



H2O-80™

LIQUID COOLING KITS

TUTORIAL & INSTALLATION GUIDE

These instructions are updated on a regular basis. Please visit our web site at
http://www.swiftnets.com/Products/installation_guide_h2o-80.pdf

Packing List
Check-marked for applicable model and content

Intel® Pentium® 3 Socket 370, AMD® Duron®, Athlon®, MP, XP socket 462		Intel® Xeon™ Processor, socket 603/604	
Intel® Pentium® 4 socket 478		Bare kit without water-block	
AMD® Athlon® 64 & Opteron®			

Qty	Item	Incl	Qty	Item	Incl.
1	MCW6000-A™ CPU water-block for AMD® K7 processors (Duron®, Athlon® MP and XP)		1	40" length Coolsleeves™ clear coils	✓
1	MCW6000-P™ CPU water-block for Intel® Pentium® 4 processors		1	FBK525™ assy. incl. (1) ½" fill & bleed kit, (2) 7/32-5/8" worm drive hose clamps	✓
1	MCW-6000PX™ CPU water-block for Intel® Xeon™ processors		2	2 ½ ft long ½" OD vinyl tubes for fill and bleed operations	✓
1	MCW6000-64™ CPU water-block for AMD® K8 processors (Athlon® 64 and Opteron)		1	MCP650™ 12 Volts DC industrial pump with retention screws	✓
1	MCR80-F2™ radiator assy. incl. (1) Radiator, (1) 80x80x25mm fan, (1) fan guard, (4) #6 x 1 ¼" screws, (4) #6 x 3/8" screws, (2) 7/32-5/8" quick-connect fittings	✓	7	Feet ½" OD high quality vinyl tubing	✓
1	1ft of ½" tube ID thick wall Clearflex tubing, (2) ½" to 3/8" barb nylon adapters	✓	1	2 oz bottle HydrX™ specially formulated coolant	✓
1	MCW50 VGA cooler		1	MCW20-R chipset cooler	

Table of contents

I.	TUBE ROUTING	6
II.	INSTALLATION OF THE COOLING COMPONENTS.....	7
1.	FBK525 FILL & BLEED INSTALLATION.....	7
3.	CUTTING TUBE LENGTHS, AND INSTALLING THE TUBING	8
4.	COOLERS FINAL INSTALLATION	8
2.	MCR80-F2 RADIATOR INSTALLATION	7
5.	PUMP INSTALLATION & CONNECTION TO THE REST OF THE CIRCUIT	8
III.	FILL AND BLEED OPERATIONS.....	11
1.	PREPARING THE COOLANT.....	11
2.	CONNECTING THE FILL-AND-BLEED TUBES.....	11
3.	PRIMING THE CIRCUIT.....	11
4.	BLEEDING THE CIRCUIT	12
5.	FINAL STEPS.....	13
IV.	DRAINING THE SYSTEM	13
V.	PERIODIC MAINTENANCE	13
VI.	AVAILABLE ACCESSORIES	14
VII.	APPENDIX: INDIVIDUAL COMPONENT INSTALLATION GUIDES	15
	MCR80-F2™ RADIATOR.....	16
1.	QUICK-CONNECT FITTINGS INSTALLATION AND USE:.....	16
2.	RADIATOR SPECIFICATIONS:	17
3.	FANS SPECIFICATIONS:.....	17
	MCP650™ PUMP	18
1.	GENERAL USE	18
2.	PHYSICAL INSTALLATION	18
3.	PUMP OPERATING PRECAUTIONS:	18
4.	PERFORMANCE & SPECIFICATIONS.....	19
5.	PERMANENT INSTALLATION TO THE CHASSIS	19
6.	MCP650 – EXPLODED VIEW	20
	MCW6000-P WATER-BLOCK INSTALLATION GUIDE FOR PENTIUM™ 4 PROCESSORS	21
1.	PREPARING YOUR MOTHERBOARD.....	21
2.	WATER-BLOCK ORIENTATION.....	21
3.	WATER-BLOCK INSTALLATION:	22
4.	CONNECTING THE WATER-BLOCK(S) TO THE COOLING CIRCUIT:.....	22
5.	ATTACHING THE TUBES:	22
6.	ALTERNATE CONNECTIONS:	22
7.	TYPE OF COOLANT:.....	22
8.	FINAL INSPECTION:.....	22
	MCW6000-PX WATER-BLOCK INSTALLATION GUIDE FOR XEON™ PROCESSORS	23
1.	PREPARING YOUR MOTHERBOARD:.....	24
2.	WATER-BLOCK ORIENTATION:.....	24
3.	WATER-BLOCK INSTALLATION:	24
4.	INSTALLATION WITH SPRING LOADED SCREWS:	25
5.	CONNECTING THE WATER-BLOCK(S) TO THE COOLING CIRCUIT:.....	25
6.	ATTACHING THE TUBES:	25
7.	ALTERNATE CONNECTIONS:	25
8.	TYPE OF COOLANT:.....	25
9.	FINAL INSPECTION.....	25
	MCW6000-NX™ WATER-BLOCK INSTALLATION GUIDE FOR XEON™ “NOCONA” (800MHZ FSB) PROCESSORS PARTS LIST	26
1.	PREPARING YOUR MOTHERBOARD.....	27
2.	WATER-BLOCK ORIENTATION.....	27
3.	WATER-BLOCK INSTALLATION.....	27
4.	CONNECTING THE WATER-BLOCK(S) TO THE COOLING CIRCUIT.....	27
5.	ATTACHING THE TUBES	27
6.	ALTERNATE CONNECTIONS	27
7.	TYPE OF COOLANT.....	27
8.	FINAL INSPECTION.....	27
	MCW6000-A WATER-BLOCK INSTALLATION GUIDE FOR AMD™ K7 PROCESSORS.....	28
1.	PREPARING YOUR MOTHERBOARD.....	29
2.	WATER-BLOCK ORIENTATION.....	29
3.	WATER-BLOCK INSTALLATION	29
4.	CONNECTING THE WATER-BLOCK(S) TO THE COOLING CIRCUIT:.....	30
5.	TYPE OF COOLANT:.....	30

6.	FINAL INSPECTION:.....	30
MCW6000-64 WATER-BLOCK INSTALLATION GUIDE FOR AMD® K8 PROCESSORS.....		31
1.	PREPARING YOUR MOTHERBOARD	31
2.	WATER-BLOCK ORIENTATION	32
3.	WATER-BLOCK INSTALLATION	32
4.	RETENTION FRAME ISSUES	32
5.	CONNECTING THE WATER-BLOCK(S) TO THE COOLING CIRCUIT:.....	32
6.	ATTACHING THE TUBES	32
7.	ALTERNATE CONNECTIONS	32
8.	TYPE OF COOLANT.....	32
9.	FINAL INSPECTION.....	32
MCW50™ VGA WATER-BLOCK INSTALLATION GUIDE		33
1.	PREPARING YOUR GRAPHICS CARD	33
2.	INSTALLING THE MCW50™ GPU COOLER.....	33
3.	TYPE OF COOLANT:.....	34
4.	FINAL INSPECTION.....	34
MCW20-R™ CHIPSET WATER-BLOCK INSTALLATION GUIDE FOR INTEL® & AMD® PLATFORMS		35
1.	PREPARATION STEPS COMMON TO BOTH PLATFORMS	35
2.	INSTALLATION FOR INTEL® PLATFORMS	36
3.	INSTALLATION FOR AMD® PLATFORMS.....	37

Preamble

Congratulations on your purchase of a Swiftech liquid cooling system!

This kit has been designed to facilitate the installation of the components with no modifications required to the chassis. It is however intended for advanced users, well versed in installing computer components.

General guidelines

- ❑ Never work with electricity connected to the computer while work is in progress.
- ❑ The fill and bleed kit should always be at the highest point of the cooling circuit (top 5 ¼" tray).
- ❑ While it is possible to install the kit in a chassis already populated with all typical components, such as hard drive, CD Rom, power supply, etc, it is always preferable and easier to work on a "naked" case, removing both side panels, front bezel, and top panel.
- ❑ Plan your installation ahead. Observe the relative position of the components for possible interference with other components. Examples: will the pump interfere with a hard drive? Will the radiator interfere with the installation of the CPU cooler?
- ❑ Think about the airflow inside your chassis. In liquid-cooling environments, it is always better to draw fresh air from the outside through the radiator, as opposed to using the warm air from inside the computer.

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.

I. TUBE ROUTING

The following table contains examples on how to establish connections between the different elements of a cooling circuit based on multiple possible configurations. This table assumes that the fill-and-bleed kit is positioned at the uppermost position in the computer, and that the pump is located at the lowermost location.

These are guidelines only, and may change depending on the relative position of the components inside your chassis.

Devices: (1) CPU Cooler + (1) Radiator + Pump + F&B kit							
Fill & bleed discharge to pump inlet	Pump discharge to CPU cooler inlet	CPU cooler discharge to radiator inlet	Radiator discharge to fill & bleed inlet	– Loop completed			
Devices: (1) CPU Cooler + VGA cooler + (1) Radiator + Pump + F&B kit							
Fill & bleed discharge to pump inlet	Pump discharge to VGA cooler inlet	VGA cooler discharge to CPU cooler inlet	CPU cooler discharge to radiator inlet	Radiator discharge to fill & bleed inlet	– Loop completed		
Devices: (1) CPU Cooler + VGA cooler + Chipset cooler + (1) Radiator + Pump + F&B kit							
Fill & bleed discharge to pump inlet	Pump discharge to VGA cooler inlet	VGA cooler discharge to Chipset cooler inlet	Chipset cooler discharge to CPU cooler inlet	CPU cooler discharge to radiator inlet	Radiator discharge to fill & bleed inlet	– Loop completed	
Devices: (1) CPU Cooler + VGA Cooler + Chipset Cooler + (2) Radiators + Pump + F&B kit							
Fill & bleed discharge to pump inlet	Pump discharge to VGA cooler inlet	VGA cooler discharge to Chipset cooler inlet	Chipset cooler discharge to CPU cooler inlet	CPU cooler discharge to Y connector for PARALLEL connection to both radiator inlets	Dual Radiator discharges to Y connector to fill & bleed inlet	– Loop completed	
Devices: (2) CPU Coolers + VGA cooler + Chipset cooler + (2) Radiators + Pump + F&B kit							
Fill & bleed discharge to pump inlet	Pump discharge to VGA cooler inlet	VGA cooler discharge to Chipset cooler inlet	Chipset cooler discharge to CPU #2 cooler inlet	CPU #2 cooler discharge to CPU #1 cooler inlet	CPU #1 cooler discharge to Y connector for PARALLEL connection to both radiator inlets	Both radiator discharges to Y connector to fill & bleed inlet	– Loop completed

II. Installation of the cooling components

The following is a typical sequence of components installation. Placement of the cooling components may vary depending on your chassis configuration.

FBK525 Fill & Bleed installation

TIP!

The fill-and-bleed kit may be installed pretty much anywhere in the chassis, thanks to its flexible retention clip attachment system. A majority of users will find it convenient to install in a 5 1/4" bay.

To simplify the bleeding process described in following chapters, the fill-and-bleed kit should preferably be installed at the highest point of the cooling circuit, such as the uppermost 5 1/4" drive bay.

Each clip will be attached to the chassis with the provided screws as shown in the example in Figure 1 below. A single screw is sufficient per clip.



Figure 1

The clip retention system accommodates a wide range of configurations, which will depend on the particular chassis, and users needs. For example, a rheobus can easily be installed in the same bay as the FBK525 as shown Figure 2 below: Another example in Figure 3 shows a "standard" setup.



Figure 2 - Notice how the ball valves are only held by one set of jaws in this example.



Figure 3
A "standard" setup

2. MCR80-F2 Radiator installation

The radiator/fan assembly fits into any exhaust opening designed to receive a 80mm case fan. Depending on the case design, the assembly will either fit straight up (inlet and outlet up), or may need to be rotated 90° as shown in Figure 4 below:

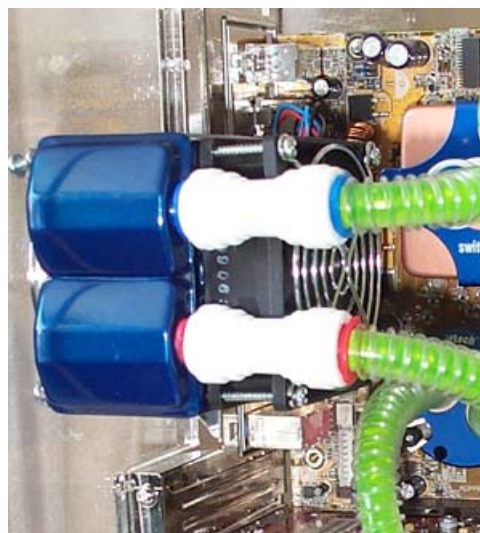


Figure 4

Please use the separate installation guide provided with the MCR80-F2 radiator assembly to fasten the radiator to the chassis (also listed in appendix).

3. Cutting Tube lengths, and installing the tubing

In order to better estimate the appropriate tube lengths between each device, it is necessary to temporarily install all the cooling components first.

For a clear understanding of the next procedures, please read the following highlighted paragraph first, and then use the individual installation guides for each cooler (reprinted in Appendix).

Because a certain amount of force is required, it is not recommended to insert the tubes while the coolers are clamped onto the motherboard or VGA adapter. This could result in damage to the microprocessors, particularly those with an exposed core such as the AMD® K7 class (Duron®, Athlon® MP and XP). Processors that are protected by an integrated heat spreader (a metallic plate covering the processor core) are far less susceptible to damage. These are: Pentium® 4, Xeon®, or AMD® K8 class (Athlon® 64 & Opteron®) processors. It is thus safer to cut the tubes first, remove the device from the motherboard or VGA adapter, insert the tube into the device, and then perform the final installation as described in each individual cooler installation guide.

TIP! For this temporary installation, interposing a piece of paper between the cooler and the processor will protect both the cooler and the processor surfaces.

Your kit comes with 7 feet of ½" OD tubing which is normally sufficient to accommodate most configurations, including dual processors. Also included, are two 2 ½" feet pre-cut pieces which will be used for filling and bleeding the system, and 1 ½ foot of 5/8" OD tubing which will be used to connect the pump.

You should start by wrapping the Coolsleeves coil around the 7-foot piece of tube. The coil measures 40" at rest. You can stretch it to approximately 6 feet once it has been wrapped around the tube. Pulling on each extremity of the tube itself will "even out" the spacing between the coils.

With one end of the tube connected to a startup component such as the pump for example, roughly estimate the length you will need to the next component. If you are going to a component with a quick-connect fitting, make sure to allocate approximately ¾" of tube to go into the fitting. Then cut the tube and coil with a pair of scissors, and install a tube insert (shown below) at the extremity of each tube.



TIP! Rubbing the extremity of the tube with a little bit of liquid soap will greatly facilitate insertion of the tube into the fitting.

Work your way through the entire circuit in the same fashion, until you are satisfied with the tube routing.

Coolers final installation

Dismount the coolers from the motherboard and VGA adapter, remove the protective paper, and connect the tubes to each cooler as follows:

- ☐ Rollback the coil by a couple of inches, as this will give you a better grip onto the naked tube for the next step.
- ☐ Insert the tube into the quick-connect fitting. The tube will go in freely for the first ¼" and you will then feel a resistance: this is the O-ring inside the fitting. Push *through* the O-ring by twisting the tube back-and-forth for another ½" until the tube reaches the tube-stop at the bottom of the fitting. The tube is properly installed once the visible extremity of the tube insert is flush with the face of the quick-connect fitting. Then bring the coil back to the face of the fitting.
- ☐ Work your way to the next components in the same fashion to daisy chain all the components together.

- ☐ Proceed to the final installation of the coolers with thermal compound, following the instructions provided in the individual coolers installation guides (reprinted in Appendix)

TIP! Verify that each cooler will 'hang' naturally in very close to its mounted position. If the stiffness of the tubing, or the tight radius of the necessary bend, will not permit such, then it may be necessary to externally support the tubing: typically some strategically placed cable ties will facilitate this restraint. This precaution is particularly important with AMD® K7 class processors, but less so with Intel® Pentium® 4, Xeon, or AMD® K8 class processors.

- ☐ Once everything is in place, you should then adjust the Coolsleeves coil spacing: adjust to a wide space between each coil (up to ¼" or more if needed) when the tube is straight, and very close to each other in tight bends (approximately 1/8th of an inch or less).

5. Pump installation & connection to the rest of the circuit

Please refer to the separate installation guide for specific information regarding the pump (reprinted in Appendix). Preferable position is at the bottom of the chassis. However, the pump can operate in any position. For optimum safety, the pump can be bolted to the chassis. **TIP!** Do not peel-off the protective sticker until you are satisfied with the position of the pump, as subsequent removal is destructive to the foam gasket.

The pump's inlet and outlet are ½" in outside diameter. A 1 foot supply of ½" ID tubing is provided with your kit together with two reducers to make the transition to the rest of the circuit. **TIP!** Use approximately 1ft length at the inlet, and a few inches at the outlet, as shown in figure 5.



Figure 5 shown with earlier MCP600 pump

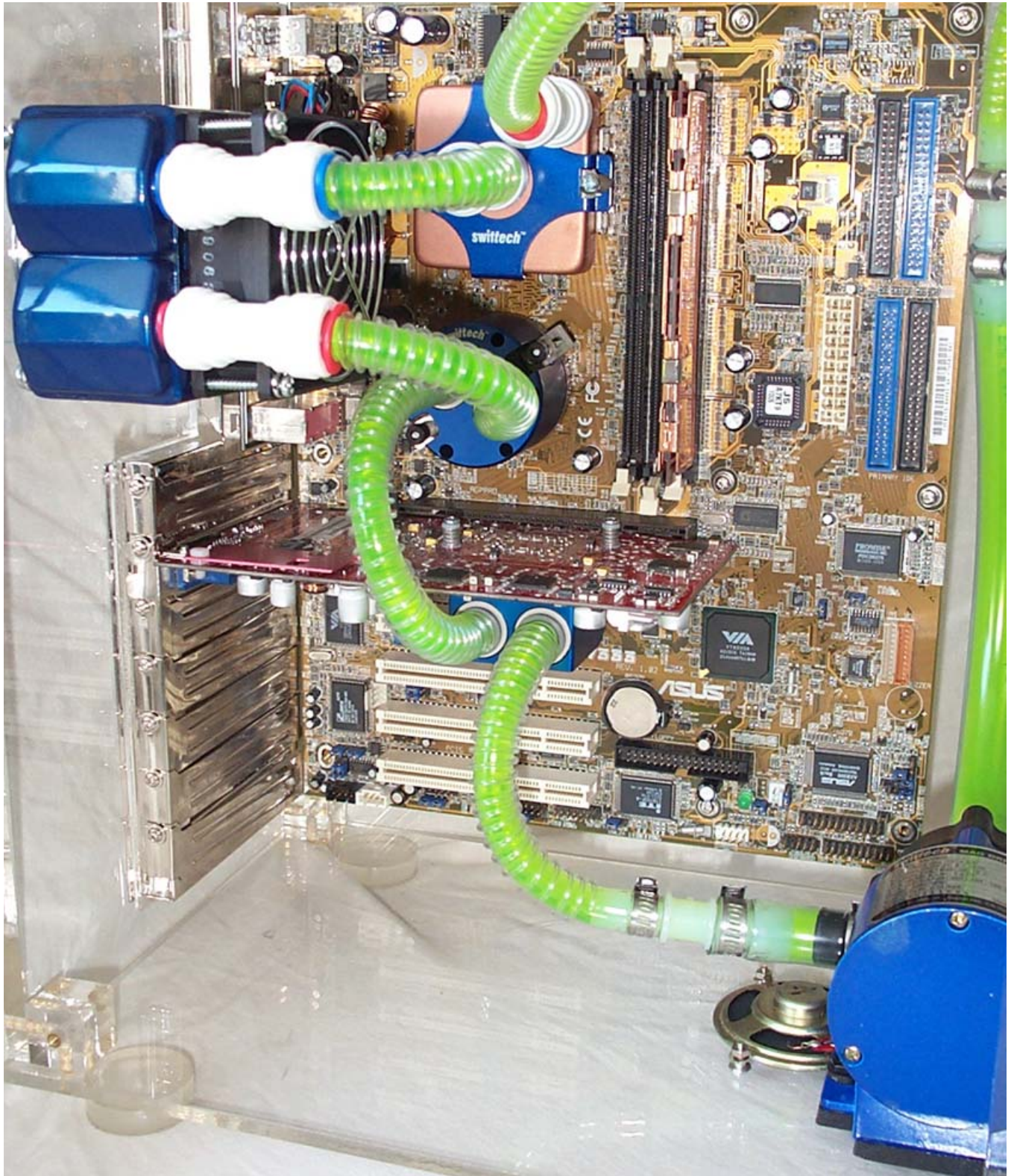


Figure 6

Figure 6 above illustrates a final installation, showing the MCR80-F2 radiator in place, the MCW6000 CPU cooler, the MCW50 VGA cooler, the MCW20 chipset cooler, and an earlier MCP600 pump. Notice how the Coolsleeves coils allow tight bends, keeping a "clean" uncluttered arrangement of the circuit. In this particular chassis, the radiator is positioned slightly lower relative to the CPU. As a result, we installed the components in the following sequence: VGA cooler -> Chipset cooler -> Radiator -> CPU cooler.

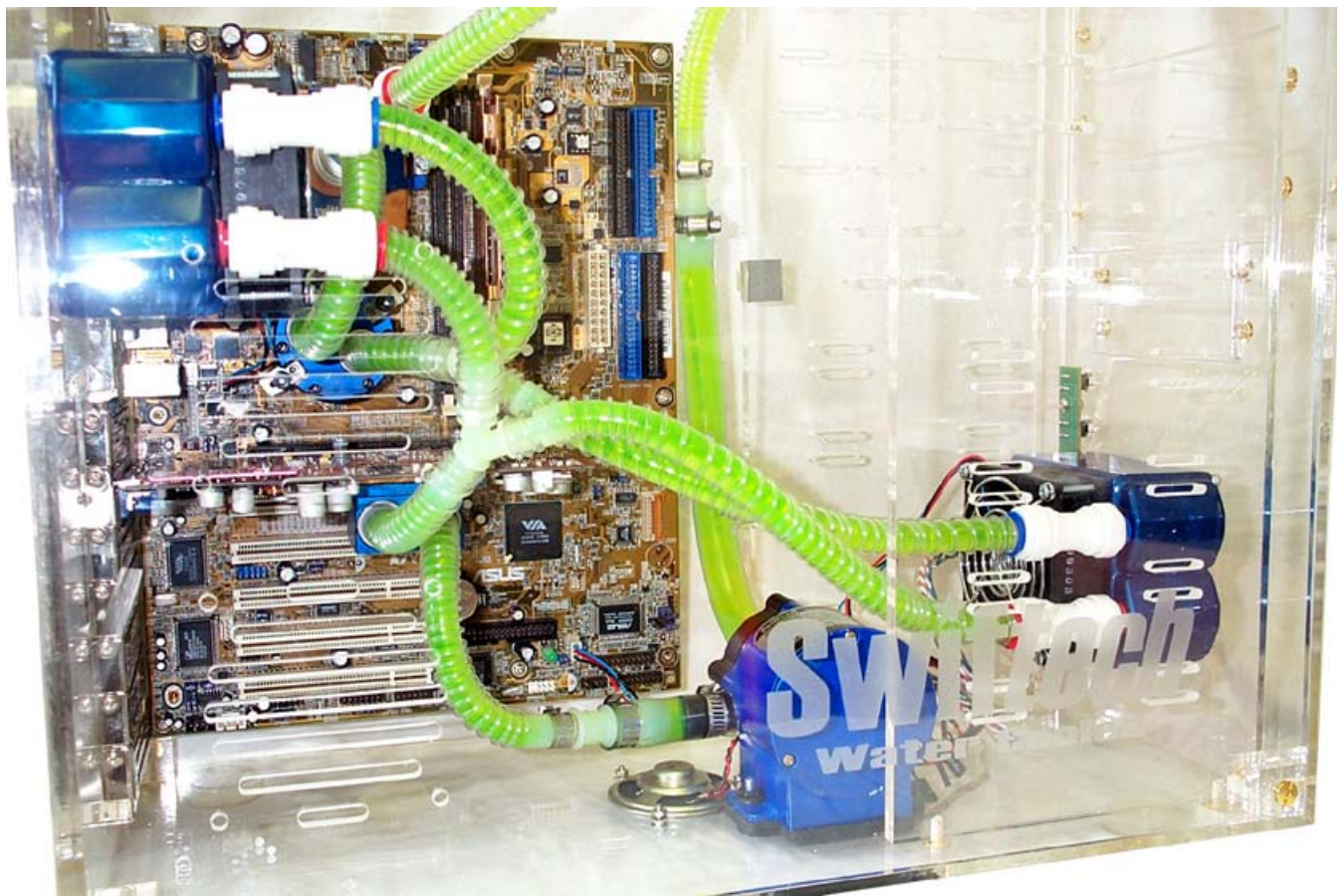


Figure 6a

Figure 6 a shows a dual radiator setup. This particular setup was chosen to illustrate how to overcome the apparent difficulty of connecting two radiators located opposite to one another in a chassis: one radiator in the back, and one radiator in the front. Such chassis configuration is among the most commonly found in today's mid-tower cases.

Notice how the radiators are setup in a parallel connection: from the MCW50 VGA cooler discharge, the tube is split into two sections, using a Y connector. Each branch of the "Y" is then connected to each radiator inlet. Then the radiator discharge tubes rejoin into another "Y" connector which goes to the MCW20 chipset cooler inlet, thus resuming the circuit. In this particular example, the sequence in which components are connected to one another was chosen purely for convenience in tube routing, and dictated by the respective positions of these components.

From a performance standpoint there is very little performance to be gained from strictly controlling the component sequence: the maximum delta T (difference in temperature) between any two points of the liquid cooling circuit does not exceed 1°C. Whenever possible, performance oriented users will typically want to route the radiator discharge(s) tube(s) to the inlet of the CPU cooler, since the fluid exiting the radiators is always the coolest.

III. Fill and bleed operations

LEAK PROOF YOUR CIRCUIT BEFORE YOU FILL IT UP – DO NOT SKIP THIS STEP!

The following procedure is a convenient and safe solution to leak proof your circuit WITH ALL THE COMPONENTS ALREADY INSTALLED, BUT WITH **NO LIQUID IN THE SYSTEM**, thus avoiding any chances of spilling moisture on your valuable components, thanks to Swiftech's fill-and-bleed system:

CRITICAL TIP!

- ❑ Close the main valve as shown in Figure 7.
- ❑ Connect the 2 precut tubes that came with your kit to the inlet and discharge valves of the fill & bleed kit.
- ❑ Open either one of the inlet or discharge valves, and close the other.
- ❑ Suck vigorously on the open line to create a vacuum inside the circuit (see note*).
- ❑ Close the valve. You now have a circuit under moderate vacuum.
- ❑ Remove the tube from your mouth, and wait 30 seconds to a minute.
- ❑ Finally, obstruct the extremity of the tube with your thumb, and re-open the valve. Tube should adhere to your thumb as a result of the vacuum. This is evidence that your system is completely air tight, thus completely leak proofed ☺

* **Note:** The tubing we use is food grade, and as long as you clean it properly, it can be safely placed into your mouth.

Fill and bleed operations, step by step

1. Preparing the coolant

Your kit comes with a 2 Oz (60ml) bottle of Swiftech's specially formulated HydrX™ concentrated coolant. The product should be mixed with distilled or demineralized water only. Simply empty the concentrated coolant into a 33 fl oz (1 liter) plastic bottle, and complete filling with your distilled water. Your coolant is ready.

Connecting the fill-and-bleed tubes

Connect the 2 precut tubes that came with your kit to inlet and discharge valves of the fill & bleed kit, and set the valves as shown Figure 7. The extremity of the inlet tube should be pushed all the way down the bottom of the feed bottle.

TIP!

Note the orientation of the valve levers in Figure 7. Since the valves close clockwise, positioning the valves as shown here will orient the valve levers towards each other once closed, which is easier to reach if your case does not feature a removable top (see closed valve position Fig 12 page 8)

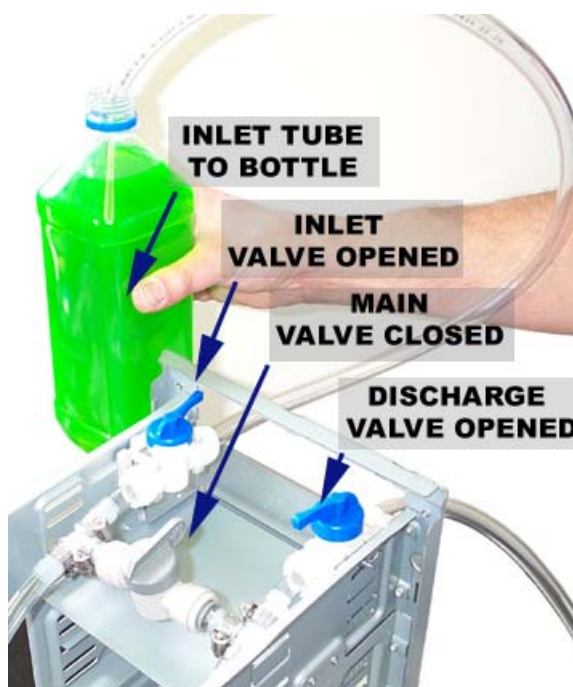


Figure 7

Priming the circuit

WARNING: DO NOT SKIP THIS STEP UNDER ANY CIRCUMSTANCE – Your pump is not self-priming, and the pump impeller housing must be filled with fluid before you apply power.

HOLD THE FEED BOTTLE ABOVE THE COMPUTER,

and start gently sucking on the discharge tube to prime the circuit. Then place it back into the bottle. The coolant will start flowing down the inlet, and the circuit will fill-up by simple gravity (figures 8 and 9)

TIP!

Observe here that we have not yet submersed the discharge tube all the way down into the bottle. This will be helpful to check that the fluid is flowing in the next step (Fig 10)

Figure 8



Figure 9

In the picture above, the pump is not running yet. Notice how the liquid filled-up the circuit by simple gravity

Bleeding the circuit

Now that the circuit is primed, make sure that your pump is connected to the power supply, then go ahead and power-up your computer.

The pump will start circulating fluid throughout the circuit. Observe for a moment that the liquid flows vigorously from the discharge tube (Fig 10), and then submerge the tube down to the bottom of the bottle. Let the system run for about a minute.

Observe in Figure 8 that when you first start filling up the circuit, the portion of the line comprised between the two T connectors of the fill and bleed kit will retain a large bubble of air. To remove this bubble, simply open the main valve for a few seconds while the pump is running, and then close it again.

TIP!

Observe the liquid flowing vigorously

Figure 10

Troubleshooting note: If there is no flow after you turned the pump on, chances are that you either didn't prime your circuit properly, and there is air in the pump housing, or you didn't connect your components in the correct sequence. Go back to the Tube Routing section, and make sure that you followed all our instructions. Once you have discovered the source of the problem, correct it, and restart the above process

TIP!

IF YOU NEED TO REFILL THE SYSTEM, ALWAYS FLUSH ALL THE LIQUID FROM THE CIRCUIT FIRST, AS THE PUMP CANNOT CLEAR THE AIR FROM THE SYSTEM. THEN REFILL PER THE ABOVE PROCEDURE.

While your pump is still running, flip your case face up as shown figure 11 for a few seconds. This will allow all the air trapped in the radiator and other components to bleed out.

Then, bring the case back to vertical again.

Open and close the main valve a few seconds one more time, just to allow any left over bubbles.

Visually inspect your lines for any traces of air, and if none are observed, close both inlet and discharge valves as shown in figure 12.

FINALLY, MAKE SURE TO RE-OPEN THE MAIN VALVE! FAILURE TO DO SO WILL PREVENT ANY CIRCULATION IN YOUR SYSTEM, AND CAUSE IT TO FAIL RAPIDLY.

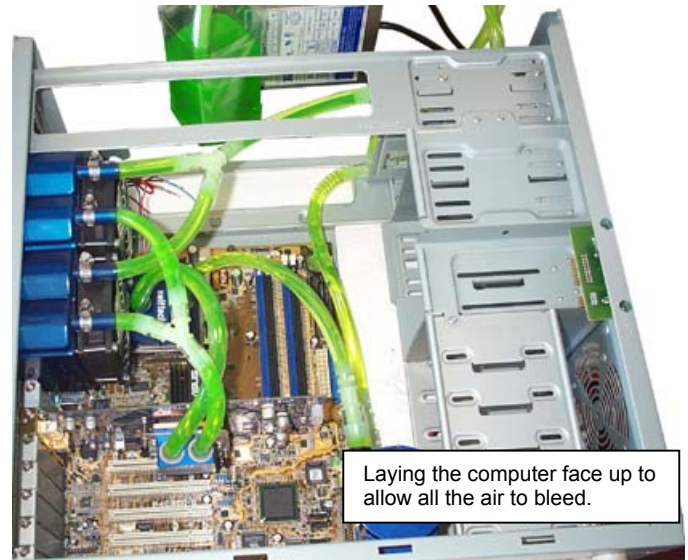


Figure 11

Final steps

Lift the inlet, and discharge tubes from the bottle above the coolant level, and lower the bottle below the level of the computer. This will allow whatever coolant was trapped into the tubes to empty itself into the feed bottle: no spill, no mess ☺

Disconnect the fill and bleed tubes from the valves as shown figure 12. Removing tubes from quick-connect fittings is quite easy but takes a little practice:

The FBK525 inlet and discharge valves feature two little “ears” on the collet, which ease the removal process: **Firmly hold the tube in the cradle formed by three fingers, and push against the ears with thumb and index fingers. This will disengage the tube from the fitting. Correct position of the hand and fingers is shown in figure 12.**

Finally, clean off the opening of the fittings to prevent the last remnants of moisture to drop into your case.

Installation is complete!

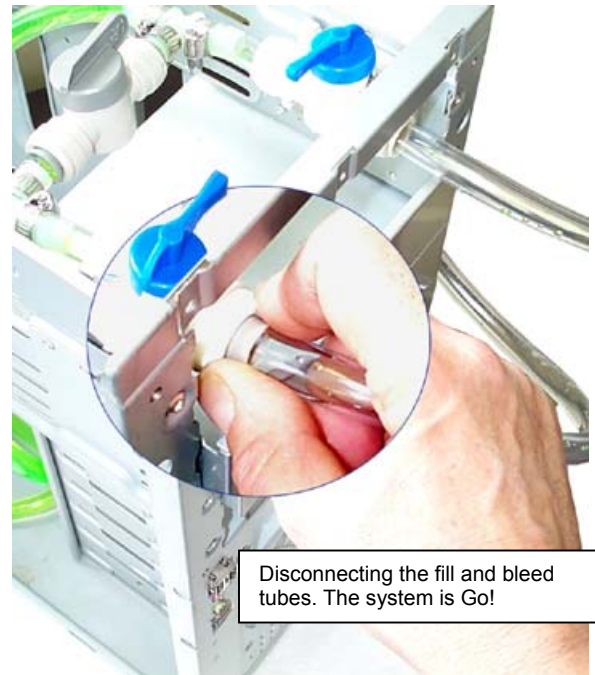


Figure 12

IV. Draining the system

- ☐ Insert the fill and bleed tubes into inlet and discharge valves.
- ☐ Place the tube from the discharge valve into an empty container.
- ☐ Close the main valve. Open the inlet valve.
- ☐ Clean off the extremity of the tube from the inlet valve and blow into it to flush the liquid out. Do not use compressed air to perform this operation, as it could damage your pump.

V. Periodic maintenance

- ☐ Every 6 months: dust off the radiator fins and fan. You can use a can of compressed air for example, available in most electronic supply stores. If you live in a very dusty area, you should perform this task at closer intervals. It is essential to the optimum performance of your cooling system.
- ☐ Inspect the level of liquid inside the circuit, and refill if necessary. Evaporation in this closed circuit is extremely limited, but still present due to microscopic porosity in the vinyl lines.

VI. Available accessories

Improve performance with a second radiator:
MCR80-F2 Radiator assembly



Part # MCR80-F2, includes radiator, 80mm fan, retention screws, fan guard, quick-connect fittings

VGA Cooling

Please go to:

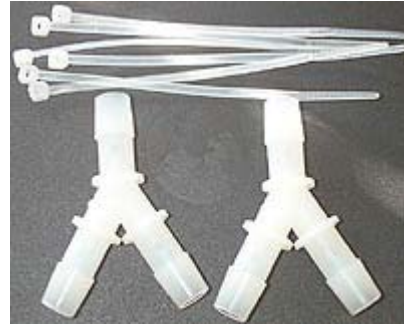
<http://www.swiftnets.com/products/mcw50.asp> for specifications



Part # MCW50

For installation of radiators in parallel
(recommended)

Add part # YFIT-3-8:



Chipset Cooling

Please go to:

<http://www.swiftnets.com/products/mcw20.asp> for specifications



Part # MCW20

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. Pump is guaranteed for 24 months. 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.

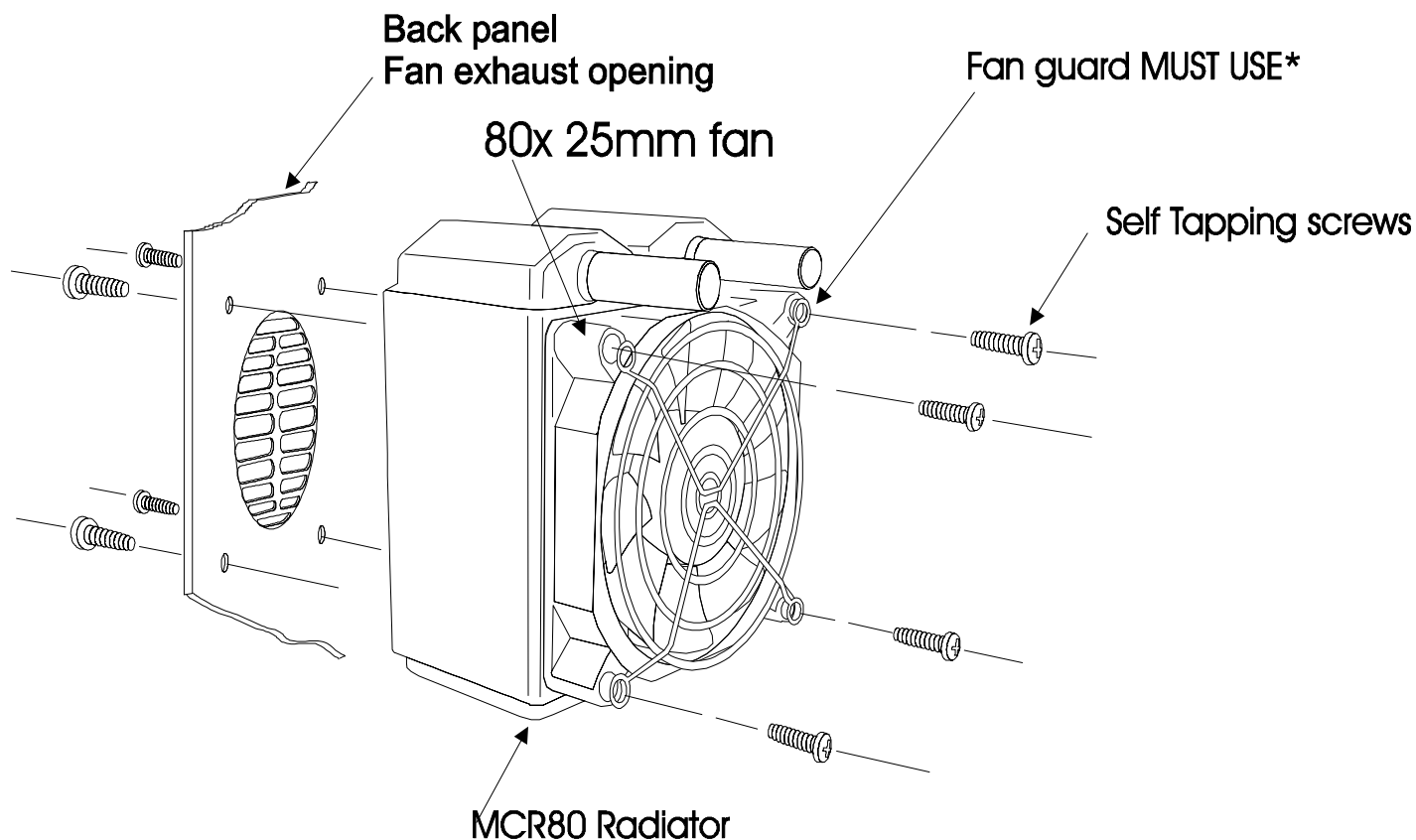
For service, support, or questions: please contact us at the address below

VII. Appendix: Individual Component Installation guides

- INTENTIONNALLY LEFT BLANK -

MCR80-F2™ RADIATOR

MCR80 radiator	1	80mm fan guard	1
#6 X 1 1/4" Philips screw type B	4	80x80x25mm fan	1
#6 x 3/8" Philips screw type B	4	Quick-connect fittings	2
Tube inserts	2		



*Note of caution regarding the inlet/outlet side of the radiator:

The fan guard **MUST BE INSTALLED** when using the provided self-tapping screws. It is necessary to allow sufficient clearance between the tip of the screws and the radiator core. **Failure to use the fan guard will systematically result in permanent damage to the radiator**, as the screws will otherwise punch a hole in the core channels. Users are advised that such damage is not covered under our warranty.

Likewise, if fans other than the provide 80x80x25mm fans are installed, users should carefully check the clearance remaining between the retention screws and the radiator core.

1. Quick-connect fittings installation and use:

Your radiator ships with two quick-connect union fittings (3/8" tube OD to 1/2" tube OD). The 3/8" side of the fitting goes on the MCR80 radiator inlet and outlet tubes. The 1/2" side of the fitting is used to connect hoses from your circuit. Notice that the body of the fitting has been flattened on the 3/8" side. This flat section provides clearance for the fan, and should be oriented towards it. The fittings also feature color-coded collets. While these are purely conventions, you would typically install the red collet (warm water) on the inlet side of the radiator, and the blue collet (cool water) on the discharge side.

Using quick-connect fittings:

If you are using soft vinyl tubing, you must also use the provided tube inserts:



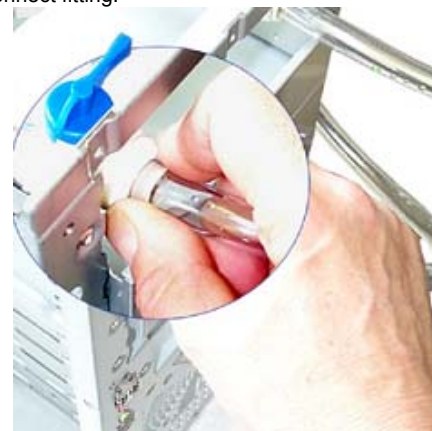
TIP! Rubbing the extremity of the tube with a little bit of liquid soap will greatly facilitate insertion of the tube into the quick-connect fitting.

Tube insertion

Insert the tube into the quick-connect fitting. The tube will go in freely for the first $\frac{1}{4}$ " and you will then feel a resistance: this is the O-ring inside the fitting. Push *through* the O-ring by twisting the tube back-and-forth for another $\frac{1}{2}$ " until the tube reaches the tube-stop at the bottom of the fitting. The tube is properly installed once the visible extremity of the tube insert is flush with the face of the quick-connect fitting.

Tube removal:

The collet of our quick-connect fittings feature two little "ears", which ease the removal process: firmly hold the tube in the cradle formed by three fingers, and push against the ears with thumb and index fingers. This will disengage the tube from the fitting. Correct position of the hand and fingers is shown in the picture to the right:



2. Radiator specifications:

- ☐ Height: 4.1" (104.8mm); Width: 3.25" (82.5mm); Depth: 3.2" (81.6mm)
- ☐ 2-pass 80 mm radiator specifically developed for PC CPU and VGA liquid cooling
- ☐ Double-row high internal volume design 80 mm (3 inch) Copper core consisting of flat tubes for maximum heat conductivity
- ☐ High-density copper fin configuration for enhanced heat dissipation Tested in our labs and rated for 100 Watts with a 15°C coolant temperature rise. 3/8" OD inlet and outlet for use with 3/8" ID tubing.

Fans specifications:

Part #	Voltage (V)	Current (mA)	Revolution (RPM)	Volume (CFM)	Max Static pressure (InH2O)	Sound Noise (dBA)
AFB0812M	12	180	2700	31.4	.129	28

MCP650™ Pump

1. General Use

The MCP650 pump is a magnetically driven centrifugal pump featuring a 12 V DC motor. It requires no maintenance when used with de-mineralized water and the appropriate anti-fungal additives. We recommend using 5% Swiftech's HydrX™ as an additive. The pump is designed to be connected to your computer power supply using the standard Molex 4 pin connectors.

The MCP650 pump is not submersible.

Physical installation

- ❑ Determine the best location for your pump by observing how the tubing will be routed to the rest of the circuit. Sharp bends in the tubing should always be avoided to prevent kinks, which will reduce or completely prevent flow of the cooling fluid.
- ❑ In general, we recommend installation of the pump at the bottom of the chassis.
- ❑ The base of the pump features a soft neoprene pad coated with strong adhesive material. Once an appropriate location for the pump has been determined, simply peel-off the pad's protective paper, and press the pump against the chassis surface. The surface should be clean, and non greasy. Thru-bolts are also provided for permanent installation, and require drilling holes in the chassis (see permanent installation page 2).

Pump operating precautions:

The MCP650 pump should never be run dry, even for a quick test. You should always prime the pump with fluid before you start operating it (see warranty note *).

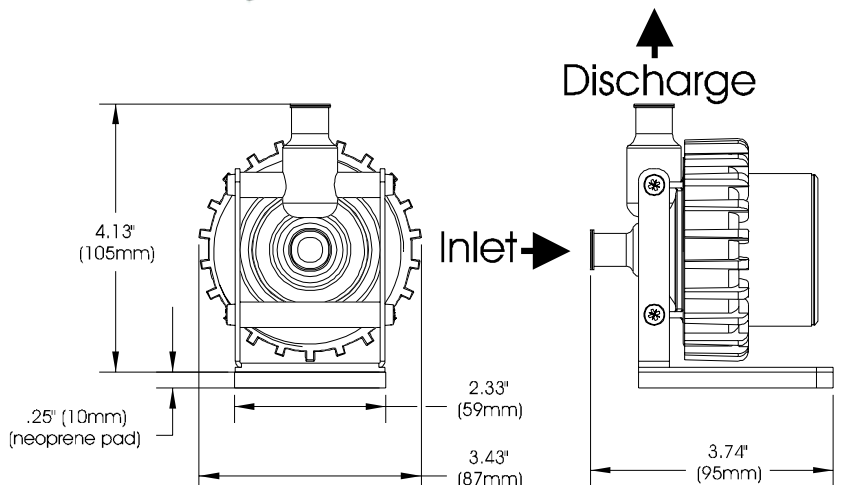
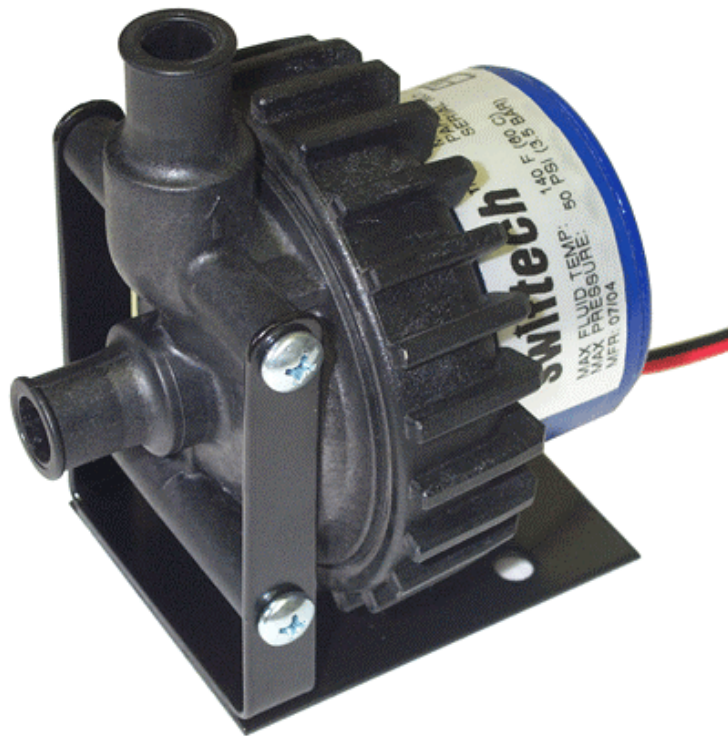
Use of coloring die or fluorescent additives containing particulate fillers will cause excessive wear to the pump's impeller bearing (see warranty note **).

Do not utilize small diameter or flow restrictive fittings in the pump inlet line. Minimum line inner diameter is 3/8". An example would be a reservoir with 1/4" fittings. This will cause the pump impeller to cavitate, lose prime, stop pumping and damage the pump (see warranty note ***).

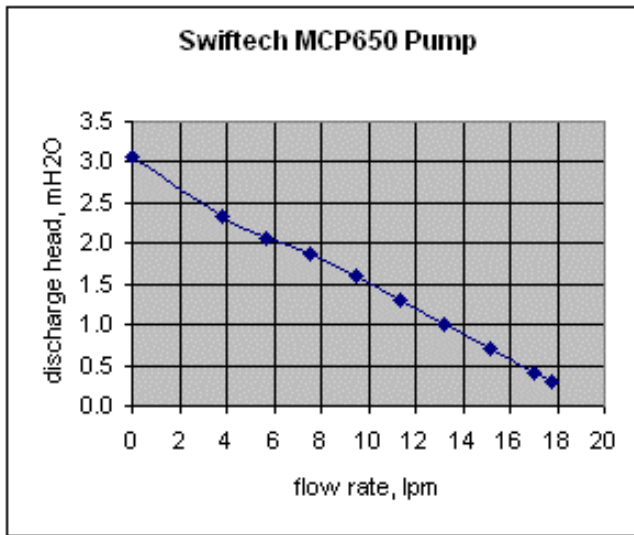
Connecting the pump to the circuit:

The pump's inlet and outlet are 1/2" in outside diameter. An adapter kit is available (included with all our complete kits) to connect the MCP650 to a circuit using 1/2" ODx3/8"ID tubing. This kit consists in: 1 foot supply of 3/4"ODx1/2"ID tubing and two reducers to make the transition to the 1/2"ODx3/8"ID circuit.

TIP: when connecting the MCP650 pump to a 1/2"ODx3/8"ID circuit, always use the longest possible 3/4"ODx1/2"ID tube section at the inlet.



Performance & Specifications

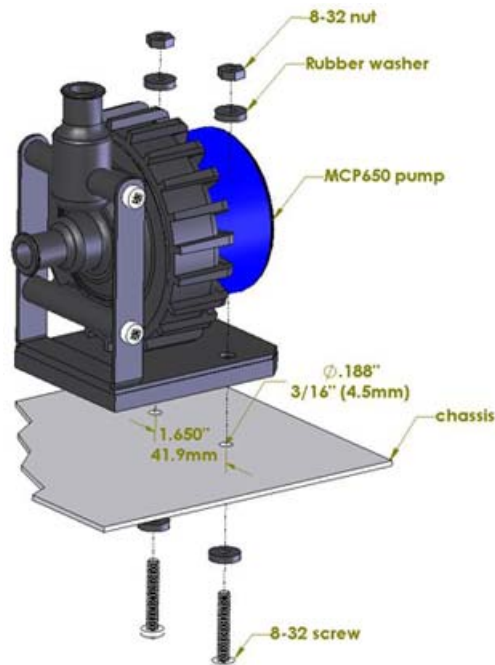


Nominal voltage	12 V DC
Operating voltage range	6 to 14 VDC
Nominal power (@ 12 V)	24 W
Nominal current (@ 12 V)	2 amps
Motor type	Brushless, microprocessor controlled
Maximum head	10 ft (3.1 m)
Maximum discharge	~ 317 GPH (800 LPH)
Connection size	1/2" barbs
Maximum pressure	50 PSI (3.5 BAR)
Temperature range	32 °F to 140°F (0 °C to 60 °C)
Electrical connector	Molex 4 pin
Weight	1.4 LB (650 gr.)
Impeller Housing material	Noryl®
Our noise measurement (non lab environment)	33 ~ 34 dBA in a quiet room @ 2'

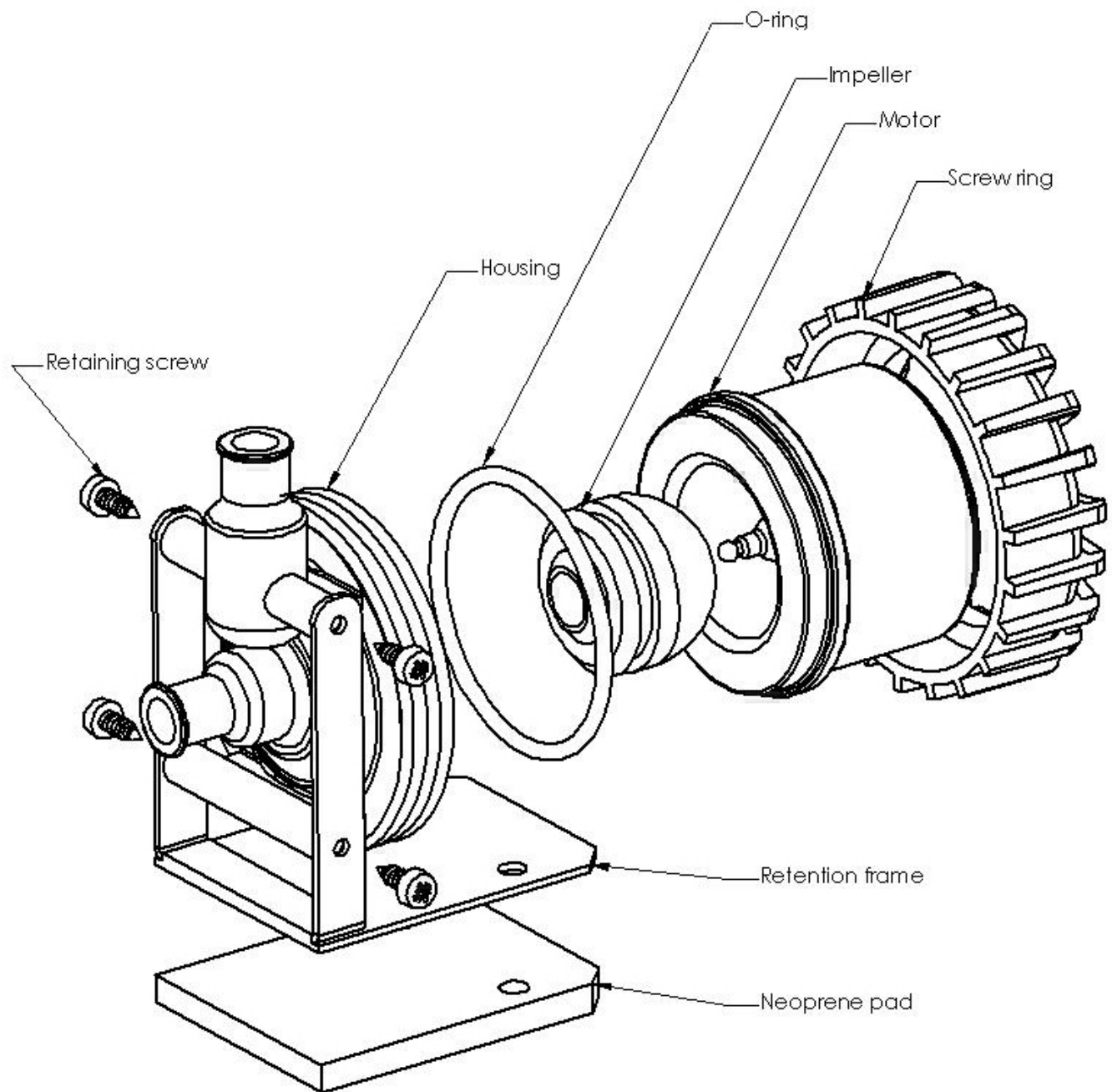
WARRANTY: This product is guaranteed for a period of **24 months** from date of purchase for defects in material, and workmanship. Guarantee consists of replacing defective parts with new or reconditioned parts. Guarantee is considered void in case of **improper use** (**)(**)(***), handling or negligence on the part of user. Original invoice showing date and place of purchase is required for exercise of the warranty. (*) **WARNING: DO NOT ATTEMPT TO RUN THIS PUMP DRY. THIS WILL CAUSE IMMEDIATE AND PERMANENT DAMAGE TO THE PUMP.** (**) **EXCESSIVE WEAR DUE TO INAPPROPRIATE FLUIDS.** (***) **EXCESSIVE RESTRICTION TO THE PUMP'S INLET**

DISCLAIMER: Swiftech assumes no liability whatsoever, expressed or implied, for the use of this product, and more specifically for any, and all damages caused by the use of this product to any other devices in a personal computer, whether due to product failure, leak, electrical shorts, and or electro-magnetic emissions.

5. Permanent installation to the chassis



6. MCP650 – Exploded view



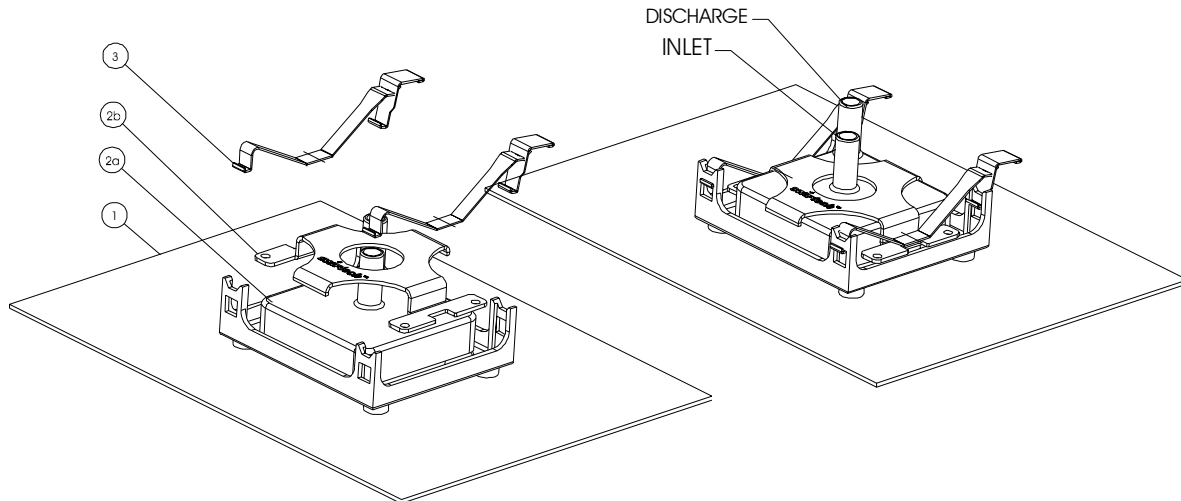
MCW6000-P Water-block

Installation guide for Pentium™ 4 processors

Parts list

Parts	QTY	PARTS	QTY
MCW6000-P™ water-block	1	Retention clips	2
Worm drive clamps	2	SP4 hold-down plate	1

This product is intended for expert users. 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.



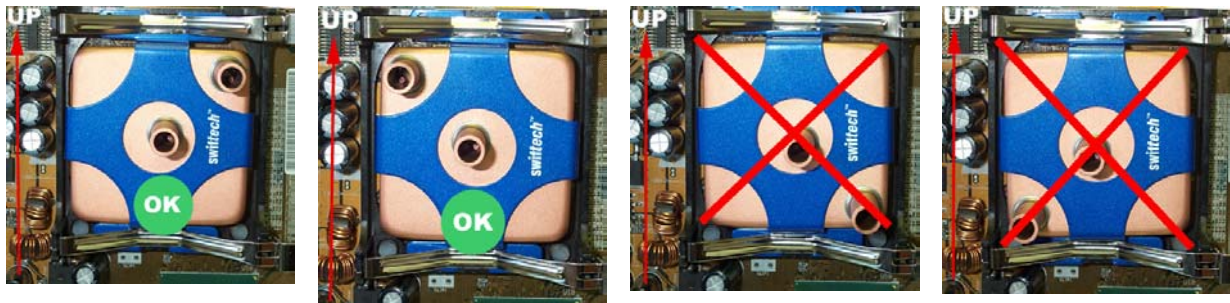
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	S478	Intel Pentium 4 socket 478 motherboard and processor
2	1	MCW6000-P-with-bracket	MCW6000-P water-block assembly
a	1	MCW6000-FLAT	MCW6000 waterblock flat base
b	1	SP4-Bckt	SP4 Hold-down plate for Intel Pentium 4 and Xeon
3	2	SC478	Pentium 4 spring clip

1. Preparing your Motherboard

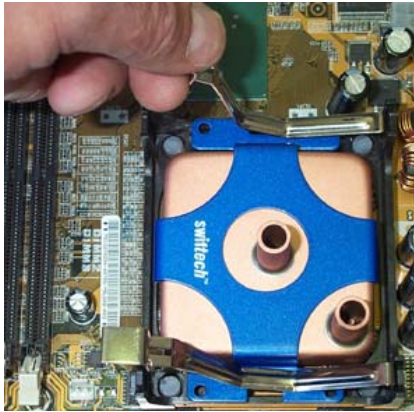
- ☐ Remove the existing heat sink
- ☐ Carefully clean the CPU.
- ☐ Lightly coat the CPU with thermal compound. We recommend high quality thermal compound such as Arctic Silver or equivalent. Application will vary depending on the type of processor. We recommend visiting www.arcticsilver.com for detailed instructions.

Water-block orientation

For ease of operations during bleeding, the outlet should always be at the highest point (while system is standing upright):

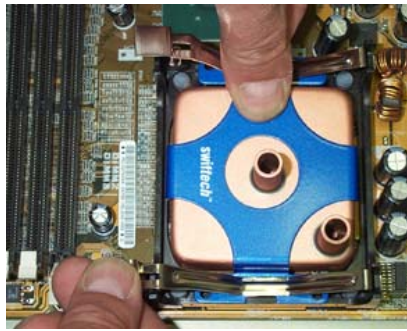


Water-block installation:



Step 1

Center the water-block inside the retention frame. Put both clips in place for the next step, by simply slipping the hook of each clip into the holes of the retention frame.



Step 2

While maintaining the opposite side of the block to prevent it from tipping over, push down on the clips' thumb-tab until the hook catches the hole in the retention frame.



Step 3

Keep maintaining pressure on the block to prevent it from tipping over, and hook-down the second clip.
Installation is complete!

Connecting the water-block(s) to the cooling circuit:

Carefully identify the direction of the flow in your circuit. For the MCW6000 to operate properly, the fitting located at the center of the water-block **MUST BE USED AS THE INLET**.

Attaching the tubes:

The MCW6000™ ships with 2' of tube already clamped to inlet and outlet.

Alternate connections:

The MCW6000™ can also be used with optional quick-connect fittings (fig.5), or regular worm-drive hose clamps (fig. 4).

Type of Coolant:

Being entirely made of copper, the MCW6000™ may be used with pure water, and does not necessitate the use of anti-corrosion agents. The use of an algaecide is nonetheless recommended in any liquid cooling system, and our HydrX™ additive also performs such function.

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. **Do not test the water-block using city water pressure.** This will bow the top of the housing and render the block unusable (and will void your warranty).
Maximum pressure allowable for testing is 25 psi (1.7 bar)



Tubes attached with the included worm-drive clamps



Optional quick-connect fittings

MCW6000-PX Water-block

Installation guide for Xeon™ processors

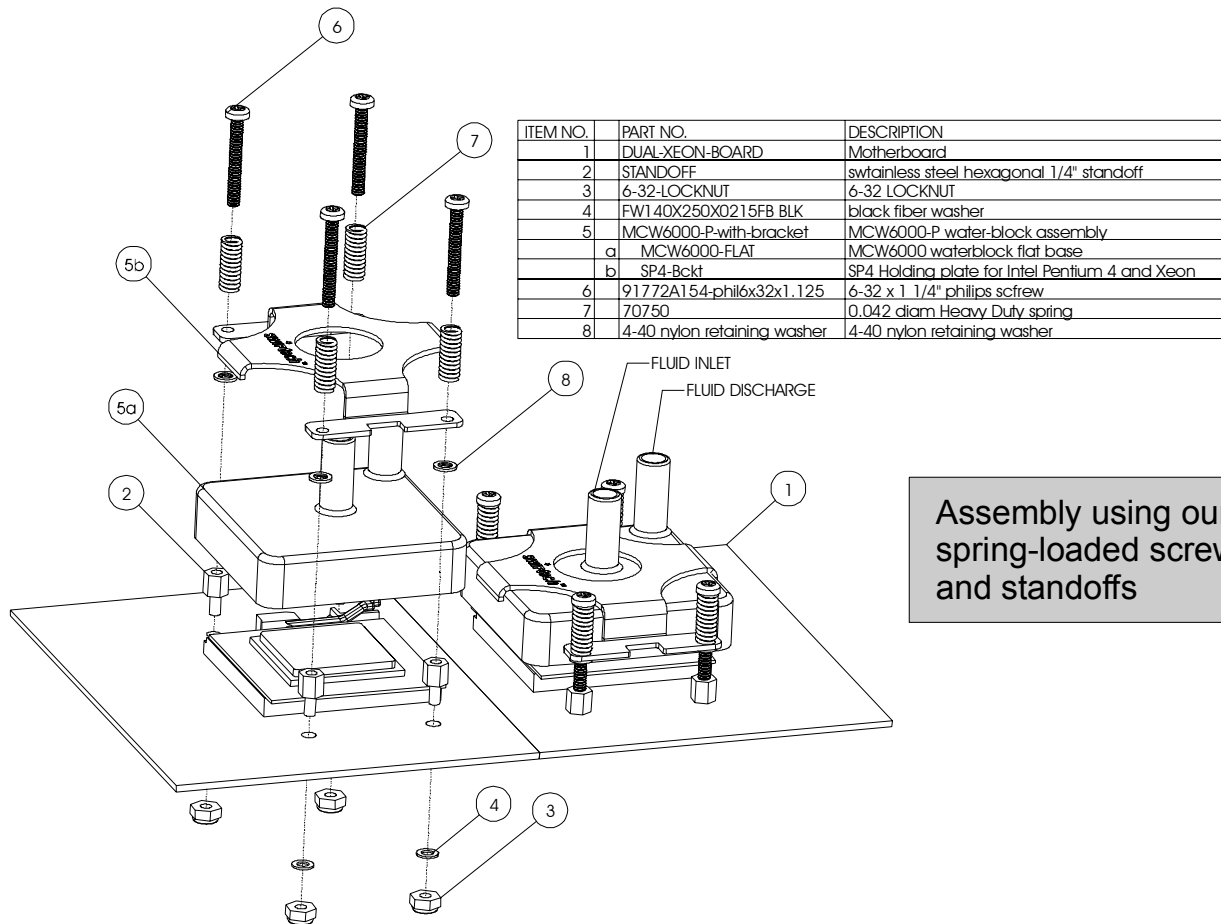
Parts list

Parts	QTY	PARTS	QTY
MCW6000-PX™ water-block	1	6-32 x 1 1/4" Philips screws	4
Worm drive clamps	2	Springs	4
SP4 hold-down plate	1	Standoffs	4
4-40 Nylon retaining washers	4	Black fiber washers	8
Locknuts	4		

This product is intended for expert users. 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.

The MCW6000-PX can be installed using two different methods:

- ☐ Using the spring-loaded screws and standoffs included with the water-block (fig. 1 below)
- ☐ Using the plastic retention frames and spring clips included with most motherboards (fig. 2 page 2)



Assembly using our
spring-loaded screws
and standoffs

Figure 1

16	PART NO.	DESCRIPTION
1	DUAL-XEON-BOARD	Motherboard
2	RETENTION	Plastic retention frame, included with motherboard
3	XEON-CLIP	Xeon clip included with motherboard
4	MCW6000-P-with-bracket	MCW6000-P water-block assembly
a	MCW6000-FLAT	MCW6000 waterblock flat base
b	SP4-Bckt	Hold-down plate for Intel Pentium 4 and Xeon

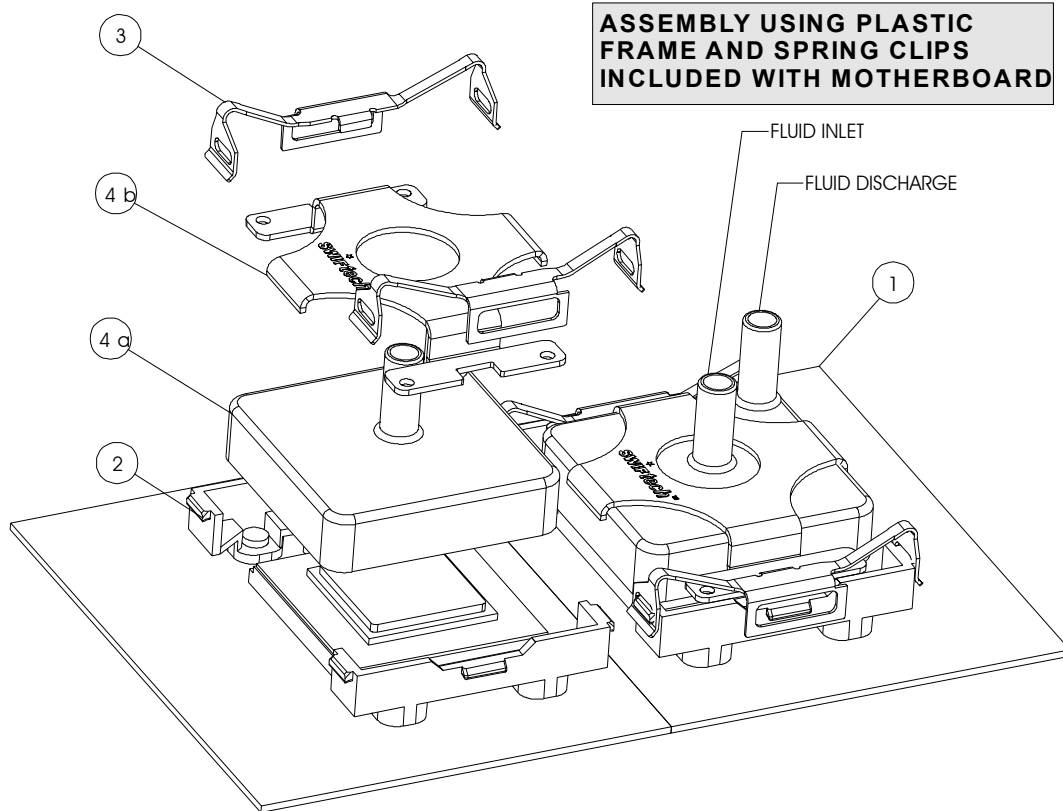


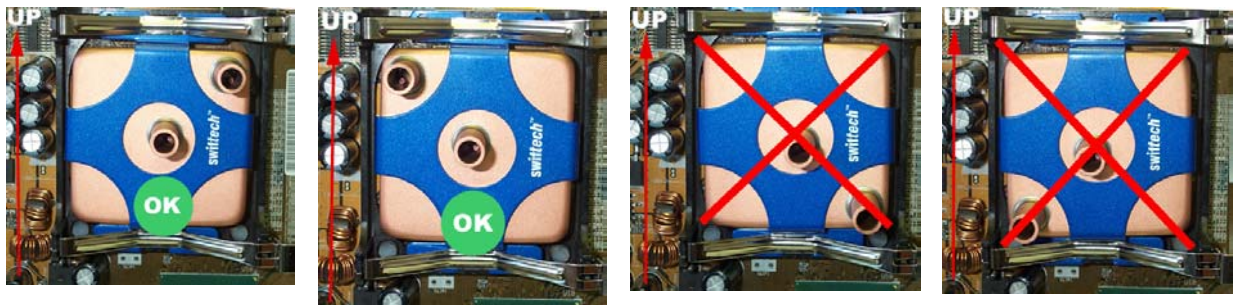
Figure 2

1. Preparing your Motherboard:

- ☐ Remove the existing heat sink
- ☐ Carefully clean the CPU.
- ☐ Lightly coat the CPU with thermal compound. We recommend high quality thermal compound such as Arctic Silver or equivalent. Application will vary depending on the type of processor. We recommend visiting www.arcticsilver.com for detailed instructions.

Water-block orientation:

For ease of operations during the filling and bleeding procedures, the outlet should always be at the highest point (while the computer system is standing upright):



Water-block installation:

The MCW6000-PX can be installed using two different methods (also see figure 1 and 2):

- ❑ Using the spring-loaded screws and standoffs included with the water-block (fig. 1), or
- ❑ Using the plastic retention frames and spring slips included with most motherboards (fig. 2)

You may use either method at your convenience. For installation with our own spring loaded screws, follow the instructions below. For installation with Intel's spring clips, follow the instructions included in your motherboard manual.

Installation with spring loaded screws:

- ❑ Remove the motherboard from the chassis, and remove the stock retention plastic frames to expose the mounting holes.
- ❑ Install the standoffs through the holes, using fiber washers and locknuts as shown in figure 1.
- ❑ Tighten the standoffs as shown figure 3, using a ¼" socket tool to drive the standoff, and a small pair of pliers to prevent the locknut from spinning. Torque value should not to exceed 16 in. lbs. In other words just tight, without excessive torque, otherwise the standoff stem may snap.
- ❑ Tighten the spring-loaded screws in a crisscross pattern until the screws bottom out into the standoff. Once there, do not attempt to lock the screws any further, or they will jam into the standoff, and could prove difficult to remove if you ever need to uninstall the heatsink.

Water-block installation is now complete.



Figure 3

Connecting the water-block(s) to the cooling circuit:

Carefully identify the direction of the flow in your circuit. For the MCW6000 to operate properly, the fitting located at the center of the water-block **MUST BE USED AS THE INLET**. In multi-processor environments, connect the two blocks in series: For example: pump discharge to inlet of processor 1, discharge of processor 1 to inlet of processor 2, and discharge of processor 2 to radiator.

Attaching the tubes:

The MCW6000™ ships with 2' of tube already clamped to inlet and outlet.

Alternate connections:

The MCW6000™ can also be used with optional quick-connect fittings (fig.5), or regular worm-drive hose clamps (fig. 4).

Type of Coolant:

Being entirely made of copper, the MCW6000™ may be used with pure water, and does not necessitate the use of anti-corrosion agents. The use of an algaecide is nonetheless recommended in any liquid cooling system, and our HydrX™ additive also performs such function.

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. **Do not test the water-block using city water pressure.** This will bow the top of the housing and render the block unusable (and will void your warranty). **Maximum pressure allowable for testing is 25 psi (1.7 bar)**



Figure 4

Tubes attached with worm-drive clamps



Figure 5

Optional quick-connect fittings

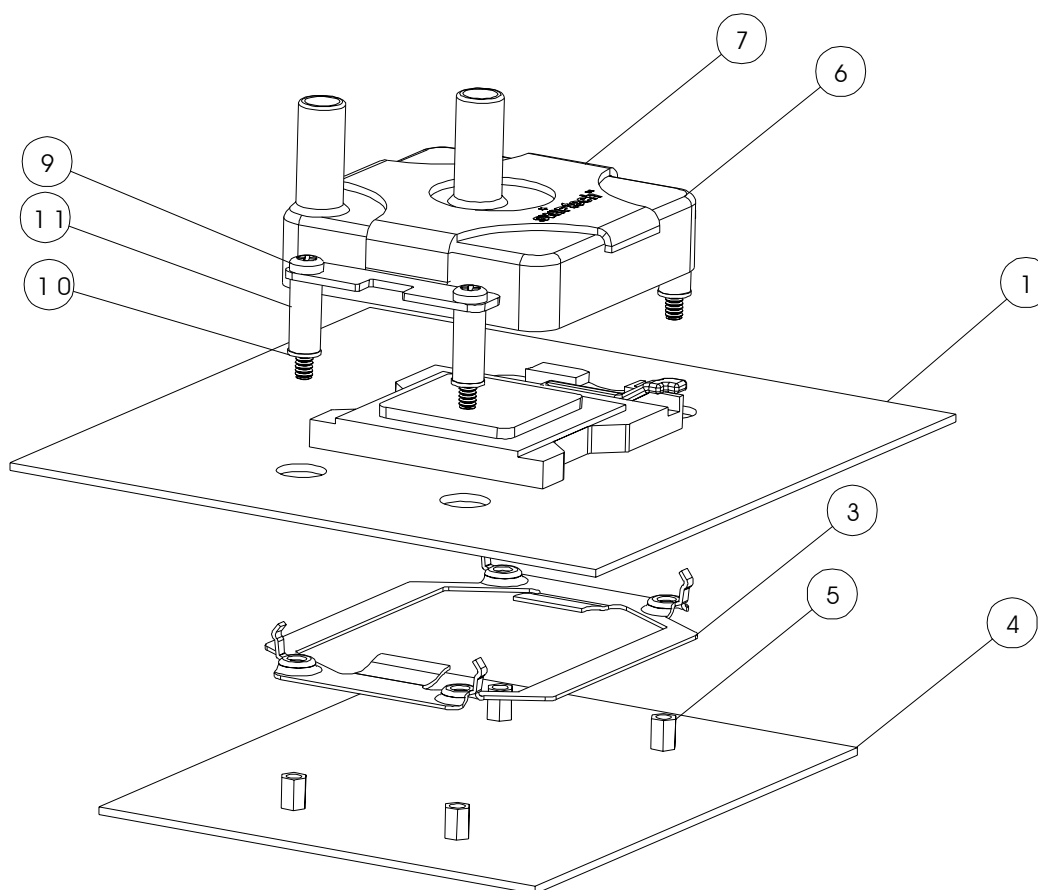
MCW6000-NX™ Water-block

Installation guide for Xeon™ “Nocona” (800MHz FSB) processors

Parts list

Parts	QTY	PARTS	QTY
MCW6000-NX™ water-block	1	6-32 x 7/8" Philips screws	4
Worm drive clamps	2	.600 x .250 Nylon spacer	4
SP4 hold-down plate	1	4-40 Nylon retaining washers	4

This product is intended for expert users. 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.



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	S604-NOCONA	Motherboard & CPU assembly
3	1	spring-backplate	retention spring (provided by motherboard vendors)
4	1	chassis	
5	4	STANDOFF-0.187	
6	1	MCW6000-FLAT	MCW6000 waterblock flat base
7	1	SP4-Bckt	SP4 Holding plate for Intel Pentium 4 and Xeon
9	4	90272A152-6-32x7-8-philips	6-32 x 7/8" (22mm) Philips screw
10	4	4-40 nylon retaining washer	4-40 nylon retaining washer
11	4	custom_spacer-r1	Nylon spacer .600 x .250 (15 x 6mm)

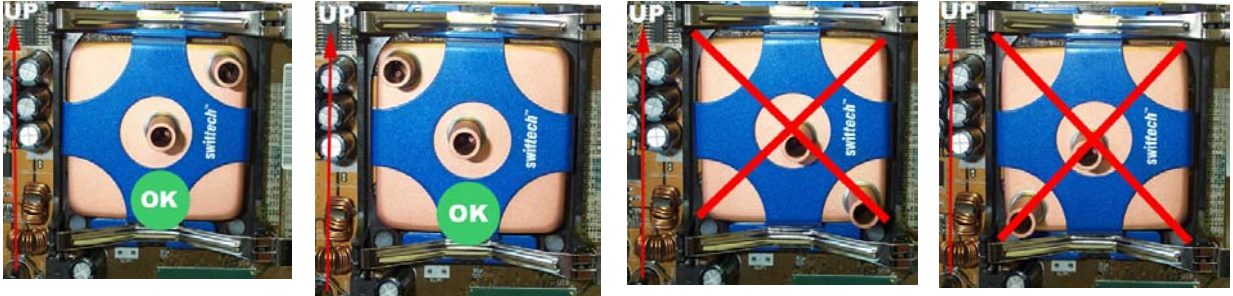
Figure 1

1. Preparing your Motherboard

- Remove the existing heat sink
- Carefully clean the CPU.
- Lightly coat the CPU with thermal compound. We recommend high quality thermal compound such as Arctic Silver or equivalent.

2. Water-block orientation

For ease of operations during the filling and bleeding procedures, the outlet should always be at the highest point (while the computer system is standing upright):



3. Water-block Installation

The MCW6000-NX water-block uses Intel's validated retention spring, provided in accordance to Intel specifications by the motherboard vendors. Installation of the water-block to the processor is identical to that of a standard heatsink, normally described in the motherboard installation guide. Simply screw down all 4 Philips screws to the chassis standoffs as shown in Figure 1, and installation is complete.

4. Connecting the water-block(s) to the cooling circuit

Carefully identify the direction of the flow in your circuit. For the MCW6000 to operate properly, the fitting located at the center of the water-block **MUST BE USED AS THE INLET**. In multi-processor environments, connect the two blocks in series: For example: from pump discharge to inlet of processor 1, discharge of processor 1 to inlet of processor 2, and discharge of processor 2 to radiator.

5. Attaching the tubes

When sold separately, the MCW6000™ ships with worm-drive type hose clamps. Secure the tubes as shown in figure 2 (shown in this example with an AMD hold-down plate), and tighten **firmly**. When sold in kits, the tubes are factory pre-installed with ear-clamps.

6. Alternate connections

The MCW6000™ can also be used with optional quick-connect fittings as shown in figure 3.

7. Type of Coolant

Being entirely made of copper, the MCW6000™ may be used with pure water, and does not necessitate the use of anti-corrosion agents. The use of an algacide is nonetheless recommended in any liquid cooling system, and our HydrX™ additive also performs such function.

8. 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. **Do not test the water-block using city water pressure.** This will bow the top of the housing and render the block unusable (and will void your warranty). **Maximum pressure allowable for testing is 25 psi (1.7 bar)**

Troubleshooting help is available on our web site at www.swiftnets.com, or by calling customer support at 562-595-8009.



Figure 2

Tubes attached with the included worm-drive clamps



Figure 3

MCW6000-A Water-block

Installation guide for AMD™ K7 processors

Parts list			
Parts	QTY	PARTS	QTY
MCW6000-P™ water-block	1	3T spring/clip assemblies	2
Worm drive clamps	2	SK7 hold-down plate	1

This product is intended for expert users. 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.

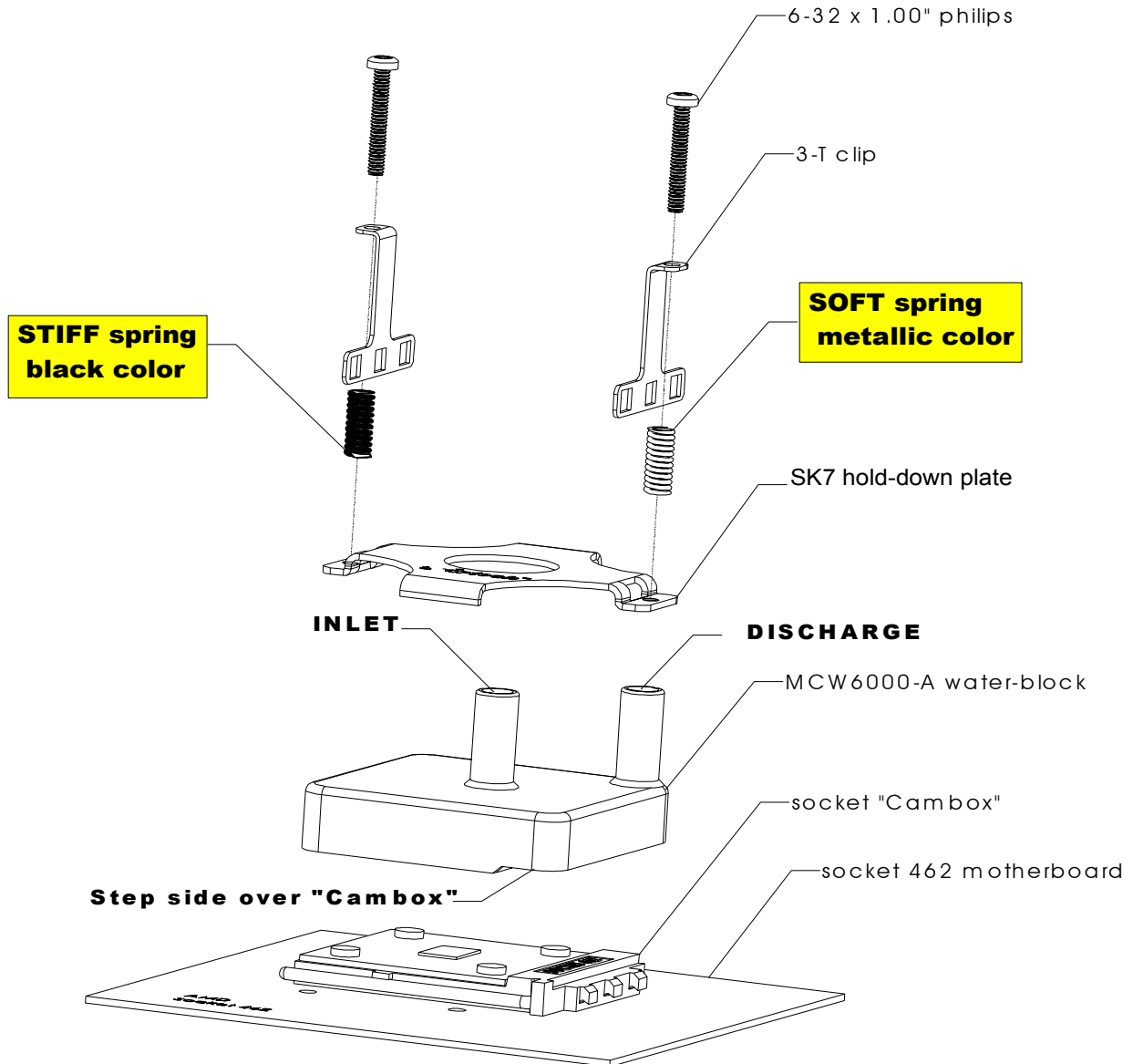


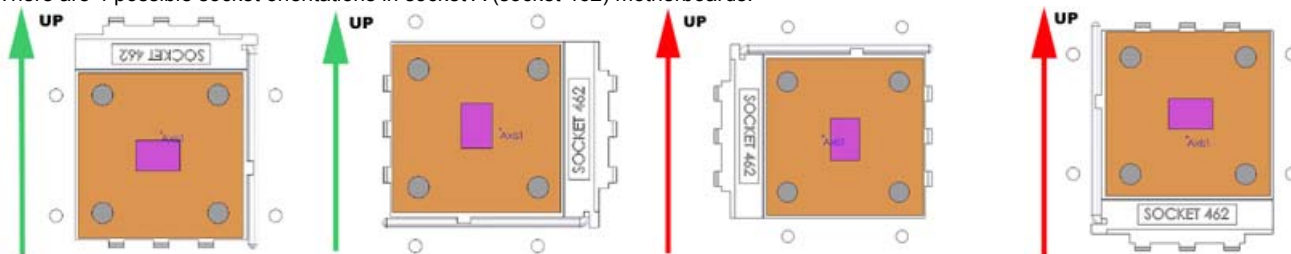
Figure 1

1. Preparing your Motherboard

- Remove the existing heat sink
- Carefully clean the CPU.
- Lightly coat the CPU with thermal compound. We recommend high quality thermal compound such as Arctic Silver or equivalent. Application will vary depending on the type of processor. We recommend visiting www.arcticsilver.com for detailed instructions.

Water-block orientation

There are 4 possible socket orientations in socket A (socket 462) motherboards:



Case 1

Most common - OK

Case 2

Most common - OK

Case 3

Dual processor boards Caution!

Case 4

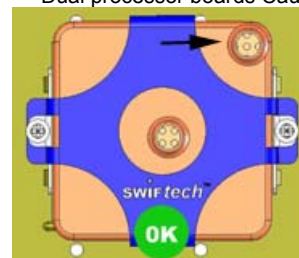
Dual processor boards Caution!

In order to bleed correctly during the fill and bleed operations, and while the system is standing upright, the water-block discharge should always be at the highest point, as shown in case 1 and 2.

If your block installs as shown in case 1 and 2, then proceed with installation instructions in paragraph 3.



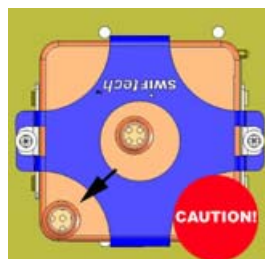
Case 1



Case 2

If due to the socket orientation the water-block is oriented as shown in case 3 or 4, such as frequently encountered in dual processor boards for example, then the water-block must be bled PRIOR to installation onto the socket:

Simply set-up your cooling circuit first, and while filling it up with fluid, hold the water-block in your hand with the discharge pointing upwards so that all the air trapped into the block will escape. **Then** attach the water-block onto the socket.



Case 3



Case 4

Water-block installation

CRITICAL PREAMBLE - MUST READ!

As shown in figure 1 page 1, there is a specific side allocated to each spring: the STIFF spring goes opposite to the socket cam-box, and the SOFT spring goes on the same side as the socket cam-box. The springs are color-coded to prevent any mistakes: the stiff spring has been plated with a black zinc coating, while the soft spring is zinc plated in a shiny metallic grey.

You **MUST** be extremely careful to respect this arrangement!

Not respecting this arrangement will result in unbalanced pressure, and prevent the water-block from sitting flat on the processor, resulting in high temperatures, and likely damage to the CPU.

Place the MCW6000-A™ over the CPU as shown in figure 1 page 1.

The water-block step side MUST be located over the socket cam box. A label affixed to the base of the water-block clearly identifies which side this is.

- ❑ The retention clips should snap over each side, and hook onto the socket tabs. Make sure that the clips are properly aligned to fit snugly underneath the tabs.
- ❑ **Gradually** loosen (counter-clockwise) each spring-loaded screw to release the spring tension, checking that the clips remain engaged underneath the tabs.
TIP: if space permits, hold the clips pressed against the socket while loosening the screws, as shown in figure 2. This will prevent the clips from disengaging themselves from underneath the tabs at start-up.

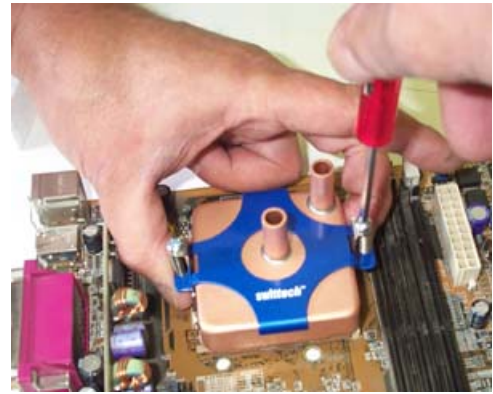


Figure 2

- ❑ Continue backing off until the head of the screw completely clears the top of the bracket, as shown figure 3.
- ❑ **Double-check to ensure that the clips have remained underneath the tabs.**
- ❑ Installation on the CPU is now complete !

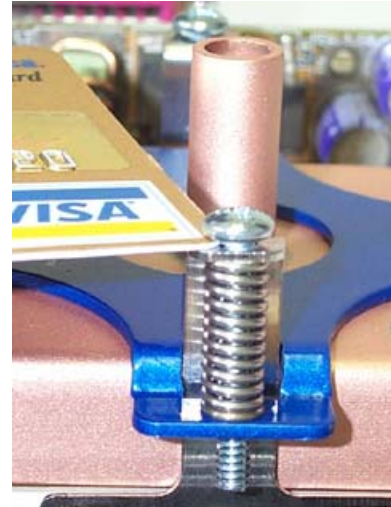


Figure 3

Connecting the water-block(s) to the cooling circuit:

- ❑ Carefully identify the direction of the flow in your circuit. For the MCW6000 to operate properly, the fitting located at the center of the water-block **MUST BE USED AS THE INLET**.
- ❑ **TIP! In multi-processor environments**, connect the two blocks in series: For example: pump discharge to inlet of processor 1, discharge of processor 1 to inlet of processor 2, and discharge of processor 2 to radiator.
- ❑ **Attaching the tubes:**
The MCW6000™ ships with 2' of tube already clamped to inlet and outlet.
- ❑ **Alternate connections:**
The MCW6000™ can also be used with optional quick-connect fittings (fig.5), or regular worm-drive hose clamps (fig. 4).



Figure 4 - Tubes attached with worm-drive clamps

Type of Coolant:

Being entirely made of copper, the MCW6000™ may be used with pure water, and does not necessitate the use of anti-corrosion agents. The use of an algaecide is nonetheless recommended in any liquid cooling system, and our HydrX™ additive also performs such function.

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. **Do not test the water-block using city water pressure.** This will bow the top of the housing and render the block unusable (and will void your warranty). **Maximum pressure allowable for testing is 25 psi (1.7 bar)**

Troubleshooting help is available on our web site at www.swiftnets.com, or by calling customer support at 562-595-8009.



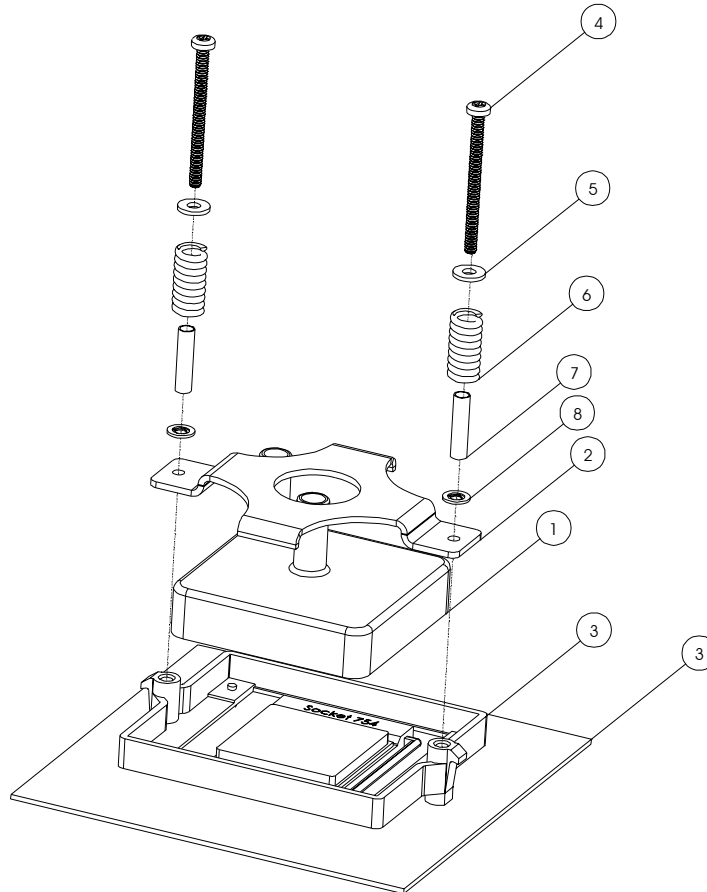
Figure 5 - Optional quick-connect fittings

MCW6000-64 Water-block

Installation guide for AMD® K8 processors

Parts	QTY	PARTS	QTY
MCW6000™ water-block	1	Spring loaded screw assemblies	2
Worm drive clamps	2	Sk8 hold-down plate	1

This product is intended for expert users. 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.



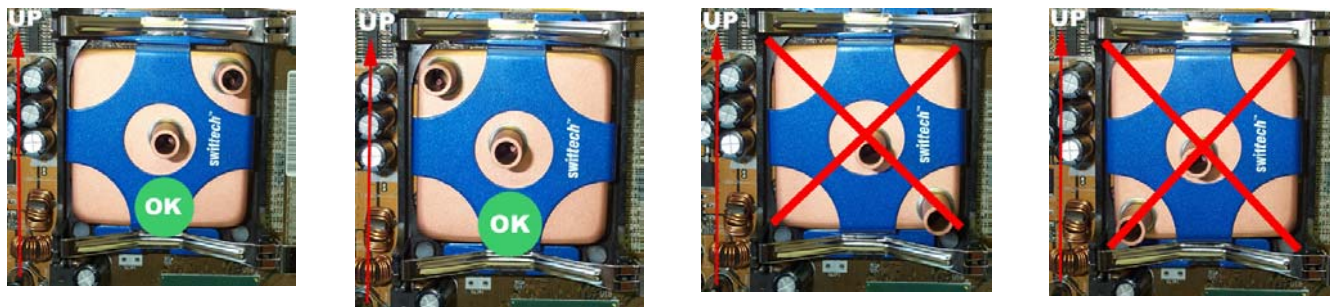
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	MCW6000-R2	MCW6000 flat base water-block
2	1	S754-RETENTION-r2	SK8 hold-down plate for AMD K8
3	1	K8 Motherboard	AMD K8 (Athlon 64 & Opteron) motherboard + processor assy.
	1	counter-plate	
	1	motherboard	
	1	retention-frame	
4	2	91772A158-6-32X1.75	6-32 x 1 3/4" phillips screw
5	2	93286A041-WASHER	zinc plated washer
6	2	885	spring
7	2	spacer-205x140x773	tension limiter
8	2	6-32 nylon retaining washer	6-32 nylon retaining washer

Figure 1

1. Preparing your motherboard

- Remove the existing heat sink
- Carefully clean the CPU.
- Lightly coat the CPU with thermal compound. We recommend high quality thermal compound such as Arctic Silver or equivalent. Application will vary depending on the type of processor. We recommend visiting www.arcticsilver.com for detailed instructions.

2. Water-block orientation



For ease of operations during bleeding, the outlet should always be at the highest point (while system is standing upright)

3. Water-block installation

The MCW6000™ simply bolts onto AMD retention frame as shown in figure 1, using the enclosed spring loaded screws. The tension limiter is designed to provide appropriate tension to the springs. Do not over-tighten the springs.

4. Retention frame issues

Most K8 compatible motherboards are shipped with AMD's validated plastic retention frame and metallic back-plate. In an effort to spare unnecessary costs to the majority of users, Swiftech does not include these items with the MCW6000 water-block.

Some motherboards however use non-standard retention systems, and plastic back-plates instead of the recommended metallic plates described in AMD's Athlon™ 64 Processor Thermal Design Guide.

For this reason, Swiftech offers an optional retention frame and back plate made to AMD standards, under Part # AJ00172 shown to the right.

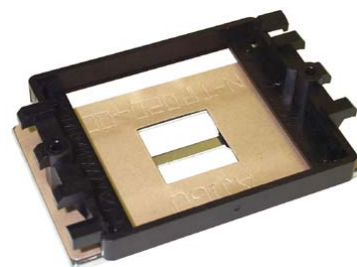


Figure 2

5. Connecting the water-block(s) to the cooling circuit:

Carefully identify the direction of the flow in your circuit. For the MCW6000 to operate properly, the fitting located at the center of the water-block **MUST BE USED AS THE INLET**.

6. Attaching the tubes

The MCW6000™ ships with 2' of tube already clamped to inlet and outlet.

7. Alternate connections

The MCW6000™ can also be used with optional quick-connect fittings (fig.4), or regular worm-drive hose clamps (fig. 3).

8. Type of Coolant

Being entirely made of copper, the MCW6000™ may be used with pure water, and does not necessitate the use of anti-corrosion agents. The use of an algicide is nonetheless recommended in any liquid cooling system, and our HydrX™ additive also performs such function.

9. 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. **Do not test the water-block using city water pressure.** This will bow the top of the housing and render the block unusable (and will void your warranty). **Maximum pressure allowable for testing is 25 psi (1.7 bar)**

Troubleshooting help is available on our web site at www.swiftnets.com, or by calling customer support at 562-595-8009.



Figure 3 - Tubes attached with worm-drive clamps



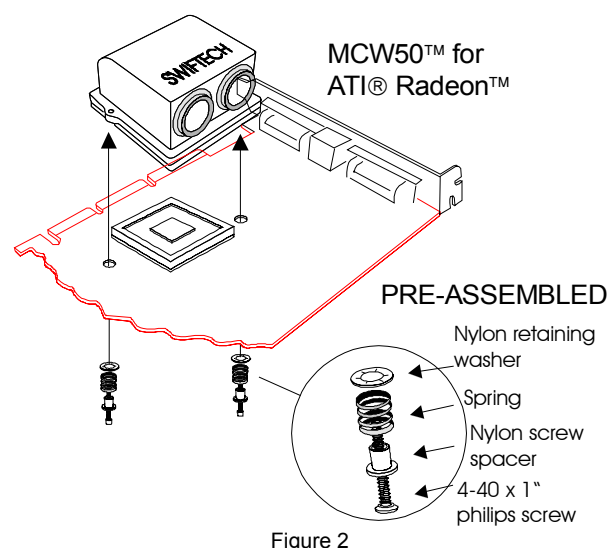
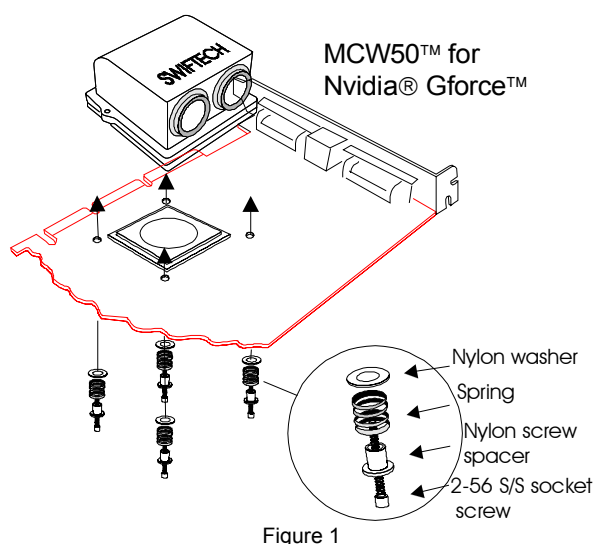
Figure 4 - Optional quick-connect fittings

MCW50™ VGA Water-block Installation Guide

Parts	QTY	PARTS	QTY
MCW50™ assembly	1	Spring	6
2-56 S/S socket screw	4	Nylon retaining washer	2
4-40 x 1" S/S phillips screw	2	Tube insert	4
Nylon screw spacer	6	Thermal compound	1
Nylon washer	4	Socket wrench	1

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.

Installation diagram



1. Preparing your graphics card

- Remove the existing heat sink
- Carefully clean the GPU (graphics processing unit)
- Lightly coat the GPU with the provided 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.

Before installing the block onto the graphics card cut two pieces of tubing of sufficient length to connect to the rest of your circuit, and install them into the MCW50™ Inlet and outlet. It is **absolutely imperative** to use the provided tube inserts with clear vinyl (soft) tubing, as shown below:



Shown here with an MCW50-T™ version



Shown here with an MCW50-T™ version



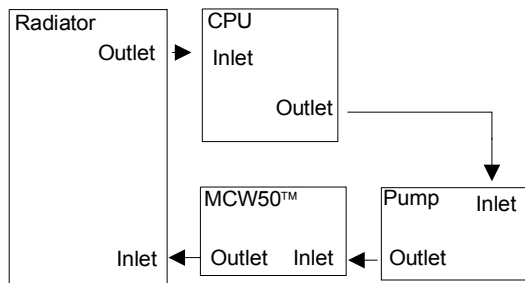
Make sure that the tubes are fully inserted into the fitting. The tip of the plastic tube inserts should be flush with the inlet and outlet openings, as shown above. Inserting the tubes requires a firm push, accompanied by a twisting motion, and a little bit of grease around the tubing really helps ☺

2. Installing the MCW50™ GPU Cooler

The MCW50™ retention mechanism can either use the two diagonal holes featured in many graphics cards such as ATI® Radeon™ 9000 to 9700 families, or the four mounting holes found in NVidia® GeForce™ families of products. It can also be installed with other graphics processors by using permanent bonding agents, such as thermally conductive epoxies. We recommend Arctic Silver™ or Arctic Alumina™ epoxy.

Install your block onto the graphics card, as shown in Figure 1 or Figure 2 (p.1) according to your application. A “finger –tight” lock is sufficient when tightening the spring retention assemblies. Over-tightening will squish the nylon screw spacer body, and result in uneven pressure over the GPU.

Recommended integration of the MCW50™ in an existing liquid cooling circuit:



Re-install the graphics card in the AGP slot, and proceed with filling and bleeding the cooling circuit.

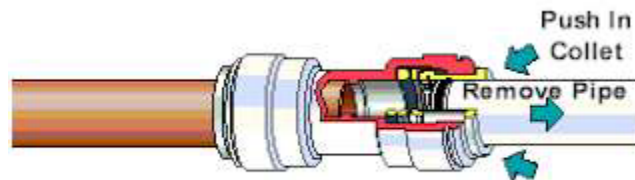
3. Type of Coolant:

- 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).
- In ALL cases, you MUST use Distilled water AND a corrosion inhibitor with the MCW50 water-block. Regular automotive anti-freeze is acceptable. Automotive manufacturers recommend that not less than 25% is used.
- NEVER use tap water, even for a short-term test.
- Not following paragraphs b and c above constitutes misuse (*) of the product, and will void your warranty.

4. 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.swiftnets.com, or by calling customer support at 562-595-8009.

Final note concerning removal of the tubing: Push in collet squarely against face of fitting. With the collet held in this position, the tube can be safely pulled out. Do not attempt to pull the tube out without pushing squarely against the collet. This may result in damaging the fitting. Further details for using quick-connect fittings are also available here: http://www.johnquest.com/install_6.shtm#disconnect:



MCW20-R™ Chipset Water-block

Installation guide for Intel® & AMD® platforms

Common parts to both platforms		Intel platform specific parts		AMD platforms specific parts	
Part	Qty	Part	Qty	Part	Qty
MCW20™ assembly	1	Neoprene pads (strip of 4)	1	4-40 x 1 1/2" Philips screws	2
Tube inserts	2	4-40 HOOKS	2	Black fiber washers	6
Arctic Alumina Thermal compound	1	Nylon tension limiter 1/2"	2	4-40 mini-nuts	2
4-40 x 3/16" socket screw		0.880" Spring	2	0.300" Spring	2
Socket wrench tool	2	Long bracket (1.10")	2	1/4" tension limiters	2
	1	Acorn nuts	2	Short bracket (.71")	2
				Knurled knobs	2

This product is intended for expert users. 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.

1. Preparation steps common to both platforms

Step 1: Pre-installation assembly schematics

Attach the brackets to the water-block with the provided socket wrench tool.

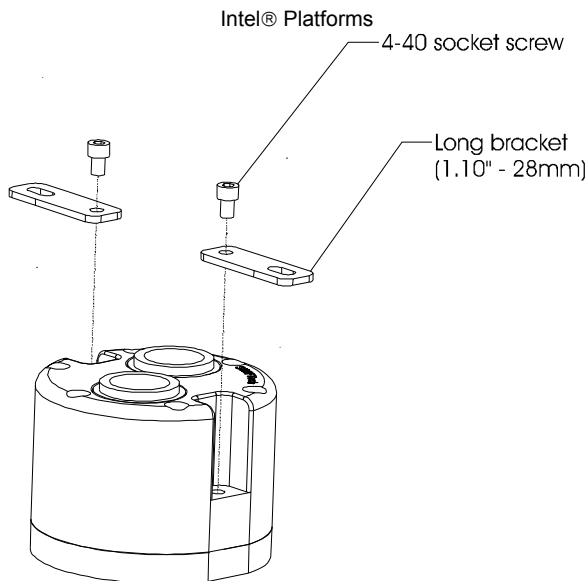


Figure 1

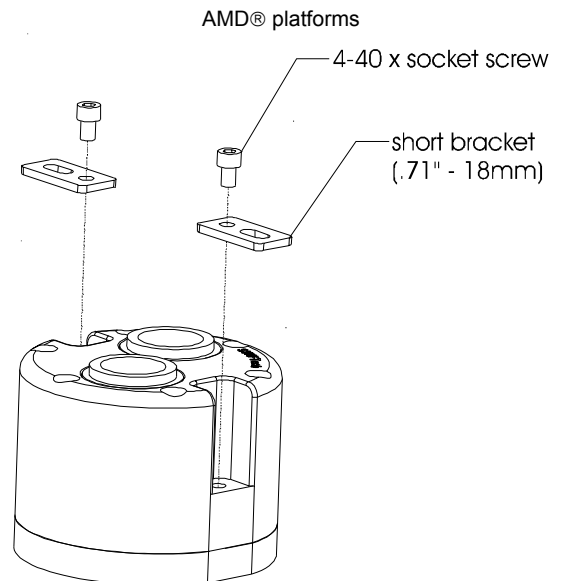


Figure 2

Step 2: Prepare the tubing

a. **Prepare two pieces of tubing** of sufficient length to connect to the rest of your circuit. The cuts must be square as shown in figure 1 or leaks may occur:

b. **Install the provided plastic tube inserts** at each end of the tubes, as shown in figure 4: these inserts are absolutely **imperative** when using any kind of **soft** tubing, such as vinyl, ClearFlex, Tygon, etc...

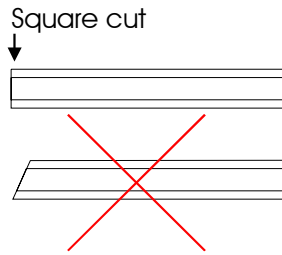


Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

c. **Spread a little bit of grease or liquid soap** around the tubing. It helps pushing the tubes in, particularly with Clearflex™ tubing, which features a very “sticky” surface.

d. **Fully insert both tubes into the fittings.** The tip of the plastic tube inserts should be flush with the inlet and outlet openings, as shown in figure 4 above. Inserting the tubes requires a firm push, accompanied by a twisting motion.

2. Installation for Intel® platforms

a. **Prepare your Motherboard**

- ☐ Remove the existing heat sink
- ☐ Carefully clean the processor, using alcohol
- ☐ Install the 4 neoprene pads as shown figure 8. This step is only necessary if the processor core is exposed. **If the chipset features a heat spreader (a large lid covering the entire area of the chipset), then the neoprene pads MUST not be installed.**
- ☐ Lightly coat the processor with the provided 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° angle

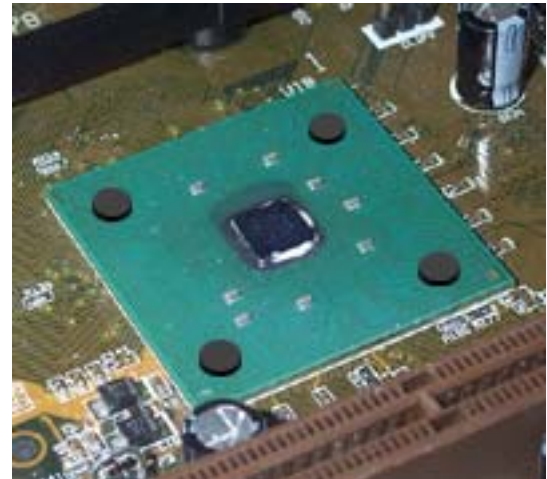


Figure 8

b. **Install the MCW20-P™ water-block**

- ❑ **TIP!** It is preferable to have the tubing inserted into the water-block BEFORE you install the block onto the motherboard. This is because pushing the tubes into the block while it is already installed could exert undue pressure onto the microprocessor.
- ❑ Place the MCW20-P™ onto the processor, as shown in figure 9: hooks should be engaged into two diagonal motherboard loops first, then install the nylon tension limiters (flange facing down), the springs, and tighten the assembly with the acorn nuts.

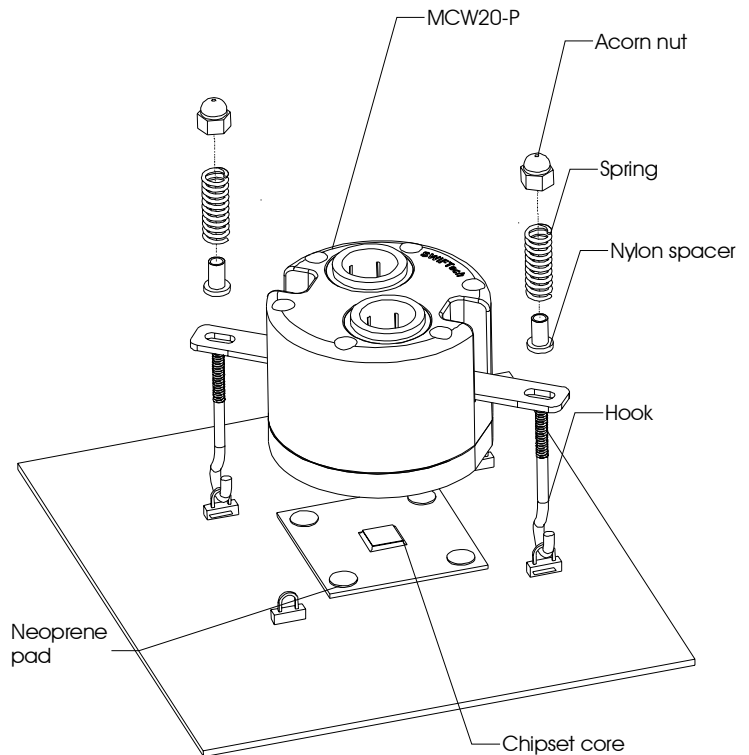


Figure 9

c. **Connect the block to the rest of the cooling circuit.**

d. **Type of Coolant:**

- a. 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).
- b. In ALL cases, you MUST use Distilled water AND a corrosion inhibitor with the MCW5002 water-block. Regular automotive anti-freeze is acceptable. Automotive manufacturers recommend that not less than 25% is used.
- c. NEVER use tap water, even for a short-term test.
- d. Not following paragraphs b and c above constitutes misuse (*) of the product, and will void your warranty.

e. **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.** If using Swiftech's fill-and-bleed kit, such test can be done without any liquid into the circuit. Please refer to the FBK525™ installation guide for details. Troubleshooting help is available on our web site at www.swiftnets.com, or by calling customer support at 562-595-8009.

3. **Installation for AMD® platforms**

1. **Preparing your Motherboard**

- ❑ Remove the motherboard from the chassis
- ❑ Remove the existing heat sink
- ❑ Carefully clean the microprocessor, using alcohol

2. Installing MCW20-A™ water-block

- ❑ Install the provided screws through the motherboard, using a black fiber washer on both sides of the motherboard, and tighten the nuts.
- ❑ Install the motherboard back into the chassis
- ❑ Lightly coat the microprocessor with the provided 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.
- ❑ **TIP!** It is preferable to have the tubing inserted into the water-block BEFORE you install the block onto the motherboard. This is because pushing the tubes into the block while it is already installed could exert undue pressure onto the microprocessor.
- ❑ Slide down the MCW20-A over the retention screws, as shown figure 10, then install the nylon tension limiters (flange facing down), the springs, and tighten the assembly with the knurled knobs. Over tightening of the assembly is prevented by the tension limiter. Users should be cautious nonetheless, as nylon can be easily crushed.

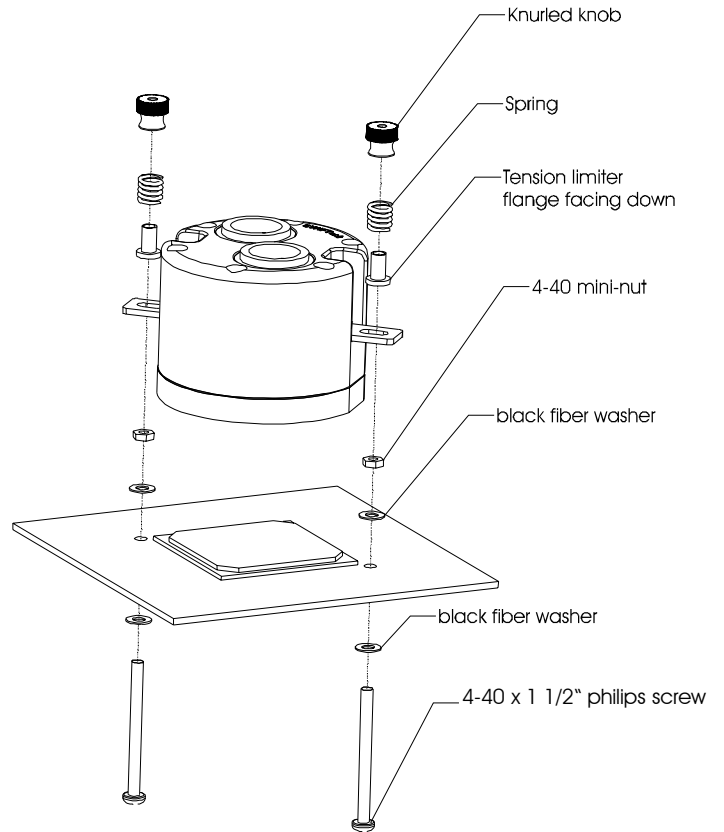


Figure 10

3. Connect the block to the rest of the cooling circuit.

The block is designed in such a way that it will bleed itself automatically in any vertical orientation (computer standing-up).

4. Type of Coolant:

- i) 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).
- ii) In ALL cases, you MUST use Distilled water AND a corrosion inhibitor with the MCW5002 water-block. Regular automotive anti-freeze is acceptable. Automotive manufacturers recommend that not less than 25% is used.
- iii) NEVER use tap water, even for a short-term test.
- iv) Not following paragraphs b and c above constitutes misuse (*) of the product, and will void your 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.swiftnets.com, or by calling customer support at 562-595-8009.

Note concerning removal of the tubing in quick-connect fittings: Push in the collet squarely against the face of the fitting using swiftech's tube removal tool, or a wrench of approximately the same opening diameter as the tube (1/2" +). The collet is the inner plastic ring protruding from the face of fitting. It fits loosely into the fitting, and can be moved up and down by approximately 1/8". With the collet firmly held against the face of the fitting, the tube can be safely pulled out. Do not attempt to pull the tube out without pushing squarely against the collet. This may result in damaging the fitting.

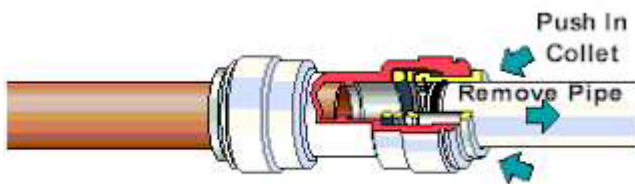


Figure 11

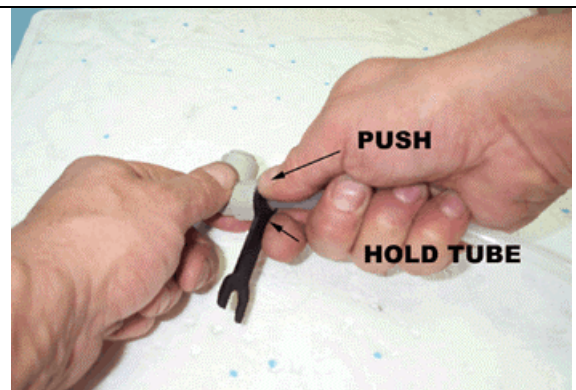


Figure 12