INITIAL DIAGNOSTIC CHECKLIST

Work top to bottom. Stop and act as soon as you find something abnormal — you don't need to complete every step for every fault. For detailed fault-finding, see the full Troubleshooting Guide.

STEP 1 — Safety First

- ☐ E-stop tested and confirmed to release/engage correctly before touching anything.
- ☐ No visibly damaged, hot, or swollen battery cells.
- ☐ Hands, tools, and loose clothing clear of wheels and moving mechanisms while powered.
- ☐ Robot powered off / battery disconnected before opening any connector or handling wiring.

STEP 2 — Power Check

- ☐ Battery 0 voltage measured at the terminals — within normal range for the pack. Record Voltage Here _____
- ☐ Battery 1 voltage measured at the terminals — within normal range for the pack. Record Voltage Here _____
- ☐ Control panel main power switch is ON and the E-stop is released.
- ☐ Battery connectors fully seated and correctly polarised.
- ☐ Relevant HCPDB fuse(s) visually inspected — no obviously blown element.

STEP 3 — Quick Visual & Physical Inspection

- ☐ All main power and CAN wiring connectors fully seated (battery, panel, HCPDB, Titans, VMX).
- ☐ No visibly frayed, pinched, chafed, or disconnected wiring.
- ☐ WAGO / lever-nut connections look fully closed, not gapped.
- ☐ Structural fasteners (frame, motor mounts, panels) checked for tightness.
- ☐ Each wheel turns freely by hand with power off — no binding, grinding, or excess play.

STEP 4 — Narrow It Down — Where to Look Next

If you observe…	Go to…
Robot completely dead — no lights	6.1 Power & Battery
Powers on but motors won't enable	6.2 Control Panel & E-Stop / Safety Circuit
One motor / channel dead, others fine	6.3 HCPDB & Fusing
Titan not detected / no CAN comms	6.4 Titan Motor Controllers & CAN Bus
Motor wrong direction / no encoder feedback	6.5 Drive Motors & Encoders
VMX not powering on / comms lost with Titans	6.6 VMX Controller & Communications
LiDAR not detected or erratic	6.7 LiDAR & Sensor Wiring
Fault comes and goes with vibration/flexing	6.9 Wiring, Connectors, WAGO & Ferrules
Rattle, wobble, clunk, or veers off-line	7 Mechanical & Hardware

STEP 5 — Before You Declare It Fixed

- ☐ State your diagnosis before beginning the repair.
- ☐ Repair is properly secured — cable-tied and correctly terminated, not just twisted together.
- ☐ Full functional test run on the whole robot, not just the repaired subsystem.
- ☐ Fault logged (symptom → test → result → fix) for future reference.