MCW478-UT Water-block
Installation Guide for Intel® processors

Parts list

Parts	QTY	PARTS	QTY
Water-block, with TEC & gaskets assy.	1	Nylon 6-32 Hex nuts	4
6-32 x 2" screws (for WB)	4	Tube insert	2
Standoffs	4	Pentium 4 brackets	2
Springs	4	4-40 socket screws	4
.230x.096 Nylon spacers	4	Arctic Alumina thermal compound	1
Intel P4 motherboard gasket	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
- **Install standoffs in MB**

Figure 1

You **must uninstall** your MB prior to installing the MCW478-UT water-block.
Remove the stock heatsink support base (the black plastic frame that clips down to your motherboard). This will reveal the four mounting holes we use to install our standoffs. Install a standoff in each one of the holes. Keep the standoff 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 lose during frequent assembly and disassembly operations.
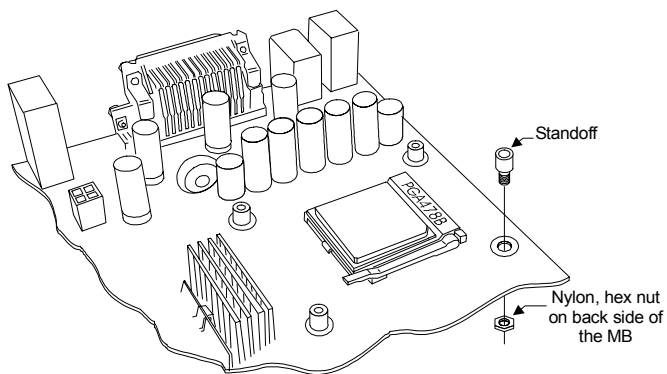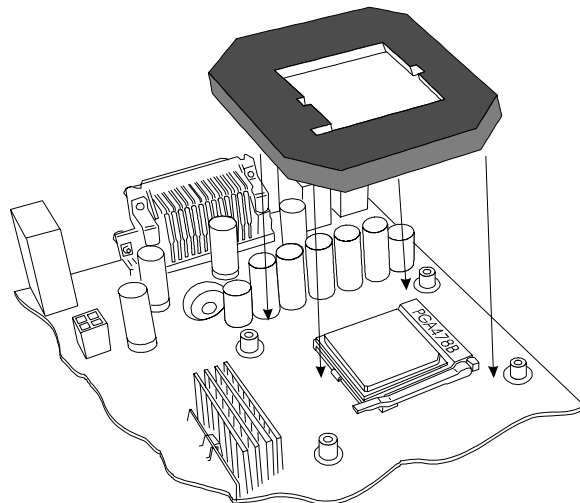
- **Fill-up the socket with dielectric grease.** Do not confuse dielectric grease with thermal compound. Dielectric grease is used to prevent condensation where parts are exposed to cold. We recommend Luberex (available on our web site under the accessories section), or any similar product, with good 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.
- Remove the peel-off paper back from the motherboard gasket, and install it as shown Figure 2. The sticky side should be towards the motherboard.
- **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, 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.

Figure 2

Information subject to change without notice

- 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 motherboard, behind the processor.
- **Re-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 holes of the brackets that are normally used to mount socket 423 or Xeon processors. If you need to use these mounting holes for your Xeon or socket 423 Pentium 4, you should first disassemble the brackets, very carefully re-route the wires in the socket 478 mounting holes, then re-install the brackets. *Swiftech will not honor the warranty for broken wires.*
- **It is preferable to insert the tubing into your MCW478-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** that you 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 on page 3 prior to installing the block onto the CPU.**
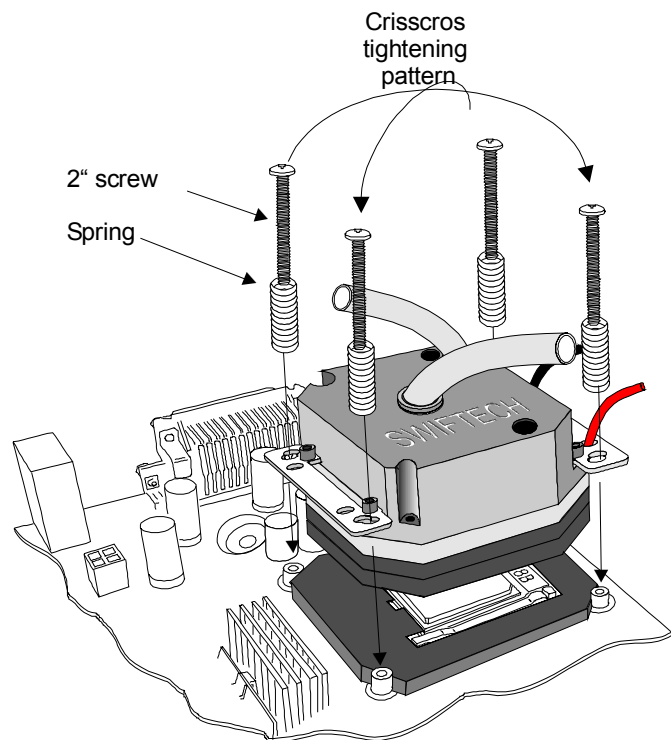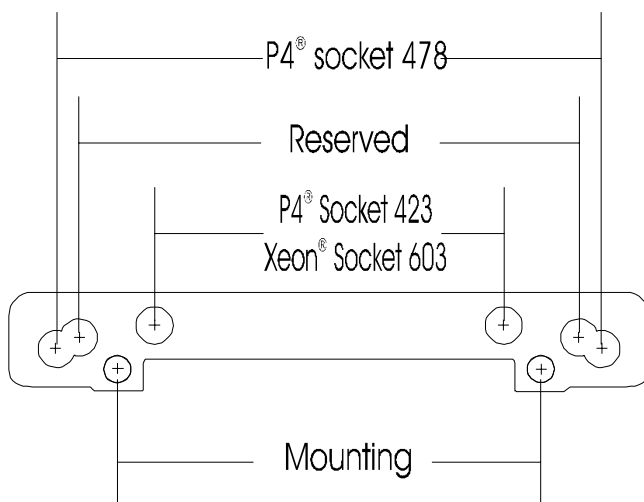
Crisscros tightening pattern

2" screw

Spring

Figure 3

- **Identify the mounting holes on the bracket for your particular processor, as shown in the schematic below:**

P4® socket 478

Reserved

P4® Socket 423

Xeon® Socket 603

Mounting

Install the water-bl;ock assembly onto your processor, as shown on figure 3. Gradually tighten the 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 suggest 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!

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. below, Fig. 1 shows the two positions in which the MCW478-UT will bleed correctly, and Fig. 2 shows the two positions in which the MCW478-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

Fig. 1
CORRECT BLEED

Fig. 2
NO BLEED

Fig. 3
CORRECT BLEED

Inlet   Outlet
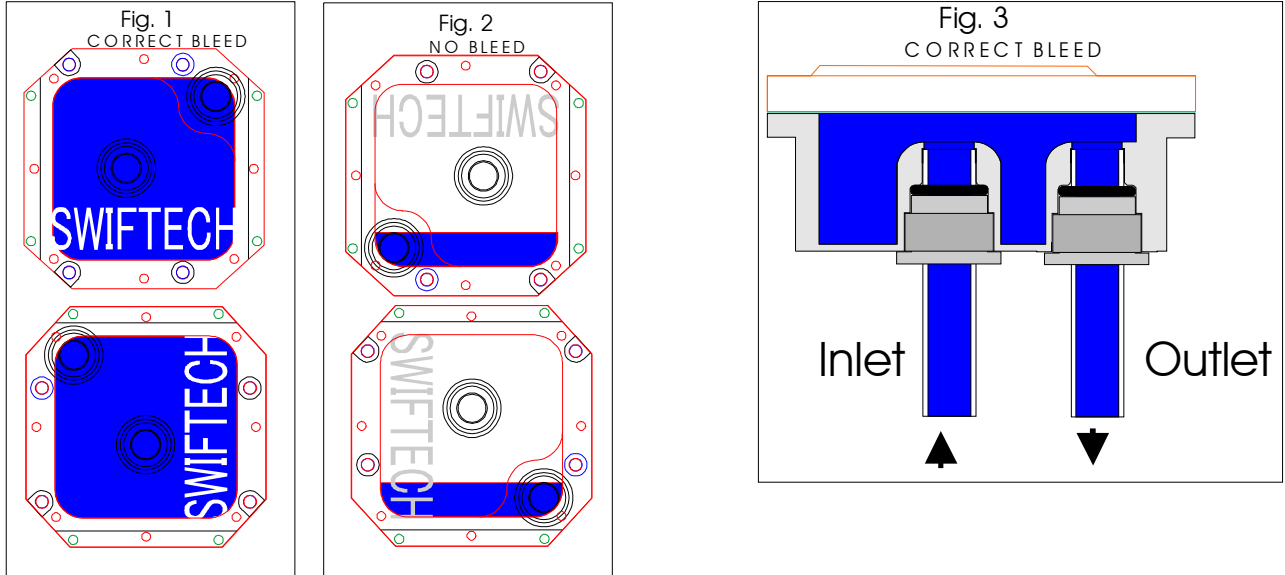
III. Thermoelectric connections

- 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.

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