

These instructions are updated on a regular basis. Please visit our web site at <a href="http://www.swiftnets.com">http://www.swiftnets.com</a>

Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com

PAGE 1 of 20

Packing List

QTY	ITEM					
1	STORM water-block, including hold-down plate, various					
	processors mounting systems, and (2) hose clamps					
1	MCP655 pump, including mounting hardware and (2) hose					
	clamps					
1	MCRES-Micro, including mounting hardware, <sup>1</sup> / <sub>2</sub> " hose-barb					
	fittings, and (2) hose clamps					
1	MCR220 Radiator assembly, including (2) pre-installed 120mm					
	fans with fan guards, mounting hardware, 1/2" black nylon hose					
	barb fittings, (2) 12v to 7v adapters, (2) 12v to 5v 3-pin to 4-pin					
	Molex adapters, and (2) hose clamps					
	And					
	Pre-installed MCB-120 Radbox, with mounting hardware					
8	Feet 7/16" industrial grade PCV tubing					
1	Length (40") Coolsleeves 625 clear					
1	2 Oz. Bottle of HydrX concentrated coolant					
1	Syringe of Arctic Céramique thermal compound					

## TABLE OF CONTENTS

I.	PLANNING	4
1.	General Guidelines	4
2.	Tube Routing	4
II.	INSTALLATION OF THE COOLING COMPONENTS	5
1.	MCR220 Radiator installation	6
	Installation	6
2.	STORM Water-block installation	8
	Installation overview	8
	Individual installation schematics	8
I	ntel® Pentium® 4 Socket 478	9
I	ntel® Pentium® 4 Socket LGA 775	10
I	ntel® Xeon™ Socket 603/604	11
F	AMD® socket 462 – Athlon®, Duron®, MP, XP	12
ŀ	AMD® 64, Opteron® - Socket 754, 939, 940	13
3.	Re-installing the motherboard	14
4	Pump installation	14
<u> </u>	General Use	14
	Physical Installation	14
	Pump operating precautions.	14
		10
5.	Preparing the tubing	16
6.	MCRES-Micro reservoir Installation	17
	Installation	17
	Preparing the coolant	18
<u> </u>	Re-installing your power-supply	18
	Filling-up the circuit	18
7.	Troubleshooting	20
8.	Draining the system	20
9.	Periodic Maintenance	20

### INTRODUCTION

### Congratulations on your purchase of a Swiftech™ H20-APEX liquid cooling system!

This kit has been designed to facilitate the installation of the components with a minimum of case modifications. While all attempts have been made to make the installation of this system user friendly, please note that this system is intended for users that are well versed in installing computer components.

### DISCLAIMER

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.

In addition, Swiftech assumes no liability, 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 device in a personal computer, whether due to product failure, leak, electrical short, and or electro-magnetic emissions.

### 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. Planning

### 1. <u>GENERAL GUIDELINES</u>

- Please read this guide carefully and entirely before you start this installation. Plan your installation ahead. Observe the relative position of the components for possible interference with other components.
- Never work with electricity connected to the computer while work is in progress.
- Because some work is necessary that will require cutting holes in the case, it is strongly recommended to remove all the components from the case prior to begin with this installation.
- After the metal work has been completed, carefully clean the case to remove all metal debris.
- Once the time has come to re-install the motherboard and complete the liquid-cooling circuit, the motherboard should be disconnected from the power-supply at all times during the entire mock-up phase of the installation. In case of a spill or leak on the motherboard, do not panic! As long as the motherboard is not electrically connected, no harm is done. You must however thoroughly dry the exposed area, using a hair dryer for example, and wait a minimum of 6 to 8 hours prior to re-connecting the motherboard to its power source.
- □ The reservoir should preferably be installed at the highest point of the cooling circuit (top 5 ¼" tray), although this is not absolutely necessary if all the other components are self-purging.
- 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.
- A Make sure to dry-fit all components before making final connections and filling the water-cooling system.

### 2. <u>TUBE ROUTING</u>

The tubing for the water-cooling system must be routed to form a complete loop that includes all elements of the system. When daisy-chaining components, the simplest and most natural route is usually the best. Always avoid sharp bends that would kink the tubing!

Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: <u>http://www.swiftnets.com</u> Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com

	The following table contains examples on how to establish connections between the different elements of a cooling circuit to multiple possible configurations. These are guidelines only, and may change depending on the relative position of the com- inside your chassis.		
	From a performance standpoint there is very little performance to be gained from strictly controlling the component sequence maximum delta T (difference in temperature) between any two points of the liquid cooling circuit does not exceed 1°C. When possible, performance oriented users will typically want to route the radiator discharge(s) tube(s) to the inlet of the CPU coole the fluid exiting the radiators is always the coolest.		
Devices:		(1) CPU cooler + (1) Radiator + Pump-reservoir assembly	
Connect:		Pump discharge to radiator inlet Radiator discharge to CPU cooler inlet CPU cooler discharge to reservoir inlet Reservoir discharge to pump inlet – MANDATORY!	
Connect		Pump discharge to CPU cooler inlet CPU cooler discharge to radiator inlet Radiator discharge to reservoir inlet Reservoir discharge to pump inlet – MANDATORY!	
Devices		(1) CPU cooler + (1) VGA cooler + (1) Radiator + Pump-reservoir assembly	
Connect:		Pump discharge to VGA Cooler inlet VGA cooler discharge to radiator inlet Radiator discharge to CPU cooler inlet CPU cooler discharge to reservoir inlet Reservoir discharge to pump inlet – MANDATORY!	
Connect:		Pump discharge to CPU cooler inlet CPU cooler discharge to VGA cooler inlet VGA cooler discharge to radiator inlet Radiator discharge to reservoir inlet Reservoir discharge to pump inlet – MANDATORY!	
Devices:		(1) CPU cooler + (1) VGA Cooler + (1) chipset Cooler + (1) Radiator + Pump-reservoir assembly	
Connect:		Pump discharge to chipset cooler inlet Chipset cooler discharge to VGA cooler inlet VGA cooler discharge to radiator inlet Radiator discharge to CPU cooler inlet CPU cooler discharge to reservoir inlet Reservoir discharge to pump inlet – MANDATORY!	
Alternatively, Connect:		Pump discharge to CPU cooler inlet CPU cooler discharge to chipset cooler inlet Chipset cooler discharge to VGA cooler inlet VGA cooler discharge to radiator inlet Radiator discharge to reservoir inlet Reservoir discharge to pump inlet – MANDATORY!	
Devices: Connect:		Dual CPU cooler and VGA cooler (SLI) configurations CPU coolers in series: CPU cooler (1) discharge to CPU cooler (2) inlet VGA coolers in series: VGA cooler (1) discharge to VGA cooler (2) inlet	
Devices:		Dual Radiators: A second radiator can be added anywhere in the loop in series with the other components,	
Connect		For example Pump discharge to radiator (1) inlet Radiator (1) discharge to VGA cooler inlet VGA Cooler discharge to chipset cooler inlet Chipset cooler discharge to radiator (2) inlet Radiator (2) discharge to CPU cooler inlet CPU cooler discharge to reservoir inlet Reservoir discharge to pump inlet – MANDATORY!	

## II. Installation of the cooling components

Warning! Placement of the cooling components may vary depending on your chassis and motherboard configurations. A mock-up installation is thus necessary to estimate the length of the different sections of tubing that will be required between each component.

The following is the recommended sequence of components installation.

- 1. Radiator and fan
- 2. Water-block(s)
- 3. Pump

Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftnets.com

### 4. Reservoir

### MCR220 RADIATOR INSTALLATION

### Preamble:

1

The MCR220<sup>™</sup> dual 120mm radiator ships with the fans and the Radbox chassis already pre-assembled to the radiator. It is assumed in effect that users will take advantage of our Radbox concept (external radiator installation) due to the benefits it provides and ease of installation. In such context, the following installation guide describes this type of installation. We also recognize that due to various considerations (cosmetics, space, or simply user preference) a number of users will wish to install the MR220 radiator internally. Because of the large size of the radiator, it is most likely that an internal installation will require extensive modifications in most computer cases. Because these modifications depend on the structure and dimensions of each individual chassis, we simply cannot provide precise installation instructions to this effect. Here are some general guidelines that advanced "case-modders" should take into consideration:

### Radiator installation, general considerations:

For optimum performance radiators require an unobstructed source of cool air. This dictates either an external mounting or one on/in the case where the radiator will draw cool air from the exterior. The second consideration is the placement of the inlet and outlet connections; at least one connection should be at the 'top' of the radiator to make it self-purging.

An external mounting can be effected by means of the RadBox affixed to the backside of the case and the tubing routed through holes drilled in the case underneath the power-supply. This places the connections at the top of the radiator and it will preclude the accumulation of air in the radiator.

Single 120mm fan radiators can be mounted over appropriately sized openings in a variety of cases; conversely, mounting a dual 120mm radiator is considerably more difficult and generally results in placing the radiator 'inverted' at the top, or 'right side up' at the bottom. Note that the 'inverted' mounting places the inlet and outlet facing down; this mounting will accumulate air over time. Placing the radiator 'right side up' in the case bottom will make the radiator self-purging, but it will gather dust VERY quickly if adjacent to the floor. In any case, mounting a dual 120mm radiator inside a case will require some extensive case modifications for the air inlet.

### Installation

- Place the radiator assembly on the back of the computer to roughly estimate where it will fit best.
- You need to consider the following clearance issues:
  - Exit cables and connectors from various PCI devices: the Radbox base plate can be moved in both vertical and horizontal directions to allow clearance for the cables
  - > Opening the side panel once the Radbox is installed: the Radbox is supplied with various nylon spacers to separate the base plate from the surface of the back-panel and to provide clearance for opening of the side-panel.
  - Note that a chassis with 80mm fan opening(s) is likely to provide a very good range of adjustments. Conversely, a chassis featuring a single 120mm fan opening the base-plate is a direct bolt on, but offers no adjustments, which may or may not suit our installation for the purpose of positioning the radiator. In that case, it will be become necessary to drill (4) mounting holes of 0.150" (~3.5mm) in diameter to install the base plate at the desired location.
- Securing the base plate at the desired location.



Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com **TIP:** In the package of assorted hardware coming with your Radbox, locate the 4 little nylon retaining washers looking like this:



Use these to secure the screws and nylon spacers to the computer back-panel. This will hold the screws in place while you adjust the Radbox back-plate.

- Once satisfied with the position, bolt down the Radbox back-plate with the provided nylon nuts.
- Next, you will need to mark the location of the holes that must be drilled to allow routing of the tubes through the computer back-panel. You can cut two small pieces of the provided PVC tubing and install these to the radiator hose barbs, then temporarily mount the radiator assembly onto the back-plate. The tubing will provide a convenient way to mark the position of the holes as shown below:



- Remove the radiator assembly from the back-plate and mark the center of the circle.
- Two rubber grommets are provided with your kit so that you can route the tube though the case without damaging the tubing with the sharp edges of the hole. The required hole diameter for the grommet is 7/8" (23mm).
- To cut the holes, use a heavy-duty Bimetal hole saw of 7/8" in diameter:





- Once the two holes are cut, de-burr the edges, and install the grommets.
  - Install your radiator assembly onto the back plate.

Once the tubes are connected to the radiator, the final results will look like so:



Finally, you need to route the fan wires through the backpanel. This can be done easily with the provided PCI adapter plate featuring a hole and grommet for protection of the wire.



Your MCR220 Radiator is now installed!

Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: http://www.swiftnets.com Rouchon Industries. Inc., dba Swiftech – 1703 E, 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel, 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com

#### 2. STORM WATER-BLOCK INSTALLATION

If you followed our general guidelines listed on page 5, your motherboard should have been removed from the case, and it is now time to install the STORM water-block. Please follow the installation procedures described below, and listed per class of processor.



**Exploded View** 

Swiftech's Storm water-block ships with all the necessary hardware to install with the following processors: Intel® Pentium® 4 Socket 478, and socket LGA 775, Xeon<sup>™</sup> (socket 603/604), AMD® socket 462, 754, 939, and 940. Removal of the motherboard is necessary to install the mounting posts in all cases, except for AMD® socket 754, 939 and 940.

Two sets of barb fittings are supplied to accommodate high-performance circuits: 3/8" barbs, and ½" barb. For installation with the H20-APEX liquid cooling kit, you will need to use the 1/2" barb fittings.

#### Installation overview

- Install the fittings with their o-rings into the water-block.
- Remove the existing heatsink from your motherboard.
- Apply the provided Arctic Céramique thermal compound to the CPU following the comprehensive installation instructions provided here: http://www.arcticsilver.com/ceramique instructions.htm
- Install the Storm water-block following the individual instructions provided for each type of CPU socket described hereafter.

#### Individual installation schematics

Preamble: The provided mounting hardware is common to Intel® Pentium® 4 socket 478, socket LGA775, and AMD® socket 462. AMD® socket 754, 939, 940 mounting hardware is different, and identified separately as such.

Copyright Swiftech 2005 - All rights reserved - Last revision date: 4-16-05 - Information subject to change without notice - URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28th Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 8 of 20

# Intel® Pentium® 4 Socket 478

ITEM #	QTY.	PART NO.	DESCRIPTION
A	1	S478	Intel Pentium 4 socket 478 motherboard and processor
В	1	storm-assy2	
С	1	STORM-HOLD-DOWN-R1	Storm Universal hold-down plate
D	2	1-4-straightx3-8-barb	1/4" NPSM Barb fitting
E	2	O-RING-9557K473	1-4" NPSM barb fitting O-Ring
F	4	6-32-Acorn-nut	
G	4	SPRING6	70927compressed-to-0337
Н	8	12SWS0444	NYLON SHOULDER WASHER
I	4	6-32-nut	6-32 nut
J	4	LOCK-WASHER#6	
K	8	FW140X250X0215FB BLK	black fiber washer
L	4	6-32X1.750	6-32 x 1 3-4" philips screw



Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: <a href="http://www.swiftnets.com">http://www.swiftnets.com</a> Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 9 of 20

# Intel® Pentium® 4 Socket LGA 775

ITEM #	QTY.	PART NO.	DESCRIPTION
A	1	LPGA 775	Prescott Socket T Representation
В	1	storm-assy2	
C	1	STORM-HOLD-DOWN-R	Storm Universal hold-down plate
D	2	1-4-straightx3-8-barb	1/4" NPSM Barb fitting - 3/8" & 1/2" supplied
E	2	O-RING-9557K473	1-4" NPSM barb fitting O-Ring
F	4	6-32-Acorn-nut	
G	4	SPRING6	70927compressed-to-0337
Н	8	12SWS0444	NYLON SHOULDER WASHER
1	4	6-32-nut	6-32 nut
J	4	LOCK-WASHER#6	
K	8	FW140X250X0215FB BL	black fiber washer
L	4	6-32X1.750	6-32 x 1 3-4" philips screw



Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: <a href="http://www.swiftnets.com">http://www.swiftnets.com</a> Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 10 of 20

## Intel® Xeon<sup>™</sup> Socket 603/604

Use all parts from "common parts pack" except Philips screws: replace with the enclosed 6-32 1 7/8" long screws, instead of the 1 3/4" long supplied in the common parts pack.

The following parts are only compatible with Xeon processors operating at 533Mhz and below, and are not compatible with Intel Xeon "Nocona" class processors (800Mhz Front Side Bus) which require a different retention mechanism available in option.

ITEM #	QTY.	PART NO.	DESCRIPTION
A	1	Socket-603-604-dual	
В	1	storm-assy2	
С	1	STORM-HOLD-DOWN-R	Storm Universal hold-down plate
D	2	1-4-straightx3-8-barb	1/4" NPSM Barb fitting
E	2	O-RING-9557K473	1-4" NPSM barb fitting O-Ring
F	4	92949A151	6-32 x 3/4" button socket head screw
G	4	6-32-Acorn-nut	
Н	4	SPRING6	70927compressed-to-0337
I	8	12SWS0444	NYLON SHOULDER WASHER
J	4	6-32-nut	6-32 nut
K	4	LOCK-WASHER#6	
L	8	FW140X250X0215FB BL	black fiber washer
М	4	6-32x1.7-8-philips	



Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: <a href="http://www.swiftnets.com">http://www.swiftnets.com</a> Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 11 of 20

# AMD® socket 462 - Athlon®, Duron®, MP, XP

It is necessary to remove the pre-installed hold-down plate prior to installation. Simply unscrew the 4 button head screws holding the assembly together using the provided 5/64 Allen wrench, remove the hold-down plate, and re-install the screws with the provided nylon washers instead as shown below.

ITEM #QTY		PART NO.	DESCRIPTION	
A	1	socket462		
В	1	storm-assy2		
С	2	1-4-straightx3-8-barb	1/4" NPSM Barb fitting	
D	2	O-RING-9557K473	1-4" NPSM barb fitting O-Ring	
E	4	92949A151	6-32 x 3/4" button socket head screw	
М	8	16FW006062	.31x.14x.06 nylon washer	
F	4	6-32-Acorn-nut		
G	4	SPRING6	70927compressed-to-0337	
Н	8	12SWS0444	NYLON SHOULDER WASHER	
I	4	6-32-nut	6-32 nut	
J	4	LOCK-WASHER#6		
K	8	FW140X250X0215FB BLK	black fiber washer	
L	4	6-32X1.750	6-32 x 1 3-4" philips screw	



Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: <a href="http://www.swiftnets.com">http://www.swiftnets.com</a> Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 12 of 20

# AMD® 64, Opteron® - Socket 754, 939, 940

ITEM #	QTY.	PART NO.	DESCRIPTION
A	1	counter-plate	Back plate AJ00264
В	1	motherboard	
C	1	retention-frame	Retention frame AJ00172
D	1	storm-assy2	
E	1	STORM-HOLD-DOWN-R1	Storm Universal hold-down plate
F	2	1-4-straightx3-8-barb	1/4" NPSM Barb fitting
G	2	O-RING-9557K473	1-4" NPSM barb fitting O-Ring
Н	2	93286A041-WASHER	zinc plated washer
I	2	885	spring
J	2	6-32x2.25-philips	6-32 x 2 1/4" philips screw
K	2	spacer-205x140x773	tension limiter
L	2	13RS031214	Nylon spacer 0.312X0.14X0.281



Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: <a href="http://www.swiftnets.com">http://www.swiftnets.com</a> Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 13 of 20

### 3. RE-INSTALLING THE MOTHERBOARD

Now that the STORM water-block is securely fastened to the motherboard, go-ahead and install the motherboard into the chassis, following the instructions provided in your motherboard installation guide.

### 4. PUMP INSTALLATION

### General Use

The MCP655 pump is a magnetically driven centrifugal pump featuring a 12 V DC motor. It requires no maintenance when used with demineralized water and the appropriate anti-fungal additives. We recommend using 5% Swiftech's HydrX<sup>™</sup> as an additive. The pump is designed to be connected to your computer power supply using the standard Molex 4 pin connectors.

The MCP655 pump is neither submersible, nor selfpriming. The inlet needs to be continuously supplied with fluid for the pump to operate properly.

### 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 the final 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.
- The back of the pump features a potentiometer to allow users to vary the pump speed from 1800 to 4800 rpm. Full speed is suggested for maximum performance. When reducing the pump speed, the operating noise will also decrease proportionally, but so will the performance. A flow rate chart is provided below
- Pump operating precautions:

### The MCP655 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 \*\*).



Note: Always make sure to directly connect the RESERVOIR DISCHARGE to the PUMP INLET.

Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: <u>http://www.swiftnets.com</u> Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 14 of 20

Permanent installation to the chassis, and exploded view



Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com

PAGE 15 of 20

PREPARING THE TUBING

Now that your radiator, water-block and pump are in place, it is time to cut segments of tubing and connect the devices together.

Your kit also comes with a 40" length of Coolsleeves coils which, when extended is a sufficient length to cover 6 feet of tubing. Use of these coils is mandatory in order to prevent kinking and flattening of the tube over time.

Start by wrapping the included Coolsleeves coil around the 4-foot piece of tube. Leave yourself enough Coolsleeves to wrap the water-block(s) pre-installed tubing.



Wrap the Coolsleeves coils around the tubing



Gather the Coolsleeves coils towards the center of the tubing, and then pull on the ends of the tubing. This will allow the coils to expand to their natural pitch.

Tight radii sections require that coils be close to each other (1/8" spacing coil to coil). In straight sections, coils can be spaced up to 1/4" or more, coil to coil

Then, with one end of a tube connected to a startup component such as the water-block for example, roughly estimate the length that you will need to the next component, and cut the tube and coil squarely with a pair of scissors. Work your way through the entire circuit in the same fashion, until you are satisfied with the tube routing.

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,

Secure all the connections of tube to hose barbs with the provided hose-clamps:



Copyright Swiftech 2005 - All rights reserved - Last revision date: 4-16-05 - Information subject to change without notice - URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28th Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 16 of 20

5.

### MCRES-MICRO RESERVOIR INSTALLATION

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MCRES-MICRO	Reservoir	1
2	1-4" NPSM x 3-8" and 1-2"barb	Barb fitting	2 pairs each
3	O-RING-9557K473	Barb fitting O-Ring	2
4	pg7-o-ring	Fill-cap o-ring	1
5	pg7-plug	Pg7 Fill-cap	1
6	MOUNTING HARDWARE		3
6а	90272A152-6-32x0500philips	6-32 x 7/8" (22mm) Philips screw	1
6b	90760A007	6-32 Nut	1
6c	washer-91007A614	Lock Washer	1
6d	WASHER-RUBBER-437X150X092	Rubber Washer	1



### Installation

The MCRES-MICRO can be installed in any suitable location meeting its form factor requirements. For filling and bleeding purposes, it is preferable to hold or to install the MCRES-MICRO at the highest point of the liquid cooling loop. However, once filled and hermetically closed, the reservoir can be installed practically anywhere as long as it is kept upright as shown in figure 1. Also, to facilitate the filling and bleeding operations, you might want to wait until the circuit has been filled-up before you fasten the reservoir permanently to the chassis.

Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 17 of 20

6.

- Fastening the device to the case: two mounting methods can be used
  - Permanent mount with the provided mounting hardware as shown in figure 1. Three holes will need to be drilled for a permanent mount. Simply use the reservoir as a template to mark the hole locations, and use a 0.150" (4mm) drill bit to drill the holes. Make sure to clean up any metal shavings from the case once you are done.
  - Easy mount, with the provided Velcro strips. This is a fairly secure mount, as we use extra strong Velcro. However, if your computer is to travel often (LAN parties for example), a permanent mount remains more suited for a more reliable fastening of the device.
- The only critical precaution to take when installing the reservoir is to make sure that the discharge line is directly connected to the inlet of the pump. In other words, the pump (inlet) should be the first device connected to the reservoir discharge. Using a different routing will make the filling and bleeding of the circuit difficult, and may prevent the pump to prime properly.
- Once you have found a suitable location for the reservoir, go ahead and connect the tubing to the reservoir fittings, then secure them with the provided hose clamps.

### Preparing the coolant

- Your kit comes with a 2 Oz (60ml) bottle of Swiftech's specially formulated HydrX<sup>™</sup> concentrated coolant. The
  product should be mixed with <u>distilled water only</u>. Simply empty the concentrated coolant into a 33 fl oz (1 liter)
  plastic bottle, and complete filling with distilled water. Your coolant is now ready. Note: a 5% mix might still allow
  some algae formation over prolonged usage if your system is continuously exposed to daylight (such as a clear
  acrylic case for example). Under such circumstances, we would suggest using a 10% mix.
- Use of alcohols (Alcohol Allyl, Amyl, Benzyl, Ethyl (Ethanol), Isopropyl, Methyl (Methanol), n-Butyl) or antifreeze products containing the listed alcohols is prohibited as it will result in deterioration of the reservoir over-time, and will void your warranty. Resistance to Ethylene and Methylene glycol used in antifreeze products is excellent.
- **Minimum Operating Level** is situated at the Swiftech Logo (approximately ½" of the reservoir). The reservoir should not be operated below this level, which could result in degradation of the system cooling.

### Re-installing your power-supply

Prior to fill-up the circuit, you will need to re-install your power-supply in order to start-up the pump during the fill
procedure. You must be able to start the PSU without it being connected to the motherboard. While the Internet
contains numerous references on how to use a paper-clip to short-out pin 13 and 14 of the 20 pin ATX connector as
shown below, we nonetheless recommend instead using a power-supply tester. A wide variety of these common
devices are available on the Internet (Google key word: "PSU tester"), and among Swiftech resellers
(www.frozencpu.com, www.Directron.com, www.newegg.com, etc.).



### □ Filling-up the circuit

Simply pour the coolant that you prepared into the reservoir – carefully to avoid spills, allowing the circuit to fill-up by simple gravity. Note: for the gravity to take effect the reservoir should be placed or held at the highest point of the cooling circuit. Once the reservoir is full, seal the fill port back with its cap in order to avoid any spills, and start-up the pump. The reservoir will quickly (within 1 second) empty itself. Immediately turn off the pump, top-off the fluid to the maximum level, and restart the pump. You need to repeat this operation 2 to 3 times, until the circuit is finally full of coolant. Then, allow the system to run 10 minutes uninterrupted to clear all the micro-bubbles and foam, and finally top-off the level one last time. Your liquid cooling circuit is now ready, and you may permanently install the reservoir.
 Allow the system to run for (3) hours, and frequently inspect all your connections for possible leaks before

you reconnect and re-install all your components (motherboard, hard drives, etc.)

### **CONGRATULATIONS, YOUR INSTALLATION IS NOW COMPLETE!**

Copyright Swiftech 2005 – All rights reserved – Last revision date: 4-16-05 - Information subject to change without notice – URL: http://www.swiftnets.com Rouchon Industries, Inc., dba Swiftech – 1703 E. 28<sup>th</sup> Street, Signal Hill, CA 90755 – Tel. 562-595-8009 – Fax 562-595-8769 - E Mail: Swiftech@swiftnets.com PAGE 18 of 20



Example of installation (including the MCW55 VGA cooler)

### 7. TROUBLESHOOTING

\* Air keeps circulating into the circuit, long after the pump has primed:

- There is a significant pocket of air trapped into the circuit. In most cases this will be due to the fact that the radiator and or the water-block where installed upside down. Temporarily dismount the device and re-orient right side-up until all the air has escaped back into the circuit.
- The fluid level is too low: top-off the reservoir to the appropriate level.
- One of the components connections is loose, or improperly tightened: Inspect each connection for traces of moisture, and tighten all worm-drive clamps, and various connections in the circuit.

### The pump does not prime.

• It is likely that the circuit is not installed correctly. Please check that the reservoir discharge is duly connected to the pump inlet. Reminder: do not let the pump run dry.

### \* The Coolant is filled with debris of some sort:

Despite our best efforts, such as lengthy ultrasonic cleaning of the radiator, and careful inspection and cleaning of all the parts we manufacture, it is always possible that debris or some sort may be contaminating your circuit. When this happens it will significantly affect the performance of the STORM water-block, which mini-jets can be easily obstructed due to their small size. The circuit should then be completely flushed (see draining procedure below), and the STORM water-block should be disassembled for inspection and cleaning.

### 8. DRAINING THE SYSTEM

- Open up the fill-cap from the MCRES-Micro
- Then, you will need to disconnect a line from one of the lowermost components. Typically, this would be the pump. You need to procure a bucket large enough to receive approximately 1 liter of fluid, and place the bucket underneath the connection that you intend to "break". Disconnect the line, and place both ends into the bucket, until all the liquid is drained from the system.

### 9. 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 maintain the optimum performance of your cooling system.
- Inspect the liquid level inside the reservoir, and refill if necessary (no refills are normally necessary for 18 months of continuous usage). Evaporation in this closed circuit is extremely limited, but still present due to some permeability in the vinyl lines.