

MACH Velocity™ MP_e

Multiprocessing G4 upgrade for PowerMacs G3 & G4/PCI



MACH Velocity™ 1x
"Solo"
(with one G4 MPe processor)



Ready to be upgraded to
multiprocessing with
a G4 ZIF MPe
processor!

MACH Velocity™ MP_e

Multiprocessing G4 upgrade for PowerMacs G3 & G4/PCI



ATLANTA: One Meca Way, Norcross, GA 30093 770-564-5682, fax 770-564-5675
EUROPE: Seymour House, Whitetleaf Road, Hemel Hempstead, HP3 9DE, UK
Tel: +44 1442 255899, Fax +44 1442 243896, euinfo@xlr8.com

ML_CVR_MChVlcty_030901



Installation and User Manual

Table of Contents

Preface	1
<i>System Requirements</i>	1
Chapter 1 - Installing and using the software	2
<i>Installing XLR8 MACH Speed Control</i>	2
<i>Using XLR8 MACH Speed Control</i>	3
Chapter 2 - Installing the MACH Velocity upgrade card	6
<i>General Installation Instructions</i>	6
<i>Installation in a PowerMac G3 Beige (desktop or mini-tower)</i> ...	7
Chapter 3 - Technical Support	13
<i>Contacting XLR8</i>	13
<i>About Troubleshooting the MACH Velocity upgrade card</i>	13
<i>Troubleshooting the MACH Velocity upgrade card</i>	14
<i>Setting the jumpers on the MACH Speed ZIF MPe processors</i>	15

Preface

Thank you for choosing the MACH Velocity upgrade card. Your new upgrade leads the industry in compatibility and stability, and is designed to provide leading edge performance and years of trouble-free operation.

Important:

Before installing your MACH Velocity, read the instructions covering your machine carefully.

- **Static electricity can cause damage to the CPU card** and other computer components including the motherboard. Please use the included grounding wrist strap while installing or removing your MACH Velocity.

Included with your package

The MACH Velocity package includes everything you need to install and use your card.

Your package includes:

- MACH Velocity processor upgrade card (1 or 2 processors)
- Anti-static wrist strap
- XLR8 MACH Speed Control software
- Installation Manual
- Two heatsinks with clips (one heatsink installed)
- Thermal grease
- Screwdriver

Installing and using the software



This chapter provides installation instructions for XLR8's exclusive and fully-automated XLR8 MACH Speed Control software and will provide detailed instructions on:

- Installing XLR8 MACH Speed Control
- Using XLR8 MACH Speed Control

Your package provides the XLR8 Universal Install CD which includes everything needed to enable and periodically review your upgrade card's status, additional information, and electronic documentation. The latest updates are available via <http://www.xlr8.com>.

XLR8 MACH Speed Control has been designed to work with single and multiprocessor upgrades.

Installing XLR8 MACH Speed Control

Installation of XLR8 MACH Speed Control is fully automatic. Installing this software prior to installing the processor upgrade is highly recommended.

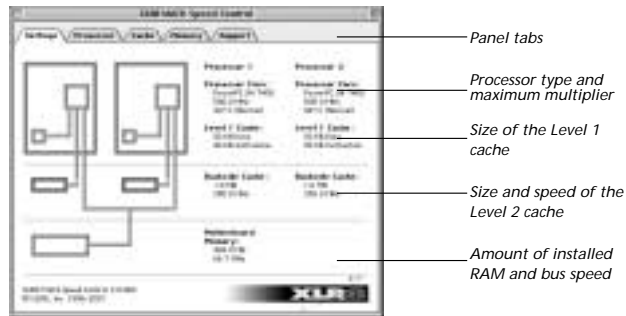
1. Install the software:
 - After booting your Macintosh, insert the XLR8 Universal Install CD.
 - Double-click the language of your choice. You should then double-click the MACH Velocity MPE folder, according to your type of upgrade.
 - Launch the XLR8 MACH Speed Control installer by double-clicking the XLR8 MACH Speed Control installer icon.
 - Read the text and follow the on-screen instructions until you have completed the installation.
 - Restart your computer.

Using XLR8 MACH Speed Control

Checking the status of your card

In the Control Panels folder of your start-up disk, open XLR8 MACH Speed Control by selecting it in the Control Panels hierarchical menu in the Apple Menu. In addition to controlling the backside cache of the upgrade card, XLR8 MACH Speed Control also provides dynamic information on the status of your card and the configuration of your computer.

Navigating the Control Panel is accomplished via the tabs at the top of the dialog. Information for each of the tabs is shown below. Interactive help is always available by clicking on the Help icons.



Settings Panel

- Settings panel:** Displays the current settings for the processor upgrade.
 - Processor:** Identifies the number of processors installed, their type, speed (in MHz) and temperature. Also indicates the amount of level 1 cache on the processor(s).
 - Level 1 Cache:** Provides information on the Level 1 cache size.
 - Backside Cache:** Provides information on the backside cache size and access speed. (in MHz)
 - Memory:** Amount of physical installed RAM and bus speed of the motherboard.

- Processor panel:** This panel gives information on the processor revision number and special features it may have.

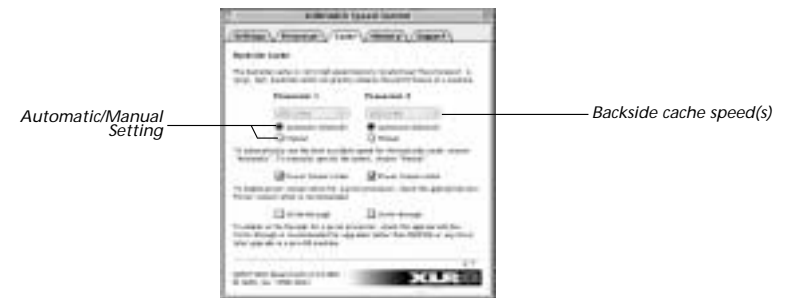


Processor Panel

- Cache panel:** This panel allows to modify the options for processor(s) backside cache.

Backside Cache Speed: Selecting the "Manual" setting allows you to select any available speed. Speeds selected manually will remain in effect until changed. Selecting the "Automatic" setting will cause the cache to run at the default working speed. Please note that sometimes this is not the fastest speed that may be available.

Power Conservation: Enabling Power conservation is recommended for all processors.



Cache Panel



Installing the MACH Velocity upgrade card

- 4. **Memory Panel:** The memory panel gives extensive information on the RAM configuration of your computer. This panel shows the location of each RAM module - A RAM bank has an unique identifier.



Memory Panel

- 5. **Support Panel:** The support panel contains contact information for technical or general inquiries about XLR8 products.



Support Panel

General Installation Instructions

Before installing your MACH Velocity upgrade card, you should review this short section. It provides information specific to the MACH Velocity upgrade card.

1. Prepare the system and work area.
 - Prepare your work area by ensuring that you have a well-lighted space, preferably not on carpet (static), and away from all magnetic devices.
 - Turn off the computer and disconnect all cables.
2. Attach the anti-static wrist strap. The anti-static wrist strap will ensure that you are well grounded and avoid any unexpected static discharges.
 - The elastic end of the wrist strap is placed over your wrist.
 - After disconnecting the power cable, the plug end of the wrist strap is attached to the power socket on the back of the computer system.

Installation in a Power Macintosh G3 Beige

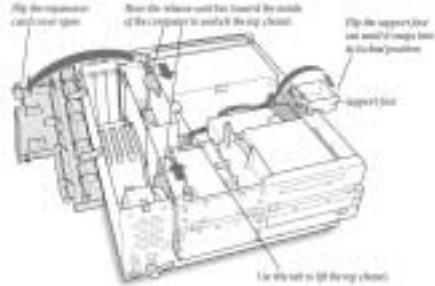
Getting access to the processor

Desktop: Press the two release buttons under the front panel and slide the cover toward you approximately two inches, lift it straight up and off the computer.

Mini-Tower: Lay the computer on its side with cover and buttons facing up and remove the cover from the computer.

Desktop

1. Unlock the chassis and open the support foot.
 - Open the expansion card cover.
 - Slide the chassis release switches inward.
 - Flip out the support foot until it locks into the open position.

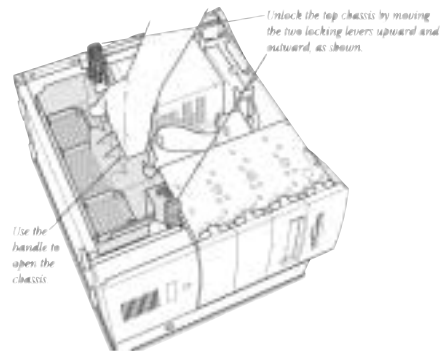


2. Swing the chassis up and insert the support arm.
 - Lift the chassis by the tab until the support foot rests securely on a flat surface.

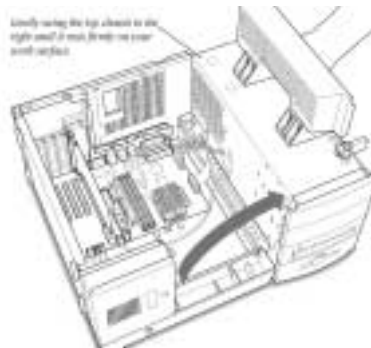


Mini-Tower

1. Open the chassis.
 - Unlock the top chassis by moving the two locking levers upward and outward

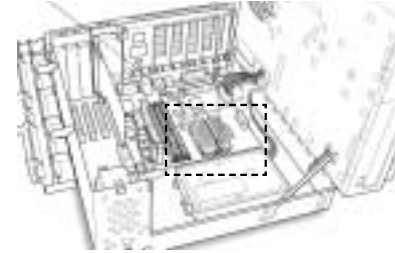


2. Open the chassis.
 - Use the handle to open the chassis.
 - Gently swing the top chassis to the right until it rests firmly on your work surface.



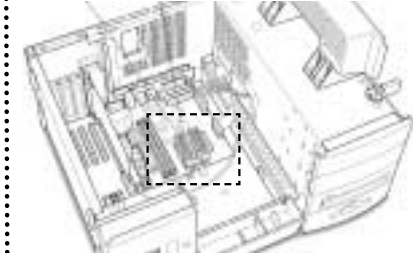
Desktop (cont.)

3. Locate the processor and heatsink



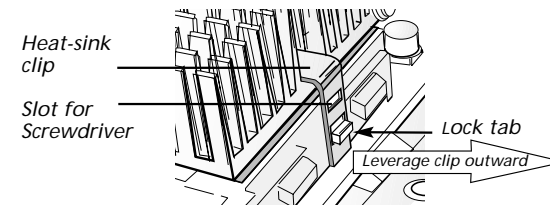
Mini-Tower (cont.)

3. Locate the processor and heatsink

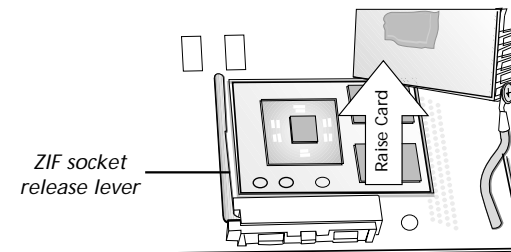


Removing the old processor

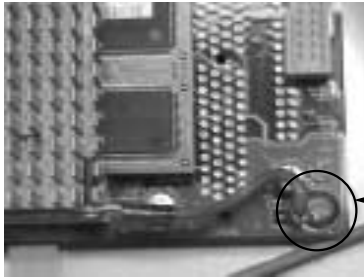
1. Remove the heat-sink.
 - Insert the small screw-driver into the slot on the heat-sink clip.
 - Press down and rock the handle of the screwdriver towards the heat-sink fins, releasing the heat-sink's clip from the lock tab.



2. Remove the CPU Card.
 - Carefully raise the ZIF Socket Release Lever and lift the CPU card from the socket.
 - Put the used card into MACH Speed anti-static box. If you ever have a problem, it may be handy to be able to use the old card while troubleshooting the system.

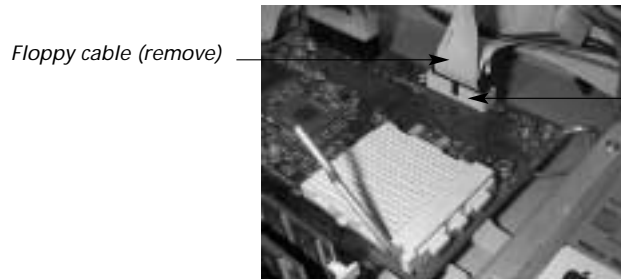


3. The original heatsink is attached to a grounding cable. The grounding cable is secured with a screw that you will need to remove.



Grounding cable screw
(remove)

4. Disconnect the floppy cable. You cannot install the Velocity card unless this cable is disconnected.

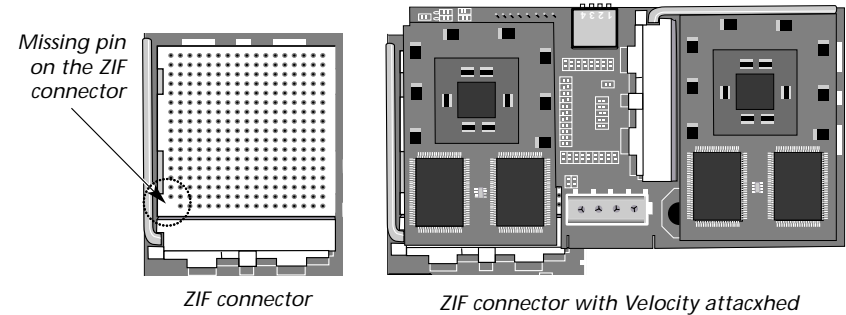


Floppy cable connector

Installing the Velocity upgrade card

1. Install the MACH Velocity into your system.
 - The MACH Velocity Upgrade will face the same direction as the older card that you just removed (note the missing pin.)
 - Holding the card by the edges (do not depress the center of the card), line up the pins and insert the card straight down. Insertion should require only minimal force.
 - Lower the ZIF Socket release lever to lock the card into the socket.

AS VIEWED FROM FRONT OF MACHINE

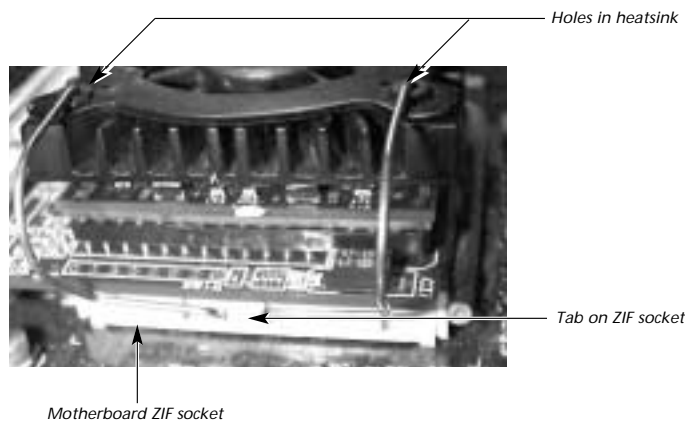


2. Apply a small amount of thermal grease onto the first processor. The thermal grease should be applied on the center of the processor only.

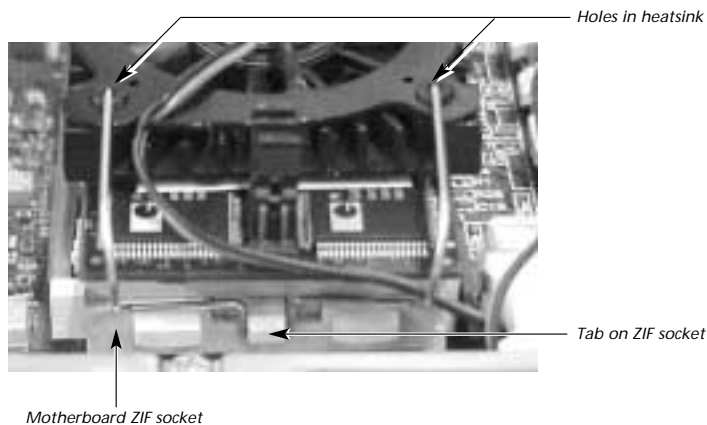


3. Attach the heatsink to the processor.

- The MACH Velocity "Duo" comes with 2 heatsinks– one for each processor. Even if you purchased a single processor MACH Velocity "Solo", there will always be a heatsink installed on the ZIF socket of the Velocity card.
- Facing the front of the computer, use the clip labeled with a red dot and hook the clip onto the tab on the motherboard ZIF socket that is *farthest* from you. Then insert the two arms, one at a time, into the holes on either side of the heatsink. (Orient red dot on heatsink to red dot on clip.)



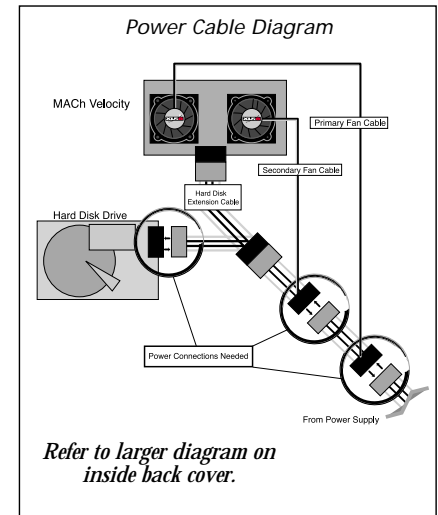
- Using the clip labeled with a green dot, hook the clip onto the tab on the motherboard ZIF socket that is *closest* to you. Then insert the two arms, one at a time, into the holes on either side of the heatsink. (Orient green dot on board to green dot on clip.)



4. Attach the power cables to the MACH Velocity.

- The fans on the heatsinks, as well as the MACH Velocity card, require power to operate. The fans have power cables attached to them for which power will need to be supplied. Plug the unplugged fan (the fan that you just installed) into the available socket on the existing fan's power cable. Then attach a power cable from your system's power supply to the socket on the fan's power cable. ***It may be necessary to unplug power from your hard drive to make the power cable available. The power extension cable attached to the fans has an available plug that you may attach to your drive's power socket.*** Finally, ensure the flat-ended plug on the extension cable is firmly attached to the MACH Velocity. (Due to limited accessibility of the Mach Velocity's power socket location, you may need to temporarily move your hard disk to check the cable.)

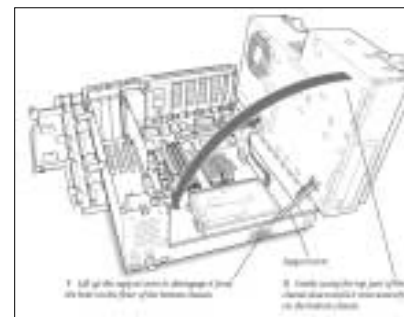
Note: Route all cables so that they will not interfere with the fan's operation.



Desktop

Close the chassis by disengaging the support arm and gently swing the chassis back into place.

- Lift up the support arm to disengage it from the hole on the floor of the bottom chassis.
- Gently swing the top part of the chassis down until it rests securely on the bottom chassis.

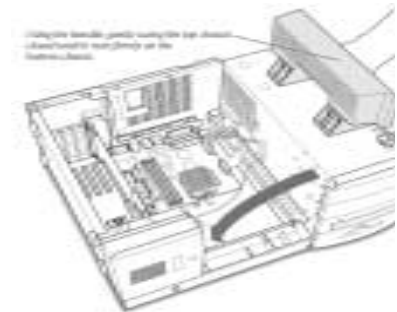


5. The installation of the MACH Velocity card is now finished. Reconnect all cables and boot your computer.

Mini-Tower

Replace the chassis by swinging it back into place and lock it with the two green levers.

- Replace the cover on the computer.



Technical Support



Direct questions concerning proper installation and operation of the MACH Velocity upgrade card to:
XLR8 USA
Tel: +1 770 564 5682
XLR8 Europe
Tel: +44 (0)1442 255 899

Technical Support E-mail Address: support@xlr8.com
Web Address: www.xlr8.com

About Troubleshooting the MACH Velocity upgrade card

This section provides information on troubleshooting your system with the MACH Velocity upgrade card and software installed. Additional troubleshooting information is available on the web at www.xlr8.com/support or www.xlr8.com/osc.

Note that most problems associated with the MACH Velocity are usually related to software conflicts or corruption that manifests itself only while running at the faster speeds. To test a problem system, always attempt to return the system to its simplest configuration. Disable all unnecessary software, and disconnect all optional devices.

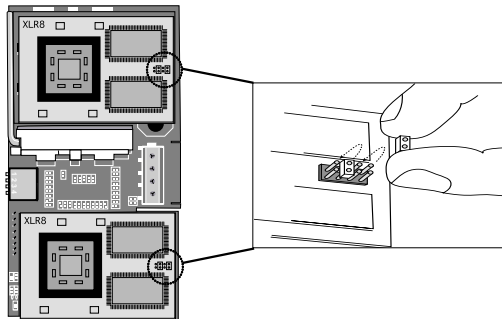
Troubleshooting the MACH Velocity upgrade card

1. Please view the readme file on the software disk for the latest news on your new MACH Velocity card.
2. If your computer does not power up:
 - Make sure the cables, video and/or other PCI cards are properly seated and connected.
 - Check the MACH Velocity card to see if it is properly and fully seated and that the heat-sinks are properly installed and seated on the CPU cards.
 - If your computer still does not power up, try removing and reinstalling the MACH Velocity card.
3. If your computer powers up, but freezes during startup:
 - ZAP the P-Ram. This is an area of memory on the motherboard that retains card settings/date/motherboard devices/etc. To refresh/ZAP, depress the "command-option-P-R" keys simultaneously, immediately after the boot chime (a second chime should occur.)
 - If you are still having problems, try starting up with extensions disabled.
 - If your system did not freeze when booting with extensions off, reboot holding the Space Bar down. During the boot sequence the Apple Extension Manager dialog will be displayed. Select Base OS settings, then scroll to re-enable XLR8 MACH Speed Control. Press Continue. If you are able to boot at this point, you have a software conflict. Reboot and re-enable extensions one at a time, until you find the conflict. You can then change the first letter of the Extension's name to change its load order, and usually fix the conflict.
 - If you are still experiencing problems, try booting from a Mac OS installation CD-ROM. If you still can't boot, it is most likely a hardware problem.
 - Make sure the MACH Velocity is properly seated in the ZIF Socket.
 - Verify that the settings are at the factory defaults for your machine.
 - Reinstall the original CPU card and reboot. If you are able to boot successfully at this point, then you most likely have a problem with your MACH Speed upgrade - contact Tech Support for assistance.
 - Have your RAM tested. Bad or weak RAM can result in slower performance and intermittent crashes.
4. System only boots up on a restart, not a cold boot:
 - The Mac does a full RAM test on a cold boot, it bypasses this extended test on a restart. It is most likely that your RAM is not operating to full specification. Have your RAM tested.
5. If your system is unstable:
 - If you have used MVP to boost the processor upgrade beyond its default settings, i.e. running at a faster processor speed, you may have boosted it beyond its capabilities. Back the speed down towards the default settings and try again.
 - Try running the backside cache at a slower speed. The automatic setting used by the MACH Speed software should generally be safe, but it is not foolproof. In particular, if MVP is being used to squeeze extra performance out of the processor upgrade, the software may select a speed that is unsustainable. Use "Manual" to select the next lowest speed from the pop-up menu and restart the machine.
 - ZAP the P-Ram.

- Depress “command-option-X-R” on reboot until the XLR8 extension is displayed. This will rerun the cache test, and assist in setting the correct cache speed.
 - Have your RAM tested. Bad or weak RAM can result in slower performance and intermittent crashes.
 - Verify that the settings are at the factory defaults for your system.
 - Reinstall/Upgrade system with a “clean install”, creating a new System Folder.
 - Reboot holding the “space bar” down. During the boot sequence the Apple Extension Manager dialog will be displayed. Select Base OS settings, then scroll to re-enable the MACH Speed Control. Press “Continue.” If you are able to run stable at this point, you have a software conflict. Reboot and re-enable extensions one at a time until you find the conflict. You can then change the first letter of the extension's name to change its load order, and usually fix the conflict.
 - If you are still experiencing problems, try booting from a Mac OS Installation CD-ROM. If you are still having problems, it is most likely a hardware problem.
6. If the XLR8 extension crashes on boot-up:
- Press and hold down the “command-option-X-D” keys before the extension comes up. This will tell the extension to disable the backside cache. Use the control panel to select a slower cache speed than was previously being used. Note that if the extension is crashing after selecting a speed faster than that recommended by the control panels “Automatic” setting, you can quickly restore the automatic setting by pressing and holding down the “command-option-X-R” keys before the extension comes up. You can remember the keys as follows:
 ‘X’ stands for *XLR8*;
 ‘D’ stands for *Disable the cache*;
 ‘R’ stands for *Retest the cache*.

Setting the jumpers on the MACH Speed ZIF MPE processors

Your card ships pre-configured for your PowerMac G3 Beige system. The MACH Speed G4 ZIF MPE processor(s) that are installed on the MACH Velocity MPE card have four jumpers that allow you to modify/adjust the individual CPU speed(s). Jumpers are set from the left to the right, with the XLR8 logo at the top left corner and the jumper block at the right of the MACH Speed ZIF card.



POWERMAC G3 (BEIGE)

Default Setting	Jumper Settings
333	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
366	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
400	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
433	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
466	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
500	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
533	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
600	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Connection Diagram Enlargement (from Page 12)

