



# Build Guide

## Downrider Pack for Model 18

Accessory for “Model 18: Reaper”

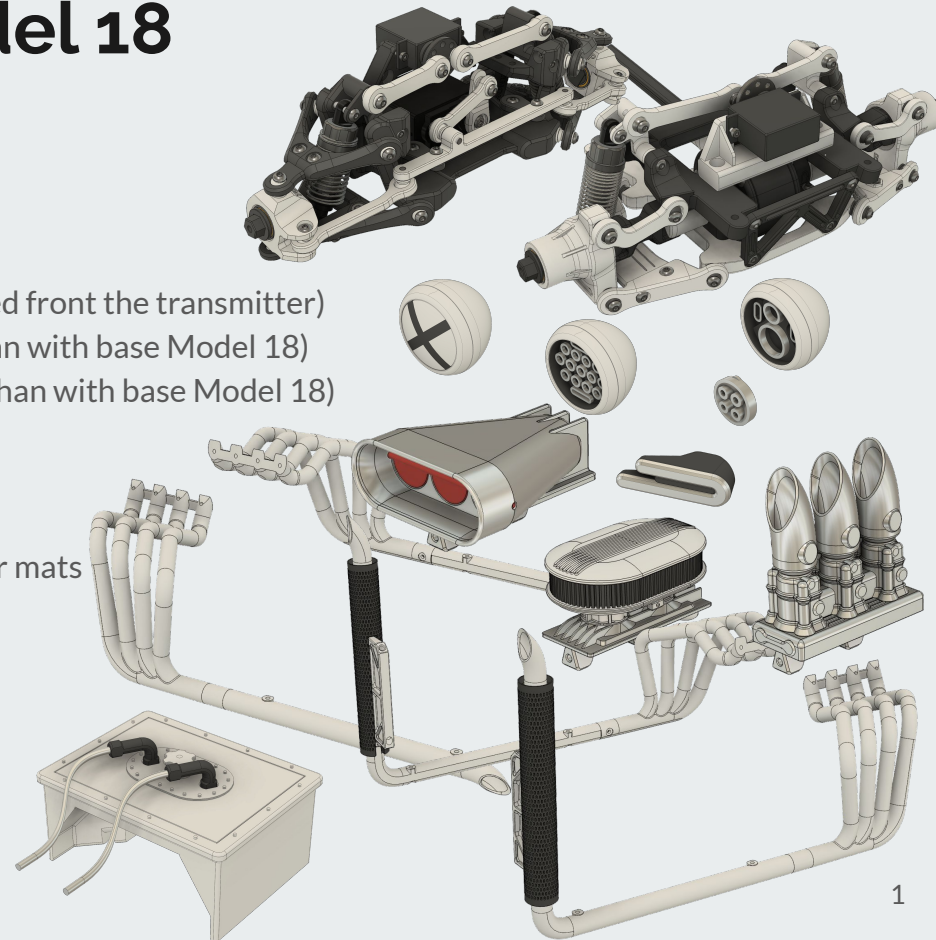
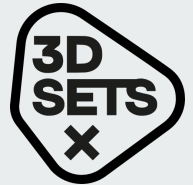
This set consist of these items:

- Servo-powered adjustable suspension (RC controlled front the transmitter)
- Additional styles of front/rear/fog lights (6 more than with base Model 18)
- Exhausts – Horizontal & Vertical exhausts (2 more than with base Model 18)
- Engine Compressor Heads – 3 additional designs
- Detailed Fuel Tank replacing the Beer Keg
- 3d printed chain under the bumper and “metal” floor mats

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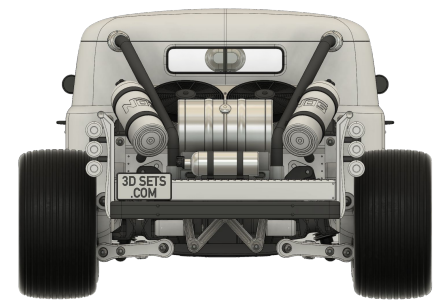
Version 1.0





## Downrider Pack for Reaper – version 1.0 technical specs.

- Dimensions: 50 cm length, 28 cm width (incl. mirrors), 19.5 cm height
- Model weights roughly 3.2 kg (including battery)
- Permanent rear wheel drive with locked or opened differential
- Remote controlled steering, speed control, suspension height (4-channel transmitter required)
- Suspension with real springs and dampers for great on-road capabilities
- BeltDrive gearbox with 1:8 gear ratio
- Doors and hood can be manually opened, door handles are functional
- Battery hidden inside the pickup bed
- Easy to replace front body parts for effortless crash repairs
- Body on Frame design

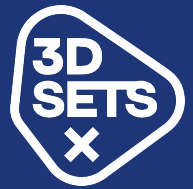




# Downrider Pack – version 1.0.0 changelog

“Downrider Pack for Model 18” v1.0.0, release date: August 23, 2024:

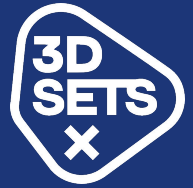
First model release



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# Before you start

- Get ready all tools.
- Buy necessary parts that cannot be printed (screws, bearings, motor etc.), these parts are listed on next page.
- Make sure that your **printer is calibrated** well – print our “calibration part” to ensure that you can fit bearings on shafts properly! Calibration part is located on “Print 0 - Calibration”.
- Use **higher printing temperatures** – use about 210-215°C for PLA to have firm layer adhesion!
- Use some **heat-resistant filament** (PC Blend) for specific drivetrain parts noted later in this Guide!
  
- Build guide is divided on steps and subassemblies. Subassembly is a sequence, where you will make some independent sub-part like gearbox, axles etc. Later you will install subassembly in the car.



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# Are you **new** to the Radio Controlled models?

Don't worry, Radio Controlled (RC) models are not as complicated as they can look! However, it's a good to know some basics before you will start buying parts.

Most mechanical parts in our products will be 3d printed on your own printer, so we will focus here on RC electronics.

On-line beginners guides:

- [Steemit.com](https://www.steemit.com) – a basic introduction to RC car models
- [Instructables.com](https://www.instructables.com) – another beginners guide, general (not focused on car models)
- [Youtube](#) – a nice video showing RC electronic basics

If you have any questions regarding our models, feel free to ask us (or other 3D Sets builders) on our Facebook discussion group, available here: [Facebook – 3D Sets](#)





## Reaper Downrider Pack – version 1.0.0: What do you need?

- **LINKS for PARTS PURCHASE!** ➔ list of required non-printed parts is here (continuously updated): [click for non-printed parts spreadsheet](#)
- Print Filament: To print this model you will need around 3500 g of print filament in total. We print our models from PLA material. **For the opened differential gears its recommended to use Prusament PC Blend.** Locked differential is OK from good-quality PLA. You can use variable color for chassis and body. Tested and recommended filament: [Fillamentum PLA Extrafill](#) or [Prusament PLA](#).
- **BeltDrive 4x4 gearbox** (recommended option):
  - Model is driven by brushless motor **3530** - size
  - **Timing belts: HTD 144-3M-06 (HTD profile, 144 mm long, 3 mm teeth distance, 6 mm wide)** – 3 pcs
  - All parts can be printed from PLA or similar filaments
- Steering servo in standard size (39x19,5x38,5mm) – minimum torque: 10kg, optimum 20kg
- 2x Suspension servo in Maximum Dimension - 29x29x13 mm, minimum torque 2 kg/cm
- Speed controller (ESC) max size 40x50x35mm – for placing under the trunk floor
- Ball Bearing 10x15x4 mm - 6700ZZ: 26 pcs. (or less depending on gearbox type and axles configuration)
- Shock -Coil springs, inner diameter max 18mm, length 50-55mm: 4 pcs. Top shock mounts are included in 2 different variants allows you to fine-tune ground clearance.
- Tires informations:
  - Front Wheels – **outer diameter 85mm (or more if you wish :), maximum width 43 mm**, rim diameter 2.2 inches
  - Rear Wheels – **outer diameter 85-105 mm**, rim diameter 2.2 inches (or 2.2 / 3.0 ProLine)
- 7.2V (2S) or 9,4V (3S) Battery with dimensions max 138x48x30mm; Alternatively you can use “shorty” battery.
- Electric connectors: 2 pairs (battery connectors, motor <-> ESC connectors)
- Servo cable extensions – about 30 cm long
- cables & soldering equipment – for extending wires from ESC to motor
- Clear Binding Covers, or any transparent foil up to 0,5 mm thick – material for “Glass”.
- Grease and Thread Locker for securing fasteners on moving parts

## Downrider Pack for Model 18 – version 1.0.0: Required hardware

Downrider Pack only – Screws and nuts (in metric size):

- M2x6: 10 pcs.
- M2x8: 2 pcs.
- M2x10: 4 pcs.
- M2x12: 10 pcs.
- 
- M3x8: 4 pcs.
- M3x10: 16 pcs.
- M3x12: 4 pcs.
- M3x14: 16 pcs.



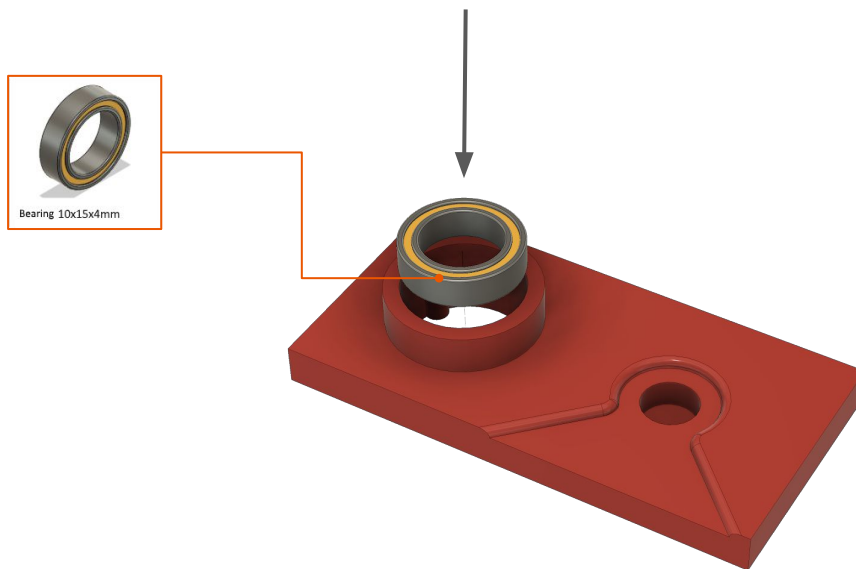
Reaper + Downrider Pack - Screws and nuts (in metric size):

- M2x6: 124 pcs.
- M2x8: 45 pcs.
- M2x10: 30 pcs.
- M2x12: 22 pcs.
- M3x6: 11 pcs.
- M3x8: 93 pcs.
- M3x10: 84 pcs.
- M3x12: 36 pcs.
- M3x14: 28 pcs.
- M3x16: 25 pcs.
- M3x20: 4 pcs.
- M3x25: 8 pcs.
- M3 nuts: 41 pcs.
- M3 locknuts: 4 pcs.
- M3x6 Socket(!) Head: 4 pcs.



# Check 3d printer calibration!

Please at first test whether the bearing can be inserted into the calibration part. If you have problems or the bearing fits too loose, please make sure that the printer is properly calibrated. Dimensions of the printed parts should match dimensions of the 3d model.





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# Subassembly – Lift Front axle

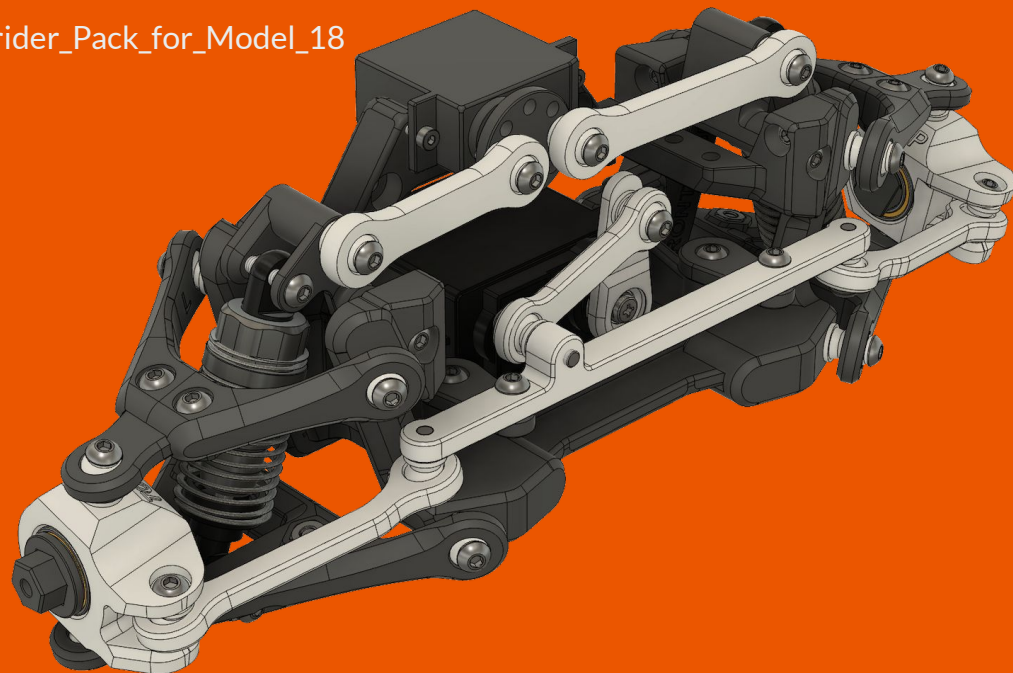
In this 10-step procedure you will assemble the front axle. The axle assembly includes an independent suspension system and steering servo.

Required print plates:

- "Print 3 - Axle Front - Arms"
- "Print 4 - Axle Front - Frame"
- "Lift Axle Front" - print plate from file Downrider\_Pack\_for\_Model\_18

Non-printed parts:

- Nut M3: 8 pcs.
- Lock Nut M3: 4 pcs.
- Screw M2x12: 2 pcs.
- Screw M3x6: 4 pcs.
- Screw M3x8: 16 pcs.
- Screw M3x10: 10 pcs.
- Screw M3x12: 9 pcs.
- Screw M3x14: 12 pcs.
- Screw M3x16: 8 pcs.
- Screw M3x25: 2 pcs.
- Bearings: 4 pcs.



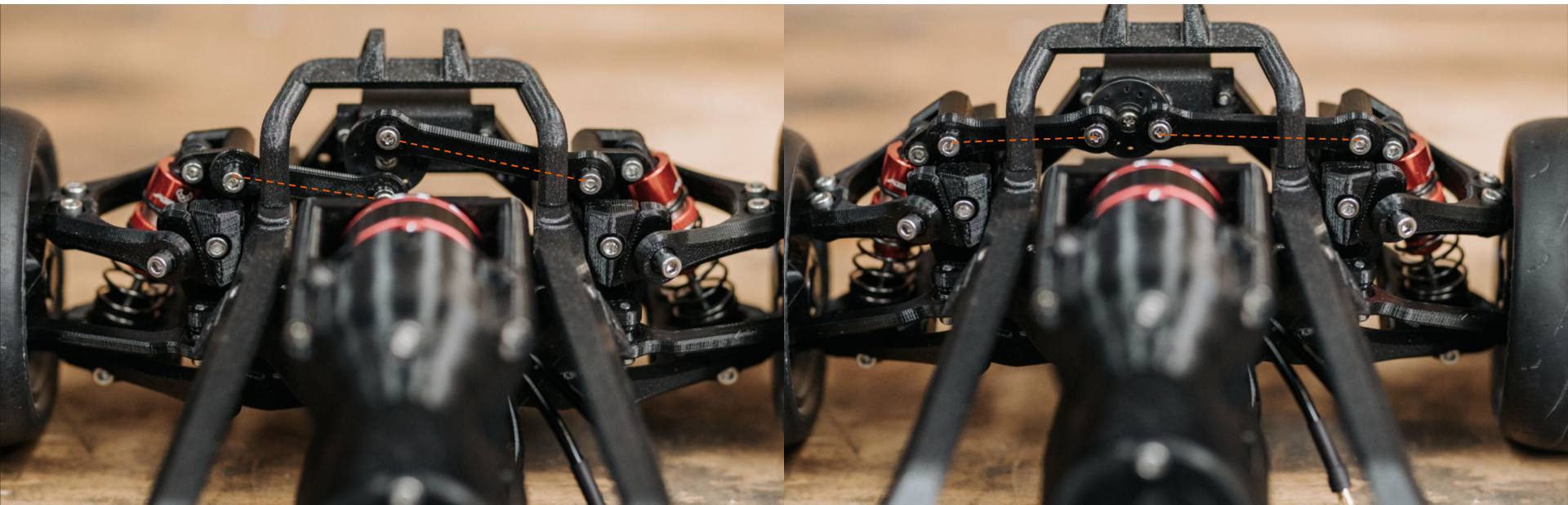
# Lift Suspension Axles

Suspension is controlled by strong mini-servo and by system of levers and rods. Use strong and good-quality metal-gear servos for suspension control. Use rubber mounting silent blocks if they are provided with the servo.

Do not live-adjust height of the car during rough ride over obstacles! Servos are NOT stressed in the fully elevated position. Please ensure that the whole mechanism is moving easily without resistance. Please lubricate all moving joints.

*Lowered position* – Suspension Levers are now leaning close to the Frame of the car, Shock Rods are not in level.

*Elevated position* – note that Shock Rods are fully horizontal and the servo is not stressed in full height position.



# Arms + Ball joints

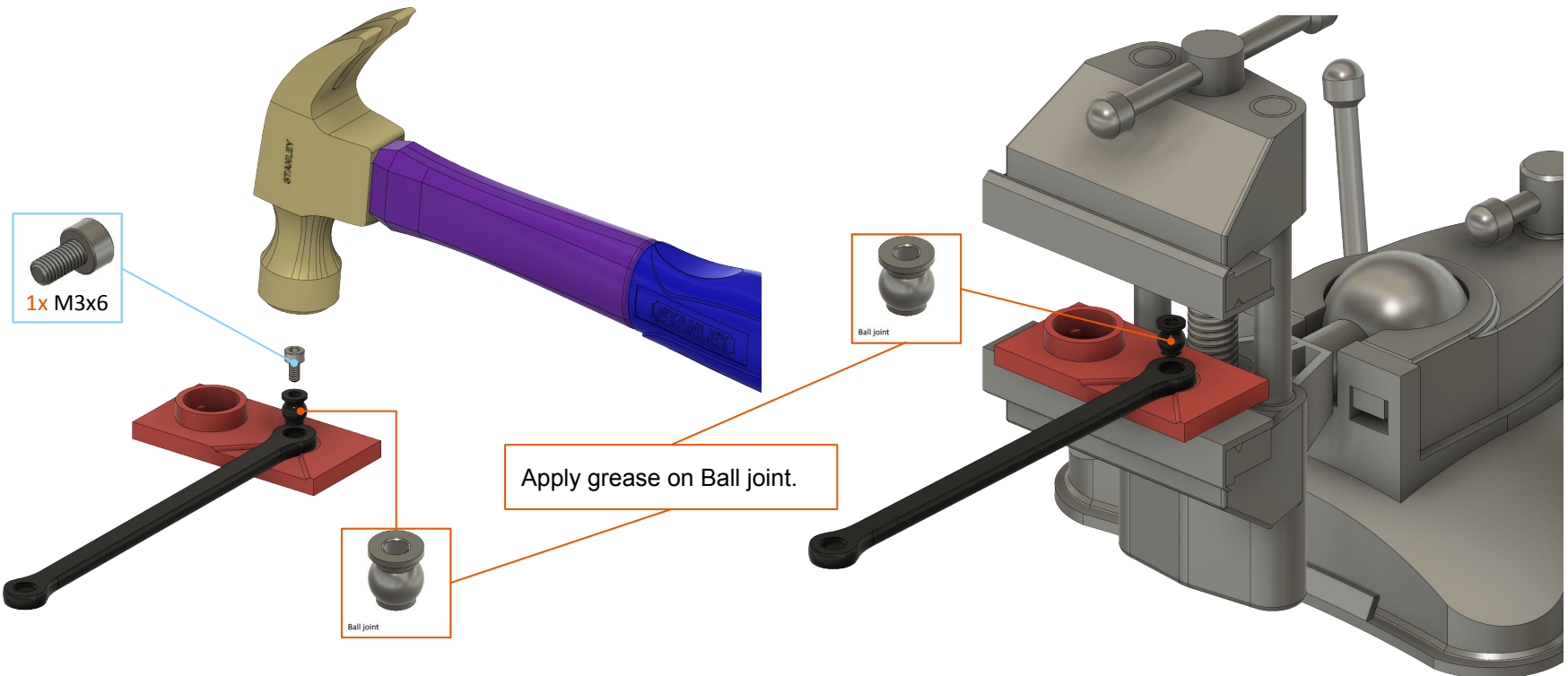
## Option A: use a hammer

Be careful as you can break the arm if you use too much force!

Press Ball joints in arm ends. Pay attention to combine parts correctly!  
Ball joints requires correct orientation on specific arms – check next page!

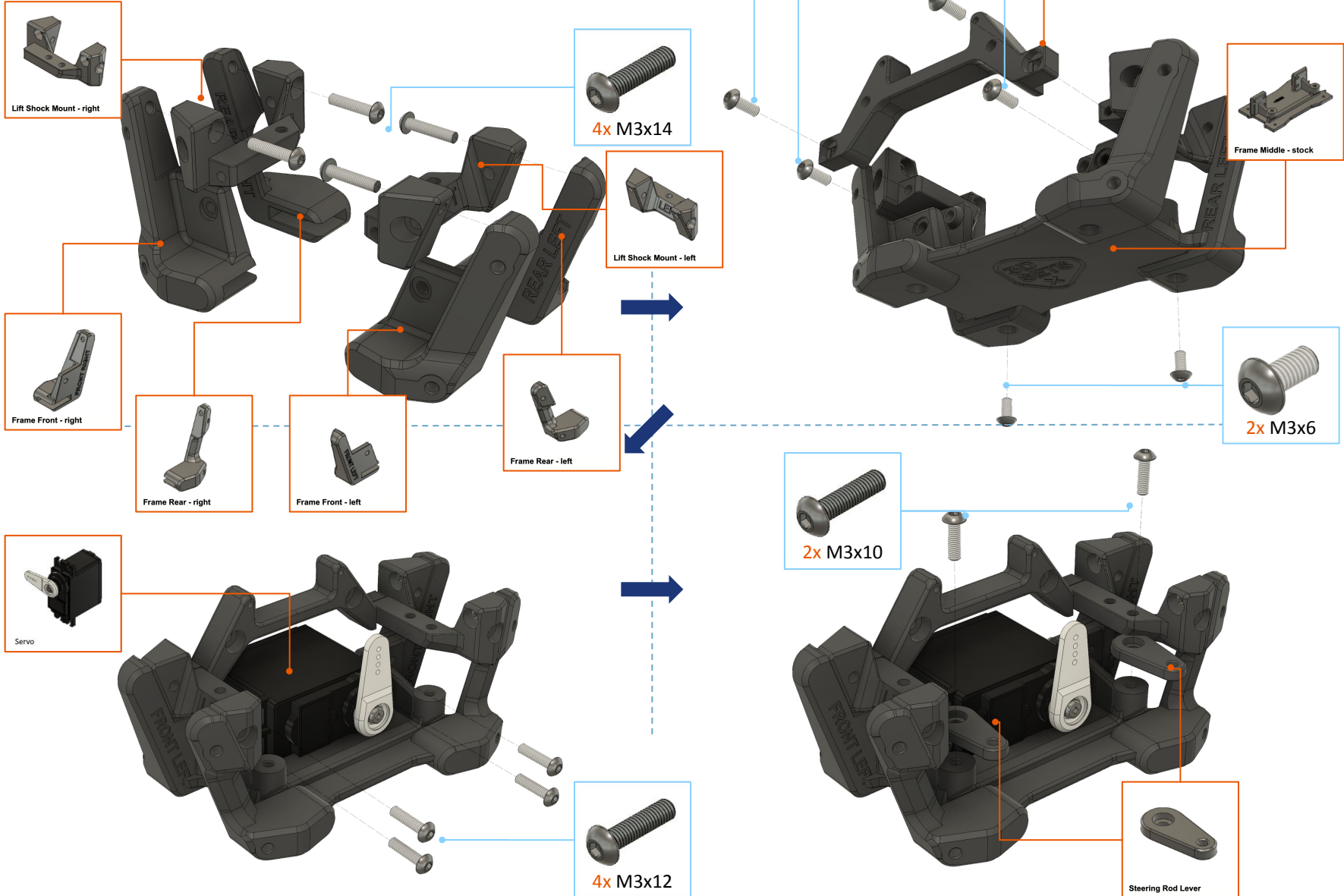
## Option B: use a Vise

This is a preferred method as you can proceed slowly.

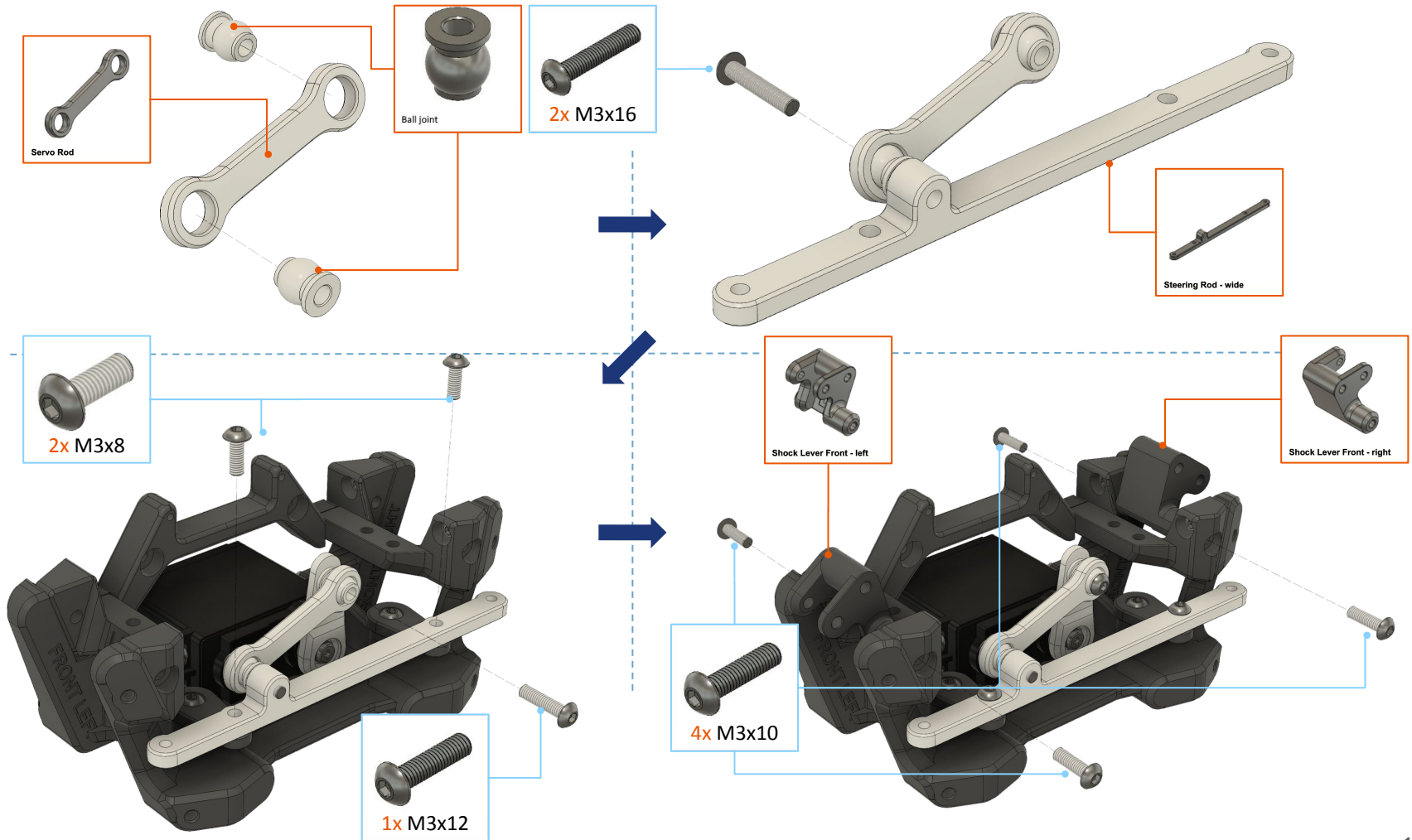


[See this step on YouTube video](#)

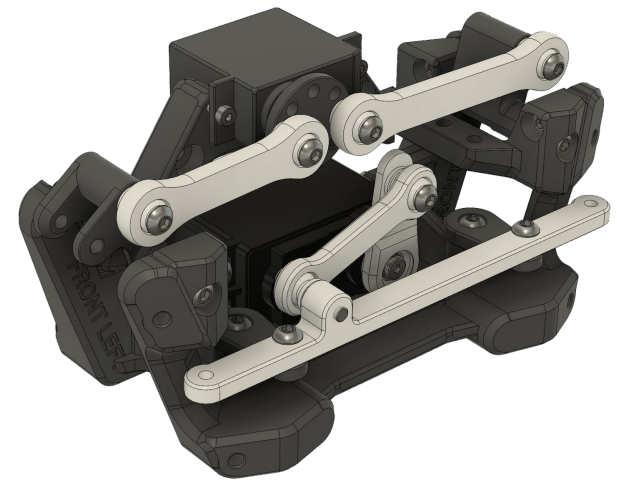
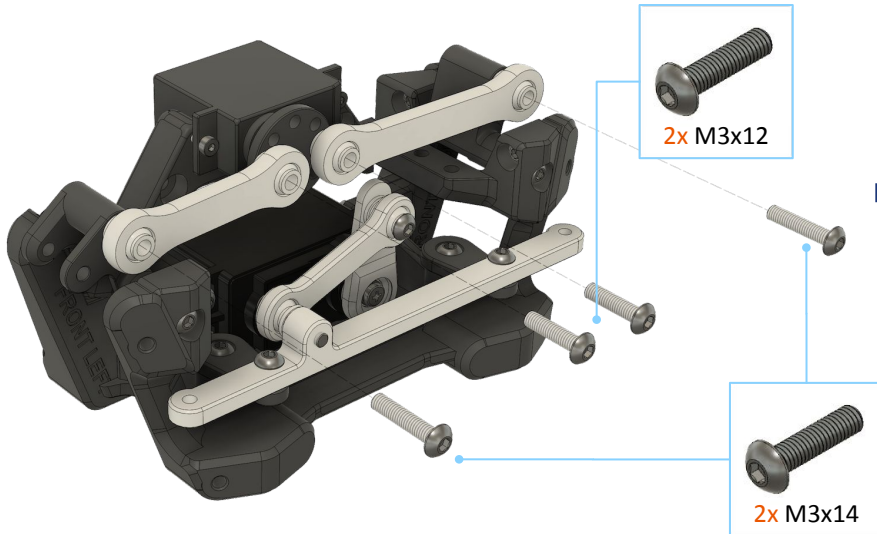
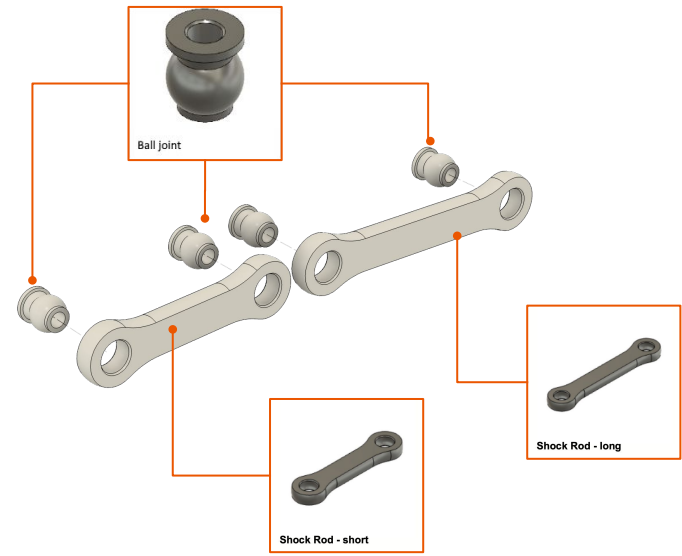
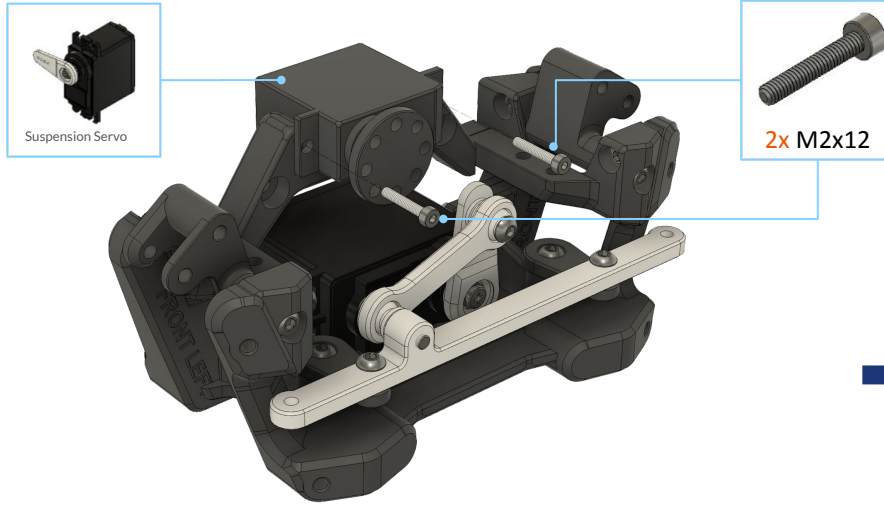
# Front Axle – step 1-4/27



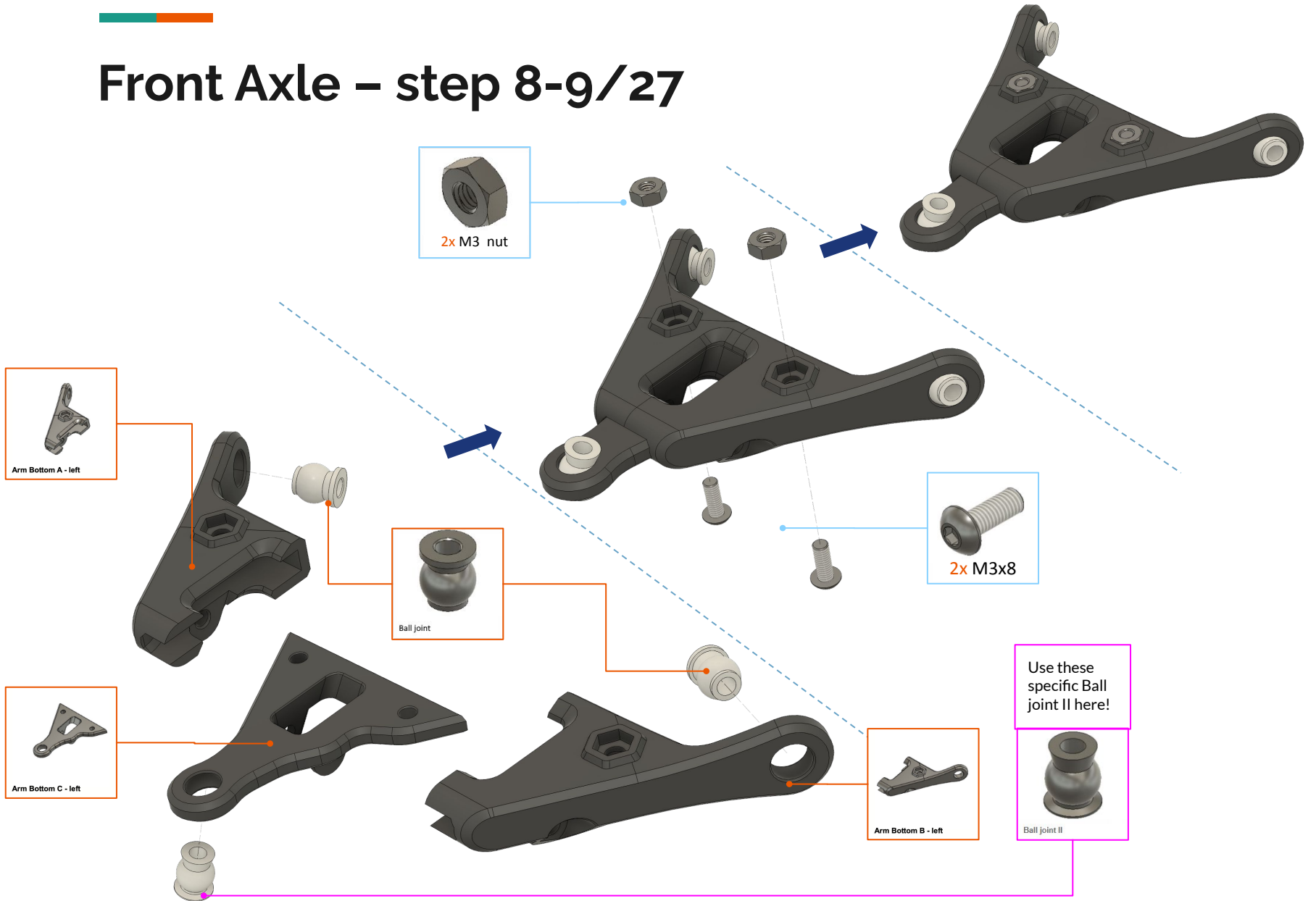
# Front Axle – step 5-8/27



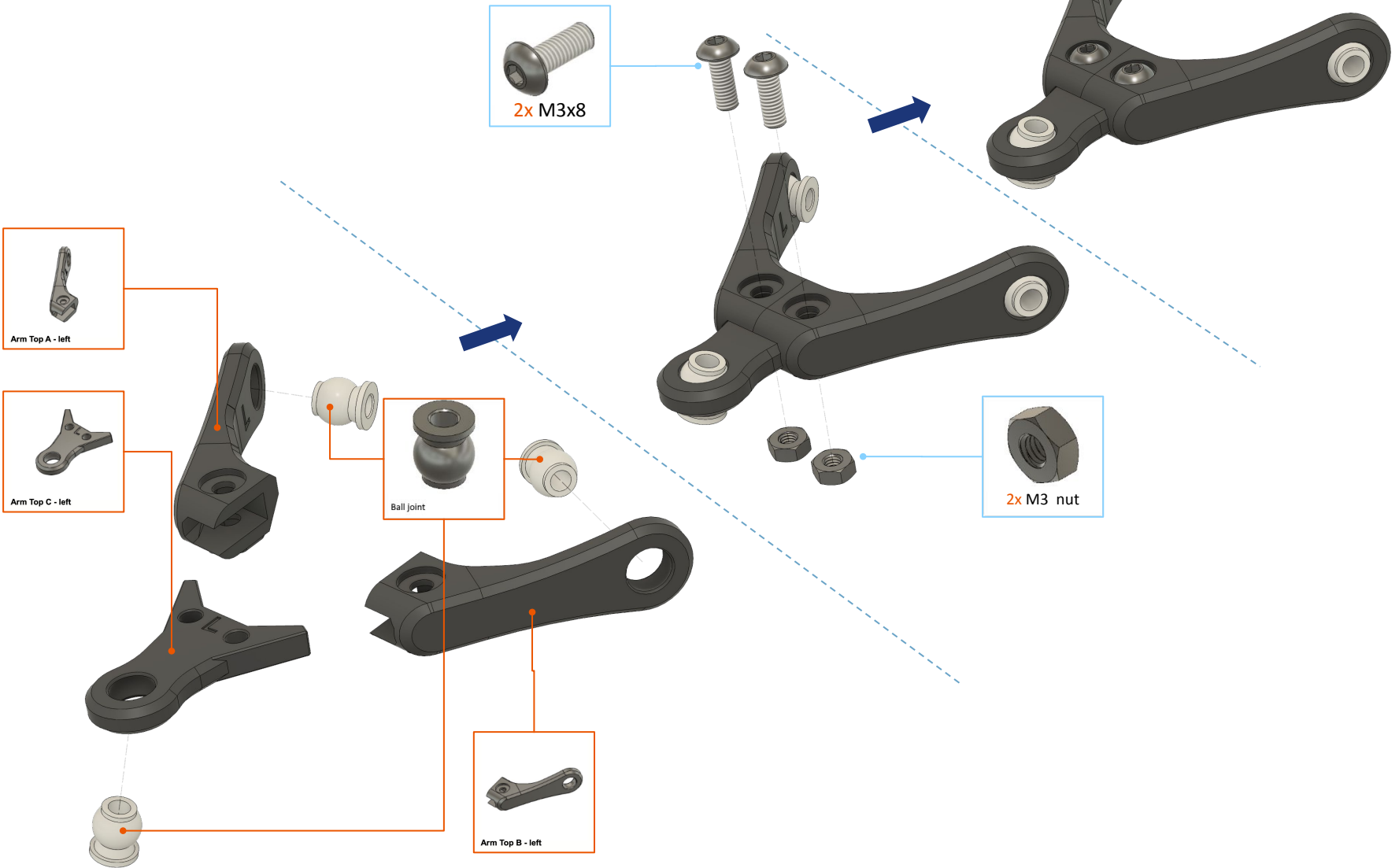
# Front Axle – step 5-8/27



# Front Axle – step 8-9/27

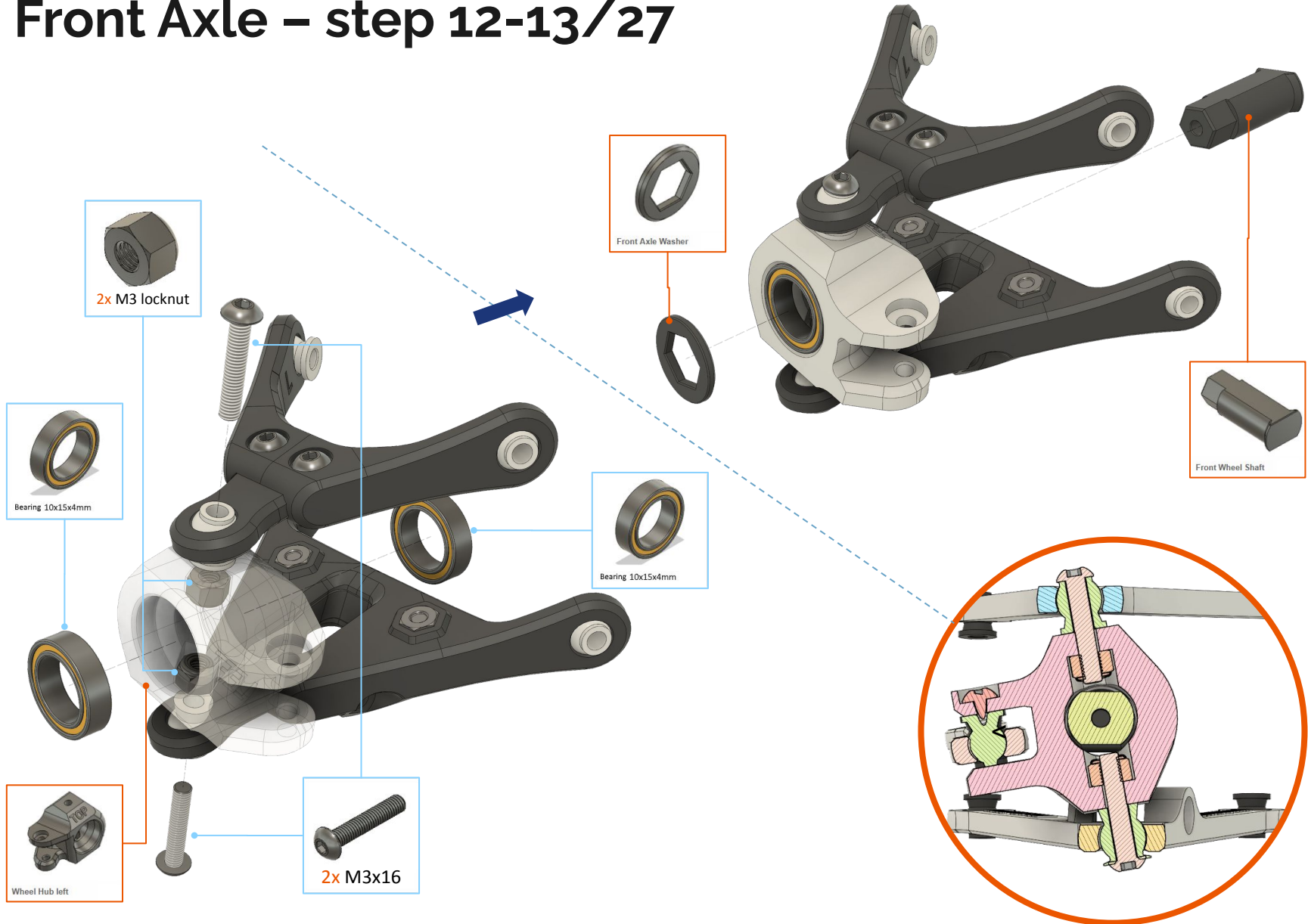


# Front Axle – step 10-11/27

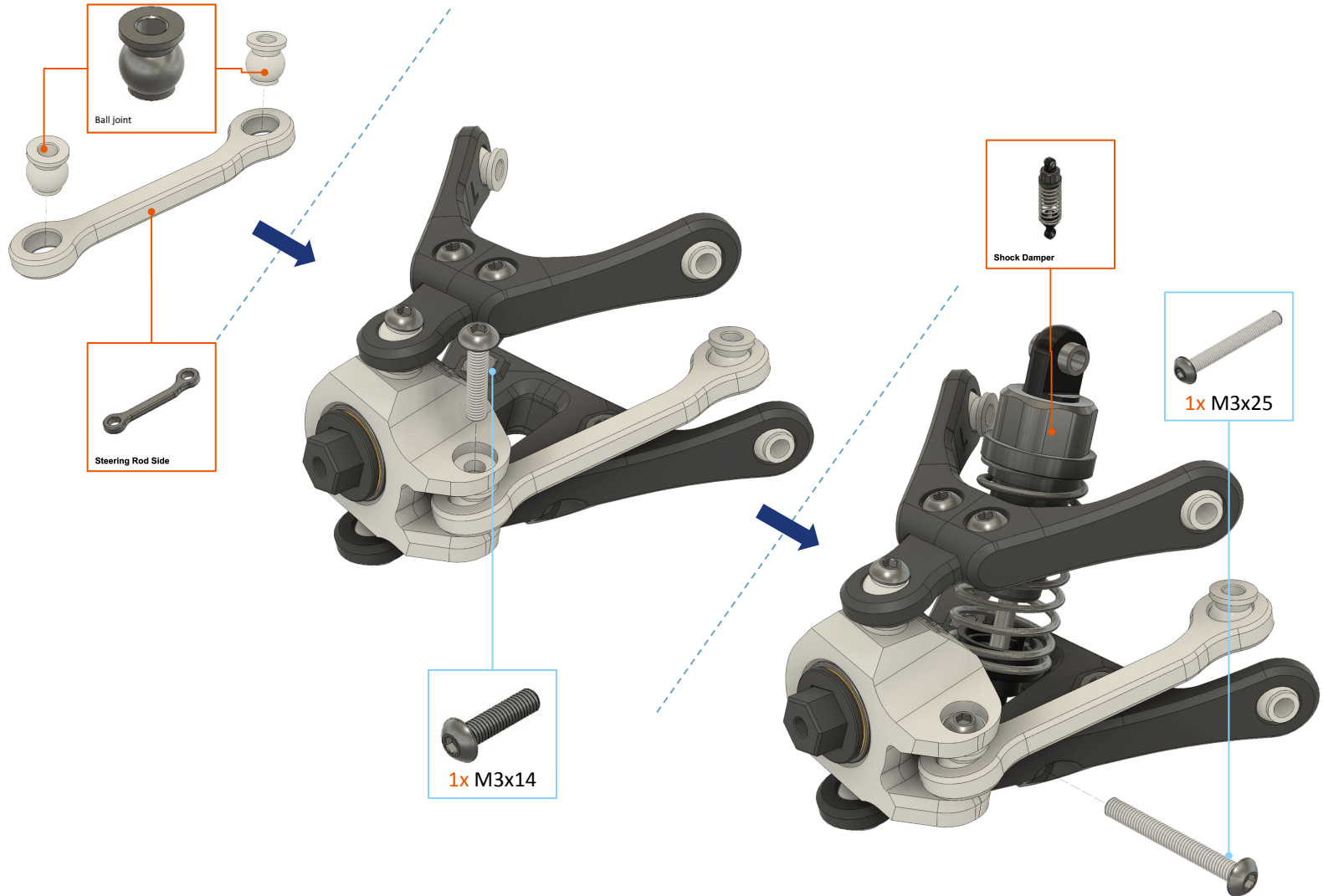




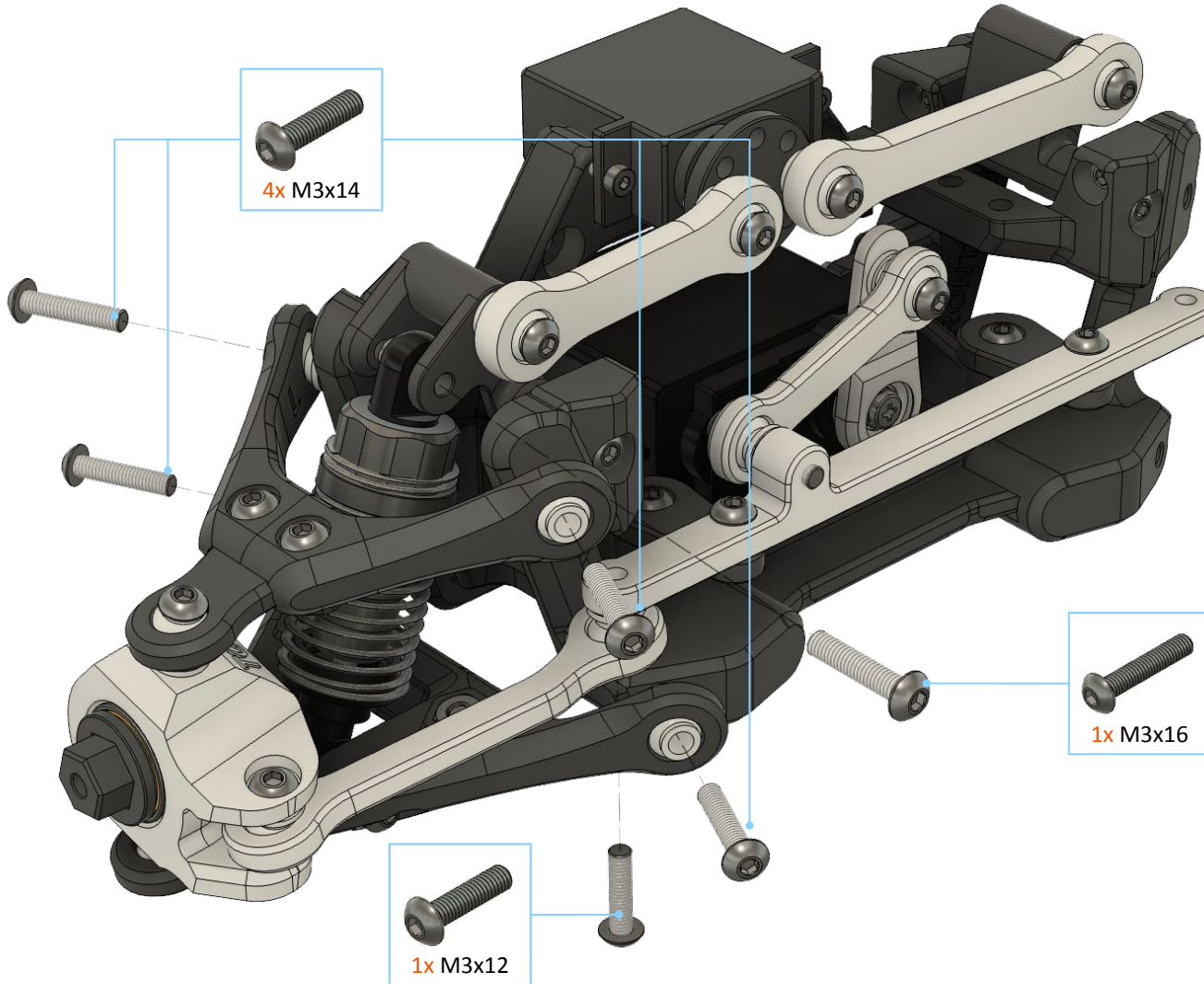
# Front Axle – step 12-13/27



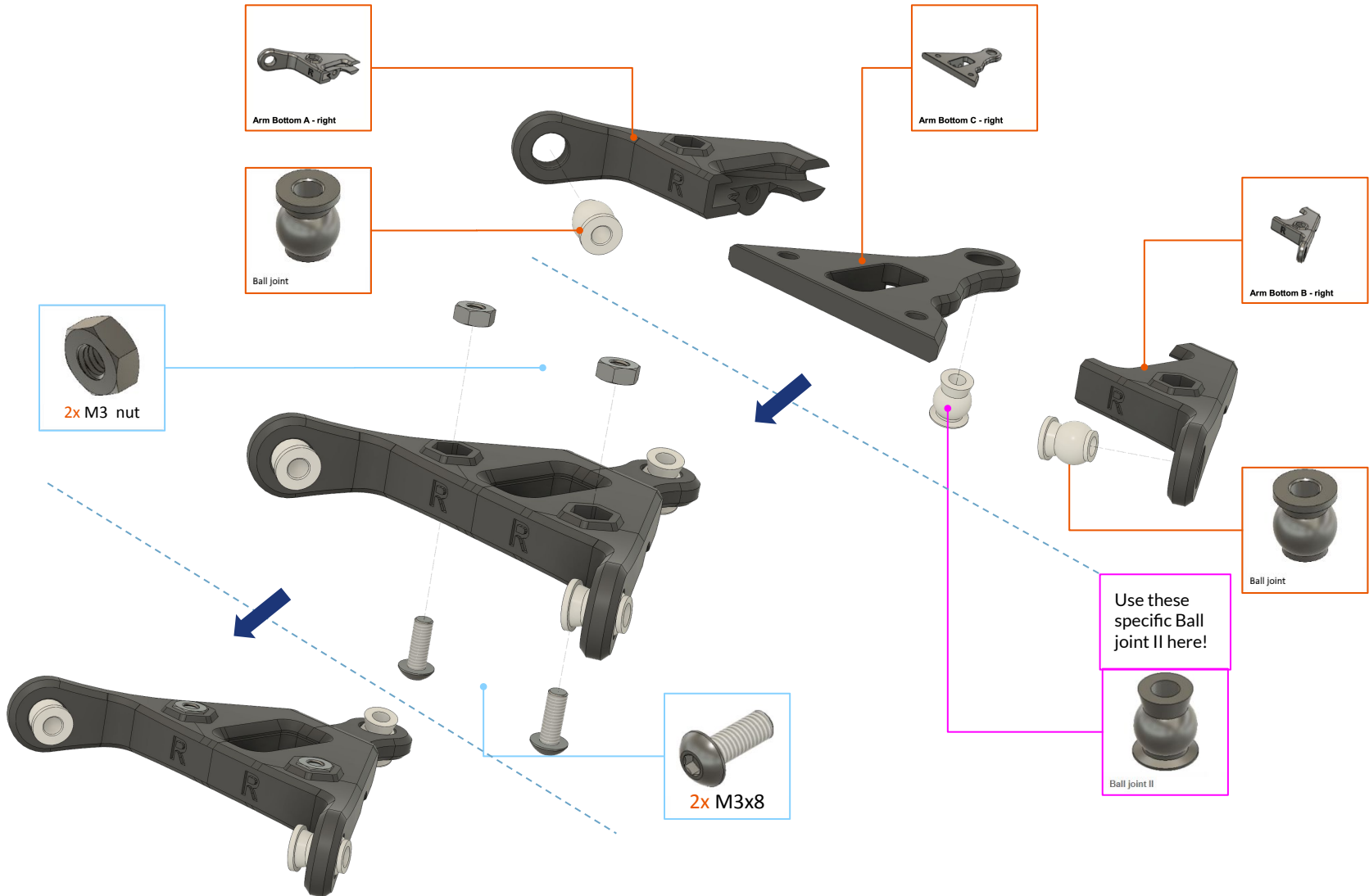
# Front Axle – step 14-16/27



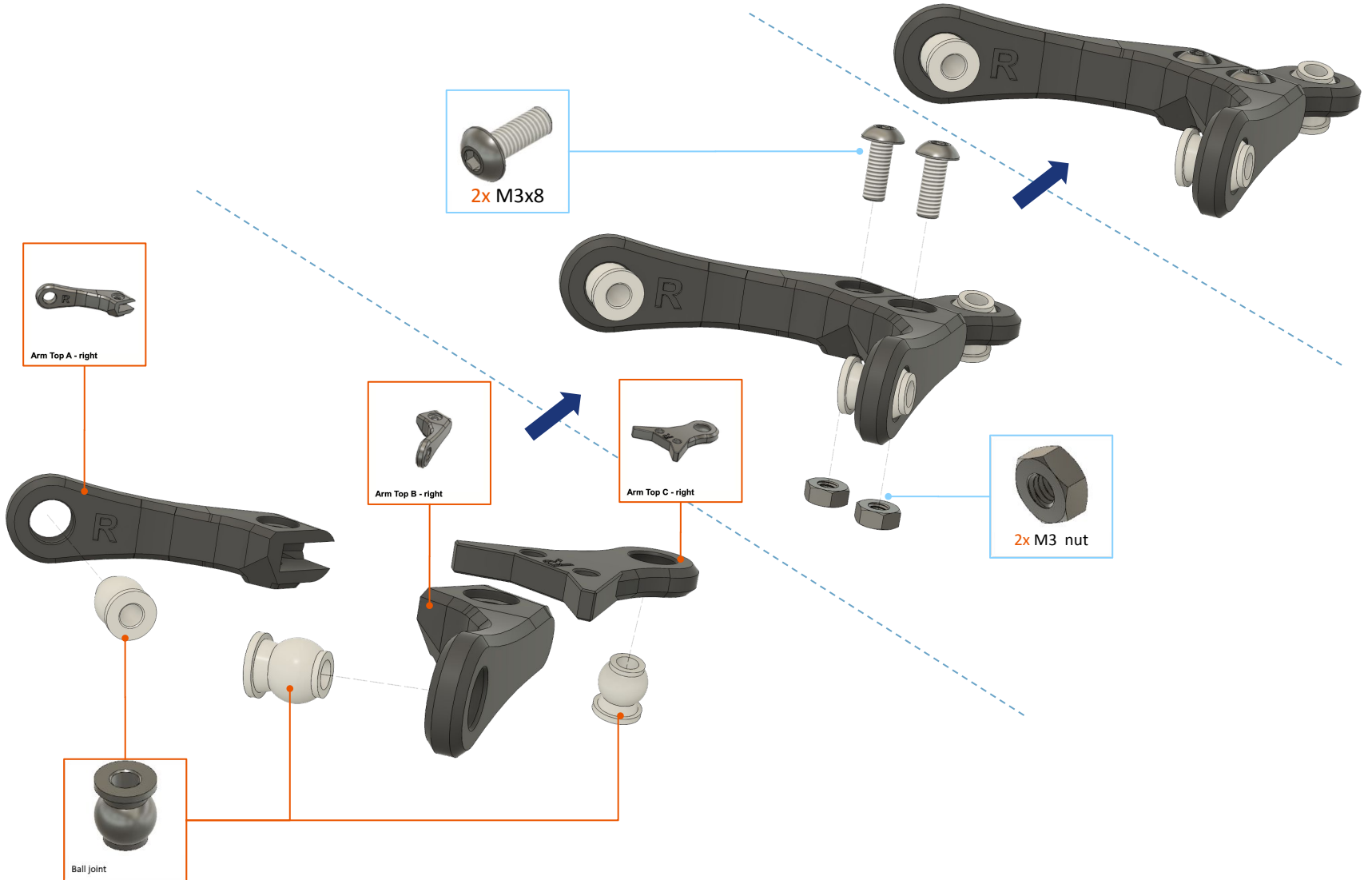
# Front Axle – step 17/27



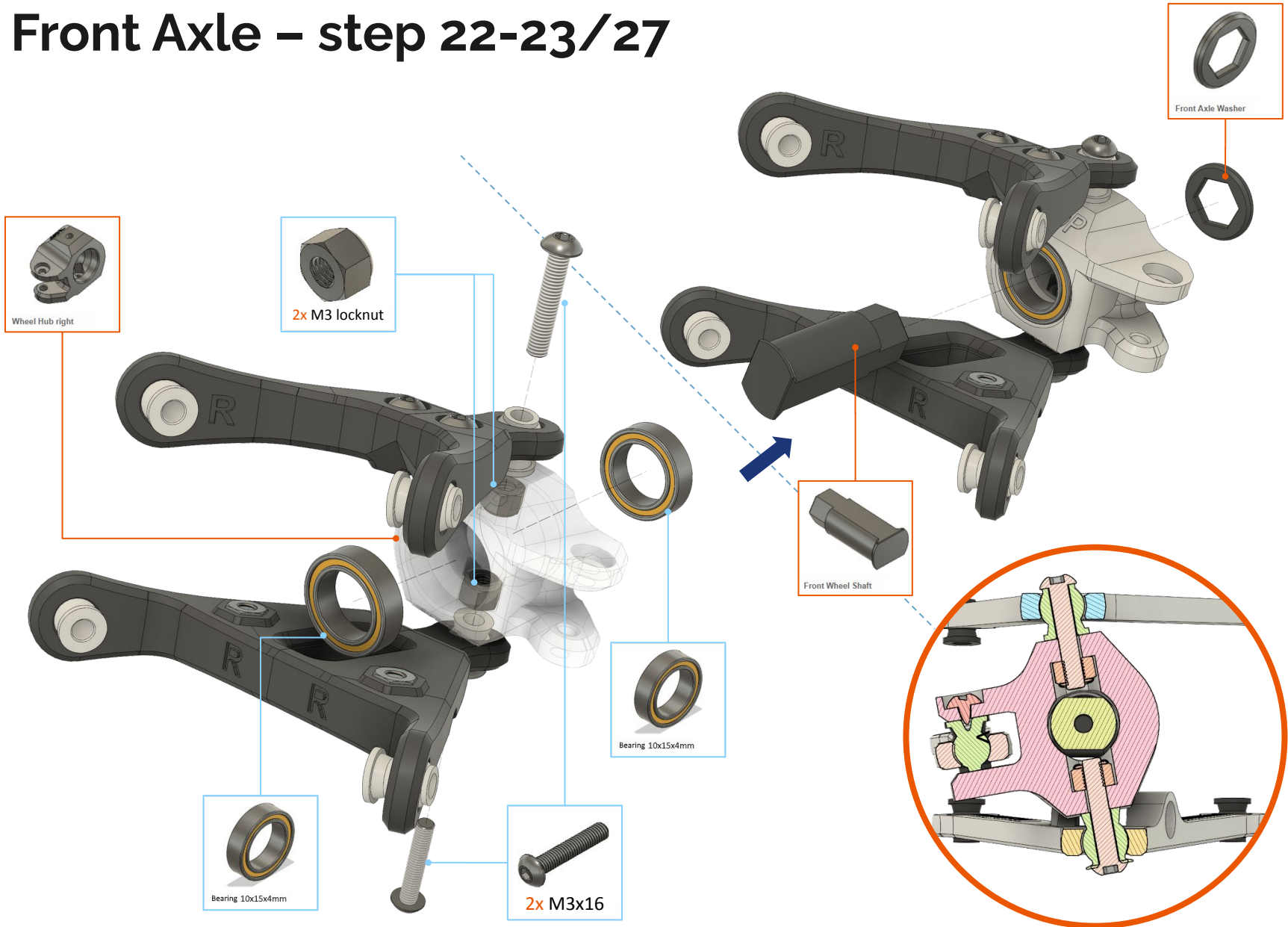
# Front Axle – step 18-19/27



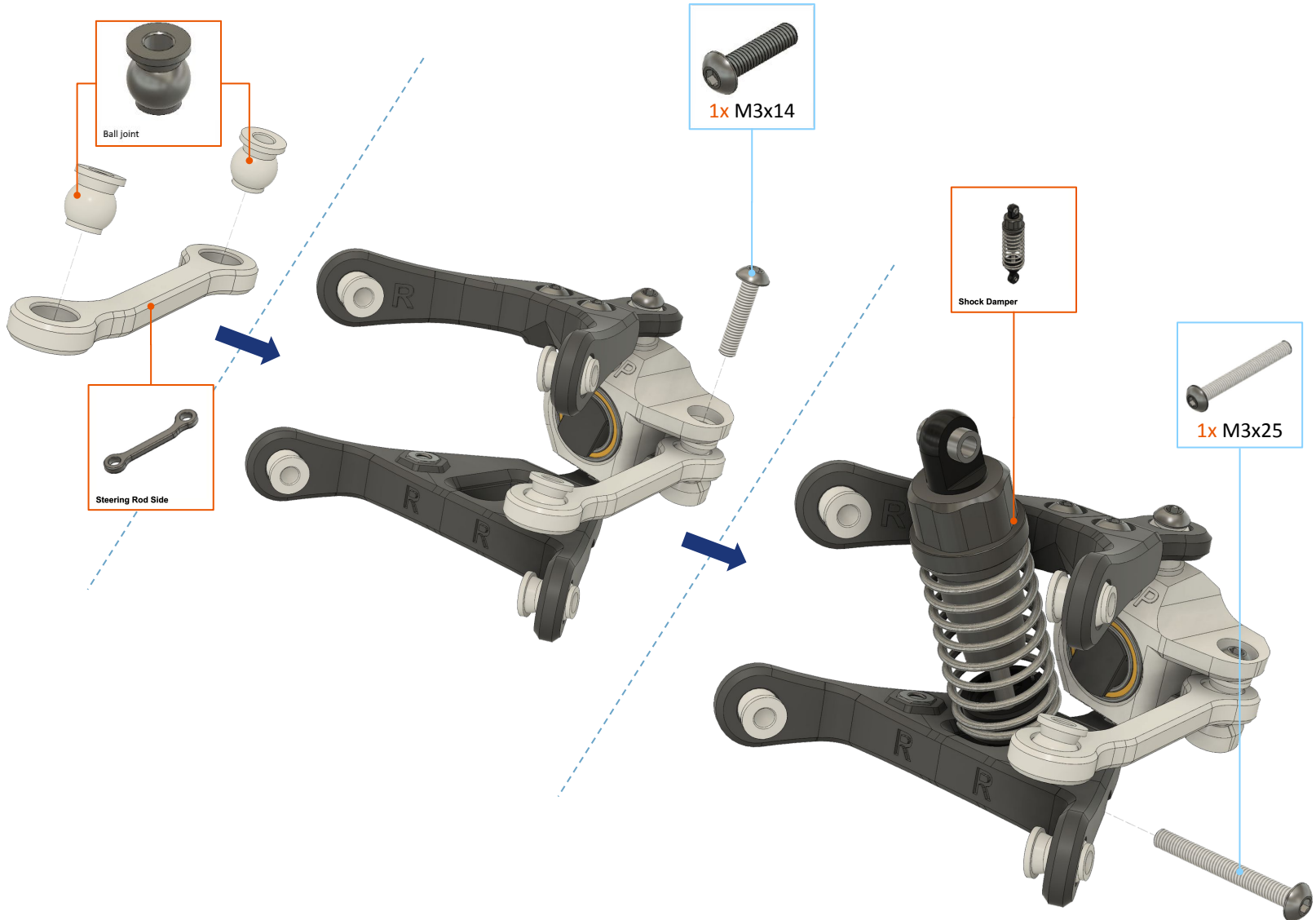
# Front Axle – step 20-21/27



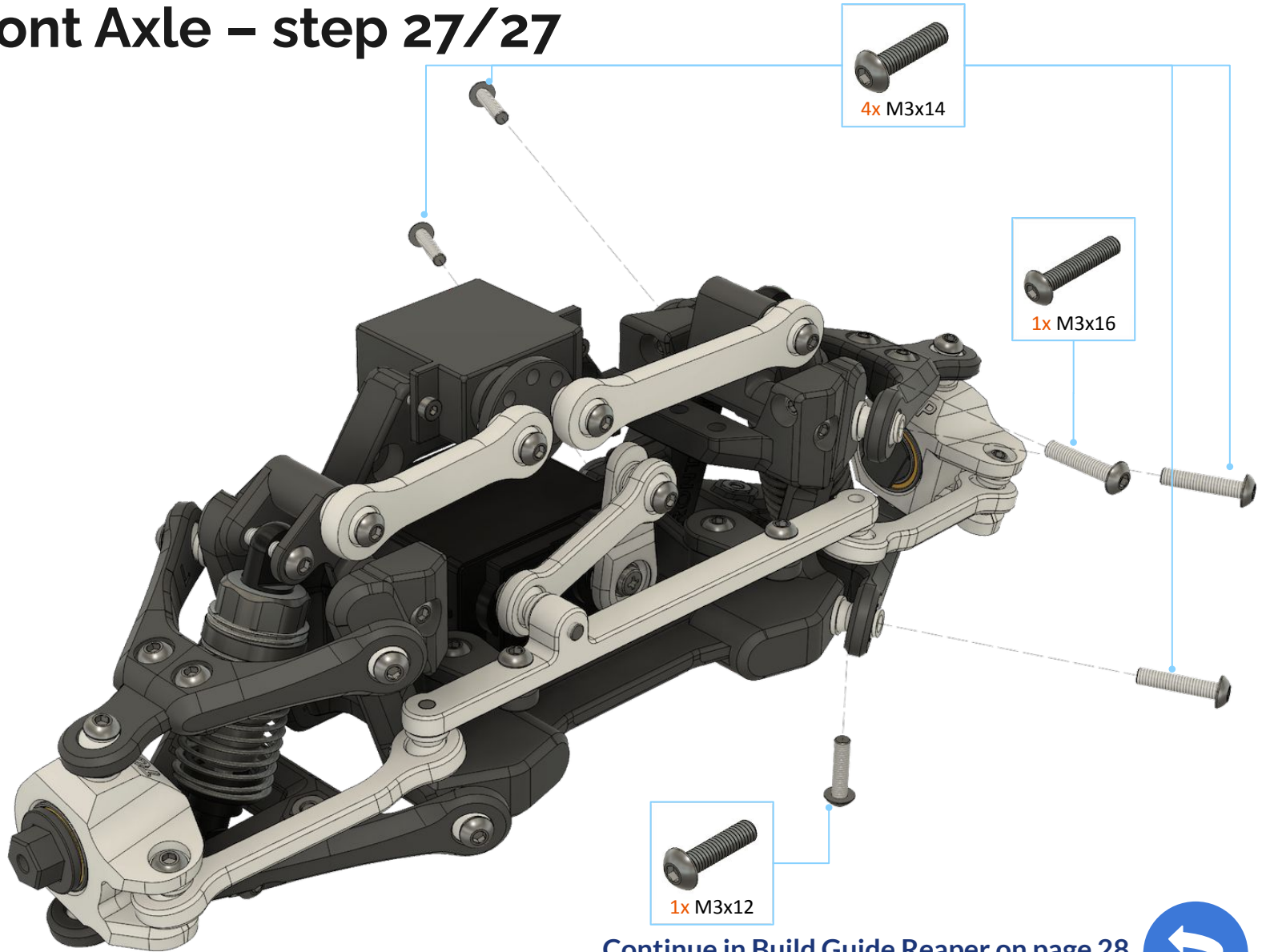
# Front Axle – step 22-23/27



# Front Axle – step 24-26/27



# Front Axle – step 27/27



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# Reaper – Lift Axle Rear

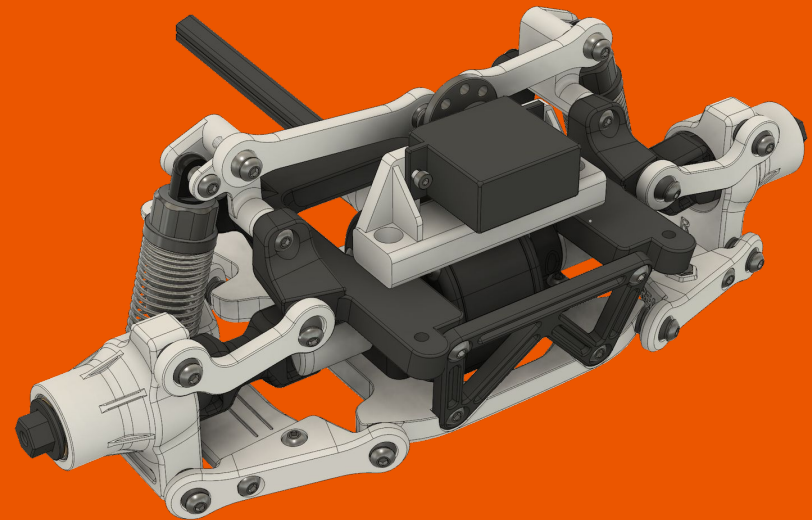
In this 10-step procedure you will assemble the rear axle. The axle assembly includes an independent suspension system.

Required print plates:

- "Print 13 - Axle Rear - 1"
- "Lift Axle Rear" - print plate from file Downrider\_Pack\_for\_Model\_18

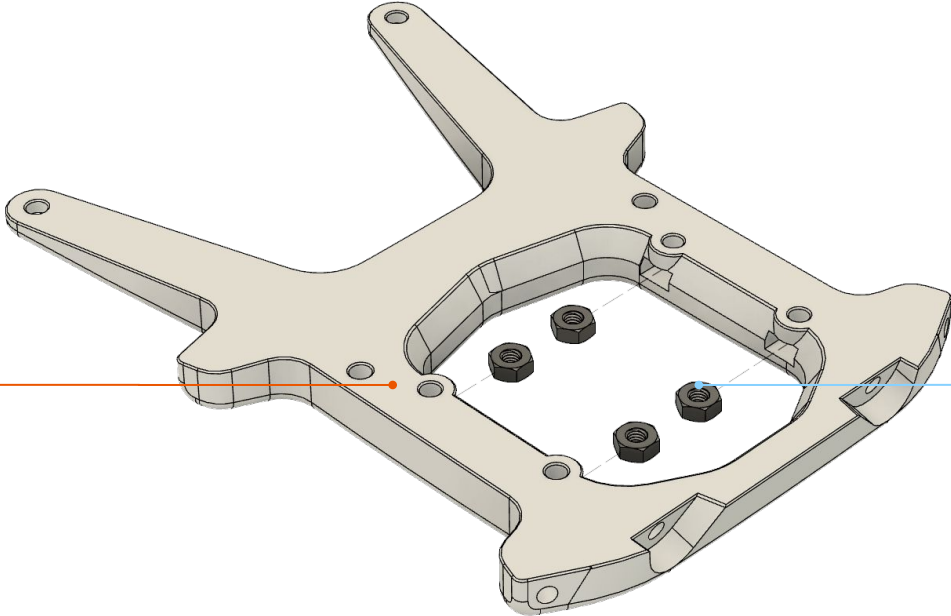
Non-printed parts:

- Nut M3: 4 pcs.
- Screw M2x10: 2 pcs.
- Screw M3x8: 2 pcs.
- Screw M3x10: 10 pcs.
- Screw M3x12: 7 pcs.
- Screw M3x14: 4 pcs.
- Screw M3x16: 14 pcs.
- Screw M3x20: 4 pcs.
- Bearings: 4 pcs.

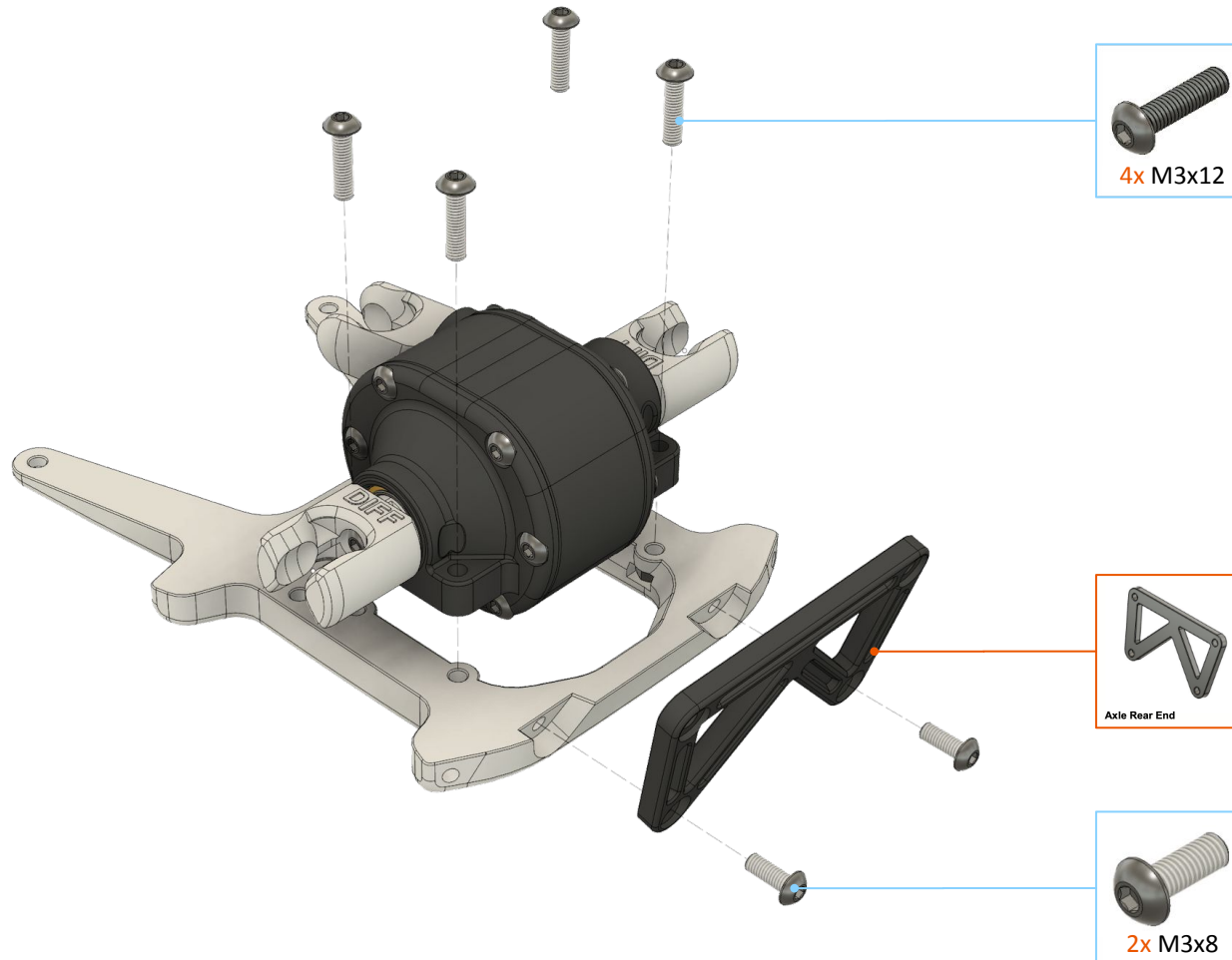




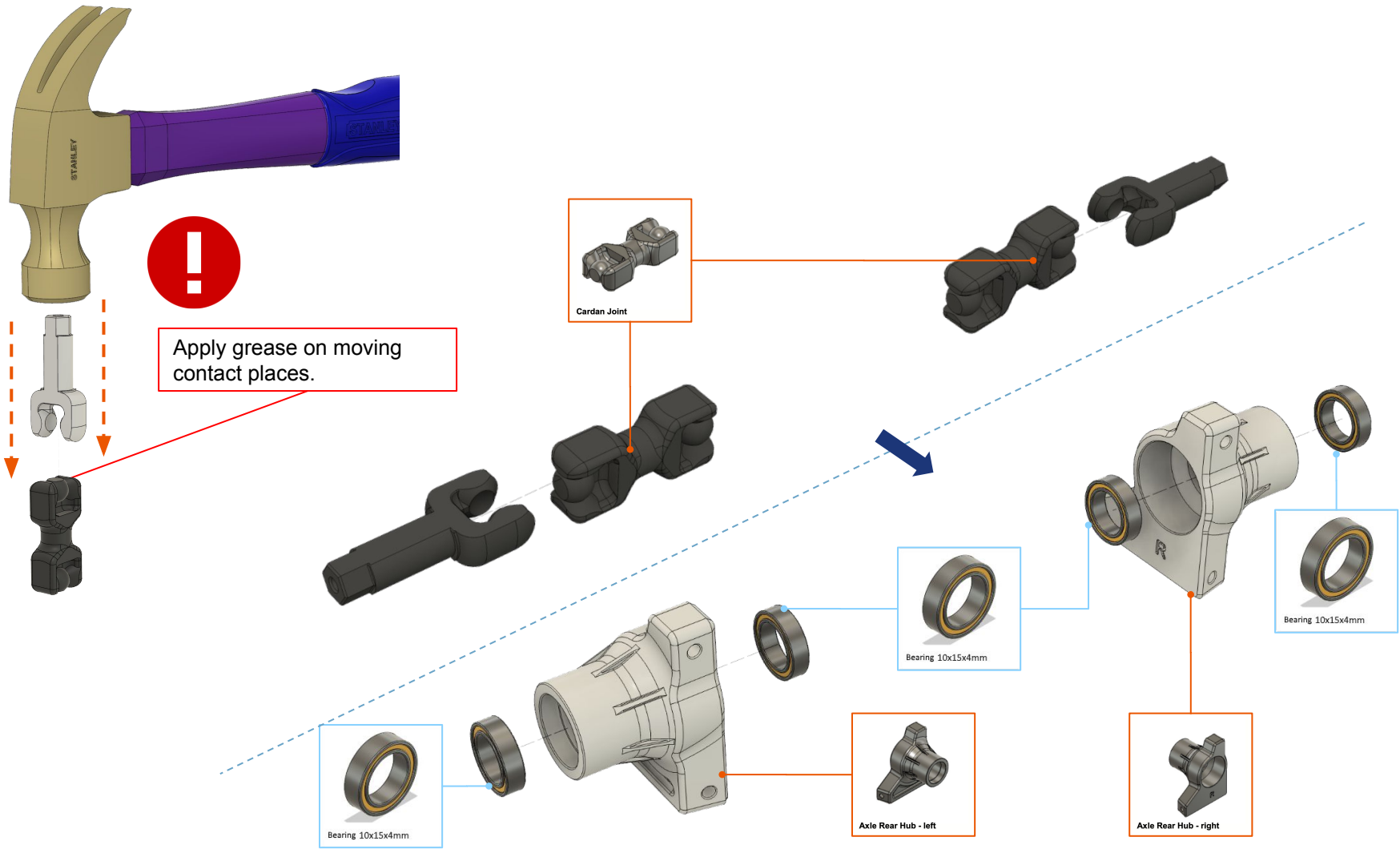
# Axle Rear - step 1/10



# Axle Rear - step 2/10

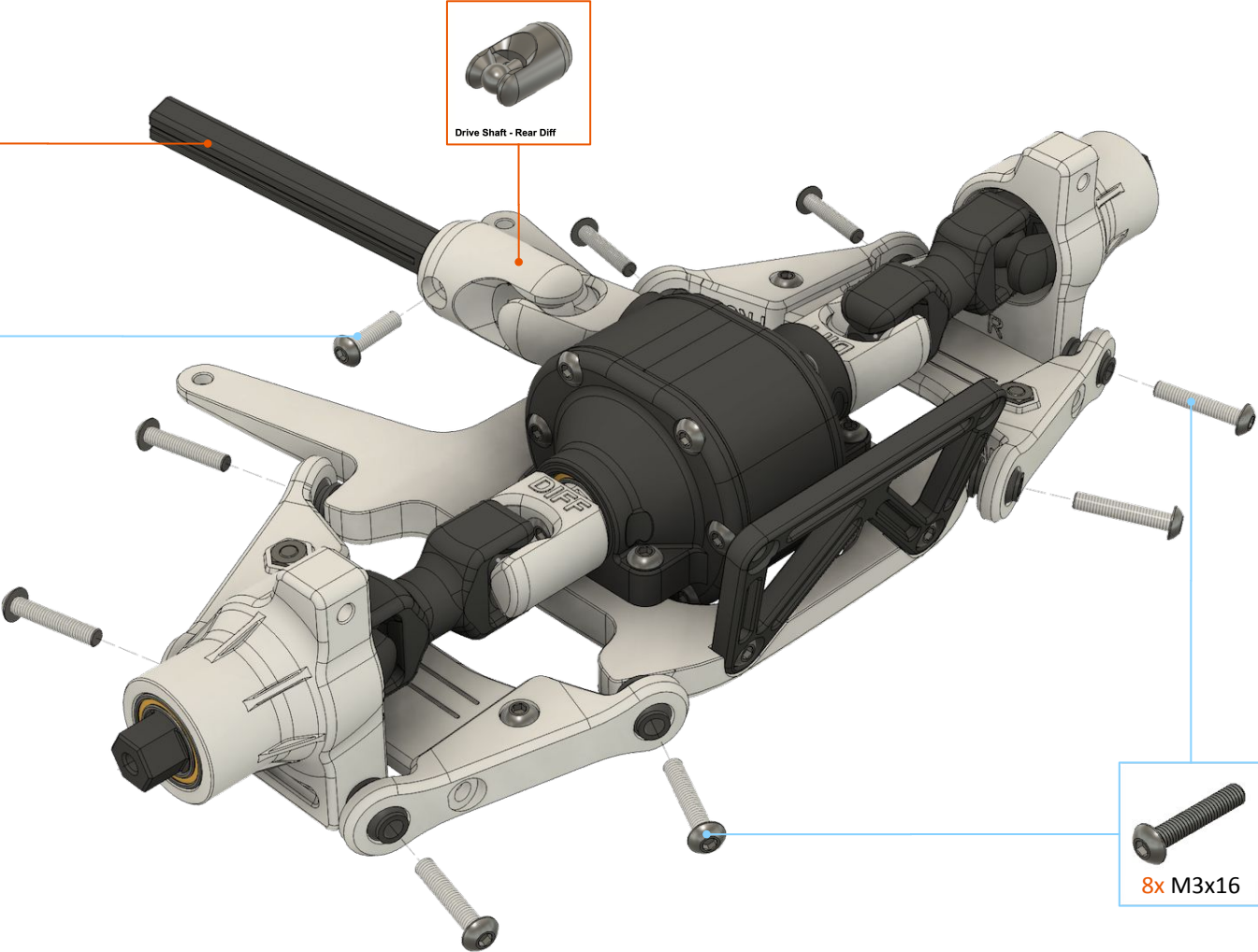


# Axle Rear - step 3-4/10

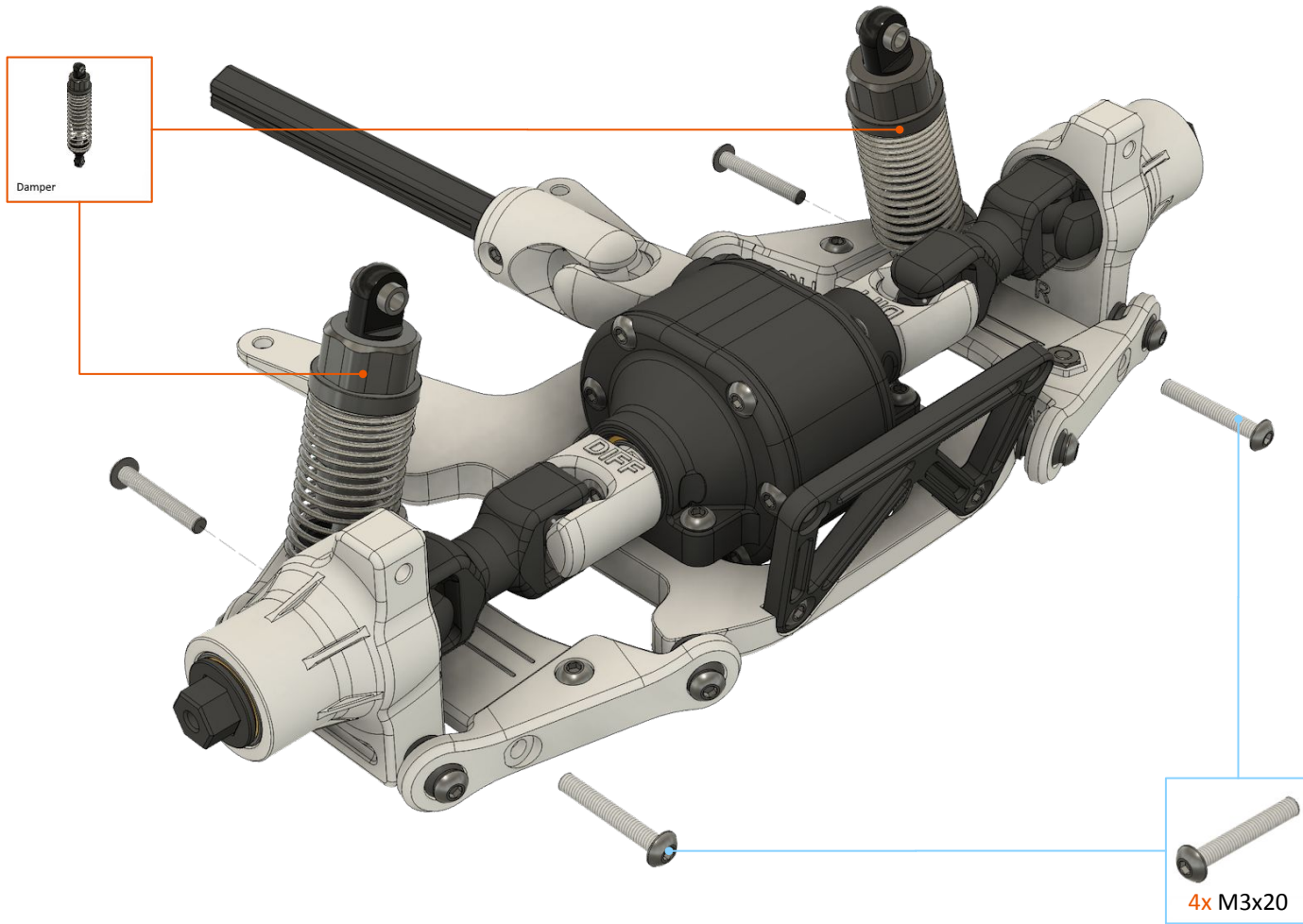




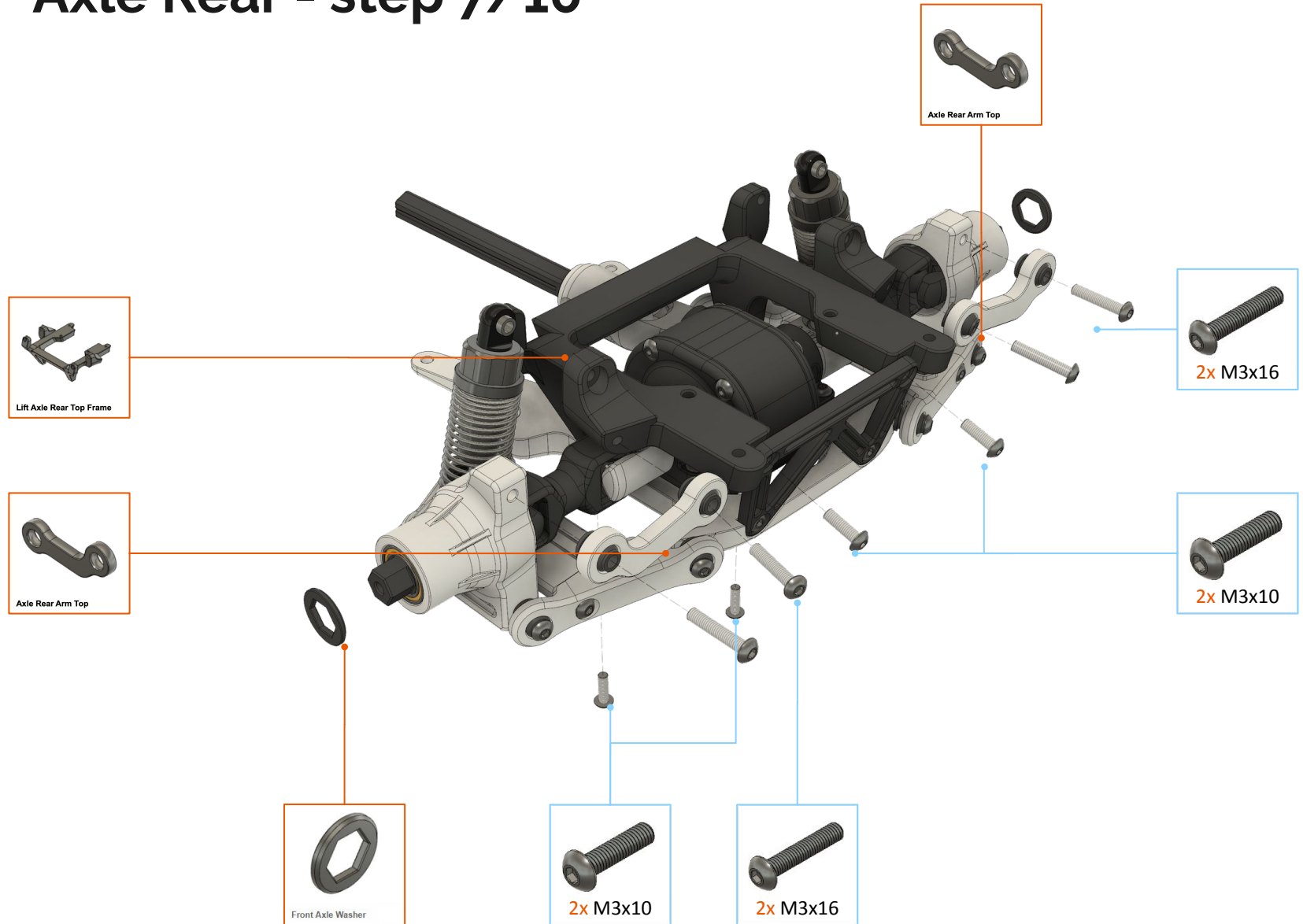
# Axle Rear - step 5/10



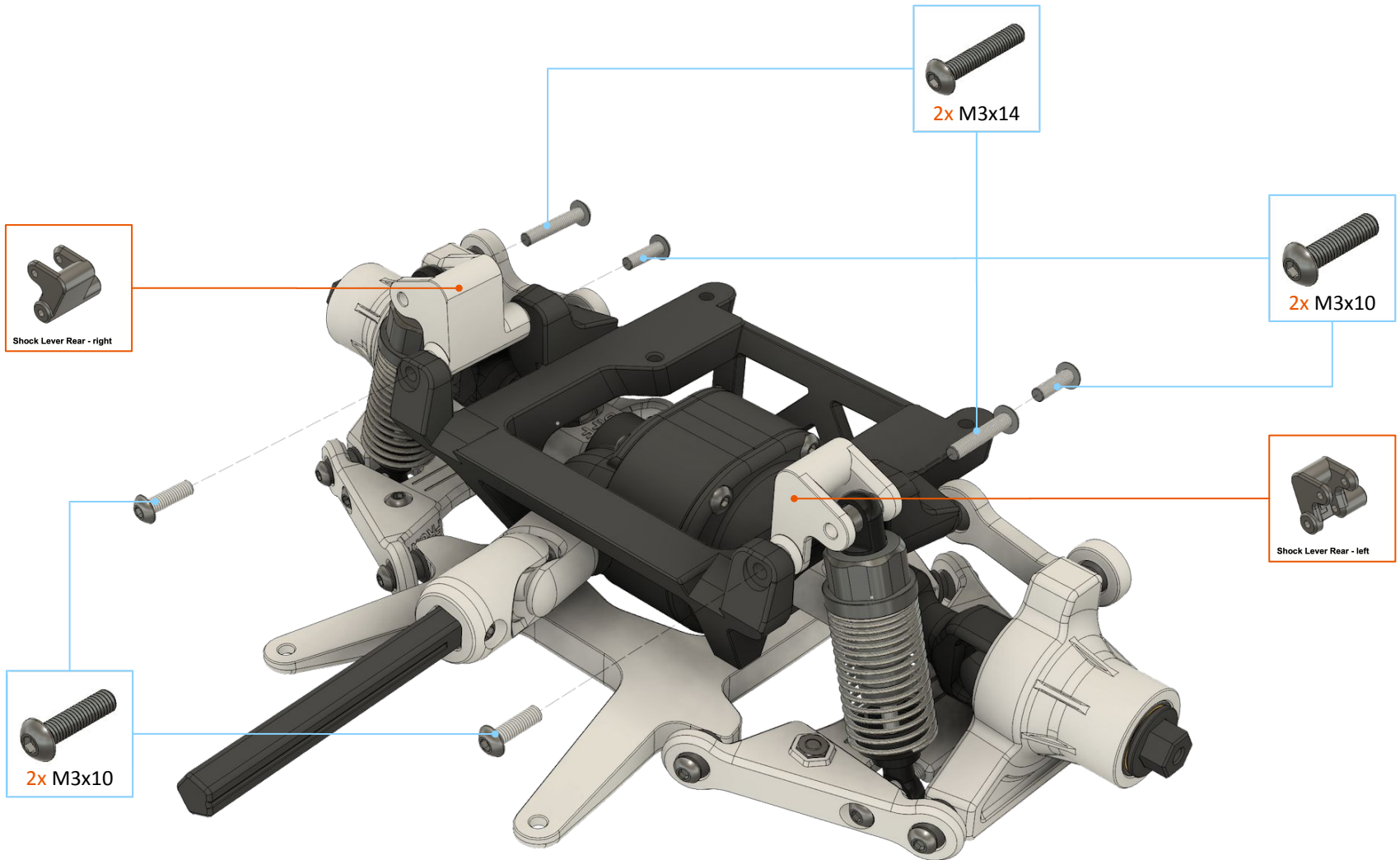
# Axle Rear - step 6/10



# Axle Rear - step 7/10



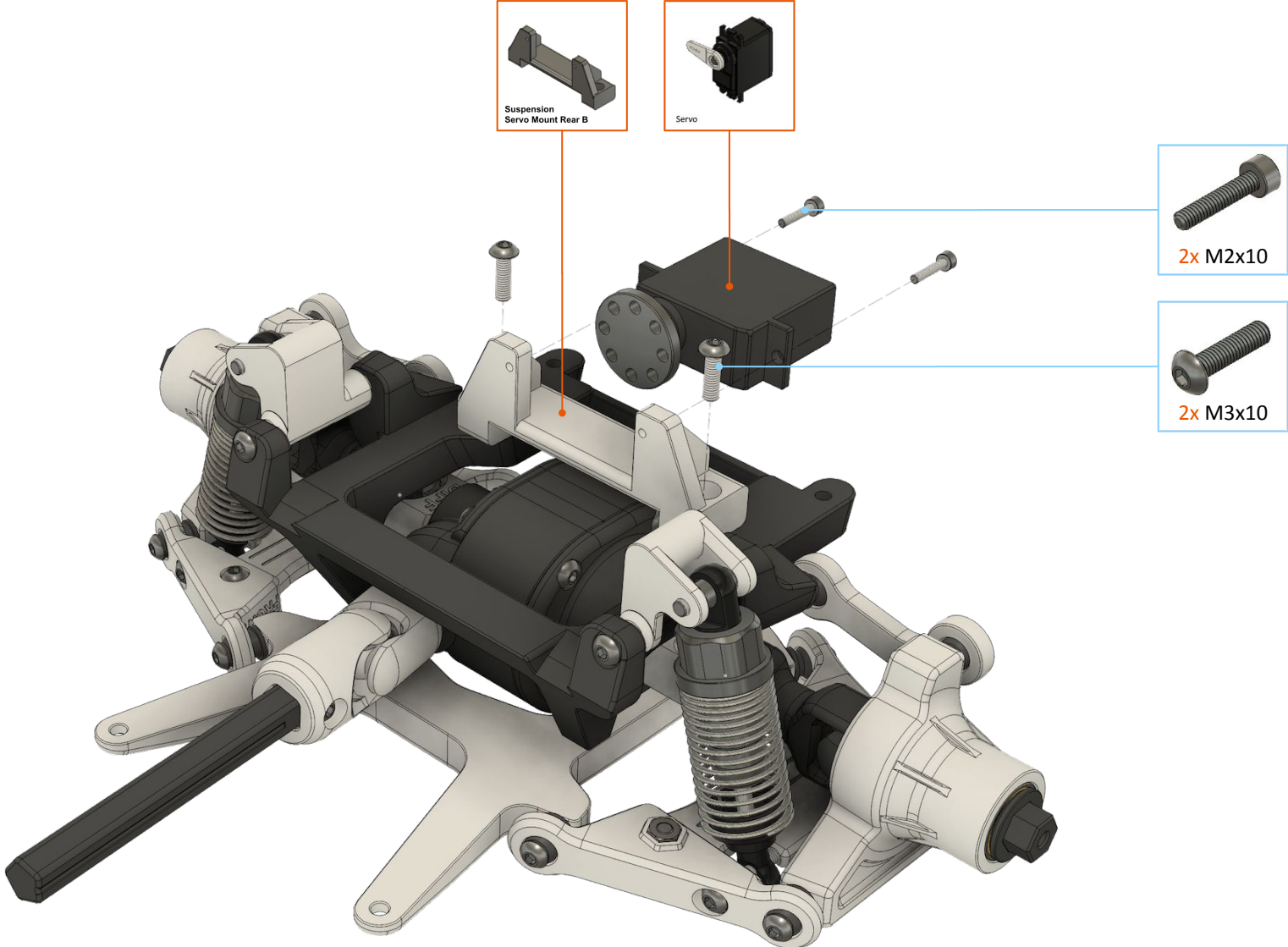
# Axle Rear - step 8/10



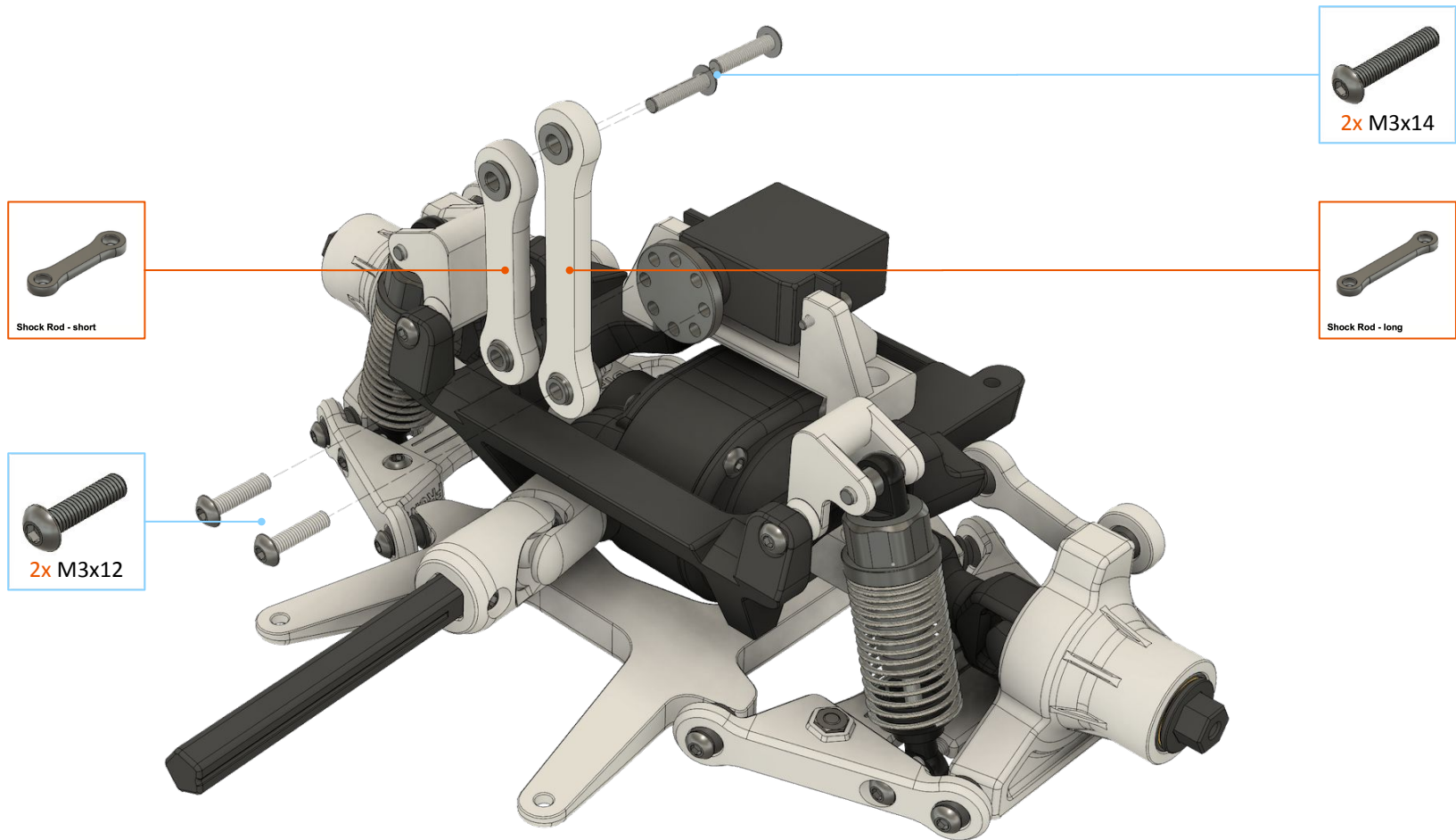




# Axle Rear - step 9/10



# Axle Rear - step 10/10



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# Reaper – Exhausts Horizontal

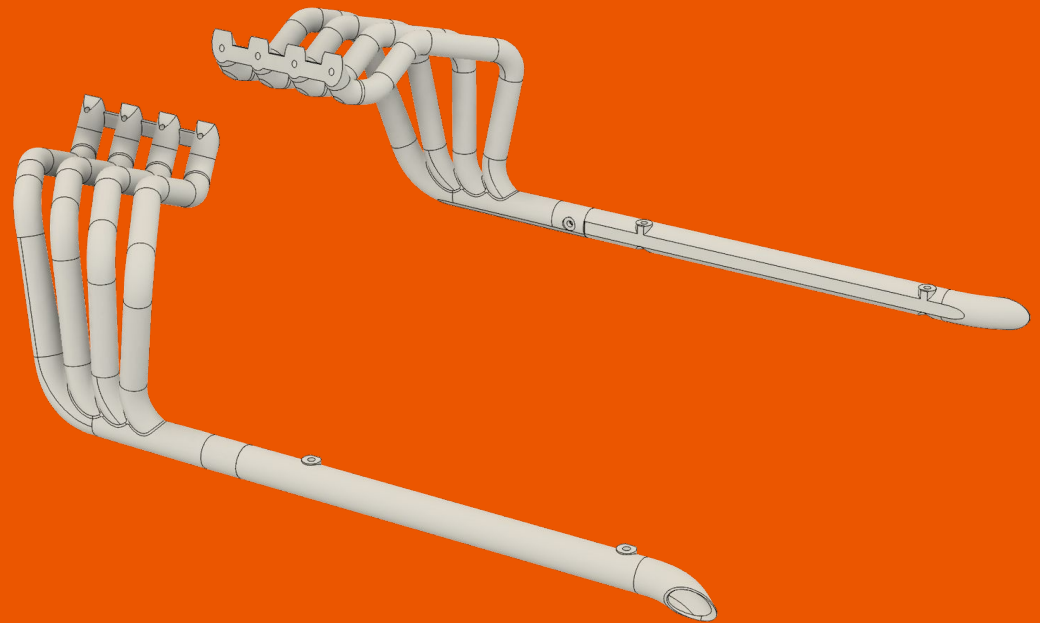
In this procedure you will install the Compressor Head B into the car.

Required print plates:

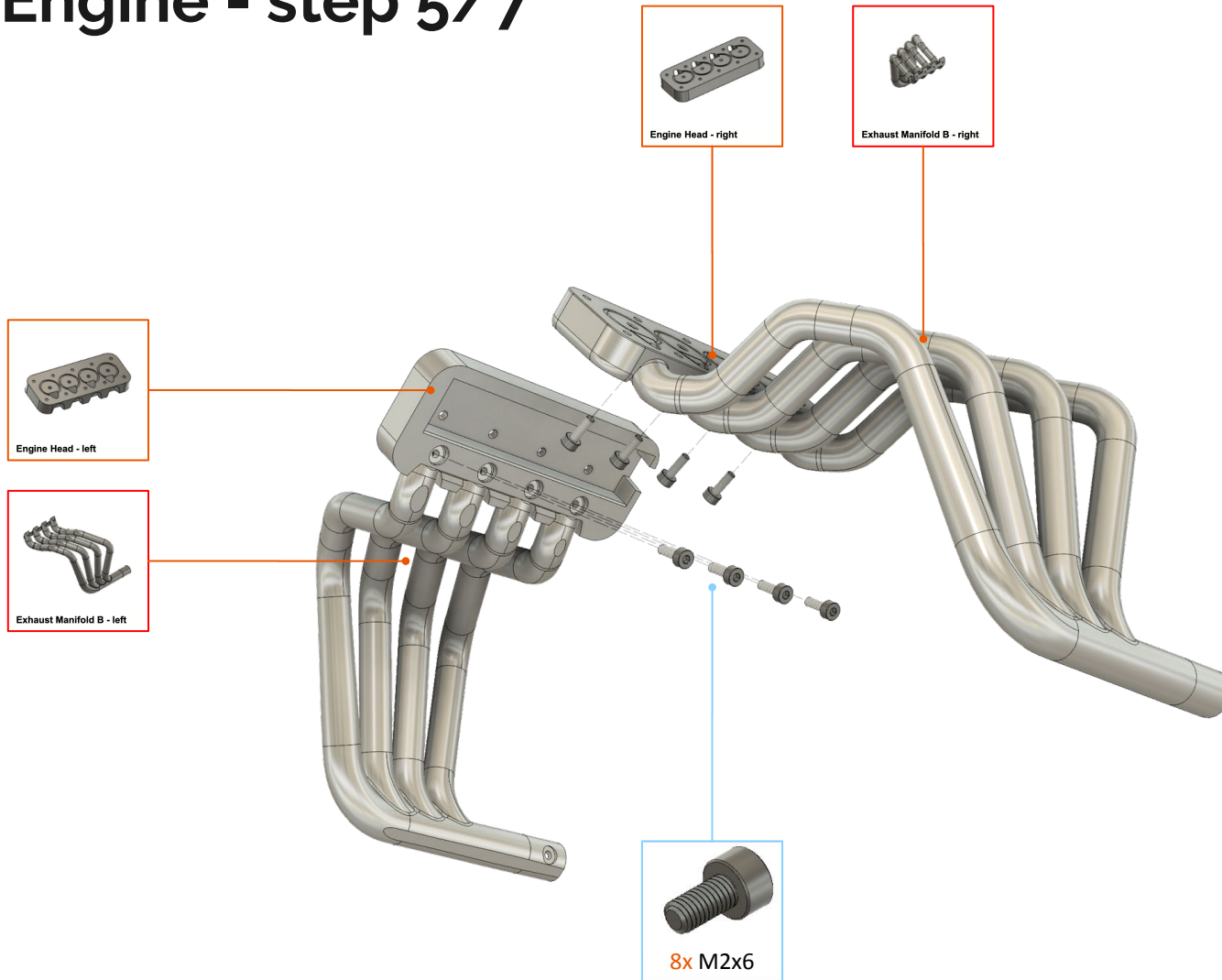
- "Exhaust Manifold B"
- "Exhausts Horizontal"

Non-printed parts:

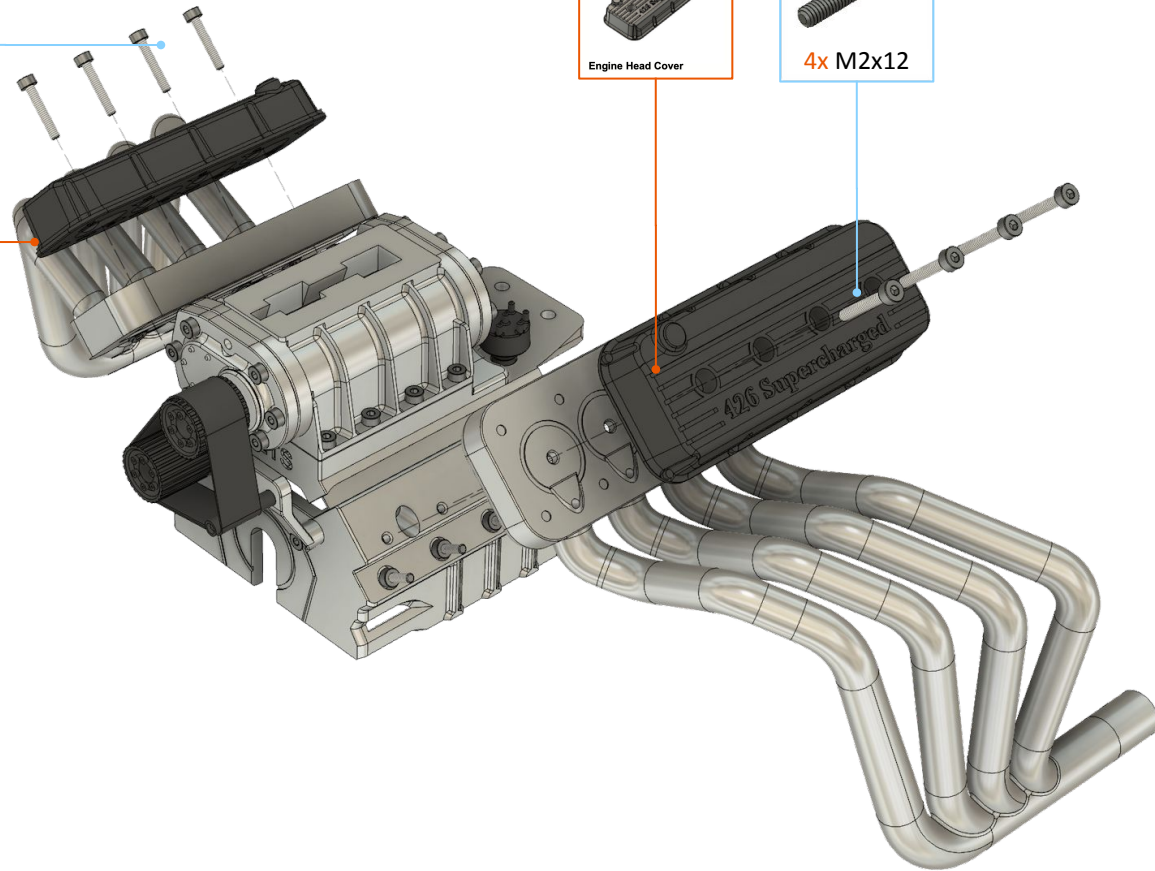
- Screw M2x6: 2 pcs.
- Screw M2x12: 4 pcs.



# Engine - step 5/7



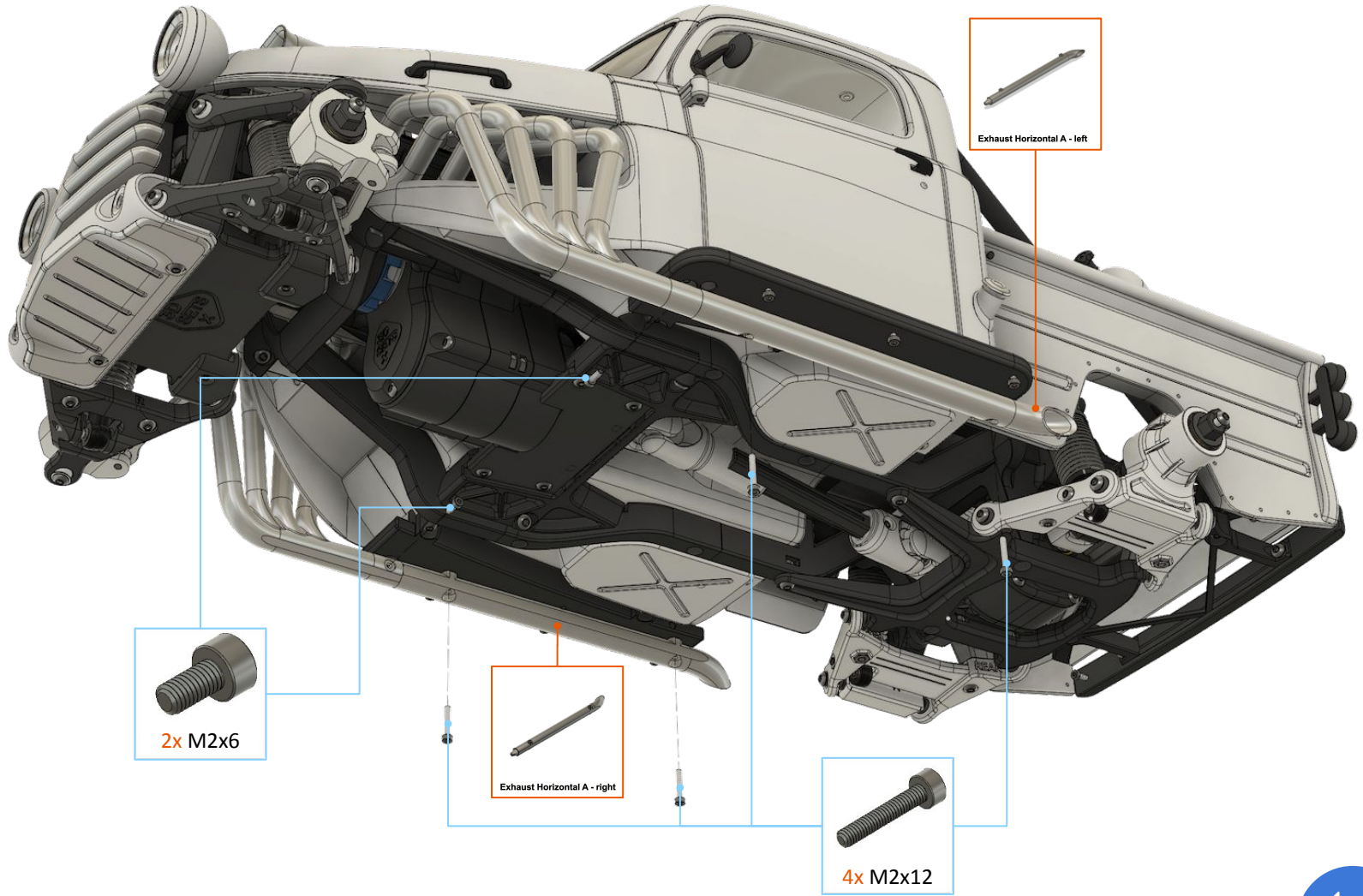
# Engine - step 6/7



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# Exhaust Horizontal - step 1/1



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# Reaper – Exhausts Vertical

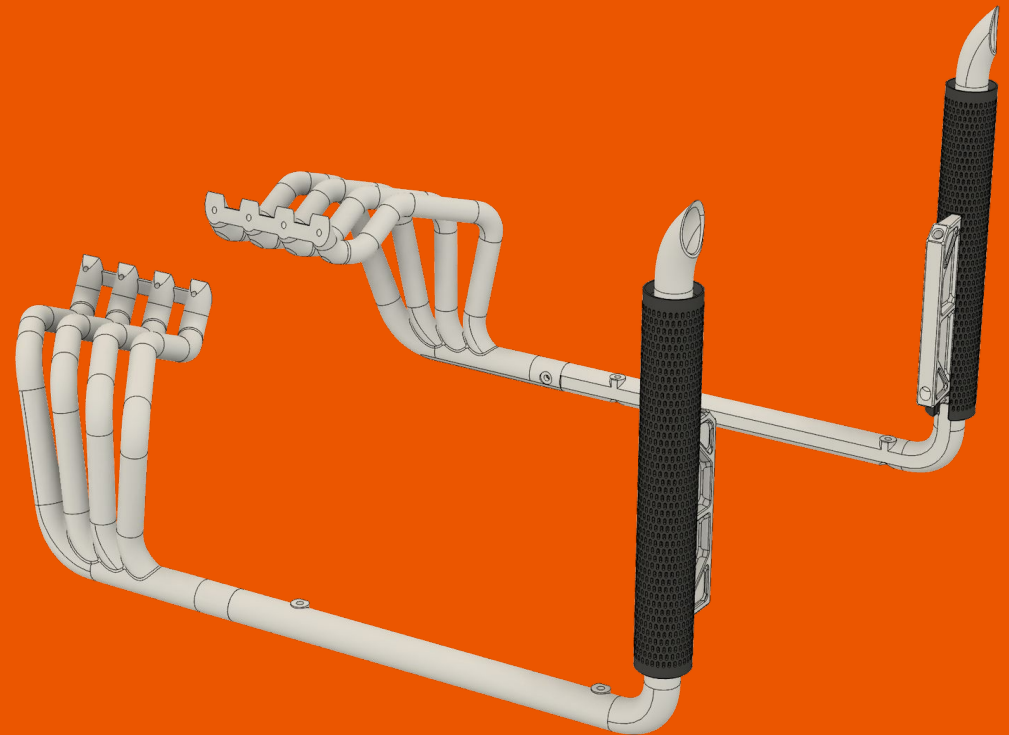
In this procedure you will install the Compressor Head B into the car.

Required print plates:

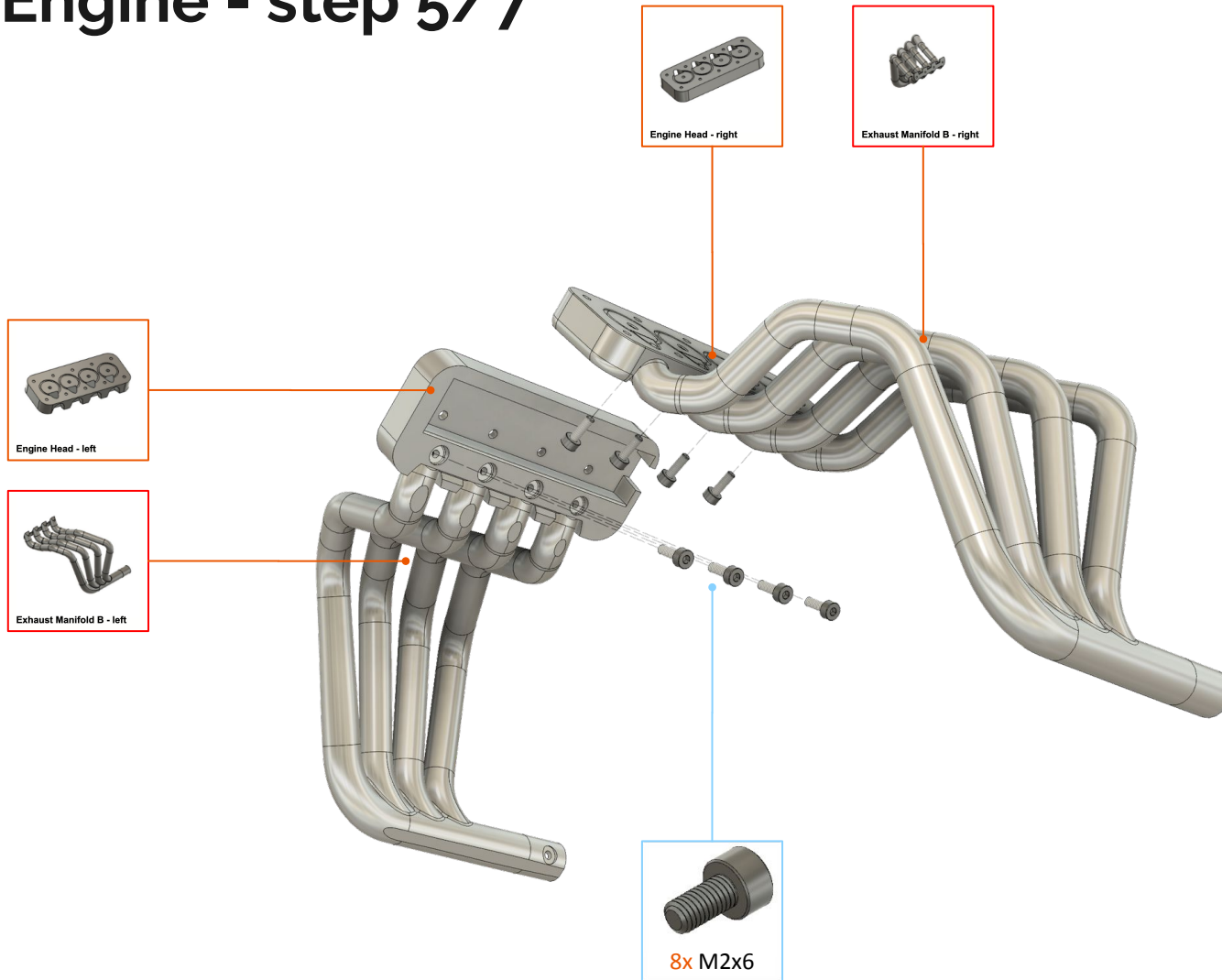
- "Exhaust Manifold B"
- "Exhausts Vertical 1"
- "Exhausts Vertical 2"

Non-printed parts:

- Screw M2x6: 2 pcs.
- Screw M2x12: 4 pcs.
- Screw M3x10: 6 pcs.

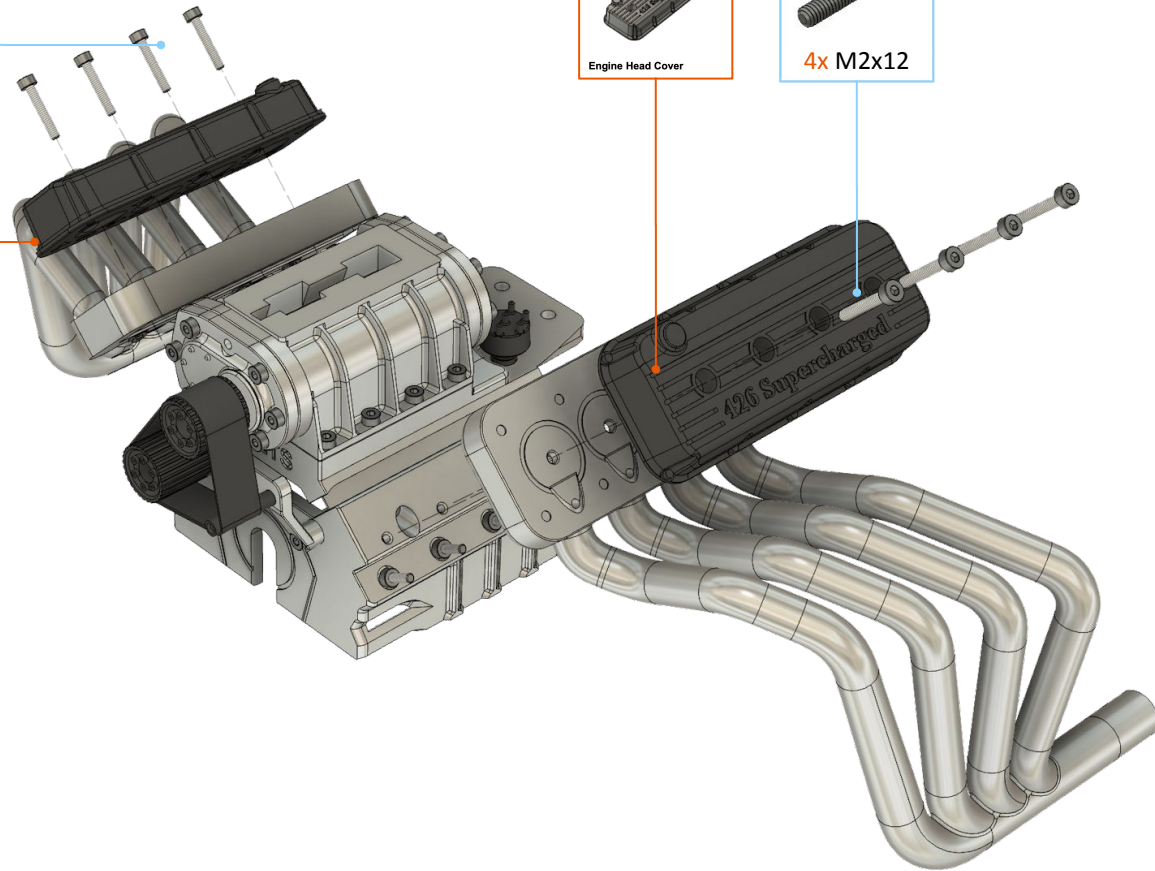


# Engine - step 5/7





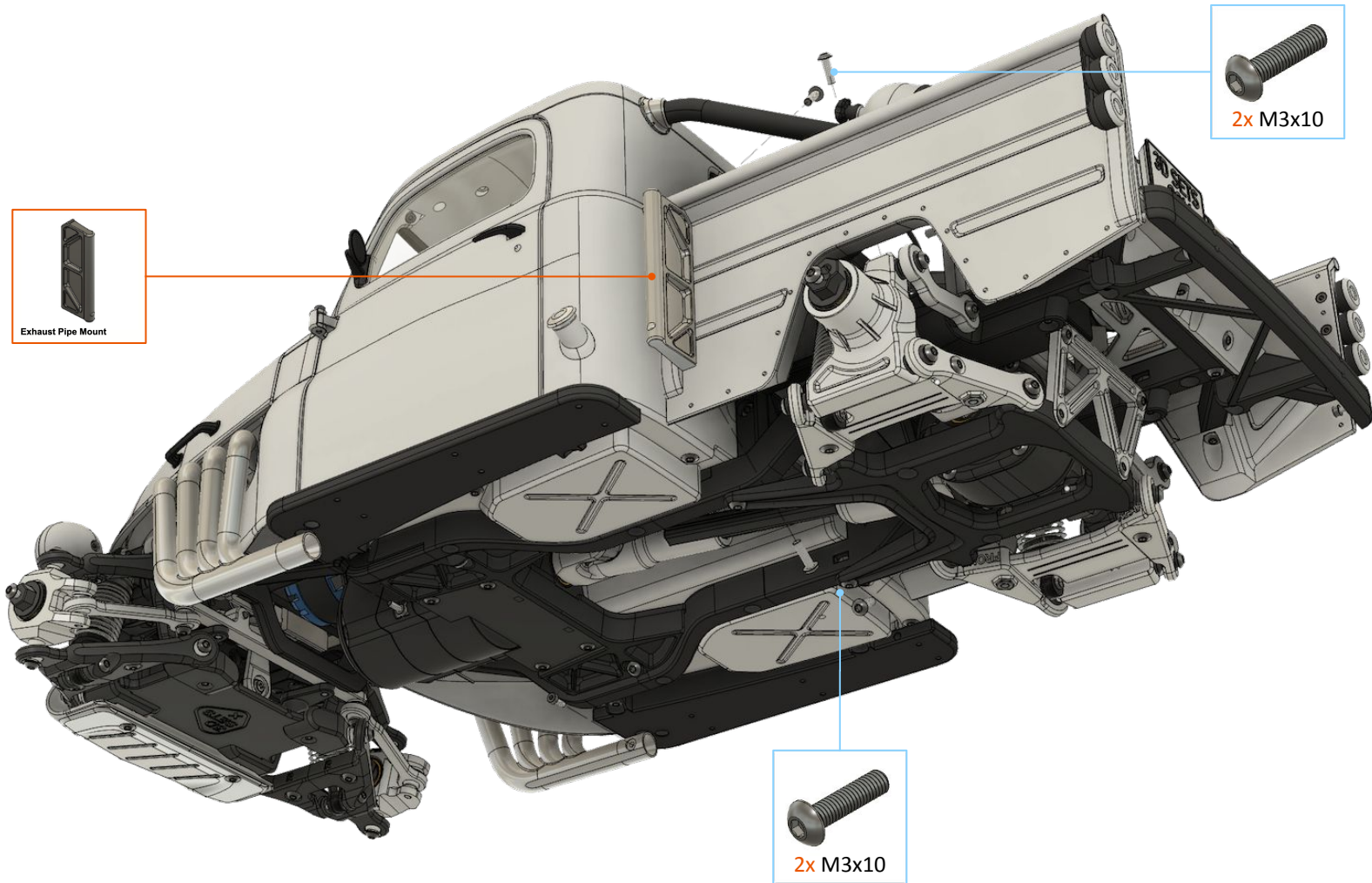
# Engine - step 6/7



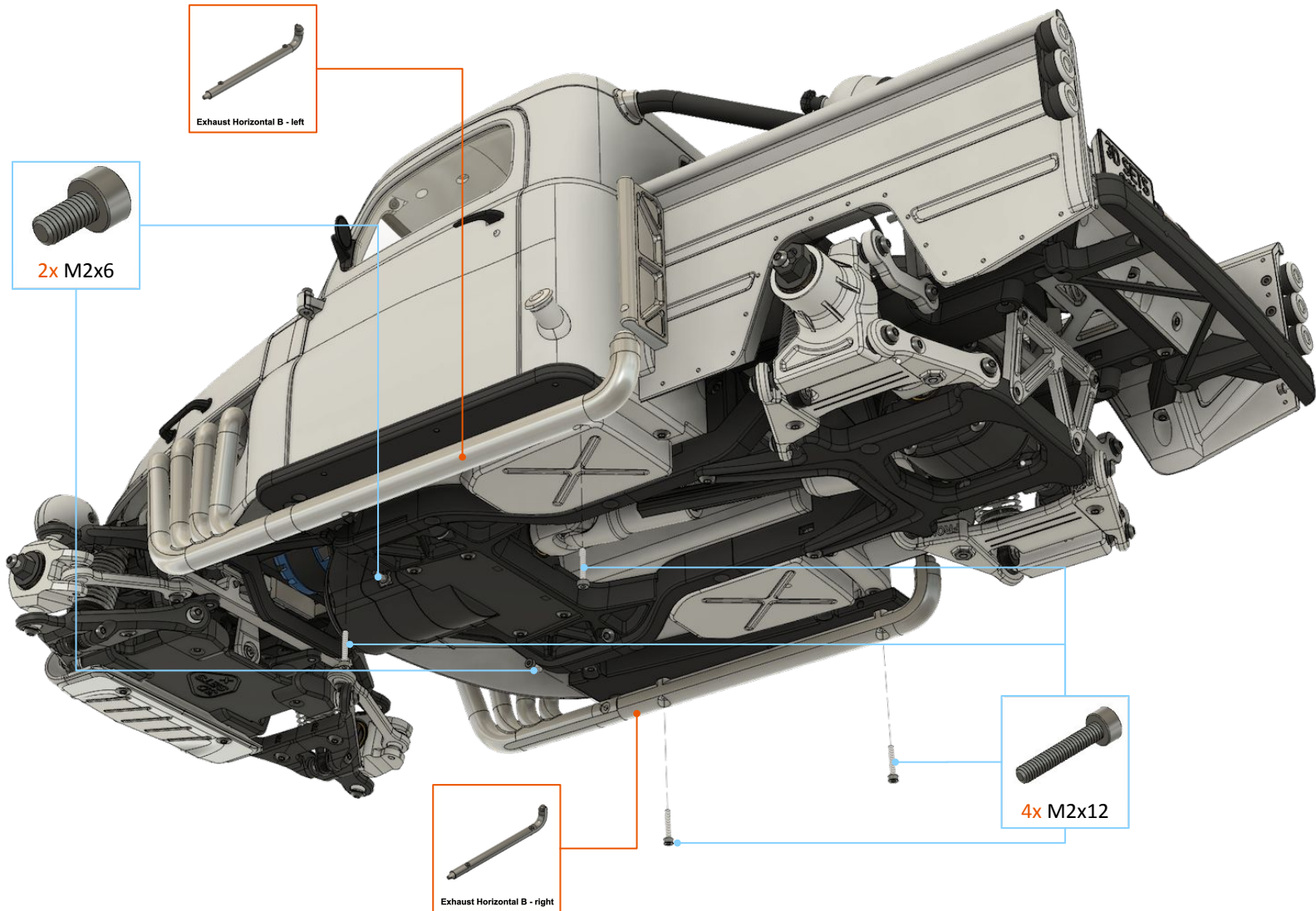
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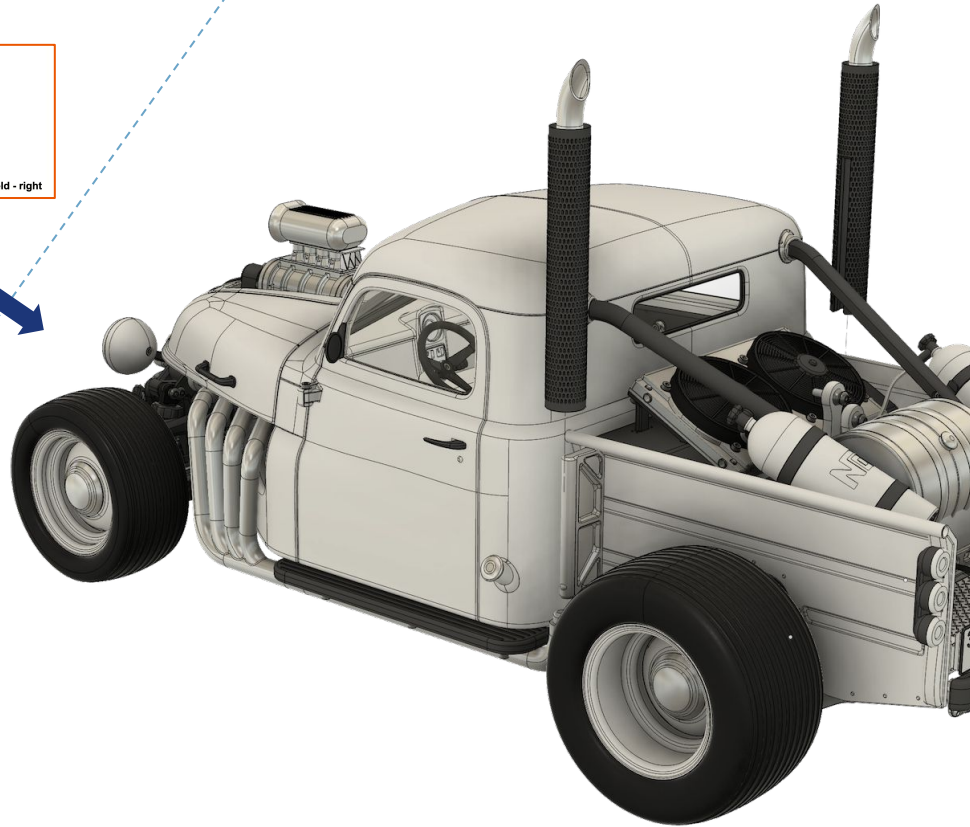
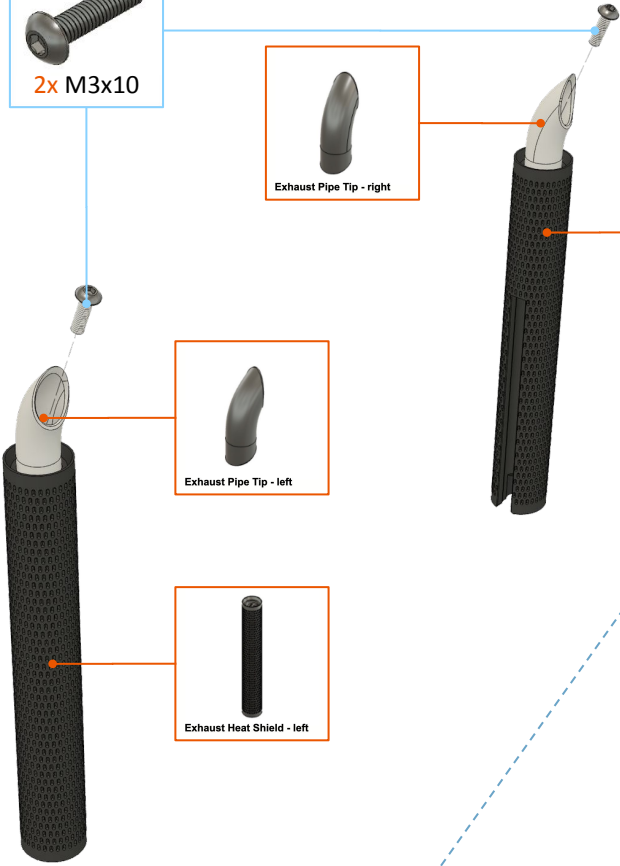
# Exhaust Vertical - step 1/3



# Exhaust Vertical - step 2/3



# Exhaust Vertical - step 3/3



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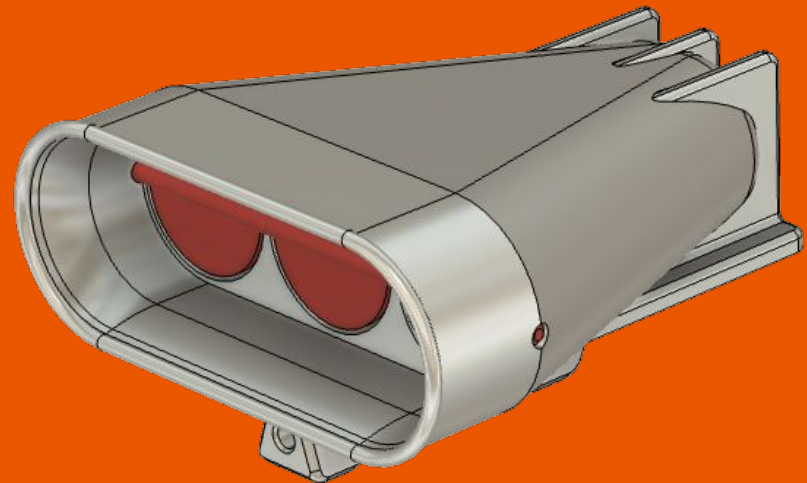
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# Reaper – Compressor Head B

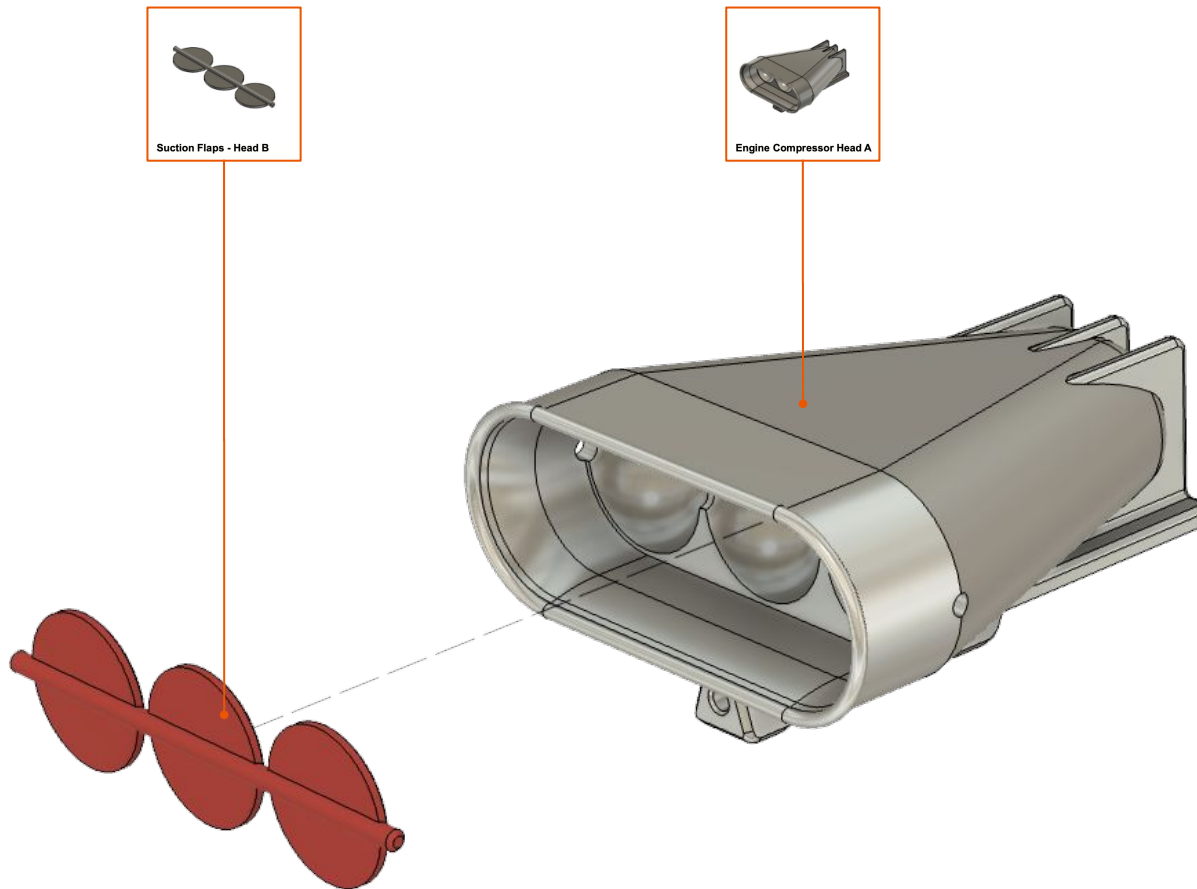
In this procedure you will install the Compressor Head B into the car.

Required print plates:

- "V8 Engine Compressor Head B 1"
- "V8 Engine Compressor Head B 2"



# Compressor Head B - step 1/1



[Continue in Build Guide Reaper on page 107](#)



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# Reaper – Compressor Head C

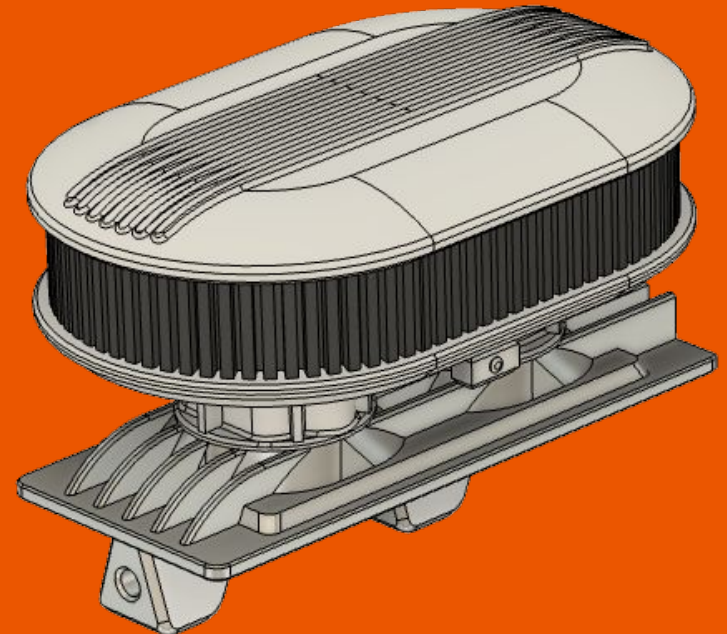
In this procedure you will install the Compressor Head C into the car.

Required print plates:

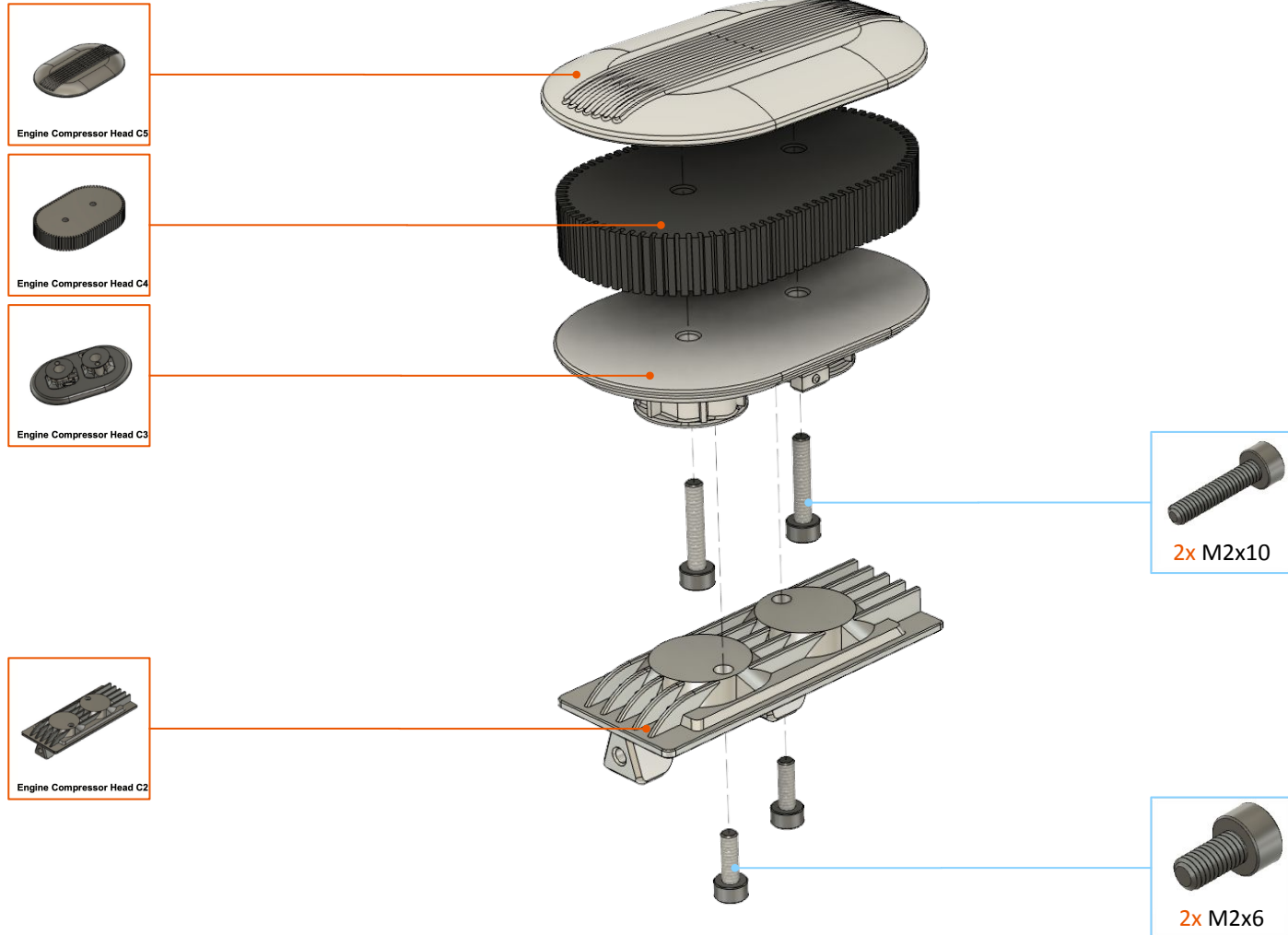
- "V8 Engine Compressor Head C 1"
- "V8 Engine Compressor Head C 2"

Non-printed parts:

- Screw M2x6: 2 pcs.
- Screw M2x10: 2 pcs.



# Compressor Head C - step 1/1



[Continue in Build Guide Reaper on page 107](#)





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# Reaper – Compressor Head D

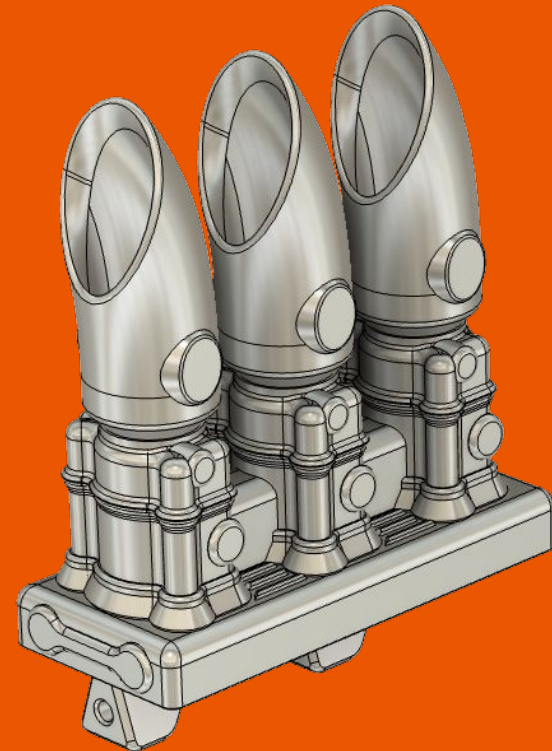
In this procedure you will install the Compressor Head D into the car.

Required print plates:

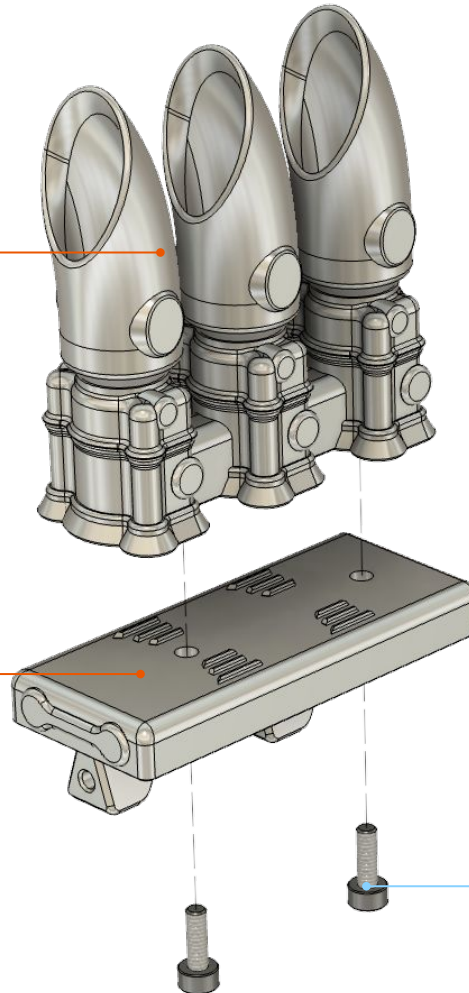
- "V8 Engine Compressor Head D"

Non-printed parts:

- Screw M2x6: 2 pcs.



# Compressor Head D - step 1/1



[Continue in Build Guide Reaper on page 107](#)



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# Reaper – Chain 3D Printed

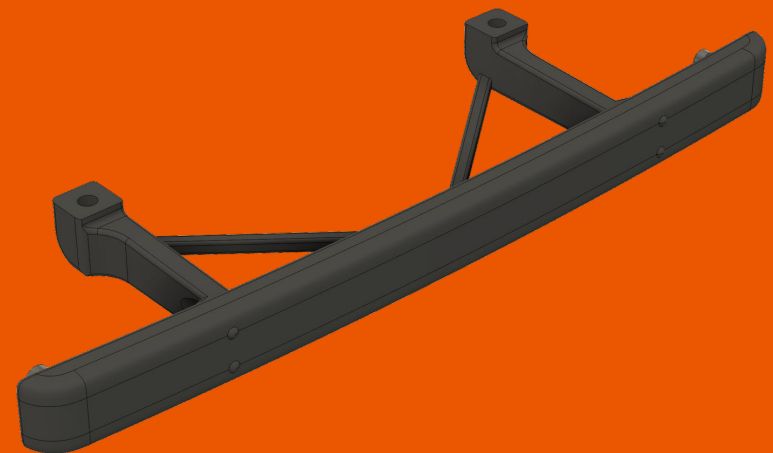
In this procedure you will add 4d printed chain to the Rear Bumper.

Required print plates:

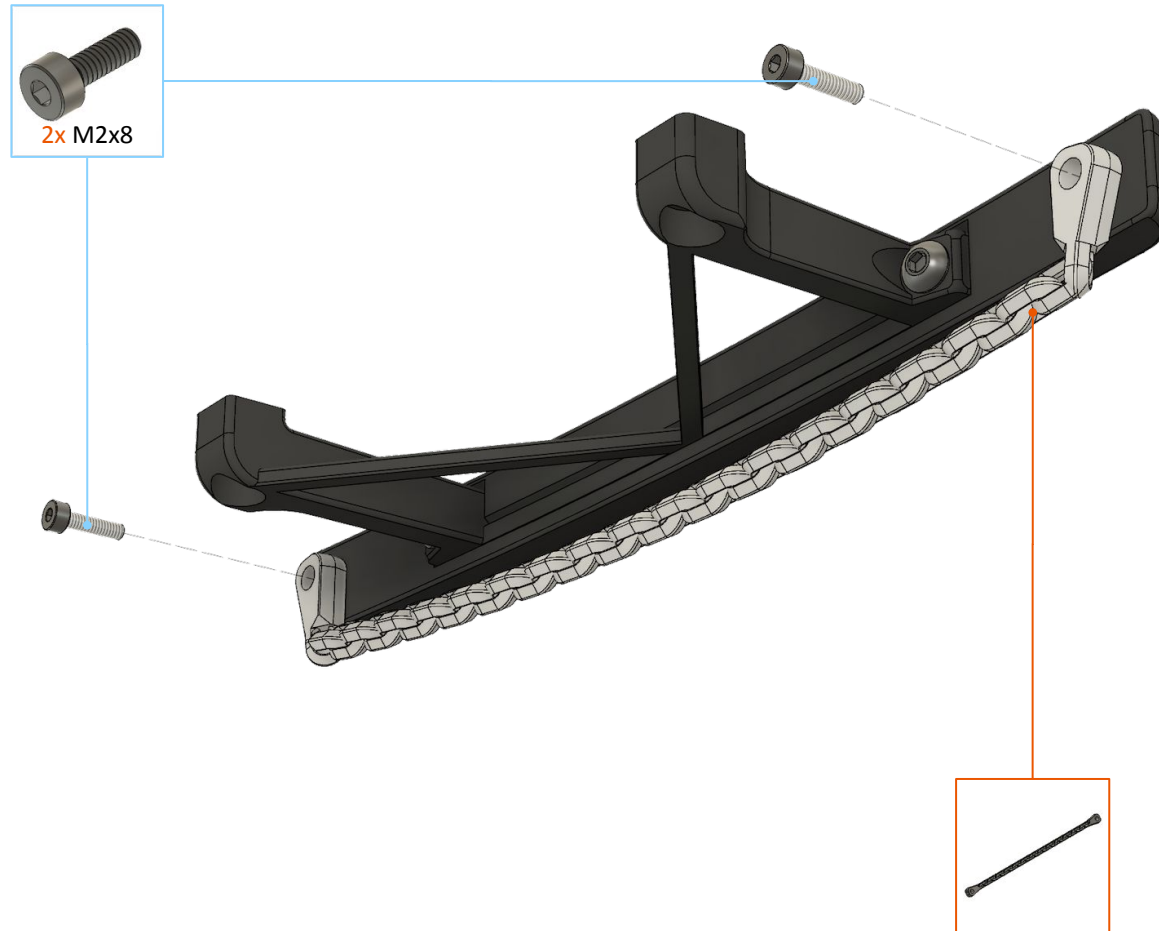
- "Chain 3D Printed "

Non-printed parts:

- Screw M2x8: 2 pcs.



# Bumper Rear with 3d printed Chain



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# Reaper – Tank

In this procedure you will assemble the Tank.

Required print plates:

- "Fuel Tank"

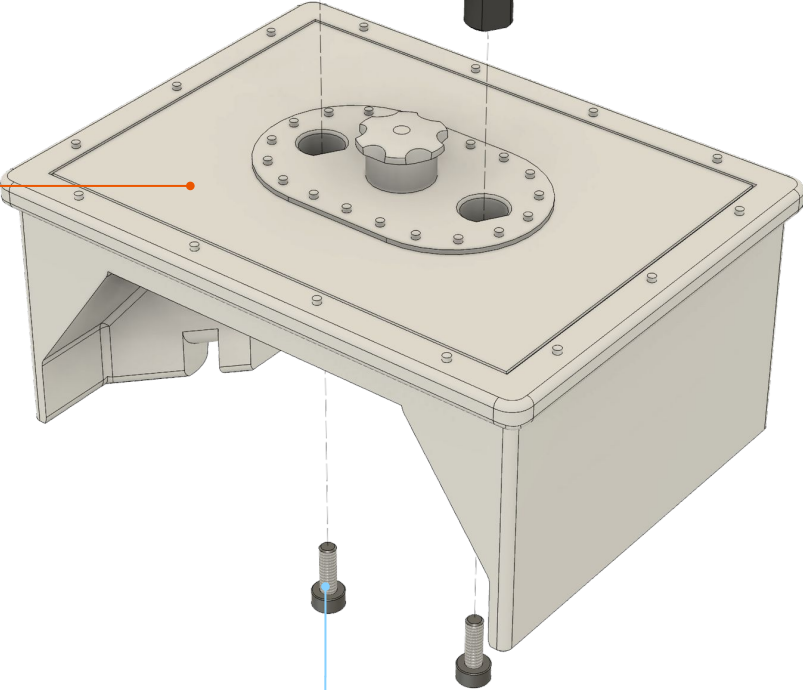
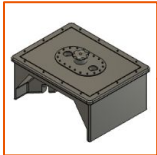
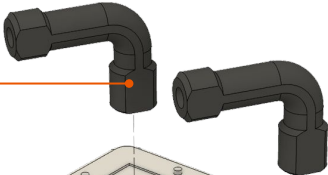
Non-printed parts:

- Screw M2x6: 2 pcs.





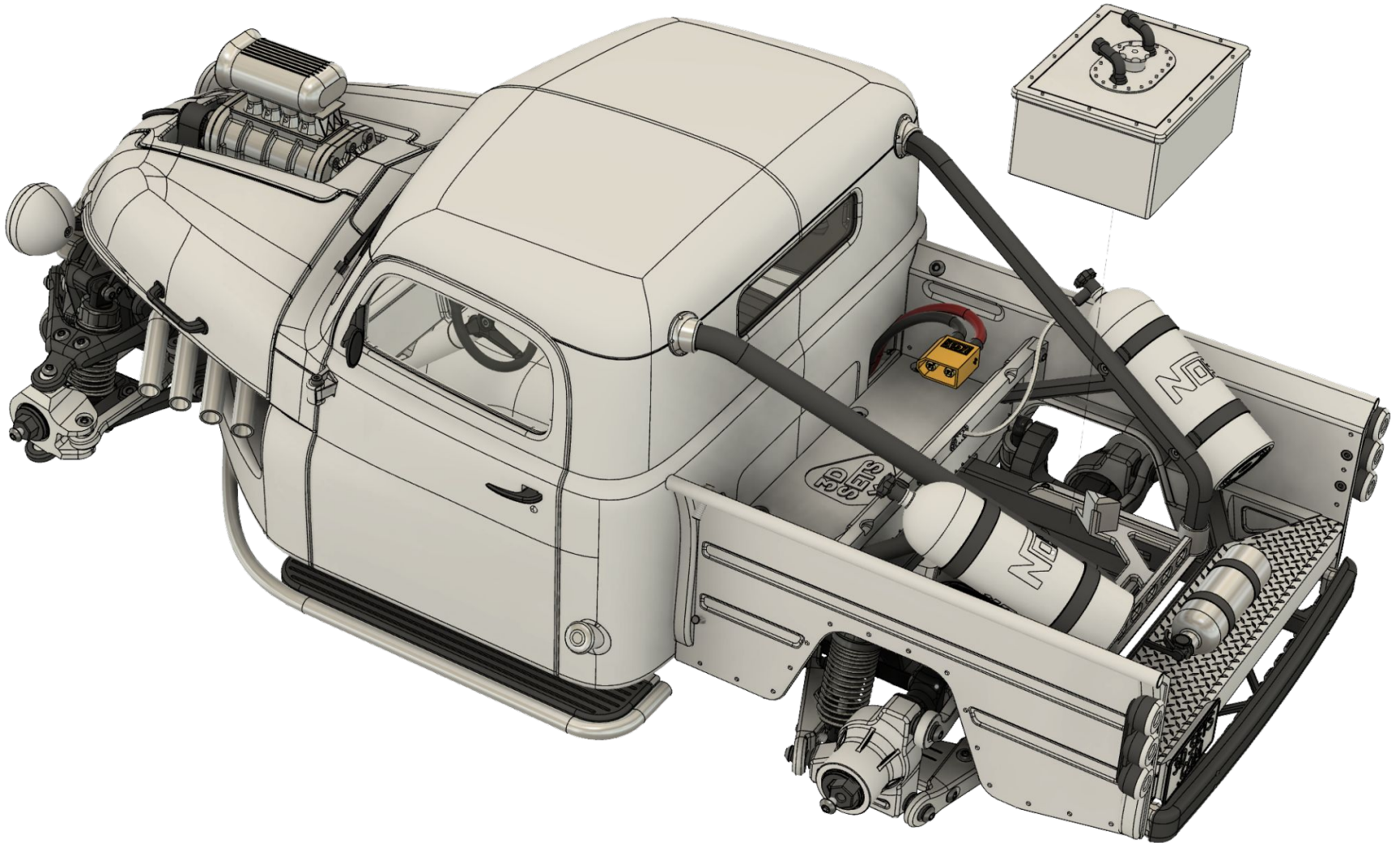
# Tank - step 1/3



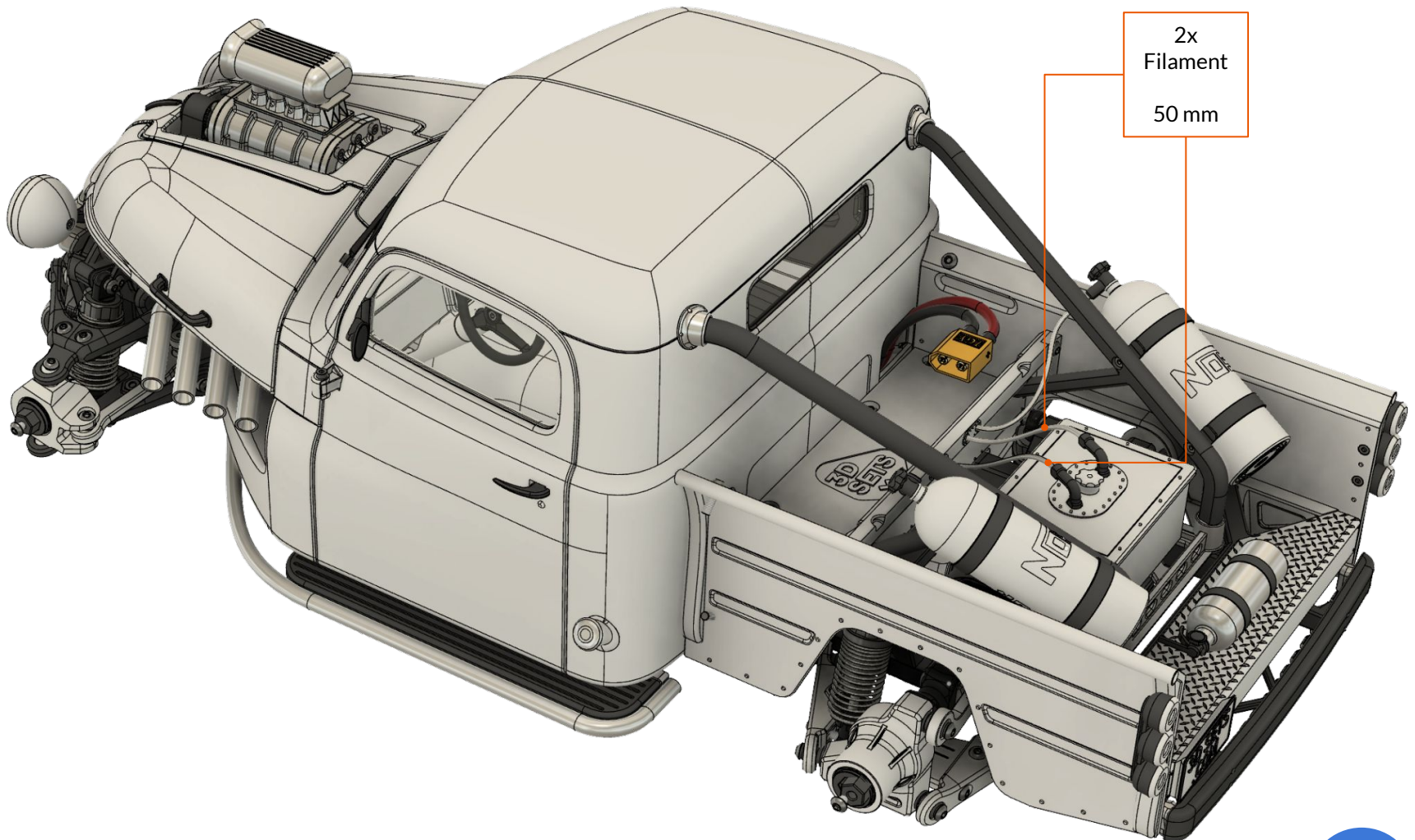
2x M2x6



# Tank - step 2/3



# Tank - step 3/3



[Continue in Build Guide Reaper on page 145](#)

