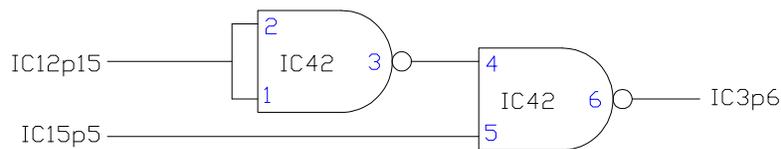


## PolyMorphic VTI Modification to Shorten Vertical Sync

Vertical sync from the VTI video board is eight times the horizontal sync period instead of 3h as specified in the RS-170 spec. This extended vertical sync causes some monitors to lose horizontal sync during vertical sync which, in turn, results in distortion in the first few scan lines of video.

Vertical sync is asserted while IC12 pin 15 is low which occurs for 8 scan lines until IC15 pin 6 goes high (the 8's bit of the scan line counter). The following mod reduces the vertical sync period from 8h down to 4h by ANDing IC12 pin 15 with IC15 pin 5 (the 4's bit of the scan line counter). Spare NAND gates in IC42 are used for this.



The easiest way to implement this mod is as follows:

- 1) Cut the default trace jumper for JMP 3. This disconnects IC12 pin 15 from IC3.
- 2) Wire from the JMP 3 pad connected to IC12 pin 15 to IC42 pins 1 and 2.
- 3) Connect IC42 pin 3 to IC42 pin 4
- 4) Wire from IC42 pin 6 to the JMP3 pad connected to IC3 pin 6
- 5) Wire from the feed-through just below IC39 pin 24 (it's connected to IC15 pin 5) to IC42 pin 5.

The very first version of the VTI does not have IC42. All remaining versions include IC42, however, the version F board used one of the gates above in a hand-wired mod to fix a board problem.

This mod has the side effect of delaying vertical sync by 4h, so your monitor vertical position may have to be adjusted if the display is too close to the top of the screen.

Pictures of the mod on a version 1.2 board follow. The IC positions are the same on later rev boards, however, the JMP 3 layout is slightly different. Note: The mod is only the blue wires – the black wires are an unrelated factory mod.

