

Robot Body Stage 2: Assembly guide

Concept assembly guide derived from the staged build plan. Not a certified engineering drawing. Prices are estimates (Oct 2026); nothing here is a purchase.

Stage 2



Concept render (illustrative).

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| 1 | Assemble fuse, switch, XT60 and 5V 5A buck into the bench power harness.
Part R13: Fuse, switch, XT60, 5V 5A buck x1 (\$30) Buy: Amazon search |
| 2 | Verify 5.1 V under a 4 A dummy load before any board sees it.
Part R13: Fuse, switch, XT60, 5V 5A buck x1 (\$30) Buy: Amazon search |
| 3 | Mount the 3S pack and BMS on the nylon-standoff thermal break.
Part R12: 3S 5000 mAh LiPo + BMS + nylon-standoff thermal break x1 (\$51) Buy: Amazon search |
| 4 | Print the motor mounts in PETG.
Part R15: Wiring + PETG x1 (\$45) Buy: Amazon search |
| 5 | Bolt the two JGB37-520 motors into the mounts on the chassis.
Part R7: Chassis + 2x JGB37-520 encoder gearmotors + wheels x1 (\$56) Buy: Amazon search |
| 6 | Press the wheels onto the motor shafts; fit the casters.
Part R7: Chassis + 2x JGB37-520 encoder gearmotors + wheels x1 (\$56) Buy: Amazon search |
| 7 | Solder headers on the TB6612FNG and plug it onto the breadboard/perfboard.
Part R8: TB6612FNG motor driver x1 (\$6) Buy: Pololu |
| 8 | Wire ESP32-S3 PWM/DIR pins to the TB6612FNG.
Part R9: ESP32 dev board (OWNED, from video: at least 2 on hand) x1 (\$0 owned) Buy: Amazon search |
| 9 | Connect motor leads and encoder wires; spin one motor and read encoder counts.
Part R7: Chassis + 2x JGB37-520 encoder gearmotors + wheels x1 (\$56) Buy: Amazon search |
| 10 | Mount three HC-SR04P sensors front-left, front, front-right.
Part R10: HC-SR04 ultrasonic sensor (OWNED: at least 1; buy only the shortfall to reach 3) x3 (≥ 1 owned) (\$0-6)
Buy: Amazon search |

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Wire the MPU-6050 to the ESP32 I2C pins.

Part R11: MPU-6050 IMU x1 (\$4) Buy: [Amazon search](#)

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Link Pi to ESP32 over UART; pull the cable and confirm motors stop within 300 ms.

Part R9: ESP32 dev board (OWNED, from video: at least 2 on hand) x1 (\$0 owned) Buy: [Amazon search](#)

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Balance-charge the 3S pack on the charger before first drive.

Part R14: 6S-capable AC/DC balance charger (shared with drones) x1 (\$55) Buy: [Amazon search](#)