G4 PowerBook Chassis Enhancement Kit

Synthetic hydrocarbon metal conditioner / Bushing spanner tool / Chassis alignment aids

Overview

This kit allows you to optimize your G4 PowerBook's chassis alignment and/or hinge tension. It's important to use care when performing these adjustments so that the finish of the machine is not damaged. These instructions will outline procedures to prevent any damage. Please follow them precisely, and always ensure that your machines painted surfaces are shielded in case you slip when using any of the included tools. Select a sturdy and level table or desk to work on. We recommend using a clean, soft towel spread out over your work area, and another to protect the exposed painted areas when working with the tools. To determine which adjustments you can make, shut the computer down and latch the display. With the PowerBook sitting on its feet on a bare table (ensure all 4 rubber feet are intact on the bottom), visually note the gap between the display and the bottom case on all 4 sides. This gap may not be uniform at all points, see **Fig 1.** We will refer to this as chassis alignment, and explain ways to adjust it later. The second issue this kit addresses is excessively tight hinge tension. A simple test for the presence of this issue is to simply unlatch the display and slowly rotate it towards the open position. Grasp the display in the center, just above the latch button, do not use a second hand to hold the bottom case. If the front edge of the bottom case lifts off the table as you rotate the display, the hinge tension is excessive, which may eventually lead to failure of adjacent structural components. **Fig 2** illustrates the test.

Fig 1

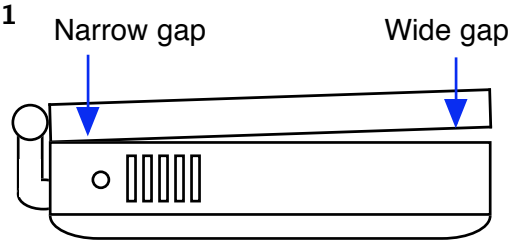
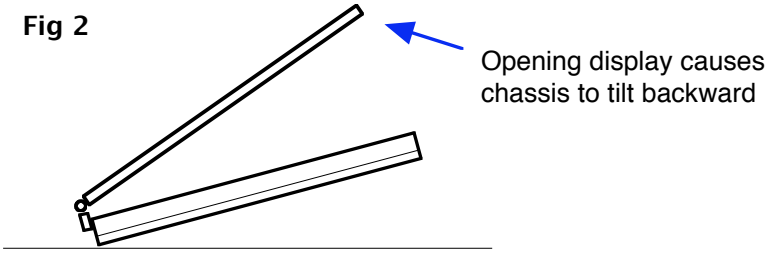


Fig 2



Correcting chassis alignment

Correcting chassis alignment requires that the display hinge covers be removed to expose the hinge mounting brackets. Remove the 2 - #8 Torx screws on each hinge cover. Grasp the cover between your index finger and thumb on either side of the screw holes, and pull straight out to remove. With the covers removed, the hinge bushing / mounting bracket will be exposed, see **Fig 3**. (the wire bundle has been omitted for clarity) To adjust the display to chassis gap, the larger screws must be loosened, **don't remove them**. These screws are RED on **Fig 3**. They may be either phillips head or #8 Torx. With the bracket screws loosened, the display assembly can be repositioned to adjust the gaps. It may be necessary to gently pry the display upward to free the brackets. A non-marring pry tool is included in the kit for this purpose, see **Fig 4**. It may be necessary to open the display about 45 degrees to accommodate the pry tool. Once the brackets are free, the hinge side of the display can be adjusted up or down, and side to side. The 4 included cardboard shims can be placed at each corner of the closed display to maintain the spacing while the hinge bracket screws are retightened, see **Fig 5**. Next, retighten all chassis screws. This includes screws in BLUE on **Fig 3**, as well as the screws securing the bottom case pan. Again, use care when tightening screws. They do not need to be "cranked down", just snug plus a little more. Be sure to shield the painted surfaces so that a slip with a tool won't result in a scratch.

Fig 3

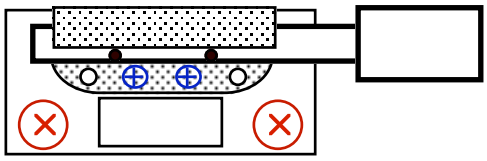


Fig 4

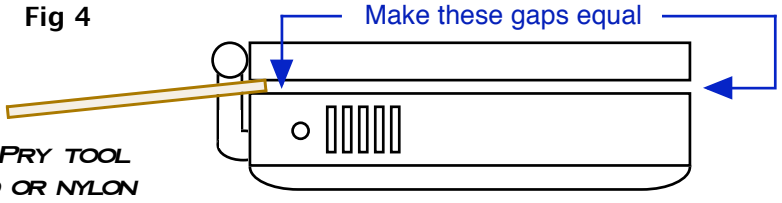
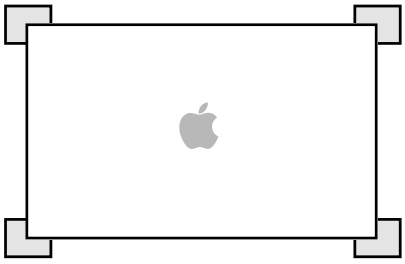


Fig 5



Shim placement for adjusting display to case clearance. Keep shims on the lighter colored, circumferential frame of the lower case when making this adjustment. Firmly push the display down onto the shims while tightening the hinge bracket screws. We offer small, adhesive backed, transparent silicone cushions which can be applied to the display bezel to maintain the display to case gap when the unit is closed. These cushions also keep the display and bezel from flexing into the case and becoming scuffed, as well as eliminating all free play, and the potential to accidentally unlatch. We highly recommend them for use with G4 PowerBooks. They are called Wildeepz Replacement Display Cushions, and are available wherever RadTech products are sold.

Adjusting hinge tension

As mentioned previously, a simple test can be performed to determine if hinge tension is excessive. See **Fig 2** on page 1.

Adjusting the hinge tension is a fairly simple and straight forward procedure. Again it must be stressed that all precautions be taken to avoid tool contact with the painted finish, as it can easily be scratched. In addition, a slight loss of the displays ability to remain open at very shallow angles may occur. Normally this does not pose a problem, as it is impossible to see the screen or use the keyboard with the display open less than 25-30 degrees. While it is possible to retighten the hinge tension, if you operate your PowerBook with the display cracked open just a few degrees, you may want to avoid this procedure. This does introduce sort of a quandary, as tight hinges often lead to component failure. One suggestion is to use something small to prop the display open at these low angles if you need this functionality.

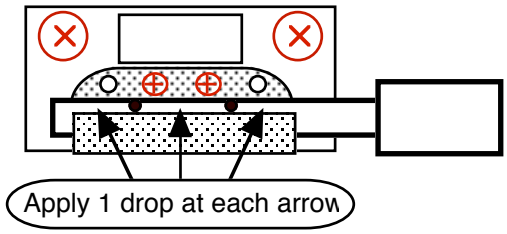
Before proceeding, it is recommended that the procedure for aligning the chassis on page 1 be performed if misalignment exists. The hinge covers will need to be removed to access the bushing assembly, and ALL case and hinge bracket screws should be tightened. Use care when working around the display cables which rest beside the hinge bushings.

Lay a towel on a sturdy, flat surface. Shutdown the unit and place it topside down on the towel with the hinge side facing you. Securely tighten the 4 screws per hinge as indicated in RED in **Fig. 6**.

Snip the end of the metal conditioner applicator tube and apply 1-2 drops of the conditioner into the bushing groove at each point indicated on the diagram. If there is excessive grease present, wipe away as much as possible. The factory grease will no longer be necessary. Allow the liquid to disperse into the joint for 2-3 minutes. The conditioner will displace any remaining factory grease. Use a cloth or paper towel to wipe any excess grease/liquid from the hinge area.

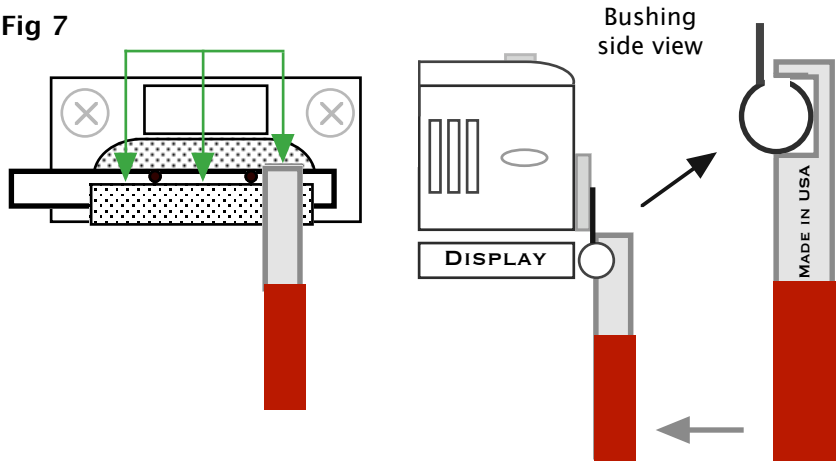
Turn the unit topside up, slowly rotate the display throughout its entire travel 20-30 times. If the desired action is achieved, replace the hinge covers and snug (not tight) the mounting screws. If an even lighter action is desired, repeat steps 2-3. For extremely tight hinges, proceed to the next section.

Fig 6



If the hinges do not respond to the conditioner, the "Ti-tool" can be used to mechanically loosen them. Spread the hinge bushing using the hook, or spanner end of the tool. Hook the C-shaped end of the tool over the bushing with the computer upside down with the hinge end at the edge of your work table. Holding the tool firmly. Place your thumb behind hinge end of the tool and gently rotate downward. see **Fig 7**. You will see the gap in the bushing spread open as you twist. Perform the maneuver at each of the 3 points indicated per hinge. Be careful so as not to slip and damage the finish on your machine, keeping your hand completely wrapped around the handle of the tool will ensure a slip won't *hurt* anything. Go easy and test. When you perform the spreading, you'll notice a significant loosening effect. If more loosening is desired, repeat the procedure and increase the amount of twist to spread the bushings open farther. Test the action after each round to obtain the desired tension level. Reapply the conditioner if needed.

Fig 7



To tighten a loose hinge:

Use the Titool to flex the bushing open, you'll notice that a gap will open up around the pin, 180 degrees from the pry slot. insert into this gap, a thin (2mm wide) strip cut from a plastic beverage bottle. When the pressure is released from the tool, the bushing will close on the plastic strip, creating a shim effect. Trim the strip so that it is flush to the bushing ends.