



Robots

Zeroth-01

Bill of Materials

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Electronics

Part	Description	Link	Quantity	Total Cost (USD)	Date Decided
Serial Bus Servo	*STS3250 50KG Serial Bus Servo	STS3250	x16	Depends by Seller due to Supply Chain Issues. Previously: 222.24	9/10
Controller	Milk-V	Link	x1	10	11/14
Servo driver board	Waveshare Bus Servo Adapter	Link	x1	7	10/05
LCD IMU	RP2040 MCU Board	Link	x1	16	10/03
IMU	9-DOF IMU	Link	x1	29.95	11/14
Camera	Milk-V CAM-GC2083	Link	x1	4	10/05
Battery	RC Lipos	Link	x1	33	11/14
12V to 5V	12V to 5V, 3 amp capacity (may need connectors)	Link	x1	3	9/24

Part	Description	Link	Quantity	Total Cost (USD)	Date Decided
Microphone	Electret Microphone	Link	x1	6	11/01
Speaker	3 Watt Speaker	Link	x1	8	11/14
Amplifier	LM386 Mono Audio Amplifier	Link	x1	8	11/01

*The STS3215 45RPM servos are no longer sufficient for the speed requirements of the legs. Please use the STS3250 servos as we look for a suitable replacement.

Fasteners

The robot is joined together by M3 screws for all of the motor outputs, and M2 screws for all of the motor housings. The same fastener sizes have been used for the other structural joints as well, as was possible.

Button head cap screws were preferred for being low-profile around critical joints; Phillips-head drives are generally sufficient. Socket-head screws and hex-drive screws are also likely acceptable where clearance is not a concern.

The gross screw counts are as follows:

Type	Size*	Length (mm)	Quantity	Description
Button Head Cap Screw	M3	10	14	Structural Joints etc.
Button Head Cap Screw	M3	4.5	129	Motor Outputs, Motor Axles, etc.

Type	Size*	Length (mm)	Quantity	Description
Button Head Cap Screw	M2	5	80	Motor Housings
Socket Head Cap Screw	M2	5	12	Board Mounts
Heat-Set Insert	M3		13	Torso etc.
Heat-Set Insert	M2		14	Electronics Carriage

*standard Coarse thread pitch

An Itemized BoM is publicly available [here](#)

For metal-on-metal screw joints, we recommend using low-strength removeable threadlocker (*Loctite Purple*). Medium-strength may present issues on disassembly due to the small fastener sizes. High-strength should be avoided.

See the Assembly Guide for more information on heat-set inserts etc.

A Note: The above assumes using STS3250 motors, with an aluminum body. If using STS3215's, with a plastic housing, most holes are *not* pre-tapped; you may be able to still use a regular screw, but self-tapping screws will make for an easier assembly process. Specifically:

- The non-drive side ('bushing') axle screw on the 3215 will not be tapped. A regular screw may still be used on the drive side (with the splined output shaft).
- The mounting holes will not be tapped, so all machine screw M2's intended for the motor housings may need converted to the self-tapping equivalent.

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