Other mechanical parts list

Self tapping Phillips screws (round head):

- M2 - 6 mm length - 4pcs - For mounting PCB
- M2 - 8mm length - 16pcs - For mounting servos
- M2 - 12mm length - 23pcs - Used on top cover and legs
- M2 - 14mm length - 4pcs - For bottom cover
- M1.7 - 6mm length - 8pcs - On servos horns tips

Machine Phillips screws (round head):

- M3 - 20mm length - 4pcs - Used as shock absorber joints
- M2 - 16mm length - 8pcs - Used shock absorber limits

Machine Phillips screws with integrated washer (round head):

- M3 - 10mm length - 8pcs - In servo shafts

Nuts:

- M2 - 8pcs

Nylon insert lock nuts:

- M3 - 8pcs

Springs (as leg shock absorbers):

- 4pcs - 17mm length (not including ending hooks), 0.85wire diameter, 6mm diameter (material unknown, possibly #304 stainless steel)

Easy fix for EU/US chip shortage

All three PCBs are designed for use with STM32 or it's chinese clones. Firmware runs 1:1 with all of them with no problems. Actually all the parts till nuts and bolts are "made in China" and bought on Taobao. Here is a list of compatible MCUs, you can use for searching on Taobao.com. Some of them might be even on Aliexpress.com.

STM32F103C8T6 Replacements:

- APM32F103C8T6
- CH32F103C8T6
- GD32F103C8T6
- CKS32F103C8T6
- Clones under original name STM32F103C8T6 also vastly available on Taobao

STM32F030F4P6 Replacements:

- HK32F030F4P6
- AT32F421F4P7
- CKS32F030F4P6
- Clones under original name STM32F030F4P6 also vastly available on Taobao

Servos

With most of MG90S servos I had no luck, they had infinite shaking problem time to time. Finally only one servo worked without limiting overall robot running speed or any significant tweaking from store called DIYMORE.CC, click HERE for URL. Before that I designed and abandoned own servo PCB (now available from my repos).

Battery assembly

Battery assembly requires kapton tape, explosion protective tape with nylon stripes, high temperature wires and thermally shrinkable large tube. I lost my previous Taobao account number and password so I can't provide URLs but these are probably easily available anywhere. Battery dimensions: 57mm width, 57mm length, 4.3mm height. Battery type: 1S 33C LiPo. I don't remember capacity but roughly it's enough for 4 hours of play.

Notes

- Spring shock absorbers actually prevent damage by reducing shock and vibration. If you can’t find these springs than use “normal” legs version included in laser cut SVG.
- Nylon insert lock nuts in places where they are used are necessary and not optional, without them robot will lose it’s parts every day.
- Depending on material quality and laser cutter, you need to adjust every hole size for self tapping screws. Because in one laser cutter and PMMA sheet I got self tapping screws loosed and on another I got them broken because of too hard material and/or smaller than expected holes. At first make sure you have correct hole sizes for your laser/material and than replace them with Inkscape (that’s actually easy) in SVGs. This can be done on small chunk of waste PMMA.
- Soft rubber leg tips would be probably great (not tested yet).
- Main and battery protection PCBs thickness 1.6mm, servos pcbs thickness 1.0mm.