MCW6500-T 775™

THERMOELECTRIC WATER-BLOCK   Installation Guide for Intel® Core 2 Processors

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.swiftech.com for updates.

| ITEM NO.	PART NUMBER	DESCRIPTION	QTY
		MCW6500-T 775 Bill of Materials Table	
1	MCW6500-T 775	Thermoelectric water-block assembly	1
2	MCW6500-MBGSKT	soft neo sponge 1/4" thick - peel-off	2
3	Motherboard	Socket 775	1
4	MCW6500-775-HARDWARE	Assembly composed of parts below	4
	6-32-Acorn-nut	6-32 Acorn nut	1
4.2	SPRING6	Spring	1
4.3	6-32-nut	6-32 nut	1
4.4	LOCK-WASHER#6	Lock washer	1
4.5	FW140X250X0215FB BLK	black fiber washer	2
4.6	6-32x2.0-philips	2" Philips screw	1
4.7	12SWS0444	Nylon shoulder washer	1
5	MCW6500-MBGSKT	Foam insert from one of the motherboard gaskets	1
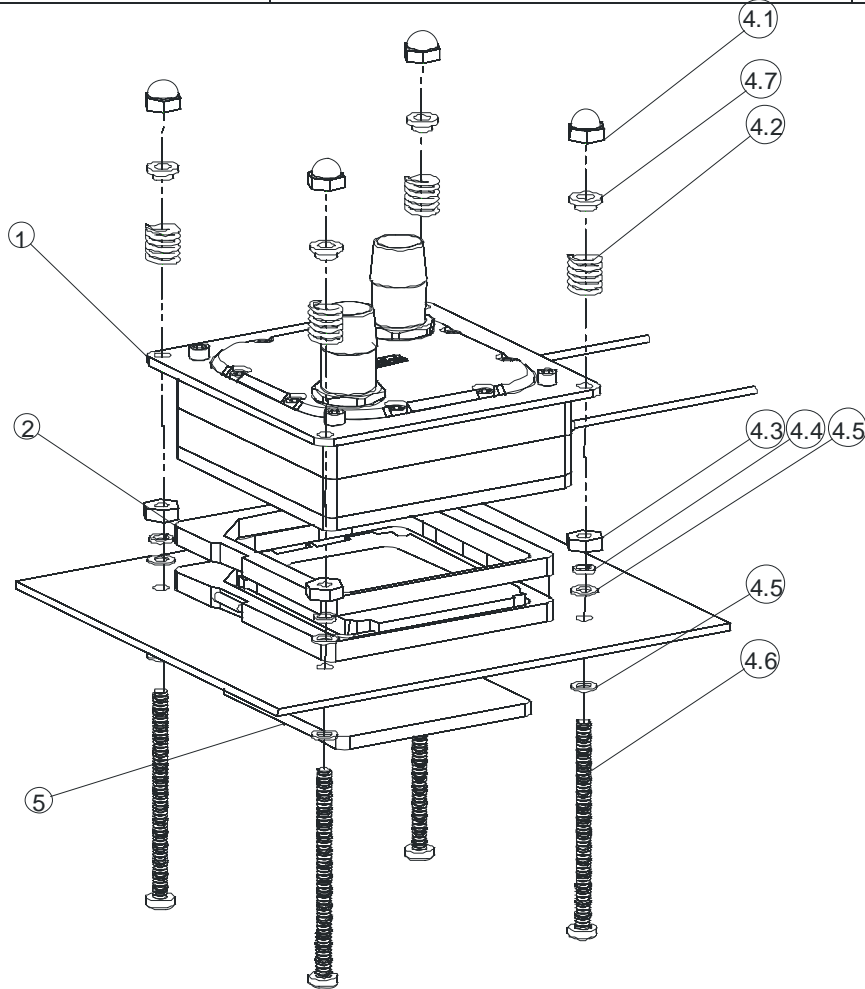
Figure 1

1. Condensation control measures

The following instructions are crucial to long lasting & reliable operations. Do not skip these steps, and do not take shortcuts. Permanent damage to your components is likely to occur otherwise.

a. Motherboard preparation

i. Conformal coating application: This step will positively ensure that any micro condensation occurring on small surface mount components will not corrode or short-circuit the motherboard.

Procure a spray can of silicone conformal coating. We use M.G. chemicals Acrylic Conformal Coating, part # 419B-340g. The product can be purchased at our online store here http://www.swiftnets.com/store/category.asp?CatID=11 - Equivalent products can also be used, but sprays are recommended for their ease of use.

Figure 2 - Back of the motherboard:

Figure 3 - Front of the motherboard

Spray the back of the motherboard, concentrating on the area immediately behind the CPU. Also spray all the way down, in a vertical path directly under the CPU area. By doing so, you ensure that if a drop of moisture was to roll down the motherboard, it wouldn't cause any short. Then allow time for the coating to dry, per manufacturer specs.

Use masking tape to protect the CPU socket, and any connector sockets in the immediate vicinity of the processor. A double layer of tape is recommended for all sockets, as the spray may soak a single layer of tape and contaminate the contacts.

Spray the area immediately surrounding the socket. It is not recommended to spray further than the area circled in the above picture. Allow the coating to be "dry to the touch" (20 minutes approximately), and remove the masking tape. Then let the board dry completely per manufacturer specs.

b. CPU preparation & water-block installation

Dielectric grease application: The following steps will ensure that condensation does not form inside of the CPU socket**.**
Procure a tube of dielectric grease. We use Luberex grease, available on our web site here:
http://www.swiftech.com/store/category.asp?CatID=11

Step 1

Step 2

Step 3

- Install the first motherboard gasket, being careful to tuck it gently between the socket and close-by capacitors (a razorblade is a good tool for that)
- Squirt a generous amount of dielectric grease inside of the socket center section.

- Place your CPU into the socket, and gently push it down to pack the grease inside the center section then close the socket lever
- Install the second motherboard gasket over the first one being careful to align them with each other.
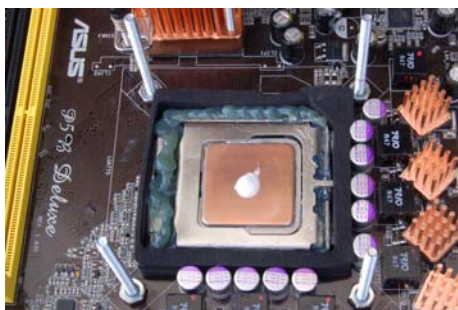
- Fill-up the empty spaces with grease, this will avoid condensation to form and accumulate over time.
Note: yes this pic shows a lapped CPU☺

Step 4

Step 5

Step 6
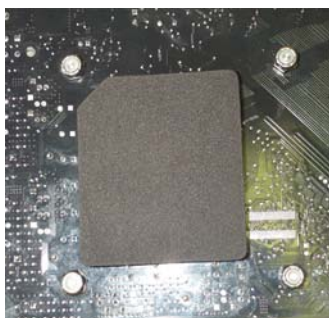
- Wipe off the back of the motherboard clean, and stick the neoprene gasket directly behind the CPU (use the center section of a motherboard gasket).

- Install the 4 posts (item 4 figure 1) into the motherboard mounting holes: 6-32 screw, black fiber washer, screw thru motherboard, then black fiber washer, lock washer, and 6-32 nut.
- Make sure to fasten the 6-32 nut firmly, preferably using a 5/16 socket.
- Once done, squirt some thermal grease (the equivalent of a green pea) at the center of the CPU. You are ready to install the MCW6500-T

- Push the water-block down until it mates with the CPU.
- Install spring, shoulder washer and blind nut onto each post.
- Fasten each nut in a cross pattern. Finger tight is sufficient.

The water-block is now installed

2. Electrical Installation

IMPORTANT WARNING: Solder joints of the wires to the thermoelectric module are **extremely fragile**. Bending the wires at their root will break the solder joint, with no possible repair. *Swiftech will not honor the warranty for broken wires*.

a. Most common installation
As shipped the MCW6500-T is configured with a 4-pin Molex connector that you can plug directly into your power supply. A high-end PSU is a must. We have validated the Enermax Galaxy 1KW. Make sure that you connect your TEC to a dedicated line (with no other devices on that line), and make sure that your power supply can deliver 18amps continuous power at 12 volts.

b. Recommended installation for coldest temps: Connecting to a dedicated auxiliary power supply

❑ The minimum requirements for a dedicated power supply are 25A @ +12V.
❑ Your TEC module has been measured to draw 18 amps at 12 volts. We recommend using the "Meanwell S320-12" auxiliary power supply, which is adjustable at up to 13.8Volts, and will boost the cooling performance. The S320-12 is available on our website in the Thermoelectric accessories section.
❑ You will need to cut and strip the wires of your TEC module in order to connect them to the terminals of the power supply
❑ Connect the red wire from the TEC module to the +V terminal, and the black wire to the –V terminal as shown in figure 4 below.
❑ A complete installation guide for the S320-12 power supply kit is available here: http://www.swiftech.com/products/installationguide_S320-12kit.pdf - This kit includes a wiring harness and a relay switch to synchronize the power to the S320-12 with your computer, which is a *highly recommended (read critical recommendations)*

Figure 4

CRITICAL RECOMMENDATIONS MUST READ!!!

Never run a thermoelectric module without coolant flowing in the circuit. This will result in catastrophic failure of the cooling element, and may cause any/all of the following:
- *Tubing to burst open due to coolant overheating*
- *Permanent failure of the Peltier module*
- *Permanent damage to the CPU and/or motherboard due to excess heat*

It is highly recommended to dedicate the auxiliary power supply for the thermoelectric module to the computer power-supply, so that the Peltier module will never run by itself without cooling fluid.

For this purpose, we recommend using the following accessory, available in our online shopping cart: PRS Kit II. *Includes: Relay Switch Circuit board AC socket, S/S socket cover, power cord. This relay switch is rated for 110 to 220~240 volts and up to 50A inrush current. It is suitable for use with the S-320-12 Meanwell power supply recommended above.*

If you run your computer unattended for extended periods of time, it is also a good practice to setup an alarm temperature, which will shut down the computer in case the CPU overheats. Such alarm/shut down process should be tested as functional.

WARNING! Wires from the thermoelectric module do get hot (this is normal). Make sure that the wires do not touch devices that are heat sensitive, such as vinyl tubes for example. Heat from the wires may cause the vinyl to deform, and/or to burst.

4. Hydraulic Installation

- ❑ For your convenience, the MCW6500-T 775 is shipped with pre-installed ½" barb (1/4" BSPP thread)
- ❑ Type of Coolant:
  - ▪ For best performance, use 95% distilled water, and 5% Swiftech brand "HydrX" corrosion inhibitor (available here: http://www.swiftnets.com/store/category.asp?CatID=2, under the "accessories" section).
  - ▪ You should preferably use distilled water together with a corrosion and algae inhibitor with your water-block. Regular automotive anti-freeze is acceptable. Automotive manufacturers recommend that not less than 25% is used.
  - ▪ The housing of your MCW6500-T is plated with two different kinds of metal: a first coat of nickel, and a second coat of zinc-cobalt. This is a military spec plating that provides the highest possible resistance to corrosion. Blunt objects can however damage the plating, leaving the aluminum bare and subject to corrosion. If you disassemble your water-block for some reason, make sure that you do not scratch the inside of the housing which is contact with coolant. Finally, note that the black color is simply a die, and can easily be removed with sanding media. Removal of the color does not affect the protection afforded by the plating. The housing plating is covered by a 5 year warranty.

5. **Final inspection**

Once the installation is completed, **it is always a good idea to test the circuit for leaks, prior to powering up the computer**. Troubleshooting help is available on our web site at www.swiftech.com, or by calling customer support toll-free from the US at 888-857-9437, or 562-595-8009

IMPORTANT DISCLOSURES
While all efforts have been made to provide the most comprehensive tutorial possible, Swiftech assumes no liability expressed or implied for any damage(s) occurring to your components as a result of using Swiftech cooling products, either due to mistake or omission on our part in the above instructions, or due to failure or defect in the Swiftech cooling products. **WARRANTY** Our products are guaranteed for 12 months from the date of delivery to the final user against defects in materials or workmanship. During this period, they will be repaired or have parts replaced provided that: (I) the product is returned to the agent from which it was purchased; (II) the product has been purchased by the end user and not used for hire purposes; (III) the product has not been **misused (*)**, handled carelessly, or other than in accordance with any instructions provided with respect to its use. This guarantee does not confer rights other than those expressly set out above and does not cover any claims for consequential loss or damage. This guarantee is offered as an extra benefit and does not affect your statutory rights as a consumer.