

MechBase Rolling Chassis

LeoCAD Build Instructions - v2

All part numbers verified against BrickLink (2026-05-31)

PARTS LIST

Qty	Part #	Name
1	3811	Baseplate 32x32
4	2730	Technic Brick 1x10 with Holes
4	3701	Technic Brick 1x4 with Holes
2	3894	Technic Brick 1x6 with Holes
16	2780	Technic Pin w/ Short Friction Ridges
2	3737	Technic Axle 10L
4	32062	Technic Axle 2L Notched
2	32073	Technic Axle 5L
2	69778	Technic Gear 12 Tooth
2	32498	Technic Gear 36 Tooth Double Bevel
4	4265c	Technic Bush 1/2 Smooth
4	45982	Tire 81.6 x 38 R Balloon
4	56908	Wheel 43.2mm 6 Pin Holes

Non-LEGO Parts:

- * 2x TT Motor (37mm gear motor)
- * 1x Adafruit Dual Motor HAT
- * 1x LiPo 7.4V battery
- * 1x Raspberry Pi 4

BUILD INSTRUCTIONS

Step 1 -- Frame Rails

Place 3811 (Baseplate 32x32) on the canvas.

Place one 2730 (1x10 brick) horizontally -- this is your first long rail.

Place a second 2730 parallel to it, about 8 studs away -- your second long rail.

Place two more 2730 bricks connecting the ends of those parallel rails, perpendicular to them.

Insert 2780 pins at each of the 4 corners to lock the frame together.

Result: Rectangular frame on baseplate.

Step 2 -- Axle Supports

At each end of the frame, place a 3701 (1x4 brick) spanning between the two parallel long rails.

You will have 2 supports total -- one at front, one at back.

Lock each support with 2780 pins where it meets the frame rails.

Result: Cross-braced axle mounts at opposite ends.

Step 3 -- Install Axles

Rear (drive axle):

Slide 3737 (Axle 10L) through rear support -- extend past both sides.

Lock with 32062 (2L Notched) into support holes on both sides.

Front (steering axle):

Slide 32073 (Axle 5L) through front support.

Lock with 32062 axles on both sides.

Result: Two axles spanning chassis width.

Step 4 -- Gearing (Rear Drive)

Mount 69778 (Gear 12T) in center of rear axle -- this is your pinion.

On each axle end, mount 32498 (Gear 36T) so its teeth mesh with the 12T pinion.

Ratio: 3:1 reduction (verified mesh -- both Group B gears).

Step 5 -- Wheels

On each axle end, slide 4265c (Bush 1/2) onto axle first -- this acts as a spacer.

Press 56908 (Wheel) + 45982 (Tire) assembly onto axle past the bushing.

Repeat for all 4 wheels.

Result: 4 wheels on chassis, held by bushings.

Step 6 -- Motor Mounts

Mount 3894 (1x6 brick) brackets above rear axle.

Position each bracket so motor output shaft aligns with the 12T pinion gear.

TT motors (37mm) mount to brackets -- their 3mm shafts drive the pinion.

Note: In LeoCAD, use a generic box as motor placeholder.

Step 7 -- Electronics Mount

Build raised platform in center-forward area using stacked bricks.

Platform holds Pi 4 + Adafruit Motor HAT.

Route wires from HAT along frame rails to TT motors.

LeoCAD Export

File -> Create Instructions -> Step through each stage -> Export PDF

File -> Export -> STEP/OBJ (for 3D printing motor mounts)