1/64 Drift RC Car

DKM64 V3.3

(with Front Suspension, 3D Linear Servo

and Narrow body conversion kit)

Build Guide

Main Improvements of V3.3 vs V3.1:

- Upgraded Chassis-A with 2 options for Front Body Mount: Full and Mid height as some body have steep front slop will require a lower Full Body Mount (Mid) height.
- Chassis-A lowered rear stabilizer by -0.1mm for less pressure against Chassis-B for smoother rotation.
- Changed Steering knuckle's ball joints from spherical to cylindrical for less defects during 3D printing.
- Added a shorter spindle knuckle design for even narrower wheel track and ease of 3D printing, but need to use spacer to ensure wheels does not rub on steering arms.
- Modified Front lower arm spring holder for easier 3D printing without support and lowered the spring depth by -0.3mm for less front sus spring tension.
- Updated PETG print settings below for better quality prints.

A. Chassis dimensions:

- Wheel-base: 37.3 to 42.7 mm
- Front wheel width: 31.4 mm or 29.8mm with Narrow -1.6mm conversion kit
- Rear wheel width: 31.4 mm or 29.8mm with Narrow -1.6mm conversion kit

B. 3D Print files:

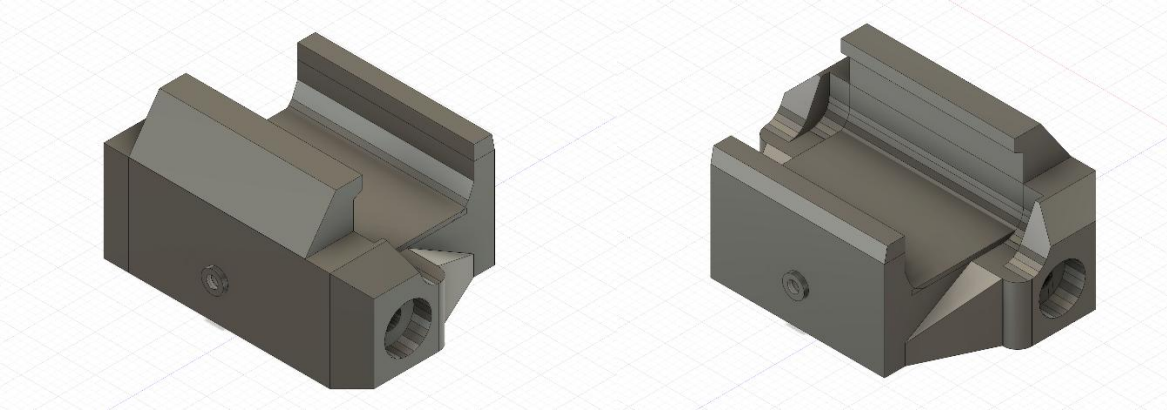
- 12 files to complete a V3.3 car kit
- 8 flies for narrow (-1.6mm) conversion kit
- 2 files for 3D Linear Servo

Optional files for **Rear Magnet Mount [car's body mounting height]:**

- 6.5mm [optional]
- 7.3mm [default]
- 8.0mm [optional]

C. Adjustable wheel-base length:

- Flip over the rear chassis to get 5mm difference in length
- Add 1mm washers between Main chassis and Rear chassis to increase length



D. Required Parts:

- 2x Front Suspension Springs:
    - Wire diameter 0.2mm
    - Outer Diameter: 2mm
    - Length: 5mm
- Front suspension arms screws:
    - Top arms: 2pcs M1 x 8mm
    - Bottom arms: 2pcs M1 x 7mm
- 1x Motor: FF-K20-9Z100 Mini K20 Motor DC 1.5V 3V 3.7V 30000RPM High Speed Micro 8mm*6mm*14.5mm. from AliExpress.com
- 1x ESC: DM-Racing NEZ ESC from GT55 website
- 1x Servo: DM-Racing Linear Servo from GT55 website
- 1x Nano Receiver with Gyro: up to your controller protocol, as long it is not bigger than 19mm x 12mm, and has a drift capable Gyro.
- Rear drive axle: M1 (OD: 1mm) rod cut to 28mm length
- Spur Gear: 0.2Modules, 1mm hole, 2mm thickness, 40T
- Pinion Gear: 0.2Modulus, 1mm hole, 2mm thickness, 20T
- **6x Bearings** (ID: 1mm x OD:3mm x Thickness: 1mm) 681ZZ Miniature Mini Ball Bearings Metal Open Micro Bearing 1x3x1mm. AliExpress.com
    - 1x for right front knuckle
    - 1x for left front knuckle
    - 2x for mounting rear chassis
    - 2x for rear axel
- M1 Screws, washers & Nuts:
    - Servo lock screws: 2pcs M1 x 2.5mm screw
    - Top deck mounting: 4pcs M1 x 3mm screw
    - Rear chassis mounting to bearings: 1pc M1 x 6mm screw + 1pc M1 washer (add more if required to increase length to fit body)
    - Front Arm (Top) mounting to chassis: 2pcs M1 x 4mm screw
    - Front Wheel (per wheel): 1pcs M1 x 5mm screw + 1pc M1 washer between wheel and bearing + 1pcs M1 nuts.
- Magnets for body mounts:
    - **1x Front:** OD:3mm x Thickness:2mm, N35 Round Magnet 3x2 mm Neodymium Magnet Permanent. From AliExpress
    - **2x Back:** OD:3mm x Thickness:2mm, N35 Round Magnet 3x2 mm Neodymium Magnet Permanent. From AliExpress
    - **Spacer Magnets** (to increase height to fit taller car bodies and also to be mounted on car body): OD:3mm x Thickness:1mm, N35 Round Magnet 3x1 mm Neodymium Magnet Permanent. From AliExpress

E. 3D Printer and recommended settings:

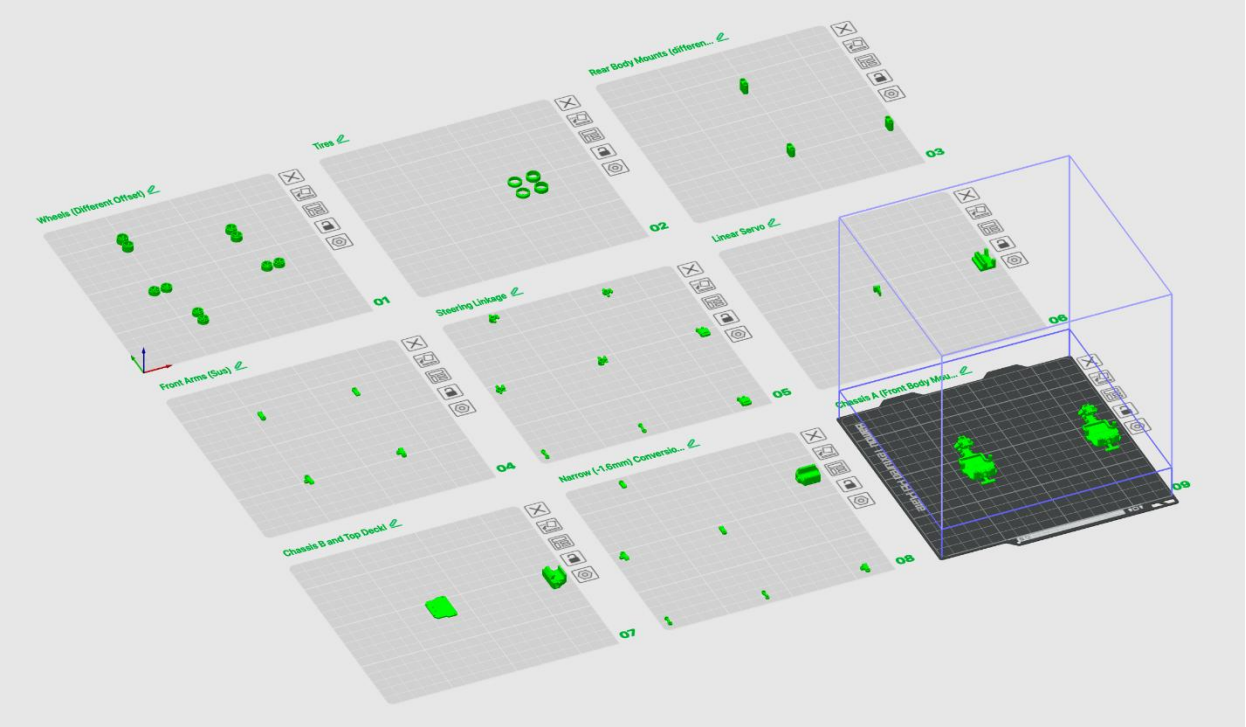
- Printer: Bamboo A1 mini
- Filament: PETG
- Nozzle: 0.2mm
- Layer height: 10mm of lower
- Infill: 50%

  Support Settings:

  i. Support line width: 20 (set in the Quality section)
  ii. Type: Normal / Snug / 45deg
  iii. Initial Layer Expansion: 2mm
  iv. Support Wall Loop: 0
  v. Top Z distance: 0.1mm
  vi. Bottom Z distance: 0.1mm
  vii. Base Pattern: Hollow
  viii. Base Pattern Spacing: 0.35mm
  ix. Pattern Angle: 45deg
  x. Top Interface layers: 0 (do not use support interface layers)
  xi. Bottom Interface layers: 0 (do not use support interface layers)
  xii. Normal Support Expansion: 0mm
  xiii. Support/object xy distance: 0.35mm
  xiv. Support/object first layer gap: 0.2mm

- Others: "Inner Brim only" for printing **tires only**.
- Print Sequence: by Object (not Layer)
- **Rear Chassis-B to be printed with Outer Brim and without support.**
- **Chassis-A rear bearing hole to be printed without support.**
- **Steering Arms Top and Bottom to be printed without support.**

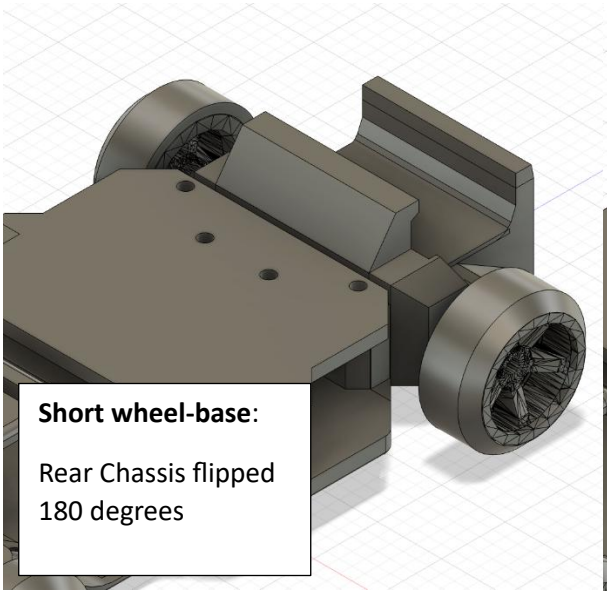
- Important! Please note the Individual parts orientation on print bed. And print each part individually by “Object”. Don’t print all parts at the same time.



F. Assembly Tips:

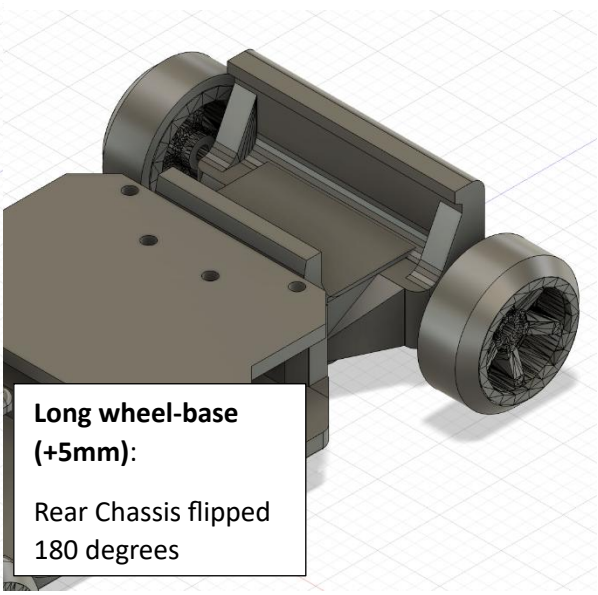
- Ensure ball-joint's ball are as round and smooth as possible, use a small fine file to gently remove excess filaments.
- Use CA glue to glue the Spur gear and rear wheels to the rear drive axle. Be careful not to get CA glue on the bearings.
- Use another spur gear (same size and type) on the opposite side of the rear drive wheel as a spacer to achieve equal weight distribution and spacing with the main drive wheel. Also allows for easy flipping of the rear chassis to fit different body lengths.
- Important! Please use Silicon Oil on all ball joints. I'm using 300 Silicon shock oil.
- Printed parts with screw holes: Open-up the screw holes and Pre-screw all screw holes before assembly. I use a sharp tweezer to poke into the screw holes to open-up the screw holes, then screw in a 1mm screw, to ensure the screw hole thread is straight before assembling it to the chassis, as printed part's screw holes are usually smaller than the required M1 screws size.
- Ensure all parts are moving smoothly and easily, especially the steering linkages and knuckles as the linear servo's torque is not strong enough. If the servo starts jamming, means there's binding &/or rubbing in the linkage and knuckles, or your transmitter &/or gyro end-points are over extended beyond the length of the steering arm length, so the servo horn is tilted at the ends.
- The 3D printed servo horn has 2 balls at the back which helps prevent the horn tilting at the end of the servo travel. Due to manufacturing variables of the linear servo, if the space between the servo horn back and servo body is too small thus the balls are causing binding of linear servo sliding as it's too tight, then use a small file to file down the balls.
- Use the 3D Linear Servo to test that there's no binding in your Steering linkage and front suspension movement before installing electronics.

G. Images for assembly reference:



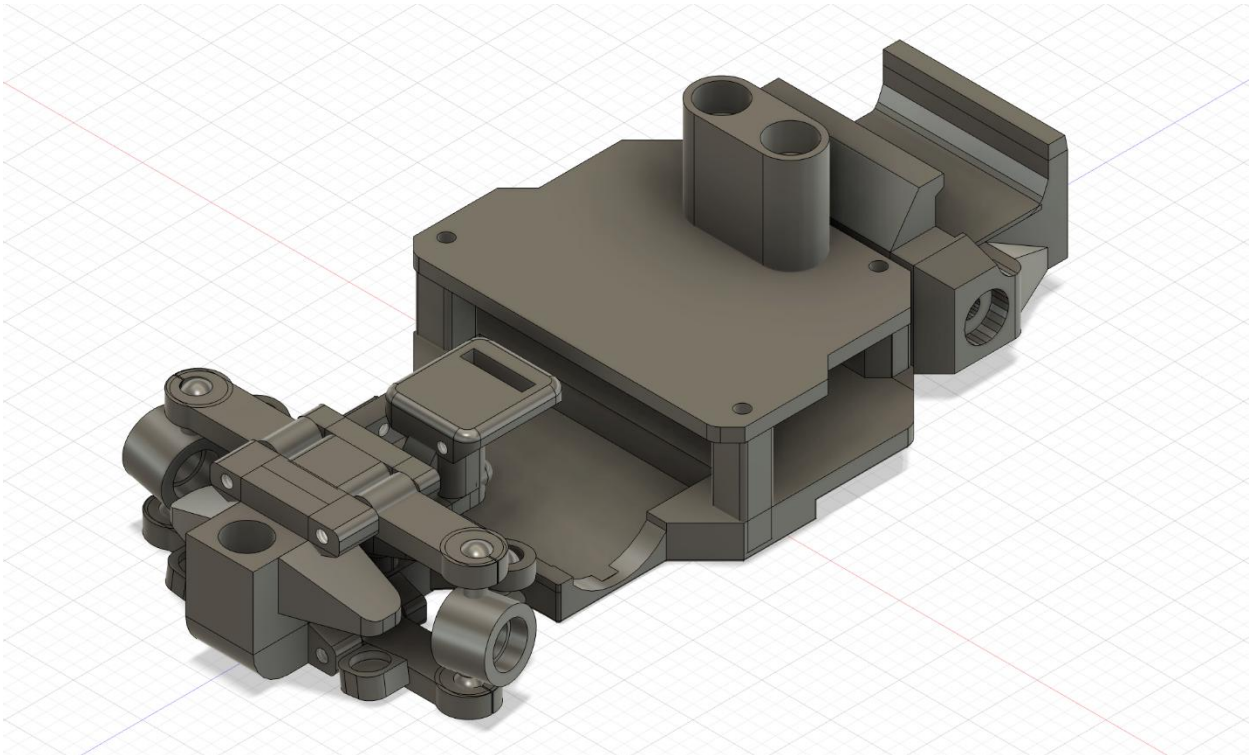
Short wheel-base:

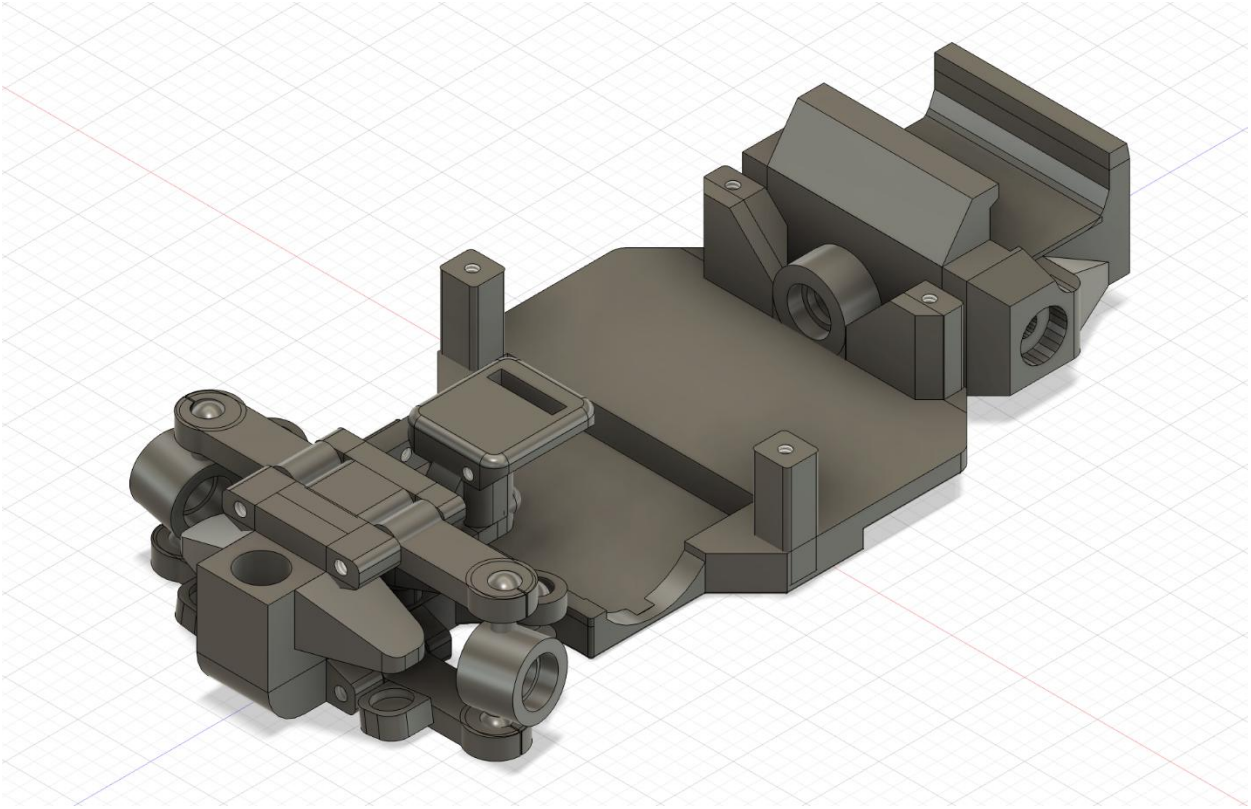
Rear Chassis flipped 180 degrees

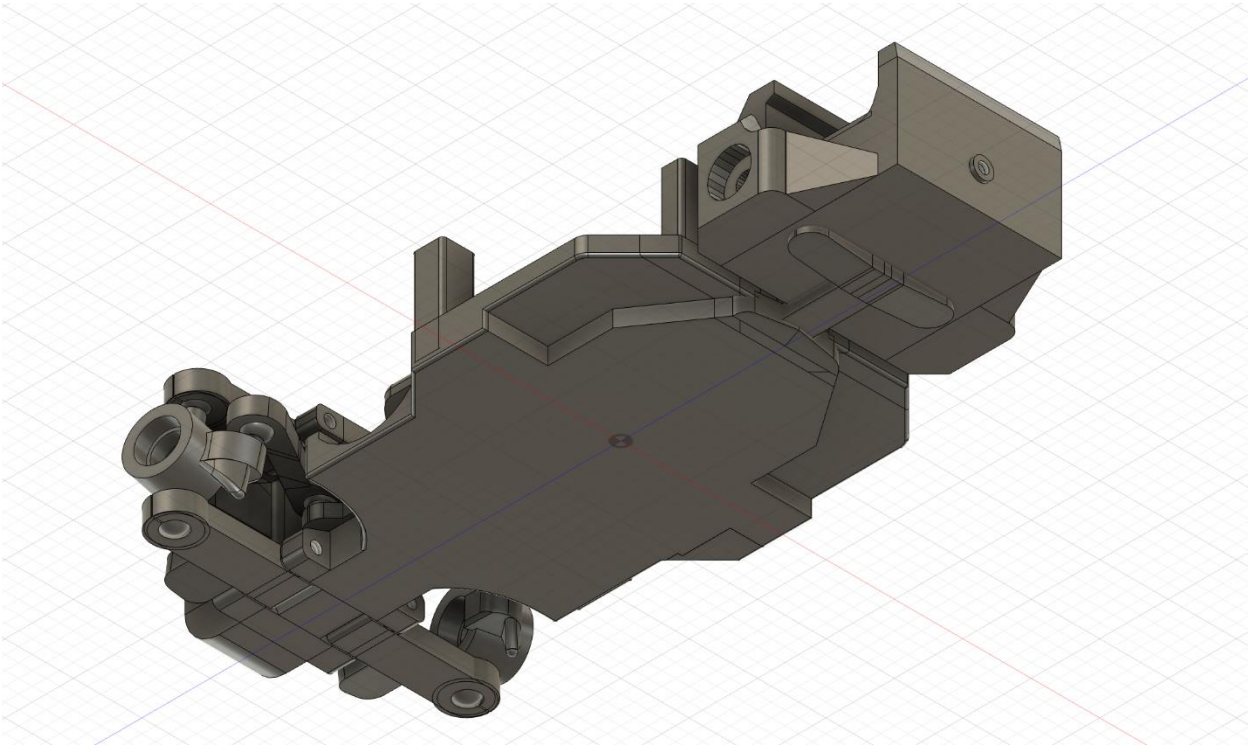


Long wheel-base (+5mm):

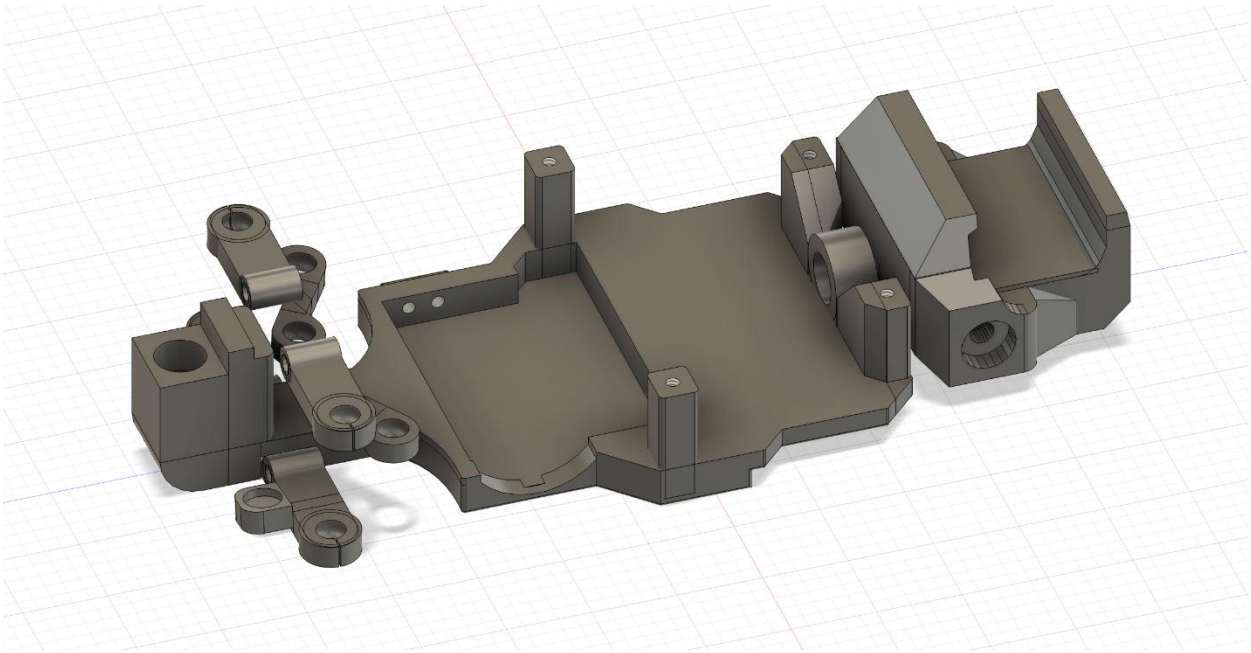
Rear Chassis flipped 180 degrees

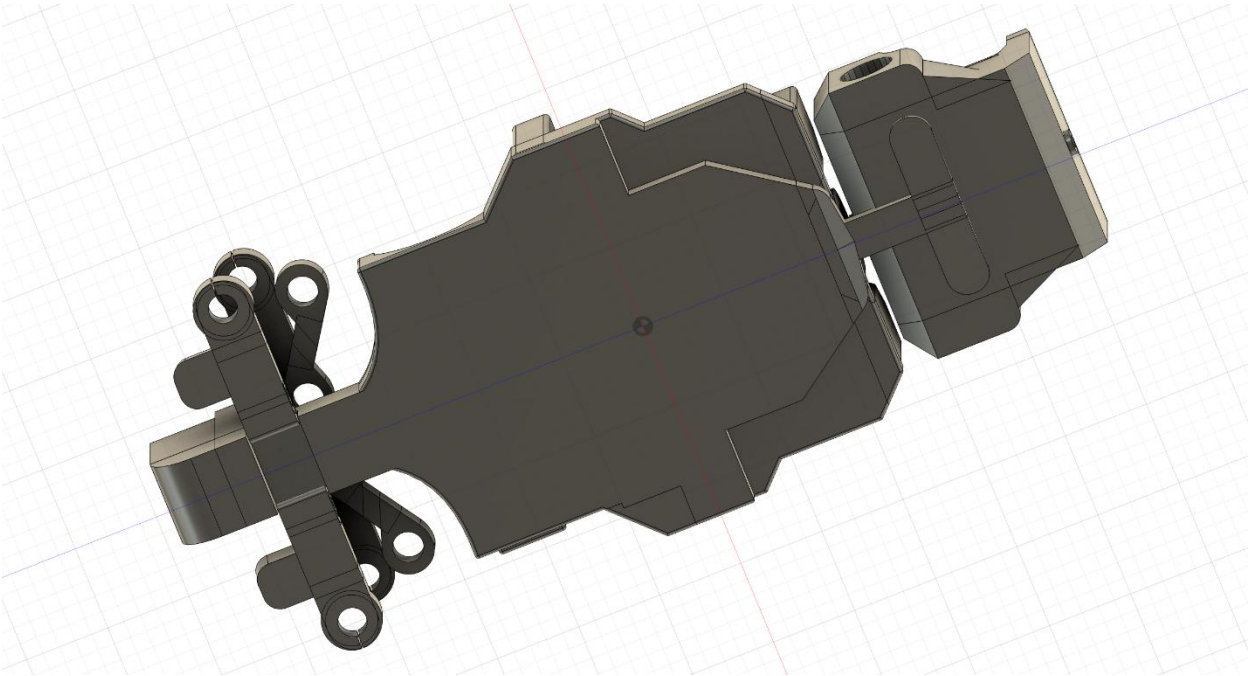


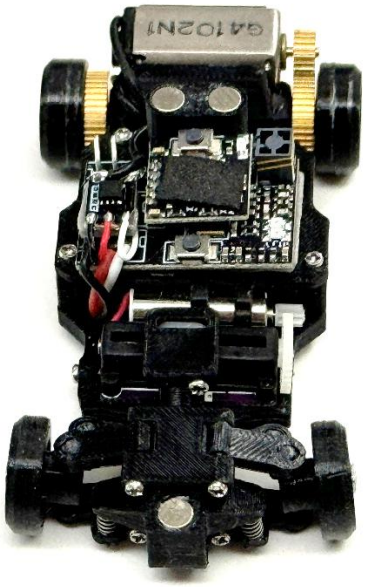




Narrow (-1.6mm) Body Conversion Kit



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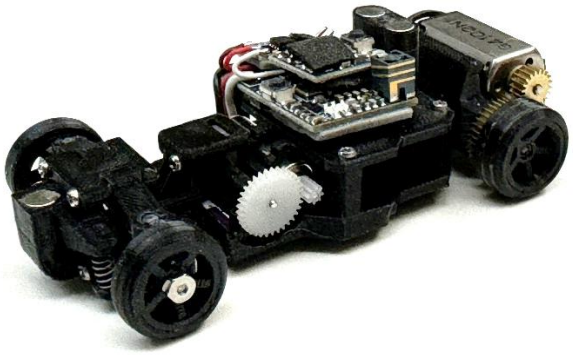

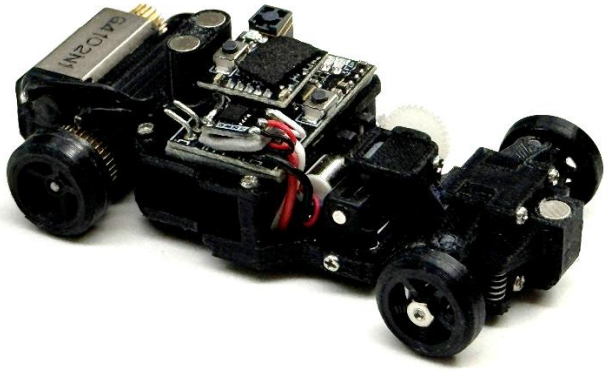

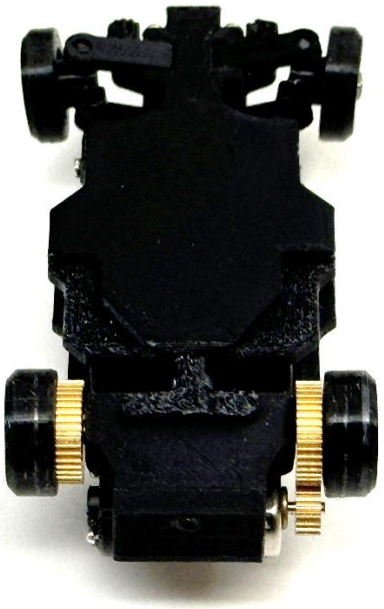

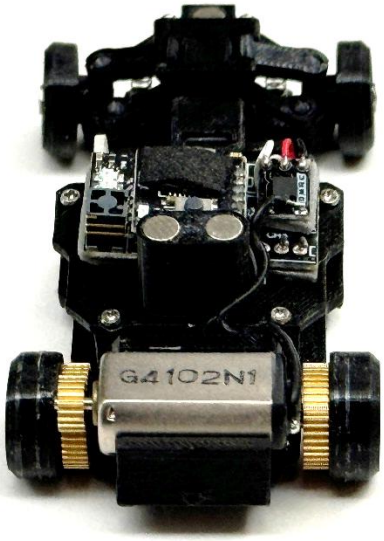
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