

# INSTALLING NEW ROM CHIP INTO GTO CONTROL BOX – MODEL GTOCP3

## Static

Microchips can be damaged by static discharge. Avoid handling the chip while walking on carpet or rug. Work on a wood table and touch your fingers to a grounded metal surface before handling.

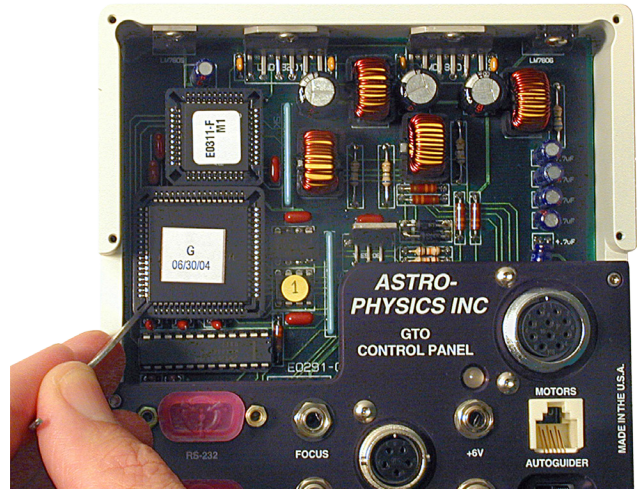
## Removing the Cover from the Control Box

Remove the GTOCP3 Control Box from its respective carrying pouch, adapter or dovetail of the 400GTO, 600EGTO, Mach1GTO, 900GTO, 1100GTO, 1200GTO, 1600GTO or 3600GTO (please refer to your mount's instruction manual if further instruction is needed). Using a 5/64 hex key wrench, remove all (5) #2-56 socket head cap screws that retain the white painted cover (black anodized on Mach1GTO's). See photo at right.



## Removing the Old Chip

The chip that needs to be changed is to the far left of the Astro-Physics logo. It is held on the board by a plastic chip carrier that can be easily damaged if improperly handled. The chip is removed with the tool provided. Refer to the instructions that are included with the extraction tool. Pay particular attention to the correct angle to insert the tool. This will help you to achieve the proper leverage to remove the chip safely. DO NOT bear down too hard on the back wall of the carrier or use the carrier as a fulcrum to “lever” the chip out. If needed, use a fingertip as a helper for the fulcrum to avoid breaking the carrier. We also suggest going back and forth on opposite corners, a small bit at a time to gradually work the chip out, rather than trying to pop it out in one motion.



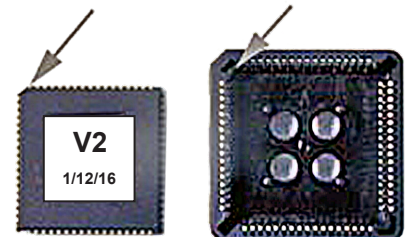
## Inserting the New Chip

You will note that the microchip and chip carrier each have a flat spot at one corner. These 2 flat corners must be aligned before the chip is pressed into the carrier. Failure to align these marks will cause permanent damage to the carrier and circuit. Please ignore the orientation of the label since it may be different from the photo. Ensure that all the pins line up.

Press the chip in evenly until it is firmly seated, engaging all 44 pins. The chip should be flat in the carrier. Be careful, as excessive pressure will bend the circuit board and put all kinds of stress on the traces and small component parts.

Return the cover to the GTOCP3 unit and fasten with the five screws. **If you are upgrading from version “R” or later, nothing further needs to be done.**

Test the new chip with N-S-E-W button moves or a slew.



## Upgrading from Version “Q” and Earlier (see details on the following page)

If you are upgrading from version “Q” or earlier, you MUST perform a full initialization to the servo (see below) on your first power-up. You will also need to redo the mount's PEM (Periodic Error Memory) (see below). To accommodate the added features of these newer chips, the location in the GTOCP3's non-volatile memory where time, location, gear angle and PE information is permanently stored has been changed. Your previously stored data will no longer be usable. The new information you enter now, however, will be remembered going forward.

**Choose either the keypad or a computer program for your initialization (when updating from a “Q” or earlier)**

**Keypad Initialization (from version 4.17 or earlier):** The keypad will perform a full initialization in either the Auto-Connect=NO or Auto-Connect=YES modes.

- In Auto-Connect=NO, choose 1=Star-Sync; 2=Polar Alignment or 4=Resume Ref-Park 1. DO NOT choose 3=Resume from Park for the first initialization.
- In Auto-Connect=YES mode, after the keypad displays the main menu, you will need to move the mount to a known star via either the clutches or the direction buttons (NOT a GoTo slew), making sure that the counterweight shaft is down.
  - Choose the star in the star catalog
  - Center the star with the clutches or button moves
  - Press the Next button and do a FULL Star-Sync. Note: a Re-Calibrate is not sufficient.

**Keypad Initialization (from version 4.19 or later):** The keypad will perform a full initialization in either the Auto-Connect=NO or Auto-Connect=YES modes.

- In Auto-Connect=NO, choose 1=Star-Sync; 2=Polar Alignment or 4=New Setup / New Startup Initialize from Reference Position: Press: 1, 2, 3, 4. DO NOT choose 3=ResumeLastPosition for the first initialization.
- In Auto-Connect=YES mode, after the keypad displays the main menu, you will need to move the mount to a known star via either the clutches or the direction buttons (NOT a GoTo slew), making sure that the counterweight shaft is down.
  - Choose the star in the star catalog
  - Center the star with the clutches or button moves
  - Press the Next button and do a FULL Star-Sync. Note: a Re-Calibrate is not sufficient.

**Computer Initialization (Keypad in Auto-Connect=EXT):** With the ASCOM Driver, APCC, PulseGuide or any other computer control, be sure that the options are selected to send all of the time, date, GMT offset and location data to the mount. For your first time using the new ROM chip your computer software MUST give the servo a full initialization. You will also need to reestablish pointing and orientation by resuming from one of the AP pre-defined park positions or by performing a full Sync on a star. Note: a Re-Calibrate is not sufficient.

**PEM (Periodic Error Memory):** If upgrading from “Q” or earlier, you will need to redo your PEM. Upgrading from “R” or later does not require redoing PEM. Since the gear angle information is lost from the earlier chips, the PE data that you have stored will no longer be in sync with the worm gear, so simply saving it to your computer via PEMPro and reloading it will not work. Once new PEM data is stored with the correct gear angle association, it will be remembered going forward. Alternatively, if you do not use PEM correction, simply disable it in the keypad and/or computer software.

### Choose the Correct Control Box for Chip Replacement

