

Robot Not Working?

Troubleshooting / Bench checklist

A calm, ordered checklist to find the first failing subsystem.

01 01 / Power -> ground

Power

Measure supply at the board under load. Watch for voltage sag when motors start.

Ground

Confirm a shared signal reference. Check continuity only with power disconnected.

02 02 / Wiring -> pins

Wiring

Compare each connection with the schematic. Check loose jumpers, reversed plugs and split breadboard rails.

Pins

Match GPIO names, header numbers and code constants. Check input-only, reserved and boot pins.

03 03 / Code -> serial

Minimal test

Run Blink, then one sensor, then one motor. Reconnect one subsystem at a time.

Serial

Print startup, raw readings and state changes. Confirm baud rate, board and port.

04 Symptom -> next check

Resets on motion

Supply sag, stall current, motor noise, missing decoupling.

Motor silent

Enable/standby, motor supply, common ground, direction and PWM.

Sensor stuck

Pin mode, pull-ups, voltage level, bus address and a disconnected signal.

Upload fails

USB data cable, board/port selection, boot mode and devices on UART pins.

Robot Not Working? / continued

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Before you power on

Raise wheels before motion tests. If a component heats unexpectedly, disconnect power and inspect wiring.

Datasheets & further reading

Arduino hardware documentation

<https://docs.arduino.cc/hardware/uno-rev3>

Raspberry Pi Pico documentation

<https://www.raspberrypi.com/documentation/microcontrollers/pico-series.html>