

Description	Qty	Part	Price Per	Total Price	Notes
Drive motors	2	DT700	11.60	23.20	
Rotation servo	1	HXT 5010	4.59	4.59	
Agitator servo	1	HXT 5010	4.59	4.59	
Horizontal servo	1	HXT 5010	4.59	4.59	
Feed servo	1	SSV 9724	10.80	10.80	
Vertical servo	1	SSV 9724	10.80	10.80	
Speed controllers	2	HobbyKing Brushless	5.99	11.98	
Microcontroller	1	Teensy 2.0	19.00	19.00	
PSU	1	Newegg 380W	14.99	14.99	
Arduino Shield	1	PCB etched	5.00	5.00	See Eagle drawings
SD card slot	1	SD slot	2.85	2.85	
Plastic	1	ABS	10.00	10.00	ABS plastic used for 3D printer, estimated
Chrome steel bearings	1	10 5/32" from Amazon	3.33	3.33	Used for rotation of motor head
Hardware	1	Home Depot/Lowes	20.00	20.00	Various screws/nuts. Lots of 1"&1.5" wood screws. 2x 1.5" pipe brackets. 2x steel "L" brackets. Small hinges for ball trays.
Wheels	2	BaneBots	2.75	5.50	Used for throwing motors
Wire	1	Assorted	10.00	10.00	Primarily 16 gauge wire for power, but also some small gauge hookup/servo wire
LCD	1	Ebay	3.00	3.00	
Wood/PVC	1	Home Depot/Lowes	10.00	10.00	About 3ft of 1.5" PVC, PVC elbow, PVC T-joint, about 4ft of 2"x4" wood, 4ft of 1"x2" wood
Corrugated plastic sheet	1	Home Depot/Lowes	5.00	5.00	Used for ball tray
Wood dowels	2	Home Depot/Lowes	2.00	4.00	Used to hold up netting
Netting	1	Joannes	5.00	5.00	About 7 feet
Servo headers	1	HK Wires	1.99	1.99	
IR Receiver	1	Ebay	0.99	0.99	
SinglePin headers	1	Ebay	1.95	1.95	
DoublePin headers	1	Ebay	0.90	0.90	Only needed if using Arduino Mega
Servo horns	1	HK	2.95	2.95	
Tie-rod ends	1	HK	4.95	4.95	
Momentary switch	1	Ebay	1.95	1.95	For Arduino reset
10k LCD Potentiometer	1	Radio Shack	2.00	2.00	To adjust LCD contrast
DPDT Relay	2	Mouser	2.55	5.10	Used to reverse motor direction
Transistor	2	Mouser	1.42	2.84	Used for relay circuit
Diode	2	Mouser	0.09	0.18	Used for relay circuit
1K resistor	2	Radio Shack	1.00	2.00	Used for relay circuit
#4-40 threaded rod - 1ft	1	Home Depot/Lowes	1.00	1.00	Used for Horizontal/Vertical servo connector rods
Ball bearings	2	Ebay	5.30	10.60	Used as a guide for the end of the motor shaft. Inner diameter needs to be ~4mm.
1/4" XL belt (1ft)	1	McMaster	2.01	2.01	Used for rotation servo
			Total	\$229.63	

Qty	Name	Notes
1	Agitator	
1	Agitator servo mount	Mounts to the 4-way servo horn
2	Bearing mount tab	
1	Bearing race cover	
1	Bearing race flange	Goes between Middle piece and middle piece cover
1	Belt clamp	Used for rotation servo belt
1	Bottom ball retainer ring	Placed flat side up between the bottom PVC Tee joint and long PVC pipe
1	Feed servo mount	
1	Motor mount	
2	Motor mount tab	
1	Piston	
1	Piston connector	
1	Piston guide	
1	Piston shaft	
2	Pole ends	
2	Pole mount	
1	Rotation servo mount	
1	Rotation servo pulley	
2	Servo mount elbow clamp	
1	Swivel joint female - bottom	Female has the exterior screw hole
1	Swivel joint female - top	Female has the exterior screw hole
3	Swivel joint male	
1	Universal motor mount adapter	
1	Upper ball detent ring	Goes in the groove in the motor mount
2	Wheel hub	
4	Wheel washer	

All of these parts are meant to be printed

Qty	Size	Type	Used
6	#4-40x3/4"	Countersunk flat head phillips machine with nuts	Flange mount to universal adapter
8	#4-40x3/4"	Round head phillips machine with nuts	Rotation bearing (flange) housing
2	#4-40x3/4"	Round head phillips machine with nut	Servo mount elbow tube clamps
6	#4-40x3/4"	countersunk flat head phillips machine with nuts	Swivel hinge mounts
14	#4-40	Washers	Swivel hinge mounts
8	#4x3/8"	Pan head phillips metal screw	Rotation and feed servo horn screws
1	#4-40x3/4"	Round head phillips machine with nut	Feed servo connector rod
1	#4-40x1/2"	Round head phillips machine with nut	Feed servo connector rod
4	#4-40	Washers	Feed servo connector rod
4	M4	Nuts and washers	Throwing wheel retainers
8	#4-40x1/2"	Round head phillips machine with nuts	Bearing and motor mount tabs to motor mount
8	#4-40	Washers	Bearing and motor mount tabs to motor mount
6	#4-40x1/2"	Round head phillips machine with nuts	Motor mounts to motor mount tabs
6	#4-40	Washers	Motor mounts to motor mount tabs
6	#4-40x1/2"	Round head phillips machine with nuts	Universal adapter piece mate to motor mount
8	#4-40x1/2"	Countersunk flat head phillips machine with nuts	Ball tray hinge mounts
1	#4-40x1/2"	Round head phillips machine with nut	Belt clamp