

## **Ace Amusements.us**

Arcade Video Games ~ Custom Multicades ~ Parts ~ Services ~ Memorabilia ~ And More

### **How To Remove An Arcade Monitor Chassis For Repair Service**



**Hi! Not often, but occasionally, after you have purchased a game from me, something will go wrong with the monitor. Maybe something got damaged or loosened in transit. Or, perhaps a component has failed.**

**Whatever the reason for the monitor problem, we can perform the service required to get your monitor working correctly.**

**If you are not local, you can mail the monitor chassis to me for repair. Following is the step-by-step process for problem diagnoses, some troubleshooting tips, and a "how to" for monitor chassis return.**

**If you are local, you might rather bring in your complete monitor for a thorough monitor overhaul. You can click any of the following photos for a larger view.**

**Send me an email if you have questions: [gamerroomdude@yahoo.com](mailto:gamerroomdude@yahoo.com)**

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### **How To Remove An Arcade Monitor Chassis For Repair Service:**

#### **Warnings -**

- 1. Arcade video game CRT monitors are dangerous, regardless of whether the AC power is on or off. If you are not up to the task, hire an experienced service technician. If you get hurt, or damage your game or monitor, only you are responsible.**
- 2. Remove all conductive items from your hands and wrists when working around electrical devices.**
- 3. Be aware as to whether the AC power is on or off.**

- 4. There are many ways to get shocked, even when the power is off. Not only will the shock hurt, even severely; but when you reflex, you can further hurt yourself if you hit something, as well as damage whatever it is that you might hit.**
- 5. Use non-conductive tools, as required.**
- 6. Always be extra careful. One time a CRT discharge knocked me to the ground. I thought I was dead. Another time, a CRT discharge caused my hand to reflex and damage the deflection board (not to mention my damaged hand). And another time, a CRT discharged through me to the game's circuit board, frying a \$250 pcb.**
- 7. Make certain that the AC power to the monitor is provided through an isolation transformer. If not, you have a potentially deadly situation at hand.**
- 8. The CRT is made of glass and encloses a high vacuum. If the glass breaks, the CRT will forcefully implode. The CRT neck is the weakest, most vulnerable part of the CRT. Broken necks are a common occurrence. Handle and store the CRT with great care. Wear safety goggles and gloves when handling the CRT.**
- 9. Read all of the following text, as there are additional specific warnings.**

#### **Problem Diagnoses -**

- 1. When your monitor experiences a problem, send me an email. Include a description of the problem, and photos of the monitor screen and the rear of the monitor. Take several photos of the rear of the monitor and its chassis from different angles and distances.**

**I may spot something in the photos that will allow me to help you perform the service.**

- 2. Send the problem description and photos to: [gamerroomdude@yahoo.com](mailto:gamerroomdude@yahoo.com)**
- 3. Make certain that the video input leads from the game's printed circuit board are correctly attached to the monitor deflection board.**
- 4. Make certain that the AC output power cord from the isolation transformer is making a good connection with the AC input power cord from the deflection board.**
- 5. If the problem is a small area(s) of image dis-coloration, and all the other image colors are correct; your monitor**

screen only needs to be degaussed. You will need a degaussing wand to perform this simple task. More about degaussing to come.

6. If the image is too small, too narrow, too dark, too bright, or rolling, the monitor needs adjustment. Refer to the Adjusting The Monitor section below. Be careful because you will be working with the AC power on. Use non-conductive television adjustment tools.

## The Monitor -

1. There are many brands of arcade CRT monitors, and each have different means of adjustment and chassis removal. So, for purposes of illustration, I will use the most common arcade video game monitor, the 19" Electrohome G07. The procedures for the G07 are similar to the next most common arcade monitor, the 19" Wells-Gardner 4900.

2. Pictured to the right is a G07 service manual.

I can provide photocopies of just about any arcade monitor service manual for \$25, which includes mailing.

You can use [PayPal](#) to place a service manual order.

3. This is a photo of the front, or screen, of an arcade video game 19" color RGB CRT monitor in a horizontal steel frame.

Most of the classic arcade game monitors look just like this one.

4. Here is a front and rear view of the Electrohome G07 monitor.

As can be seen in the photo, the chassis and all other components are located on the rear side of the monitor.

5. The monitor assembly is composed of:

- the glass cathode ray tube (CRT),



- the monitor assembly steel frame,
- the degaussing coil (around rear of CRT),
- the neck circuit board (mounted to the rear neck of CRT),
- the alignment rings (mounted around neck of CRT) (avoid moving these as they align the color guns),
- the yoke (mounted around neck of CRT), and
- the deflection circuit board and its metal frame (which mounts to the steel frame).

6. This is a photo of the so called monitor chassis.

The chassis consists of the deflection circuit board (top), its metal frame, and the neck circuit board (bottom).



7. This is a top side, or component side, view of the Electrohome G07 deflection circuit board.

The bottom side are the solder connections.



8. Avoid touching the solder connections of the round grey large capacitor located middle left. It's discharge can really hurt. There is a similar large capacitor on all brands of deflection boards.

#### Removing The Chassis -

1. Chassis removal is a simple task. But, depending on the monitor brand, the cabinet style, and the monitor mounting method, chassis removal can be a lengthy, tedious process.

So, with some games, you can remove the chassis while the monitor is still mounted inside the cabinet. But, there are other cabinets where it will be more convenient to first remove the monitor, and then remove the chassis from the monitor.

2. Typically, you will need either a phillips head screwdriver or 1/4" nut driver, a CRT discharge tool, and possibly wire cutters.

3. A homemade CRT discharge tool is shown in this photo. It is a flat head screwdriver with a wire lead and an alligator clip.



4. Attach the alligator clip to the monitor steel frame. Then, use the blade of the screwdriver to discharge the CRT at the point where the black plastic cup with red lead (anode) (shown in the photo)

**attaches to the CRT. You will hear a loud "pop" when the CRT discharges.**

**5. A CRT can hold a charge for several days, even after having been previously discharged. So, discharge the CRT each time before removing or replacing the anode.**

**6. To remove the chassis, follow these steps (make certain there is no AC power):**

- **Detach the anode from the CRT, be sure to first discharge the CRT.**
- **Detach the connector that leads from the yoke.**
- **Detach the AC power connection that leads from the isolation transformer.**
- **Detach the video input connector(s) that lead from the pcb.**
- **Detach the two leads from the degaussing coil.**
- **Detach neck board from the CRT neck (grasp board at center, not at the edges).**
- **Detach ground lead from CRT at neck board.**
- **Detach chassis from the monitor frame (two screws).**

## **Adjusting The Monitor -**

**1. When adjusting a monitor, be careful because you will be working with the AC power on.**

**2. You will need to use non-conductive television adjustment tools. And, you will need a mirrow.**

**3. Even though we thoroughly adjust a game's monitor, and adjust a repaired chassis, before shipment; for a variety of reasons, a monitor may again require adjustment after its receipt. The following is a brief treatment of some of the easier and more common types of adjustments you can make.**

**4. Here is a diagram of all the Go7's various adjustments. You can click the image for a larger view.**

**5. These adjustments are the most common ones (see diagram for adjustment pot location):**

- **Brightness Control - for a brighter or dimmer image.**
- **Focus Control - to adjust the sharpness of an image.**
- **Vertical Hold - to stop image rolling.**
- **Vertical Heigth - to vertically enlarge or narrow an image.**
- **Hor. Freq. - to adjust horizontal frequency, usually for correcting a curled image edge.**



**6. Adjusting the Width Coil, to adjust horizontal height, requires a special non-conductive tool. You can substitute a metal allen wrench, but use it only when the power is off. With the AC power on, the metal wrench will become extremely hot and burn your hand.**

#### **Other Terms And Conditions -**

- 1. Ship the chassis by USPS to Ace Amusements, POB 172202, Arlington, TX, 76003**
  - 2. Use bubble wrap, and double box the chassis. A single box does not usually provide enough protection to prevent the deflection board from being broken in shipment. Bubble wrap the chassis, and the inside box.**
  - 3. If a warranty repair, you pay only for the packing and shipping to me. I cover the cost of parts and labor, and return shipping.**
  - 4. If a non-warranty repair, you pay for the packing, shipping, and repair cost.**
  - 5. I have tried to be thorough, but your use of the above instructions is done so at your own risk.**
  - 6. If you have any doubts are questions, ask for help: [gamerroomdude@yahoo.com](mailto:gamerroomdude@yahoo.com).**
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