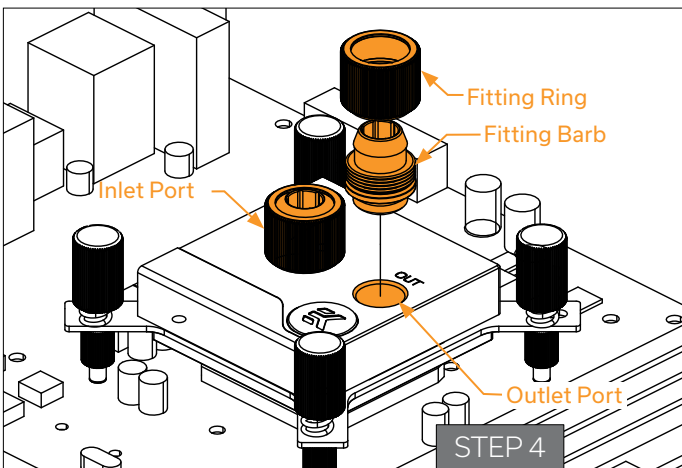
Remove the sticker from the water block cold plate.

Align the water block over the mounting screws on the LGA 2011(-3) motherboard with a pre-installed CPU.



Before proceeding with installation, it is mandatory to remove the protective foil from the backside of the water block.

Place an enclosed compression spring and a thumb nut over each M3 thumb screw. Start fastening two thumb nuts at a time, preferably in a cross pattern, but do not tighten them fully until all four are partially screwed in. Then - using your fingers only - screw in all four thumb nuts until you reach the end of the thread.



STEP 4

Tighten the fitting bars in a clockwise direction until the gasket underneath is compressed.

The installation of the CPU water block is now complete.

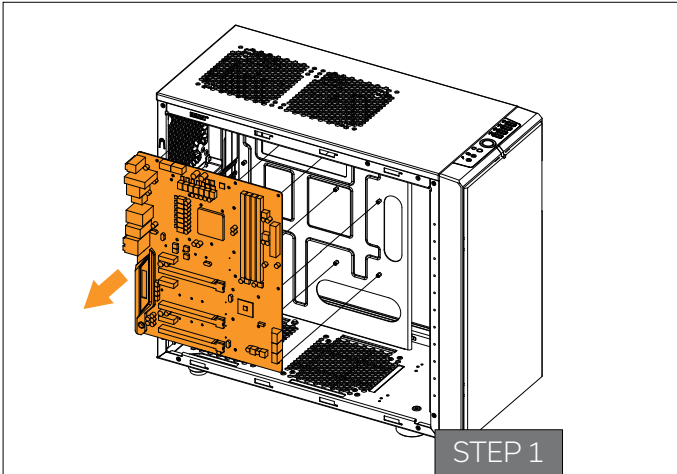


With EK-Supremacy Classic series water blocks, it is mandatory to use the port closest to the center of the water block as the INLET port. Mixing these ports up may result in poor thermal performance of the water block.

LGA 115X/1200 SOCKET MOTHERBOARDS

STEP 1

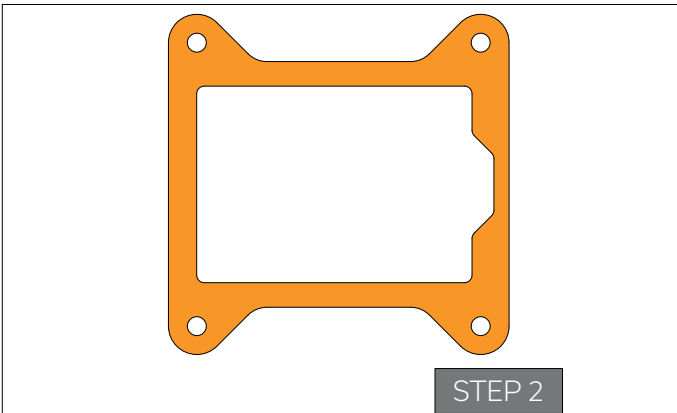
If already installed, please remove the motherboard from the computer case. Place it on an even surface with the front facing downward.

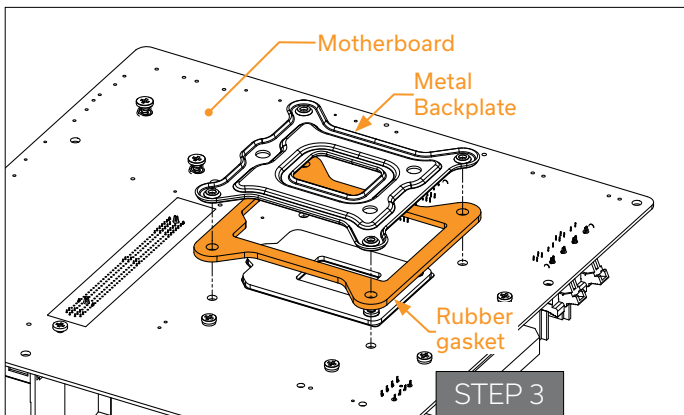


STEP 2

Preparing the Backplate Rubber Gasket

The enclosed rubber gasket is an essential part of the backplate and mounting system, and therefore must be used every time you install this water block on the motherboard.





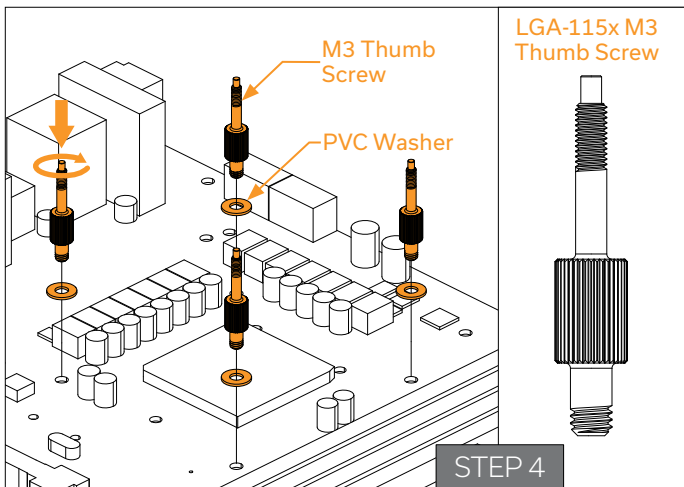
STEP 3

Install the backplate rubber gasket and place the metal backplate for Intel® LGA 115x/1200 socket to the back of your motherboard **ribbed side up** (facing away from the motherboard). Align the holes on the motherboard with holes on the rubber gasket and backplate.



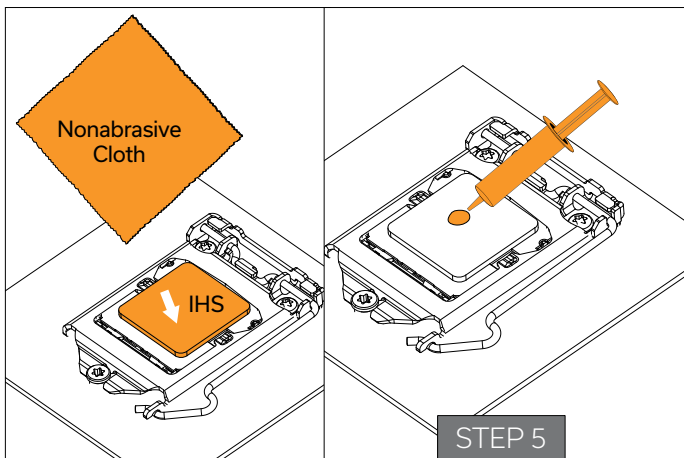
Make sure to orientate the rubber gasket to fit past the CPU socket ILM backplate. On certain ITX form factor motherboards, the rubber gasket may need to be trimmed with household scissors.

Using one hand, carefully rotate the motherboard assembly with the front side facing up while holding the backplate and rubber gasket in place with the other hand.



STEP 4

Install four (4) M3 thumb screws into your motherboard. It is mandatory to put a plastic washer underneath each M3 thumb screw. Tighten the screws to the metal backplate until you reach the end of the thread. Using tools (i.e., pliers) is not recommended.



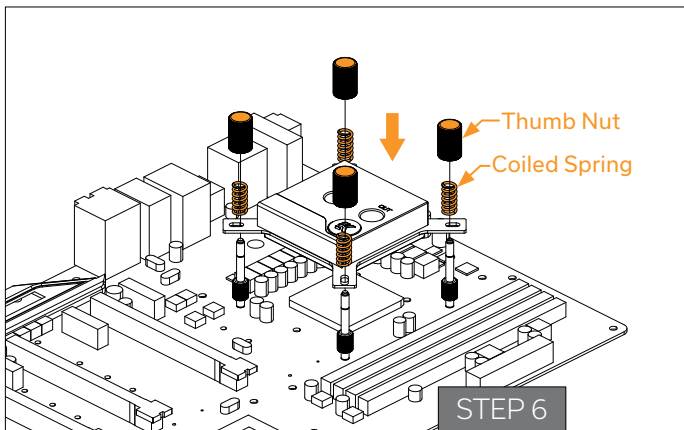
STEP 5

Cleaning the CPU: Wipe the CPU's contact surface with a nonabrasive cloth or Q-tip.

Applying Thermal Compound: On the clean CPU IHS, apply a blob or line of enclosed thermal compound (see sample image).



EK recommends the quantity of about two rice grains of thermal compound. There is no need to cover the whole IHS. Applying too much thermal grease will disrupt cooling performance!



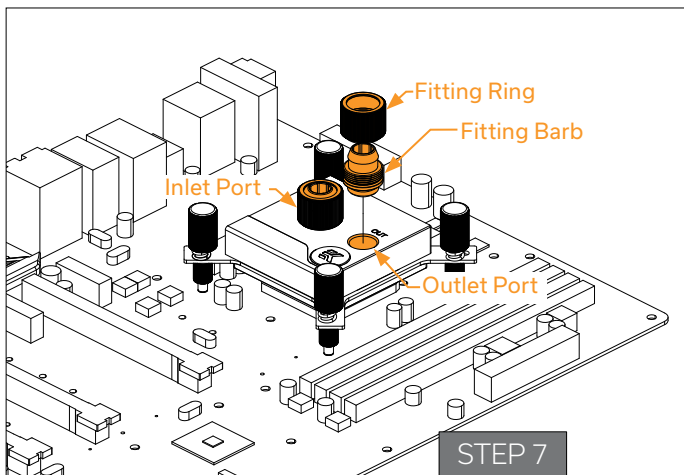
STEP 6

Align the water block over the mounting screws on the LGA 115x/1200 motherboard with a pre-installed CPU.



Before proceeding with installation, it is mandatory to remove the protective foil from the backside of the water block.

Place an enclosed coiled spring and a thumb nut over each M4 thumb screw. Start fastening two thumb nuts at a time, preferably in a cross pattern, but don't tighten them fully until all four are partially screwed in. Then – using your fingers only – screw in all four thumb nuts until you reach the end of the thread.

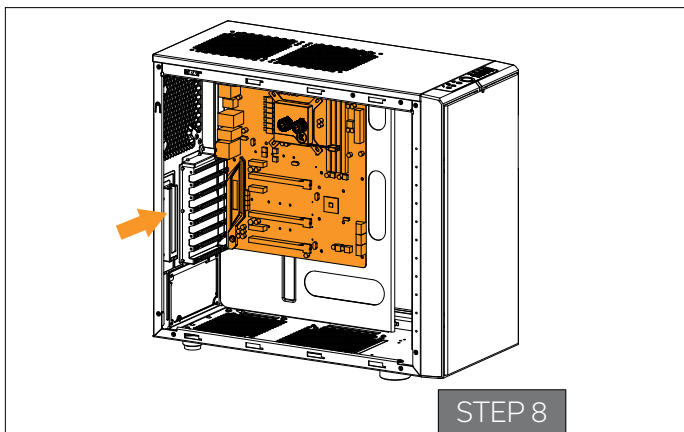


STEP 7



With EK-Supremacy Classic series water blocks, it is mandatory to use the port closest to the center of the water block as the INLET port. Mixing these ports up may result in poor thermal performance of the water block.

Tighten the fitting bars in the clockwise direction until the gasket underneath is compressed.



STEP 8

Install the motherboard back into the computer case.

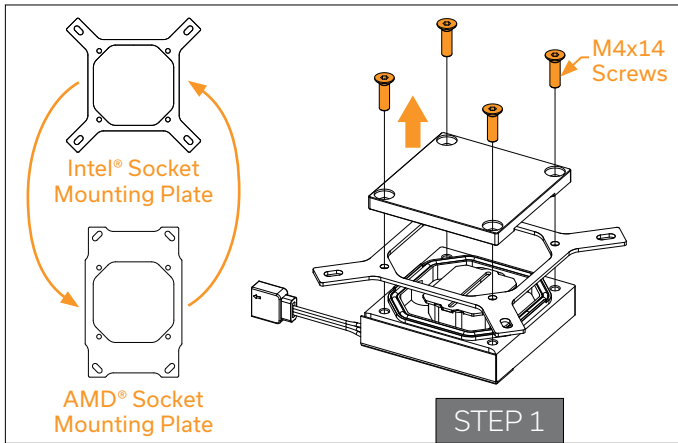
The installation of the CPU water block is now complete.

AMD® SOCKET MOTHERBOARDS

STEP 1

Replacing the Mounting Plate


Place the water block on an even surface and, using the 2.5mm Allen key in the counter-clockwise direction, remove four M4x14 DIN 7991 screws attaching the copper base to the top.



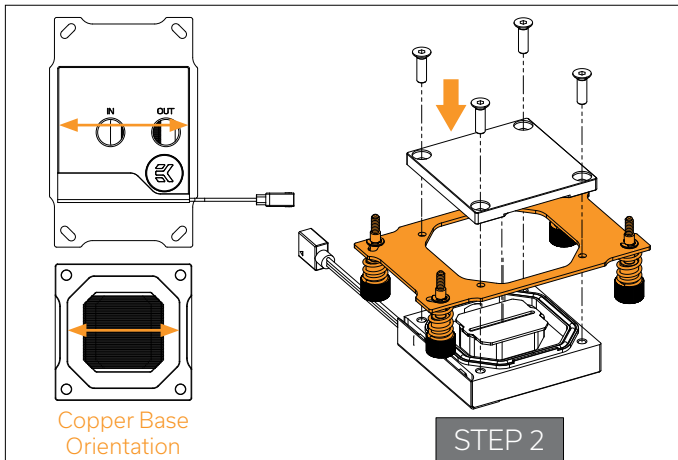
STEP 2

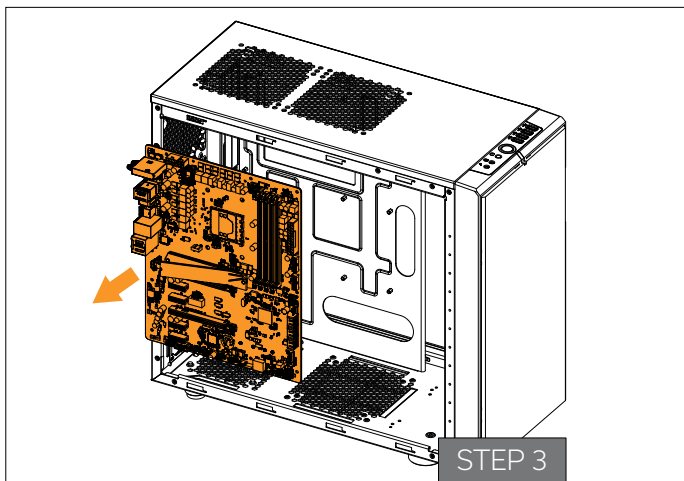
Replace the factory-installed Intel® mounting plate with the AMD® one. You will feel the mounting plate locking into position when placed correctly onto the top.

Reseat the O-ring gasket into the gap between the mounting plate and water block top.

 Pay special attention to the orientation of the copper base. It should be placed as shown in the picture.

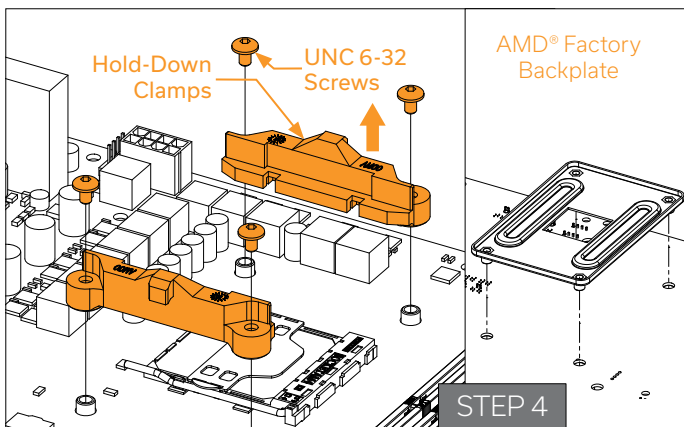
Reinstall the M4x14 screws and use the 2.5mm Allen key in the clockwise direction to screw them in.





STEP 3

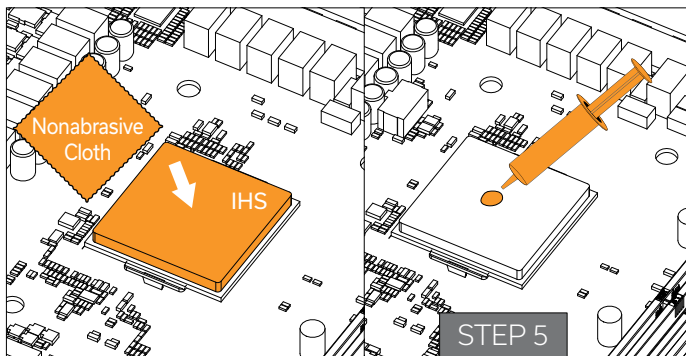
If already installed, please remove the motherboard from the computer case. Place it on an even surface with the front facing downward.



STEP 4

Removing the Original Hold-Down Clamps

Using a Philips head screwdriver, remove the four UNC 6-32 screws securing the original plastic hold-down clamps around the socket (as shown in the picture). You can use the factory backplate for mounting the EK-Supremacy Classic water block.



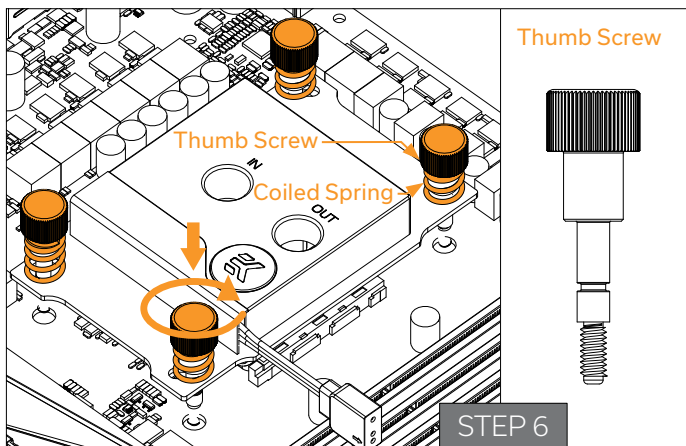
STEP 5

Cleaning the CPU: Wipe the CPU's contact surface with a nonabrasive cloth or Q-tip (as shown in the image).

Applying thermal compound: EK recommends a blob or line method for applying the enclosed thermal compound to the CPU heat spreader (see sample image).



The quantity of about two rice grains of thermal compound is just about right. There is no need to cover the whole IHS. Applying too much thermal grease will disrupt cooling performance!



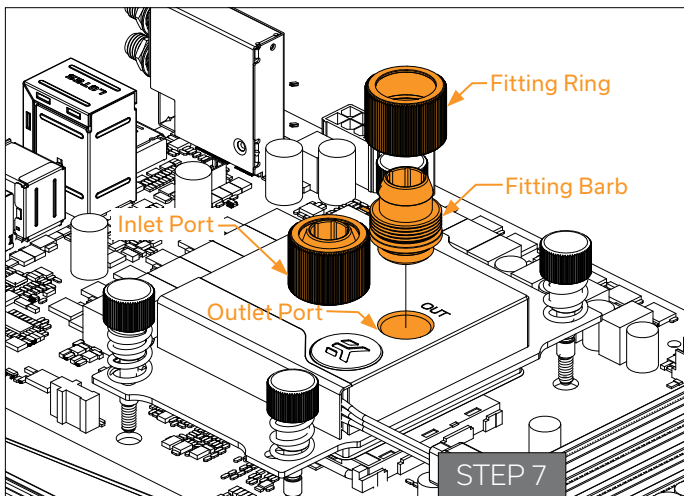
STEP 6

Align the water block with the pre-installed mounting screws on the AMD® socket motherboard.



Before proceeding with installation, it is mandatory to remove the protective foil from the backside of the water block.

Start fastening two thumb screws at a time, preferably in a cross pattern, but don't tighten them fully until all four are partially screwed in. Then – using your fingers only – screw in all four thumb screws until you reach the end of the thread.

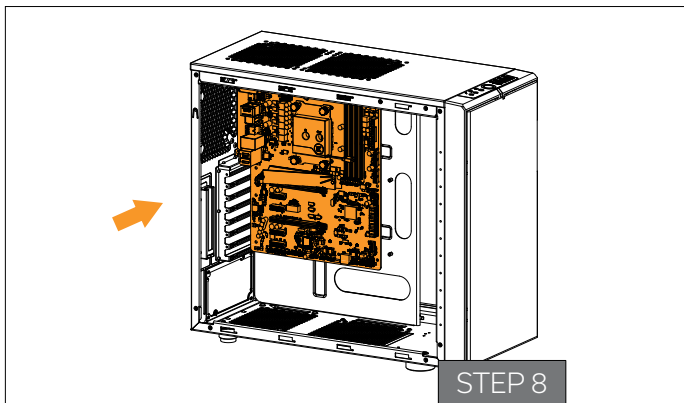


STEP 7



With EK-Supremacy Classic series water blocks it is mandatory to use the port that is nearest to the center of the water block as INLET port. Mixing the ports may result in poor thermal performance of the water block.

Tighten the fitting barbs in the clockwise direction until the gasket underneath is compressed.



STEP 8

Install the motherboard back into the computer case.

The installation of the CPU water block is now complete.

INSTALLING THE RADIATOR AND FANS

Before positioning the fans on the radiator, decide if you want them to:

- A) **Serve as the hot air exhaust - Method 1** (when fans are placed on the exhaust) or
- B) **Receive the coldest air possible - Method 2** (when fans are placed on the air inlet).



The first method results in an overall decrease in temperature throughout the entire computer chassis but also leads to slightly higher liquid temperatures. A reversed airflow (the second method) is also a viable option.

Whichever method you choose, always strive to achieve the unidirectional airflow throughout the chassis by placing all fans accordingly.

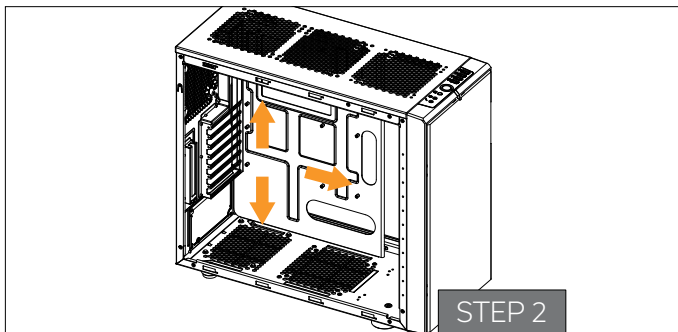
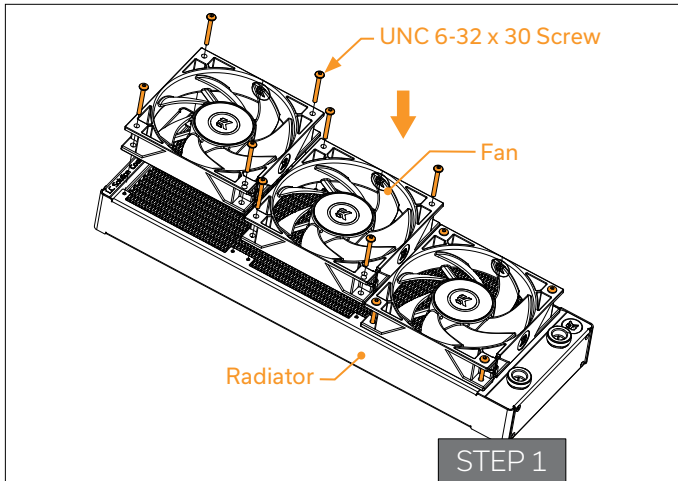
METHOD 1

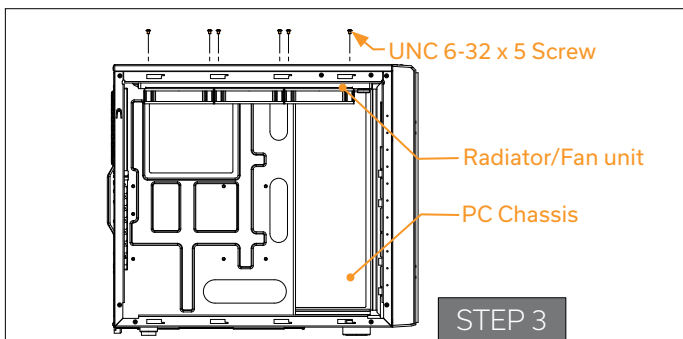
STEP 1

Install the fans on the radiator. Take four UNC 6-32x30mm screws for each fan and screw them in. Use the enclosed Allen key to tighten the screws in the clockwise direction.

STEP 2

Prepare your suitably-sized PC chassis for the installation of the radiator unit. The position of the unit in the chassis depends on its size, fan mounting holes, and hardware that is installed. You must make sure the unit fits into the case. Usually, cases already have standard pre-drilled fan-mounting holes, and you should look for those with a spacing of 105mm (for standard 120mm computer cooling fans) or 125mm (for 140mm cooling fans).

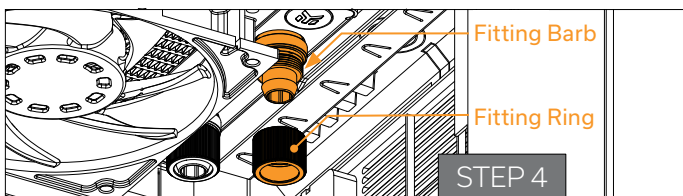




STEP 3

Align the holes of the radiator with the ones in the PC chassis.

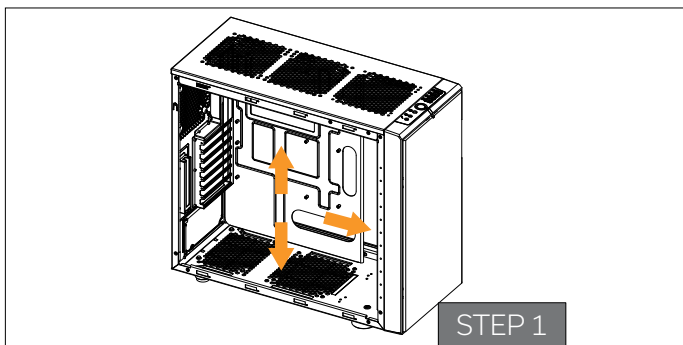
Take four (4) UNC 6-32 x 5mm screws for each fan and guide them through the holes in the chassis, then screw them into the threaded holes of the radiator. Tighten them in a clockwise direction using the enclosed Allen key.



STEP 4

Install compression fittings on both G1/4 extender openings of the radiator. Tighten the fitting barbs in the clockwise direction until the gasket underneath is compressed.

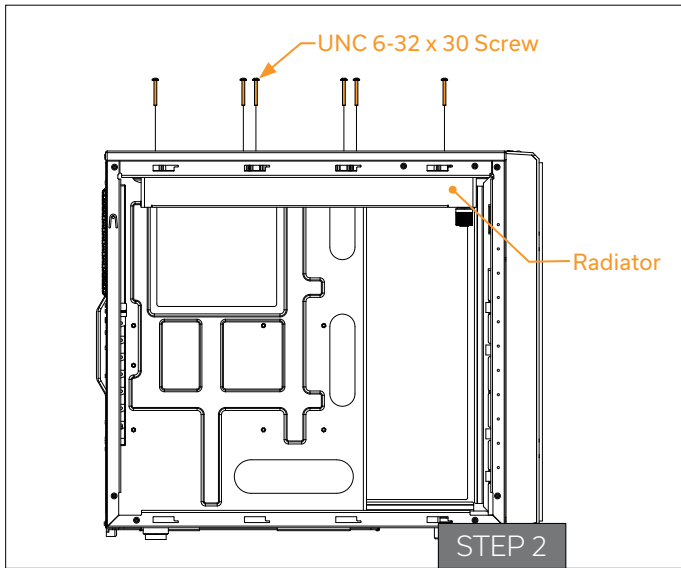
The installation of the radiator and cooling fans is now complete.



METHOD 2 INSTALLING THE RADIATOR AND FANS IN ONE GO

STEP 1

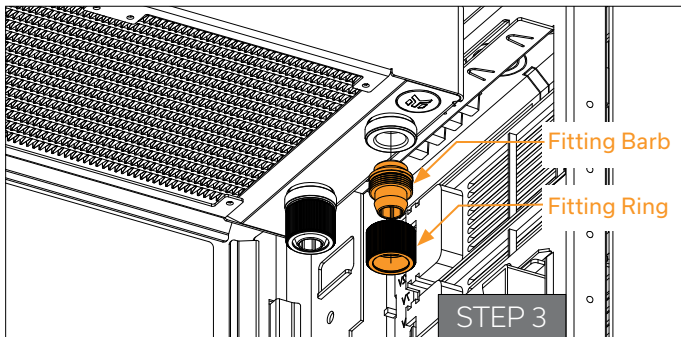
Prepare your suitably-sized PC chassis for the installation of the radiator unit. The position of the unit in the chassis depends on its size, fan mounting holes, and hardware that is installed. You must make sure the unit fits into the case. Usually, cases already have standard pre-drilled fan-mounting holes, and you should look for those with a spacing of 105mm (for standard 120mm computer cooling fans) or 125mm (for 140mm cooling fans).



STEP 2

Align the holes of the radiator and fans with the ones in the PC chassis.

Take four (4) UNC 6-32 x 30mm screws for each fan and guide them through the holes of the chassis and fans, then screw them into the threaded holes of the radiator. Tighten them in a clockwise direction using the enclosed Allen key.



STEP 3

Install compression fittings on both G1/4 openings of the radiator. Tighten the fitting barbs in the clockwise direction until the gasket underneath is compressed.

The installation of the radiator and its cooling fans is now complete.

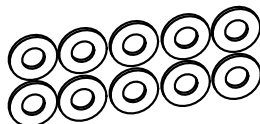
INSTALLING THE PUMP-RESERVOIR UNIT

ENCLOSED IN THE PACKAGING

PUMP-RESERVOIR MOUNTING KIT



Screws M4 x 4



Washers M4 x 0.8 mm



Allen Key 2 mm



Allen Key 2.5 mm

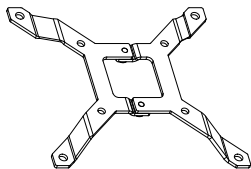


Nut M4

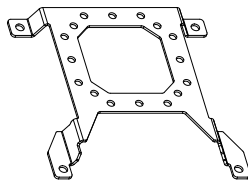


Screws M4 x 6

You may choose one of the two enclosed brackets for mounting the Pump-Reservoir unit.



Spider Bracket



UNI Bracket

INSTALLING THE PUMP-RESERVOIR UNIT TO THE BOTTOM OF THE CASE

STEP 1

Your Classic Kit comes with a combined pump and reservoir unit with a pre-installed anti-vibration holder.

Take the unit and place it on the chosen bracket vertically, as shown in the picture



You can turn the pump in any direction, but do not turn it upside-down.

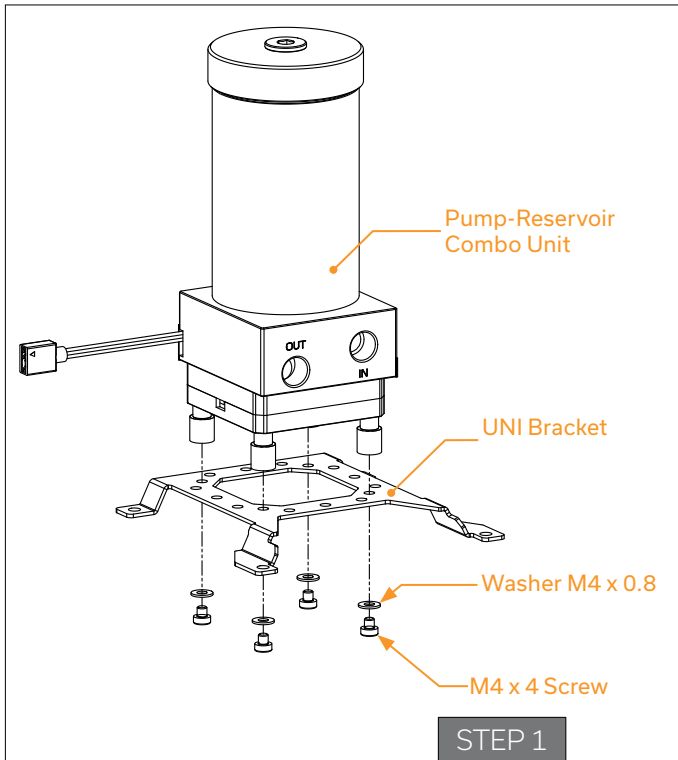
Secure the pump from the backside using four (4) M4 x 10 screws and PVC washers. Tighten them in a clockwise direction using the enclosed 2.5mm Allen key.

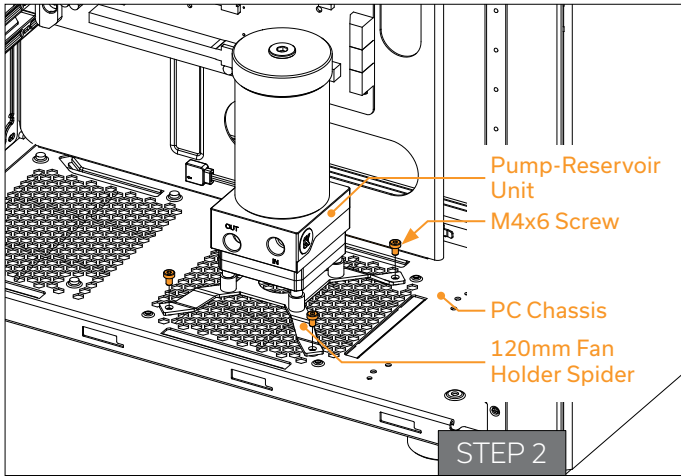


This unit can be installed without the use of a pump bracket if there is a 62 x 34mm rectangular mounting hole pattern in the chassis.



For detailed instructions on how to install the Pump-Reservoir unit, scan the QR code on the Pump-Reservoir packaging box.





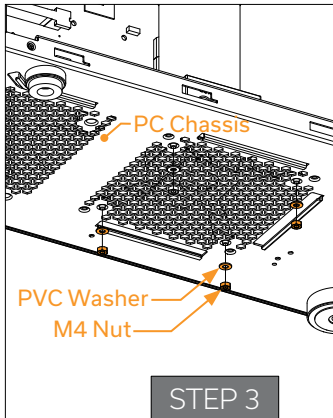
STEP 2

The position of the unit will depend on the fan mounting holes and hardware that is installed in the chassis. Usually, cases already have standard pre-drilled fan-mounting holes, and you should look for those with a spacing of 105mm.

Place four M4 x 6 DIN7984 screws into the holes of the bracket from the upper side.



Alternatively, you can drill four $\text{\O}4.5\text{mm}$ holes using an electric power drill in the most suitable place of your computer chassis.

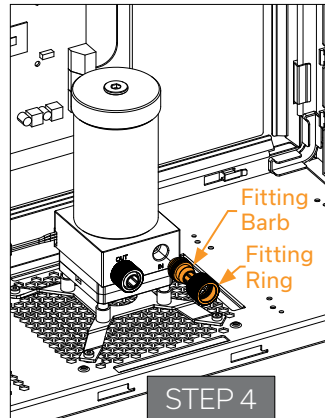


STEP 3

Secure the M4 x 6 screws from the previous Step with four (4) M4 nuts and PVC washers. Tighten them with a 2.5mm Allen key.



Make sure the screws are holding tight but do not exaggerate with the force applied.



STEP 4



The pump-reservoir unit has clearly marked inlet (IN) and outlet (OUT) G1/4 ports. Not taking that into account will lead to reverse flow.

Tighten the fitting barbs in the clockwise direction until the gasket underneath is compressed.

The installation of the pump-reservoir combo unit is now complete.

CONNECTING THE TUBING



If you are adding an additional unit to your water cooling loop, please proceed to chapter **System Expansion Possibilities**.

STEP 1

In order to successfully route your tubing, please check the liquid cooling scheme.

The water block should receive the coldest fluid possible. Therefore, EK recommends you connect the radiator's outlet port with the water block's inlet port. Even though this is the best practice, it is not mandatory.

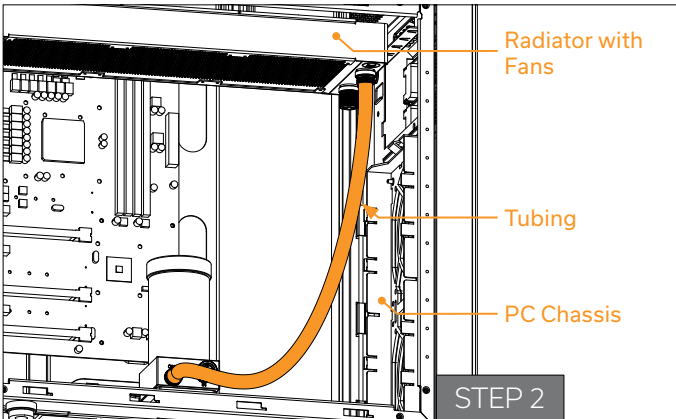
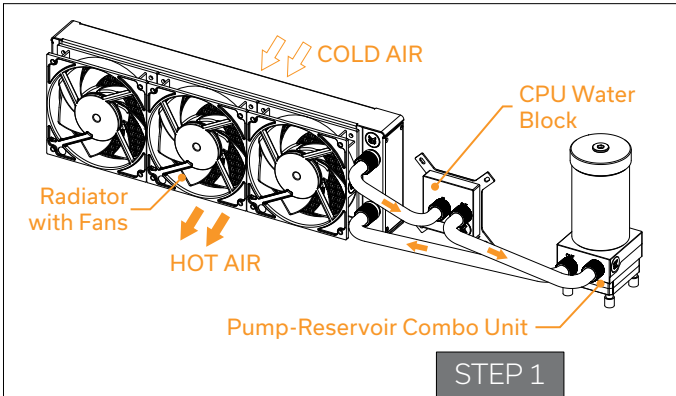
STEP 2

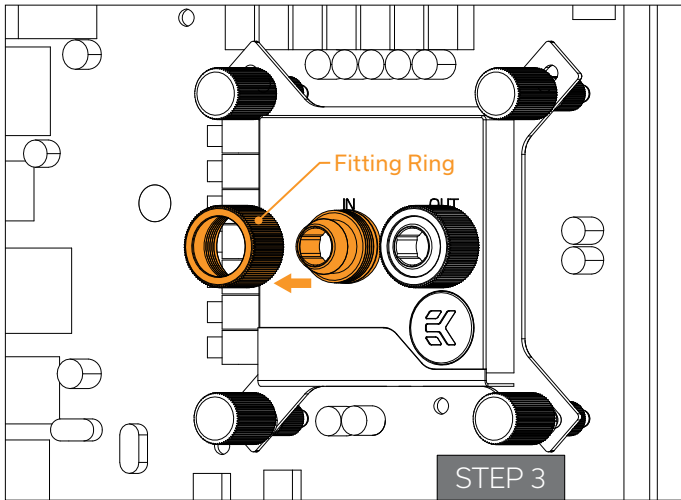
Try to visualize the tube route and then measure its distance by trying to fit it into the chassis. Mark the required length with a felt-tip pen.

Before you make the first cut, keep in mind that it's best to have 2-3 cm in tube length to spare. You can always shorten the tube afterward. You may use the enclosed Soft Tube Cutter to cut the tubes.



For the coolant to flow without restriction, make sure the tube is not bent or twisted.



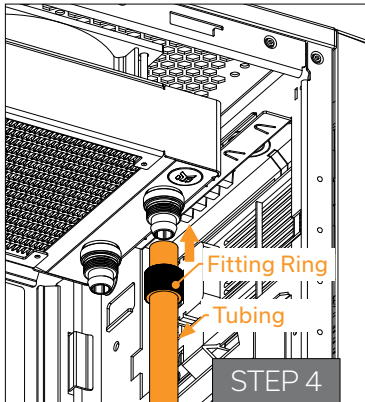


STEP 3



If you have assembled the components according to this installation manual, all the compression fittings should have already been installed.

To fit the tubing onto the compression fittings, you will have to remove the fitting rings by rotating them in a counter-clockwise direction.



STEP 4

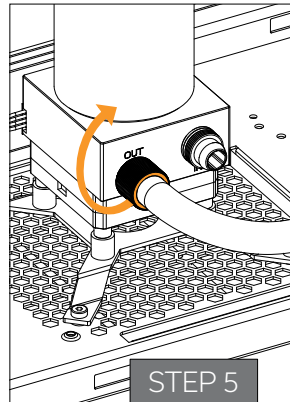
Slide the fitting ring along the tube with the threaded side facing the fitting barb.

Install the tube on the fitting barb. You can do that by forcing it to slide over the edge as far as it goes. If needed, heat the tube in warm water.

STEP 5

Slide the fitting ring toward the fitting barb and tighten it in a clockwise direction as far as it goes.

Repeat the procedure on all fittings to connect your liquid cooling loop.



ELECTRICAL CONNECTIONS

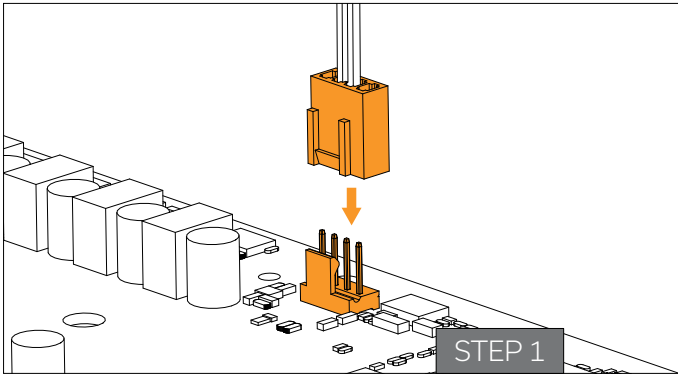
CONNECTING THE PUMP-RESERVOIR UNIT

STEP 1

Take the 4-pin PWM female connector and plug it to the male PWM header located on the motherboard.



Always try to use CPU-dedicated fan headers. On the majority of motherboards, these headers offer the best PWM regulation.



CONNECTING THE FANS

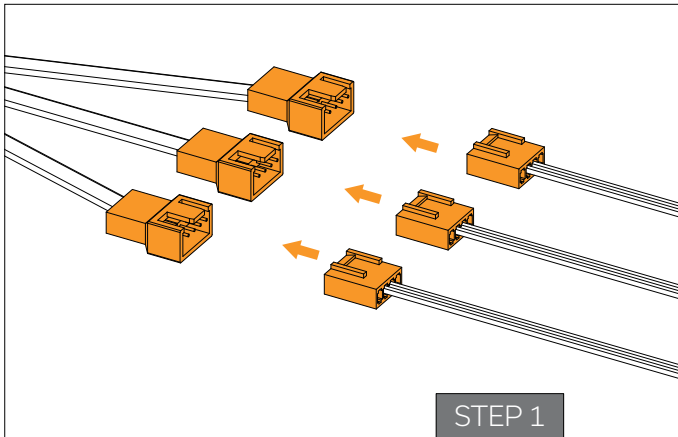
STEP 1

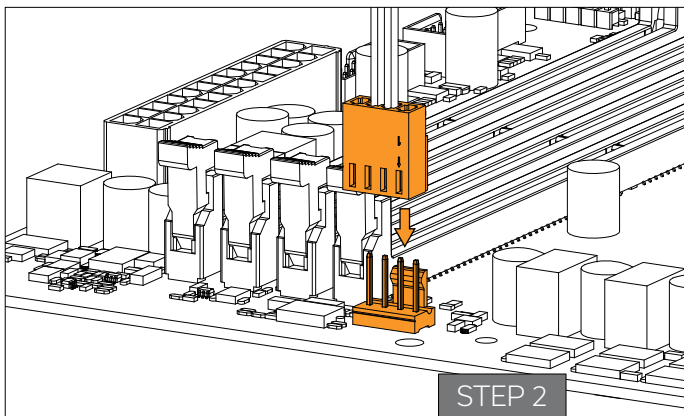
To connect the fans, you might need an EK-Cable Y splitter.



The EK-Cable Y splitter comes enclosed with the Kit.

Connect the female connectors from the fans with male connectors on the fan splitter cable.



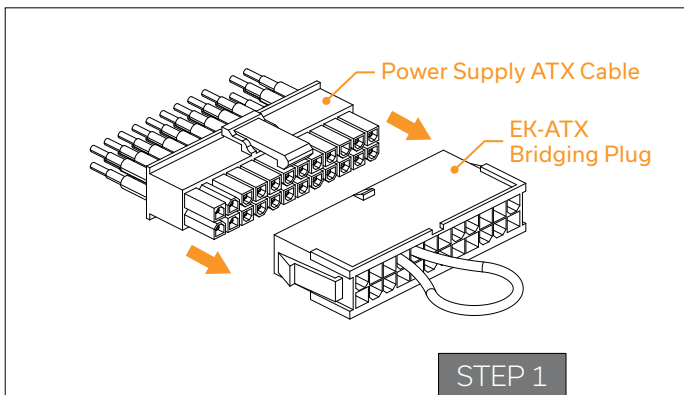


STEP 2

Connect the female splitter connector to a header located on the motherboard or fan controller.



Always try to use CPU-dedicated fan headers. On the majority of motherboards, these headers offer the best PWM regulation.



RECOMMENDED FILLING AND LEAK-TESTING PROCEDURE

STEP 1

It is **mandatory** to do the following:

1. Disconnect all PSU power connectors on your PC (4/8-pin EPS, 24-pin ATX, PCIeexpress power, SATA power),
2. Plug the EK-ATX Bridging Plug (enclosed) into the 24-pin ATX PSU cable, which allows jump-starting your computer.

This procedure requires only the pump to be connected to the power supply (PSU). Everything else needs to be disconnected!



This Step must be done to prepare the power supply for the pump, so you can fill the water cooling loop with coolant and run the leak test.

Your system is now ready to be charged for the first time.

CONNECTING THE FANS, PUMP, AND CPU D-RGB LIGHTS

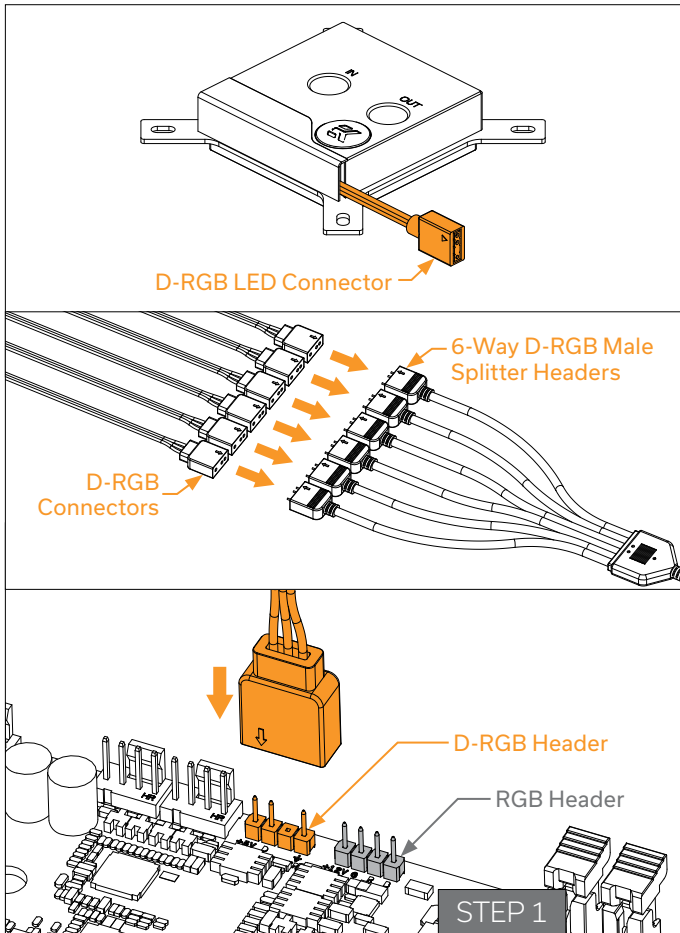
STEP 1

Connect the 3-pin D-RGB LED connector from the pump-reservoir unit, water block, and fans to the D-RGB header on the motherboard. The lights will work if the pin layout on the header is as follows: **+5V, Data, Empty, Ground**.

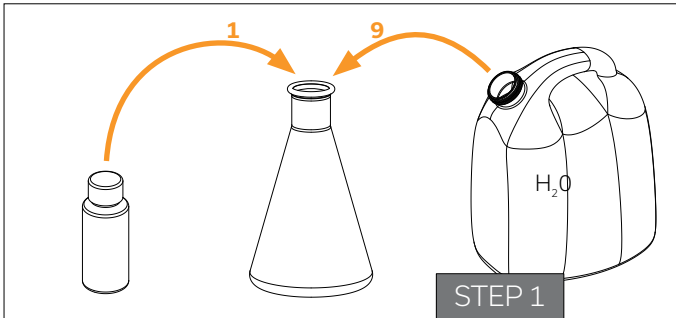


Please ensure that the arrow indicated on the connector is plugged into the +5V line, as indicated on your motherboard. If you connect LEDs to the 12V RGB header, it will damage them.

You may use the enclosed 6-way D-RGB splitter cable to connect all the D-RGB cables into one header on your motherboard.



FILLING THE SYSTEM FOR THE FIRST TIME



STEP 1

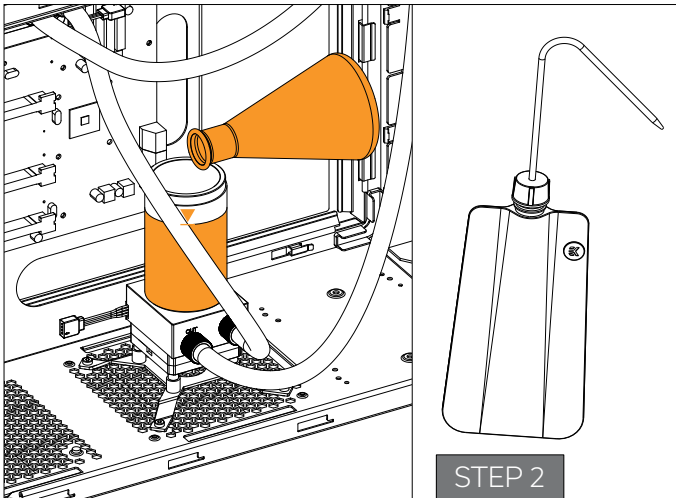
Preparing the Cooling Liquid.

The coolant comes in the concentrated form. To prepare the cooling liquid, you must take 100mL of clear coolant concentrate (comes enclosed with the Kit) and mix it with 900mL of distilled water.

Make sure you mix it properly before pouring it into your water cooling loop.



Store the remaining liquid into a PET bottle. Do not use any food or beverage container!



STEP 2

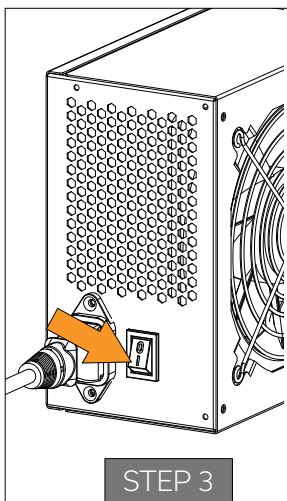
Remove the top cover of your reservoir by unscrewing it in a counter-clockwise direction.



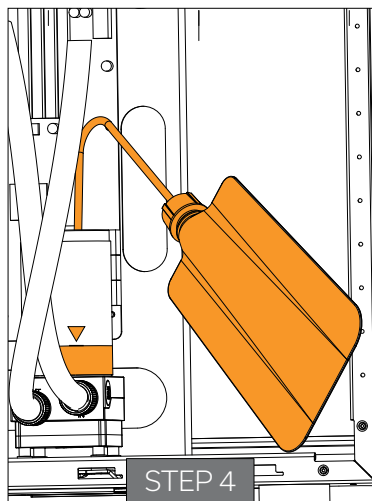
It is recommended to protect the exposed hardware with a few paper towels in case there is a leak, or you accidentally spill the coolant while pouring it.

Take the pre-mixed coolant and pour it into the reservoir until the coolant level is about 2cm below the top.

For pouring the pre-mixed coolant into the reservoir, you may use the enclosed 500mL filling bottle.



STEP 3



STEP 4

STEP 3



Please check if you have plugged in the EK-ATX Bridging Plug and EK-Cable Pump Testing Adapter correctly. Refer to the chapter **Recommended Filling and Leak-Testing Procedure**.

Turn the power supply on for a brief moment to check if only the pump is running.

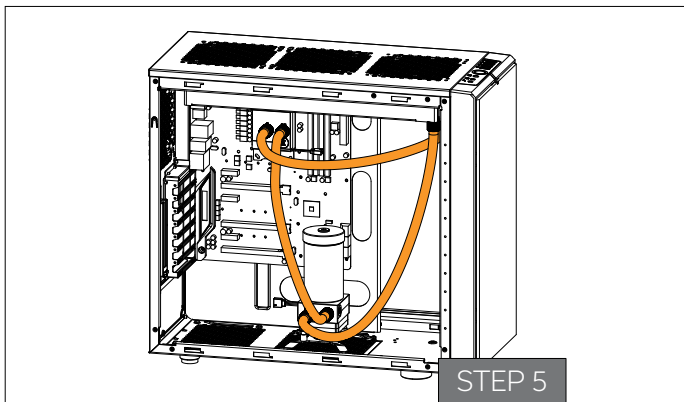
STEP 4

When you turn on the power supply, the coolant should be pushed from the reservoir toward other water cooling components. Therefore, you have to fill the coolant continuously while the pump is running.



Alternatively, you can cycle the power supply by turning it ON and OFF every few seconds to speed up the air bleeding process.

When the coolant level becomes steady, fill the reservoir until the coolant level is about 2cm below the edge. Screw the reservoir top cover back in a clockwise direction.



STEP 5

STEP 5

Tilt your PC chassis in different directions to remove any air that might have remained trapped inside the radiator. You may need to add more coolant afterward.

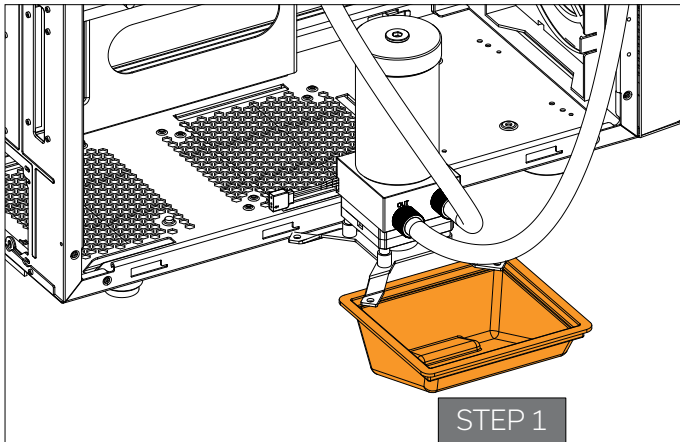
STEP 6 24 HOUR LEAK TEST



It is best practice to run your pump for at least 24 hours to ensure your system is leak-free. Once the 24-hour leak test is completed without signs of leaking fluid, you are free to finish your build.

You will not need the ATX Bridging Plug cable anymore. Connect all the necessary cables to the motherboard, graphics card, and expansion drives.

DRAINING THE LOOP



STEP 1



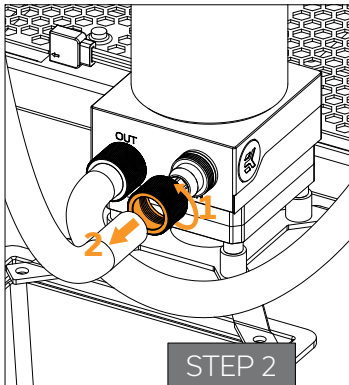
Before disassembling the water cooling loop, it is mandatory to turn off your PC and pull the power cord from the socket. Prepare paper towels to stack them over the hardware.

Unscrew the four (4) M4 nuts that are securing the Pump Reservoir Bracket to the PC chassis. Slowly pull the pump-reservoir unit along with the bracket outside of the case. Do not pull the tubing off the fittings at this stage.

Take a container and put it under the pump-reservoir unit.

STEP 2

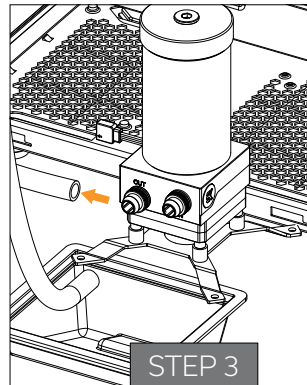
Unscrew the fitting ring from the outlet port of the pump-reservoir unit. Rotate the ring in the counter-clockwise direction. Gently pull the tube off the fitting and direct it into the container. Let the coolant flow out.



STEP 3

Disconnect the other tube – the one connected to the pump-reservoir unit's inlet port. Keep one tube directed to the container and blow into the other one to drain the system additionally.

Thoroughly drain the pump-reservoir unit. You can tilt it in multiple directions or even remove the top cap and pour the coolant out of the reservoir.



Keep the disconnected tube ends over the paper towel to prevent the coolant spillage. You should dry the tubes and the pump-reservoir to keep the hardware safe.

SYSTEM EXPANSION POSSIBILITIES

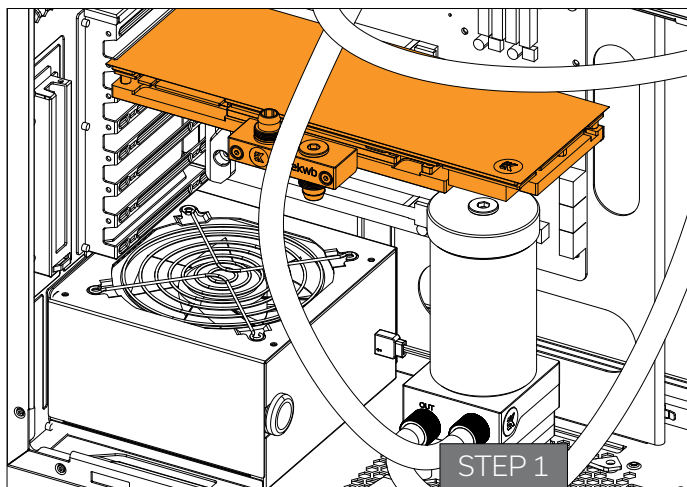
The best part of having a custom water cooling loop is that the system can be expanded, and its cooling capacity extended almost without limitations.



For maximum performance, the rule of thumb is to use at least one 120mm radiator (section) per each water-cooled component plus one additional radiator.

For example, if you are liquid cooling a CPU and a single high-performance graphics card, it is recommended you use at least one 240mm (or 2 x 120mm) radiator for adequate performance. But ideally, you should get at least a 360mm (or 3 x 120mm) radiator for the best possible performance. Motherboard and memory water blocks usually have lower power output; therefore, those are not included in this equation.

In this manual, we will explain how to expand the loop with an additional GPU full-cover water block. You can also expand the loop with an extra radiator, reservoir, motherboard monoblock, etc.



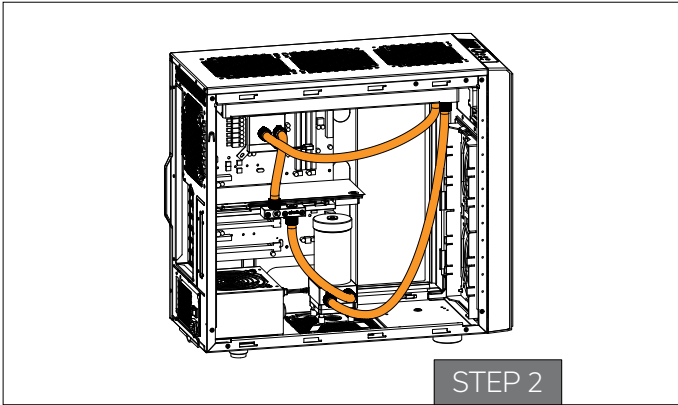
STEP 1



If already filled, drain your water cooling loop according to the instructions in the chapter **Draining the Loop**.

Install the unit with which you are expanding the system according to its installation manual. When positioning it in the loop, pay attention that water blocks must receive the coldest coolant possible.

Carefully determine the optimal tube routing and install compatible fittings (10/13mm), and optionally the plugs.



STEP 2

Measure the length of the tube that will connect the CPU to the GPU water block, and the GPU water block to the pump-reservoir unit. You can use the EK-Loop Soft Tube Cutter or a pair of scissors to cut the tube.



You may also need additional tubing to connect the water block.

Attach the tube to both fitting barbs until it sits firmly. Secure the fitting compression ring to make the assembly is complete.

Check again that all tubing is secured with compression fittings as intended. If it is not, please see chapter: **Connecting the Tubing**.



Fill the system by following the Steps from the chapter: **Filling the System for the First Time**.

MAINTENANCE

In order to obtain the best performance across the entire lifespan of the product, it is crucial to follow these maintenance tips.

1. DUST REMOVAL

It is mandatory to clean the dust **every 2-3 months**. EK recommends using a vacuum cleaner or compressed air to blow the dust away. The radiator is usually the dustiest, so pay special attention to it. Do not forget to turn off the computer and unplug the power supply. It is recommended to clean the dust outside.

2. CHECKING THE ELECTRICAL COMPONENTS

Once a year, you should check if the pump and fans are running as they should. They must run silently without any rattling noises and

must react to PWM duty cycle changes. Imperfections may lead to overheating and, ultimately, breakdown.

3. CLEANING THE UNIT

(RELATED TO CHAPTER TROUBLESHOOTING)

Every year the unit should be thoroughly cleaned. You must let all the coolant out (see chapter: **Draining the Loop**). The radiator must be flushed, the pump checked and cleaned. It is also recommended to change the tubing.

4. USING PARTS DESIGNED AND MANUFACTURED BY EK ONLY

It is recommended to **use only genuine EK liquid cooling gear** and add-ons to prevent any performance, compatibility, or warranty issues.

FREQUENTLY ASKED QUESTIONS

Q How many water blocks can you add to the loop?

- A: The EK-Classic Kit D-RGB liquid cooling unit can be upgraded with several additional parts. However, to keep the performance at the optimal level, it is recommended not to upgrade the Kit with more than:
- one (1) GPU water block (EK-Classic Kit D-RGB S/P240)
 - two (2) GPU water blocks (EK-Classic Kit D-RGB S/P360)

Q What flow rates are to be expected with an EK-Classic Kit?

A: This Kit typically operates at about 440L/h. Installing a typical GPU water block usually drops flow rates from 440L/h to about 360L/h. Adding two water blocks would result in flow rates of about 300L/h in the same scenario.

For best performance, it is recommended to run the pump at a 100% duty cycle to maintain the highest flow rates (and thus thermal performance) when running more than one additional water block.

Q Can the Push-Pull Fan configuration be used with EK-Classic Kit D-RGB?

A: Yes, this Kit can accommodate additional fans on the bottom side and therefore work in the push-pull regime. However, the required mounting screws are not enclosed and must be purchased separately. In order to prevent damage to the unit, please use the UNC 6-32 30mm screws with standard 120x120x25mm fans!



The required set of UNC 6-32 x 30mm screws can be purchased through EK Webshop and EK Partner Reseller Network.

Q Is it possible to 'daisy-chain' the enclosed PWM splitter?

A: Yes. The enclosed PWM splitter allows for daisy-chaining of additional PWM splitter cables, such as EK-Cable Y-Splitter 2-Fan PWM (10cm) [EAN: 3831109867860], as long as the total power draw does not exceed 12W (1A on +12VDC) - the limit of KK 254 4-pin fan header on the motherboard.

TROUBLESHOOTING

THE CPU IS OVERHEATING

Exceedingly high CPU temperatures are usually the symptom of a malfunctioning liquid cooling loop, assuming the contact between the CPU heat spreader and water block itself is adequate, and that the water is appropriately cooled within the radiator.

High CPU temperatures can occur in the following scenarios.

1. Malfunctioning or broken-down water pump: The symptoms usually include a rapid spike in temperature when stressing your CPU to the maximum (for example with AIDA64 software). Make sure the pump is plugged into the power connector, and that liquid is indeed flowing through the system. You should feel the pump vibrating beneath your hand. Observe the flow indicator or flow meter readings if present.

2. Malfunctioning or broken-down cooling fans: The symptoms usually include a rapid spike in temperature when stressing your CPU to the maximum. Make sure the cooling fans are plugged into the power connector hub and that the blades are indeed rotating.

3. Kink in the liquid cooling tube: The symptoms are very similar to those described above. Thin-walled tubing may collapse easily under low radius turns or when obstructed by other computer chassis elements, such as side panel doors. Check the tubing for any signs of kinks that could restrict the flow. Usually, this will not be the case when using original tubing.

4. Clogged microchannels in the water block: Microchannels get clogged easily with various dirt particles and impurities, especially with plasticizer powder leached from the tubing. The symptoms usually include a rapid spike in temperature when stressing your CPU to the maximum, and flow rates that are very low. Visually inspect the water block internals for any buildup or contamination and clean the system if necessary. In case you have the water block with a translucent acrylic top, this inspection can be done without disassembling the system.

5. Thermal Interface Material not/improperly applied: The lack of - or even too much TIM (Thermal Interface Material/thermal paste/thermal grease) - may result in the overheating of your CPU. If that is the case, please refer to the chapter **Installing the Water Block**.

6. Cooling liquid (coolant) is freezing: Running the system in a subzero environment may lead to liquid freezing. The symptoms include an initial rapid spike in the temperatures when stressing your CPU, followed by a substantial temperature drop after the liquid partially thaws. Always make sure the system is operating in an environment where ambient (room) temperature doesn't drop below 5°C.

Another culprit for exceedingly high CPU temperatures could be a partially or entirely defective CPU. Some CPUs run at higher temperatures than others, and overheating can occur in the following scenario.

Poor thermal contact within the CPU itself: Some CPUs (such as Intel LGA 1151 socket based Skylake, Intel LGA 1150 based Haswell and older, and socket LGA 1155 based Ivy Bridge) are notorious for their poor thermal contact between the CPU die and the heat spreader (IHS) due to the use of poor TIM. This is the problem of the processor itself, not the CPU liquid cooling unit. These CPUs are known to get very hot (80°C +), even on factory-set frequencies. For the best performance, it is usually recommended to replace the TIM between the die and the IHS or even run the processor de-lidded. Both options require hazardous IHS removal that will void the processor's warranty but can lead to a temperature decrease of 30°C or more.



EK deems der8auer Delid Die Mate tool safe to be used by experts for de-lidding the Intel Skylake CPUs.



Upon exhausting all options, please consult EK knowledge base at <http://support.ekwb.com>. You can also ask a question through EK Support ticketing system if needed.

THE COOLER IS TOO LOUD

The EK-Classic Kit D-RGB unit is equipped with fast-spinning EK-Vardar high-static pressure PWM controlled fans that run at very high speeds if the UEFI/BIOS is not set to control the fan speed. **Make sure to set control mode to PWM** (instead of DC). On the majority of motherboards, this feature can be found in the 'Hardware Monitoring' section of the UEFI/BIOS. Please consult your motherboard manual on how to change the fan speed.



Make sure the 4-pin PWM Fan connector is indeed plugged in into the appropriate FAN header on your motherboard. Please consult chapter **Electrical Connections**.

CLEANING GUIDE



Liquid cooling parts can be disassembled for cleaning purposes on an occasional basis. Your warranty will not be void upon disassembly of the water block, but you will lose the EK Leak-Free Guarantee that comes with a factory-tested component. A soft toothbrush is an excellent cleaning tool!

1. CLEANING NICKEL-PLATED COPPER

When cleaning nickel-plated copper, it is forbidden to use any aggressive chemicals (vinegar included) and rough materials since those could damage the plating and thus void the warranty. Also, note that due to the presence of dye additives and other chemicals, the nickel layer might become discolored/stained over time. However, the staining is usually reversible with a simple flush and rinse.

Cleaning the nickel-plated copper should consist of the following:

- rinse the nickel-plated copper under warm water;
- clean the surface using the wet nonabrasive cloth and once again rinse with clean water;
- if necessary, polish the hardened deposits (such as algae or dirt).

EK recommends the use of automotive soft nonabrasive metal polish cremes. After you finish using other cleaning methods, give the nickel plating a good polish with a nonabrasive metal or chrome polish. Apply a small amount of polish to a cloth or surface of the nickel. Wipe the entire surface of the nickel with the polish, using small circular motions, until it looks shiny and clean. Use another clean cloth to remove the remains of the polishing paste from the surface. Always rinse the surface with distilled water when you are done polishing it.

2. CLEANING ACRYLIC (PLEXI) TOPS

Please, do not use anything but warm, soapy water and a toothbrush to clean the acrylic (plexi) water block tops and reservoir tubes. Using aggressive chemicals will void the warranty.



Acrylic will fail prematurely if subjected to even the smallest amounts of alcohol, acetone, or other aggressive chemicals.



Algae or dirt deposits may be rubbed out using a soft cloth in combination with warm, soapy water. Rinse with distilled water after cleaning.

PREVENTIVE STEPS

Using corrosion-inhibiting coolants such as EK-CryoFuel or other market-proven coolants is highly recommended for any water cooling loop, especially those with nickel-plated parts. Since EK-CryoFuel is also a biocide, it will prevent algae growth and dirt deposition on all wet surfaces.

The use of specially engineered coolants that contain corrosion, scale, and biological inhibitors is mandatory to prevent damage to your nickel-plated water cooling gear! We are offering a selection of such products in the EK webshop, Coolants section.

SUPPORT AND SERVICE

In case you need assistance, please contact:

<http://support.ekwb.com/>

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