

8 Inch Astrograph Repair

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Issue confronting site

The 8 inch astrograph stopped working when an electrical failure caused the small motor to stop working completely. After further working on the broken motor the larger motor failed as well.

Activities performed

- Diagnosed the small motor as an issue
- Removed and replaced the capacitor connected to the small motor
- Removed the relays connected to both motors and began replacing them
- Researched replacement motors for the small motor in the astrograph

These relays are used by the astrograph to switch between forward and reverse motion in the motors. If a high voltage was applied to them, it could have welded their switches together, rendering them unusable, and could be a cause of the small motors ceasing to function.

Impact

I successfully replaced the capacitor in the astrograph, however it was seemingly not the issue with the motor. I have not finished replacing the relays to see if those are the issue, since I have not been able to return to campus and finish the repairs.

Future work

In the future, I hope to finish replacing the relays to see if that fixes the problems with the motor. If that is not the issue, I would see if the other relays inside the astrograph could be the problem. If all else fails I would try to replace the entire small motor in the astrograph.

The Observatory

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Originally used to track and photograph satellites in orbit around Earth, this 8 inch astrograph was sent to the University of Maryland Observatory after it was no longer needed at NASA. At the observatory, its two motors were once used to keep a steady look at one point of the moving night sky, until the small motor stopped working years ago.

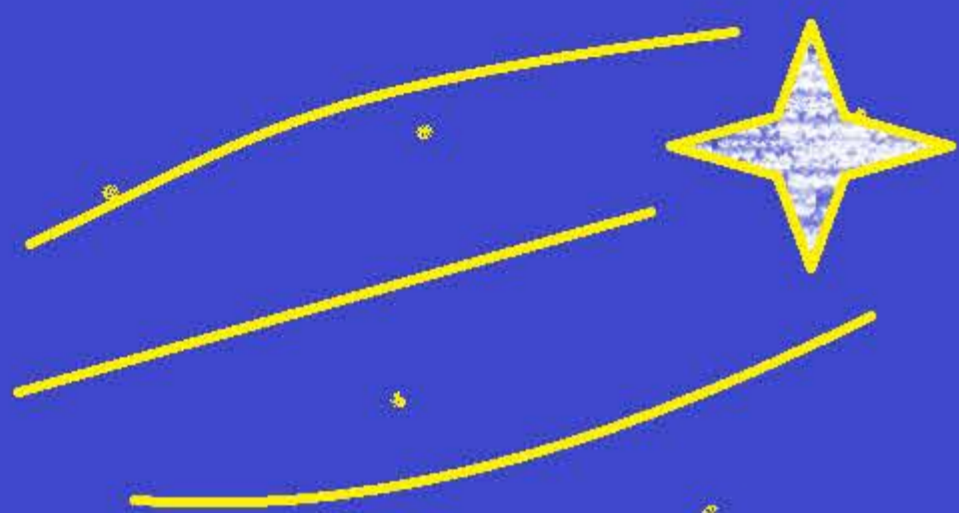


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Another issue I thought the astrograph may have faced was one with the capacitor. The capacitor allows for charge to be stored for a later time in a circuit. If the capacitor was broken, no charge would be reaching the small motor at all, which would clearly result in the motor not working, so I replaced it during my repairs.

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This is the small motor itself. With a speed of 1 revolution per minute, it was a very slow, which is very good for keeping up with the movement of the night sky due to Earth's rotation. After new outlets were added to the observatory, the motor stopped functioning completely, leaving only the large, faster motor working.