

updated 2024.12
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Cost by Category

Category	subtotal
Mechanical	\$88.28
Electronics	\$230.36
Printing	\$10.47
Kit Parts	\$57.47

Cost by Kit

build variation	cost
standard	\$318.64
full kit	\$386.58

costs are computed by counting parts for 1 robot.
when buying parts, some products contain larger quantities than required.
This BOM denotes the cost of such parts per robot quantity

Mechanical Parts

category	store	part	part no.	cost (each)	qty	subtotal	last update
chassis	amazon	wheel	B07531B4GK	\$16.23	1	\$16.23	2022.05
chassis	amazon	bracket 90deg	B07BQR7WX8	\$2.75	4	\$10.99	2021.10
chassis	amazon	belt, timing, 5M	B08PW2HD81	\$6.43	2	\$12.86	2022.05
chassis	Mcmaster	nut, m8	90591A161	\$0.07	2	\$0.14	2021.10
chassis	Mcmaster	extrusion, 3030	5537T97	\$8.13	4	\$32.52	2022.05
chassis	amazon	caster	B01J4FED5E	\$1.83	2	\$3.67	2022.05
chassis	Mcmaster	screw, m8x110	91290A470	\$0.97	2	\$1.95	2022.05
chassis	Mcmaster	screw, m6	91239A319	\$0.10	8	\$0.82	2019.11
chassis	Mcmaster	screw, m6 x 10	91239A316	\$0.10	12	\$1.25	2019.11
chassis	McMaster	screw, m5	91390A118	\$0.04	2	\$0.08	2019.11
chassis	Mcmaster	screw, m3x10	92010A120	\$0.04	6	\$0.27	2019.11
chassis	amazon	screw, tapping m2	B00GMQDSRI	\$0.01	8	\$0.07	2019.11
chassis	Mcmaster	screw, m2.5x10	92010A020	\$0.04	6	\$0.23	2019.11
chassis	Mcmaster	screw, m2.5x6	92005A066	\$0.04	3	\$0.13	2019.11
chassis	amazon	nut, m6 dropin	B077Z2HX42	\$0.20	12	\$2.40	2019.11
chassis	Mcmaster	washer, m8 spring	92148A200	\$0.07	2	\$0.15	2019.11
chassis	Mcmaster	washer, m8 flat	93475A270	\$0.08	2	\$0.16	2019.11
chassis	Mcmaster	washer, m6	93475A250	\$0.05	8	\$0.43	2019.11
chassis	Mcmaster	washer, m6 spring	91202A234	\$0.03	6	\$0.17	2019.11
chassis	Mcmaster	rail, DIN, 305mm	B079VV2W7P	\$1.67	1.6	\$2.67	2024.12
chassis	Mcmaster	threaded insert, m2.5	94180A321	\$0.12	9	\$1.11	2019.11

Electronics

category	store	part	part no.	cost (each)	qty	subtotal	last update
computer	mouser	raspberry pi 4	102991317	\$56.25	1	56.25	2022.05
actuator	amazon	motor driver	B07VHFCYFQ	\$16.41	1	16.41	2022.05
actuator	amazon	motor	B072R5QSRG	\$14.99	2	29.98	2022.05
Sensors	amazon	camera	B07QSTPGR8	\$58.99	1	58.99	2022.05
power	amazon	battery cell	B00GS48XRE	\$7.48	3	22.45	2019.11
Sensors	mouser	encoder	PN_990600491	\$15.75	2	31.50	2022.05
connectors	powerwerx	connector, anderson	WP30-100	\$1.15	8	9.24	2019.11
power	digikey	battery tray	BK-18650-PC6	\$2.00	1	2.00	2019.11
power	mouser	switch	SRB22A2FBBNN	\$0.95	1	0.95	2019.11
power	amazon	terminal, spade	B06XCWFTJ9	\$0.13	2	0.26	2019.11
power	amazon	wire, paired 18awg	B07428NBCW	\$0.69	1	0.69	2019.11
wiring	amazon	cable, dupont 20cm	B07GCV6CH7	\$1.06	1	1.06	2022.06
wiring	amazon	cable, dupont 10cm	B07GD312VG	\$0.58	1	0.58	2022.06
power	amazon	bms	B07JMY631D	\$10.69	1	10.69	2019.11

3D Printing

category	store	part	part no.	cost (each)	qty	subtotal	last update
3D Print	Amazon	filament, ABS	B07D6BG8FR	\$19.99	0.42	\$8.48	2022.05
Wiring	JLPCB	battery circuit	custom design	\$1.99	1.00	\$1.99	2019.11

Extras (kit parts)

category	store	part	part no.	cost (each)	qty	subtotal	last update
off-the-shelf	amazon	gamepad	B01KV7B2CG	\$29.99	1	29.99	2022.05
power	amazon	battery charger	B08DNQXB1C	\$13.99	1	13.99	2022.05
compute	amazon	micro SD card	B0749KG1JK	\$12.50	1	12.50	2024.12
tools	grainger	allen key, 6mm hex	54TU80	\$0.99	1	0.99	2024.12

Parts Details, SCUTTLE v3.0

updated 12/14/2024

author David Malawey

About: Tables designed to extract part descriptions from main BOM sheet. Appears to have remnants from version 2.0 robot which requires updating. Purpose for today is simplifying BOM formatting.

Mechanical Parts

Name	detail
wheel	Wheel, urethane 83mm, with bearings (pair)
bracket 90deg	Bracket - 90deg aluminum, for 3030 (for chassis)
belt, timing, 5M	Timing Belt, 5mm pitch, 245mm length, 9mm width
nut, m8	Hex Nut, M8 (for axle)
extrusion, 3030	T-slot Framing Extrusion - 30mm x 1ft (for chassis)
caster	Caster wheels (for front)
screw, m8x110	Screws - M8x110mm screw (axles)
screw, m6	Screws, M6 x 14mm (for motor plates)
screw, m6 x 10	Screws - M6 x 10mm (for casters & chassis brackets)
screw, m5	Screw, set screw, M5x0.6 (for motor pulley)
screw, m3x10	Screw, Flat head, M3x10mm (for motors 6)
screw, tapping m2	Screw, self-tapping, M2 x 6mm, for plastic (for encdr brkt 4, ultrsnc brkt 4)
screw, m2.5x10	Screw, M2.5x10mm countersunk (for battery case)
screw, m2.5x6	Screw, M2.5x6mm pan head (for motor driver mount 2, bbb lid 1)
nut, m6 dropin	Nut, M6 nickel-plated steel for 3030 T-slot extrusion
washer, m8 spring	Washer, lock spring washer for M8 bolt (for axles)
washer, m8 flat	Washer, flat washer for M8 Bolt (for axles)
washer, m6	Washer, 6x12mm (wheelBrackets)
washer, m6 spring	Washer, M6, split lock (for casters)
rail, DIN	rail, DIN, steel, 35mm width, 305mm length
threaded insert, m2.5	Threaded insert, M2.5 x 3.4 heat set (btry 2, whlplts 4, m.driver 2)

Electronics Parts

Part	Detail
pi	Raspberry Pi 4, 2gb RAM
motor driver	Motor Driver Board with Twin MC33886 H-Bridges (HW-231 model)
motor	Motor, DC 12v with 200 rpm gearbox (for drivetrain)
camera	Camera, USB, 2.1mm focal len, 150 deg FOV,
battery cell	Battery cell, Panasonic 18650 or other brand
encoder	Encoder, AMS5048B, circuit boards
connector, anderson	Anderson PowerPole Connectors, 30amp
battery tray	Battery Tray, 3 cell li-ion (BK-18650-PC6 on digikey)
switch	Switch, rocker, SPST 10A BLK ON-OFF Symbols (for battery case)
terminal, spade	Terminals - 22-16 AWG Insulated Female Quick Connect Terminal
wire, paired 18awg	Power Wire - 18 AWG (black/red pair), price listed per meter
cable, dupont 20cm	Cable, 20cm ribbon, with female Dupont terminals (i2c board ► encoders)
cable, dupont 10cm	Cable, 10cm ribbon, with female Dupont terminals (pi ► motor driver)
terminal, barrel	Connector - barrel, 5.5x2.1mm, power (for beaglebone)
bms	battery management system (BMS) circuit board, 3S, 40A

3D Printing / Fabricated Parts

Part	detail
filament, ABS	Filament, ABS, 1.75mm, 1kg spool, Green Gizmodorks or Blue Novamaker
pcb, battery	Custom PCB (optional, saves work) found on grabCAD (keyword: scuttle battery v3)

Extras (SCUTTLE Kit parts)

Part	Detail
gamepad	EasySMX model 9101 2.4GHz Game Pad Controller, with USB dongle
micro SD card	micro SD card, Samsung Evo Plus 32GB
allen key, 6mm	6mm hex key, allen wrench, for M8 socket-head machine screws
charger, battery	battery cell charger, 18650