

MCW462-UT Water-block

Installation Guide for AMD[®] processors

Parts list

Parts	AMD	INTEL	QTY	PARTS	AMD	INTEL	QTY
Water-block, with TEC & gaskets assy.	X		1	Nylon 6-32 Hex nuts	Common to both		4
6-32 x 2" screws (for WB)	Common to both		4	Black fiber washers	X		4
Standoffs	Common to both		4	Thermal grease	Common to both		1
Springs	Common to both		4	Tube insert	Common to both		2
.230x.096 Nylon spacers	X		4	Pentium 4 brackets	X		2
.220x.046 Nylon spacers	X		4	4-40 socket screws	X		4
AMD motherboard gasket	X		1				

Preamble:

This product is intended for expert users only. Please consult with a qualified technician for installation. Improper installation may result in damage to your components. **Swiftech 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.swiftnets.com for updates.

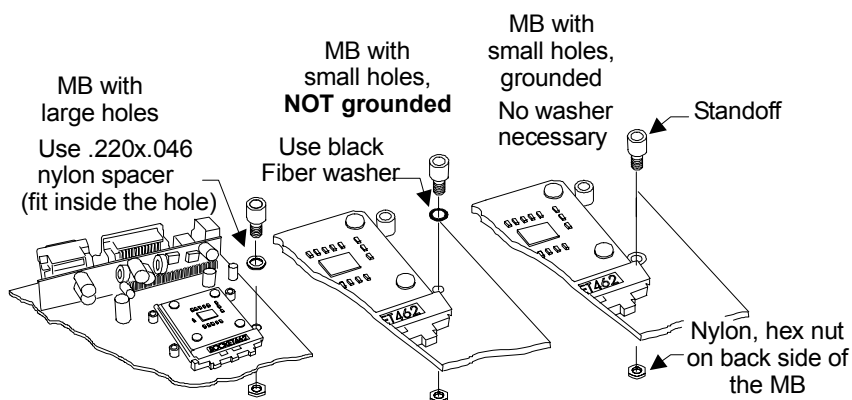
I. Preparing the motherboard

You must **uninstall** your MB prior to installing the MCW462-UT water-block.

• Install standoffs in MB

Determine which standoff washers to use, depending on your MB mounting holes:

- Large holes .230" (5.8mm) diameter : use .220x.046 Nylon spacers. The washers fit inside the MB hole.
- Small **grounded** holes .150" (3.8mm) diameter: you can recognize grounding by a silver ring around the holes; no washers needed nor necessary.
- Small holes, **NOT grounded** (bare circuit board): you **must** use black fiber washers, or damage to the MB may occur.



Install standoff in each one of the four holes surrounding the socket. Keep the standoff & washer centered over the MB holes, and secure with nylon hex nuts on backside of the MB. If you are going to assemble/disassemble the heat sink frequently, we recommend finishing the installation by putting a drop of "Crazy Glue " at the junction between standoff & MB, and between nylon hex nut & MB. This will lock the standoff onto the MB, and further prevent it from spinning loose during frequent assembly and disassembly operations.

Figure 1

- **Fill-up the socket with dielectric grease.** Do not confuse dielectric grease with thermal compound. Dielectric grease is used to prevent condensation where parts are exposed to cold. We recommend Lubrex (available on our web site under the accessories section), or any similar product, with good dielectric properties. Fill-up the socket center cavity (grease is to be level with the upper surface of the socket), and coat the socket pinholes with grease. Spread the grease with your finger so that it will penetrate inside the pinholes.
- **Insert the processor** into the socket. Since you have grease inside the socket, some hydraulic pressure lift may occur: for this reason, make sure that the processor sits perfectly flat, and is inserted all the way into the socket. Then, lightly coat the processor core with high quality thermal compound. **Only a paper-thin coat is necessary.** It should be applied using preferably a razor blade, or a credit card, held between thumb and index at a 45-degree angle. It is critical to ascertain that the entire core is covered with a uniform coat of thermal compound. Thermal performance will dramatically decrease if any portion of the core is not covered by thermal compound. We recommend Arctic Silver or similar high-end compound for superior thermal conductivity.

- Remove the peel-off paper back of the motherboard gasket, and install it as shown Figure 2. The sticky side should be towards the motherboard.
- To further prevent condensation to occur behind the motherboard, a neoprene sticker is provided with your water-block accessories. Apply it to the back of the socket.
- **Install the MB** inside the case.

II. Water-block installation

- **IMPORTANT WARNING:** the solder joints to the wires of the thermoelectric module are **extremely fragile**. Bending the wires at their root will systematically break the solder joint, and the thermoelectric module cannot be repaired. For this reason, we route the wires inside the brackets, which are normally used to install Intel processors. Therefore, it is preferable to keep the brackets installed if space allows it, even with AMD motherboards. If you must remove the brackets due to space constraints, make sure to firmly maintain the wires at their root when you bend them. Swiftech will not honor the warranty for broken wires.
- **The case should be laying flat on a table.**
- **Insert the tubing into your MCW462-UT water-block prior to installing it onto the CPU.** The reason is that inserting the tubes into the fittings requires some strength, and it is preferable not to do this while the block is sitting on the CPU. If you are going to use soft vinyl tubing (transparent tubing), it is **IMPERATIVE** to use the two plastic inserts provided with your kit.
- **Orientation of the block is important for bleeding purposes.** Please look-up the critical bleeding instructions paragraph below prior to installing the block on the CPU.
- **Install the MCW462-UT block on the CPU.** The copper base of the MCW462-U features a large step for clearance with the socket cam box. Make sure to respect this orientation. Keep the heat sink mounting holes lined up with the standoffs. Avoid twisting the block to prevent smearing the thermal compound.
- **Tip!** To have a perfect lineup every time, insert two of the screws *without springs* at opposite corners of the block (diagonal), and use them as guides. The screw will protrude from the bottom of the assembly, and allow you to position the block exactly where it is supposed to sit!
- **Insert the next two screw/spring/nylon spacer assemblies,** and tighten lightly. Remove the two bare screws you used as guides, and reinstall them with their spring and nylon spacer. Tighten lightly. Now, gradually tighten all four screws in a crisscross pattern until you feel that they reach the bottom of the standoff. A "finger-tight" lock is sufficient. Over tightening may result in stripping the nylon hex nut. Conversely, adjustments such as tightening the screws only partially are **strictly prohibited**. Such attempts will result in improper contact between the CPU core and the heat sink, and result in CPU overheating.
- **Due to wide variations in gasket thickness tolerances,** we recommend that you *uninstall the water-block once, following the initial assembly just to verify that you have good contact between the cold plate and the CPU. Inspect the grease imprint that the CPU left on the copper plate: it should be perfectly even!*

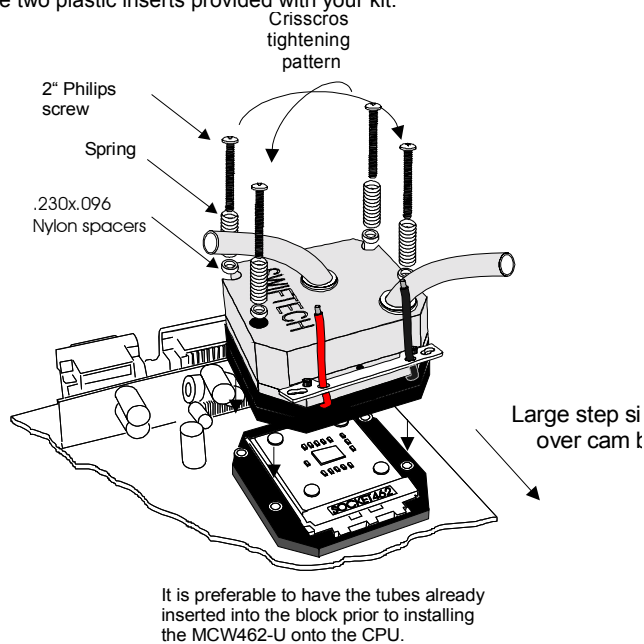


Figure 2

CRITICAL BLEEDING INSTRUCTIONS:

The following applies mostly to dual processor installations.

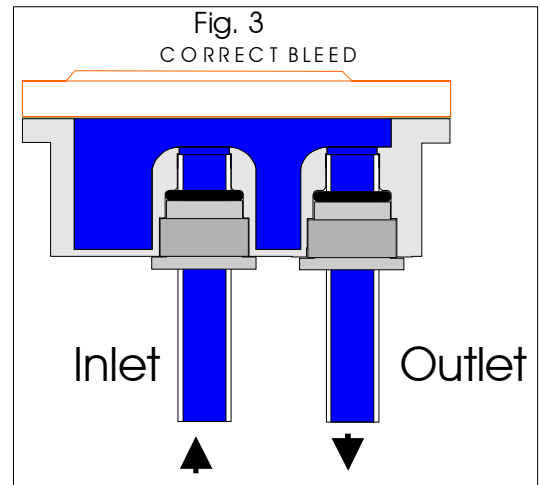
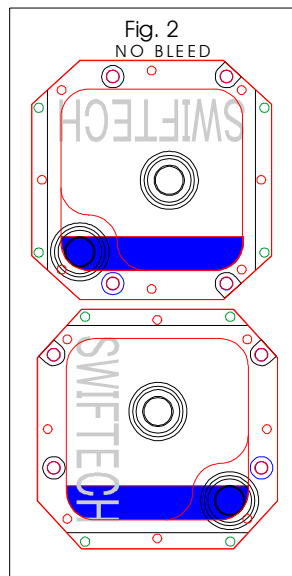
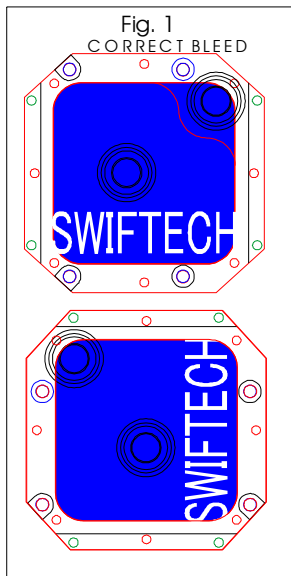
Depending on the orientation of the socket, it is critical to observe the position in which your water-block is oriented for bleeding purposes.

Assuming that the computer is standing up, and that the water-block is facing you as shown in Fig.1 and Fig 2. on page 3:

- Fig. 1 shows the two positions in which the MCW462-UT will bleed correctly, and
- Fig. 2 shows the two positions in which the MCW462-UT will **not** bleed.

Two solutions are available to bleed the water-block correctly:

1. Bleed the water-block prior to installing on the CPU. Simply rotate the block in the position shown in Fig. 1.
2. If you prefer to install the block first, then bleeding should be done with the computer laying down flat so that the Swiftech logo is facing downwards, as shown in Fig. 3



III. Thermoelectric connections

- Wiring extension & connectors: due to the high current requirements of the thermoelectric module, standard Molex type 4 pin power connectors are prohibited.
- You are likely to need extension wiring to connect the module to your power supply. **Use 12 or 14 GA. stranded wire only.** Connect the extension to the existing wires with **terminal splices**, or solder the butts, and insulate with shrink tubing.
- Power supply requirements: the thermoelectric module is optimized to run at 12 VDC, but can be run up to 15 volts DC. There is no advantage to run the module at the highest voltage, as performance decreases. Current requirement is 20~24 amps. A good quality **dedicated** switching power supply is necessary.

IV. Temperature troubleshooting

IMPORTANT NOTICE: AMD compatible motherboards measure the CPU temperature via a thermal probe located inside the socket. The probe only measures the air temperature underneath the CPU. Motherboard manufacturers use mathematic formulas to extrapolate the actual CPU temperature. Such formulas use correction factors to account for airflow around the socket generated by a conventional heatsink fan cooler. In a liquid cooling environment, **there is no airflow** at all around the socket, since there is no fan attached to the water-block. This leads to erroneous readings from the motherboard thermal probe, which reports much higher CPU temperatures than actual. Our tests evidence up to 20°C difference between the temperature measured under the socket, and the temperature measured at the cold plate.

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