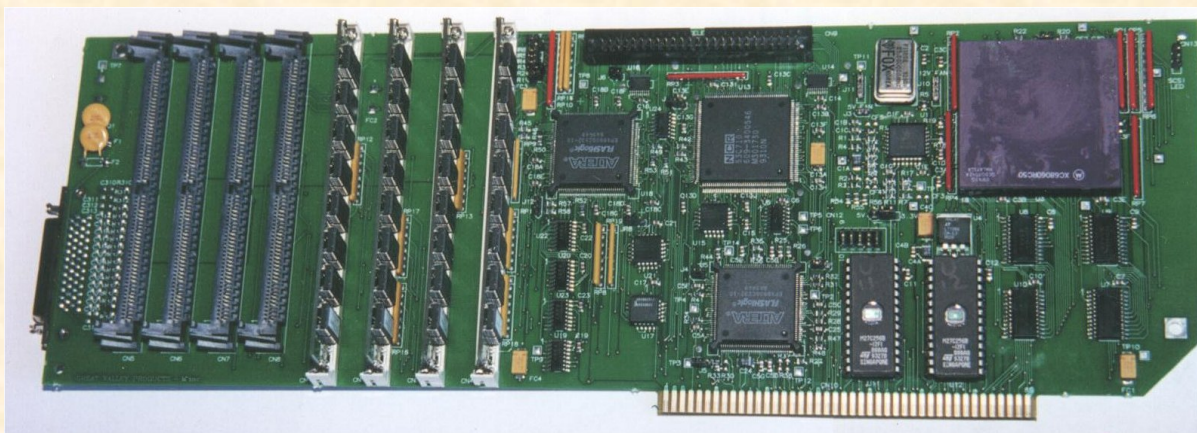# *Tips & tricks for the GVP-m G-Force 2040/2060 accelerator board (also known as TekMagic 2060/060)*

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1 - Introduction

The G-Force 2040/2060 was a board made by GVP-m until something like 1999. It is a Motorola 68040/68060 accelerator board for the A 2000. Here it is :

When it works, it is very fast, and can easily be overclocked. Its SCSI controller has some limitations (like not being able to automount other filesystems than FFS), but it is also very fast (one of the fastest I have experimented on the various 68060 Amiga configurations I own) and bug free.

This page aims at collecting info and tips about this board.

2 - Upgrading from 68040 to 68060

In the file area of this site, you will find the 2 necessary EPROM images to burn into 2 27256 when you want to upgrade from 68040 to 68060.

Apart from replacing U11 and U12 (triple check chip orientation and pins), you will need the following :

- Setting jumpers J1, J2 and J4 to 68060 position. Take care, the 68040 is a 5V processor and the 68060 is a 3.3V processor, so installing a 68060 without changing J1 will KILL it for sure.
- Changing the integrated oscillator next to the processor to a 25 MHz one (the 68060 doubles the oscillator freq, which the 68040 does not, thus you will go from a 33 or 40 MHz osc to a 25 one)
- Installing the 68060 library package found in the file area of this site, otherwise the machine will crash at boot (when Setpatch is ran by the startup sequence) and this is normal.
- The original GVP-m install floppy is also included as a DMS image in the file area of this site, which includes ksremap (060 kickstart patcher / remapper), and tek060 (an utility to control the 060 specific features)

3 - Common problems

Many owners have experienced trouble in these areas with the board :

- SIMM (memory) selection is VERY VERY picky. It may look like it works but be crashy, or completely refuse to boot or anything. My setup runs fine (but with no burst mode, see below) w/ 4 x 16 Mbyte FPM (non EDO SIMMS) and also w/ 4 x 32 Mbyte EDO SIMMS, but I know other users who have many trouble in SIMM selection.

> Only when
> mounting the simms on bank 2 and 4 it started but without detecting the simms.

This I can explain : if there is no SIMM in bank 1, the board will skip
detecting the other banks.

> my actual settings are:
> simms on bank 1 and 2
> JR1 off
> JR2 off
> JR3 on
> JR4 on
> JR5 on
> JR6 on (because my simms are double-sided)

64 MByte SIMMs double sided ? I thought they would have been single-sided

> JR7 on (factory setting)
=> With this settings I have a 64mb memory block, with several other
settings
> I got blocks of 4x16mb, 1x48mb/1x16mb,... I never know all the
combinations
> I tested.

Okay. I think of two things :
1 - the board can not handle 64 MByte SIMMs
2 - I know that the board is sensitive to the order of your SIMMs. Mine,
with 4 32 MByte EDO SIMMs, will only give 128 MByte with a certain **order** of
the four SIMMs (which I have marked as 1, 2, 3, 4).

> So this are my questions: 1. under what conditions can I Set the JR1
> burstmode and will this have advantages?

See above. Even with only 2 4 MByte FPM SIMMs, I can not have my board boot
again with JR1 On.

The effects of this is half the memory bandwidth.

- Burst mode (set by JR1) won't always work, or may work for a while but someday stop :

   > at every time I set the JR1 jumper the card crashed at once.

   Normally, as per the doc, JR1 should be only set to on with an even number
   of SIMMS (i.e. 0, 2, 4). This has been working for me for several months
   with 4 16 MByte FPM SIMMs, and then, one day, without any rational reason
   the board would not boot any longer with JR1 on, but would boot normally
   with JR1 off.

   Not using the burst mode has a side effect : the memory bandwidth, which was around 60 MByte/s (by bustest 1.9 on Aminet
   with my 60 MHz 68060) went
   down to half this : 30 MByte/s :-(

   Trust me, I have been trying EVERYTHING to make it boot again with JR1 on (including resoldering everything on the board,
   cleaning every contact, changing SIMMs, going down to 50 MHz, putting a fan on the SIMMs and on the
   060, putting the board in another 2000, etc...). I did not succeed, and since maybe 6 months, the board runs fine, but without
   the burst mode :-(I have never had any answer from either GVP-m or the dealer who sold me the
   board.

   I may have an explanation : the flashlogic chip used on the DRAM controller onboard has a fanout which is not high enough to
   sustain burst mode ; it works for a certain period of time, slowly screwing the gates, and then one
   day, it will only work with burst off.
   The board, when operated w/ a 50 MHz 68060, has a flaw that will make it freeze every 2 or 3 day.

- The board is VERY VERY picky about A2000 bus noise, and will only work in certain 4.3 and 6.2/6.3 motherboard
  revisions. Please check in YOUR machine BEFORE you buy it.
- Board won't always mechanically fit in the 2000 (you may have to remove the back plate). This may be due to GVP-m
  changing source for the rear SCSI connector...
- Embedded tekscsi2.device won't automount other filesystems than FFS. This is a bug, and there is nothing like a
  omniscsi update for this board. But if you can live without automounting a PFS3 partition, the controller is still a good
  one :

> 2. is the external SCSI connector an standard 50pin hd finepitch
connector
> so I can buy a normal adapter at a computer shop?

Yes. The onboard SCSI-2 controller is an excellent one, which gives me 10 MByte/s out of my IBM 4.3 GByte HDD, in synchronous mode. The backside connector is a standard one.

> 4. Can I upgrade the scsi
> controller with a guru-rom and if this is possible, will there be
> advantages in speed, compatibility,...

There is no guru rom for this board, and it is not necessary, since the hardware (NCR 53c710) and software (tekscsi2.device) sides of the SCSI-2 controller onboard is excellent.

- There is no finished Linux driver for the embedded SCSI chip. I have kind of written one out of another existing NCR53C710 driver (PC-based), but it is buggy and the chip itself is rather complex.
- Documentation may be very poor (like 2 or 3 low quality A4 paper copies). Here is the table of jumper functions as per the doc I have :

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Jumper OFF or 1-2 ON or 2-3 Default
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J1 CPU 5V (040) CPU 3.3V (060) Depends on your setup
J2 Clock : 040 Clock : 060 Depends on your setup
J3 Clock enabled Clock disabled OFF
J4 CPU : 68000 CPU : 040 or 060 ON
J5 No DTACK pull up DTACK pull up OFF
J6 SCSI term No SCSI term OFF
J7 DMA ignores IRQ DMA back off IRQ OFF
J8 ? ? ?
J9 Rom 27c256 Rom 27c512 1-2
J10 12 V Fan
J11 5 V Fan
JR1 Non burst Burst ON
JR2 60 ns SIMMs 70 ns SIMMs OFF
JR3 Burst write off Burst Write on ON
JR4 Burst read off Burst read on ON
JR5 4 MB GVP SIMMs 16 MB GVP SIMMs OFF (for GVP SIMMs)
JR6 Single side SIMM Dbl side SIMMs OFF (for 72 pin SIMMs)
JR7 Reserved ON
JR8 2K or 4K refrsh 4K refresh only OFF
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