GO8-003 Transistor Upgrade Kit Installation Directions

An installation video is located on the Alan-1 website.
We strongly recommend watching it, as it will answer most questions!
https://alan-1.com/product/alan-1-go8-transistor-upgrade-kit/

You will need:

- Safety glasses or goggles
- A drill
- 1/16" and 3/16" drill bits (or a small step drill bit, if you have one)
- A *tiny* bit of oil (3-in-1 or cutting fluid is best, but mineral oil or motor oil will work)
- Optional, but makes it easier: a hammer and small punch
- Electrical tape, painter's tape, or gaffer tape: anything that peels off easily. (Don't use duct tape.)
- A pencil
- Scissors
- Recommended: a second person to help you remove and re-install the GO8. It's heavy!

(*If you are using the template that came in the box, skip to Step 3.* Steps 1-2 are only necessary if the original template is lost and you're printing it out yourself.)

1. Make sure the template has printed properly. *Measure the distances between mounting holes to verify they are exactly as shown.* If not, you may have to set "Print Scaling" to 100% and turn off "Fit to Page" in the printer dialog.

2. Cut out the actual template with scissors, around the outline of the PCB. You don't have to be exact, just close.

3. Using your pencil, punch a hole in the paper template at the exact center of all four mounting holes.

4. Make sure the game is powered off and unplugged from wall power. Unplug the power and video connectors to the GO8.

- It's a good idea to mark the video connector *before* you unplug it – or at least take a picture – so you know which way to plug it back in.

5. Remove the GO8 monitor and chassis from the game, and set it on a flat work surface. (You can leave it mounted to the wood panel.) *Be very careful not to nudge the neck board as you remove it*, so you don't crack the tube neck and destroy your irreplaceable CRT!

6. Remove the old transistor block.

- Unplug the two 7-pin connectors from the paddle boards next to the transistor block. Hold the paddle boards firm and straight as you unplug, or you can crack the solder joints!

- Unplug the 3-pin fan connector from the deflection board.
- Unscrew the screws holding the transistor block to the side of the chassis. Usually there are four, but sometimes there are only two.
- Remove the old transistor block and store it in a safe place, so that you can restore your game to original condition if you wish.

7. Double-check that all 4 transistors in the block have a 2N6259 part number.
- If they have MJ15003 and MJ15004 part numbers, **STOP!** You have a GO8-001 and this kit will NOT work.
- If your GO8 does not have paddle boards and the transistor block plugs directly into the deflection board, **STOP!** You have a GO8-001 and this kit will NOT work.
- If you have a Cosmic Chasm, you are very lucky to own one of the rarest classic games in existence. *Stop anyway!* You have a GO8-105, and we have not tested this kit in that variant.
- If you have paddle boards, but the part numbers on the transistors are not MJ15003/MJ15004 or 2N6259, *contact Alan-1 for assistance.* Either your monitor has been modified, or you have a production variant we've never seen. We'll help you figure out whether the TUK is compatible with your monitor.

8. Tape the template to the OUTSIDE of the GO8 chassis, in the same orientation as it's printed on the paper – **with the backwards "ALAN-1" on the top edge.**
- Check that the left edge of the PCB is at least 5/8" (16mm) from the bar across the rear of the chassis.
- Check that the bottom edge of the PCB is at least 1/4" (6.5mm) above the metal plate that forms the bottom of the chassis.
- Check that all four holes are on metal, and not on the triangular hole/grab handle.
- If you've positioned it correctly, the PCB outline should not protrude into the triangular hole or above the top of the chassis.

9. Using your pencil, make an "X" in the center of each hole you punched in the paper. This will tell you where to drill your holes. Remove the template.

10. *Put on your safety glasses.* Make sure you can see where the four X-es are. If you can't see some of them, put the template back on (using the ones you can see to line it up) and make the X-es heavier.

11. If you have a hammer and punch, punch a small dimple at the center of each X. This will keep the drill from skating when you start the hole.

12. Using the small 1/16" drill bit (or the tip of the step drill bit), drill all the way through the metal at the center of each X. Drill at a slow speed, and stop every so often to lube the tip of the bit. This will keep the bit from dulling prematurely.

13. Once you've drilled all four holes with the small bit, remove it from the drill and install the large 3/16" drill bit. *The small bit will be hot!* Don't touch it unless you have work gloves on.

14. Drill out all four holes with the large 3/16” drill bit (or 3/16” diameter on the step drill bit). Again, drill at a slow speed, and stop every so often to lube the tip of the bit.

15. **Important!** Once the holes are drilled, blow the metal shavings out of the monitor chassis so they don’t get in the electronics and short something out.

16. Place the Transistor Upgrade Kit inside the monitor chassis, with the “Airflow” arrows pointing towards the front of the CRT. Line up the mounting holes with the holes you just drilled. Verify that the holes are drilled in the right place, and that the PCB doesn’t contact the crossbar or the bottom of the chassis. Remove the PCB from the monitor chassis.

17. Attach the two 7-pin cables to the TUK PCB. (It’s much easier to do this before you mount the TUK to the chassis.) These connectors are keyed and both ends are the same. If the keys have fallen out, line up the empty pin in the connector shell with the X on the PCB. *Make sure the locking tab on each connector clicks onto the tab on the cable end.*

18. Attach the 3-pin connector to the TUK PCB. Both ends are the same. *Make sure the locking tab on the connector clicks onto the tab on the cable end.*

19. Use the included screws and spacers to attach the TUK PCB to the chassis, and the nuts to hold the screws in.

- Push the screws through the PCB holes from the top.
- Place the plastic spacers onto the screws, behind the PCB.
- Labor-Saving Trick: Tape the screw heads to the top of the PCB, and wrap the tape around the edge of the PCB to hold the spacers in place. Then you can drop the TUK into the chassis and push the screws through, one at a time, without having to hold the spacers in place.
- Push the screws through the holes in the monitor chassis.
- You will probably have to tip the monitor forward, onto its face, in order to get the bottom two screws and spacers in, and to get the tape off when you’re done. *Make sure to place a towel or soft cloth on your work area first, so you don’t scratch the face of the CRT!*
- The nuts go onto the screws from the other side of the metal plate, outside the chassis.
- Tighten down the nuts.
- Remove the tape.

20. Plug the other end of the 3-pin cable into the 3-pin fan connector on the deflection board.

21. Plug the other end of each 7-pin cable into the paddle boards. It doesn’t matter which cable goes to which paddle board.

- Line up the empty pin on the connector shell with the empty pin on the paddle board.
- Make sure to hold each paddle board firm and straight as you do this.

22. Double-check that the 3 and 7-pin cables are all plugged in correctly. Double-check that neither the TUK PCB nor the heatsinks are touching the metal chassis, the paddle boards, or the deflection board.

23. Reinstall the GO8 in the game cabinet.

24. Plug both the monitor power and signal cables back in.

25. *Power up your game!* Check to make sure that the fans are running, and that they are sucking air in from the rear, and blowing it out the front towards the CRT.

26. **Enjoy stable, trouble-free vectors!**

TROUBLESHOOTING

If there is no video at all: did you reattach both the power AND the signal cables to the monitor? Did you reattach both 7-pin cables to the paddle boards?

If there is video but the fans aren't running: *POWER OFF IMMEDIATELY, as the TUK will quickly overheat and burn up!* Check that the other end of the 3-pin fan cable is securely attached to the 3-pin connector on the deflection board. (It's all the way on the other side of the deflection board.)

If you get half a screen, a horizontal or vertical line, or any of these intermittently:

- First, double-check that the 7-pin connectors are firmly inserted into the TUK at one end, and the paddle boards at the other.
- If so, it's likely that the solder joints around the 7-pin connectors on the deflection board, where they attach to the paddle boards, got cracked. (They're a known weak point.) If the screen comes back when you wiggle the paddle boards around, this is definitely the problem. You'll have to pull the deflection board and reflow these solder joints.