







































**2024 *FIRST* Global Challenge –
Feeding the Future Robotics Challenge
Bill of Materials**










UPDATES
















Date	Changes Made
11 July 2024	Original release
17 July 2024	Content updated











Bearings			
Part Number	Description	QTY	Image
REV-41-1317	15mm Bearing Pillow Block	40	
REV-41-1329	Through Bore Bearing - Long	48	
REV-41-1452	15mm Metal 12mm Ball Bearing Mount V2	8	
REV-41-1528	5mm Hex to 8mm Round Bearing Insert	20	
REV-41-1322	End Cap Bearing	32	
REV-49-1559	8mm x 12mm x 3.5mm Flanged Bearing	10	
REV-41-1683	5mm Hex Bearing Block	4	
Belt and Pulley			
Part Number	Description	QTY	Image
REV-41-1165	Barb for Polyurethane Hollow Belt	8	
REV-41-1164	Polyurethane Round Belt, 6mm, 6ft	3	
REV-41-1344	30mm Round Belt Pulley	4	
REV-41-1345	60mm Round Belt Pulley	8	
REV-41-1346	90mm Round Belt Pulley	2	










Cables			
Part Number	Description	QTY	Image
REV-11-1130	36in PWM Cable	8	
REV-31-1388	JST PH 4-pin Joiner Board	4	
REV-31-1392	XT30 extension Cable - 30cm	2	
REV-31-1394	XT30 extension Cable - 50cm	2	
REV-31-1407	Sensor Cable, 4 pin - 30cm	4	
REV-31-1408	Sensor Cable, 4 pin - 50cm	4	
REV-31-1409	Sensor Cable, 4 pin - 100cm	4	
REV-31-1412	JST VH 2-pin Motor Cables - 30cm	4	
REV-31-1413	Motor Power Cable, 2 pin - 50cm	4	
REV-31-1418	JST PH 3-pin Communication Cable - 50cm	4	
REV-31-1526	Motor Power Cable, 2 pin - 100cm	4	












Control System				
Part Number	Description	QTY	Image	
REV-31-1153	Expansion Hub	1		
REV-31-1302	12V Slim Battery	2		
REV-41-1166	Battery Holder Plate	2		
REV-31-1299	Battery Charger	1		
REV-31-1387	Switch Cable and Bracket	1		
REV-31-1595	Control Hub	1		
REV-31-1596	Driver Hub	1		
REV-31-2983	REV USB PS4 Compatible Gamepad	2		
REV-31-1155	Potentiometer	1		
REV-31-1425	Touch Sensor	2		
REV-31-1462	Magnetic Limit Switch	2		
REV-31-1505	2m Distance Sensor	1		
REV-31-1557	Color Sensor V3	2		








Gears			
Part Number	Description	QTY	Image
REV-41-1331	15 Tooth Plastic Gear	8	
REV-41-1332	30 Tooth Plastic Gear	8	
REV-41-1333	125 Tooth Plastic Gear	4	
REV-41-1334	45 Tooth Plastic Gear	8	
REV-41-1335	60 Tooth Plastic Gear	8	
REV-41-1336	72 Tooth Plastic Gear	8	
REV-41-1337	90 Tooth Plastic Gear	4	
REV-41-1364	Servo Gear Adapter	8	
REV-41-1503	22 Tooth Plastic Right Angle Rack Gear	16	










Hardware				
Part Number	Description	QTY	Description	Image
REV-41-1161	Zipties, Black, 160mm	200		
REV-41-1491	M3 Standoff - 30mm	8		
REV-41-1492	M3 Standoff - 40mm	8		
REV-41-1493	M3 Standoff - 45mm	8		
REV-41-1713	M3 x 6mm Hex Cap Screws	100		
REV-41-1359	M3 x 8mm Hex Cap Screws	800		
REV-41-1360	M3 x 16mm Hex Cap Screws	100		
REV-41-1124	M3 x 20mm Hex Cap Screws	100		
REV-41-1125	M3 x 35mm Hex Cap Screws	50		
REV-41-1361	M3 Nyloc Nuts	800		
REV-41-1373	Hook and Loop Fastener, 13.5mm x 2m	3		
REV-41-1907	M3 X 8MM T-Slot Screw	100		
Motors				
Part Number	Description	QTY	Description	Image
REV-41-1300	Core Hex Motor	3		
REV-41-1600	UltraPlanetary Gearbox Kit & HD Hex Motor	6		
REV-41-1609	UltraPlanetary Hardware Bundle	1		











Motor (Motion) Brackets			
Part Number	Description	QTY	Image
REV-41-1303	15mm Plastic Motion Bracket	32	
REV-41-1313	15mm Plastic Indexable Motion Bracket	4	
REV-41-1304	15mm Plastic Rod End Bracket	16	
REV-41-1315	15mm Gearbox Motion Bracket	8	
REV-41-1624	UltraPlanetary Flat Mounting Bracket	8	
REV-41-1433	15mm Metal Bent Core Hex Motor Bracket V2	8	
REV-41-1621	UltraPlanetary Outside Mounting Bracket	4	
REV-41-1623	UltraPlanetary Bent Mounting Bracket	4	
REV-41-1846	Motion Pattern Spacer	8	
REV-41-1625	UltraPlanetary Long Reach Mounting Bracket	2	













Servo and Servo Adapters			
Part Number	Description	QTY	Image
REV-31-1108	SRS Programmer	1	
REV-41-1097	Smart Robot Servo	6	
REV-41-1168	Replacement Gear Set for Smart Robot Servo	2	
REV-41-1319	15mm Plastic Servo Bracket	6	
REV-41-1328	Servo Shaft Adapter	12	
REV-41-1485	15mm Metal Bent Servo Bracket V2	4	
REV-41-1475	15mm Metal Offset Servo Bracket V2	4	
REV-41-1828	Aluminum Servo Horn V2	4	
REV-41-1820	Aluminum Double Servo Arm	2	








Shafts			
Part Number	Description	QTY	Image
REV-41-1147	High Strength Hex Hub	12	
REV-41-1316	15mm Hex Pillow Block	8	
REV-41-1326	Through Bore Bearing	24	
REV-41-1325	5mm Hex Shaft Spacer - 1.5mm	28	
REV-41-1324	5mm Hex Shaft Spacer - 3mm	48	
REV-41-1323	5mm Hex Shaft Spacer - 15mm	24	
REV-41-1327	Shaft Collars	50	
REV-41-1347	5mm x 75mm Hex Shaft	8	
REV-41-1348	5mm x 90mm Hex Shaft	20	
REV-41-1349	5mm x 135mm Hex Shaft	16	
REV-41-1362	5mm x 400mm Hex Shaft	8	










Specialty Motion			
Part Number	Description	QTY	Image
REV-41-1162	1.2mm UHMWPE Cord, 10M	2	
REV-41-1163	Surgical Tubing, 3mm	6	
REV-45-1259	15mm Hinge Kit	3	
REV-41-1358	Grasper Claw Assembly	1	
REV-41-1368	Small Pulley Bearings	20	
REV-45-1507	15mm Linear Motion Kit V2	4	
REV-41-2080	Ultra 90 Degree Gearbox	2	





Sprocket and Chain			
Part Number	Description	QTY	Image
REV-41-1338	10 Tooth Plastic #25 Sprocket	8	
REV-41-1339	15 Tooth Plastic #25 Sprocket	8	
REV-41-1340	20 Tooth Plastic #25 Sprocket	8	
REV-41-1343	40 Tooth Plastic #25 Sprocket	2	
REV-41-1341	54 Tooth Plastic #25 Sprocket	2	
REV-41-1702	Tensioning Bushing - 39mm	8	
REV-41-1342	26 Tooth Plastic #25 Sprocket	8	
REV-41-1365	#25 Roller Chain - 10 ft	2	
REV-41-1366	#25 Master Links	10	

Extrusion			
Part Number	Description	QTY	Image
REV-41-1568	15mm Extrusion - 120mm - 90° Ends	10	
REV-41-1431	15mm Extrusion - 225mm - 90° Ends	8	
REV-41-1432	15mm Extrusion - 420mm - 90° Ends	32	
REV-41-1430	15mm Extrusion - 150mm - 45° Ends	8	
REV-41-1562	15mm Corner Cube	8	
REV-41-1687	U Channel Endcap	4	
REV-41-1762	45mm x 15mm C Channel - 408mm	6	
REV-41-1767	45mm x 15mm C Channel - 248mm	4	
REV-41-1839	4mm Corrugated Plastic Sheet - 450mm x 300mm	8	
REV-41-3049	1mm Clear Polycarbonate Sheet - 400mm x 350mm	4	

Structure, Brackets			
Part Number	Description	QTY	Image
REV-41-1305	15mm Plastic 90 Degree Bracket	48	
REV-41-1308	15mm Plastic 30 Degree Bracket	8	
REV-41-1307	15mm Plastic 45 Degree Bracket	16	
REV-41-1306	15mm Plastic 60 Degree Bracket	8	
REV-41-1311	15mm Plastic 120 Degree Bracket	6	
REV-41-1310	15mm Plastic 135 Degree Bracket	8	
REV-41-1312	15mm Plastic 150 Degree Bracket	6	
REV-41-1318	15mm Plastic Variable Angle Bracket	8	
REV-41-1320	REV-41-1320 15mm Plastic Inside Corner Bracket	32	
REV-41-1321	15mm Plastic Lap Corner Bracket	40	
REV-41-1480	15mm Metal 90 Degree Bracket V2	16	
REV-41-1483	15mm Metal T Bracket V2	8	

Tools			
Part Number	Description	QTY	Image
REV-41-1119	5.5mm Nut Driver	2	
REV-42-1442	#25 Chain Tool	1	
REV-41-1215	Storage Tote - Orange	2	
REV-41-1374	5.5mm Combination Wrench	2	
REV-41-1376	1.5mm Allen Wrench	1	
REV-41-1377	2mm Allen Wrench	1	
REV-45-1727	Extrusion Channel Cover Color Pack	1	

Wheels				
Part Number	Description	QTY		Image
REV-41-1160	60mm Omni Wheel	4		
REV-41-1190	90mm Omni Wheel	4		
REV-41-1267	90mm Grip Wheel	8		
REV-41-1350	60mm Traction Wheel	4		
REV-41-1353	30mm Traction Wheel	4		
REV-41-1354	90mm Traction Wheel	4		
REV-41-2035	Compliant Wheel - 2in - 5mm Hex Bore - Soft	6		
REV-41-2150	1in Grip Wheel - 5mm Hex Bore - Soft(Light Gray)	8		
REV-41-2702	Intake Flap - 5mm hex - Medium	8		

Other			
Part Number	Description	QTY	Image
REV-42-3247	FIRST Global 2024 - Ball Pump	1	
REV-41-3246	FIRST Global 2024 - Food Ball	1	
REV-41-3245	FIRST Global 2024 - Energy Ball	1	
REV-41-3244	FIRST Global 2024 - Water Ball	1	
REV-39-1598	Webcam	C270 UVC USB	