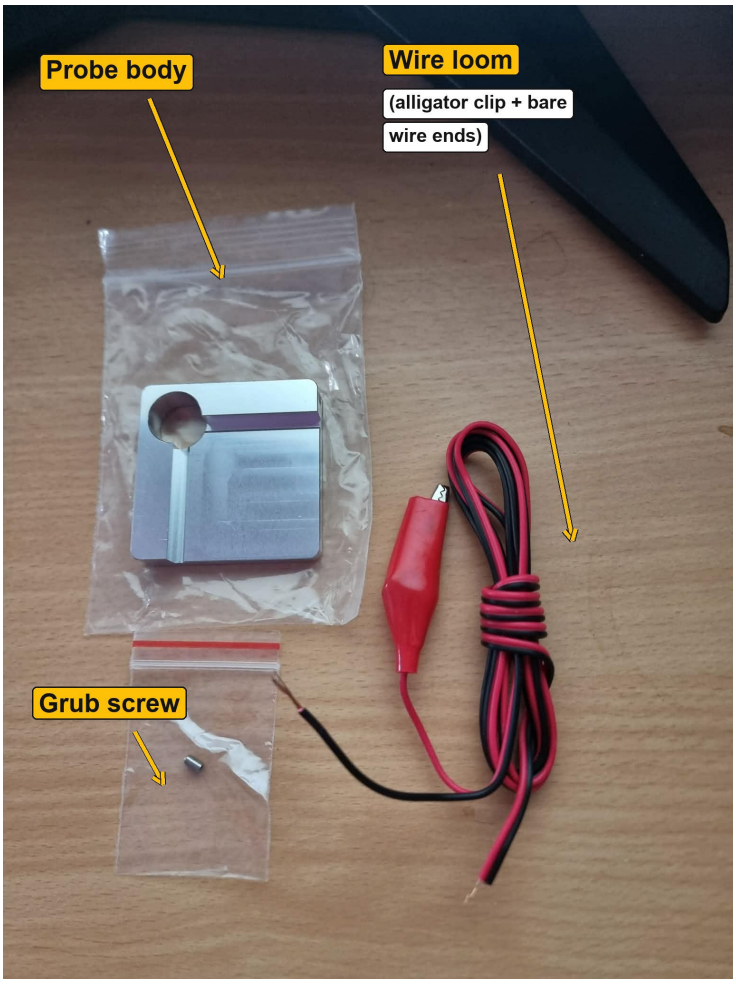
XYZ CNC Probe

Wiring Guide

This short guide walks you through wiring up your CNC3D XYZ touch probe and connecting it to a Nighthawk controller. The whole job takes a couple of minutes and needs one tool: a 1.5 mm metric Allen key.

WHAT'S IN THE KIT

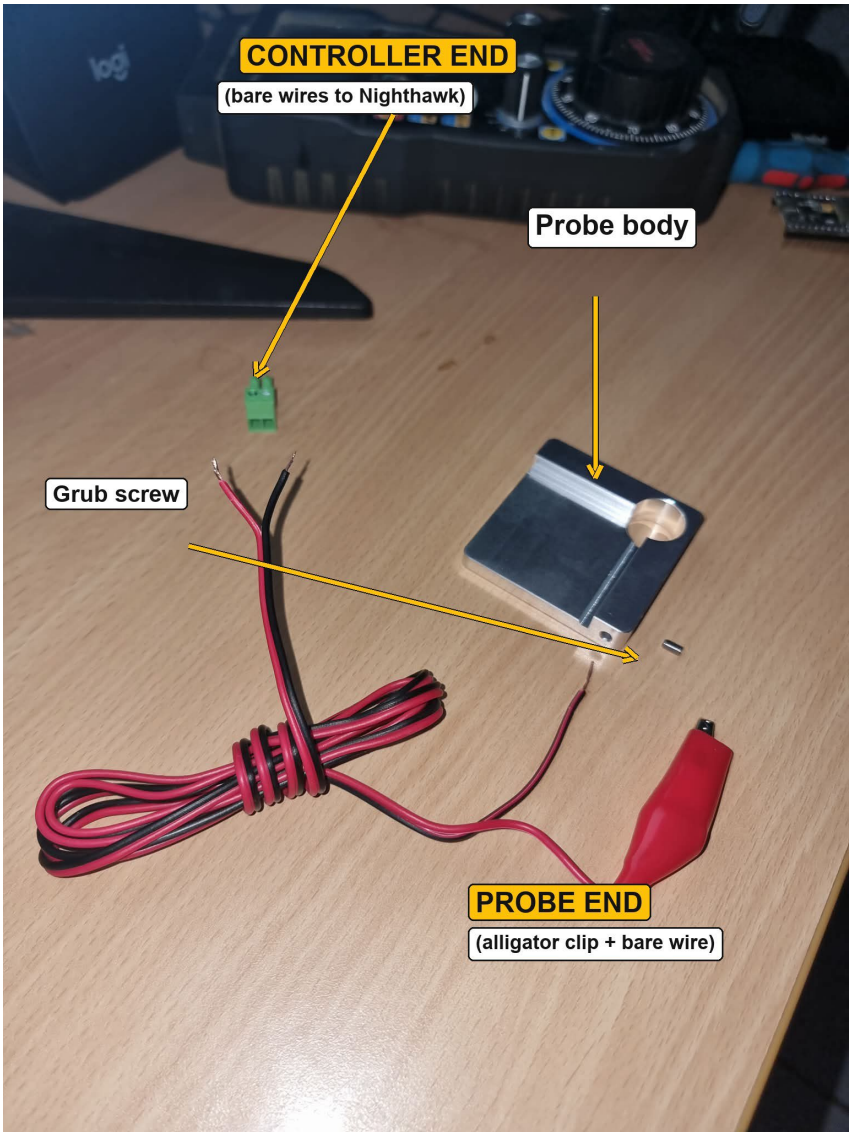


Everything shipped with the XYZ CNC Probe kit.

- Probe body — machined aluminium block with a tool-locating slot.
- Grub screw — tiny set screw that clamps the wire against the probe body.
- Wire loom — one end has a red alligator clip + bare black wire (the PROBE end). The other end has bare wire tails (the CONTROLLER end) that terminate into your Nighthawk controller's probe port.

IDENTIFYING THE TWO ENDS OF THE WIRE

Before you wire anything up, get familiar with which end of the loom goes where. The loom is a single length of red/black wire with different terminations at each end.



The loom spread out. The green plug goes to the controller; the alligator clip + bare wire end goes to the probe.

End	Where it goes
PROBE end	Red alligator clip + bare black wire. The alligator clip clips onto your router bit / cutter, the bare black wire screws into the probe body.
CONTROLLER end	Bare wire tails. Terminate these into the Nighthawk controller's probe port (typically a green Phoenix-style 2-pin plug — see Step 2).

STEP 1 — WIRE THE PROBE BODY

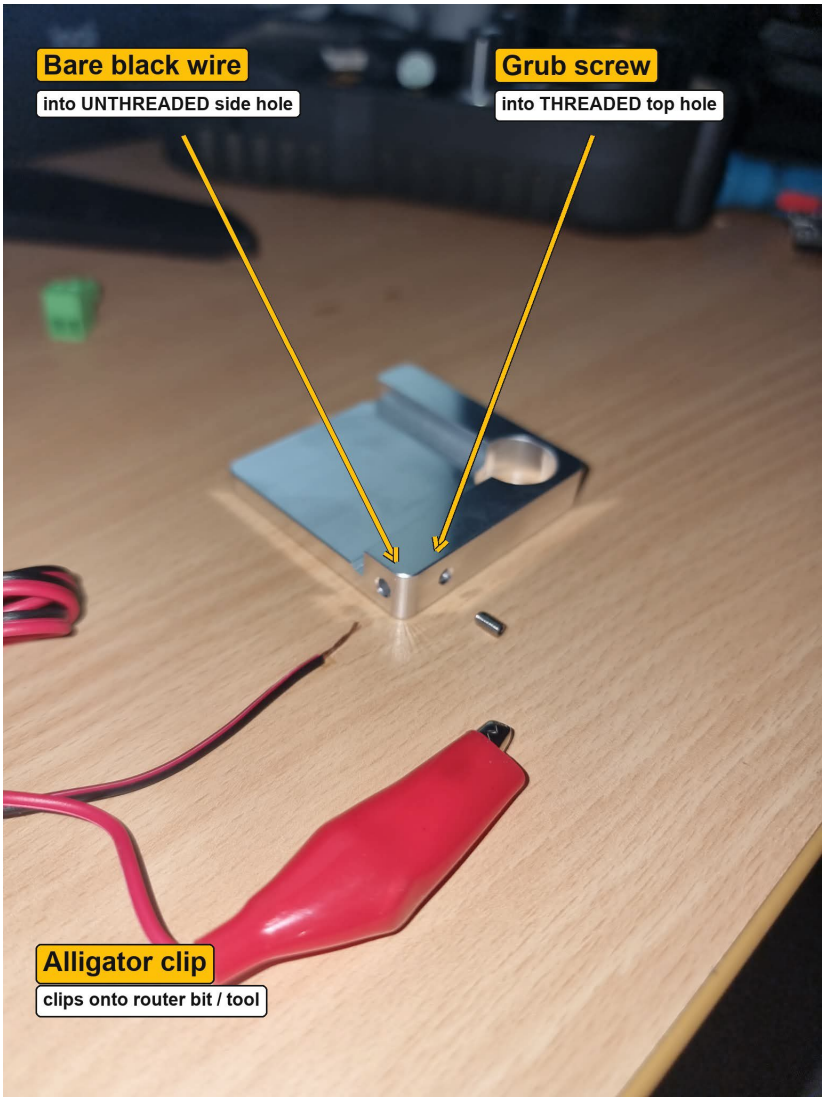
You only need to work on the PROBE end of the loom for this step.

Tools required:

- 1.5 mm metric Allen (hex) key

Procedure

1. Pick up the loom and find the end with the red alligator clip. That same end has a short length of bare black wire next to it — that's what goes into the probe body.
2. Slide the bare black wire fully into the small UNTHREADED side hole on the probe body. Push it in until the insulation is flush against the block, so the exposed conductor is sitting inside the clamping zone.
3. Using the 1.5 mm Allen key, screw the grub screw into the THREADED hole on the top face of the probe. Tighten it down until the screw bites firmly onto the bare copper conductor of the wire.
4. Give the wire a gentle tug to confirm it's held. It should not pull free.



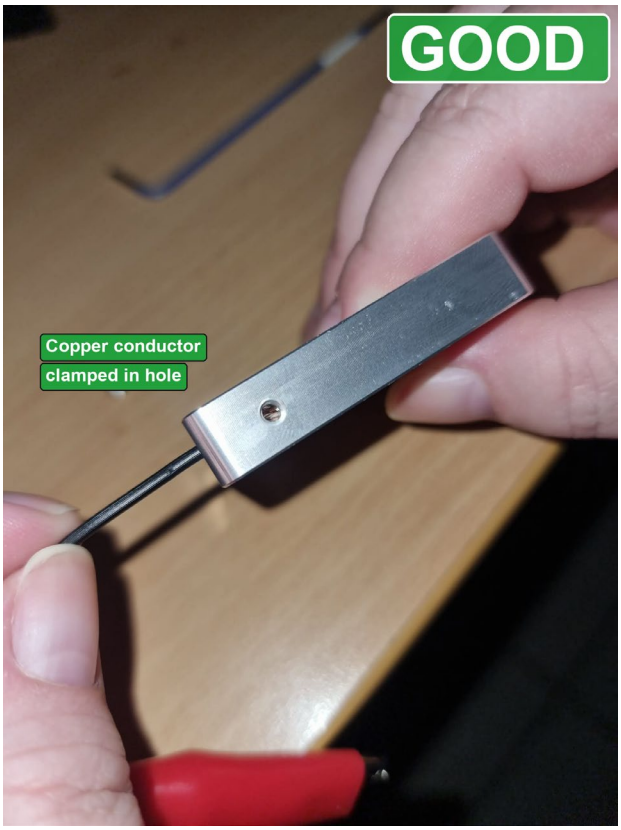
Wire goes into the unthreaded side hole; grub screw goes into the threaded top hole to clamp it.

CRITICAL — CLAMP THE CONDUCTOR, NOT THE INSULATION

This is the single most common mistake and it will stop the probe from working. The grub screw has to bite onto the bare copper strands of the wire, not onto the plastic insulation around them. If it clamps the insulation, there is no electrical contact and the controller will never see a probe trigger.

How to check

Look straight down into the grub-screw hole with a torch. You should see bright copper inside the hole. If the inside of the hole looks dark or empty, the screw is sitting on insulation — back it off, slide the wire in further (or strip a little more insulation back), and try again.



GOOD — copper conductor visible in the hole

BAD — grub screw will bite into the black insulation, NOT the wire conductor

STEP 2 — CONNECT TO THE NIGHTHAWK

With the probe body wired, flip the loom around and work on the other end — the CONTROLLER end with the two bare wire tails.

Procedure

1. Locate the probe port on your Nighthawk controller. It uses a green 2-pin Phoenix-style plug that unplugs from the board.
2. Unplug the green 2-pin connector from the Nighthawk. Loosen the two small screws on top.
3. Insert the two bare wire tails into the green plug's terminals and tighten the screws. Polarity doesn't matter (see note below).
4. Push the wired-up green plug back into the probe port on the Nighthawk. It is keyed and will only go in one way.

5. In use: place the probe on the work surface under the cutter, then clip the red alligator clip onto the shank of your router bit (or directly onto the tool / collet). This completes the circuit when the tool touches the probe.

Polarity: the probe circuit is polarity-independent, so the green plug has no +/- orientation to worry about.

For the full Nighthawk wiring overview (power supply, motors, limit switches and probe port location), refer to the main Nighthawk wiring diagram supplied with the controller.

VIDEO TUTORIAL

For a walkthrough of running the XYZ probing cycle from inside CNC3D Commander, watch the tutorial video below:

Watch on YouTube: youtube.com/watch?v=2q8tDUQNImg