# ThrustMaster CougarThrottle

Hall Sensor Upgrade – Throttle axis by JCook

This tutorial explains the installation steps for the Hall sensor throttle-axis upgrade using the kit available from **rel4y** (mtwsims@tutamail.com) on the DCS forums. Here is his forum post:

https://forums.eagle.ru/topic/188571-tm-cougar-ch-magnetoresistive-hall-sensor-kits

Disassembly

1.Turn the Throttle base on its side, with the throttle arm pointing up to protect it.
2. Remove the 8 screws from the bottom of the throttle base. There are 4 shorter screws in the corners and 4 longer screws in the center. Place the screws in a safe place.
3. Remove the bottom part of the base.
4. Take note of how all the components are arranged and connected so you can reassemble it correctly. Take some reference photos if needed.

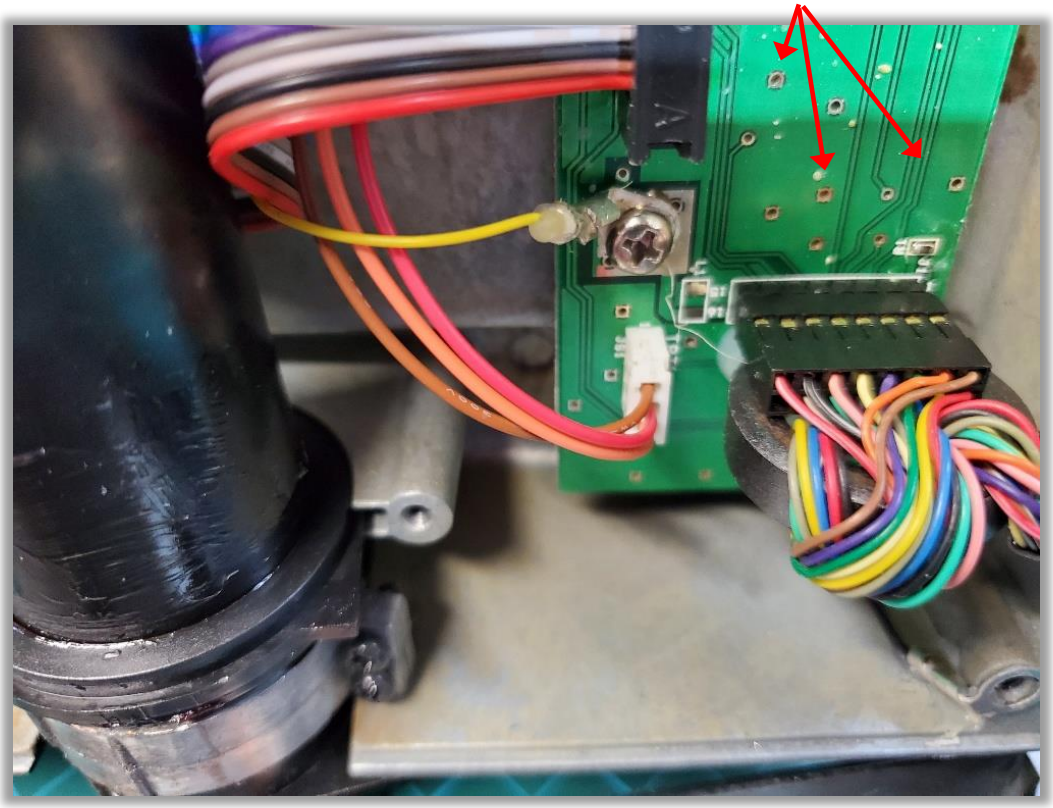
Determine type of Circuit board

Older Circuit boards have a resistor in-line and use a different voltage than the Hall sensor component. A voltage converter must be used in this case (available from mtwsims@tutamail.com).

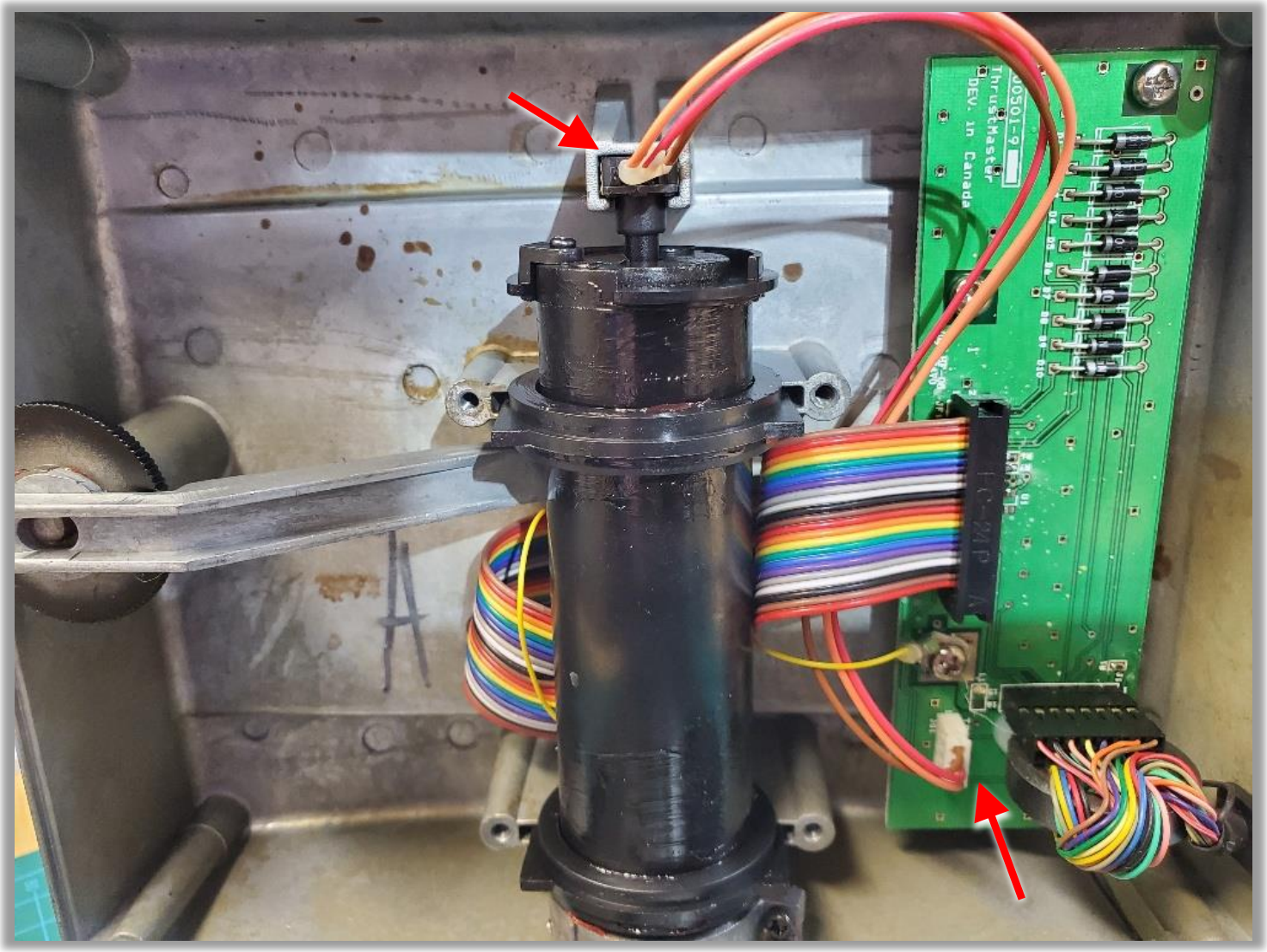
Newer circuit boards will not have this resistor and will already be using the correct voltage. An easy way to determine which type circuit board you have is to look for “via” holes. If you see these small holes, you have the newer board and can proceed without the voltage converter addition.

Here you can see the small “via” holes on the circuit board above the multi-colored wire connector.

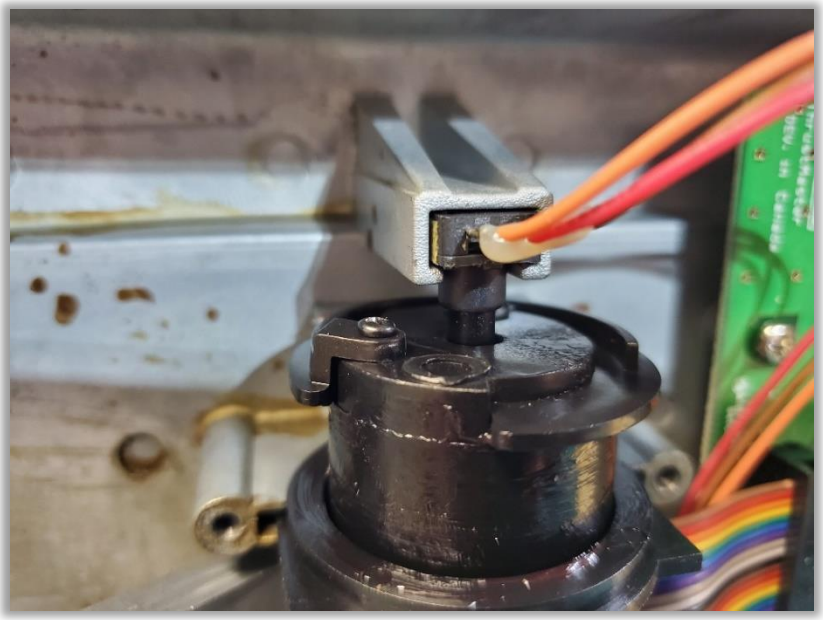
Via holes indicating newer circuit board



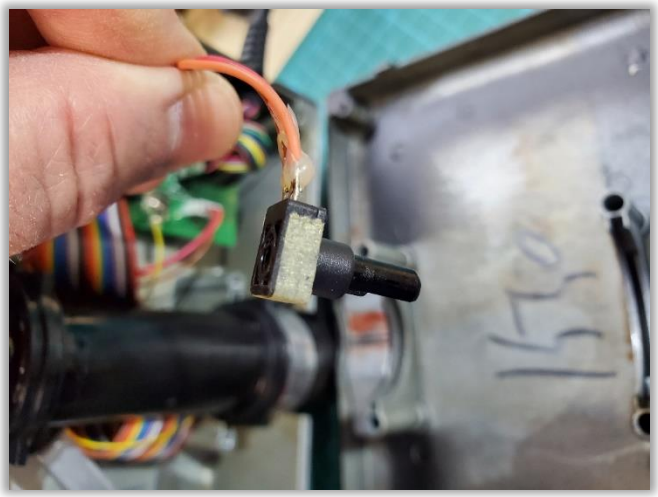
The potentiometer must be removed from the axle at the top and the circuit board connector at the bottom, near the multi-colored wire connector. Note that the wires are guided under the multi-colored ribbon cable.




5. In preparation for reassembly, take note of how the axle fits into the metal guides.



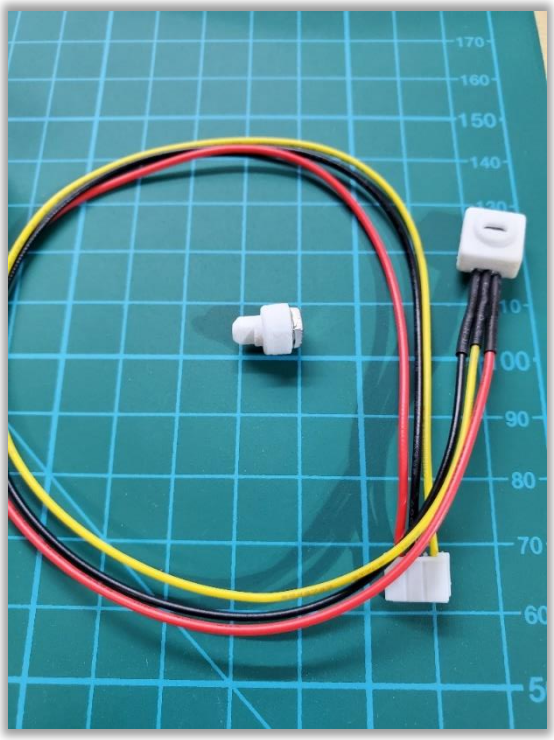
6. Lean the top of the axle toward you, to allow access to the potentiometer.
7. Carefully pull the potentiometer out of the metal slot.
8. Pull the potentiometer shaft out of the axle hole.

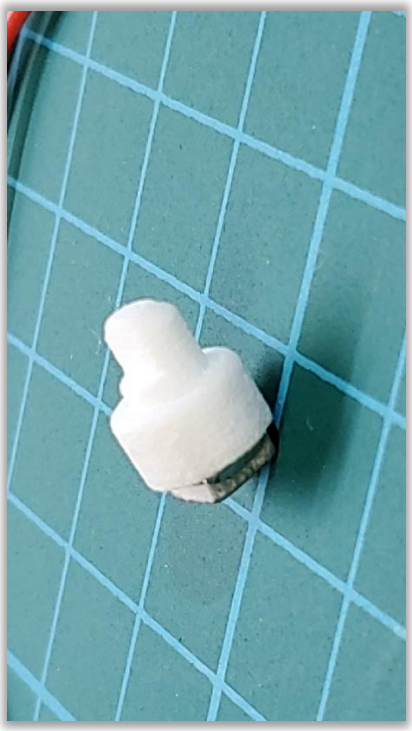


9. Carefully unplug the adapter at the other end of the wires from the circuit board.

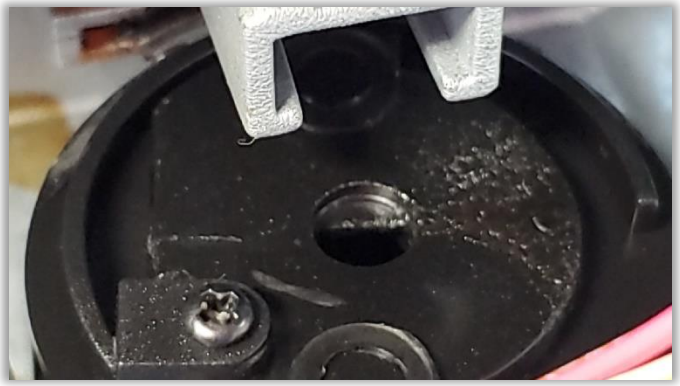
Installation

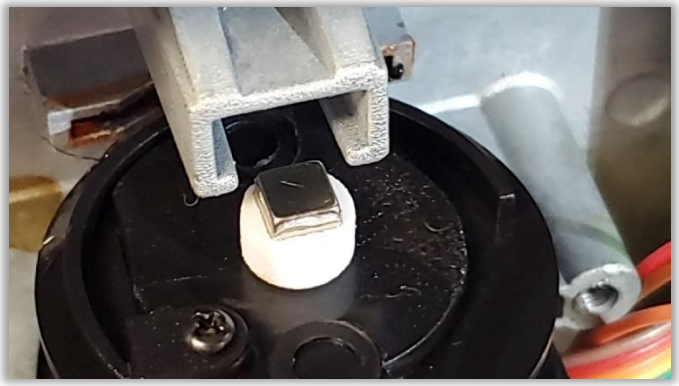
The hall sensor replacement consists of a three-wire connector at one end and a sensor at the other end. The sensor will fit into the same metal slot that the potentiometer was removed from. The other component is a magnet which will fit into the axle hole, where the potentiometer's shaft connected.





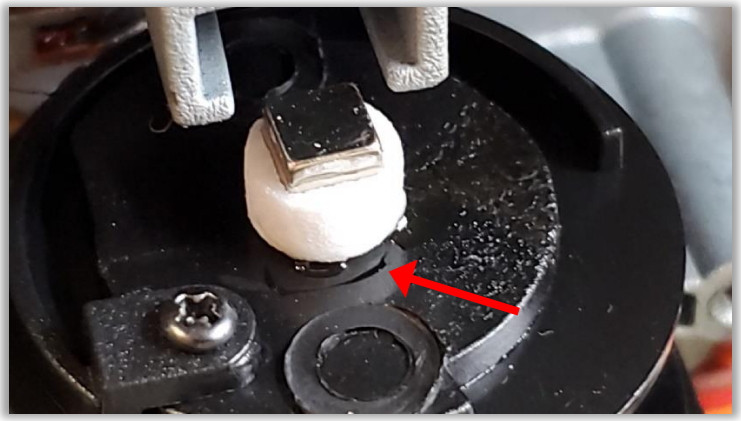
The axle hole is a half-circle and the magnet shaft has a half-circle shape. This causes the magnet to fit into the hole and not rotate.



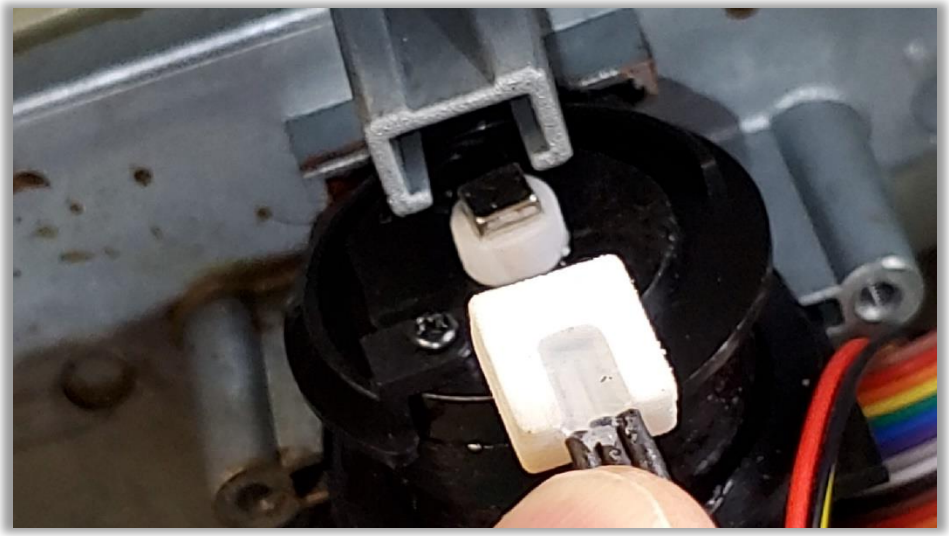


10. Insert the magnet into the axle hole. It will only fit in one way because of the half-circle alignment.
11. With the magnet in place, secure it. This can be done with a piece of tape or glue. Whichever you use hold the magnet firmly in-place while applying the tape or glue.

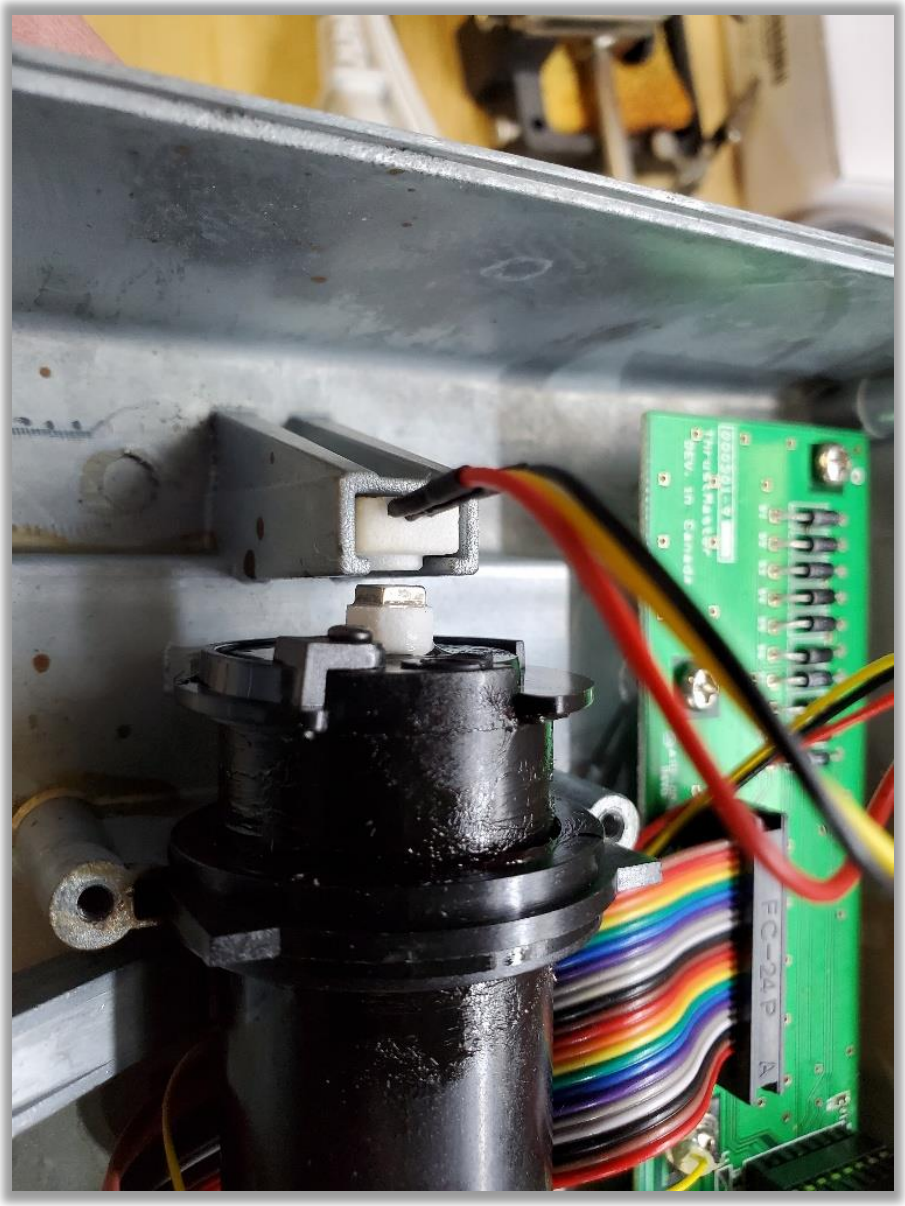
In the photo below, I've used Bondic glue (a UV activated glue) to secure the magnet in-place.

12. Insert the hall-sensor into the metal slot. There is a circular shape on one side, this side should be facing down toward the magnet.



13. Guide the wires under the multi-colored ribbon cable.
14. Connect to the circuit board. It will only connect one way.




The hall sensor and magnet should have a few millimeters between them when they are aligned.
15. Re-align the axle with the metal guides
16. Re-attach the bottom of the base, verifying that all cables are secure and inside the base.
17. Aligning the screw holes, insert the screws and tighten.

The hall sensor upgrade is complete. Connect your throttle and test.