

Robot Body: R2-D3 Dome Droid: Bill of materials

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

ID	Stage	Part	Qty	Price	Buy link
R1	Stage 1	Raspberry Pi Camera Module 3	1	\$25	Raspberry Pi
R2	Stage 1	USB mini microphone	1	\$15	Amazon search
R3	Stage 1	MAX98357A I2S amp + 3 W speaker	1	\$10	Adafruit
R4	Stage 1	64 GB microSD (robot card)	1	\$10	Amazon search
R5	Stage 1	Pi 4 USB-C 5.1V 3A supply (if needed)	1	\$8	Raspberry Pi
R6	Stage 1	PETG filament (desk stand / dome, ~\$2 used)	1	\$2	Amazon search
R7	Stage 2	Chassis + 2x JGB37-520 encoder gearmotors + wheels	1	\$56	Amazon search
R8	Stage 2	TB6612FNG motor driver	1	\$6	Pololu
R9	Stage 2	ESP32 dev board (OWNED, from video: at least 2 on hand)	1	\$0 owned	Amazon search
R10	Stage 2	HC-SR04 ultrasonic sensor (OWNED: at least 1; buy only the shortfall to reach 3)	3 (≥1 owned)	\$10.4	Amazon search
R11	Stage 2	MPU-6050 IMU	1	\$4	Amazon search
R12	Stage 2	3S 5000 mAh LiPo + BMS + nylon-standoff thermal break	1	\$51	Amazon search
R13	Stage 2	Fuse, switch, XT60, 5V 5A buck	1	\$30	Amazon search
R14	Stage 2	6S-capable AC/DC balance charger (shared with drones)	1	\$55	Amazon search
R15	Stage 2	Wiring + PETG	1	\$45	Amazon search
R16	Stage 3	2020 aluminum extrusion (torso) + printed shell	1	\$40	Amazon search
R17	Stage 3	MG996R pan servo on lazy-susan bearing	1	\$12	Amazon search
R18	Stage 3	MG90S tilt servo + slip ring	1	\$17	Amazon search
R19	Stage 3	MG996R shoulder servos	2	\$14	Amazon search
R20	Stage 3	PCA9685 16-ch servo driver	1	\$10	Adafruit 815
R21	Stage 3	6V 10A servo UBEC	1	\$15	Amazon search
R22	Stage 3	Spine battery cradle + hardware	1	\$16	Amazon search
R23	Stage 4	Geekworm UPS board (OWNED, from video; exact model unverified)	1	\$0 owned	Geekworm
R24	Stage 4	Molicel P28A 18650 cells (UNVERIFIED owned; still a buy)	2	\$15	18650 Battery Store
R25	Stage 4	XT90-S anti-spark pair + VBAT sense lead	1	\$8	Amazon search
R26	Stage 4	Raspberry Pi 5 2GB (optional brain upgrade)	1	\$77.50	Raspberry Pi
R27	Stage 4	Pi 5 Active Cooler	1	\$5	Raspberry Pi
R28	Stage 4	64 GB microSD (second card)	1	\$10	Amazon search
R29	Stage 5	reSpeaker XVF3800 mic array	1	+\$46	Amazon search

ID	Stage	Part	Qty	Price	Buy link
R30	Stage 5	LD19 lidar + 3x VL53L1X ToF	1	+\$117	Amazon search
R31	Stage 5	Pololu 37D encoder motors	2	(in \$135)	Pololu 4753
R32	Stage 5	Pololu wheels / hubs	1	(in \$135)	Pololu 2762
R33	Stage 5	Cytron 10A dual motor driver	1	(in \$135)	Amazon search
R34	Stage 5	Bioenno 12.8V LiFePO4 pack + INA226	1	+\$77	Amazon search
R35	Stage 5	BNO085 IMU + Feetech STS bus servos	1	+\$95	Amazon search
R36	Stage 5	ASA shell, gaskets, wiring, E-stop, fan	1	+\$170	Amazon search
R37	Add-on	SIM7600G-H 4G dongle (add-on)	1	+\$90	Waveshare
R38	Add-on	4S A123 pouch structural pack (add-on)	1	+\$195	Amazon search

In stock (from video session): Raspberry Pi 4B (brain) (1); 10-inch capacitive touch panel (paired with Pi) (1); Second touchscreen (resistive, seen on video) (1); Second 10-inch mountable display (1); ESP32 dev boards (≥ 2); Solderless breadboard kit: breadboard, jumper wires, header pins (1 kit); HC-SR04 ultrasonic sensor (≥ 1); PIR motion sensor (≥ 1); MQ-2 gas sensor (≥ 1); Moisture detection sensor (≥ 1); ADS7830 ADC board (1); Geekworm UPS board (model unverified) (1); Little motors (bin) (unknown); Potentiometers (unknown); 7-segment displays (unknown); Pixel displays (unknown); 555 timers / 8-pin ICs (unknown); Transistors / power transistors (unknown); Logic gates (unknown); Op amps (unknown); Small brass cylinder part (buzzer, motor or laser? TBC) (unknown); Soldering gear (1 set); Low-wattage 2D laser etcher (labels and mounts only) (1)

Max says he already has some drive motors/servos, but none were identified on video (model and qty unknown). Stage 2/3 motor, servo, chassis, driver, LiPo, PCA9685, slip ring and UBEC lines stay as buys until Max sends photos or a list. Molicel cells and the exact Geekworm model are also unconfirmed.

R7: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R8: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R9: In stock. Plain ESP32 works for motor PWM/encoders; S3 is optional.

R10: Owned HC-SR04 is 5V: add a 1k/2k divider on ECHO for ESP32. Exact count unknown.

R12: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R17: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R18: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R19: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R20: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R21: UNVERIFIED: Max says he has some actuators but model/qty unknown; keep as a buy until photos or a list confirm.

R23: Owned Geekworm UPS. Confirm it is the X1200 (Pi 5) vs a Pi 4 model before Stage 4.

Links marked 'Amazon search' open a search for that exact part spec (no specific listing chosen yet, no affiliate tag). Vendor links come from the existing build brochures.