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A. I N T R O D U C T I O N

This TekMagic.Install disk contains a minimal Workbench 2.04 environment (enough to boot from and prepare a hard disk). It should NOT be copied onto the hard disk and used as Workbench. The FastPrep (and ExpertPrep) program will prompt you to copy Workbench onto that hard drive after it finishes prepping and formatting a partition; this request is explicitly aimed at the Workbench disks that were included with the Amiga when purchased (or any subsequent Enhancer Kit).

The TekMagic.Install:TekMagic drawer contains standard utilities provided to help diagnose any problems that might be encountered when additional RAM is added, or other system components are modified. An explanation of the drawers and files found in the TekMagic drawer can be found in the next section of this document. (NOTE: In order to provide the most useful environment for the pre-formatted hard drive there are certain drawers within the TekMagic drawer that may not pertain to the 68040/060 accelerator, and are therefore not described in this document.

A. THE TEK MAGIC DRAWER

This section of the document will describe the various utilities included on the TekMagic.Install disk.

1. The SCSI drawer

- a. FastPrep - This program is the Automatic Hard Drive Prep-and-Format program. It has an easy-to-use Intuition (point-and-click) interface, and performs most of the work for you. Please refer to the GVP FastPrep User's Guide for more information.
- b. ExpertPrep - This program is a more advanced version of FastPrep and allows more control over the prepping and formatting operations for a hard drive. Care should be taken when using this program, because it allows you to change almost all of the parameters of the drive. While it does attempt to warn you when a potentially problematic operation is requested, it will let you proceed!
- c. SCSIMaskFix - This Command-Line utility will toggle the DMA Mask Value back-and-forth between 0xFFFFFE and 0xFFFFFEE. Please read the section on A2000-040/060 DMA Mask and Extended Memory for more on this utility.

2. The Memory drawer

- a. MemTest - This program is actually a small script that calls two memory test programs to allocate all of the RAM currently in your system (and not in use) and performs tests on it. These tests include writing random values to a RAM address and then reading it back to compare with the original value. If any errors occur, it will report them to the screen. Since it is almost impossible to detect which chip on a SIMM module (or even which SIMM module) is at fault when an error is reported, attempts should be made to slowly reduce the amount of RAM in the system (and the tests re-run) to determine where the bad RAM chip may be.

3. The 68040 drawer

- a. KSRemap - This program re-maps Kickstart into on-board 32-bit RAM (if possible) to improve system performance. There is one option to this command as noted below:
 - REMOVE - This function performs the exact opposite

of the above function, and returns Kickstart control back to the ROM in the Amiga.

- b. Reboot - This program will reboot the A2000 and cause the system to boot with its original 68000 processor as the main CPU thereby maintaining 100% backward compatibility. This feature ensures that any software that will not run on a 68040/060 processor can still be used. To return to the 68040/060 processor simply reboot the system with the key sequence of Control-Amiga-Amiga.

With 68040/060 processor of speeds of 40 MHz or more there is a tendency due to the and lengthen of the CPU's "reset" command to cause the system to generate a "Software Failure". If this happens simply press the left mouse key and the system will then properly boot in 68000 mode.

NOTE: Both of the above utilities (KSRemap and ReBoot) work with the 68060 as well as the 68040 and perform the same.

3. The 68060 drawer

- a. Tek060 - This program is used to control the 68060 caches. Generally the caches are setup and optimized by running "SetPatch" at startup time. However, if the user desires individual control of the 68060 caches, the program "Tek060" can be used much like the Commodore program "CPU" which allows control of the 68040 caches. There are many option available with this program and the user can review these options by typing "Tek060" followed by a "?".

If the TekMagic 060 installation is used this program is automatically stored in the "c" directory.

C. A 2 0 0 0 - 0 4 0 / 0 6 0 A C C E L E R A T O R

1. Hard Disk Drive Performance

It may be possible that SCSI drives already set up on other controllers may have limits set on the memory range they can directly address. This can have an adverse affect on the hard drive transfer rates since all data from such a drive has to be buffered through the 1 MB of RAM on the Amiga motherboard. For the fastest possible drive speeds, a SCSI drive should be connected to the A2000-040/060 SCSI controller and have access

to the full address range of system and extended memory. To ensure that the maximum SCSI performance is achieved with the built-in controller of the A2000-040/060 board, it is very important that the "DMA Mask" in the RDB on the hard drive is set correctly.

2. DMA Mask

The drive parameter that sets the drive's usable address range is the DMA mask. This is a hexadecimal number, which when translated into binary, makes a list of address bits that can be used. The default value for most existing DMA controllers is only six characters long. This is enough to access all of the standard Amiga memory, but not the extended memory. With a drive attached to the A2000-040/060 board SCSI interface, the mask should be changed to 0xFFFFFFFFE which will allow the controller to transfer data to all the standard Amiga memory AND the extended memory on the accelerator board.

3. Setting the DMA Mask

There are two methods for setting the DMA mask for your previously prepped and formatted hard disk drives. The first is a simple command line utility called SCSIMaskFix. The program has instructions built into it and can be displayed by typing, "TekMagic.install:TekMagic/SCSI/SCSIMaskFix ?" from a Shell window. The TekMagic FastPrep program can also change the mask value and runs under Workbench. Please refer to the FastPrep User's Guide for detailed information on changing drive (or partition) information.

4. Maximizing System Performance

Included as part of the Commodore 2.04 system there is a command called "CPU" that was intended for the 68040 and performs useful functions such as turning on and off the data and instruction caches. It can also be used with the 68060 but there is a new program provided by TekMagic called "Tek060" that was written specifically for the 68060. This program provides control of the 68060 caching parameters. Please refer to section B4 above for an explanation of this program features. Documentation for Commodore's CPU program can be found in the User's Guide provided with Workbench 2.04.

Also please note for the 68040 or 68060 to be configured for maximum performance a program called "SetPatch" and "KSRemap" needs to be executed. "SetPatch" is normally run as the second line of the "Startup-sequence" with "KSRemap" as the first line. If the TekMagic install program is used when installing the TekMagic software, both "SetPatch" and "KSRemap" will be included in the "Startup-sequence" and executed automatically at reboot.

"SetPatch" is used to install the floating point libraries and other enhancements for the 68040 and 68060. Each CPU requires a different library and the correct library is install automatically by selecting the appropriate TekMagic installation routine.

5. Multiple SCSI drives.

The TekMagic SCSIROM device driver allows you to boot from any partition on any drive, regardless of the number. There are two flags that are used to determine which partition should be the boot partition. First the drive needs to be flagged as bootable (please refer to the FastPrep 2.0 User's Guide for information on setting this flag) and then the BootPriority of the drive needs to be within the valid 'boot' range. This range begins at -127 (the lowest BootPriority) and functionally goes up to +4 (the highest BootPriority that a hard drive should be set to). BootPriorities actually extend to +127, but it is unwise to exceed the BootPriority of the Amiga's floppy drives, which are permanently set to +5. A standard BootPriority for a boot partition is -5 or -10. Other partitions can be set to an equal BootPriority, but be flagged as Non-Bootable partitions. (Again, please refer to the FastPrep User's Guide for more information).