

Item	Part Description	Supplier	Part Number	Number Needed Per LVE/MSA	Price Per Order	Units Per Order	Total Price	Part	Notes
Chassis	7.2V 3000 mAh	All-Battery	11204-01	1	\$15.99	1	\$15.99	Battery	
Chassis	Battery charger	All-Battery	1	1	\$7.99	1	\$7.99		
Chassis	Female Tamiya Connector	All-Battery	8000-4	2	\$1.69	1	\$3.38	Batteries to Chassis 18 AWG Wire	
Chassis	Male Tamiya Connector	All-Battery	8000-1	1	\$1.69	1	\$1.69	Charger to Chassis 18 AWG Wire	
Chassis	Terminal Block	Digkey	A68503-ND	3	\$0.59	1	\$1.77	Terminal Block for Battery/charger/chassis	
Chassis	3 Position Switch	Digkey	EG4813-ND	1	\$3.32	1	\$3.32	Power switch for MSA	
Chassis	Power Connector to RF Board	Digkey	WM13703-ND	1	\$0.63	1	\$0.63		
Chassis	Inserts for RF Power Connector	Digkey	WMS116CT-ND	2	\$0.35	1	\$0.70		
Chassis	Connectors to Terminal Block	Digkey	A27449-ND	20	\$0.55	1	\$11.00		
Chassis	Connectors to switch	Digkey	A10688CT-ND	3	\$0.07	1	\$0.21		
Chassis	RF SMA to RF SMA RF Cable	Digkey	CSA-RP5M-216-R09B-ND	1	\$9.16	1	\$9.16		
Chassis	Casters	Home Depot	9392	2	\$2.98	1	\$5.96	Caster Wheels	
Chassis	Velcro® brand Sticky-Back® Industrial Tape 2" x 18"	Home Depot	N/A	1	\$2.97	1	\$2.97	Velcro for RF Board, Battery Pack	
Chassis	Aluminum Panel (1/4"x12" x8")	McMaster-Carr	8975K445	1	\$14.70	1	\$14.70	Bottom Panel	
Chassis	Aluminum Panel (1/4"x12" x12")	McMaster-Carr	8975K446	1	\$14.66	1	\$14.66	Bottom Panel	
Chassis	1/4"-20 x1/2" Button Head Cap Screw	McMaster-Carr	92949A533	1	\$5.70	50	\$5.70	Attach Sides, Base & Motor Mounts	*Only 28 needed
Chassis	Steel Square Rod (1/2"x1/2"x12")	McMaster-Carr	9143K171	3	\$3.48	1	\$10.44	Uprights	
Chassis	Smooth Finish Polyethylene White (1/8"x12"x36")	McMaster-Carr	8752K311	1	\$12.85	1	\$12.85	Side panels	
Chassis	Aluminum Spacers (1"x1/4" x0.115")	McMaster-Carr	92510A998	12	\$0.37	1	\$4.44	Spacers for lifting PC boards	
Chassis	Steel Bar 1/2"x1"x12"	McMaster-Carr	8910K699	1	\$8.72	1	\$8.72	Bars in bed for MSA and body panel attachment	
Chassis	Socket Cap Screws	McMaster-Carr	92949A239	1	6.32	100	\$6.32	#10-24 x 5/16" to attach casters	Only Need 8
Chassis	Nuts Zinc-Plated Steel 4-40 1/4" 3/32" 100	McMaster-Carr	90489A005	1	\$0.81	100	\$0.81		
Chassis	Flat Socket Head Cap Screw 4-40 10 Pack	McMaster-Carr	90585A208	1	\$3.85	10	\$3.85		
Chassis	Fuse Holder	Mouser	576-035D0601XZCY	2	\$0.71	1	\$1.42	Fuse Holder for Main and MSA Power	Is MSA Needed?
Chassis	12A Fuse for Main Power	Mouser	576-0311012.H	1	\$0.32	1	\$0.32		
Chassis	500mA Fuse for RF	Mouser	576-0312.500MXP	1	\$0.21	1	\$0.21		
Chassis	Steel Threaded Rod 4-40, 2ft	MSC	4352167	1	\$1.82	1	\$1.82	To hold lifted PC boards in place	*Only Need 16"
Chassis	25 - 10 AWG Power Black/Red Zip Cable	Radio Shack	278-567	1	\$7.99	1	\$7.99	Power cabling	Comes in 1ft increments, min of 10 ft. tbd amount per LVE required
Chassis	154 to 1 Ratio Gear Motor	Pololu	1109	2	\$19.95	1	\$39.90	Drive Motor	
Chassis	Pololu Wheel 90x10mm Pair - Black	Pololu	1435	1	\$9.95	1	\$9.95	Wheels/Hubs	
Chassis	Motor mount	Pololu	1138	2	\$6.95	2	\$13.90		
Chassis	Aluminum Project Enclosure	Radio Shack	270-238	1	\$2.99	1	\$2.99	Aluminum Project Enclosure	
Control	Controller	Amazon		1	\$12.99	1	\$12.99	Controller	
Control	2 X 3 PCB	Batch PCB	8975K445	1	\$15.00	1	\$15.00	PCB	
Control	Diodes	Digkey	497-4548-1-ND	8	\$0.62	1	\$4.96	Diodes	
Control	PCB Headers	Digkey	ED2611-ND	1	\$0.41	1	\$0.41	Wheat connector	
Control	Resistors 470ohm	Mouser	CR0603-JW-473GF	2	\$0.02	1	\$0.04	Resistors	
Control	Resistors 100kohm	Mouser	CR0603-JW-104GF	4	\$0.02	1	\$0.08	Resistors	
Control	Capacitors 0.1uf	Mouser	C1608X7RH104M	7	\$0.05	1	\$0.35	Capacitors	
Control	Capacitors 0.01uf	Mouser	C1608X7RH103M	3	\$0.03	1	\$0.09	Capacitors	
Control	Fuses for Motor Output	Mouser	618F2505	2	\$0.42	1	\$0.84	Resettable Fuse	
Control	Arduino Nano dev Board	Robot Shop	RB-Gra-01	1	\$34.99	1	\$34.99	Arduino Nano	
Control	Motor Controller	Sparkfun	COM-09479	2	\$2.95	1	\$5.90	H-Bridges	
Control	Female Header Row	Sparkfun	PRT-00115	2	\$1.50	1	\$3.00	Arduino Nano interface row	
Control	Male Header Row	Sparkfun	PRT-00116	1	\$2.50	1	\$2.50	Male Header row for UART	
Control	Wire	Sparkfun	PRT-10367	1	\$1.50	1	\$1.50	Wire	
Control	Battery to PCB	Sparkfun	PRT-08235	1	\$1.56	1	\$1.56	Vin Connector	
Control	WOCSS	WOCSS Prototype		1	\$63.00	1	\$63.00		
MSA	MSA Main Board	BatchPCB	50564	1	\$15.00	1	\$15.00	MSA Control Board	Long lead time (1 month) Normally provides 2 boards
MSA	MSA Chassis IO Board	BatchPCB	50564	1	\$5.00	1	\$5.00	MSA Chassis IO Board	Long lead time (1 month) Normally provides 2 boards
MSA	90 deg Solid Angle 1.5" x 1.5" Aluminum (Servo Bracket, Pinned Mount)	Home Depot	6957831 (MSC, Smaller Part)	1	\$10.88	1	\$10.88	L Bracket for Servo Mount, Pin Mounts	Student part for pin location, machining required.
MSA	Press Fit Dowel Pin (Dowel Pin)	McMaster-Carr	98381A542	4	\$9.85	50	\$9.85	Chassis Mounting Dowel Pins	Requires machining, hole drilled
MSA	Hairpin Cotter Pin (Cotter Pin)	McMaster-Carr	98335A062	4	\$9.90	100	\$9.90	Chassis Mounting Cotter Pins	
MSA	Washer Spacers (Washer/Spacers)	McMaster-Carr	90295A456	3	\$3.92	50	\$11.76	1/4" x .05" washer spacer, Nylon 6/6	
MSA	Clevis Pins (Clevis Pin)	McMaster-Carr	98330A135	3	\$4.11	10	\$12.33	1/4" x 1" clevis pin, adjustable length	
MSA	Plate Mounting Screws 1/4-20 x .75" Hex Head	ME Shop		10	\$0.00		\$0.00	Mounting brackets to plate, from shop	Available in ME shop
MSA	Mounting Nuts 1/4-20 Plain (Plate Mount Nuts)	ME Shop		8	\$0.00		\$0.00	Mount to Mounting Plate, from shop	Available in ME shop
MSA	Servo Mounting Screws 4-40 x .5" Hex Head	ME Shop		8	\$0.00		\$0.00	Mounting servo to brackets, from shop	Available in ME shop
MSA	Mounting Nuts 4-40 Plain (Servo Mount Nuts)	ME Shop		8	\$0.00		\$0.00	Mounting to Servo Bracket, from shop	Available in ME shop
MSA	Board to Board / Mezzanine Connectors REC 1X12P VRT 1/H	Mouser	6-535541-0	1	\$1.90	1	\$1.90	Headers for Daughter Card	12 pin header
MSA	Break Away Headers - Straight	Mouser	69190-110HFL	5	\$0.35	1	\$1.75	Headers for Main Board and IO	10 pins
MSA	Headers & Wire Housing 20P 4-WALL HEADER STRAIGHT 10U AU	Mouser	02520-6002-AR	1	\$1.23	1	\$1.23	Header for IO Bus	
MSA	Cables (Cable Assembly) 20P 6 SKT - SKT 2BAWG STRANDED PVC	Mouser	1M-1010-0203-3265-006-0-00-AB-00-0	1	\$3.84	1	\$3.84	Connection Between Main Board And Chassis	
MSA	Screw Terminals 3.5mm Pitch (2-Pin)	Sparkfun	PRT-08235	1	\$1.50	1	\$1.50	Terminal for Batt Wires	
MSA	PTC Resettable Fuses 0.05A 30V 1210	Mouser	1210L005WR	1	\$0.23	1	\$0.23	PTC Fuse for uC	
MSA	PTC Resettable Fuses 24V 1.5A-RD 40A MAX	Mouser	1812L15024MR	1	\$0.34	1	\$0.34	PTC Fuse for Servos	
MSA	Multilayer Ceramic Capacitors (MLCC) - SMD/SMT 0603 16vohms 0.10uf	Mouser	C1608X7RH104M	3	\$0.03	1	\$0.09	Decoupling Caps	
MSA	DC/DC Switching Converters 3A 28V in Step Down SWIFT DC/DC Convtr	Mouser	IP534331D	1	\$0.00	1	\$0.00	Switching Power Supply	
MSA	Thick Film Resistors - SMD 0603 10KOHMS 5% 1/10WATT	Mouser	CR0603-JW-103ELF	1	\$0.02	1	\$0.02	R1	
MSA	Multilayer Ceramic Capacitors (MLCC) - SMD/SMT 0603 150pf 50volts	Mouser	C1608X7RH115J1	1	\$0.03	1	\$0.03	C7	
MSA	Multilayer Ceramic Capacitors (MLCC) - SMD/SMT 0603 50volts 220pf	Mouser	C1608X7RH115J1M	1	\$0.03	1	\$0.03	C6	
MSA	Multilayer Ceramic Capacitors (MLCC) - SMD/SMT 0603 50volts 0.015uf	Mouser	C1608X7RH115J3M	1	\$0.04	1	\$0.04	C5	
MSA	Power Inductors 3.3uh 30%	Mouser	SRU1028-3R3Y	1	\$1.00	1	\$1.00	L1	
MSA	Schottky Diodes & Rectifiers SHOTTKY 25V 5A TR HIGH EFFICIENCY	Mouser	RSX501L20T25	1	\$0.71	1	\$0.71	D1	
MSA	Tantalum Capacitors - Solid 500uf 16volts 10% C case	Mouser	593268R0010X2TE3	1	\$2.11	1	\$2.11	C2	
MSA	Multilayer Ceramic Capacitors (MLCC) - SMD/SMT 0805 XAS 16V 10uf	Mouser	GRM21BC91C106KA73L	1	\$0.58	1	\$0.58	C9	
MSA	Thick Film Resistors - SMD 1.87K 1% 1/10W	Mouser	CR0603-FX-1871ELF	1	\$0.05	1	\$0.05	R2	
MSA	Thick Film Resistors - SMD 20K0HM 1/10WATT 5%	Mouser	CR0603-JW-203GJF	1	\$0.02	1	\$0.02	R3	
MSA	Thick Film Resistors - SMD 348K ohm 1%	Mouser	CR0603-FX-3483ELF	1	\$0.05	1	\$0.05	R6	
MSA	TVS Diodes - Transient Voltage Suppressors 9V 400 Watts	Mouser	SMAJ9-02A JCP	2	\$0.21	1	\$0.42	D2 D3	
MSA	Thick Film Resistors - SMD 3320HM 1/10WATT 1%	Mouser	CR0603-FX-3320ELF	1	\$0.04	1	\$0.04	R8	
MSA	Standard LED - SMD Green Water Clear 40mcd 5/7mm	Mouser	598-8170-107F	1	\$0.10	1	\$0.10	LED1-odde for buck	
MSA	Thick Film Resistors - SMD 76.8K ohm 1%	Mouser	CR0603-FX-7682ELF	1	\$0.05	1	\$0.05	R7	
MSA	6063 Aluminum 125" x 75" x 4" (Links)	MSC	89755A25	2	\$3.41	1	\$6.82	uC Daughtercard	Student part for machining
MSA	Acrylic Sheet (Mounting Plate)	MSC	63391486	1	\$9.83	1	\$9.83	Mounting Plate, White	Requires machining, holes drilled
MSA	Shroud for Chassis IO Board	Brinkman		1	\$1.25	1	\$0.00	Shroud for IO	10 pins
MSA	Grigger and Servo Assembly (End Effector)	Robotdysey	GRV5	1	\$25.95	1	\$25.95	End effector, assembly comes with servo	
MSA	Arduino Pro Mini 3.3V - 5V 16MHz	Sparkfun	ROB-09018	1	\$18.95	1	\$18.95	uC Daughtercard	
MSA	Main Drive Servo (Drive Servo, Output Gear)	Sparkfun	ROB-09064	1	\$12.95	1	\$12.95	Main Drive Servo, 93 in-oz	
MSA	Servo Wire Extensions	Sparkfun	ROB-08738	1	\$2.95	1	\$2.95	Servo wire lead extensions	

Merchandise TOTAL \$425.07

Shipping

Sparkfun	\$4.75
Mouser	\$6.40
Digkey	\$0.00
Robotdysey	\$5.15
MSC	\$10.98
McMaster-Carr	\$11.84
Amazon	\$0.00
All-Battery	\$10.45
BatchPCB	\$15.45
Pololu	\$21.60

Shipping TOTAL \$86.62

FINAL TOTAL \$511.69