

# Build Guide - 3D Sets Mini Truck: Roady Dumper

3D printed radio controlled  
4WD 1/16 scale model.



[www.3dsets.com](http://www.3dsets.com)  
[3D Sets Facebook](#)



Version 1.0.0



## Roady Dumper – version 1.0.0 technical specs.

- Dimensions: 49 cm length, 16 cm width (incl. mirrors), 20 cm height
- Model weights roughly 2 kg (including battery)
- Up to 3 motors – 2 motors for road variant, 3 motors for off-road variant
- Differentials are in locked state
- Remote controlled steering and speed control
- Powered by common AA batteries (tested with IKEA® Ladda rechargeable AA batteries)
- **Tires can be 3d printed from Flex filament** or worldwide available LEGO® tires can be also used.
- Suspension with 3d printed springs for good off-road capabilities. Small LEGO® tires used as damper (**can be also 3d printed**).
- Tipper is manually operated, Doors can be opened, Cab can be tilted forwards to access electronics.
- Ready for color printing (by changing filament colors during print)
- No glue used; all parts holds together by metric M3 screws. No tiny M2 used.
- Fast build suitable for kids with help of adults.
- No soldering required (if proper non-printable parts are obtained)
- Ready for Radio Control (need to be purchased independently)

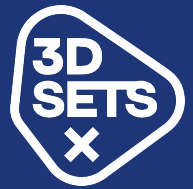


# Roady Dumper – version 1.0.1 changelog

“3D Sets Mini Truck: Roady Dumper” v1.0.1, release date: March 1, 2023:

- Fixed correct position Cabin Side Fairing in print plate "Print 1B - Roady - Cab Rear Side + ir Intake". This fix is only in file "3D\_Sets\_Mini\_Truck\_Dumper\_v1.0.1"

“3D Sets Mini Truck: Roady Dumper” v1.0.0, release date: December 15, 2023:



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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!
- 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 truck.

It is not mandatory to use soldering equipment to make all electronics working. You can buy “faston” connectors which will replace soldering of wires.



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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 3dsets builders) on our Facebook discussion group, available here: [Facebook – 3D Sets](#)





## Roady Dumper – 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 2000 g of print filament in total. We print our models from PLA material. You can use variable color for chassis and body. Tested and recommended filament: [Fillamentum PLA Extrafill](#) or [Prusament PLA](#).
- The recommended drive is a “DC Gearbox Motor Dual Shaft 200RPM” – 2 or 3 pcs depending on drive setup.
- Steering servo in Micro size (22,6x21,8x11,4mm): 1 piece for front steering. Metal gears servo strongly recommended!
- Speed controller (ESC) max size 40x30x25mm
- Ball Bearing 10x15x4 mm - 6700ZZ: 6 pcs.
- **All tires can be 3d printed from Flex filament.** If you cannot print from Flex, you can use specific LEGO® tires instead:
- Off- Road Wheels – wheels are compatible with worldwide available LEGO® tires 6 pcs. (Item No: 61480)
  - Wheels – **maximum outer diameter 72 mm, maximum width 32 mm**
- Road Wheels – wheels are compatible with worldwide available LEGO® tires 10 pcs. (Item No: 32019)
  - Wheels – **maximum outer diameter 70 mm, maximum width 20 mm**
- Shock Absorbers - **3d printed from Flex filament**, or LEGO® tire 14x4mm (Item No: 3139): 1 pcs
- AA battery with battery mount - max for 8pcs. or 7.2V - 11.1 battery with dimensions max 115x57x32mm
- Electric connectors: 4 pairs (battery connectors, motor <-> ESC connectors)
- Twin cable & soldering equipment; Soldering not necessary if you buy motors with pre-installed cables and “Faston” connectors.
- 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



## Roady – version 1.0.0: Required hardware

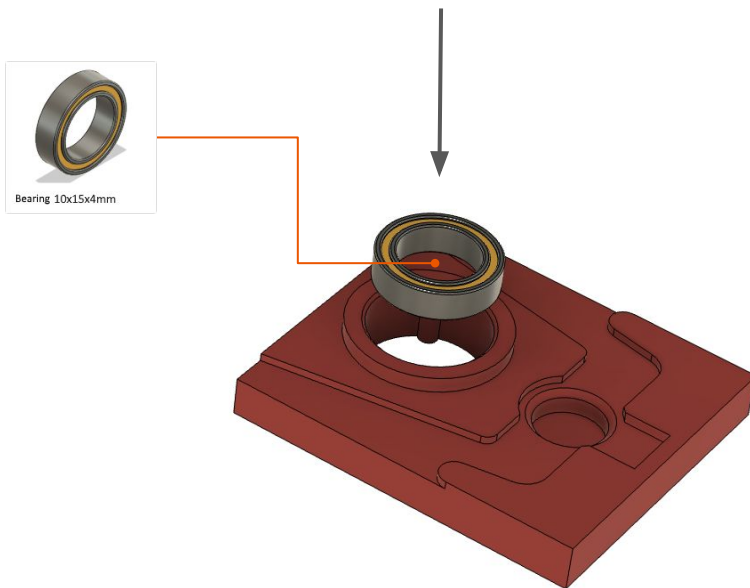
Screws and nuts (in metric size):

- M3x6: 122 pcs.
- M3x8: 36 pcs.
- M3x10: 29 pcs.
- M3x12: 23 pcs
- M3x16: 30 pcs.
- M3x20: 12 pcs.
- M3 nuts: 6 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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# Roady – Chassis

In this procedure you will assemble the chassis of the truck.

Required print plates:

- "Print 2 - Chassis 1"
- "Print 3 - Chassis 2"
- "Print 4 - Chassis 3"
- "Print 5 - Details + Rear Floor"
- "Print 6 - Chassis 4"
- "Print 7 - Fuel Tank"

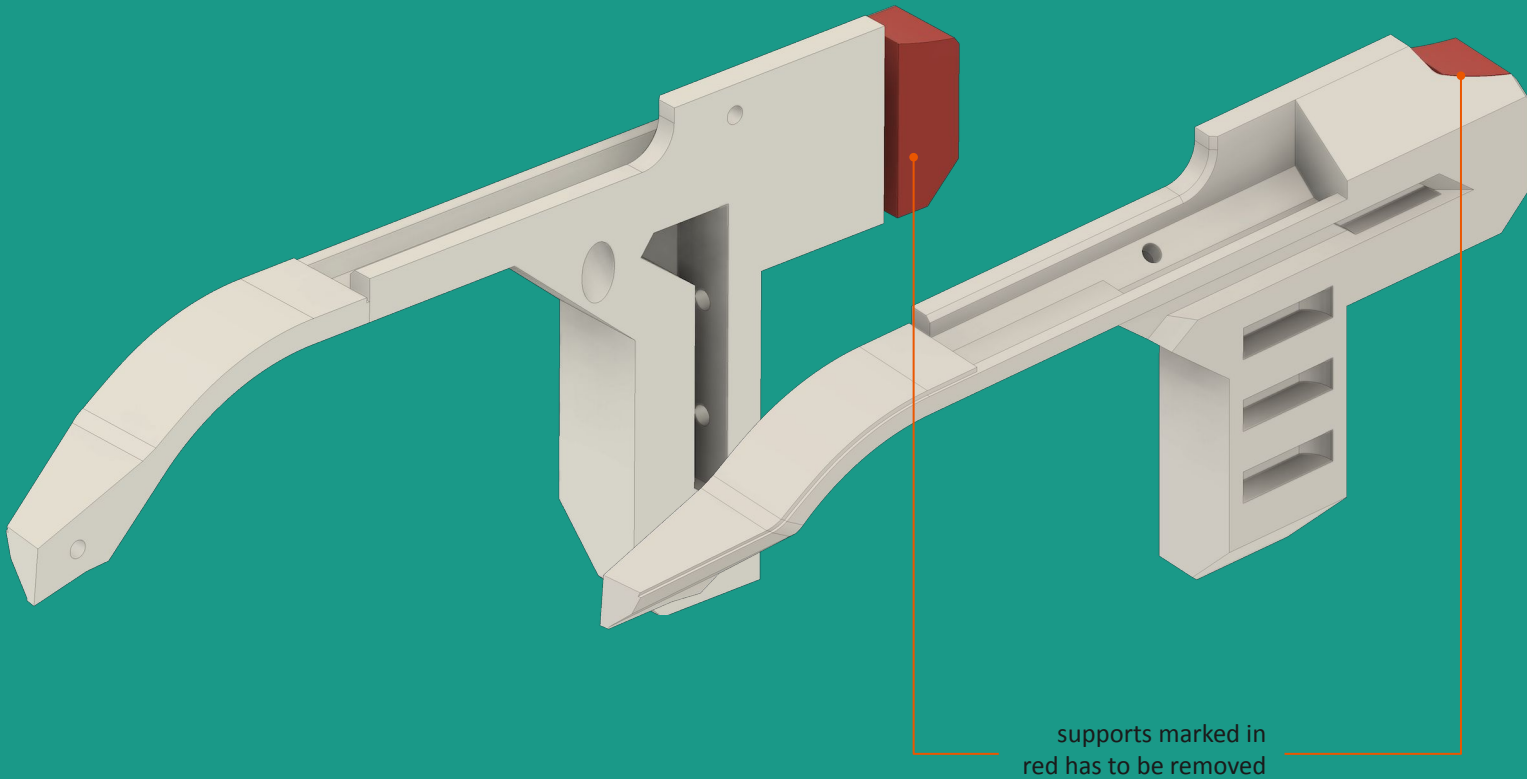
Non-printed parts:

- Screw M3x6: 22 pcs.
- Screw M3x8: 4 pcs.
- Screw M3x10: 6 pcs.
- Screw M3x16: 12 pcs.
- Screw M3x20: 2 pcs.

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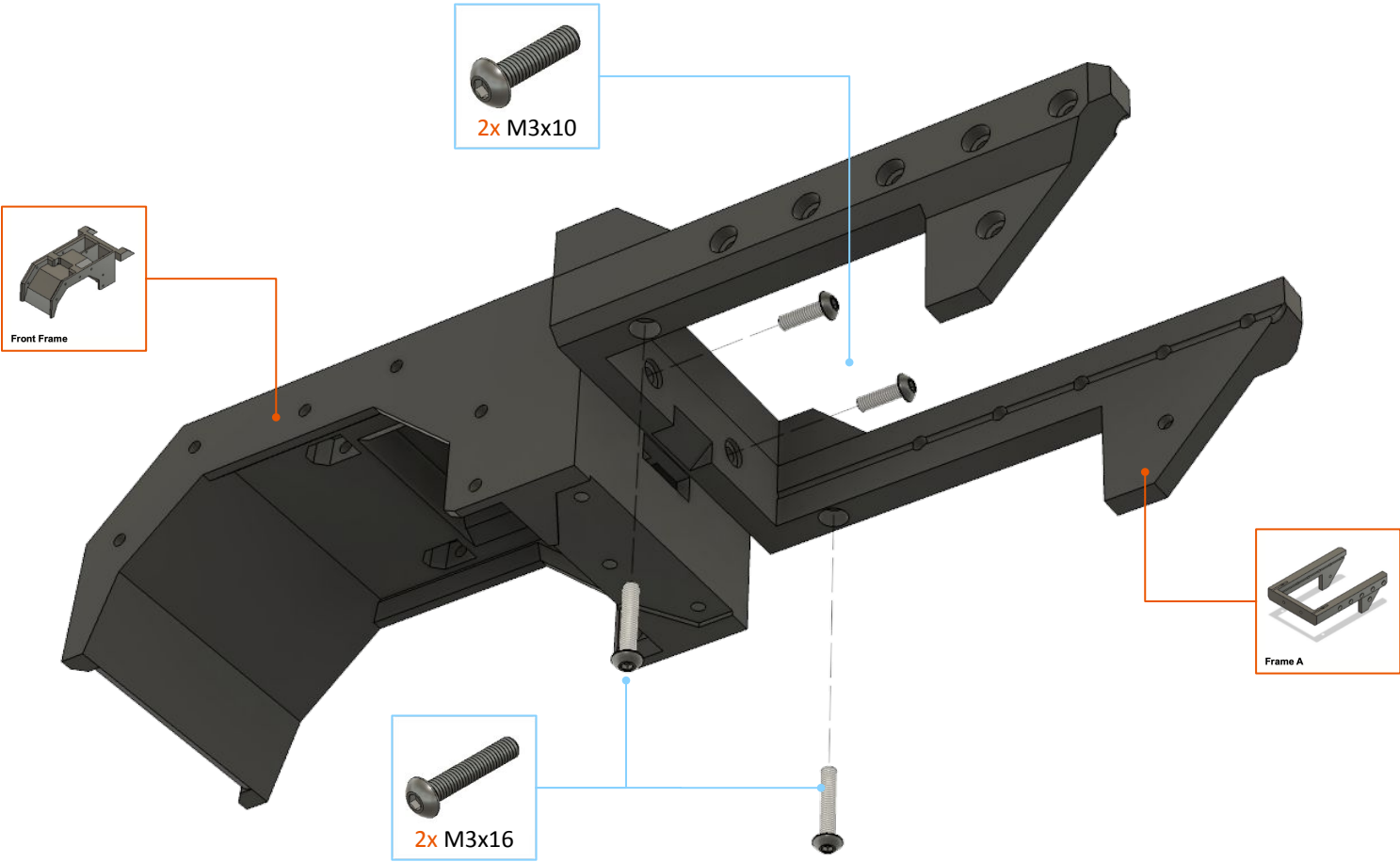
# Postprocessing – removing supports

Before you start building, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!



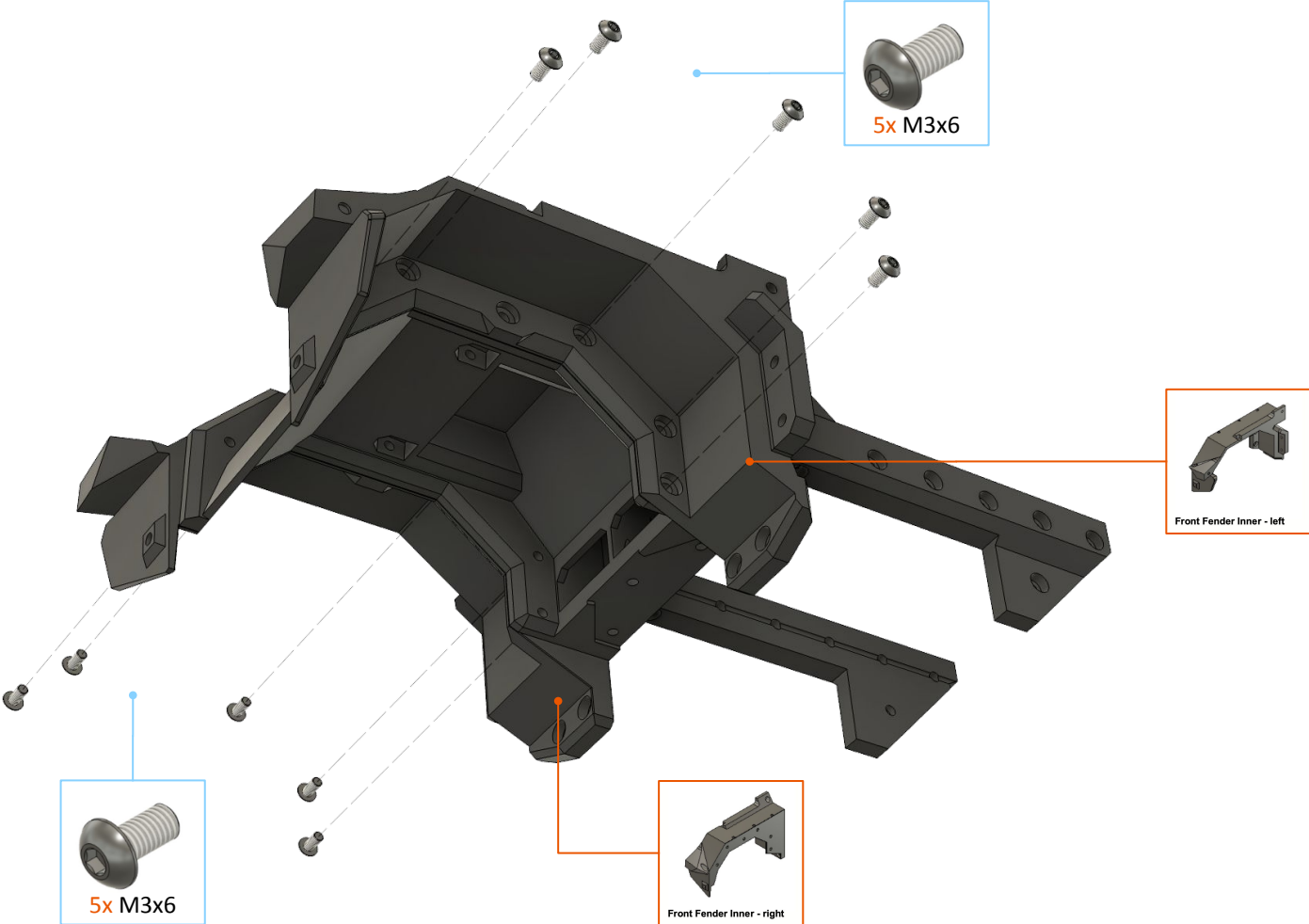


# Chassis – step 1/9



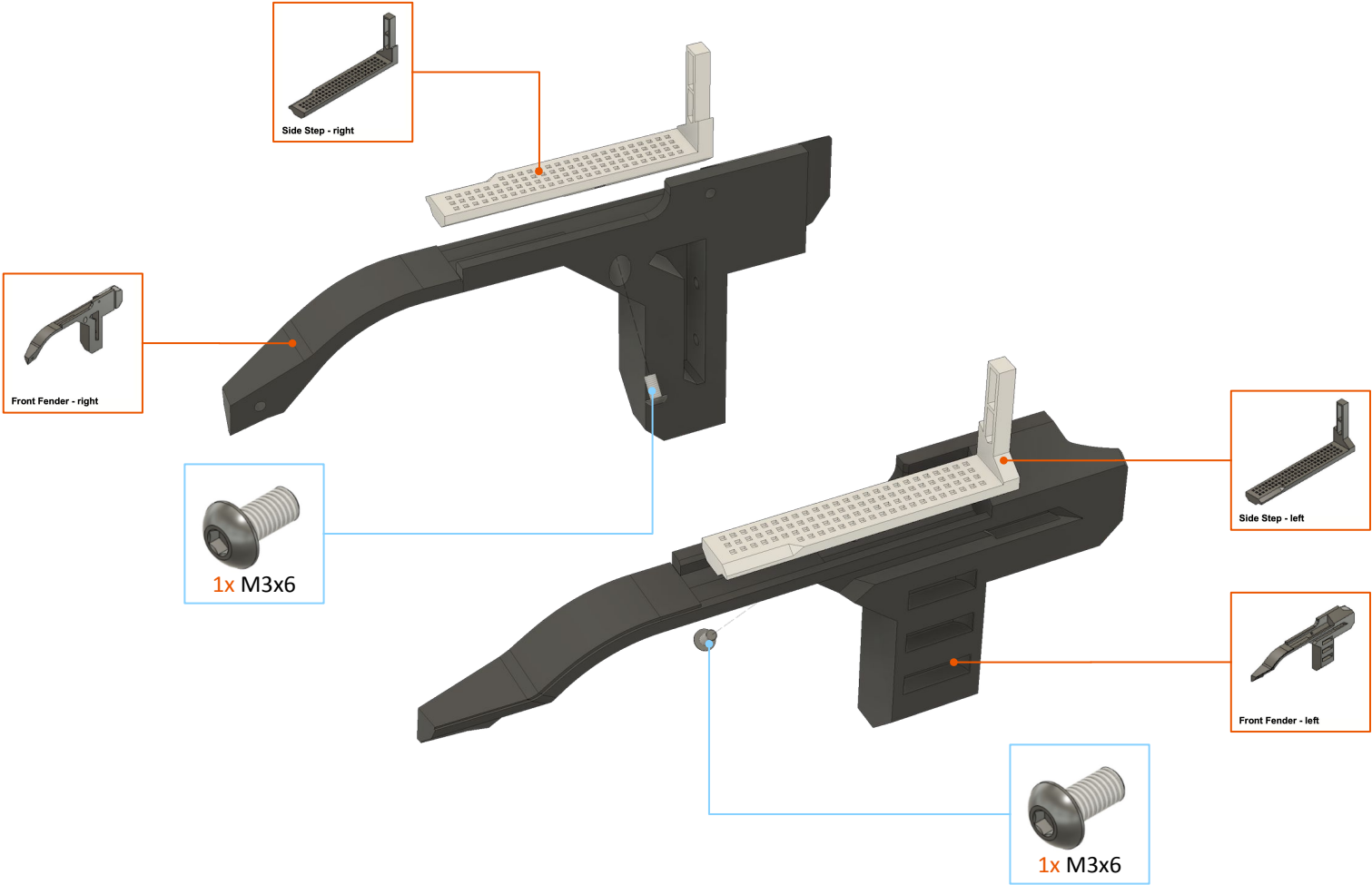


# Chassis – step 2/9

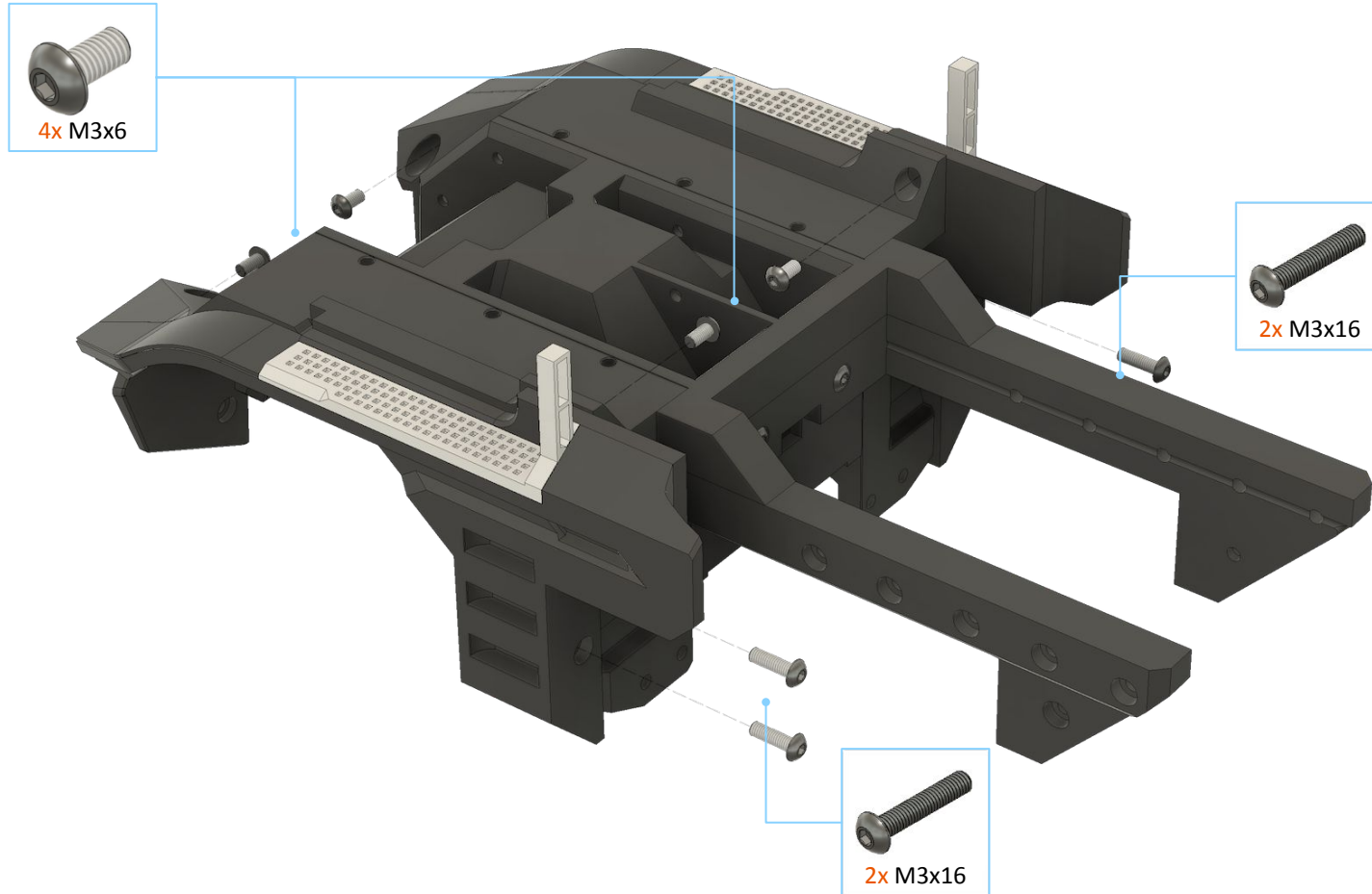




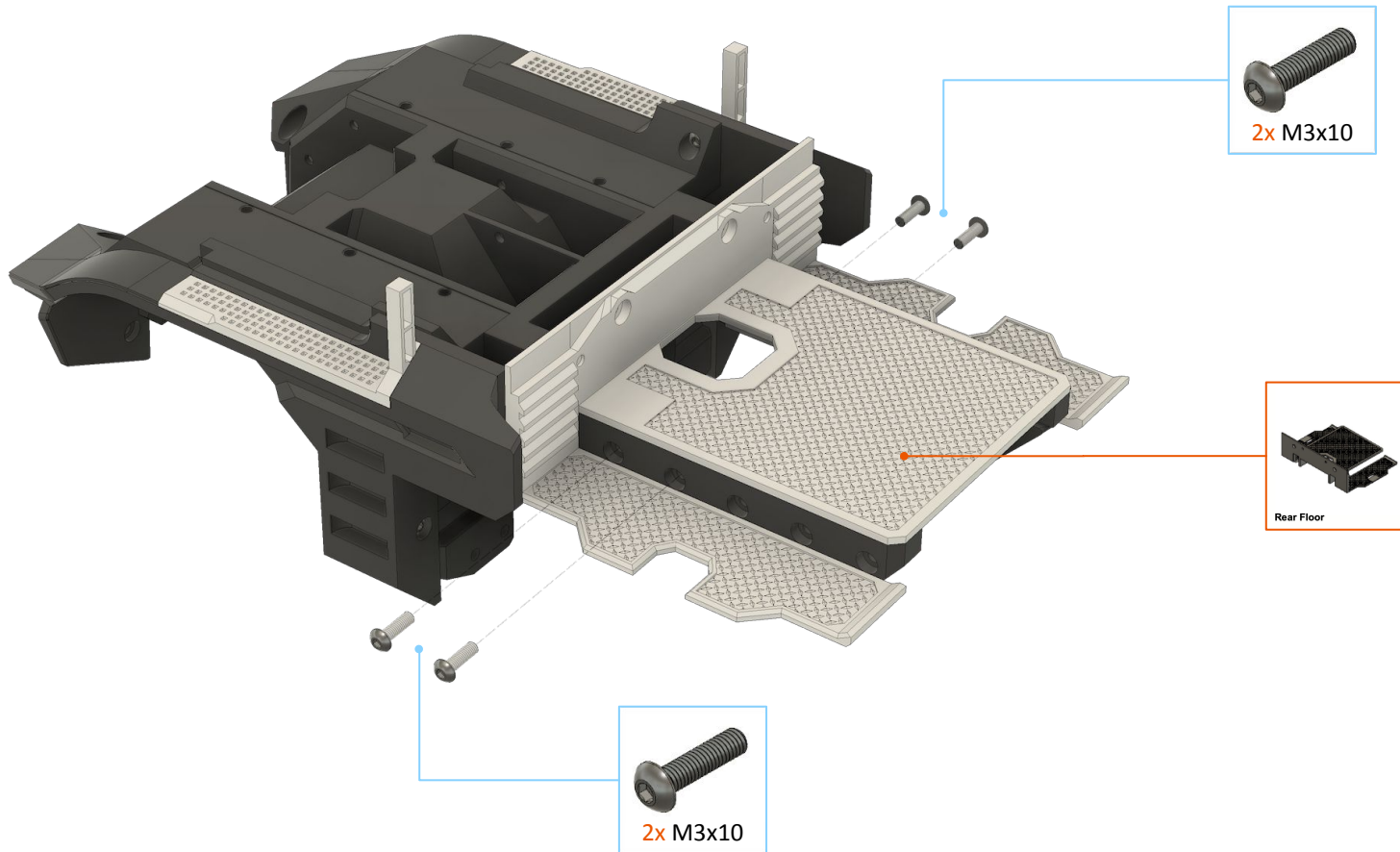
# Chassis – step 3/9



# Chassis – step 4/9

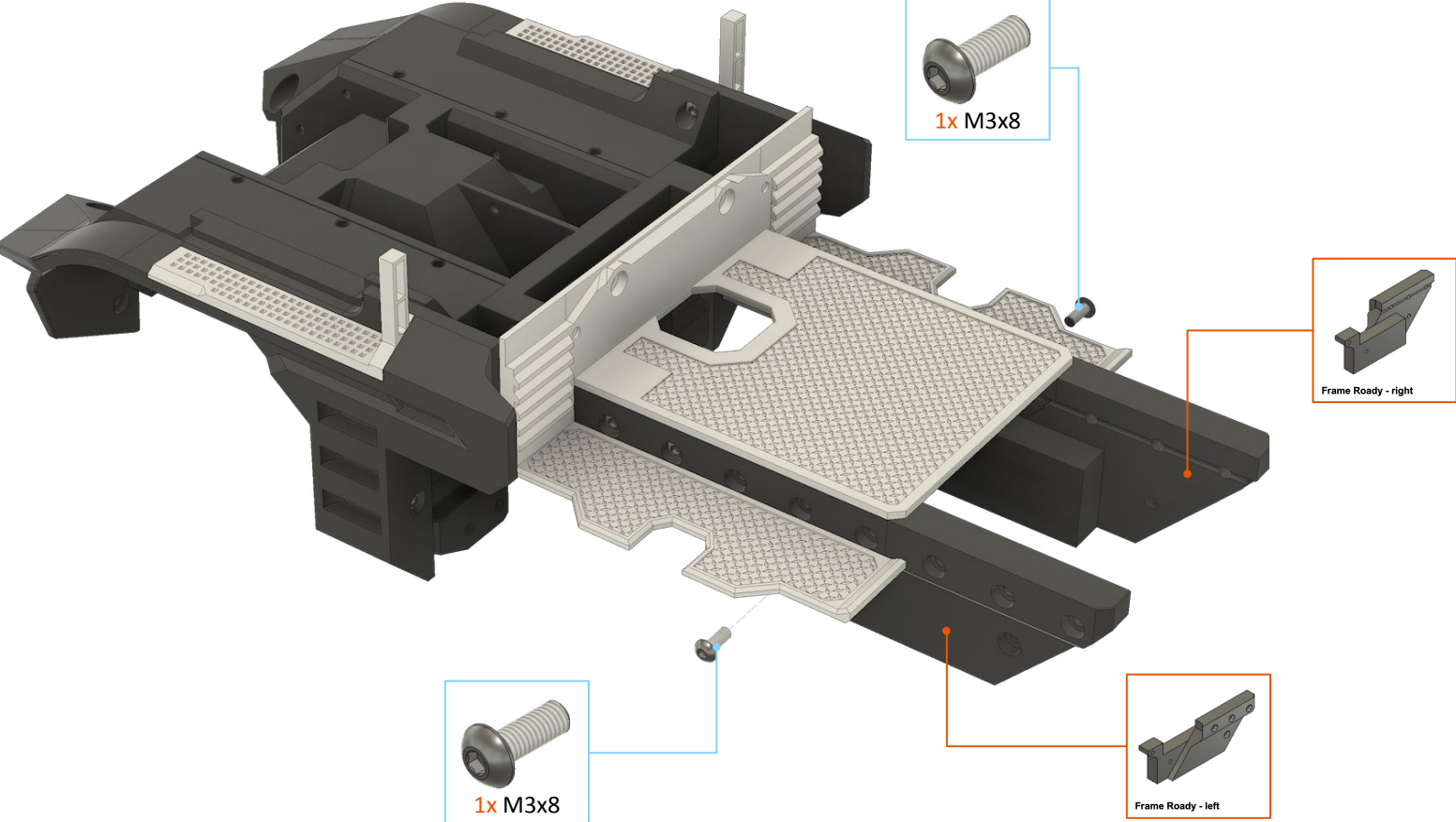


# Chassis – step 5/9



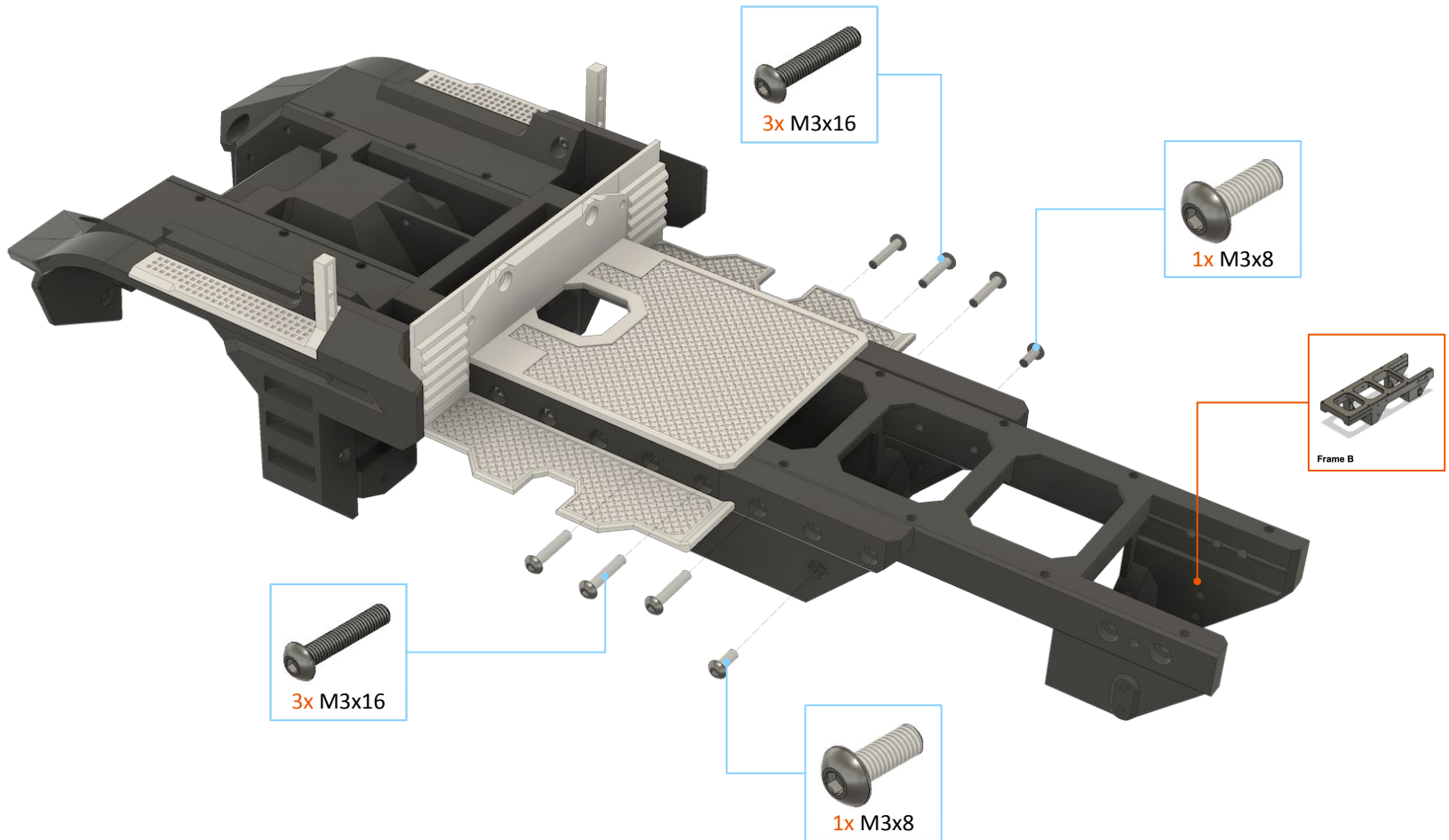


# Chassis – step 6/9

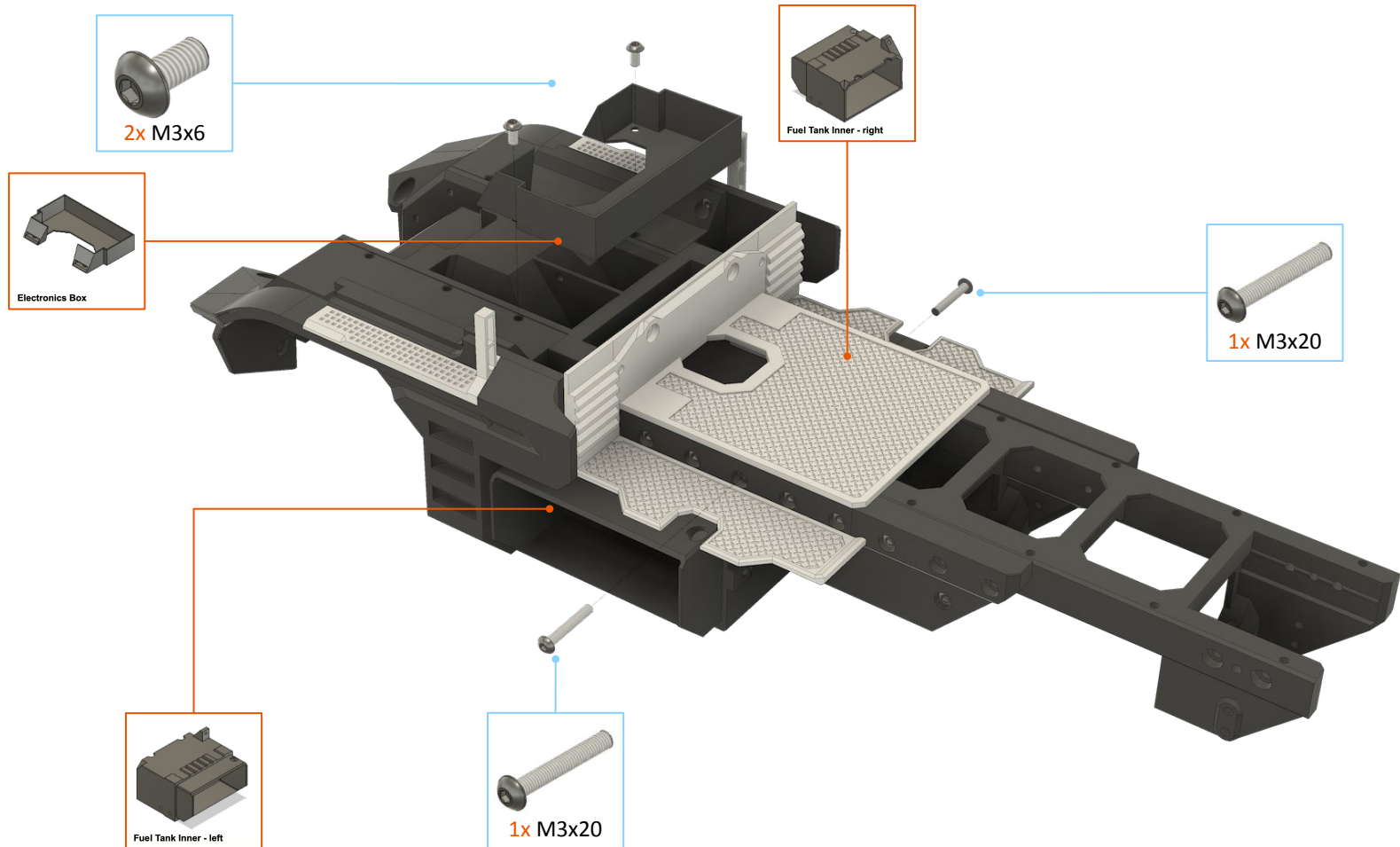




# Chassis – step 7/9

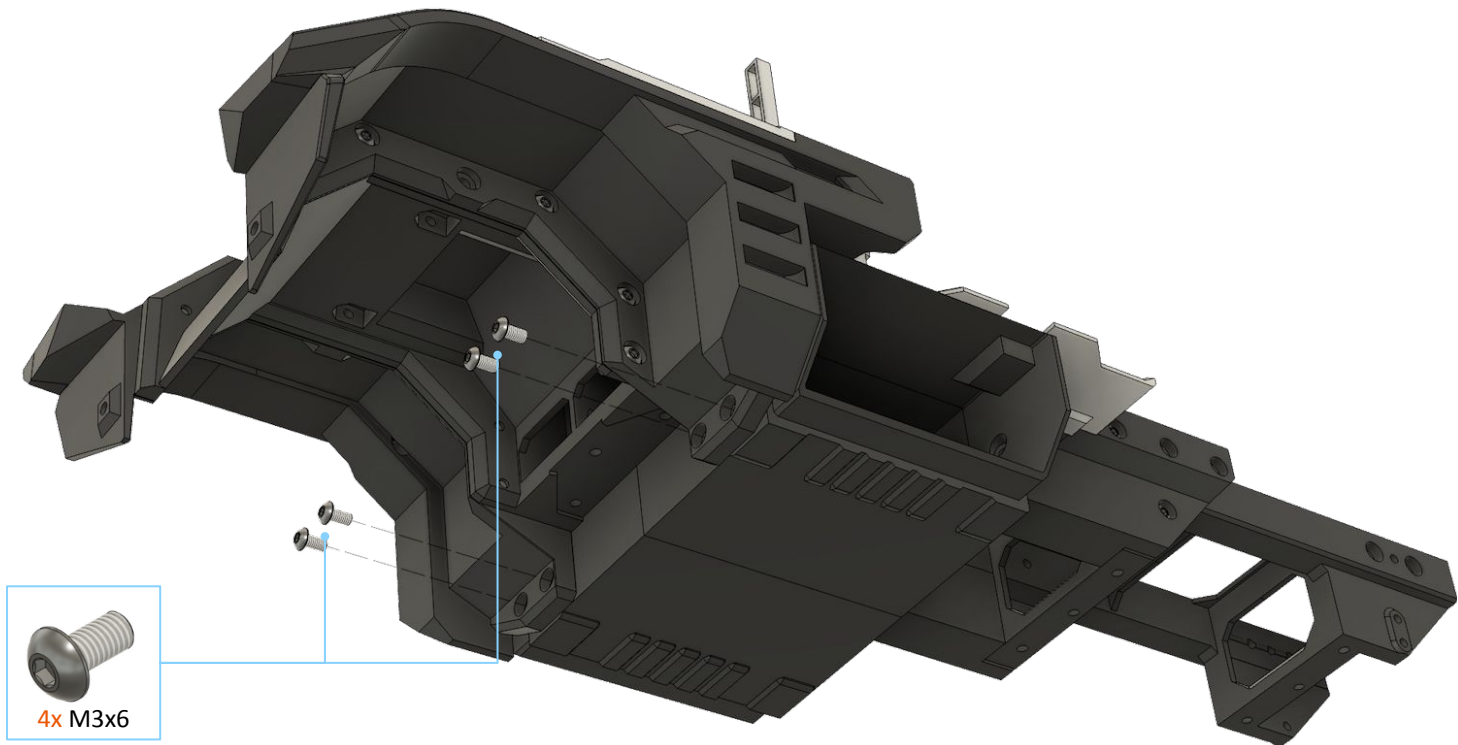


# Chassis – step 8/9





# Chassis – step 9/9



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# Roady – Front Bumper

In this procedure you will assemble the front bumper of the truck.

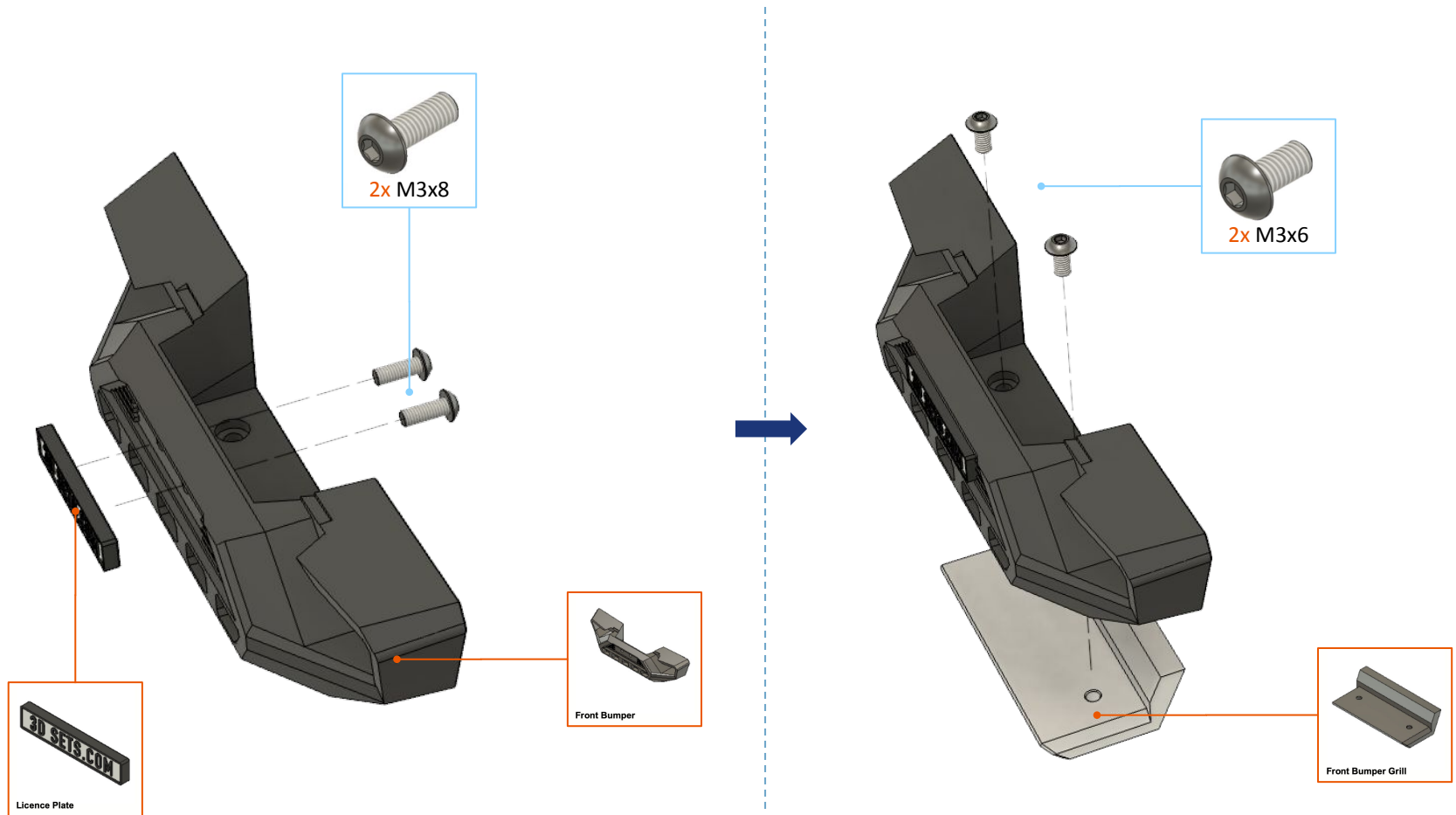
Required print plates:

- "Print 1 - Licence Plate"
- "Print 3 - Chassis 2"
- "Print 4 - Chassis 3"
- "Print 5 - Details + Rear Floor"
- "Print 8 - AdBlue Tank + Air Tank"

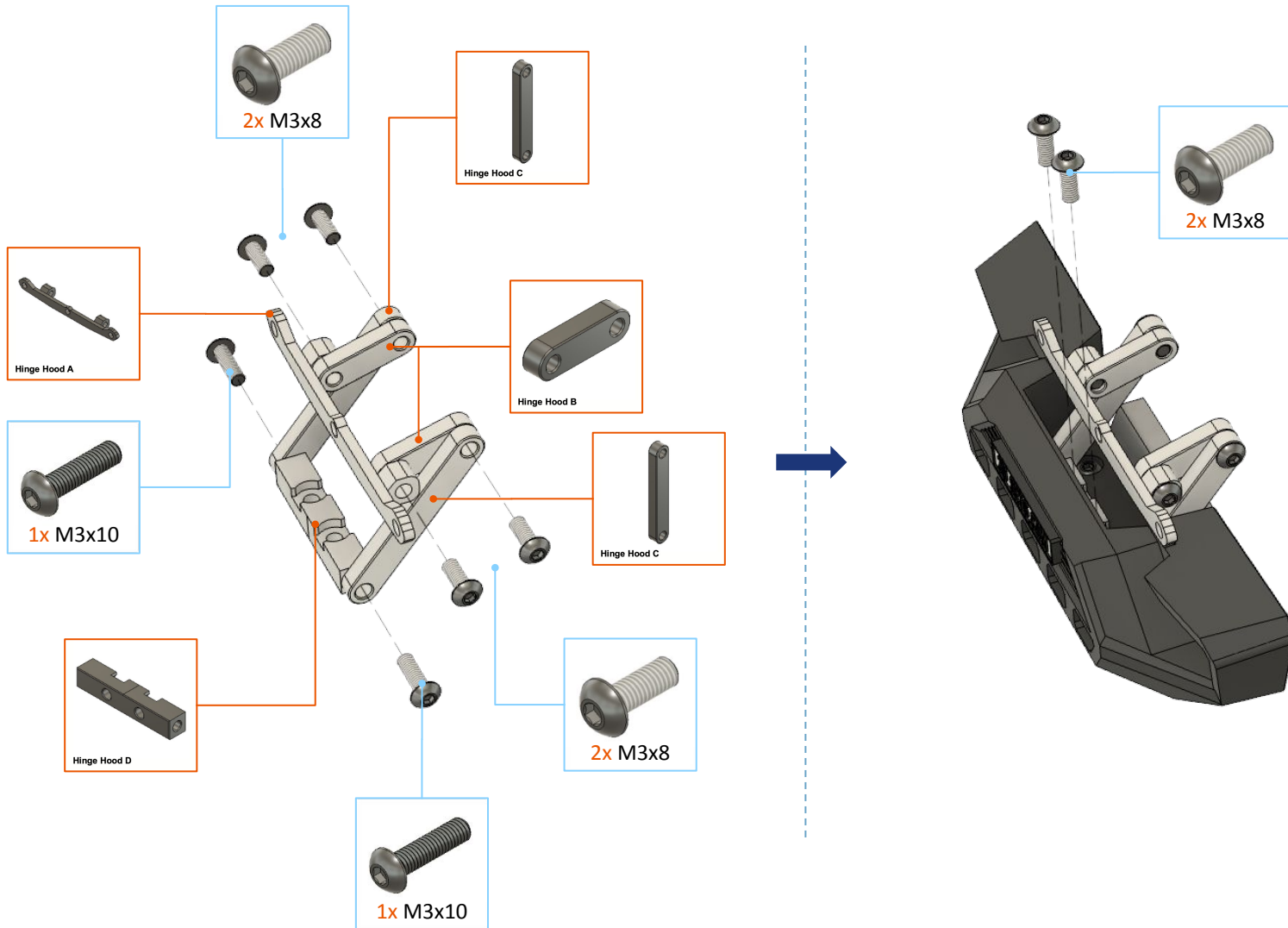
Non-printed parts:

- Screw M3x6: 2 pcs.
- Screw M3x8: 10 pcs.
- Screw M3x10: 2 pcs.
- Screw M3x12: 2 pcs.

# Front Bumper – step 1-2/6

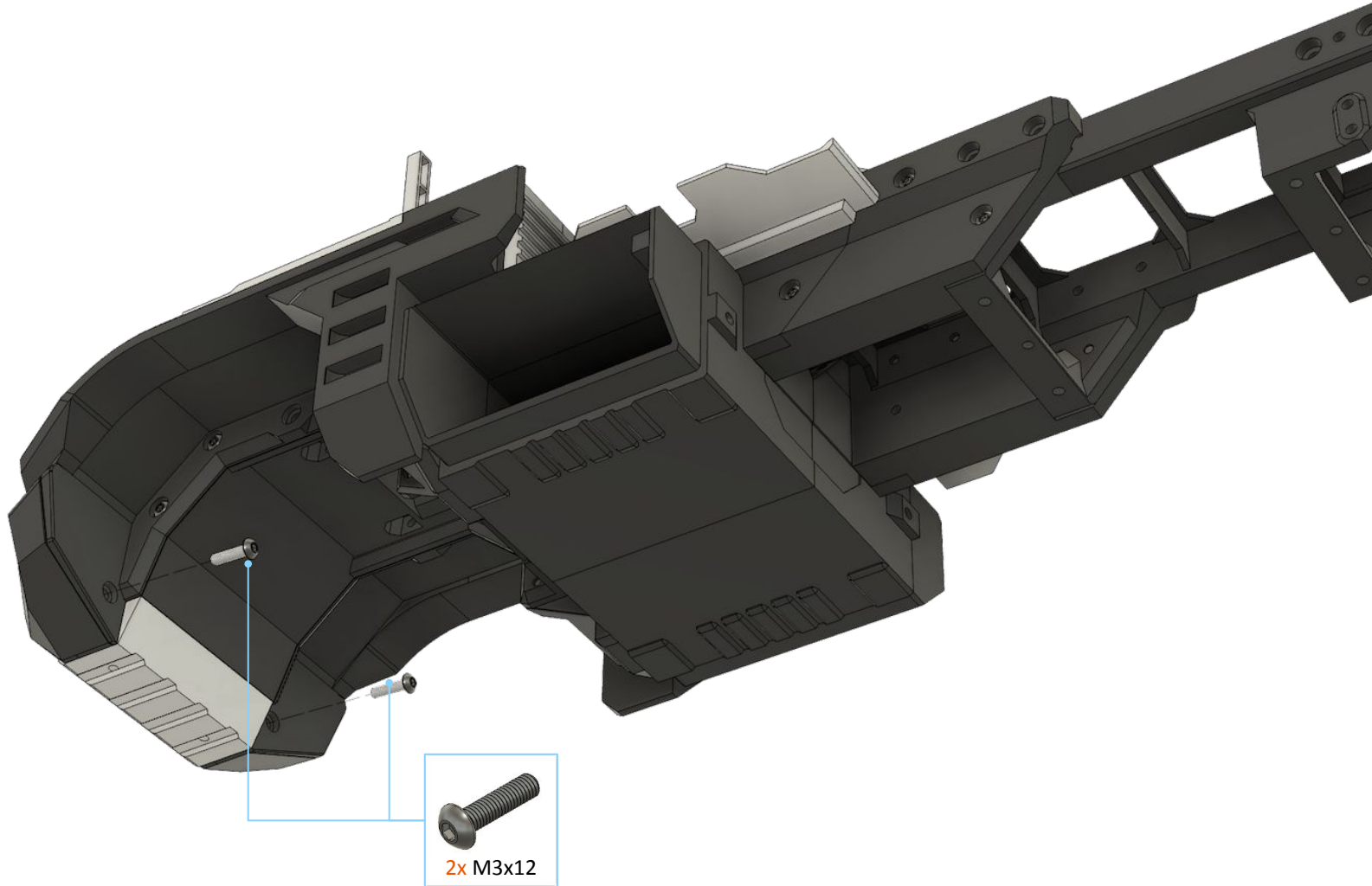


# Front Bumper – step 3-4/6

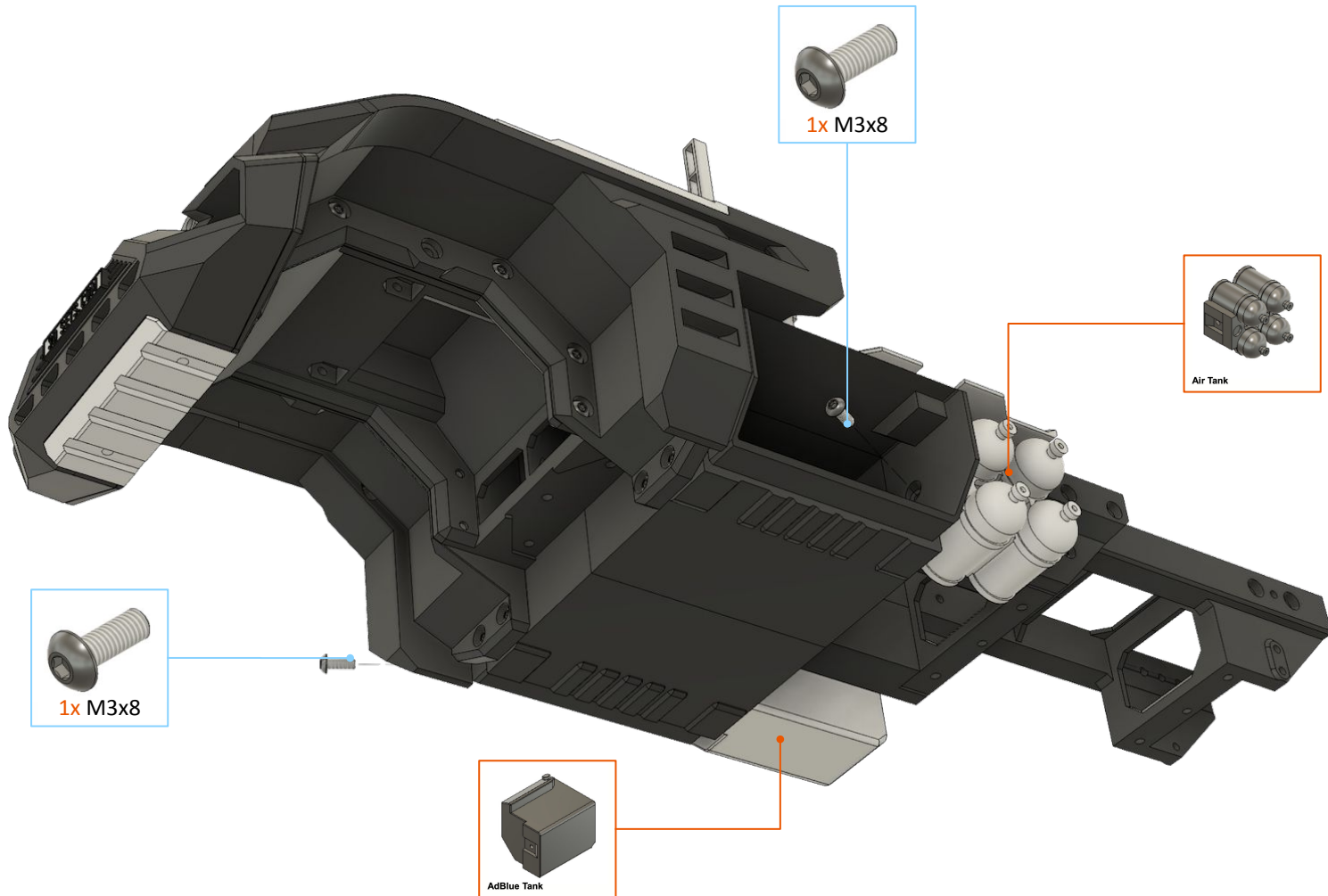




# Front Bumper – step 5/6



# Front Bumper – step 6/6





# Arms + Ball joints

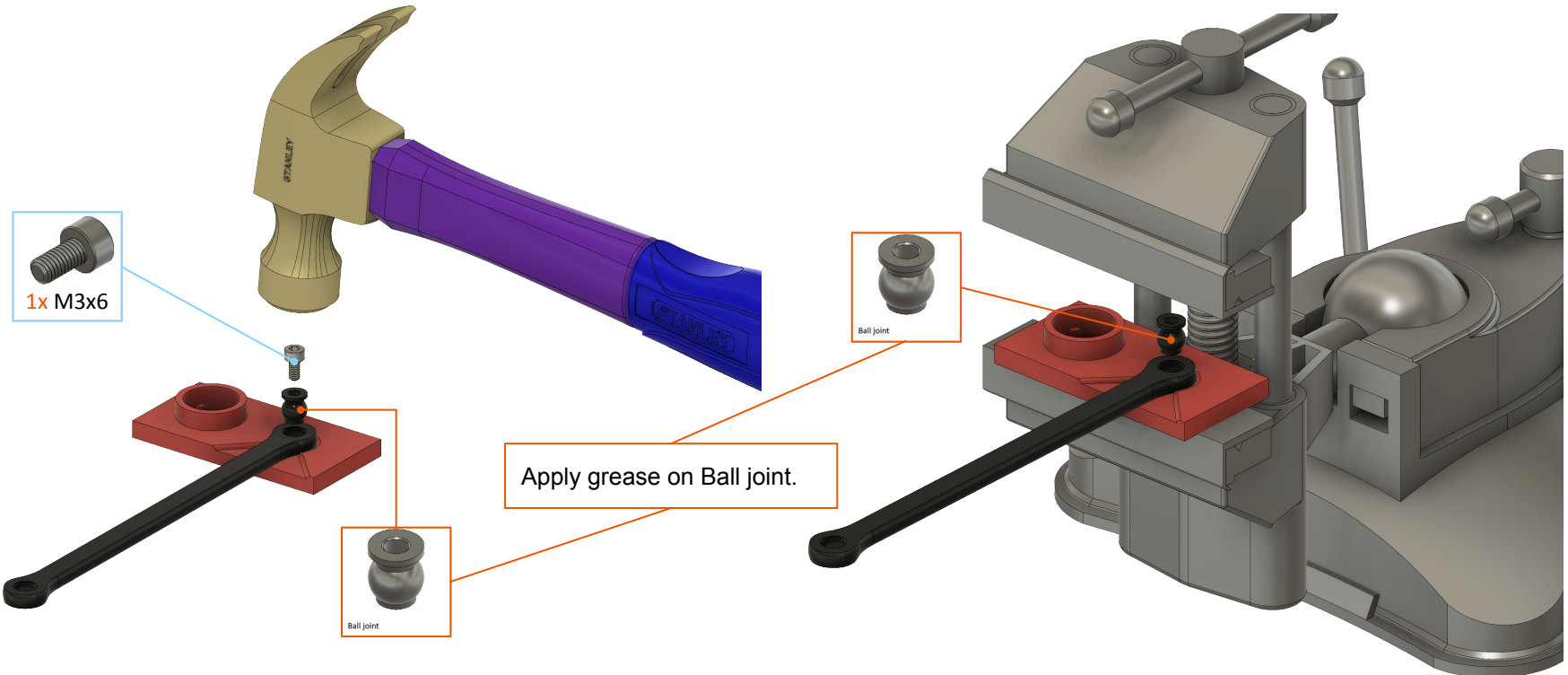
## Option A: use a hammer

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.

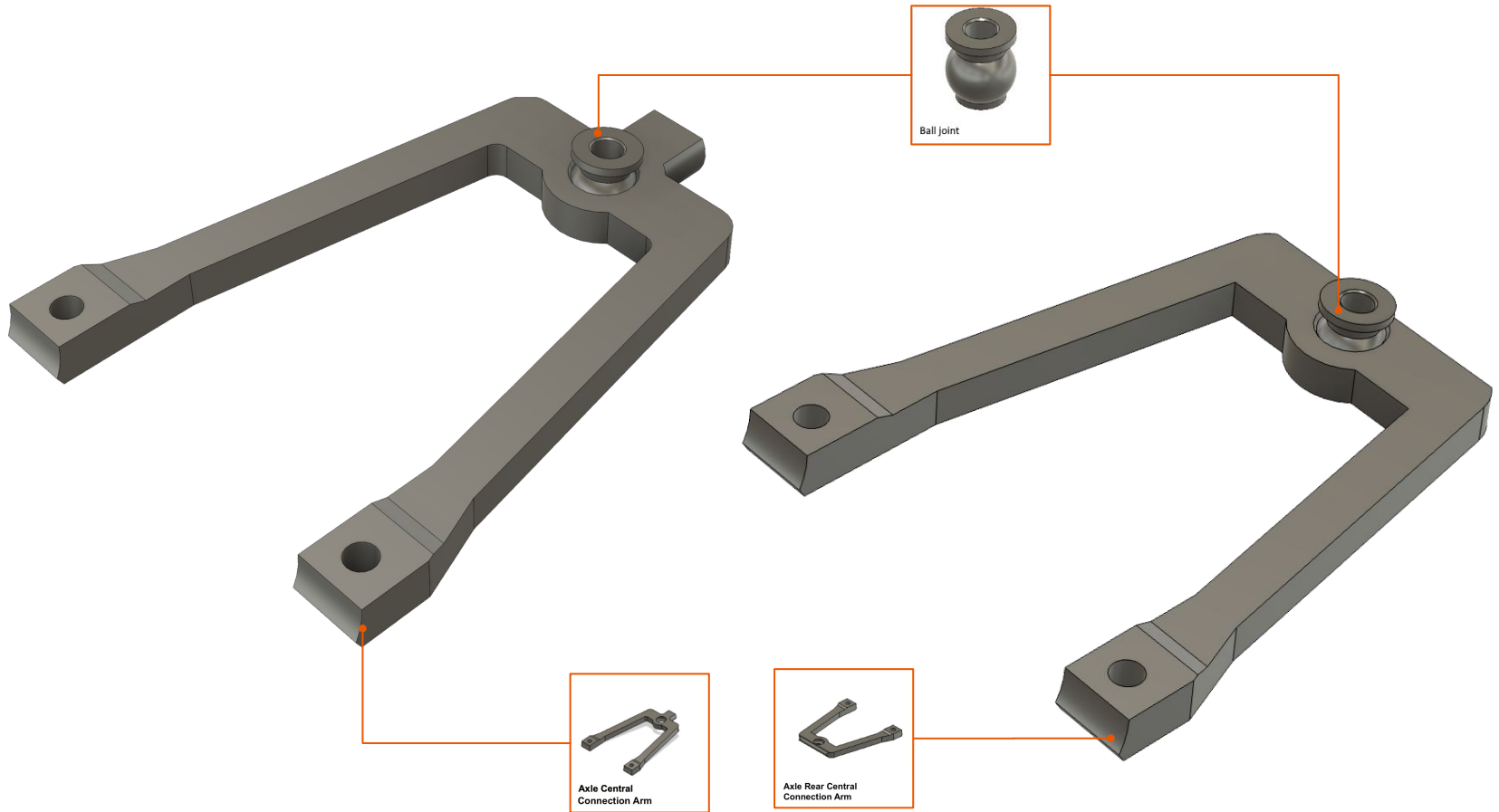


[See this step on YouTube video](#)



# Arms + ball joints

On the pictures below are rendered final Rear Arms assemblies. Please note that some Rear Arms requires opposite Ball joint orientation!



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# Roady – Front Axle

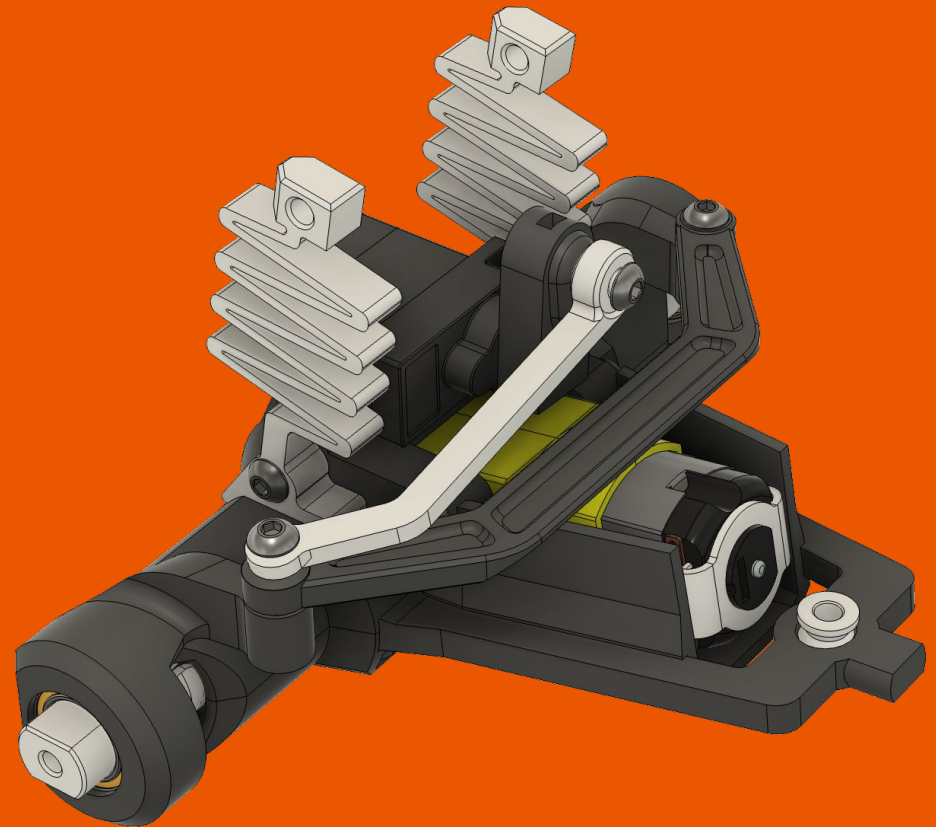
In this procedure you will assemble the front axle of the truck.

Required print plates:

- "Print 9 - Axle Front"

Non-printed parts:

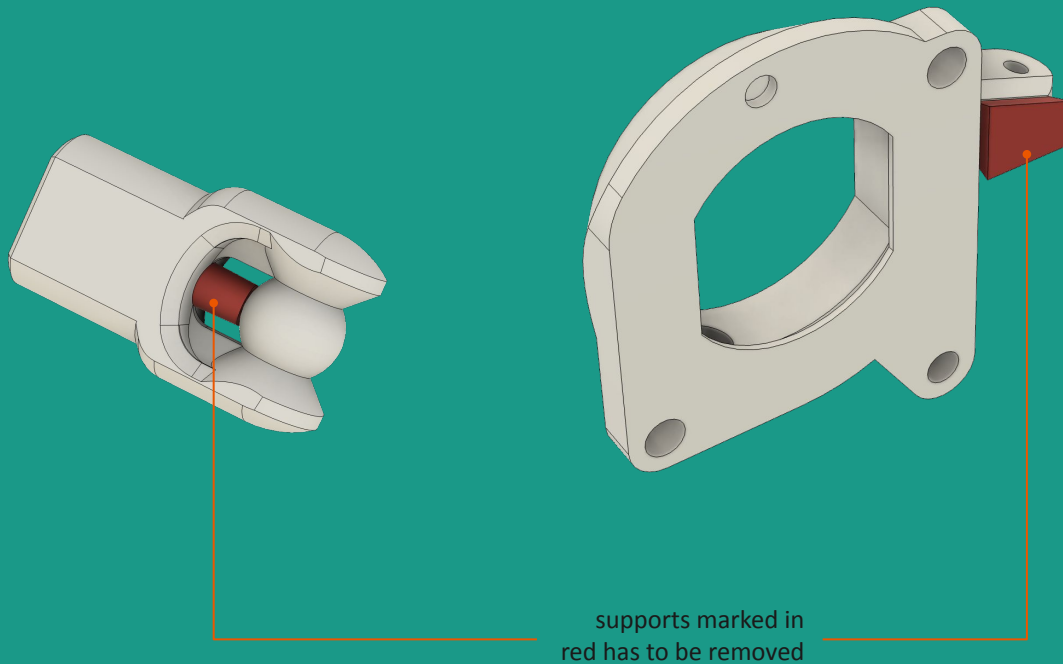
- Screw M3x6: 2 pcs.
- Screw M3x10: 3 pcs.
- Screw M3x12: 5 pcs.
- Screw M3x16: 3 pcs.
- Nut M3: 2 pcs.



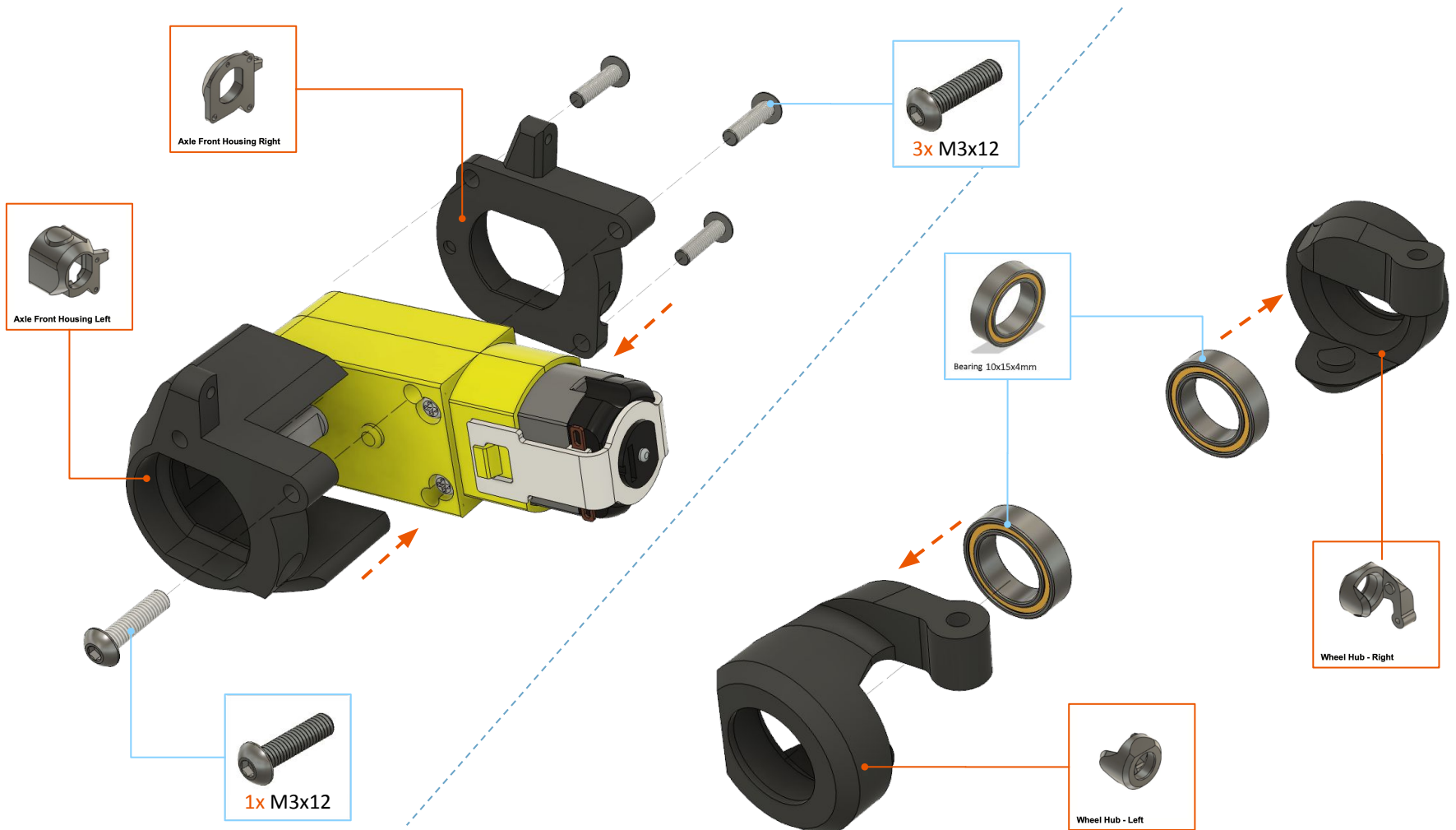
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# Postprocessing – removing supports

Before you start building, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!

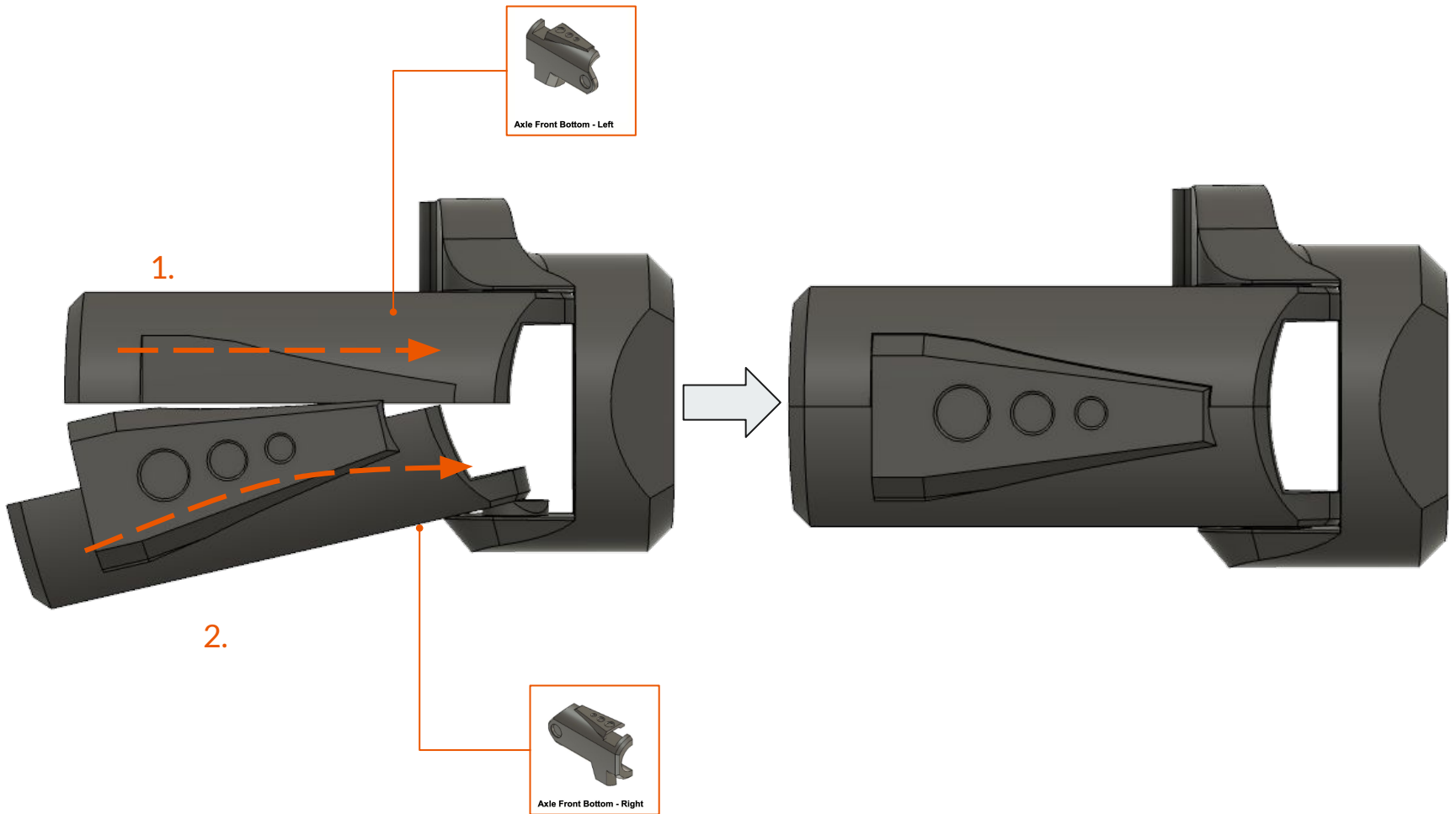


# Front Axle – step 1-2/13



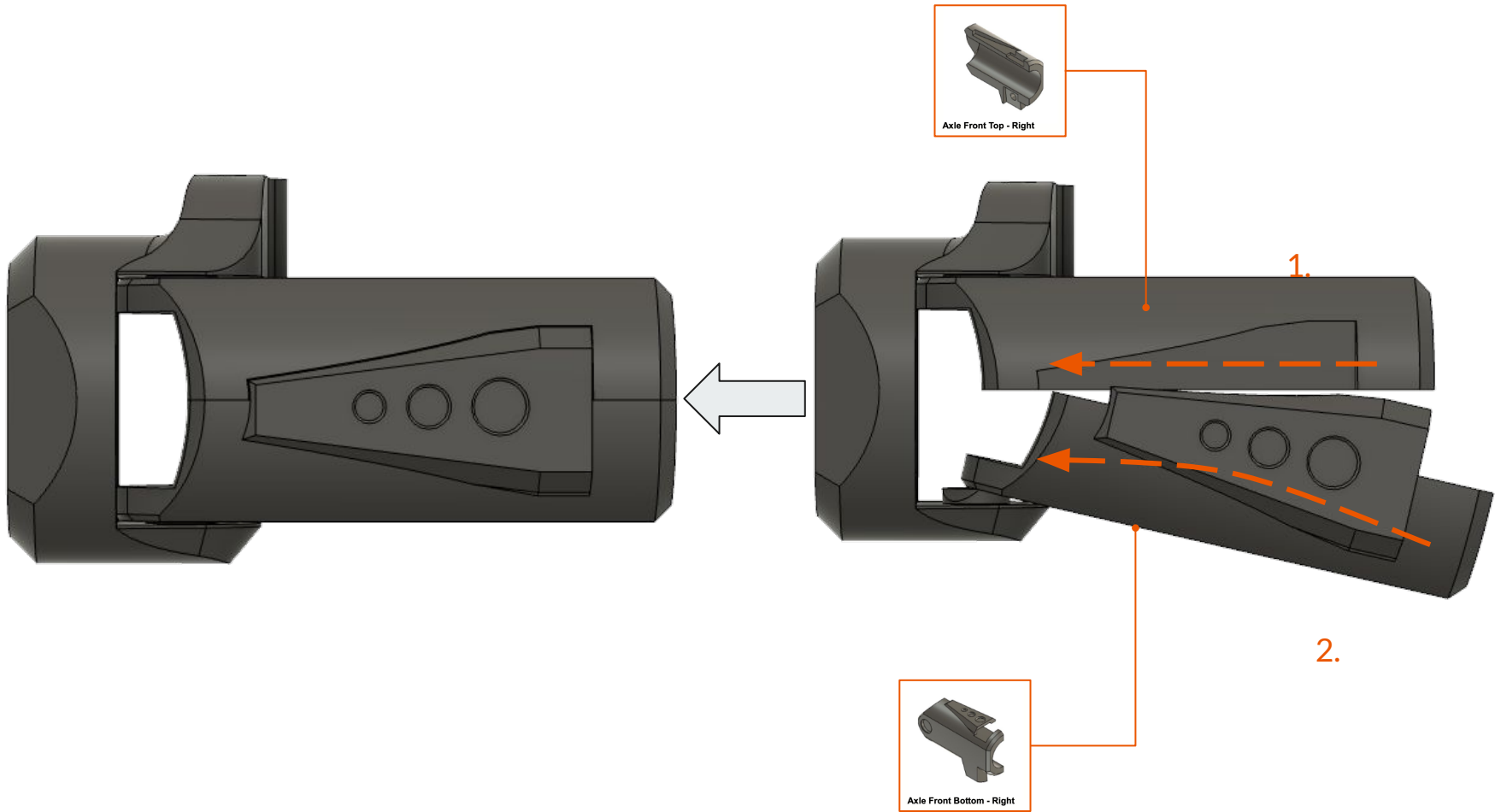


# Front Axle – step 3/13

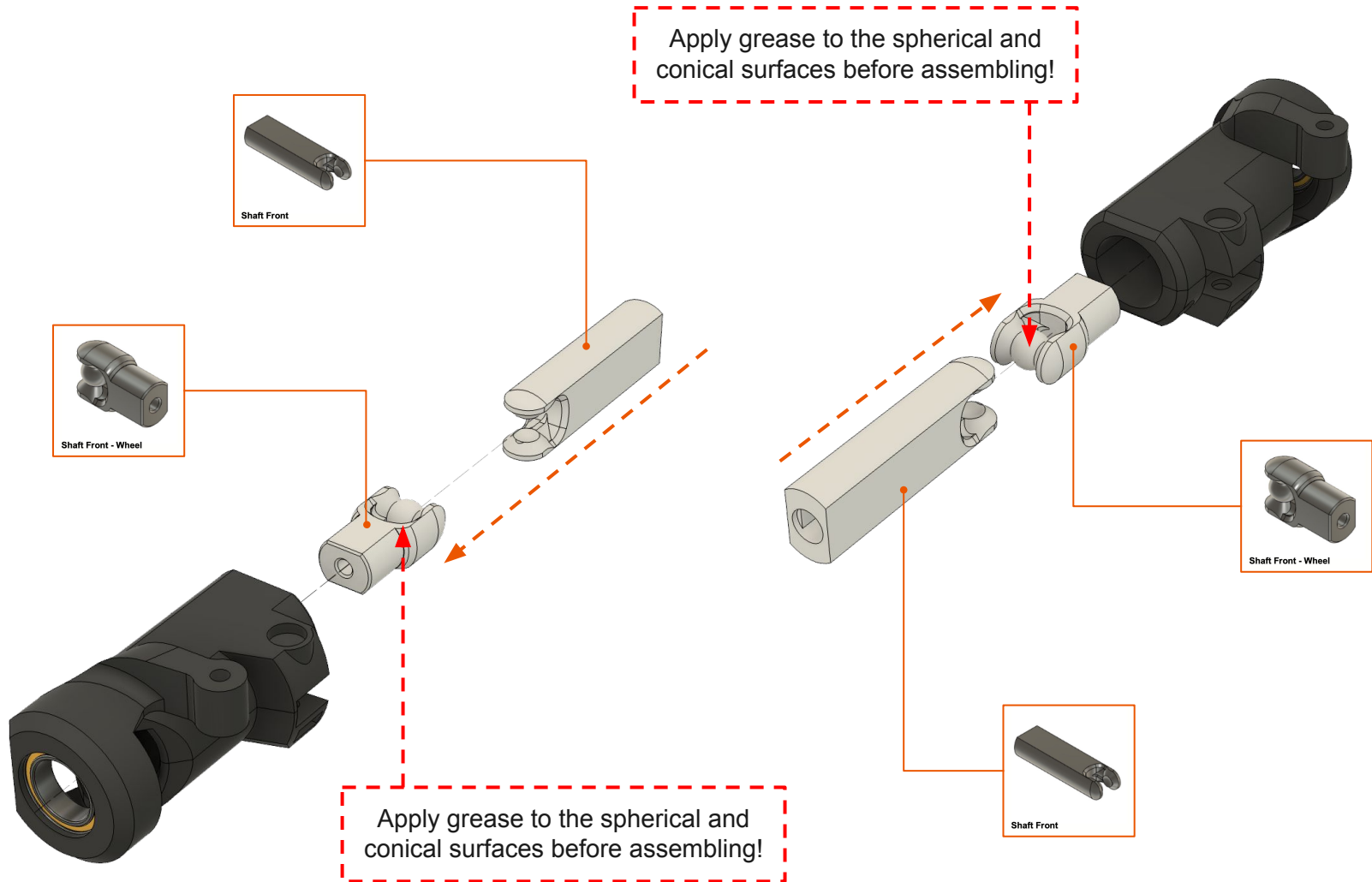




# Front Axle – step 4/13



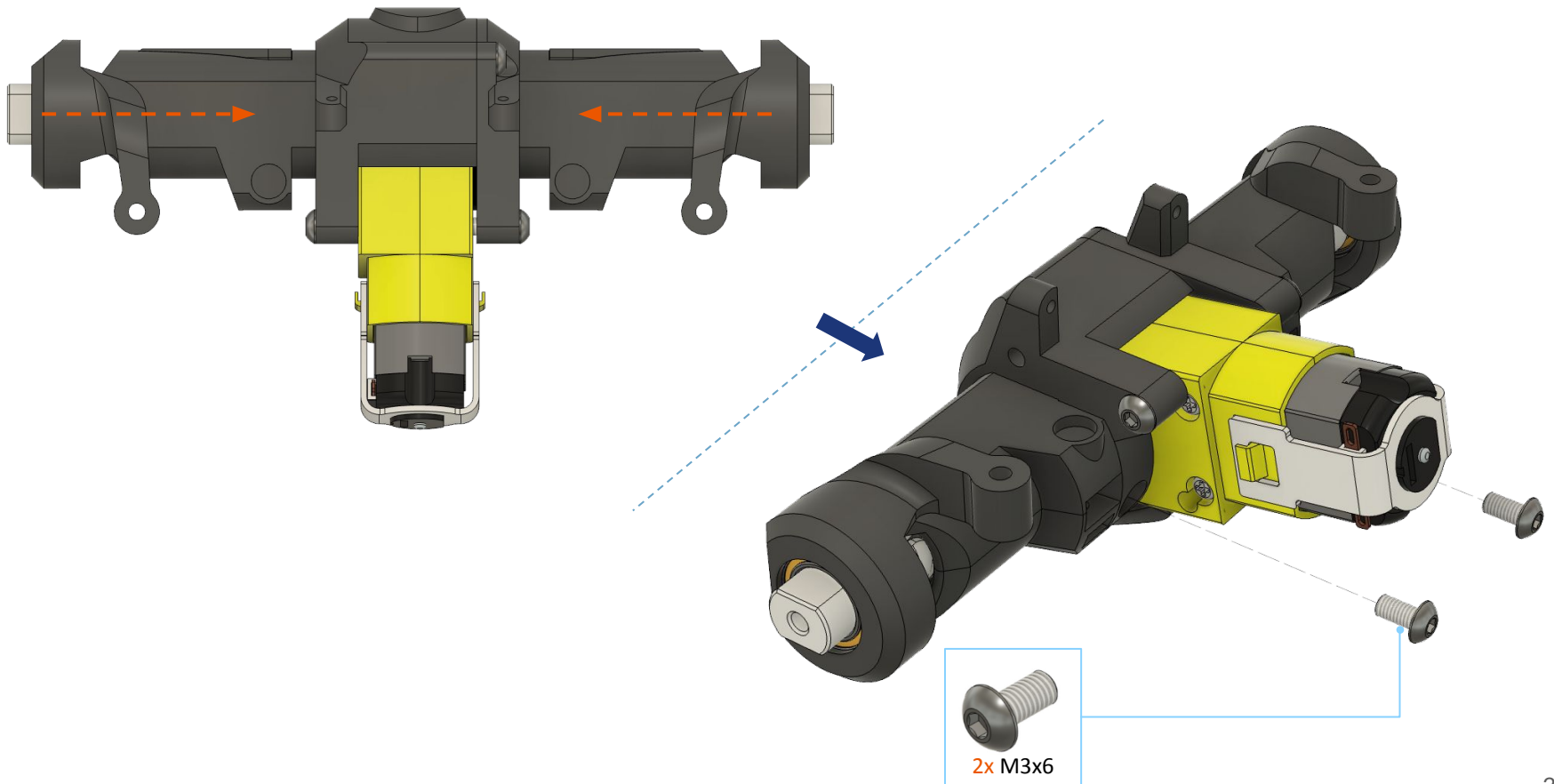
# Front Axle – step 5/13



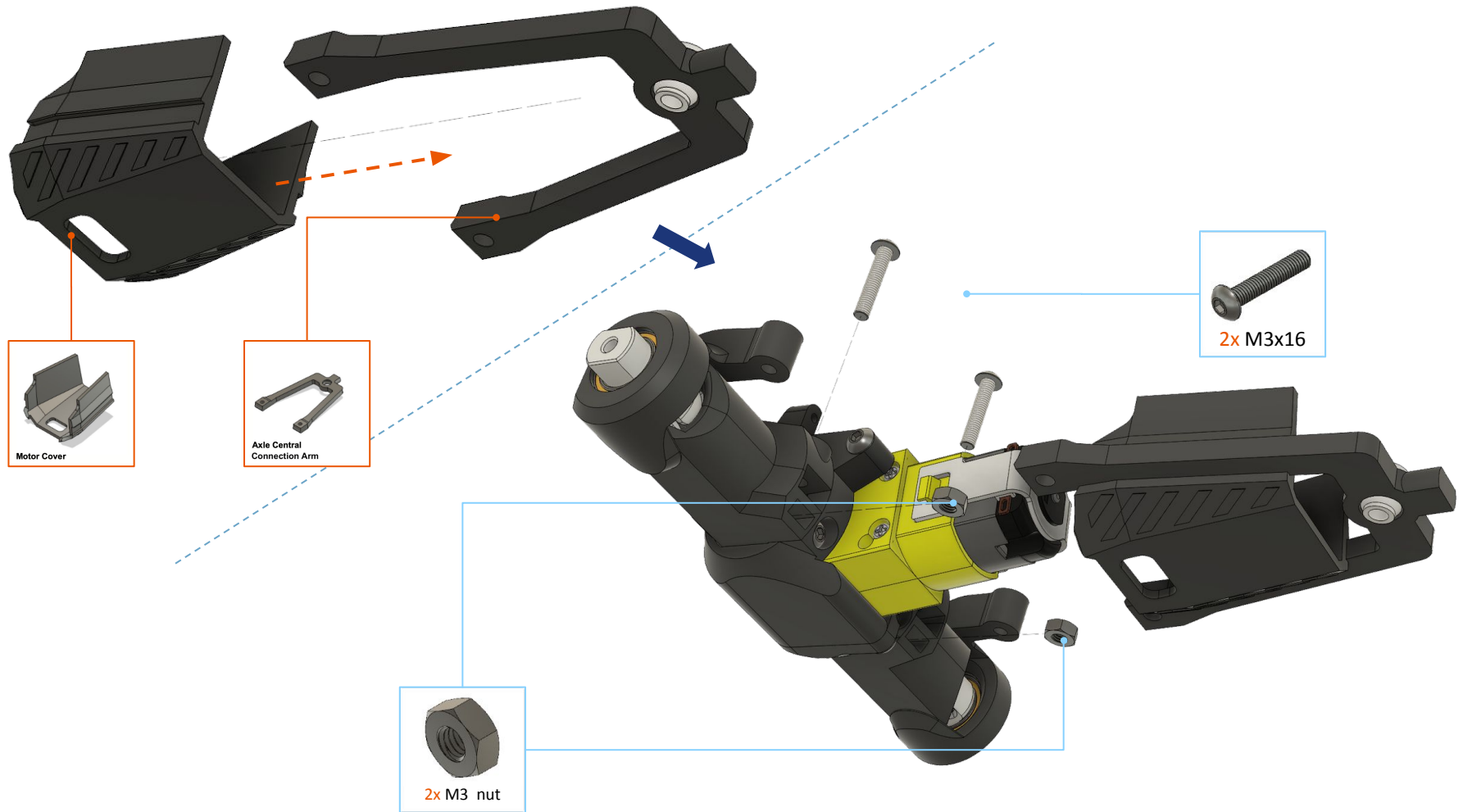




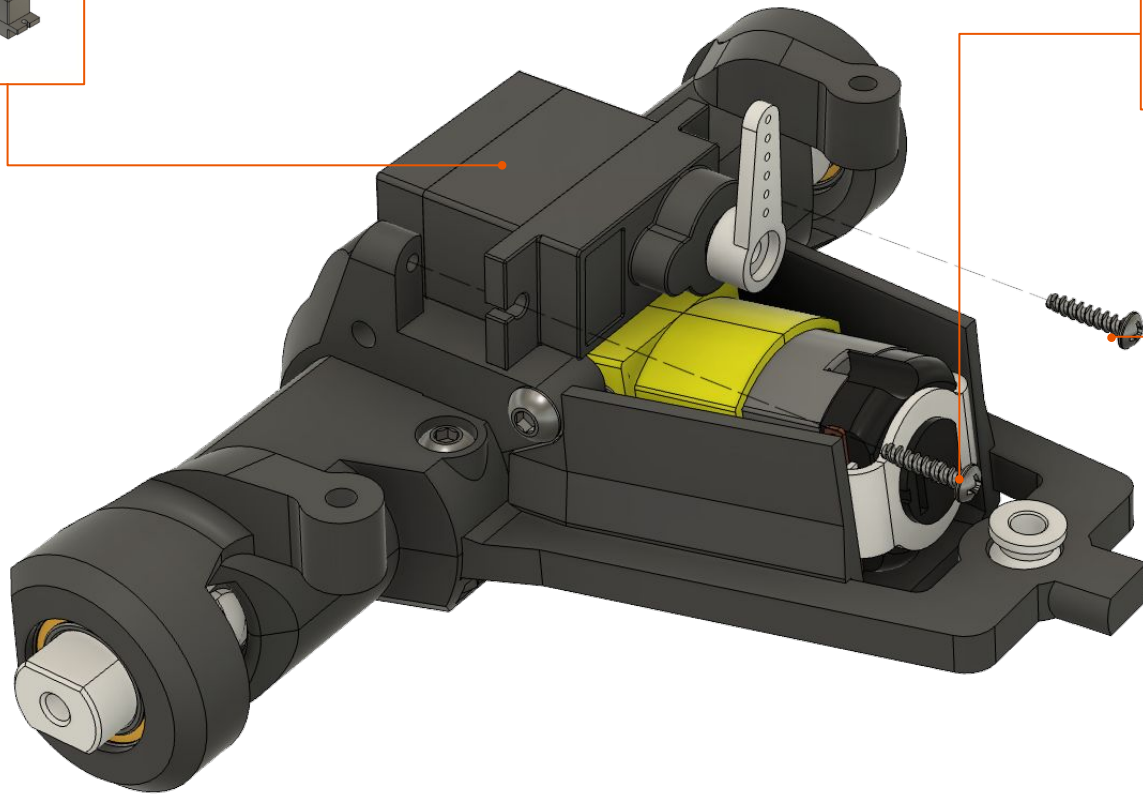
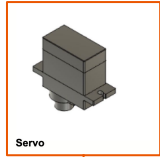
# Front Axle – step 6-7/13



# Front Axle – step 8-9/13

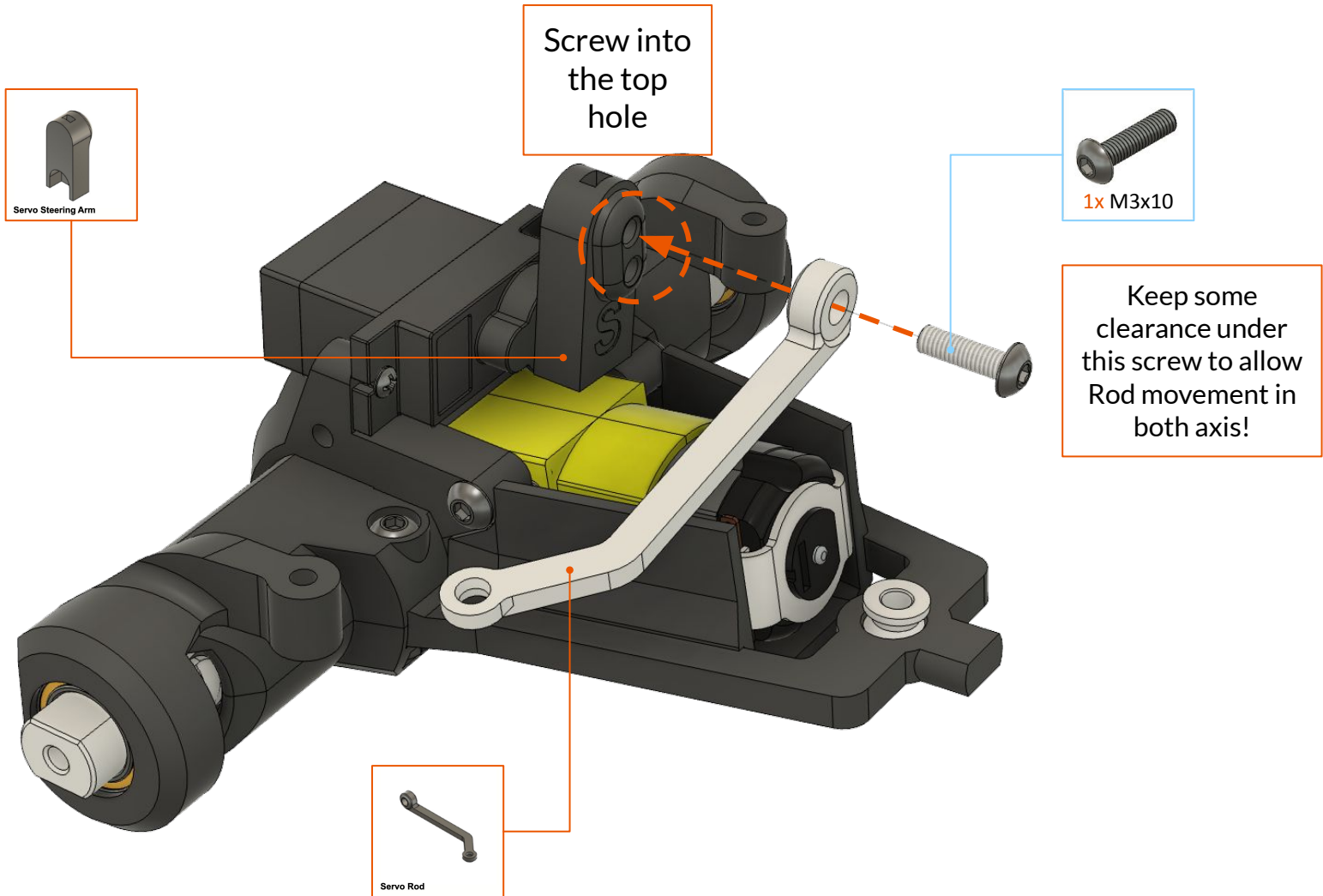


# Front Axle – 10/13

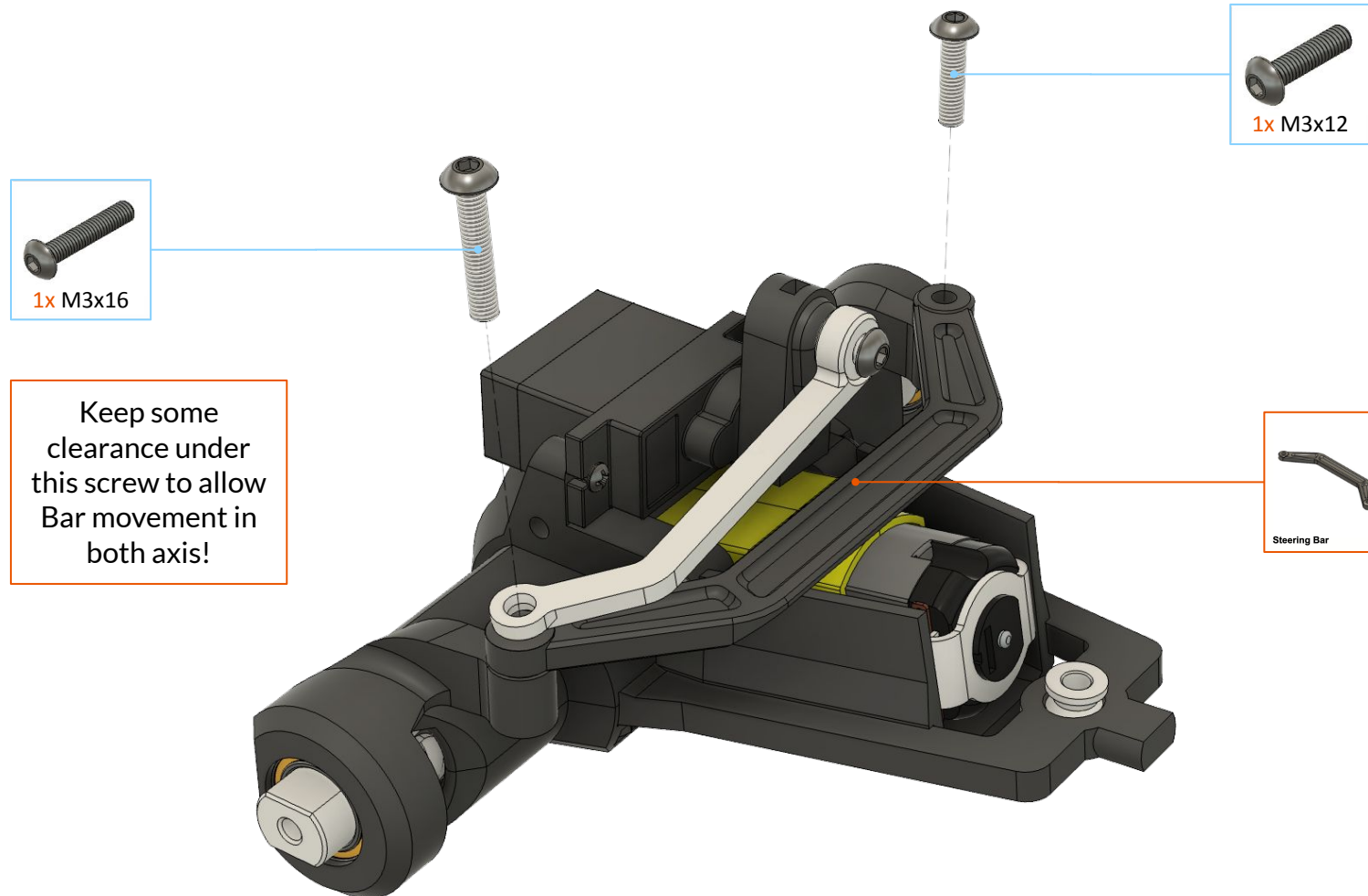


Use screws provided with your Servo

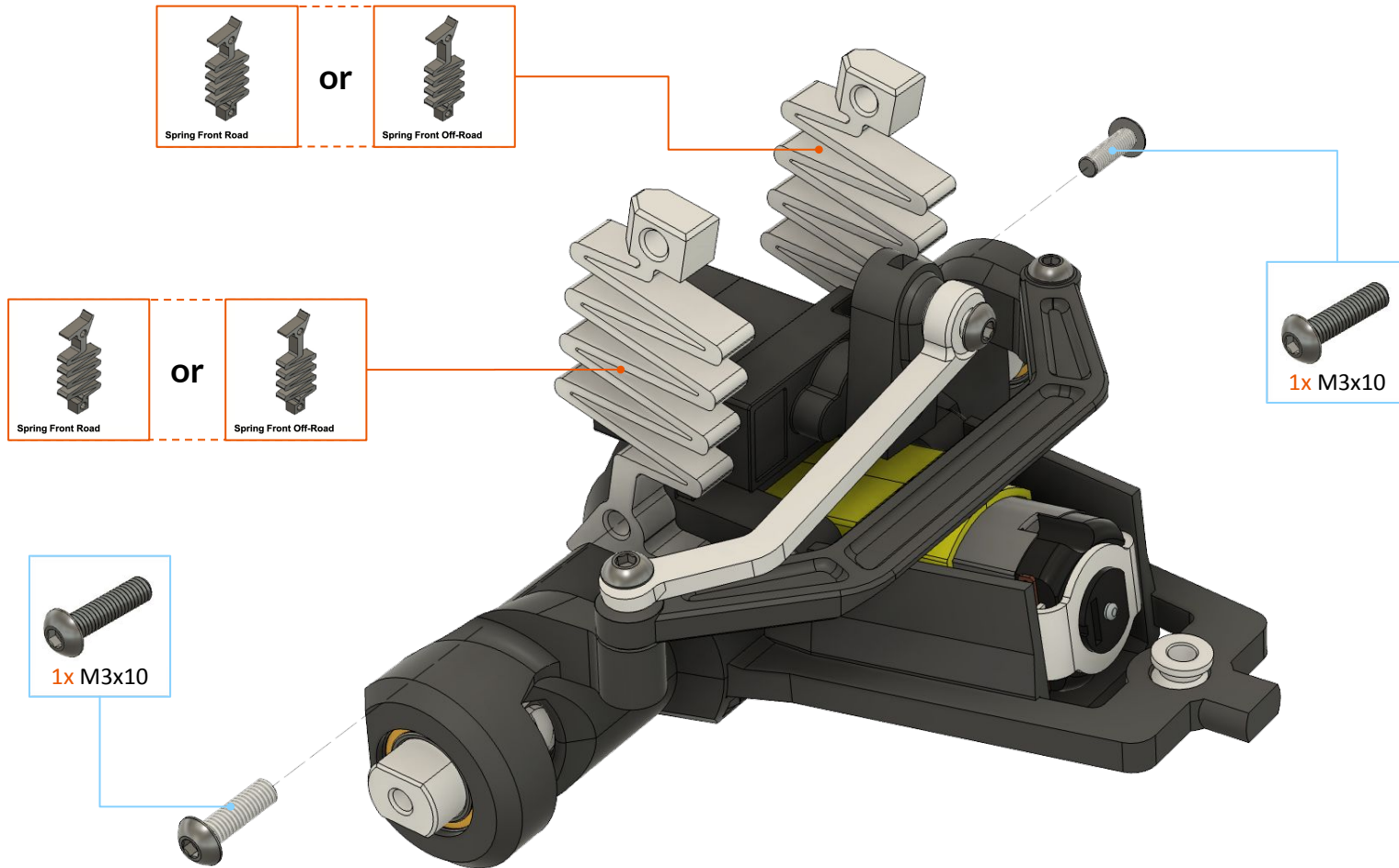
# Front Axle - 11/13



# Front Axle – 12/13



# Front Axle – 13/13



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# Roady – Rear Axle 2x

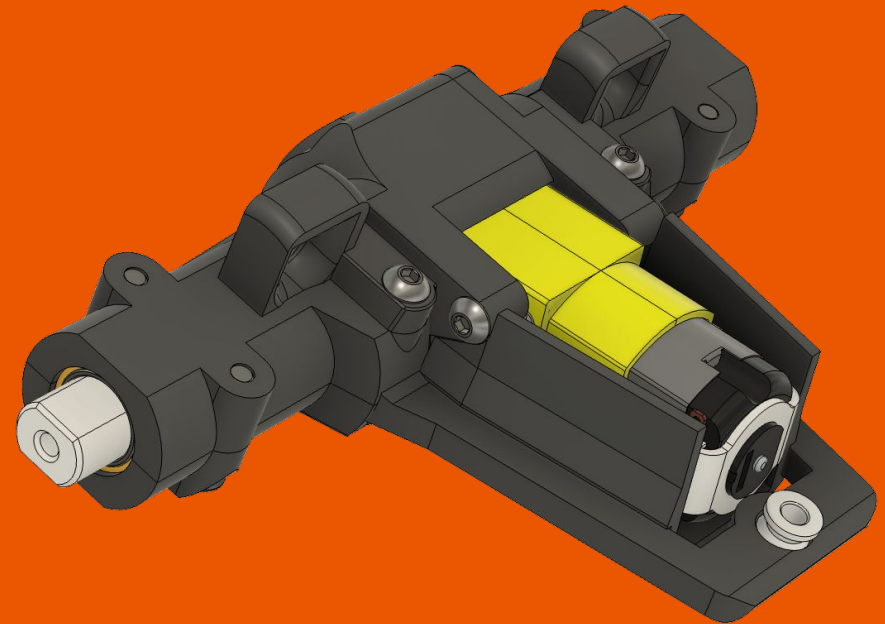
In this procedure you will assemble the rear axle of the truck.

Required print plates:

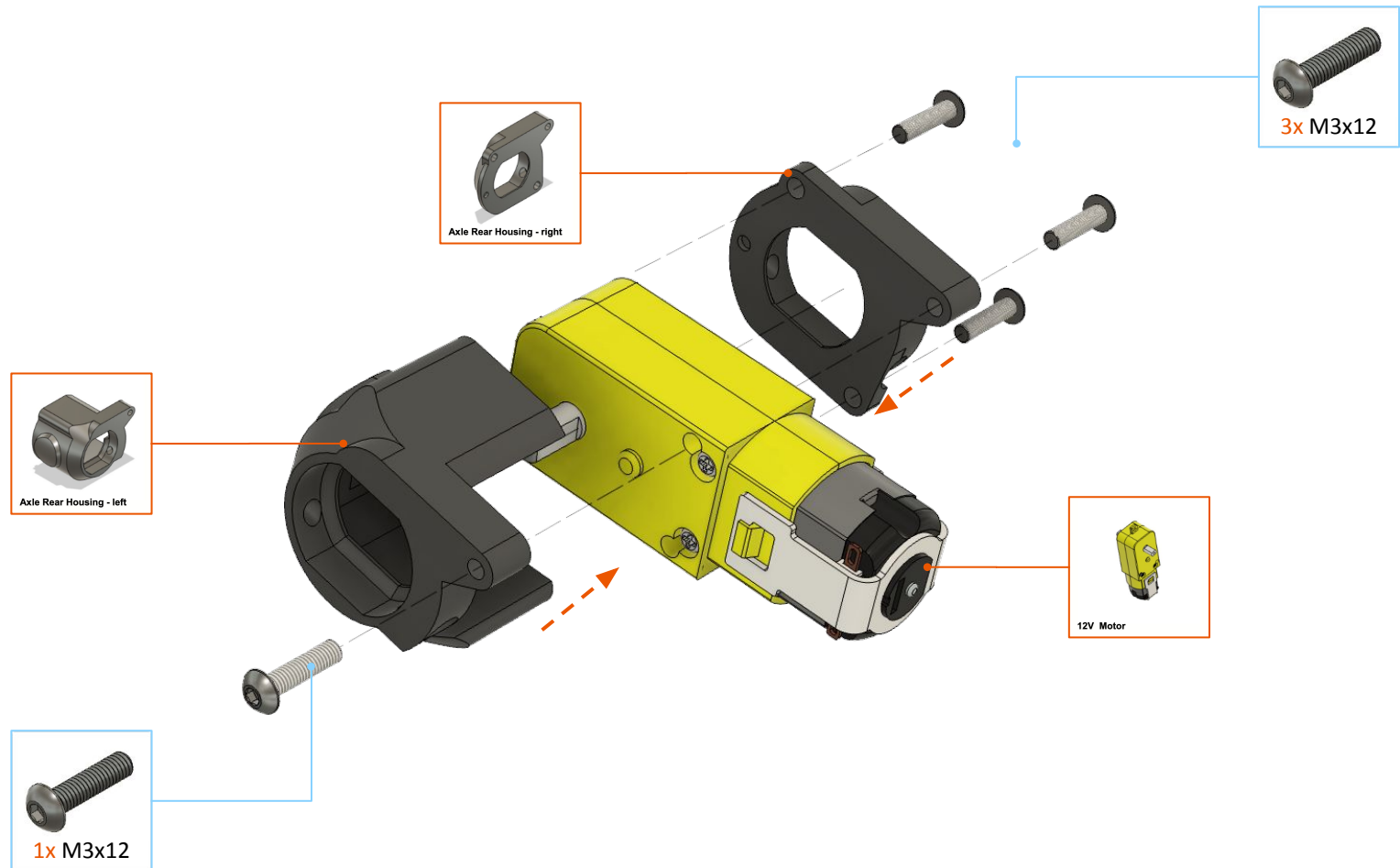
- "Print 10 - Axle Rear 1"
- "Print 11 - Axle Rear 2"

Non-printed parts:

- Screw M3x6: 8 pcs.
- Screw M3x12: 8 pcs.
- Screw M3x16: 8 pcs.
- Screw M3x20: 4 pcs.
- Nut M3: 4 pcs.

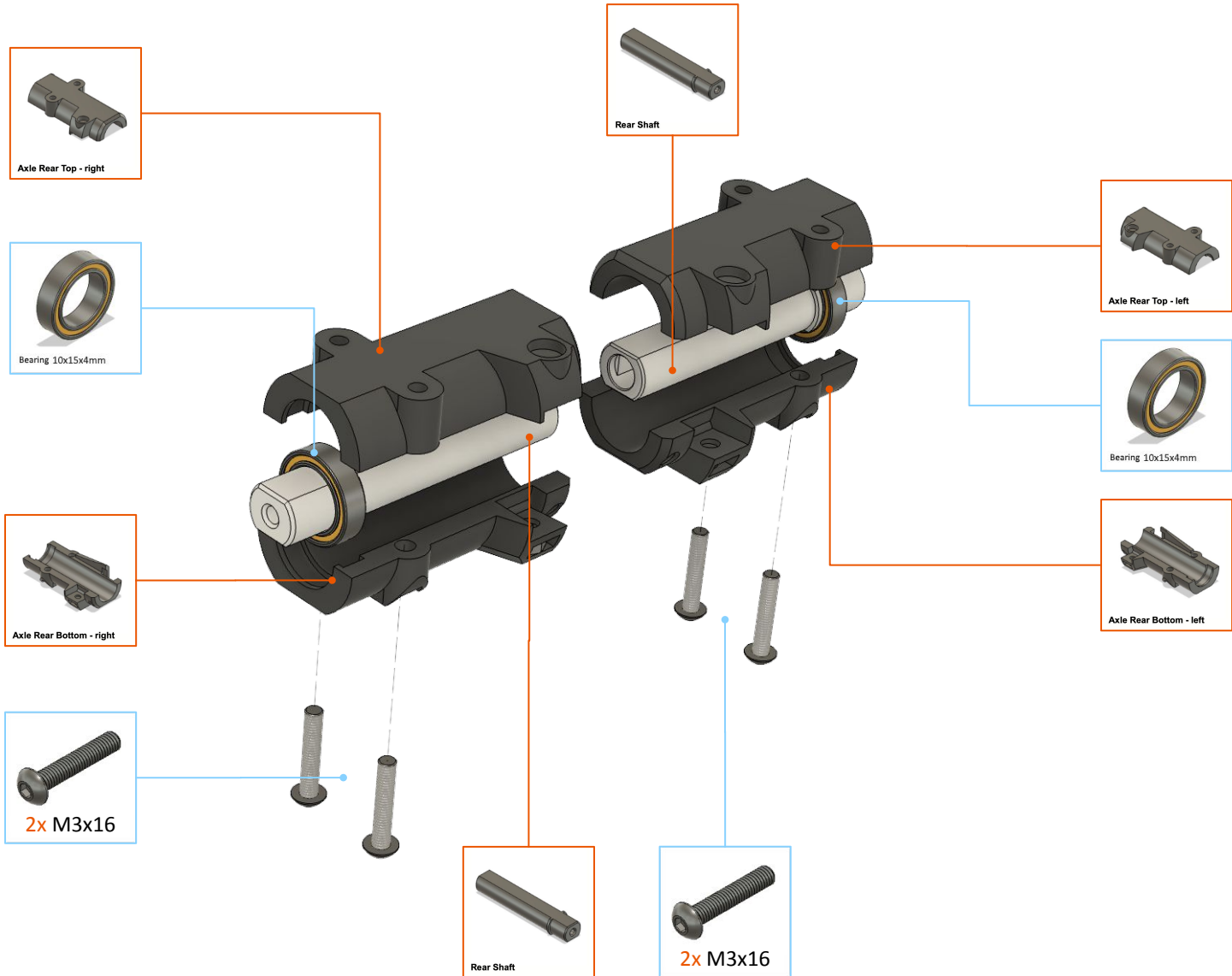


# Rear Axle – step 1/5



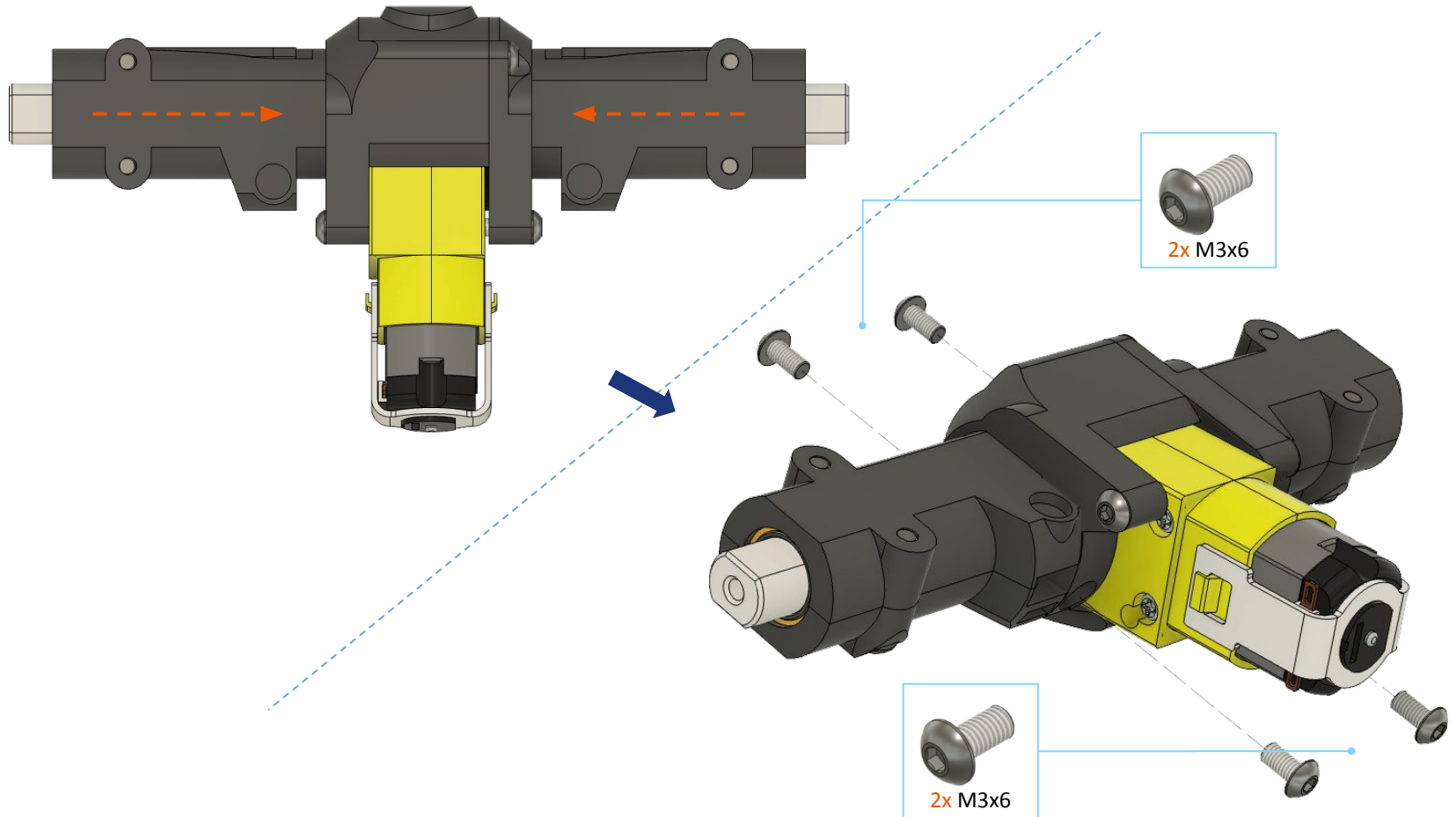


# Rear Axle – step 2/5

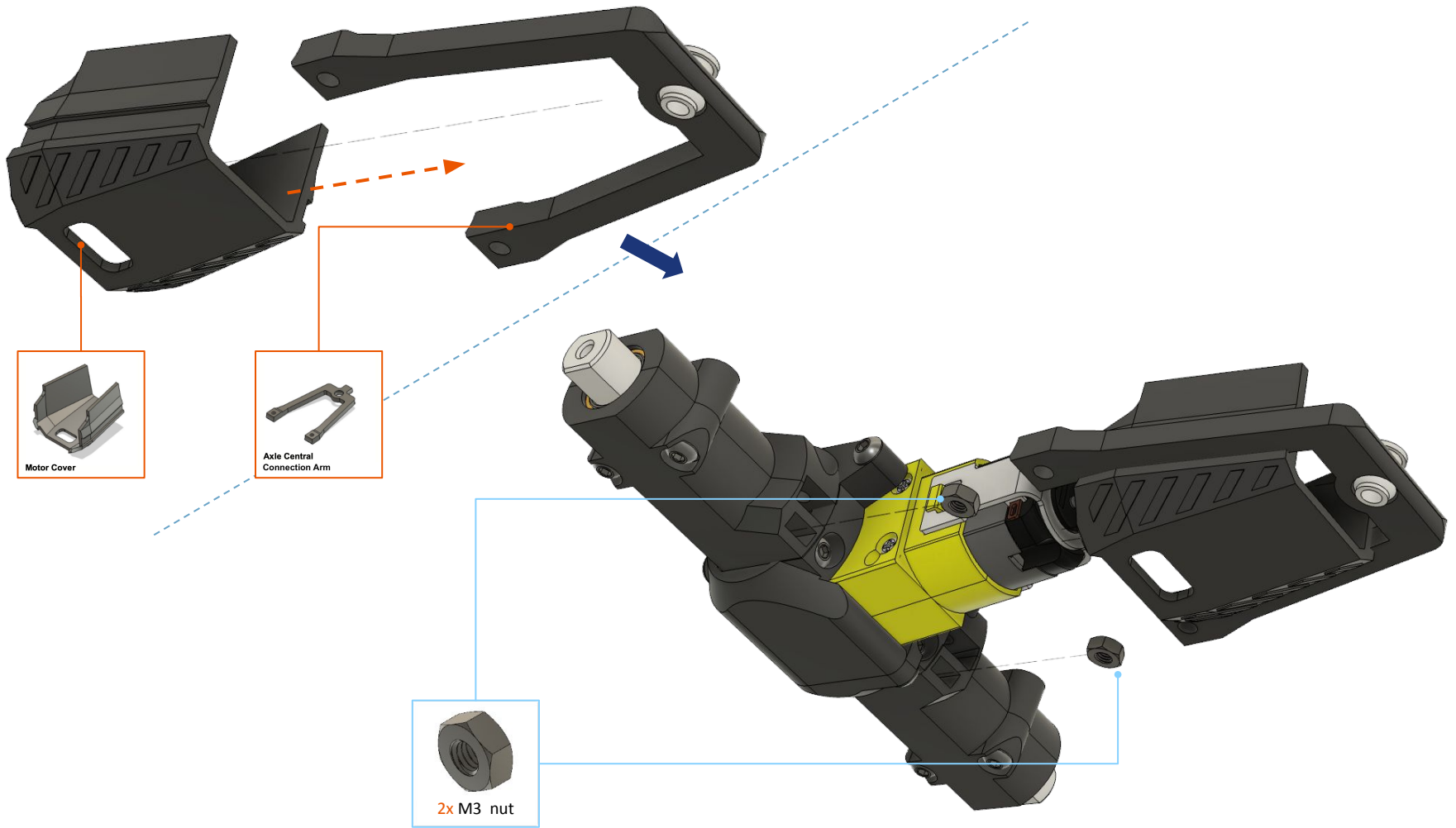




# Rear Axle – step 3/5

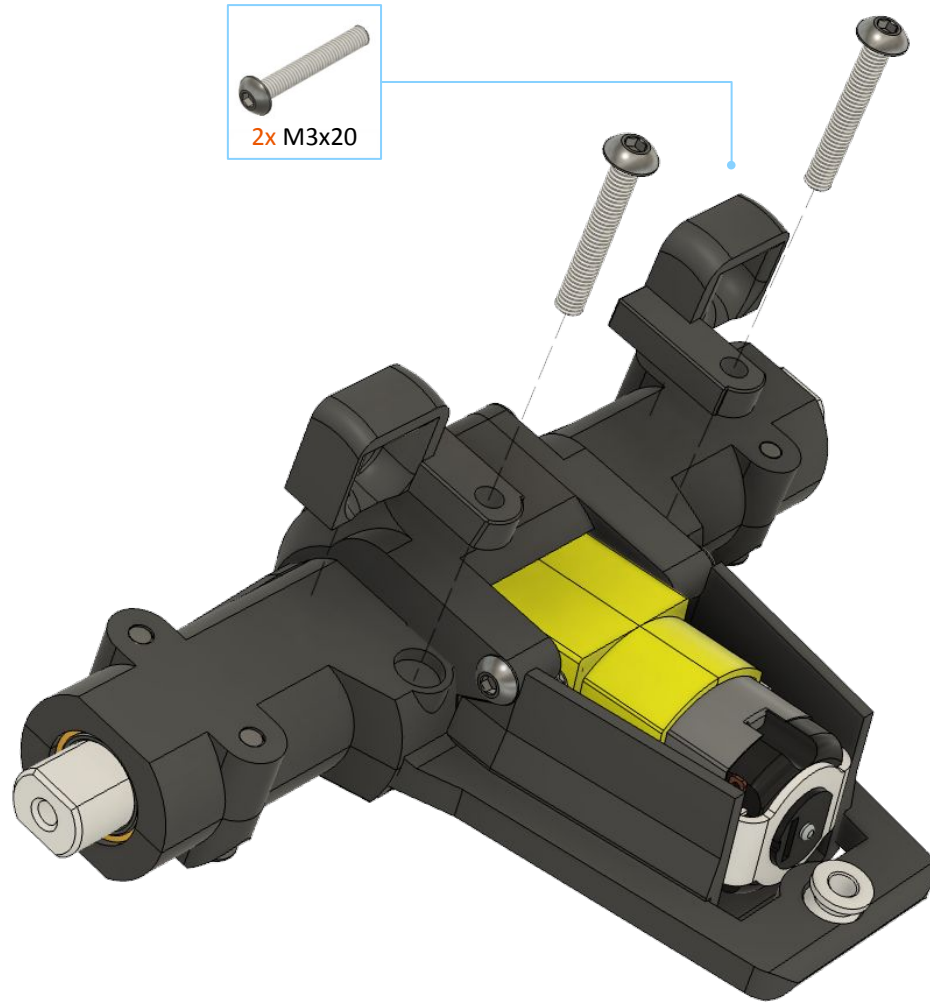


# Rear Axle – step 4/5





# Rear Axle – step 5/5



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# Roady – Install Axles

In this procedure you will install the axles into the chassis.

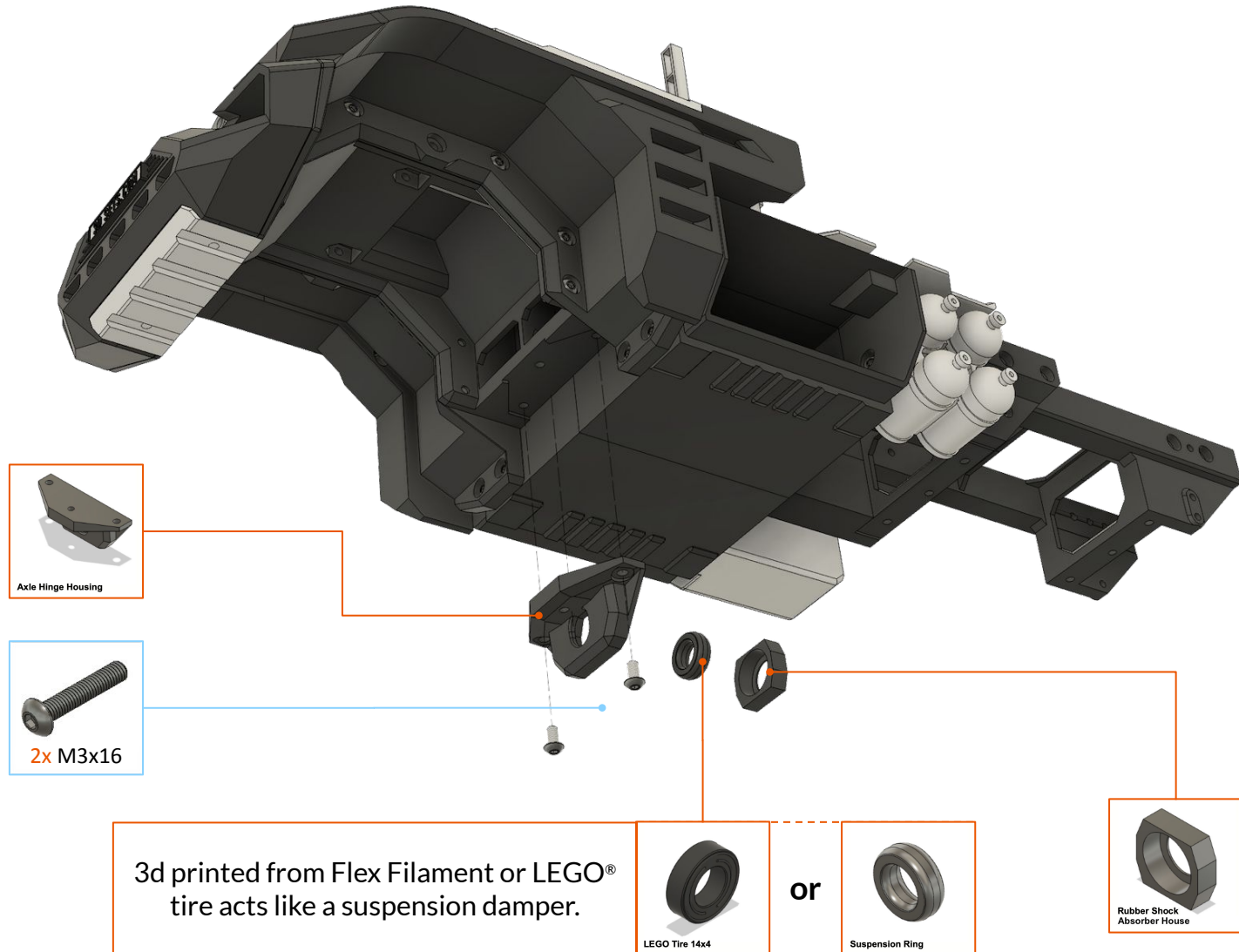
Required print plates:

- "Print 9 - Axle Front"
- "Print 10 - Axle Rear 1"
- "Print 11 - Axle Rear 2"

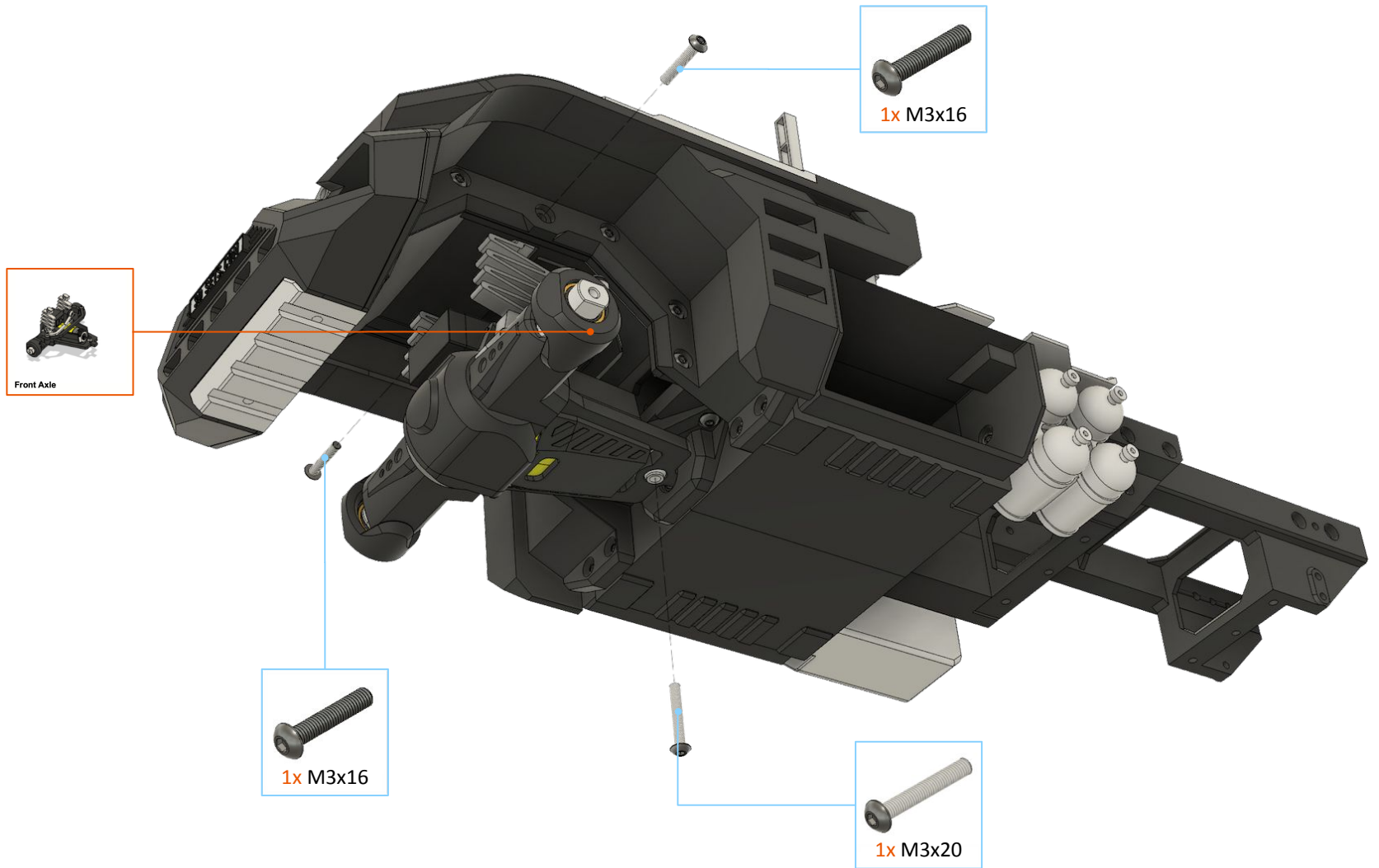
Non-printed parts:

- Screw M3x6: 2 pcs.
- Screw M3x12: 6 pcs.
- Screw M3x16: 4 pcs.
- Screw M3x20: 1 pcs.
- LEGO Tire 14x4mm (Item No: 3139): 1 pcs.

# Install Axles – step 1/5

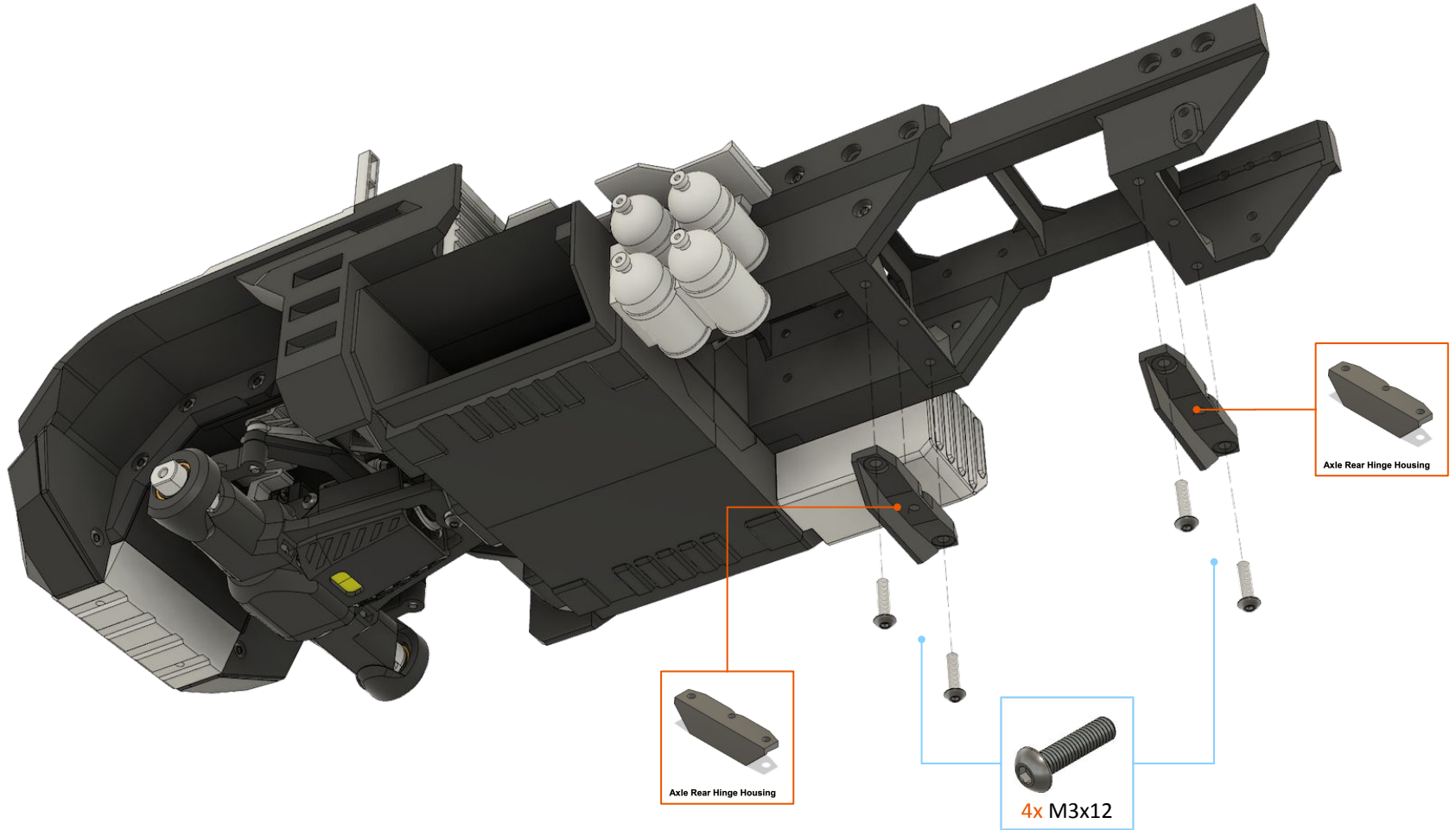


# Install Axles – step 2/5



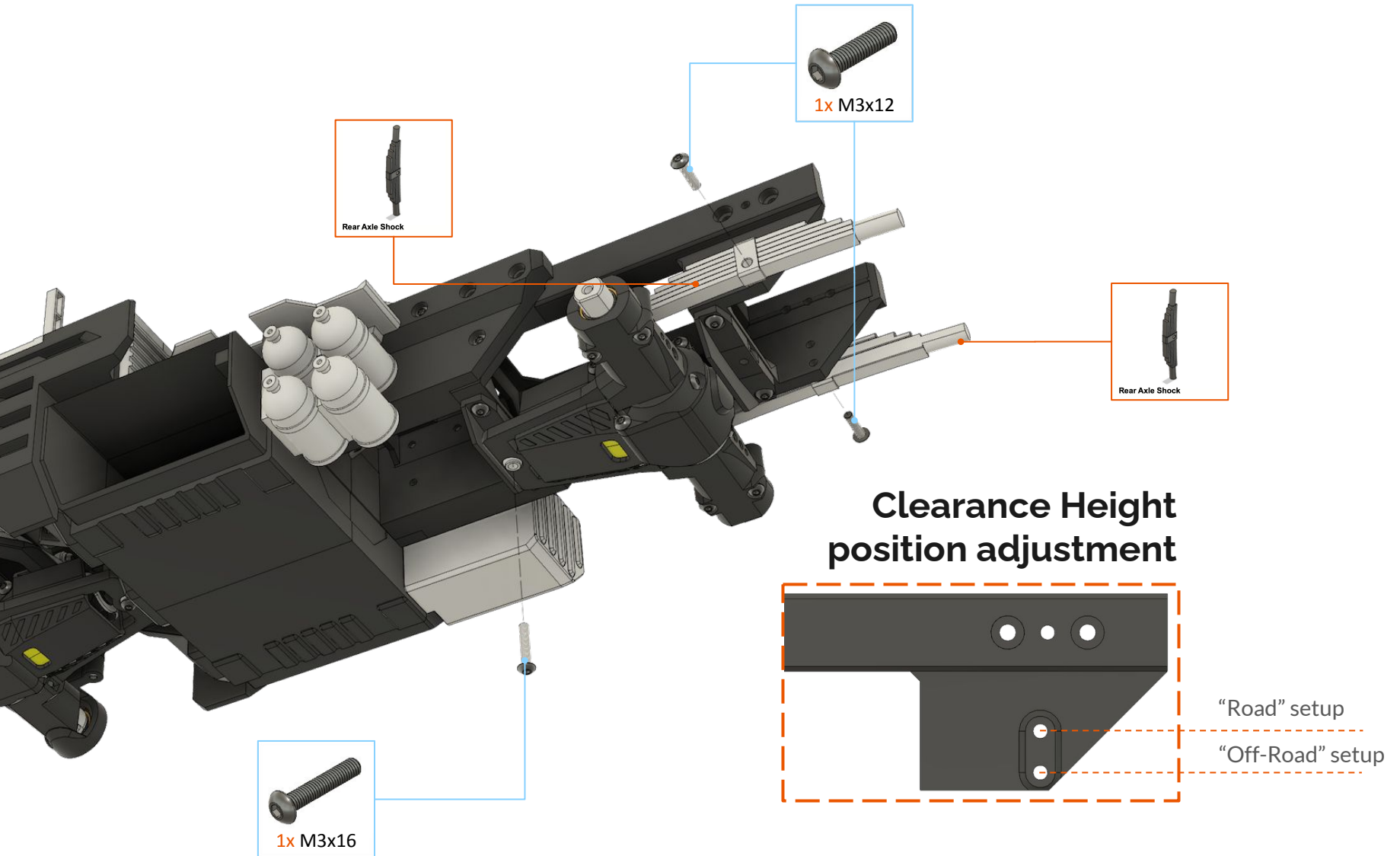


# Install Axles – step 3/5



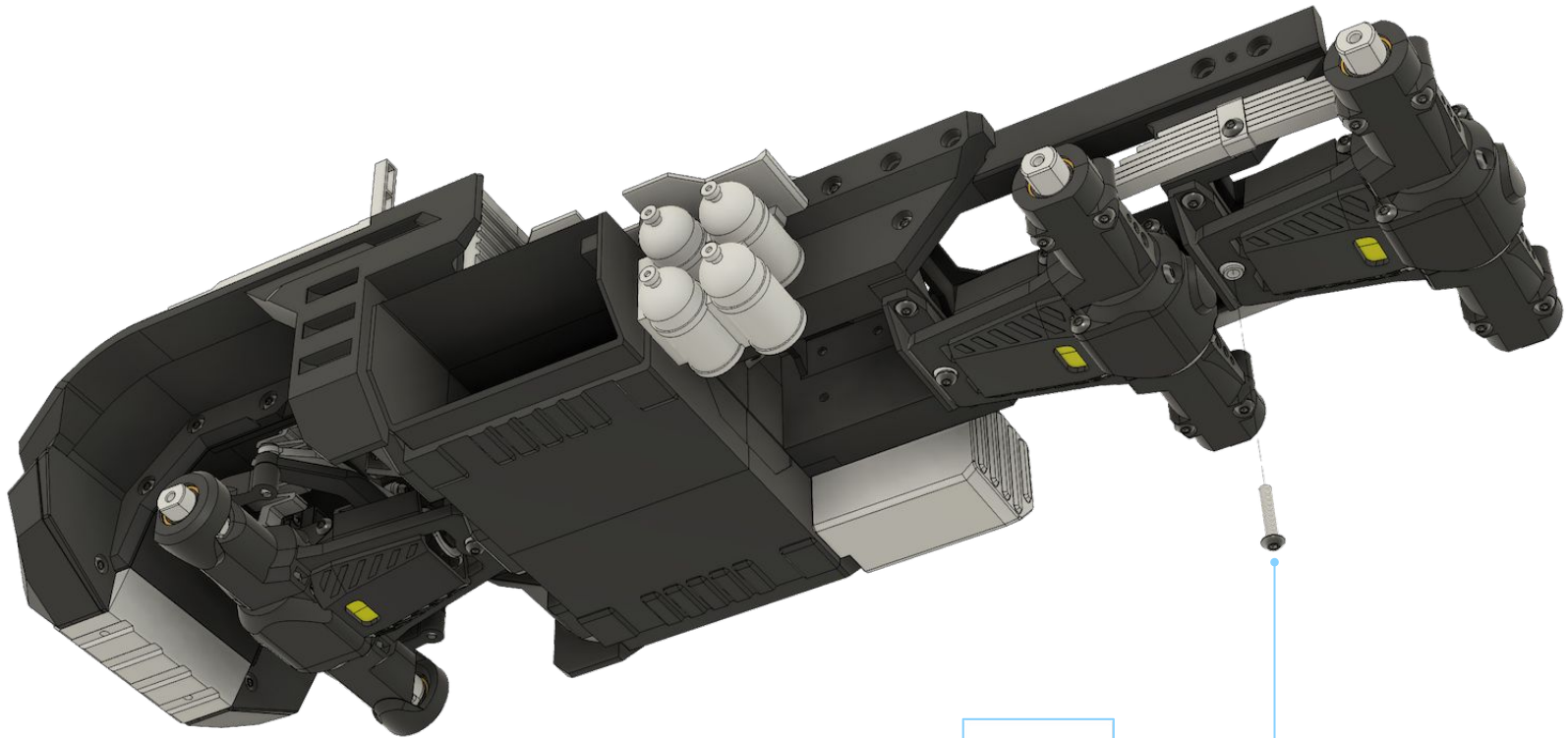


# Install Axles – step 4/5





# Install Axles – step 5/5



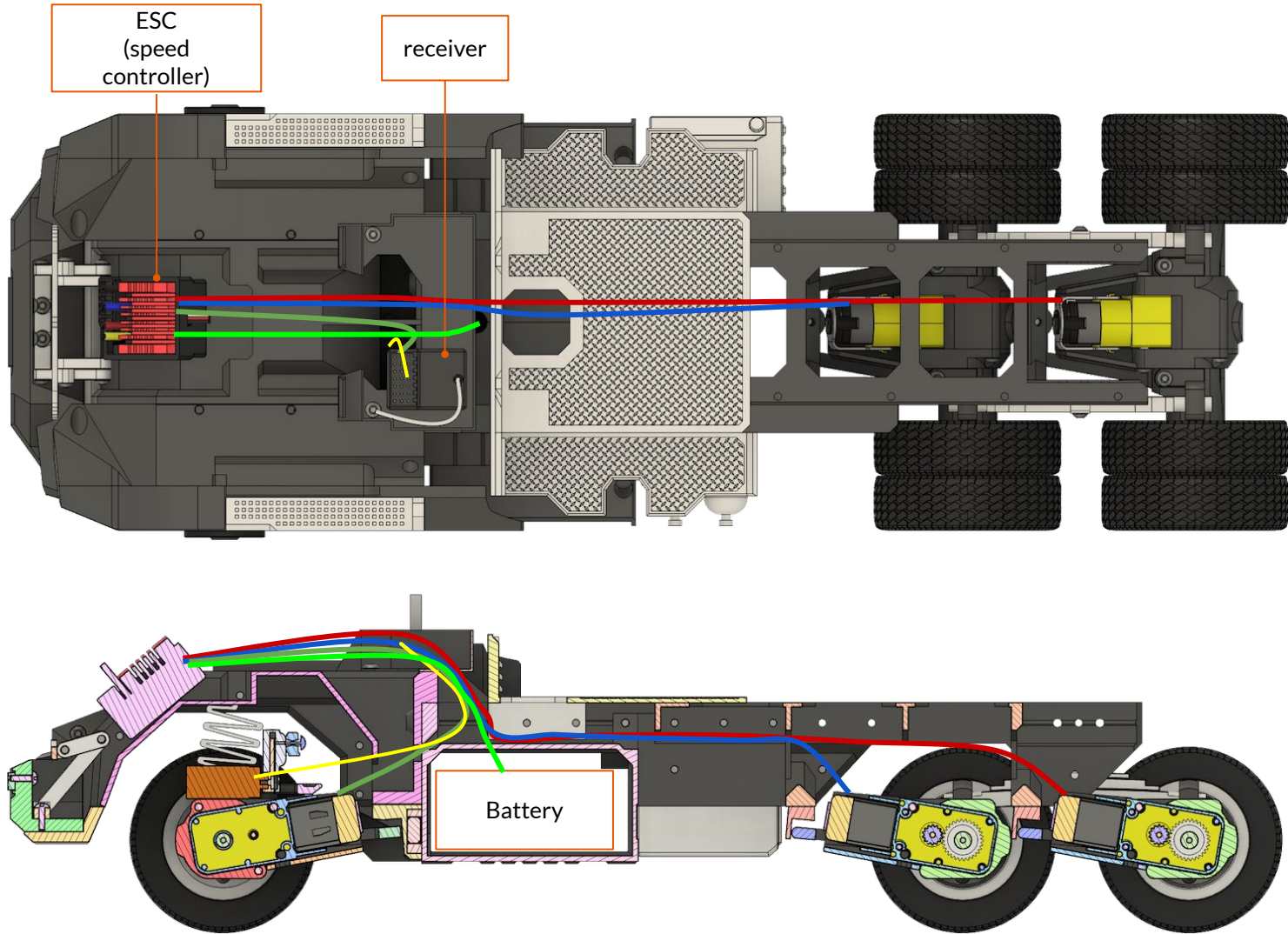
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# Roady – Electronics

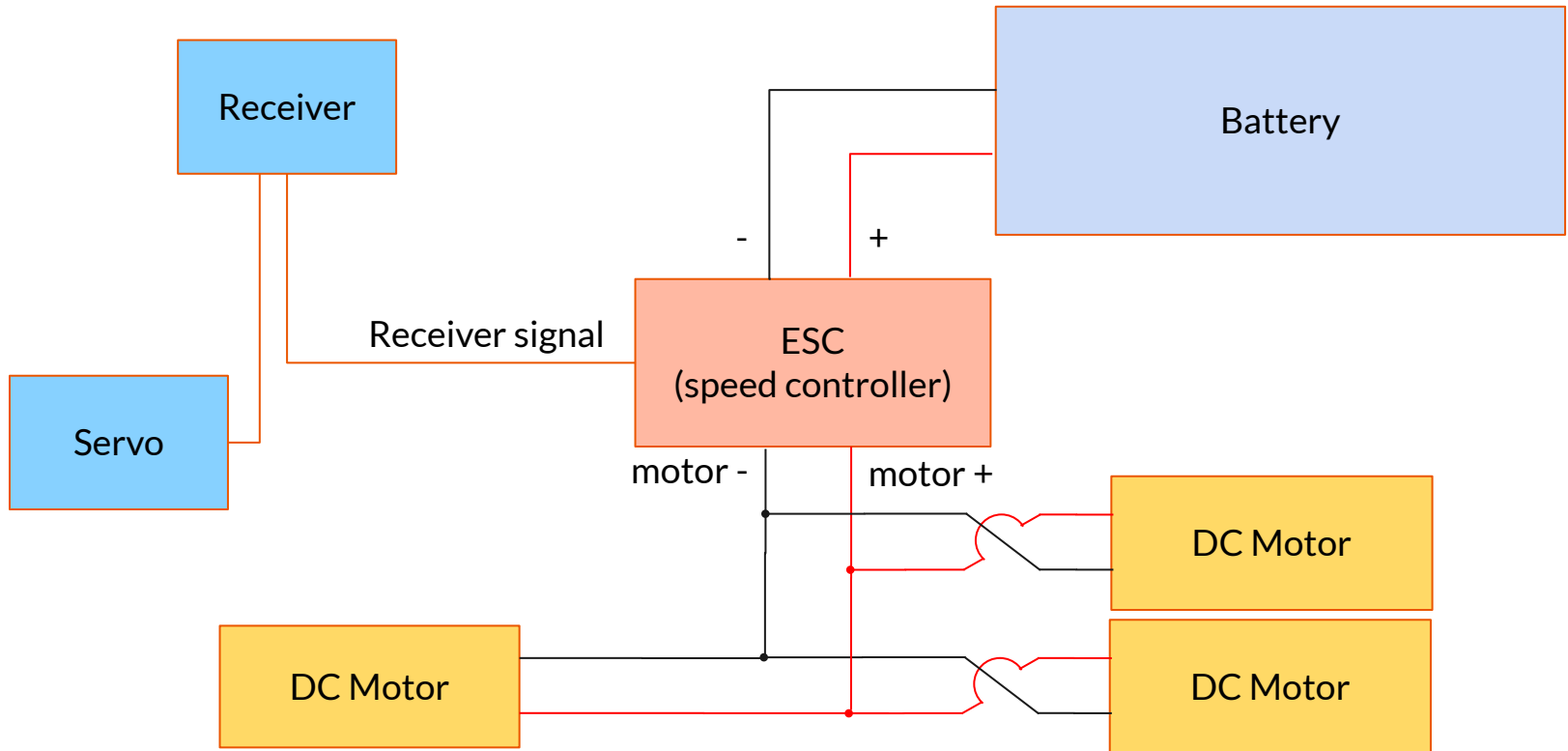
In this procedure you will assemble the electronics of the truck.



# Electronics

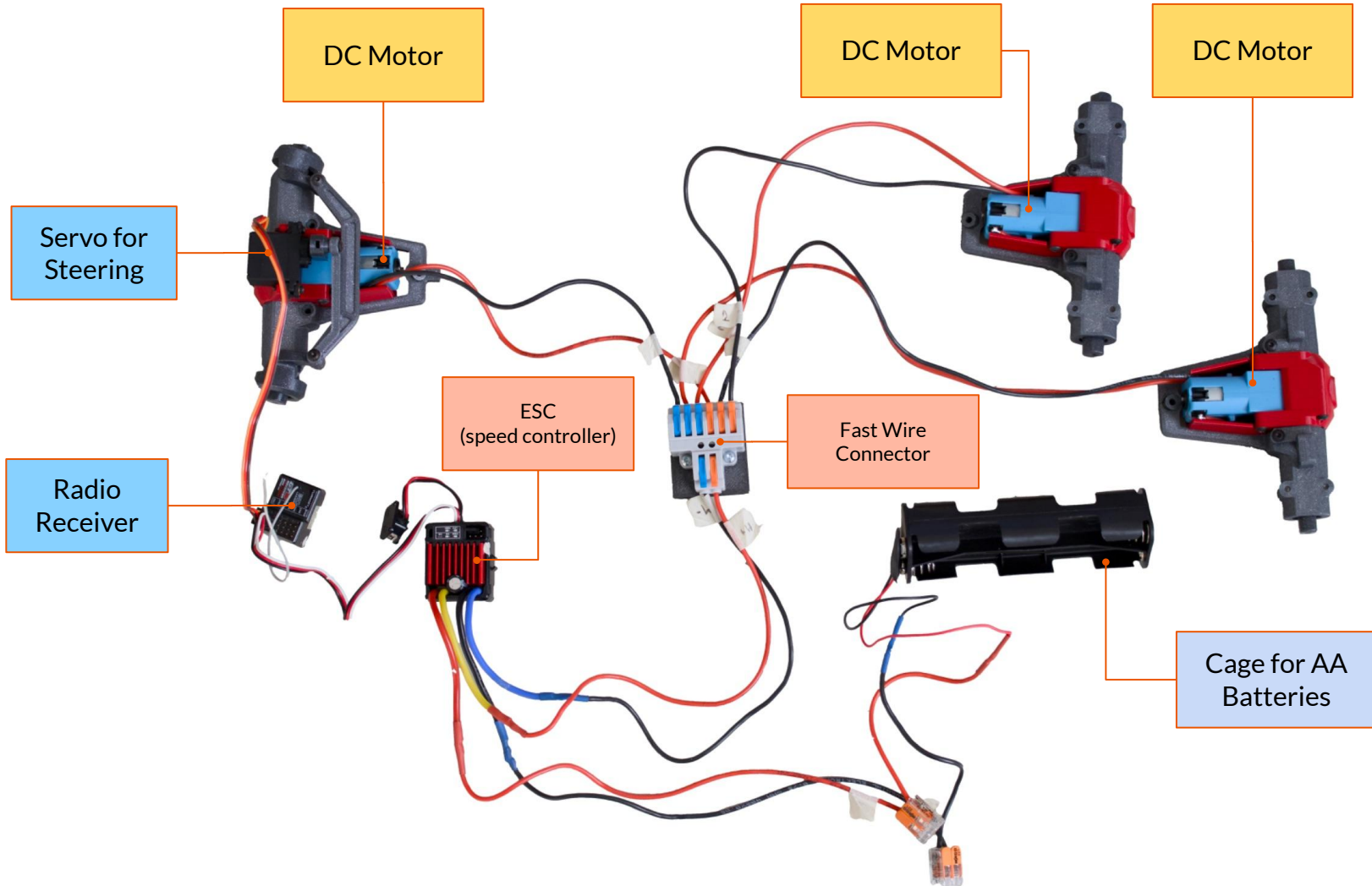


# Electronics – Standard Steering Mode



Rear motors must be connected in reverse!

# Electronics – Standard Steering Mode



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# Wheel Mini B Off-Road

In this procedure you will assemble the wheel of the truck.

Required print plates:

- "Print 12A - Wheel Mini B Off-Road"
- "Print 13A - Tire Off-Road" – *2x printed*
- "Print 14 - Wheel Mini B Hub + Ring"

Non-printed parts:

- Screw M3x6: 30 pcs.



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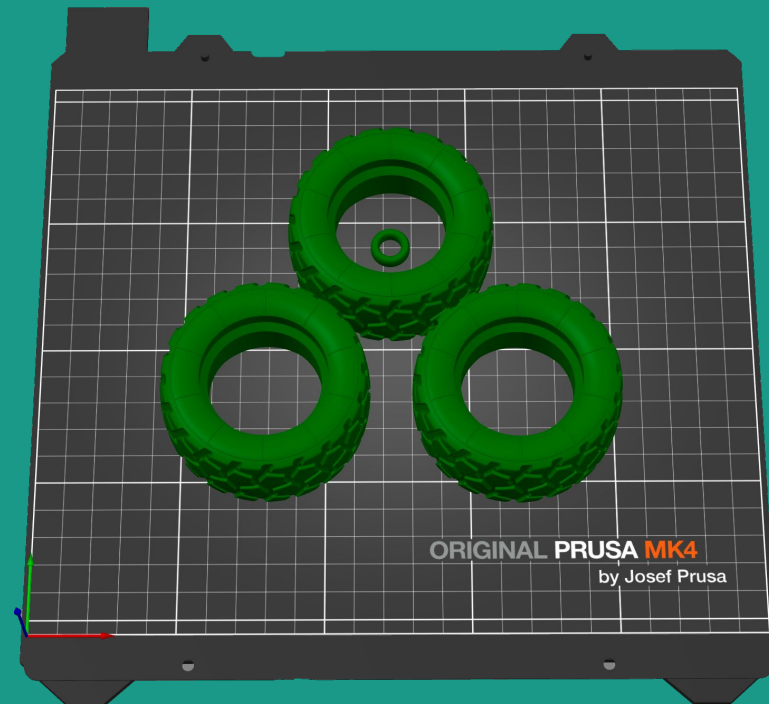
# Tires

You can print your own tires from flexible filaments, for easy printing and nice matte finish we tested “Fiberlogy MattFlex 40D” filament. Use 0% infill for flexible filaments – the “Tire.stl” file we provided is designed with ready-made internal supports, which don’t require any generated infill, resulting in relatively soft tires.

You can also print the “Dampening Rings” from flexible materials to replace tiny LEGO® tires acting as suspension dampers.

## Recommended settings:

- Infill: 0%
- Perimeters: 2 perimeters
- Seam position: Random
- Top Layer: Archimedean Chord (optional, not required)





# Wheel Mini B Off-Road Front



# Wheel Mini B Off-Road Rear



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# Wheel Mini B Road

In this procedure you will assemble the wheel of the truck.

Required print plates:

- "Print 12B - Wheel Mini B Road"
- "Print 13B - Tire Road" – *2x printed*
- "Print 14 - Wheel Mini B Hub + Ring"

Non-printed parts:

- Screw M3x6: 20 pcs.



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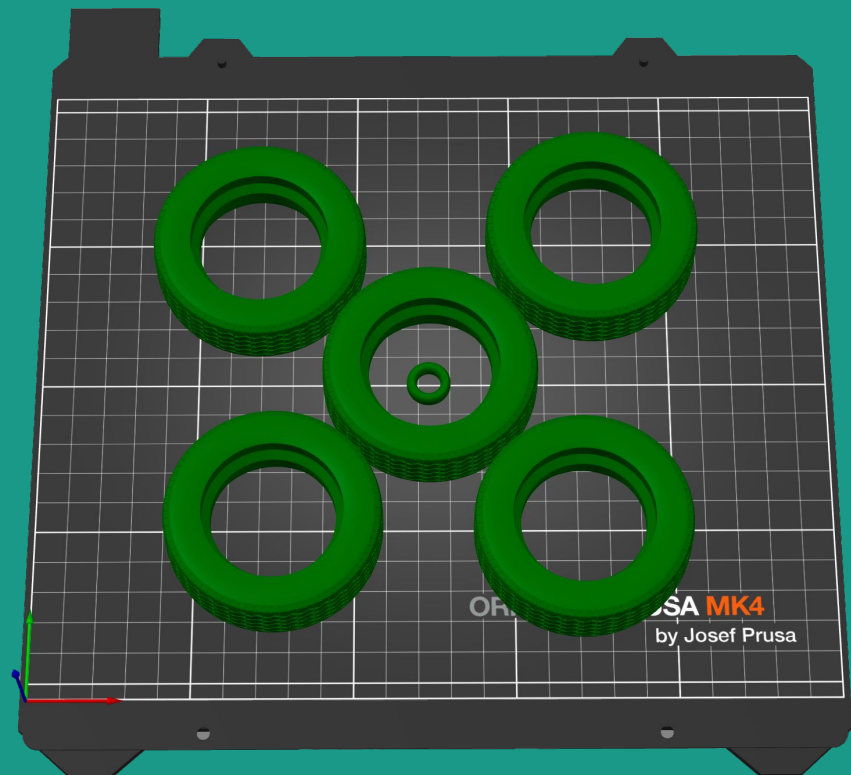
# Tires

You can print your own tires from flexible filaments, for easy printing and nice matte finish we tested “Fiberlogy MattFlex 40D” filament. Use 0% infill for flexible filaments – the “Tire.stl” file we provided is designed with ready-made internal supports, which don’t require any generated infill, resulting in relatively soft tires.

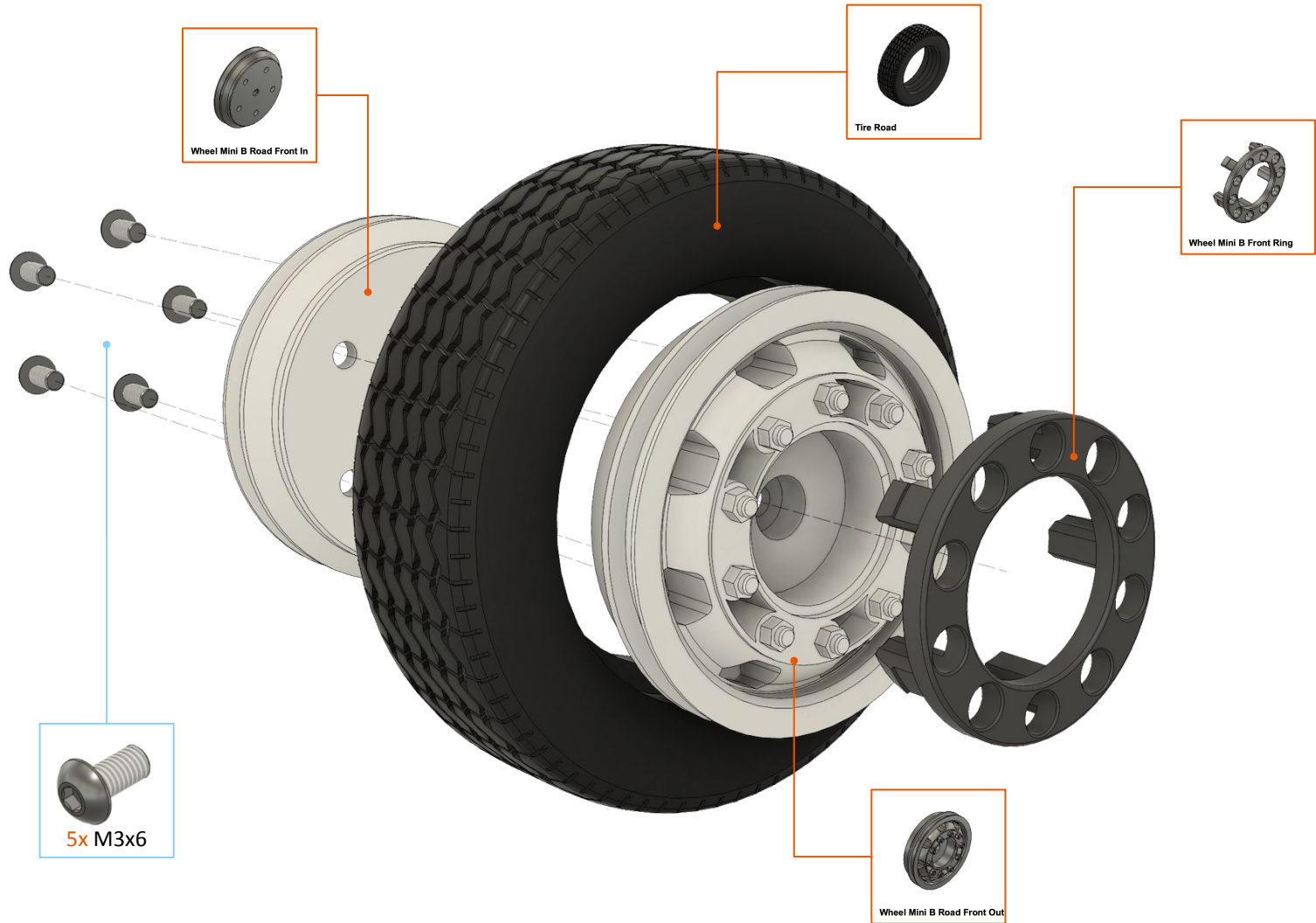
You can also print the “Dampening Rings” from flexible materials to replace tiny LEGO® tires acting as suspension dampers.

## Recommended settings:

- Infill: 0%
- Perimeters: 2 perimeters
- Seam position: Random
- Top Layer: Archimedean Chord (optional, not required)



# Wheel Mini B Road Front



# Wheel Mini B Road Rear



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# Install Wheel

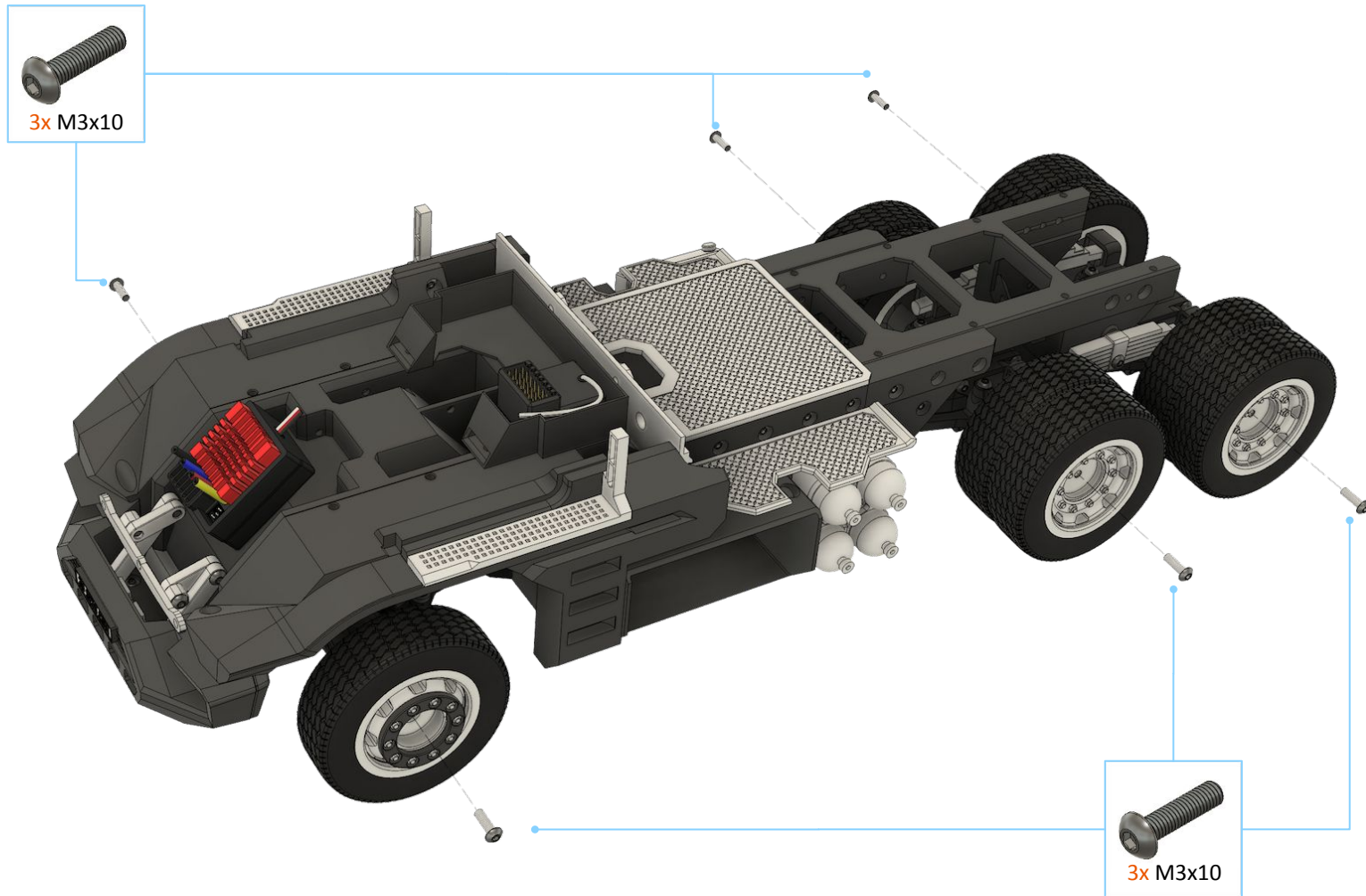
In this procedure you will assemble the wheel of the truck.

- "Print 14 - Wheel Mini B Hub + Ring"

Non-printed parts:

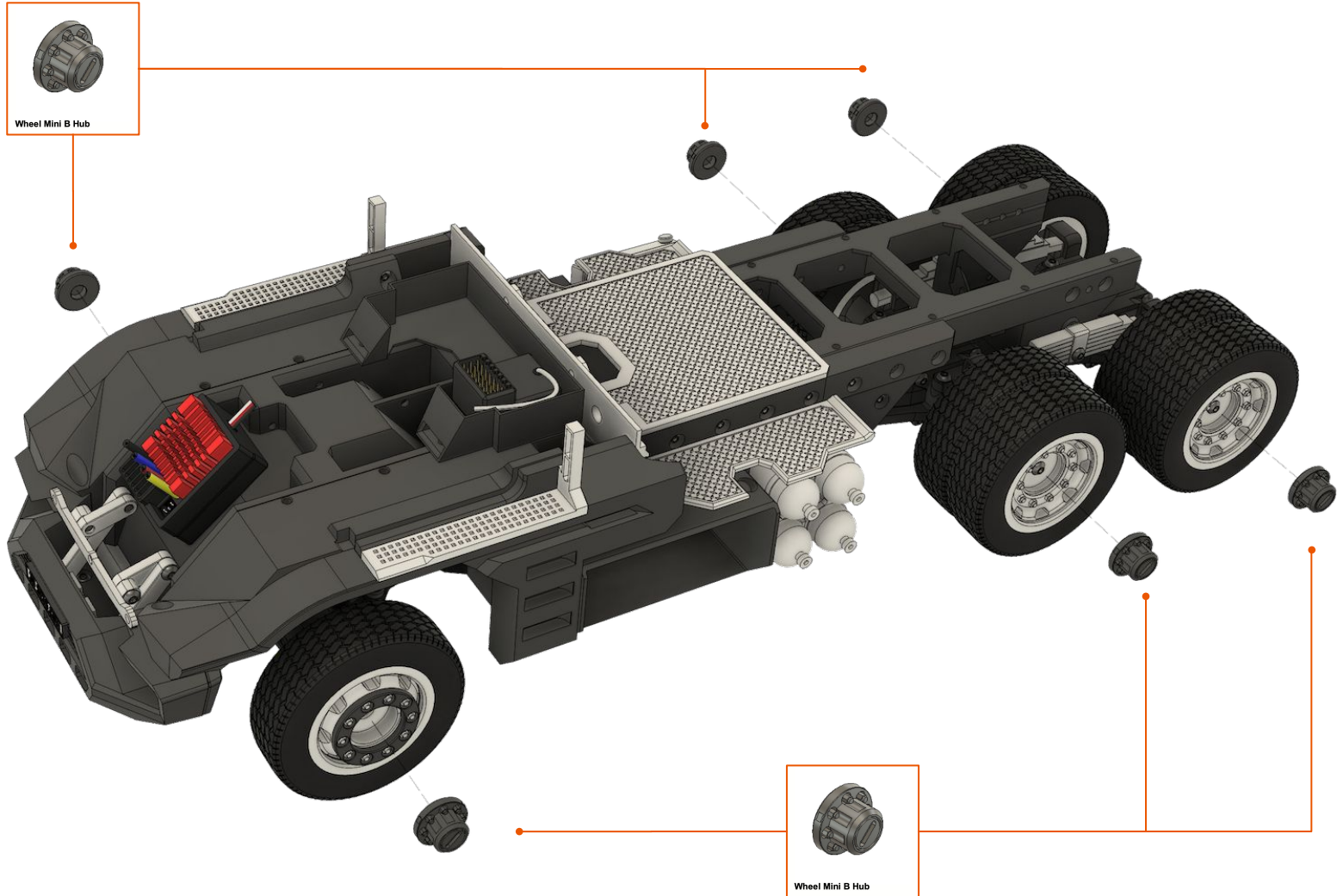
- Screw M3x10: 6 pcs.

# Wheels installation





# Wheels installation



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# Roady – Fuel Tank

In this procedure you will assemble the tank of the truck.

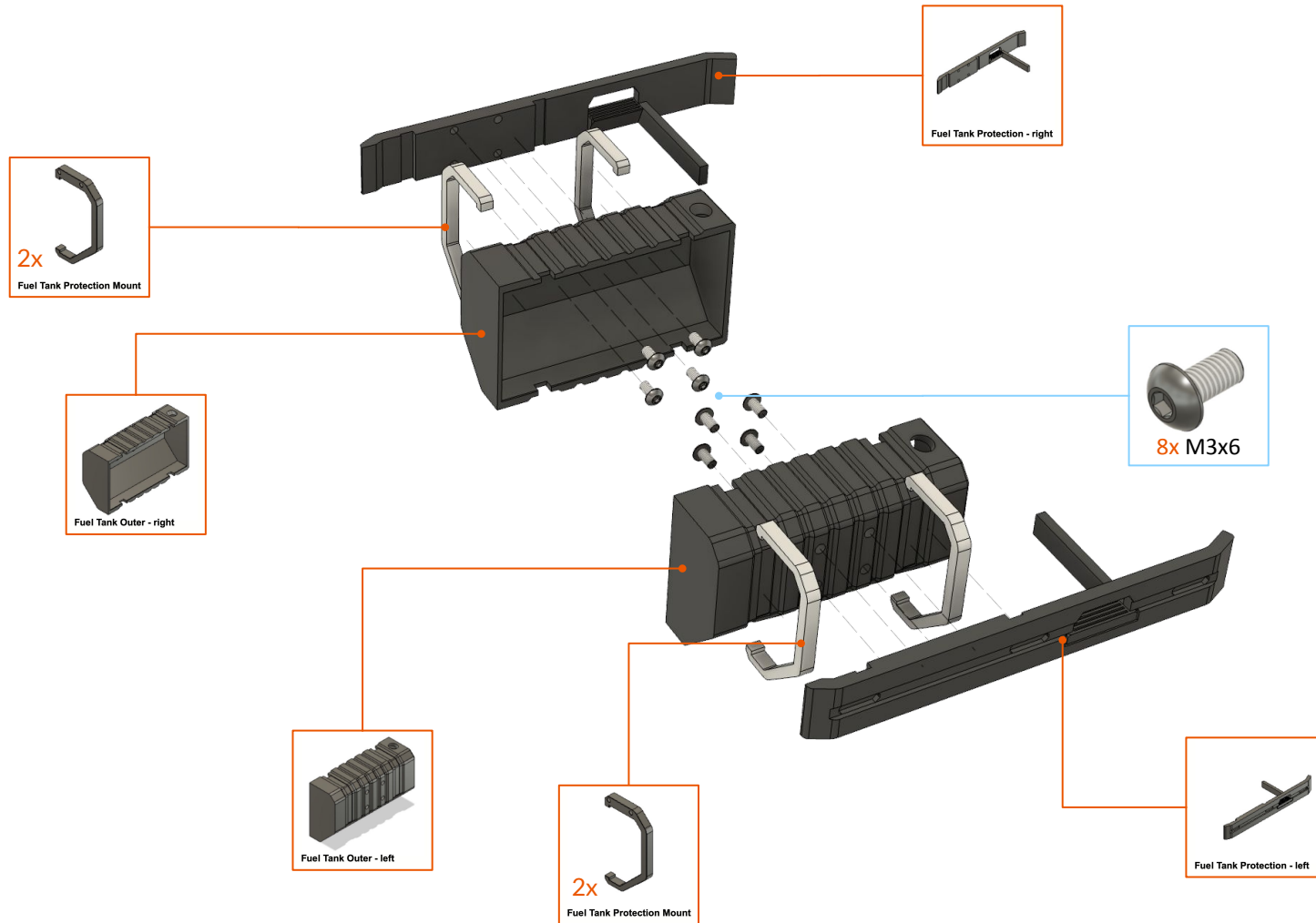
Required print plates:

- "Print 7 - Fuel Tank"
- "Print 15 - Fuel Tank Details"
- "Print 16 - Lights 1"

Non-printed parts:

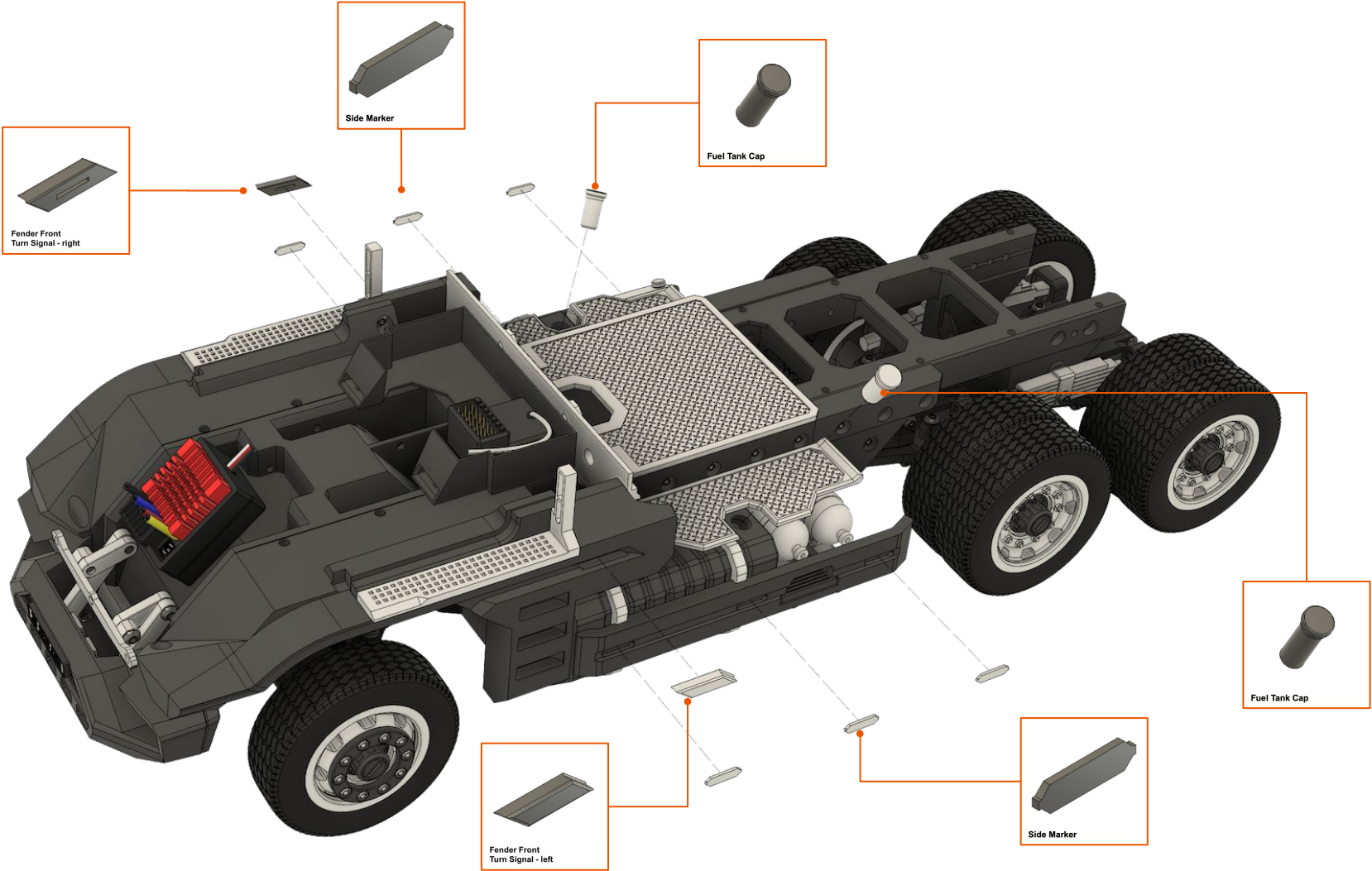
- Screw M3x6: 8 pcs.

# Tank – step 1/2





# Tank – step 2/2



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# Roady – Cab

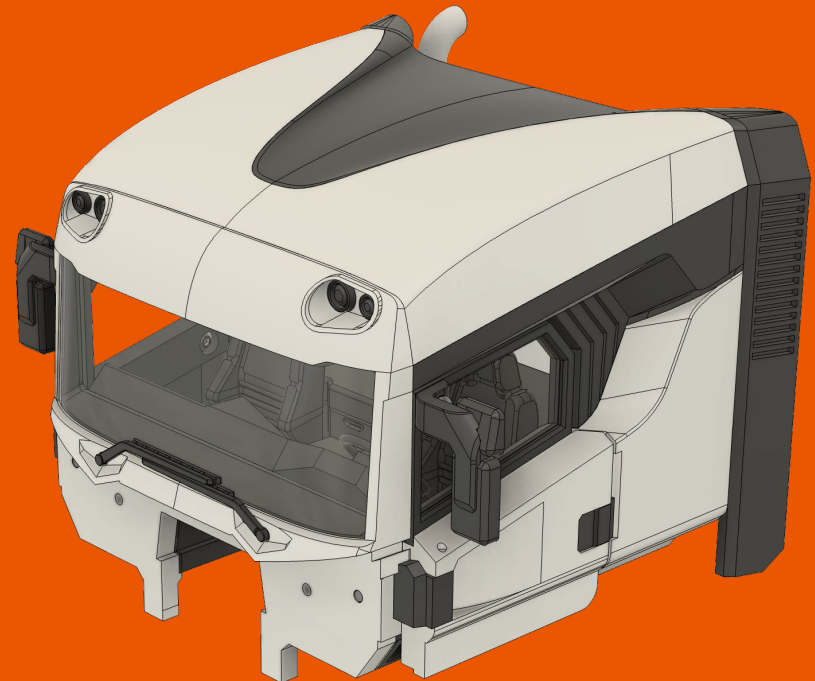
In this procedure you will assemble the cab of the truck.

Required print plates:

- "Print 16 - Lights 1"
- "Print 17 - Front Window"
- "Print 18 - Cab Roof + Side + Rear Window"
- "Print 19 - Cab Body + Floor + Bunk"
- "Print 20 - Front Mask + Lights + Interior"
- "Print 21 - Engine Hood + Cab Fender"

Non-printed parts:

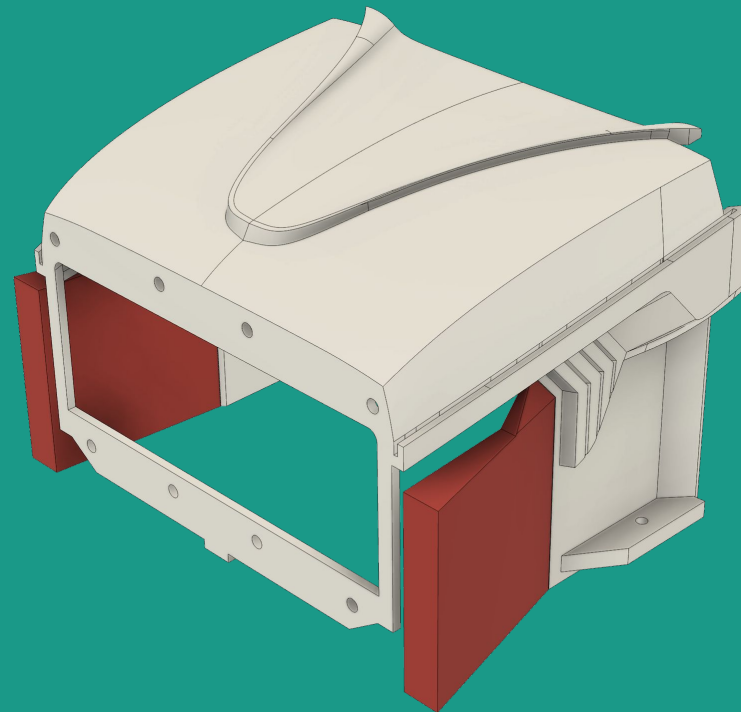
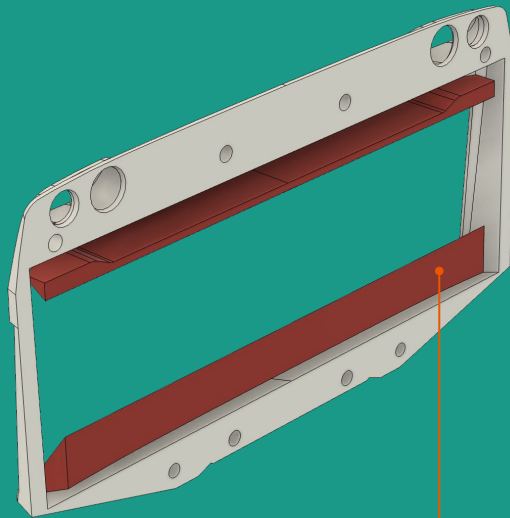
- Screw M3x6: 16 pcs.
- Screw M3x8: 10 pcs.
- Screw M3x10: 2 pcs.



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# Postprocessing – removing supports

Before you start building, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!



supports marked in red has to be removed

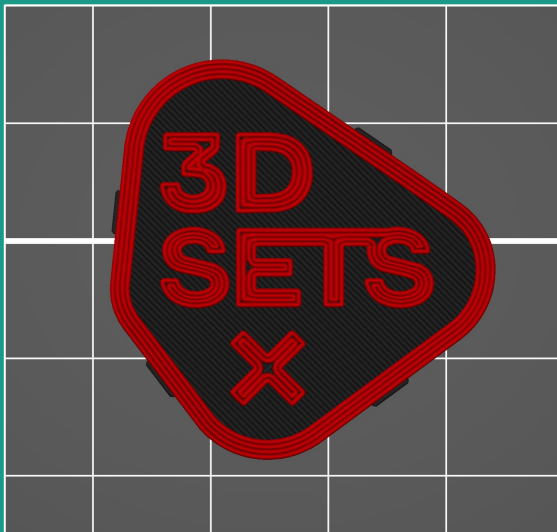
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# Cab Rear Wall Logo & Licence Plate

You can print Cab Rear Wall Logo and Licence Plate with filament changes to achieve color results. Please, setup filament changes in layer heights described below (setup is for layer height 0,15mm):

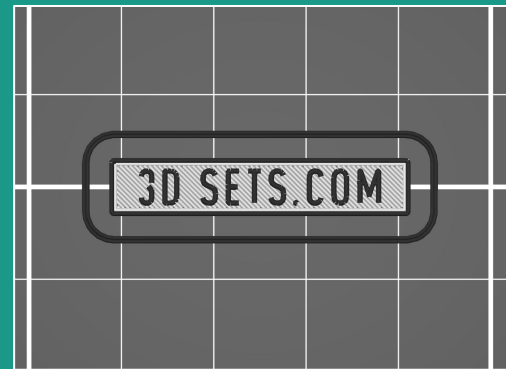
## Cab Rear Wall Logo

- Change filament at Layer 11 - height 1,7mm
- Layer color before change: black
- Layer color after change: red



## Licence Plate

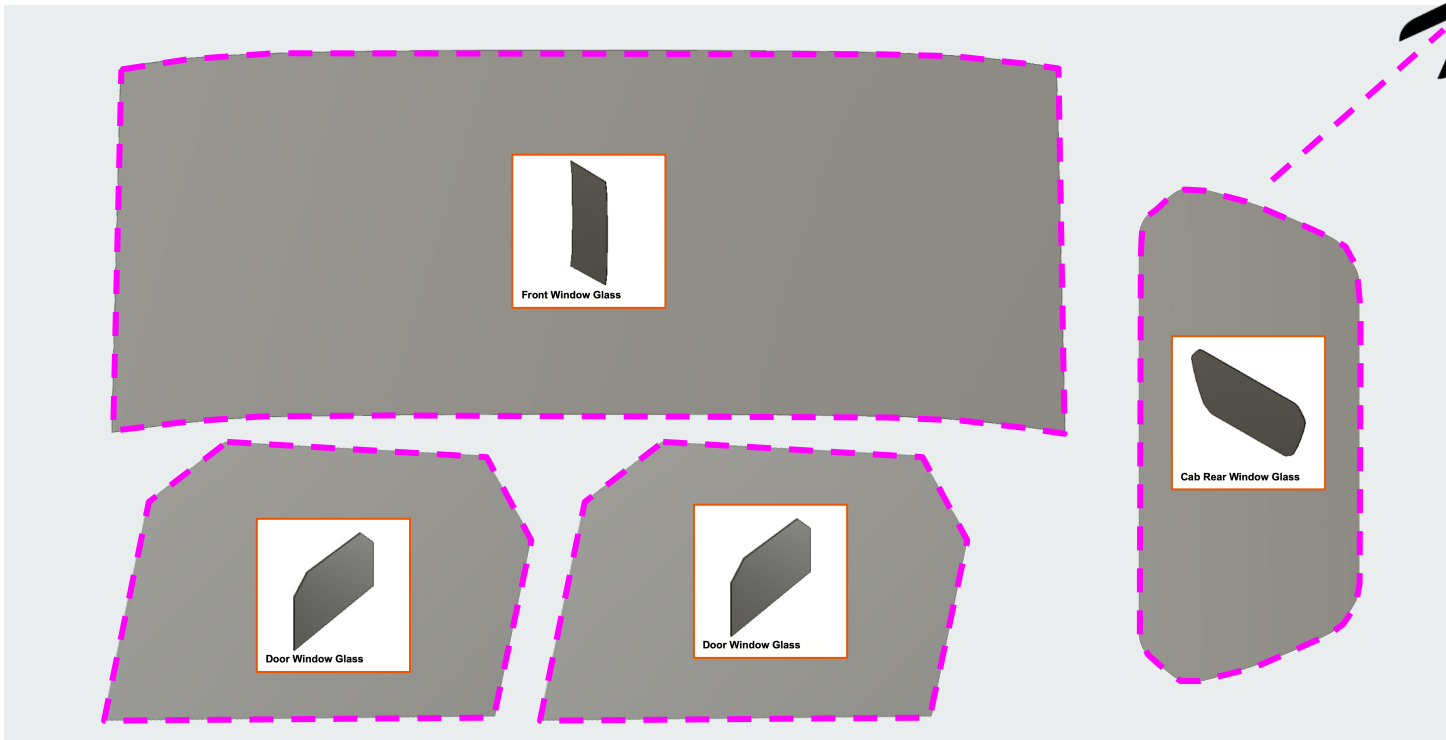
- Change filament at Layer 15 - height 2,3mm
- Layer color before change: black
- Layer color after change: white
- Change filament at Layer 17 - height 2,6mm
- Layer color after change: black



# Glass

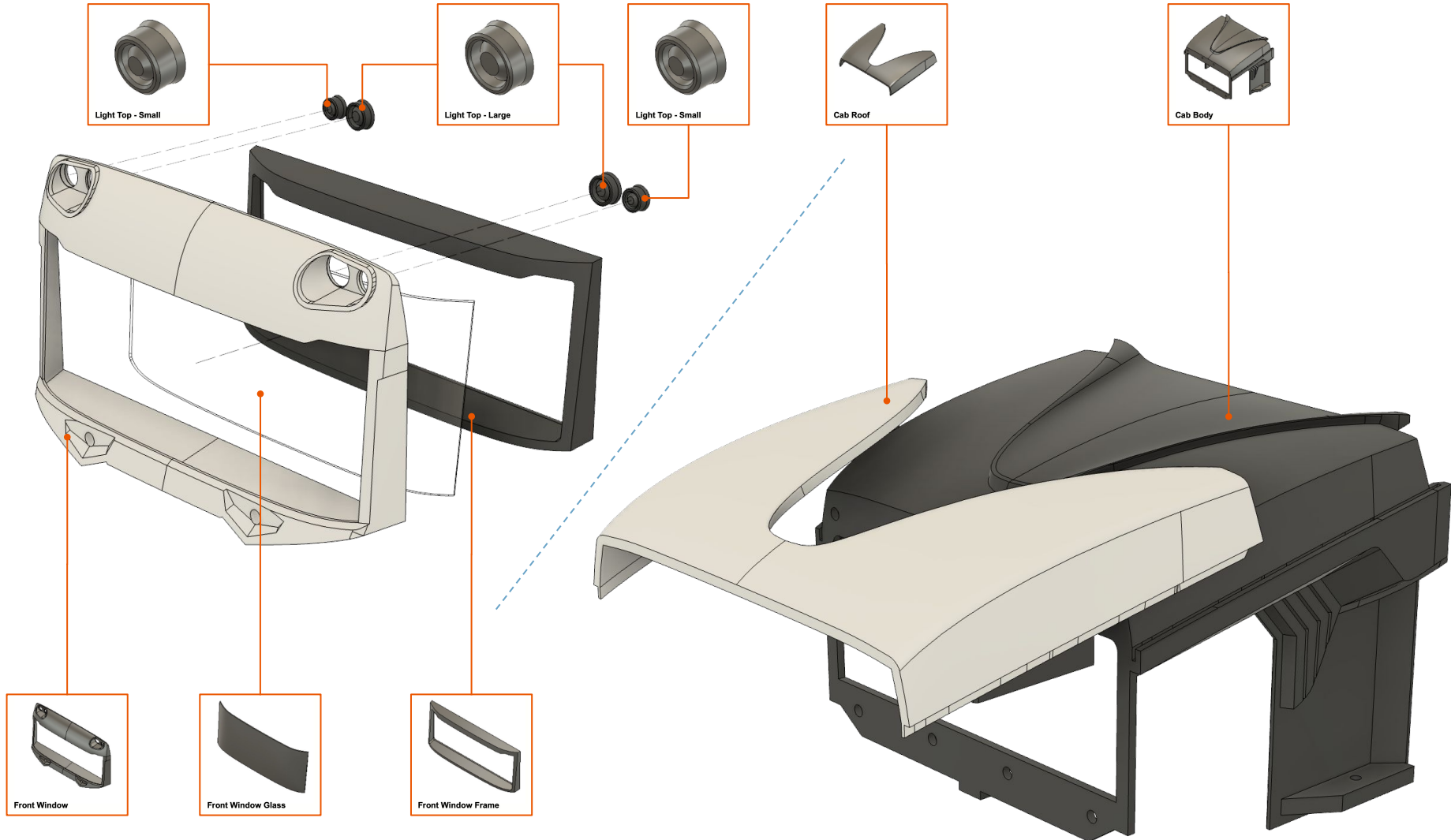
At first, you will make a “glass” from any transparent foil up to 0.5 mm thick. Thicker material is more durable than thinner, but we found that “Clear Binding Covers” are OK.

Place the printed template on the foil, sketch the shape to foil and then cut the foil by scissors or sharp knife.



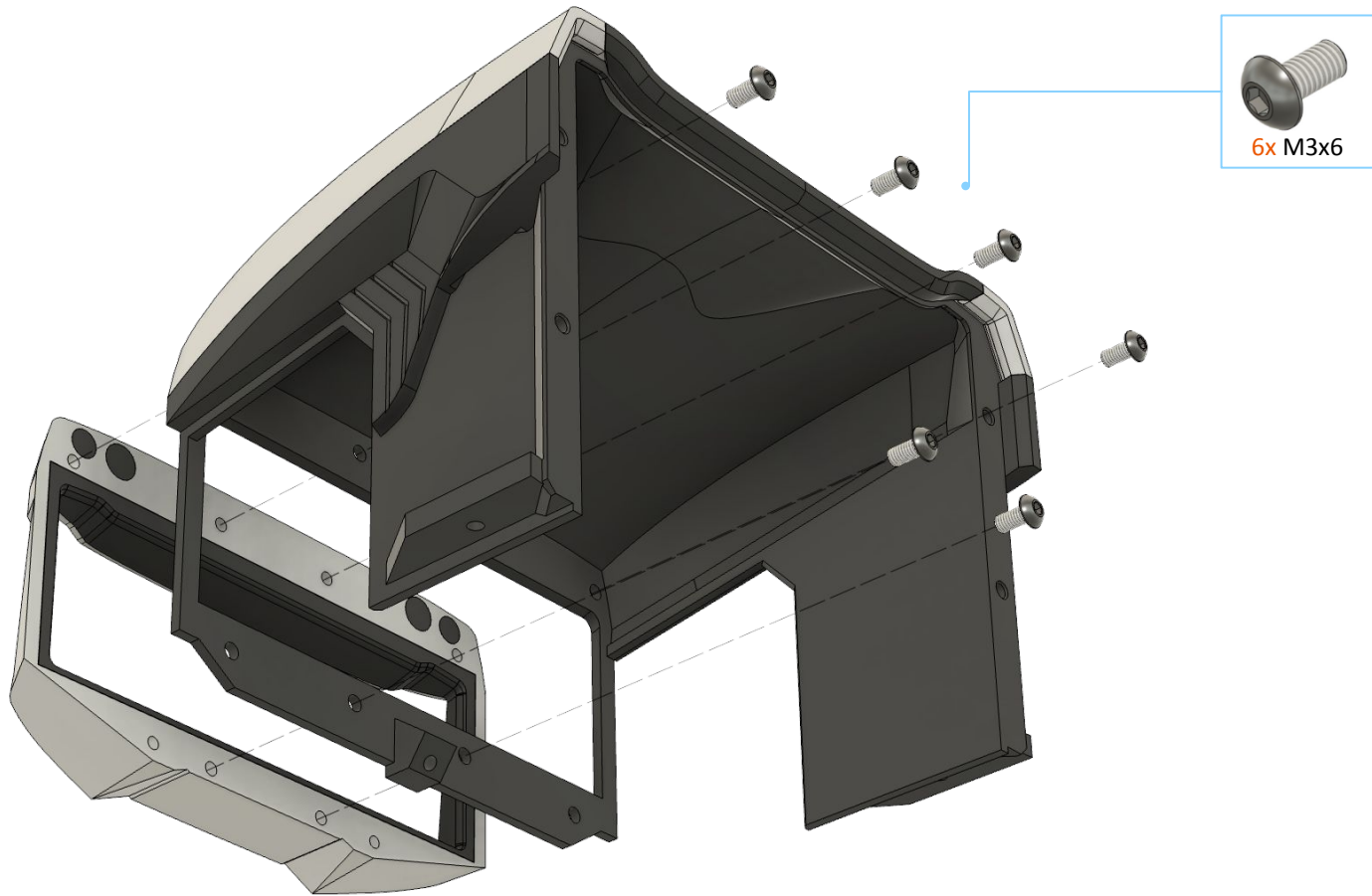


# Cab - step 1-2/12

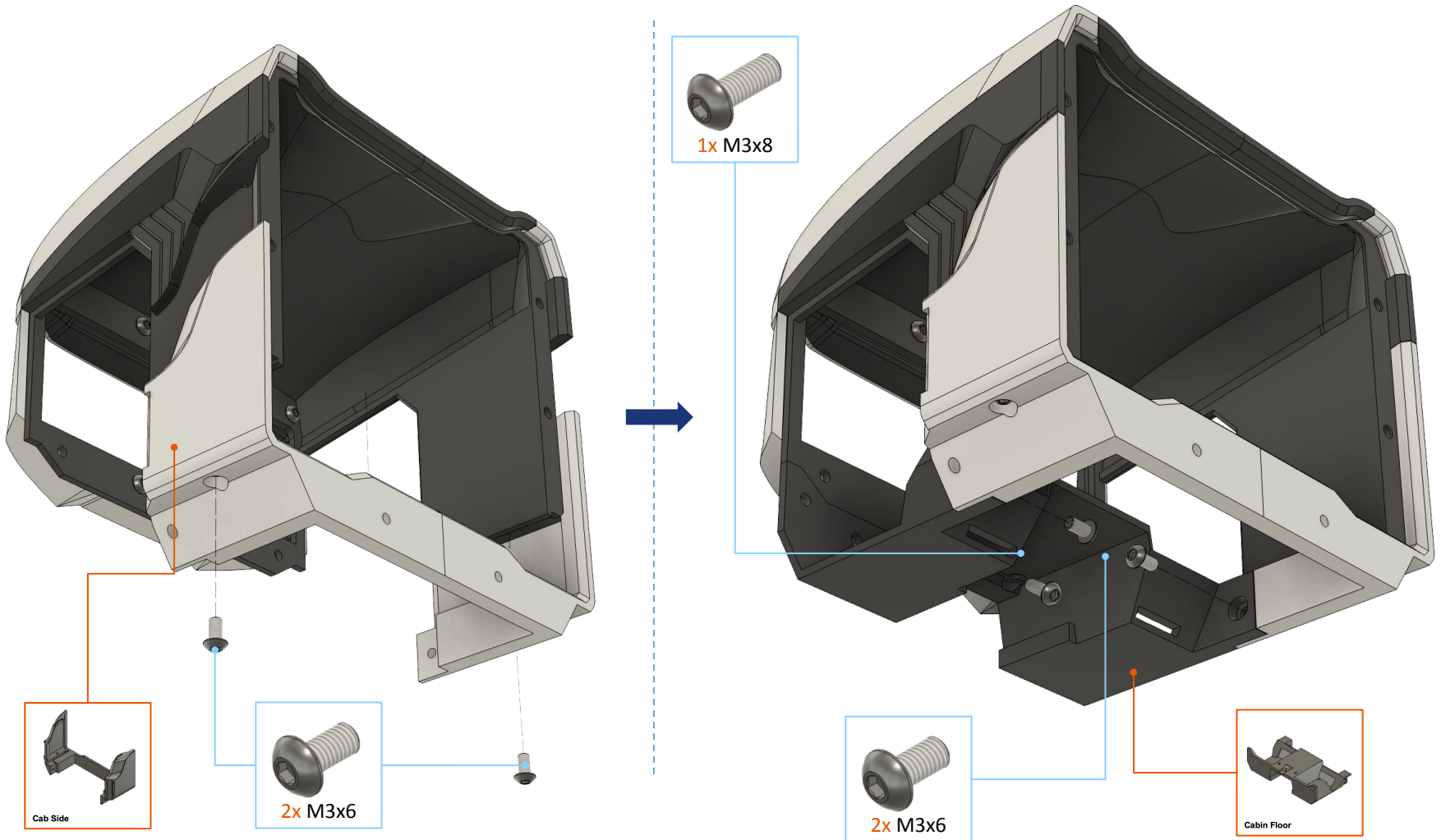




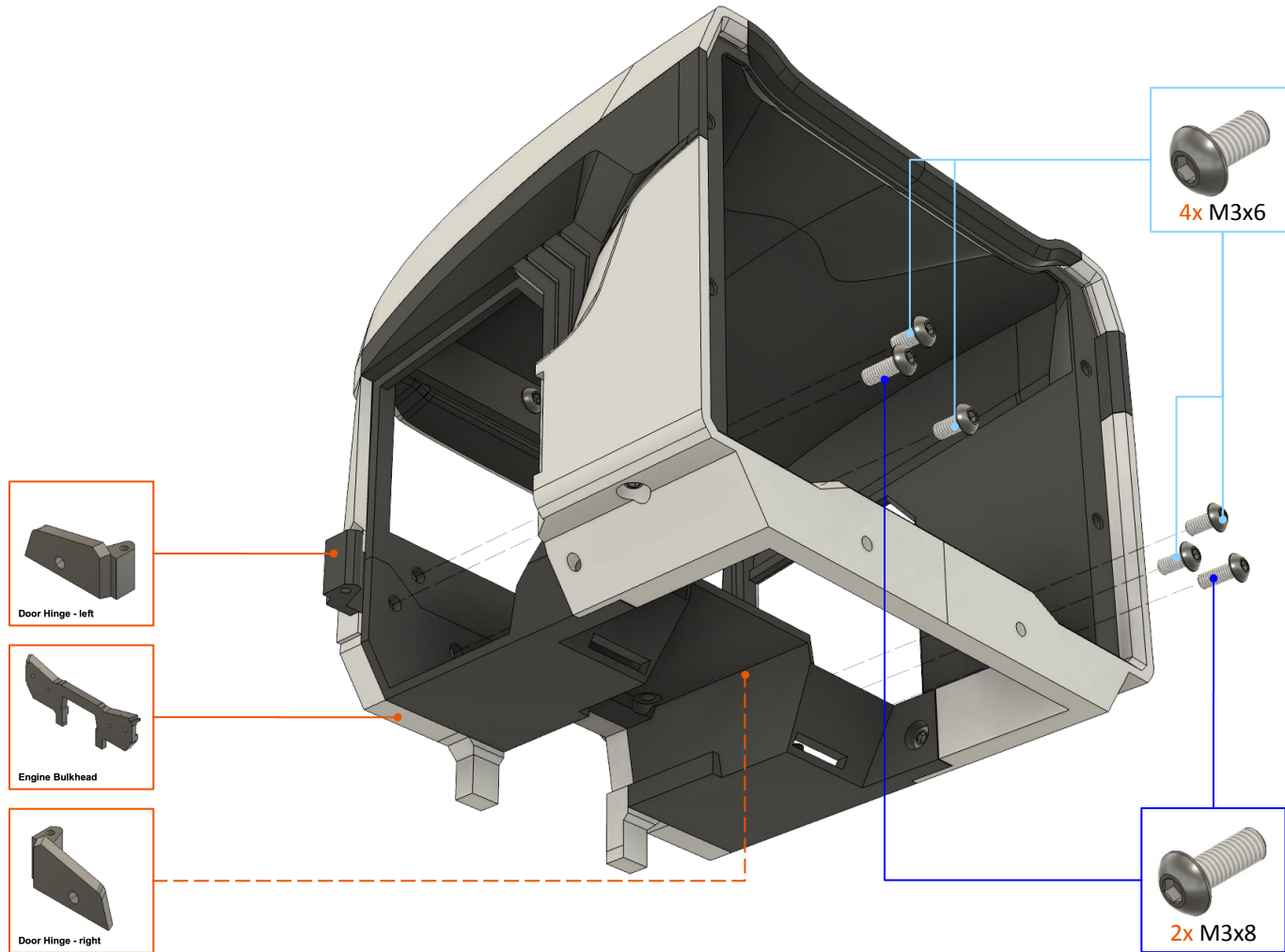
# Cab – step 3/12



# Cab – step 4-5/12

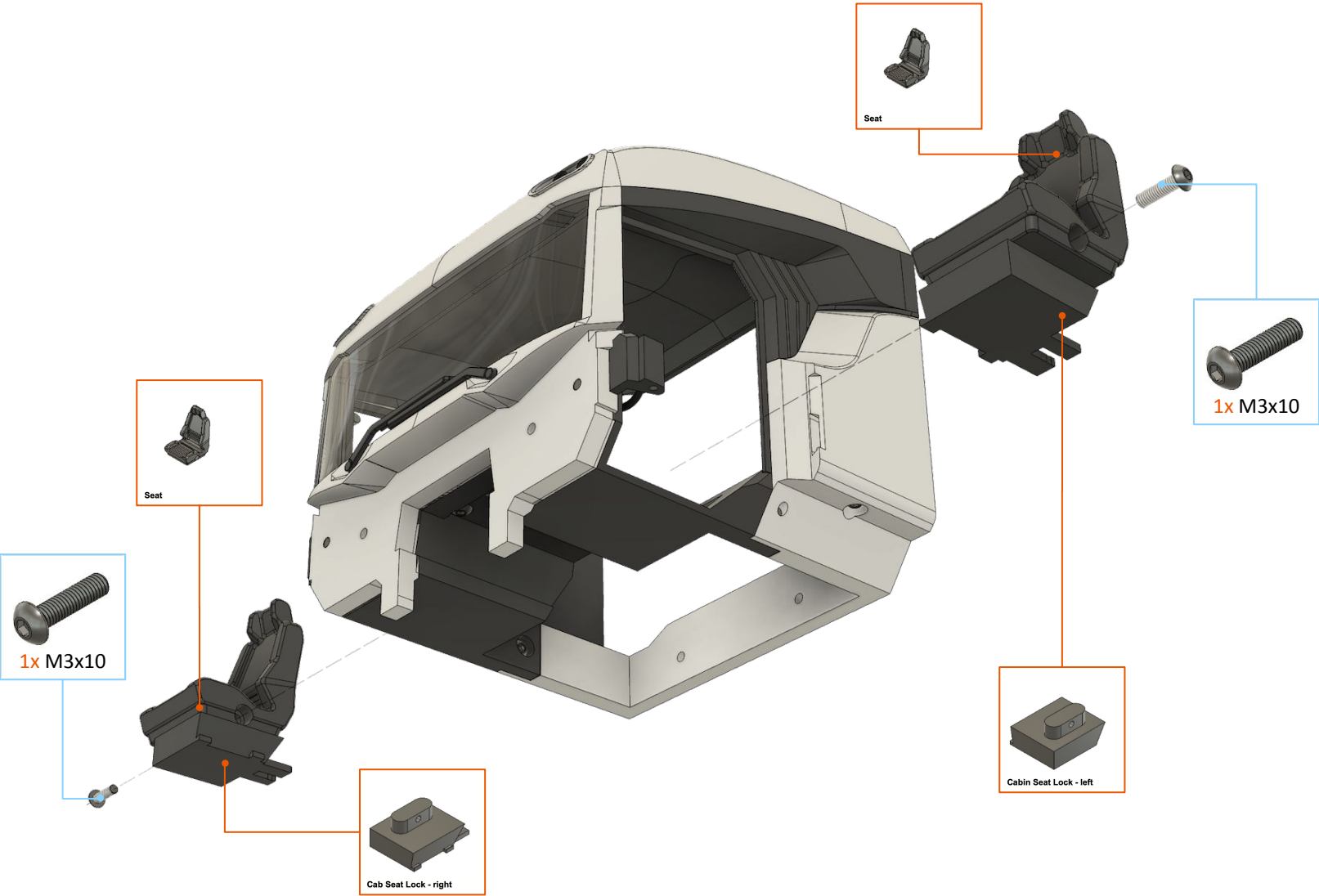


# Cab – step 6/12

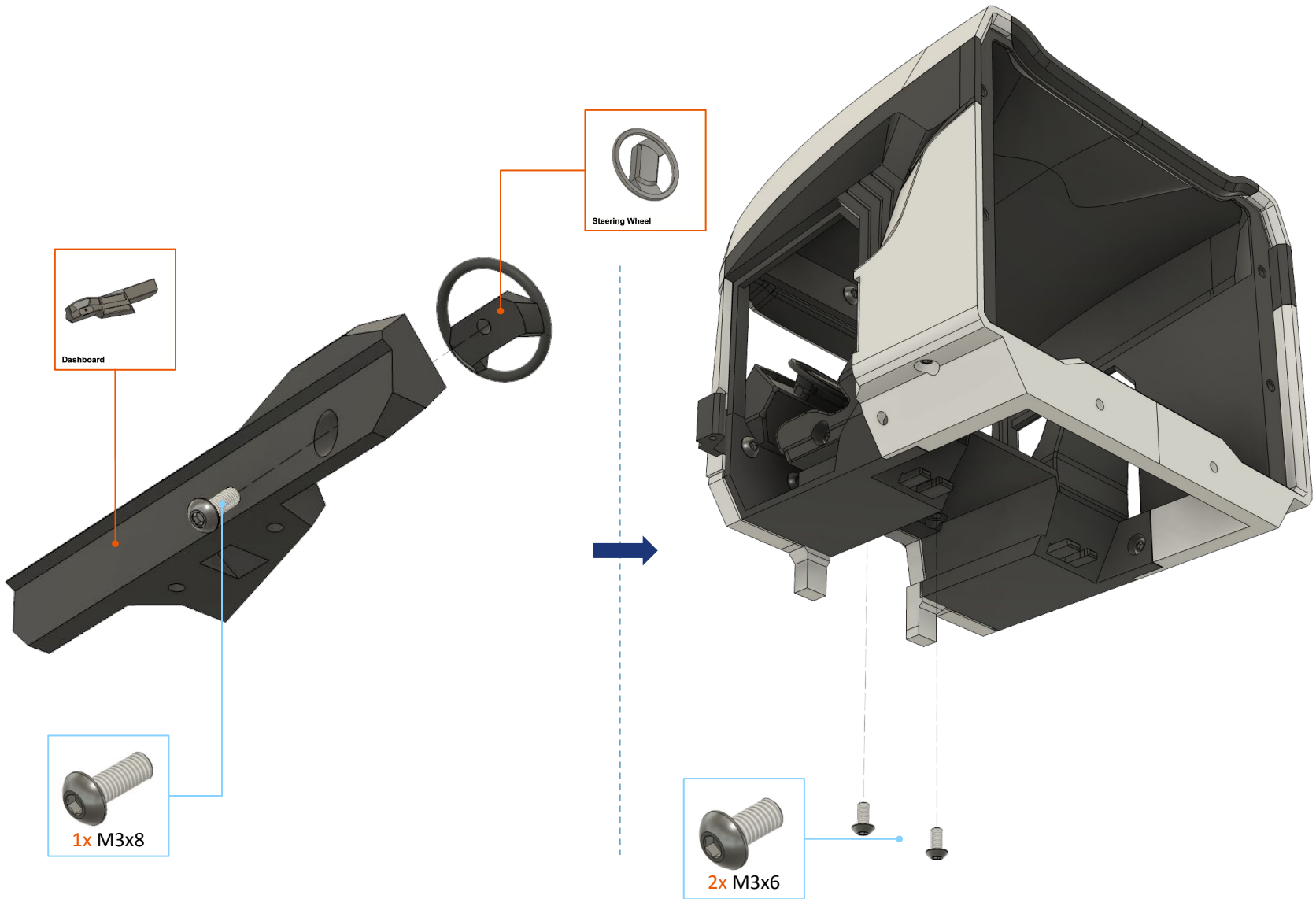




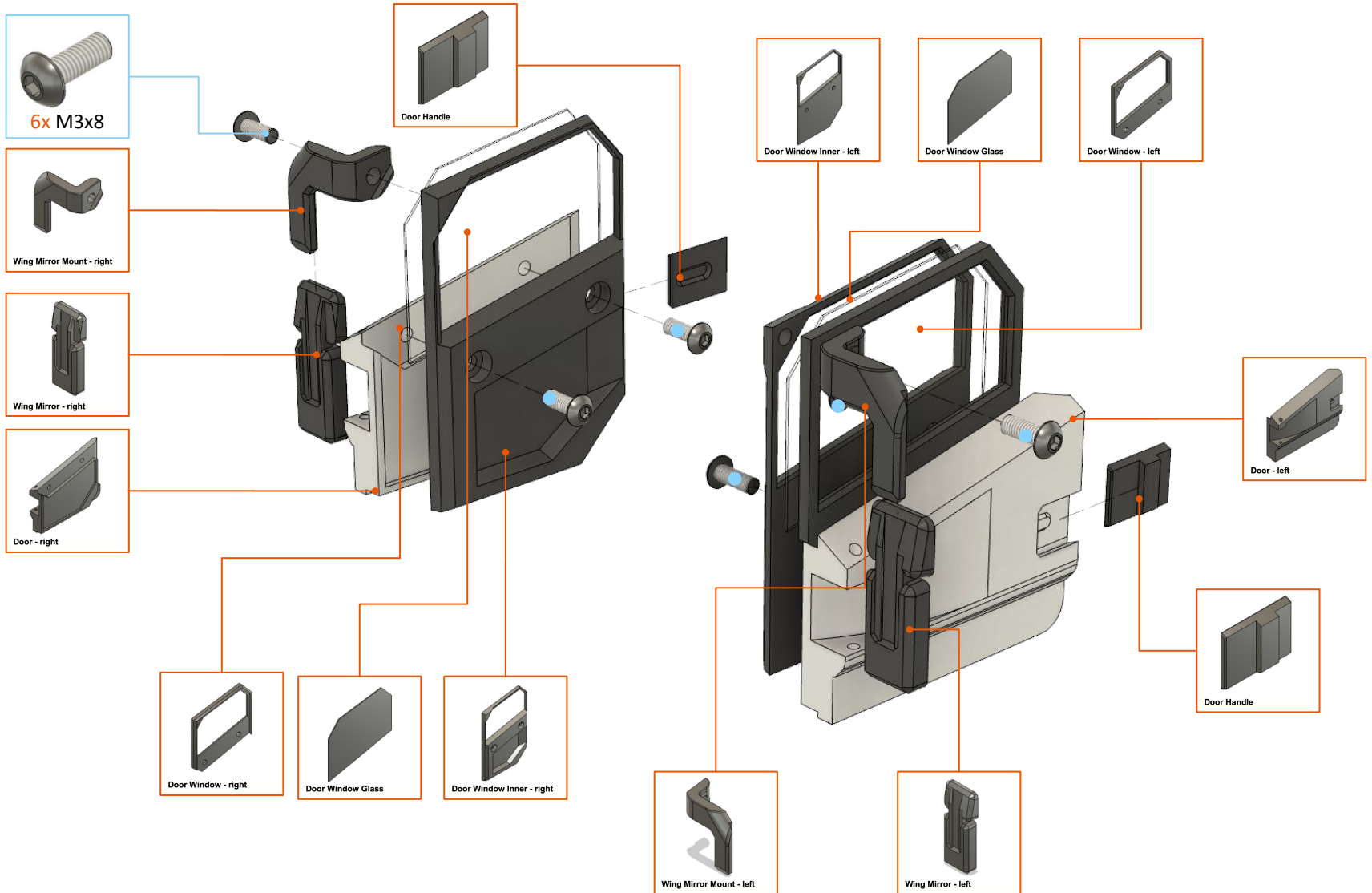
# Cab – step 7/12



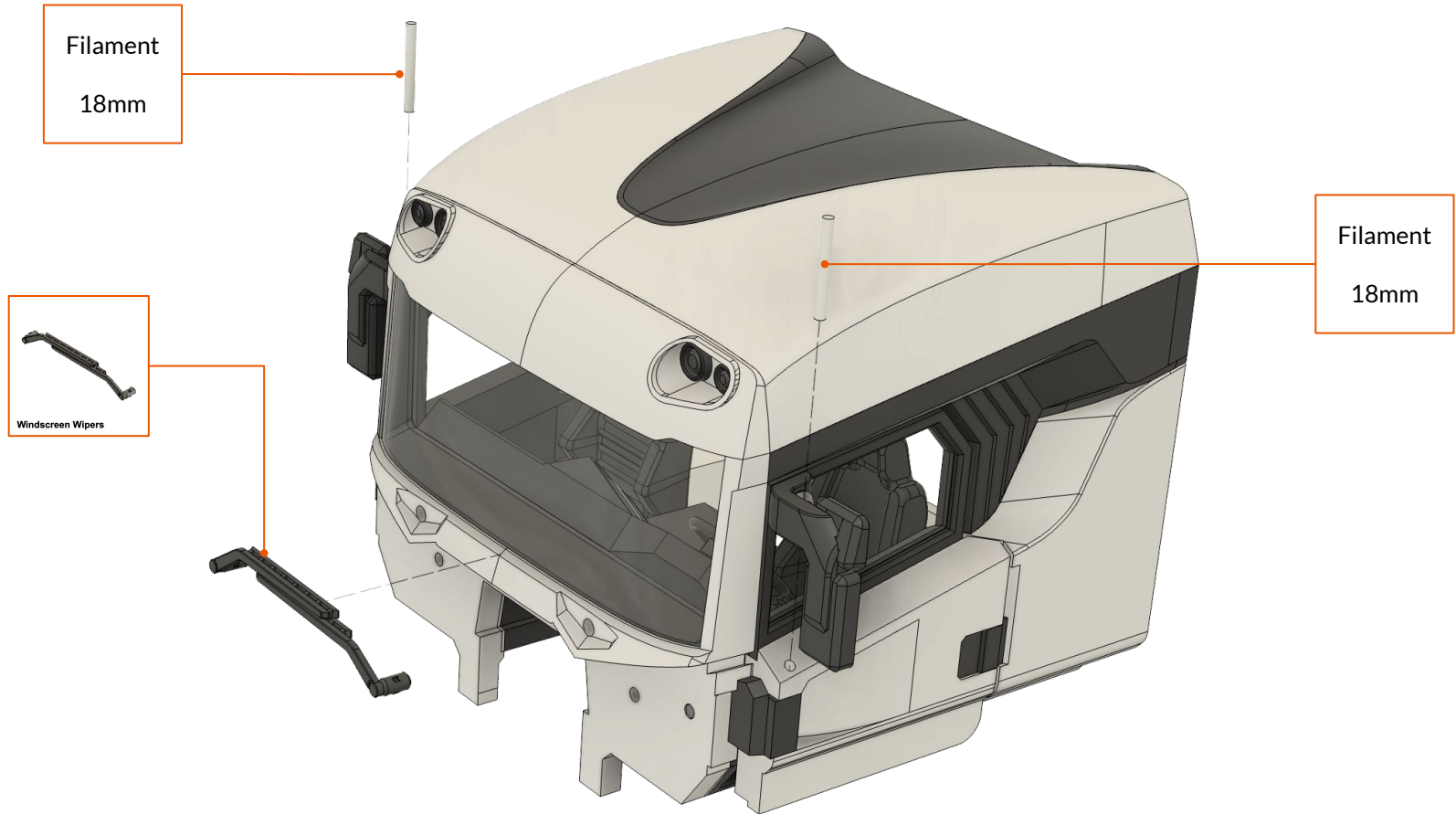
# Cab – step 8-9/12



# Cab – step 10/12

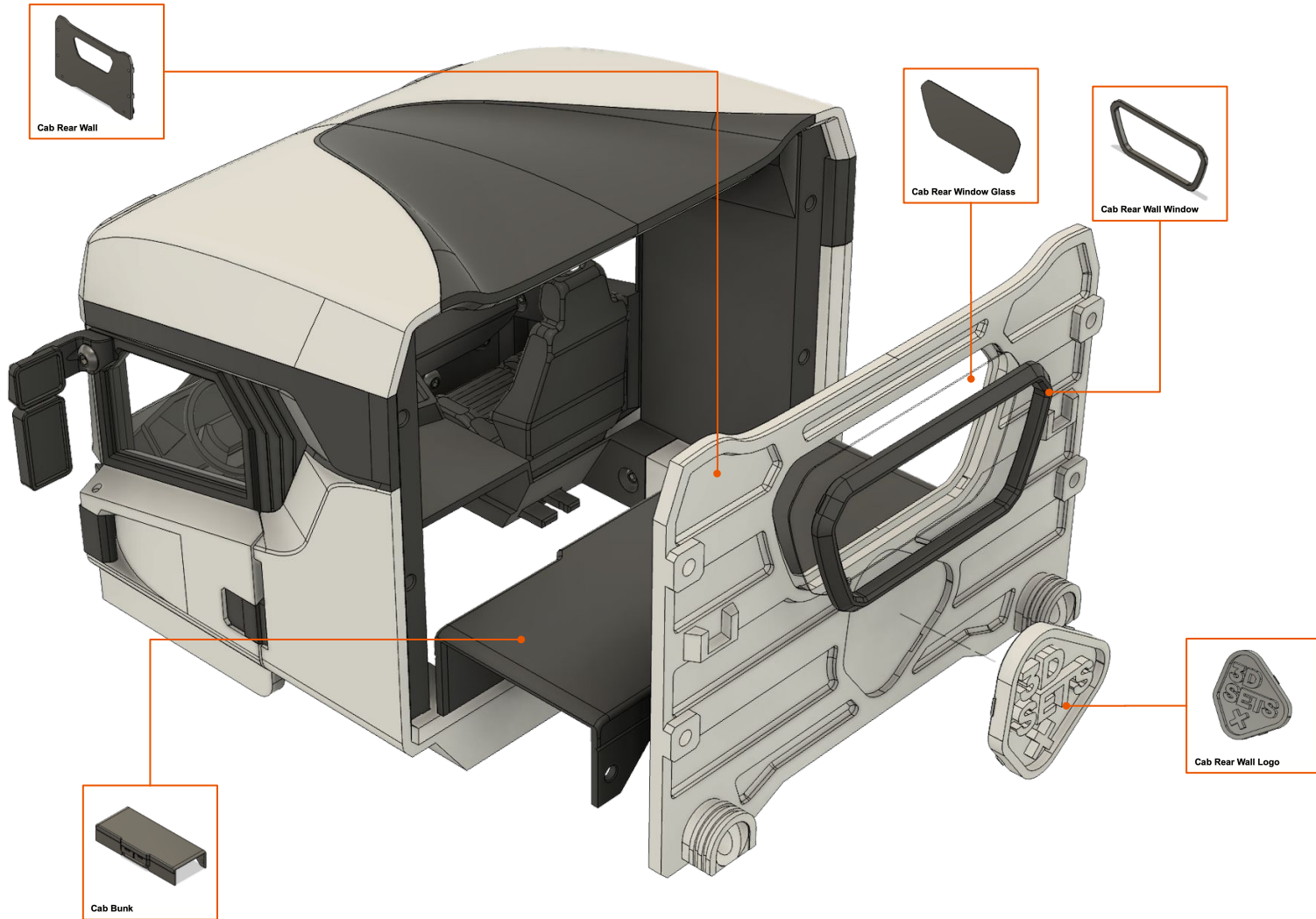


# Cab – step 11/12





# Cab – step 12/12



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# Roady – Hood

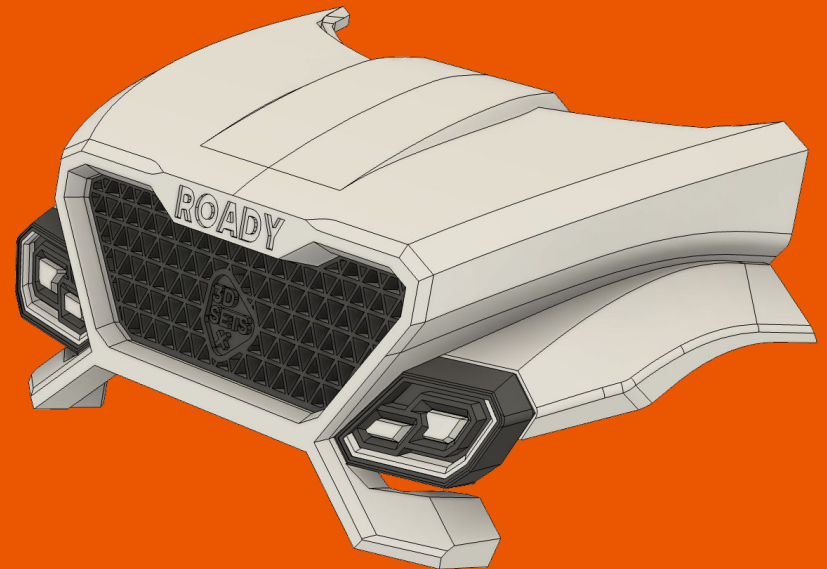
In this procedure you will assemble the hood and tank of the truck.

Required print plates:

- "Print 16 - Lights 1"
- "Print 20 - Front Mask + Lights + Interior"
- "Print 21 - Engine Hood + Cab Fender"

Non-printed parts:

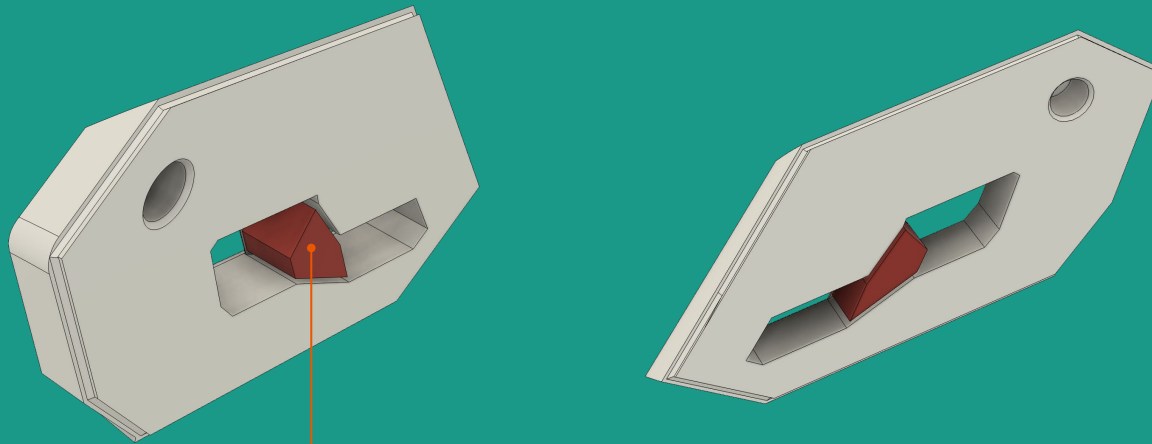
- Screw M3x6: 6 pcs.



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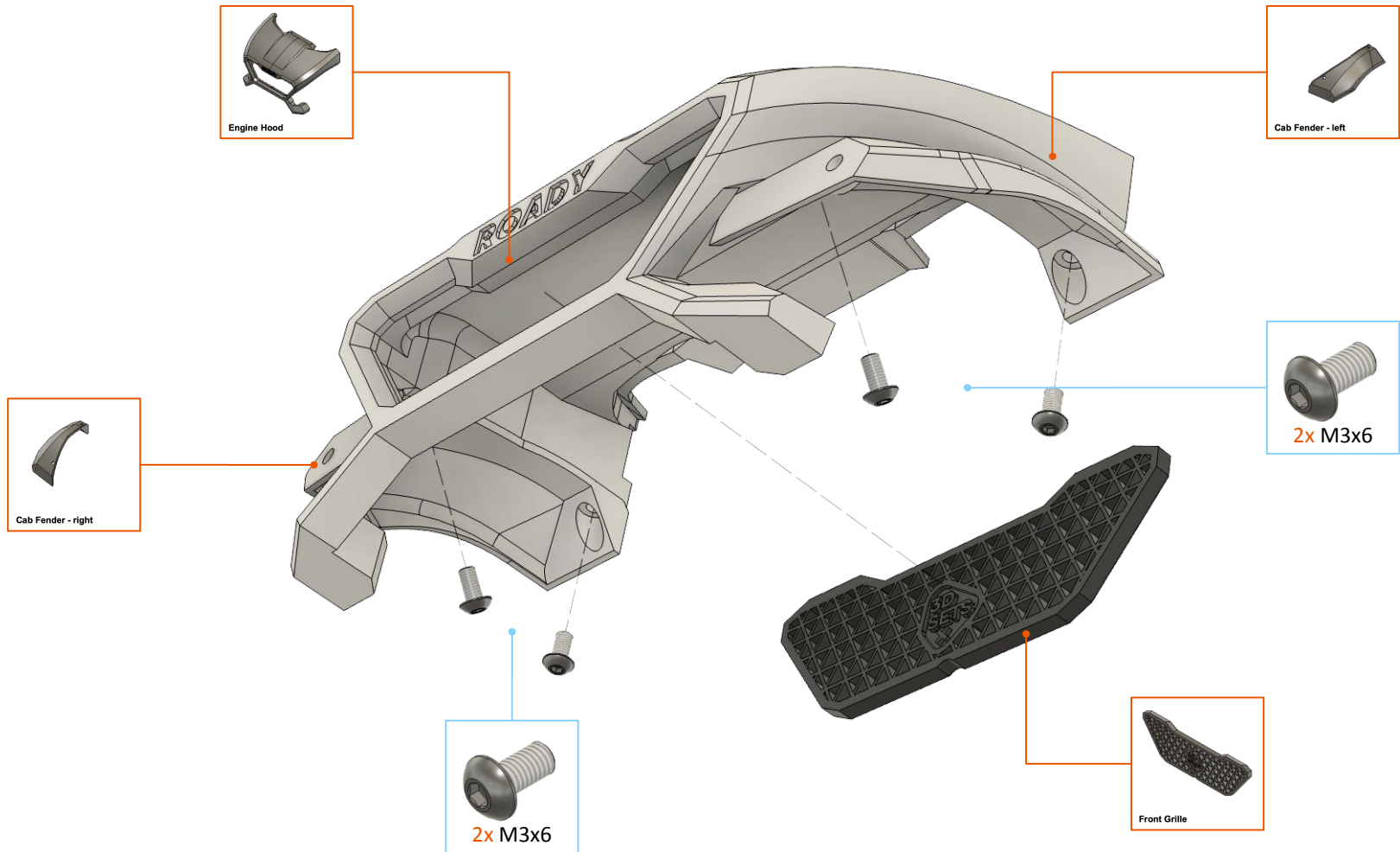
# Postprocessing – removing supports

Before you start building, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!

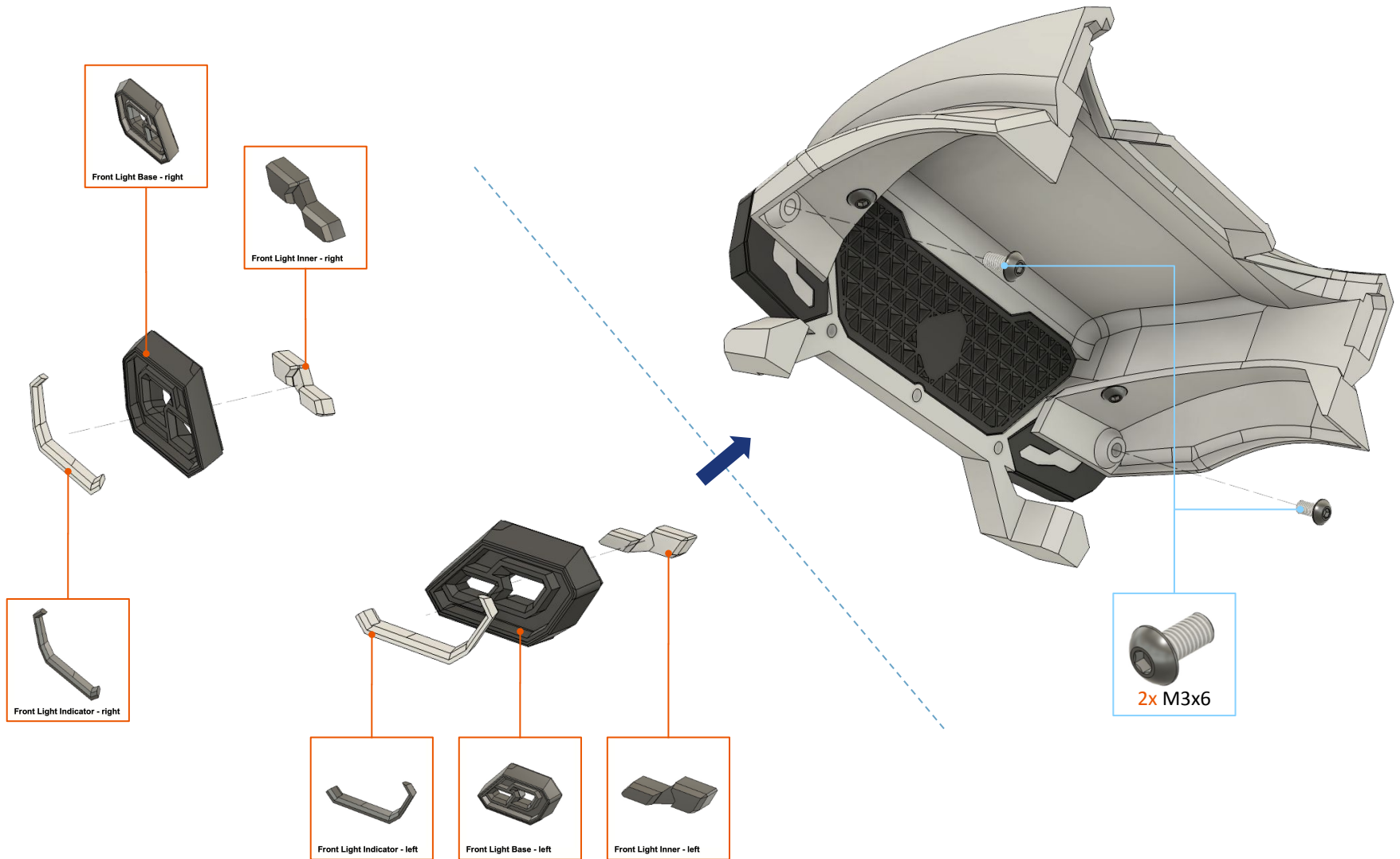


supports marked in  
red has to be removed

# Hood – step 1/3



# Hood – Step 2-3/3



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# Roady – Install Hood & Cab

In this procedure you will assemble the cab and hood of the truck.

Required print plates:

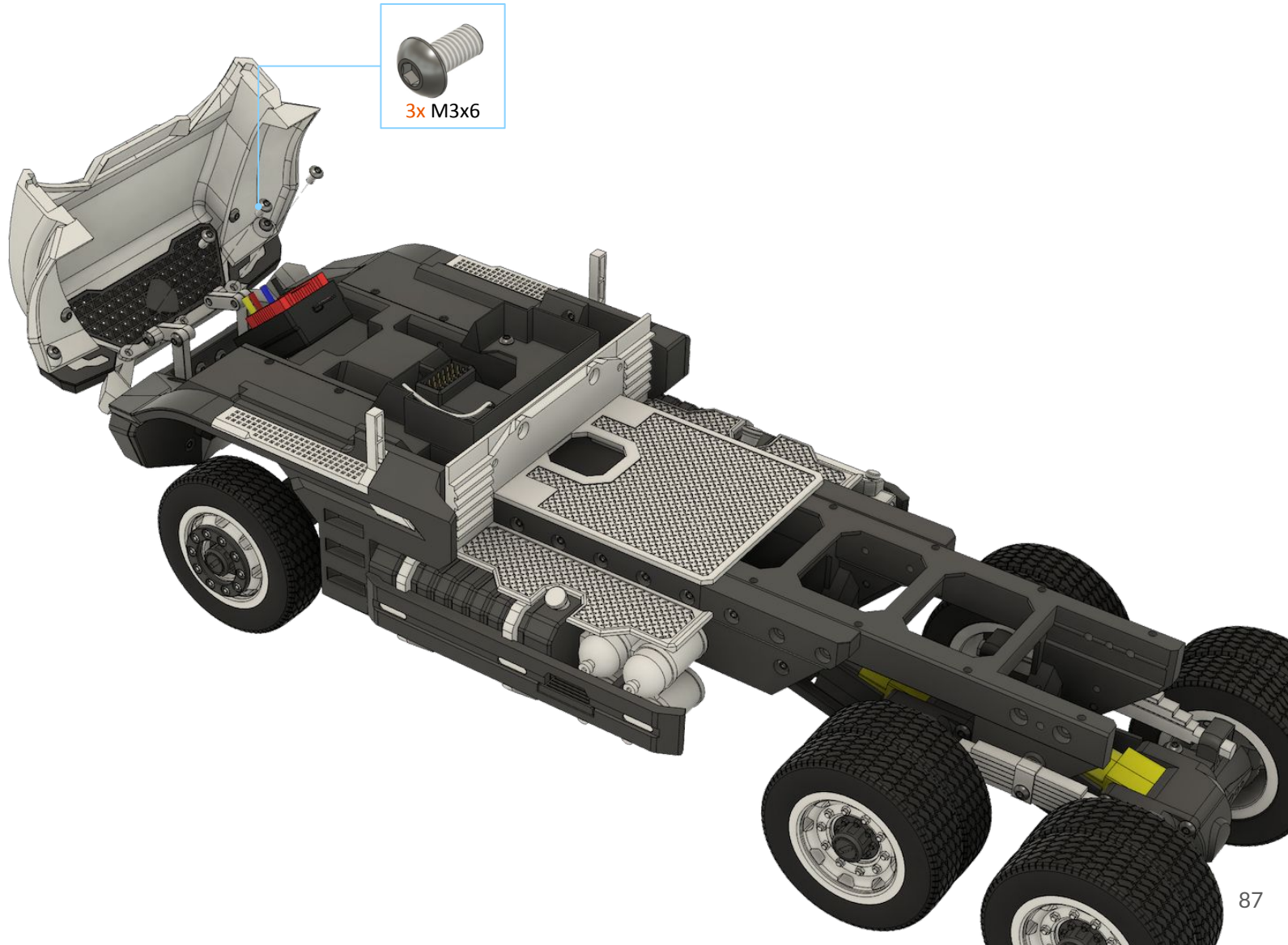
- "Print 1B - Roady - Cab Rear Side + Air Intake"
- "Print 2B - Roady - Exhaust + Piston Mount"

Non-printed parts:

- Screw M3x6: 3 pcs.
- Screw M3x8: 4 pcs.
- Screw M3x16: 2pcs.

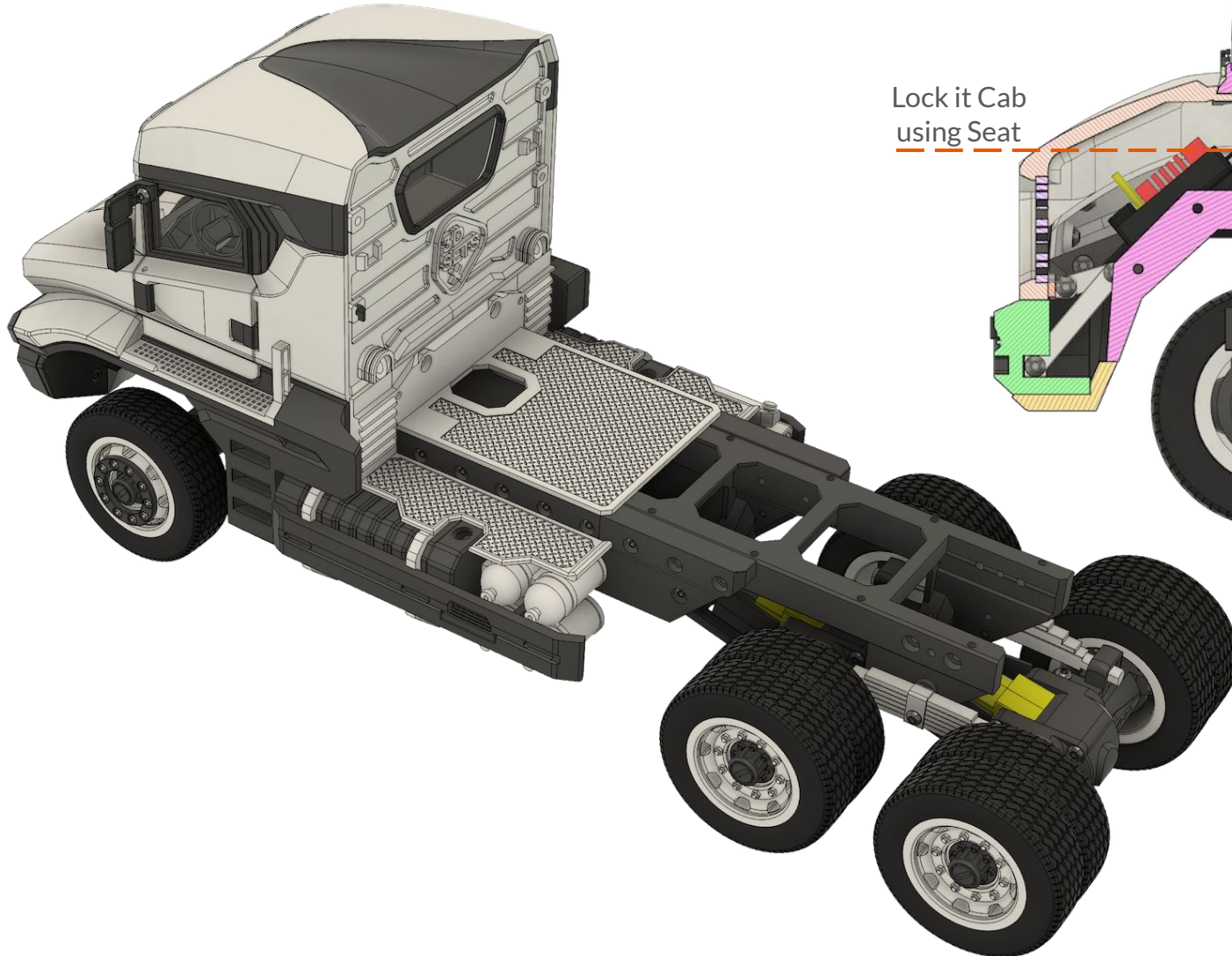


# Cab Installation – step 1/3

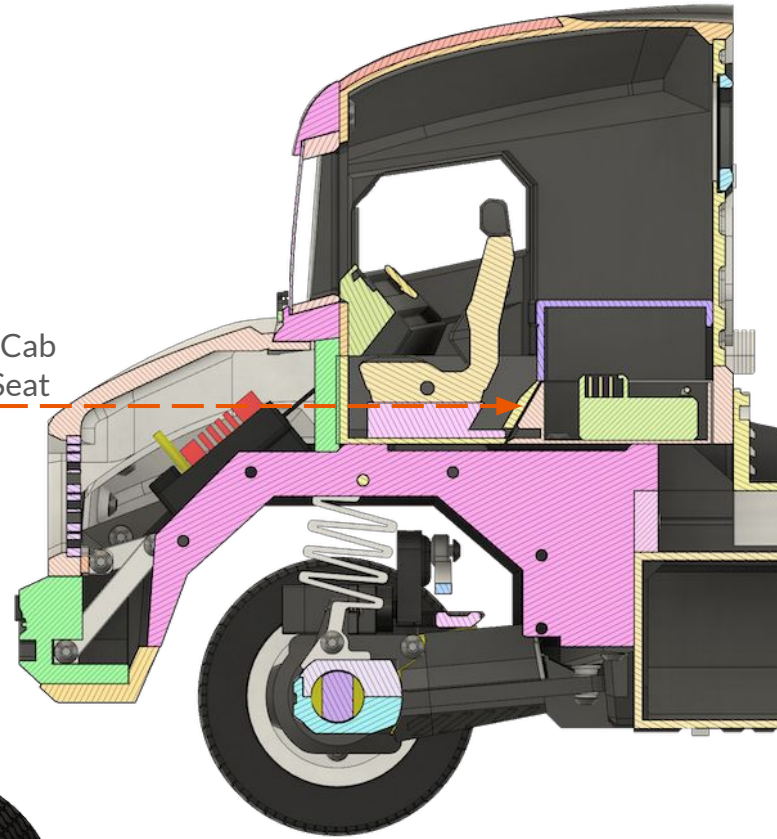




## Cab Installation – step 2/3

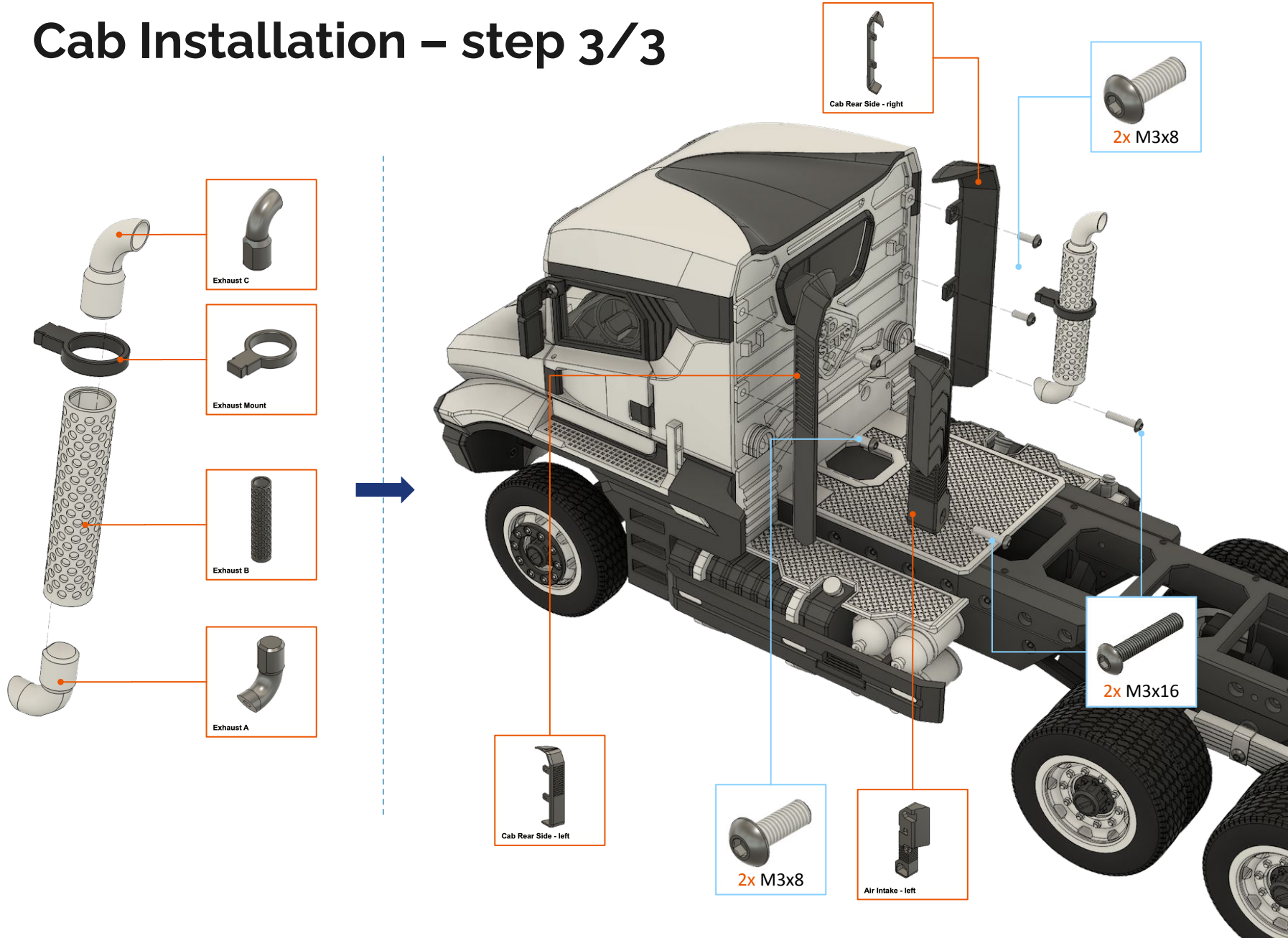


Lock it Cab  
using Seat





# Cab Installation – step 3/3



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# Roady – Install Details

In this procedure you will assemble the details of the truck.

Required print plates:

- "Print 2B - Roady - Exhaust + Piston Mount"
- "Print 3 - Frame C + Rear Bumper"
- "Print 4 - Rear Bumper Stripes"

Non-printed parts:

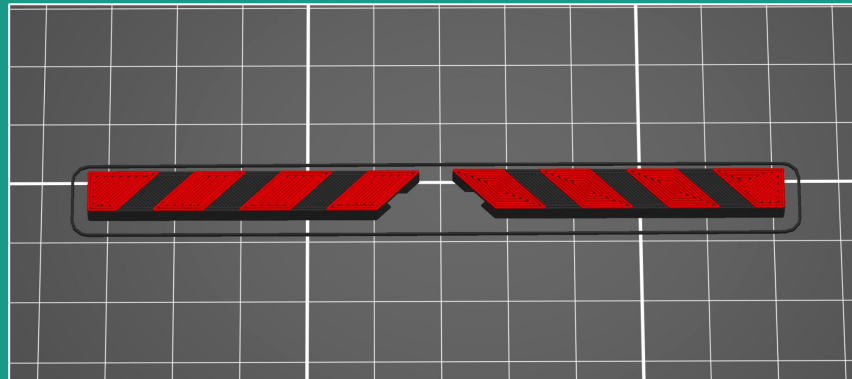
- Screw M3x10: 5 pcs.
- Screw M3x12: 2 pcs.
- Screw M3x20: 1 pcs.

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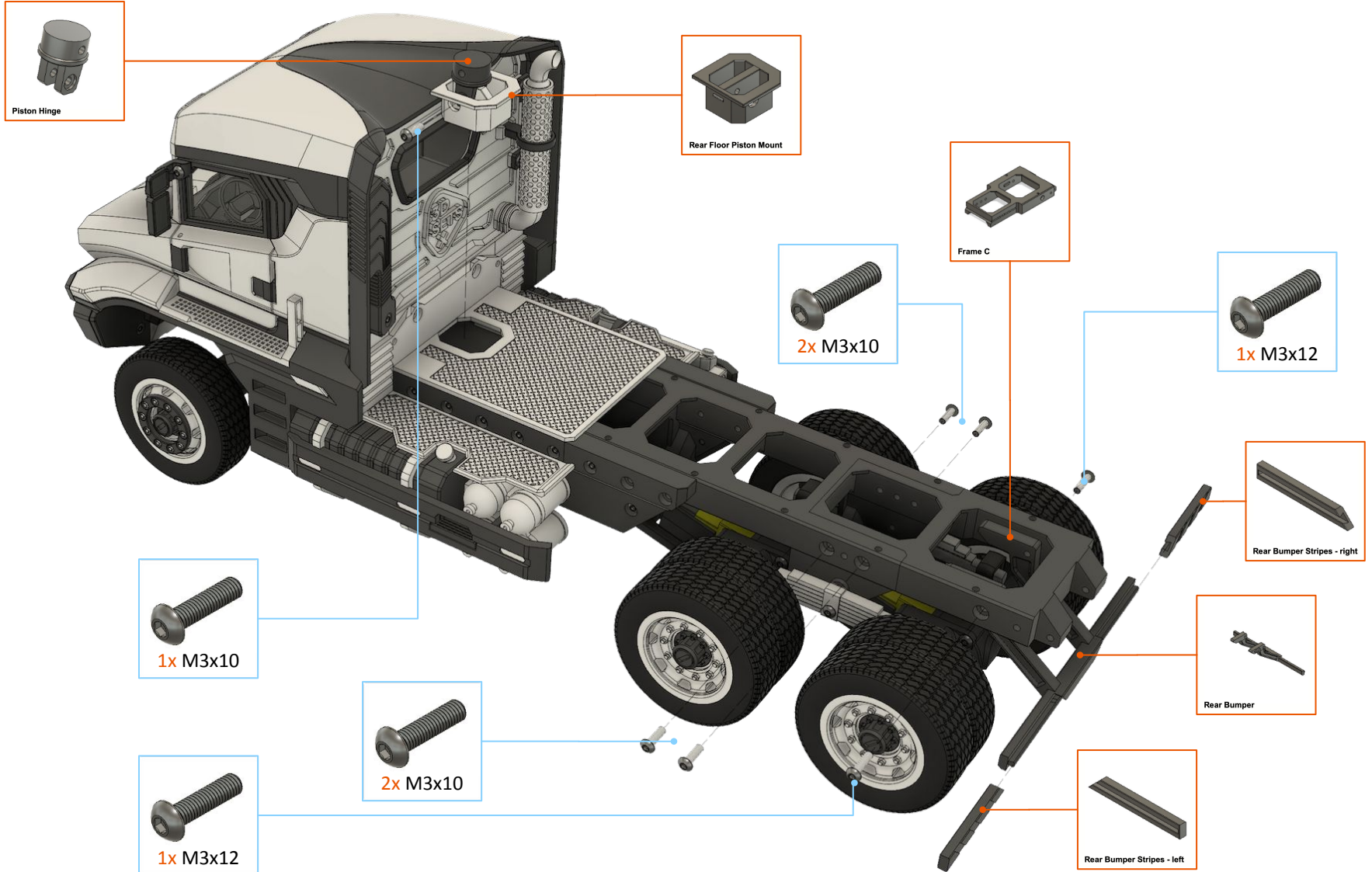
# Rear Bumper Stripes

You can print Rear Bumper Stripes with filament changes to achieve color results. Please, setup filament changes in layer heights described below (setup is for layer height 0,15mm):

- Change filament at Layer 23 - height 3,5mm
- Layer color before change: black
- Layer color after change: red

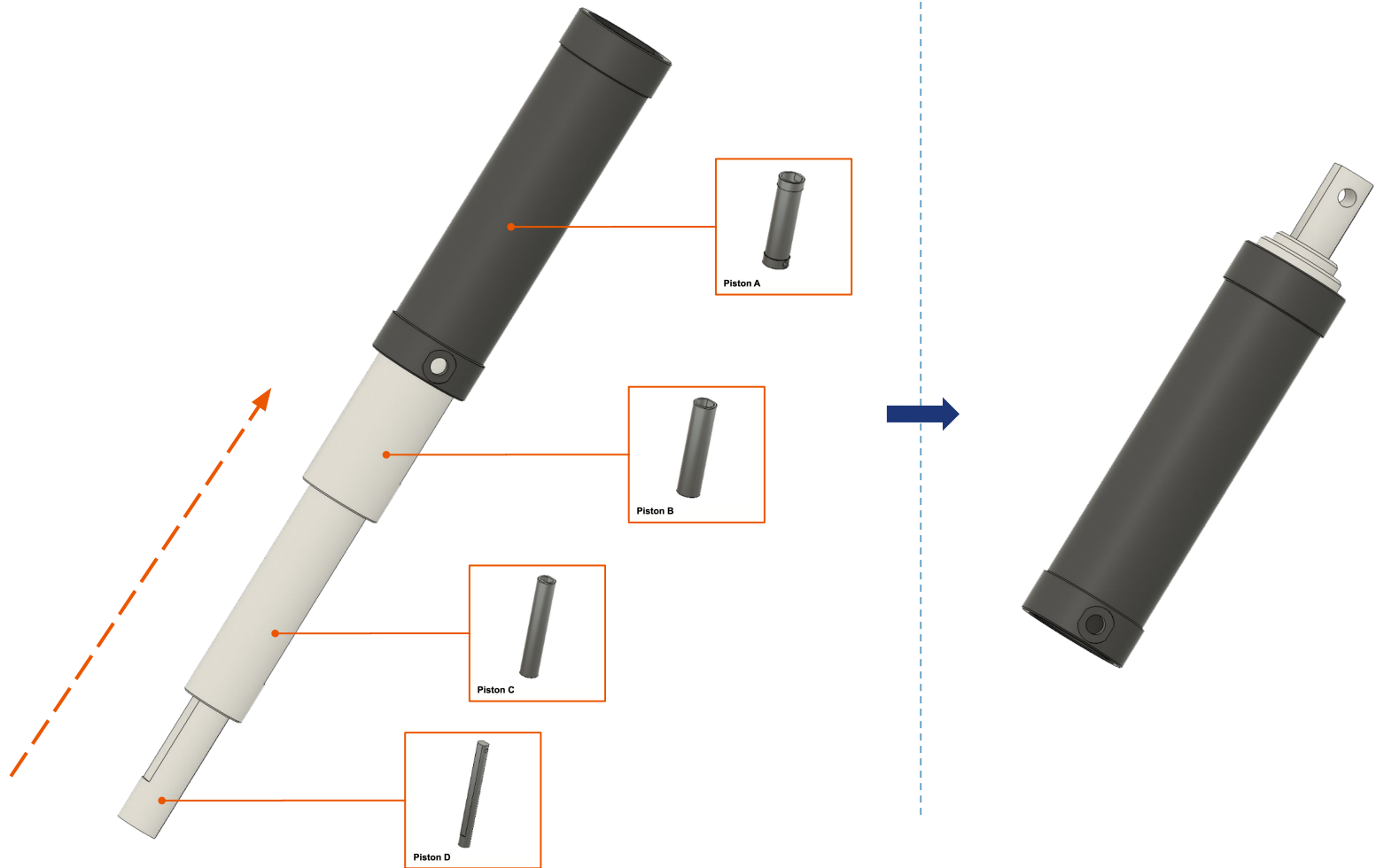


# Install Details – step 1/2



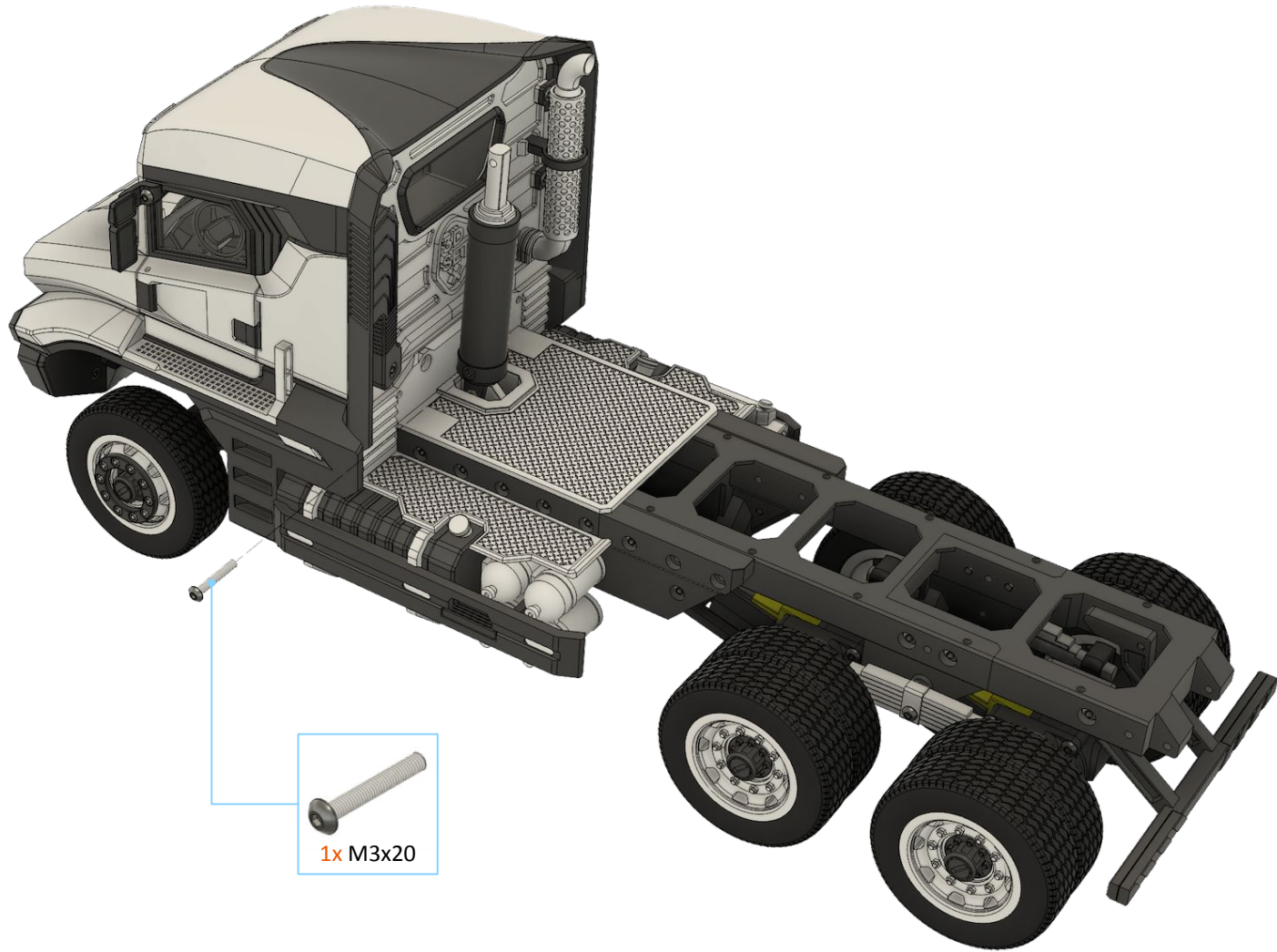


# Piston – step 1/1





# Install Details – step 2/2



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# Tipper

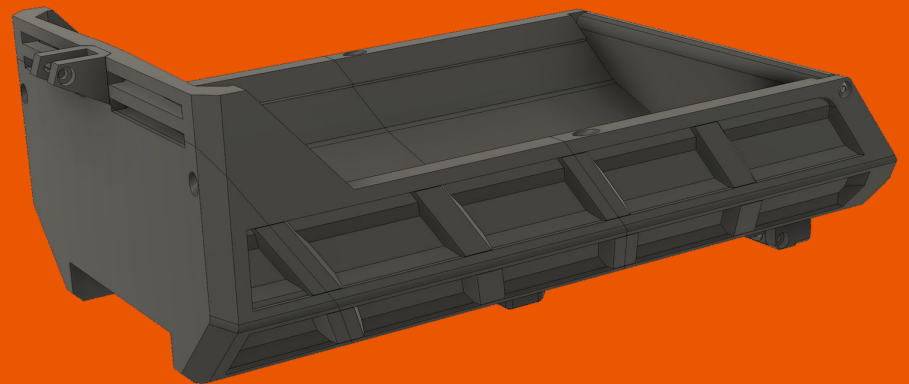
In this procedure you will assemble the tipper of the truck.

Required print plates:

- "Print 6 - Tipper A"
- "Print 7 - Tipper B"
- "Print 8 - Tipper C"
- "Print 9 - Hinge + Strut + Floor A"
- "Print 10 - Floor B"
- "Print 11 - Tipper Tailgate"
- "Print 12 - Tipper Tailgate Label"

Non-printed parts:

- Screw M3x6: 15 pcs.
- Screw M3x8: 4 pcs.
- Screw M3x10: 5 pcs.
- Screw M3x16: 1 pcs.
- Screw M3x20: 2 pcs.



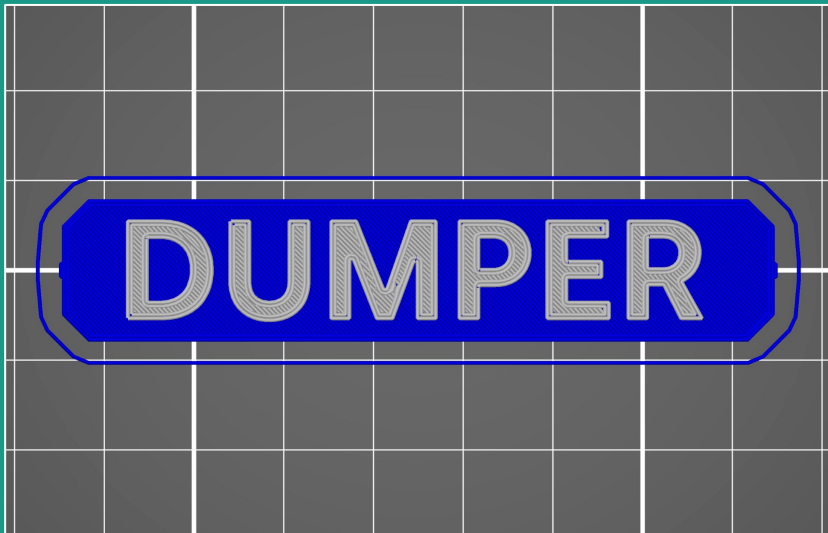
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# Tipper Tailgate Label & Licence Plate

You can print Tipper Tailgate Label and Licence Plate with filament changes to achieve color results. Please, setup filament changes in layer heights described below (setup is for layer height 0,15mm):

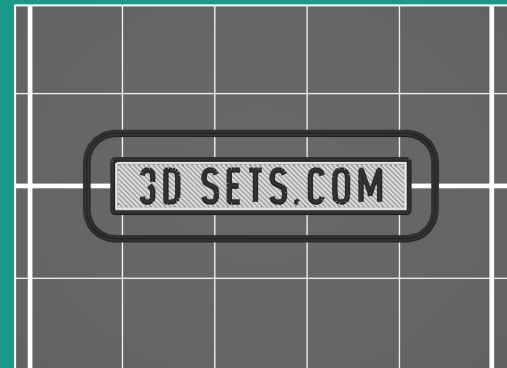
## Tipper Tailgate Label

- Change filament at Layer 11 - height 1,70mm
- Layer color before change: blue
- Layer color after change: white



## Licence Plate

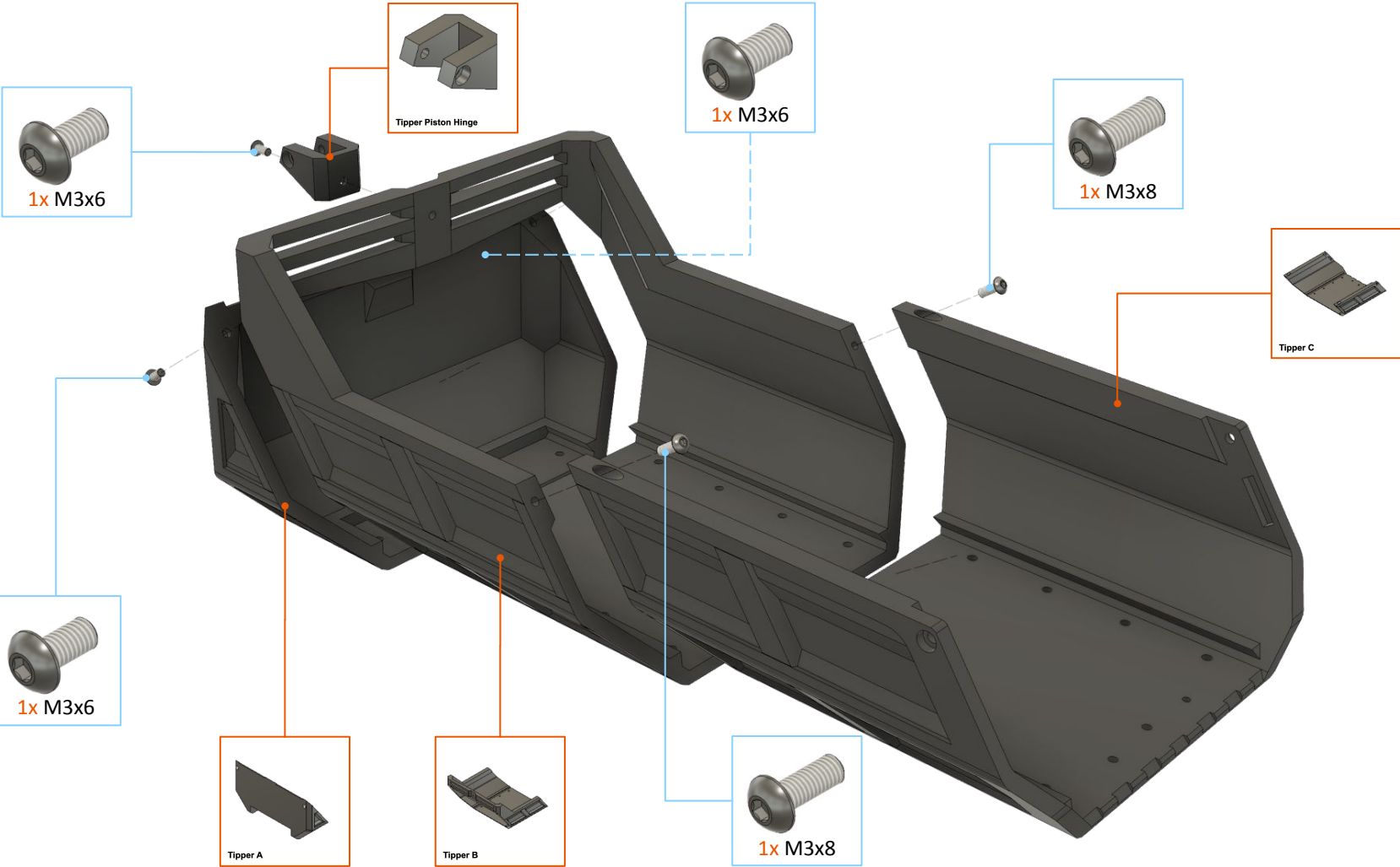
- Change filament at Layer 15 - height 2,3mm
- Layer color before change: black
- Layer color after change: white
- Change filament at Layer 17 - height 2,6mm
- Layer color after change: black





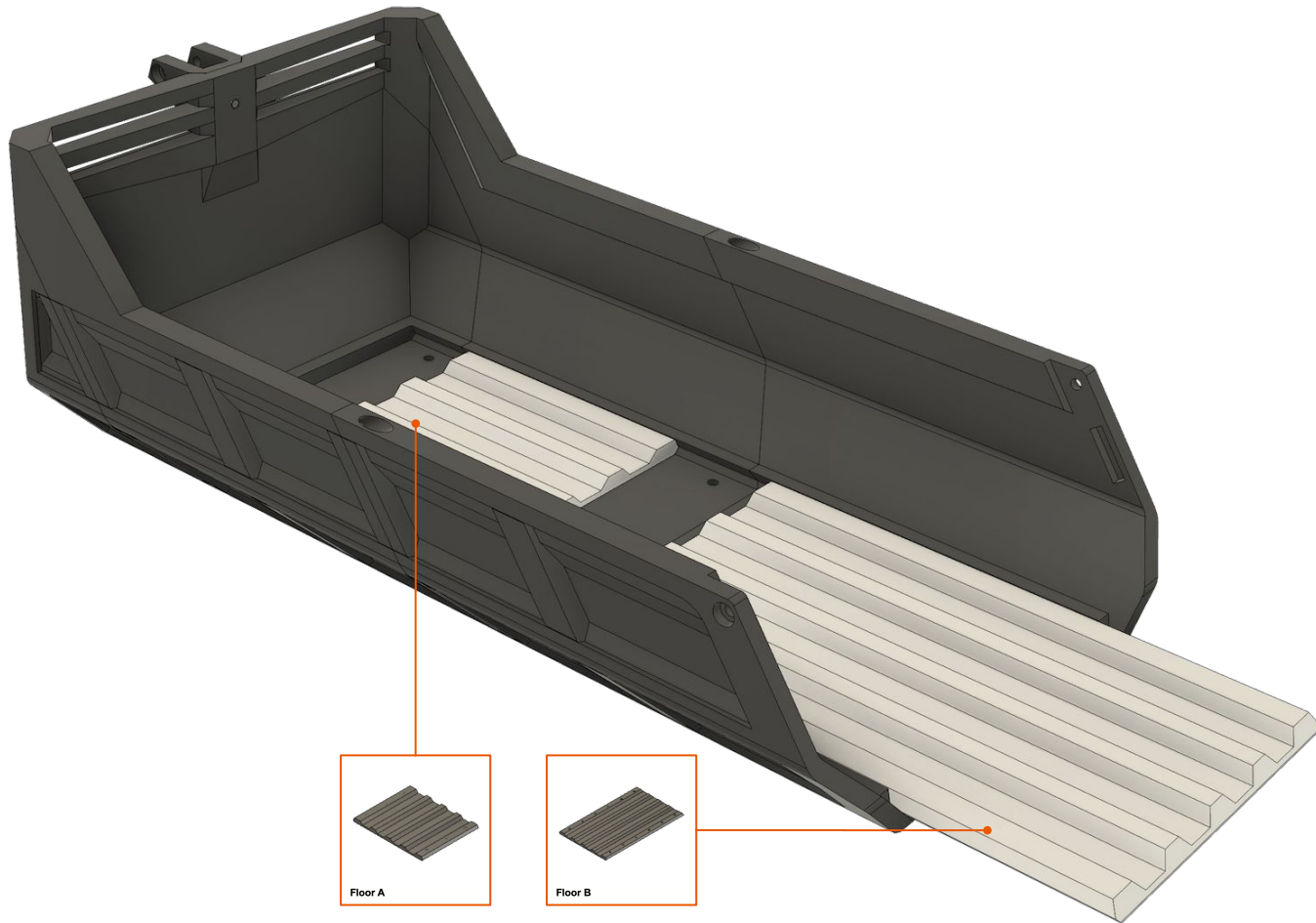


# Tipper – step 1/8



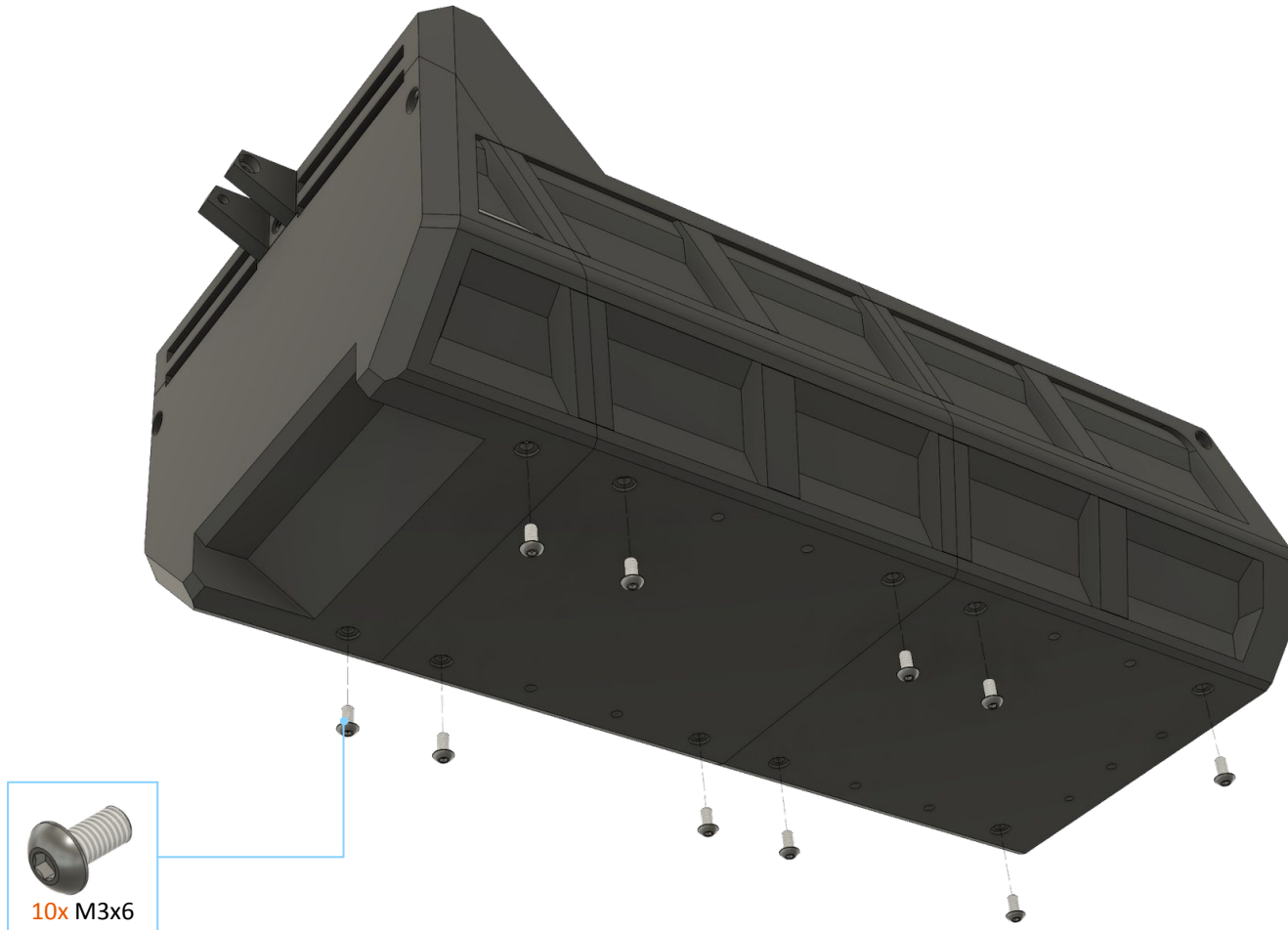


# Tipper – step 2/8



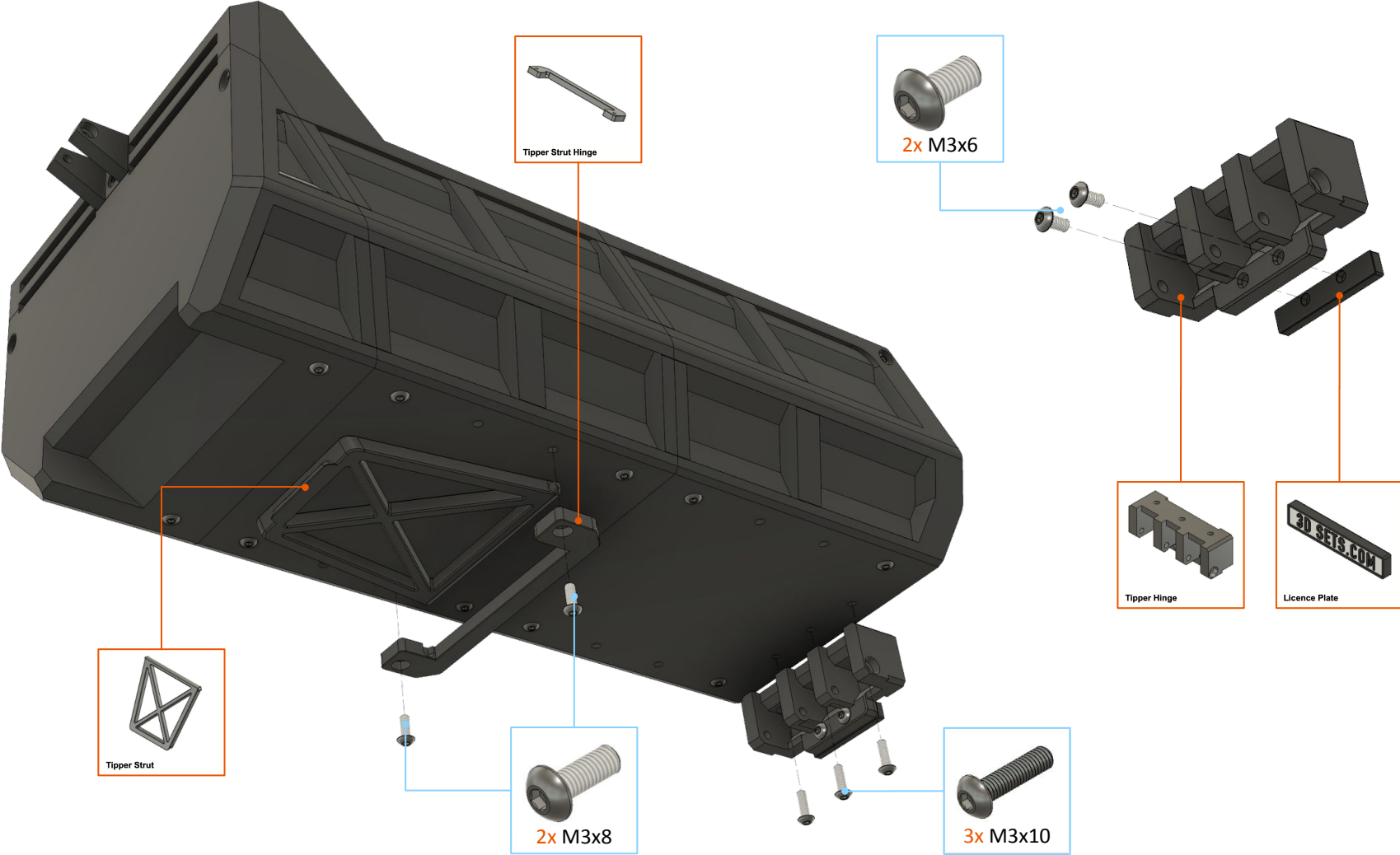


# Tipper – step 3/8



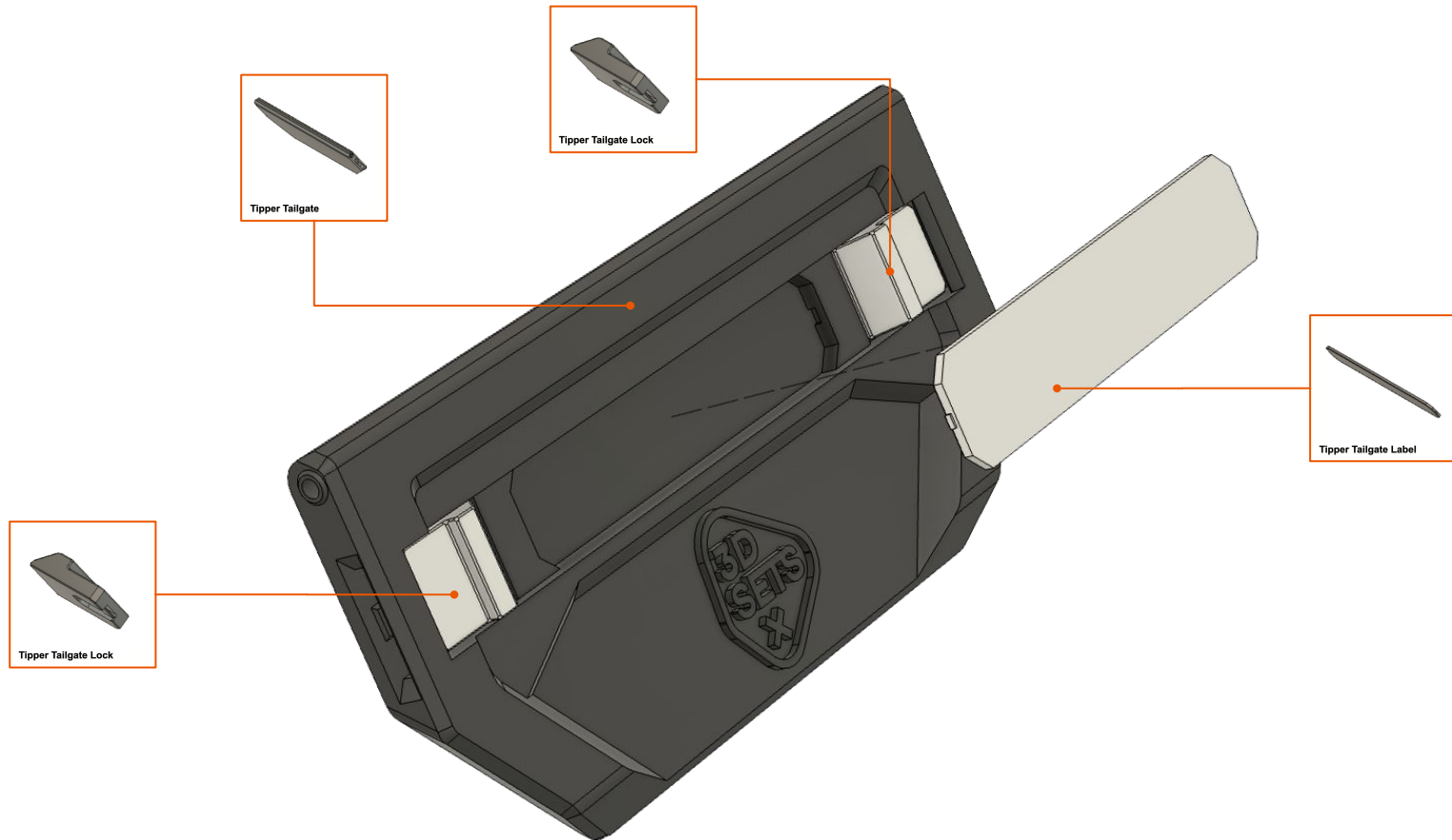


# Tipper – step 4-5/8





# Tipper – step 6/8



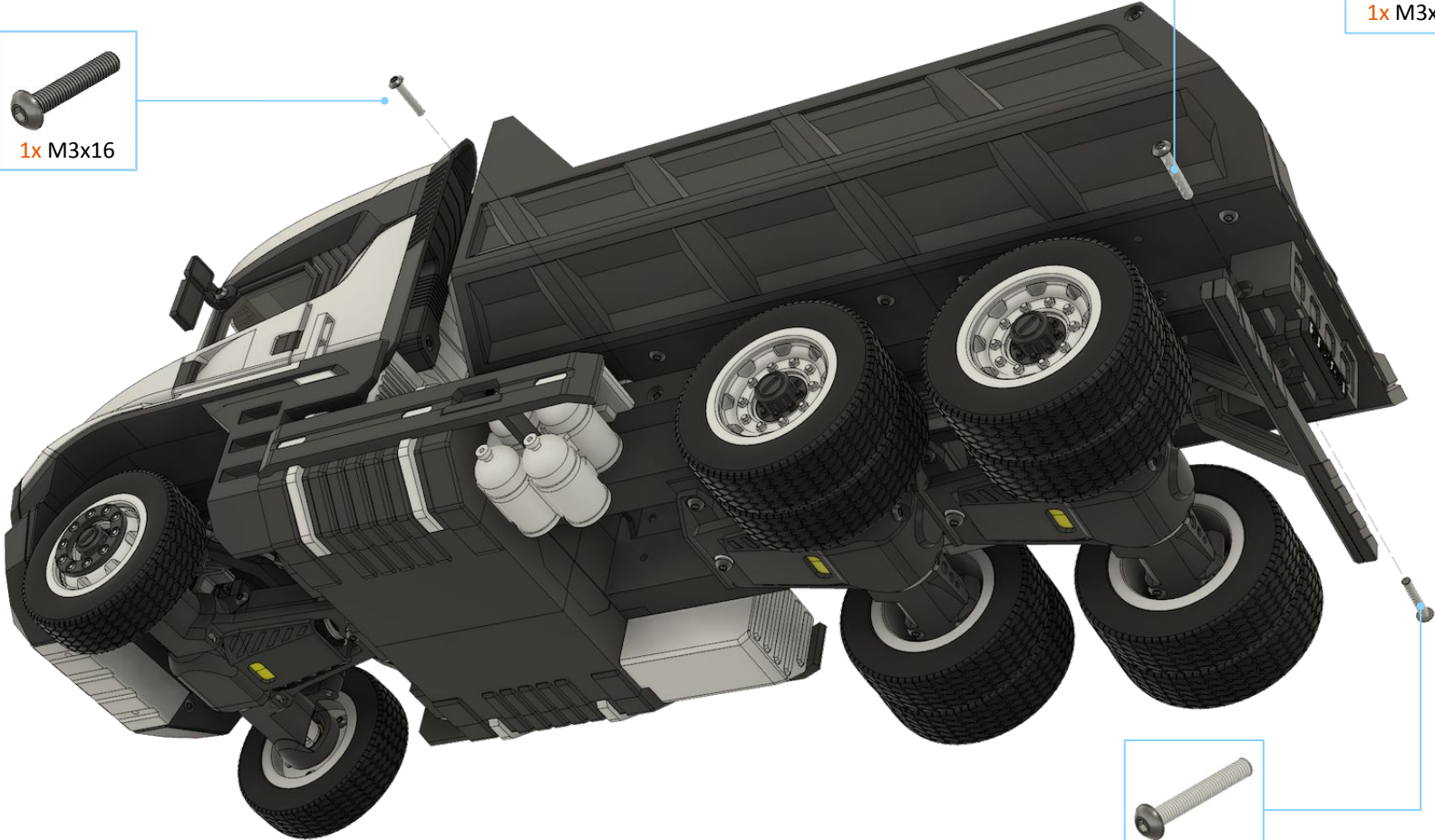


# Tipper – step 7/8





# Tipper – step 8/8



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# Roady Dumper – Fender Rear

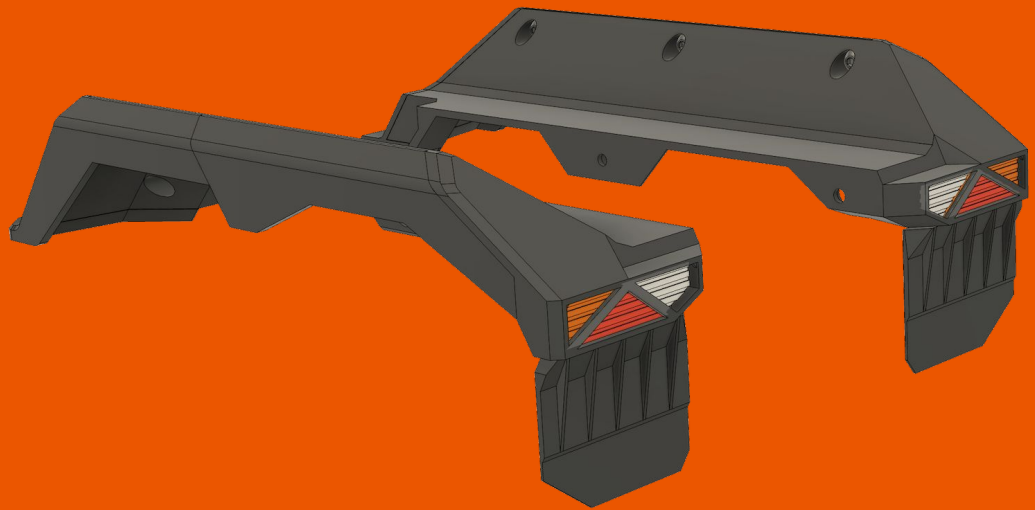
In this procedure you will assemble the seats of the truck.

Required print plates:

- "Print 13 - Fender Rear Inner"
- "Print 14 - Fender Rear Outer"
- "Print 15 - Tail Light"
- "Print 16 - Mud Flap"

Non-printed parts:

- Screw M3x6: 8 pcs.
- Screw M3x8: 4 pcs.
- Screw M3x20: 2 pcs.

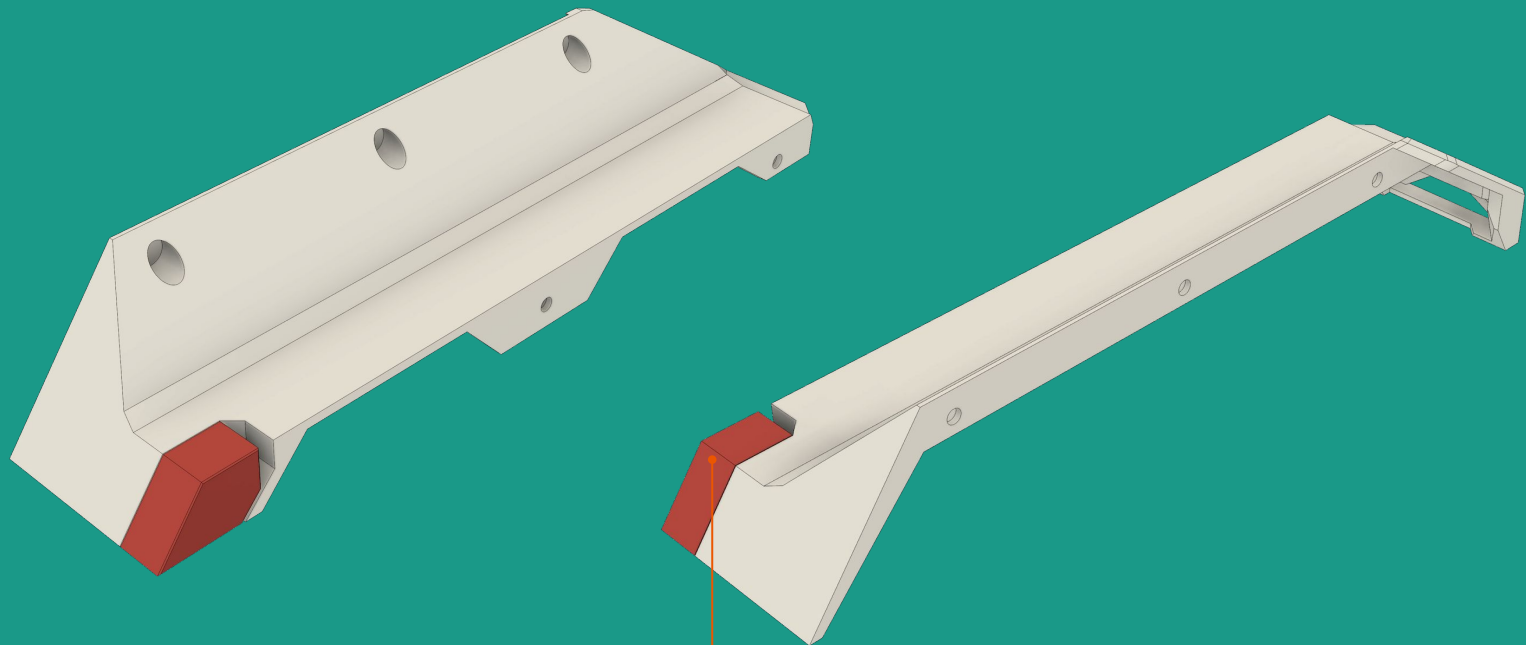




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# Postprocessing – removing supports

Before you start building, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!



supports marked in red has to be removed

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# Rear Light

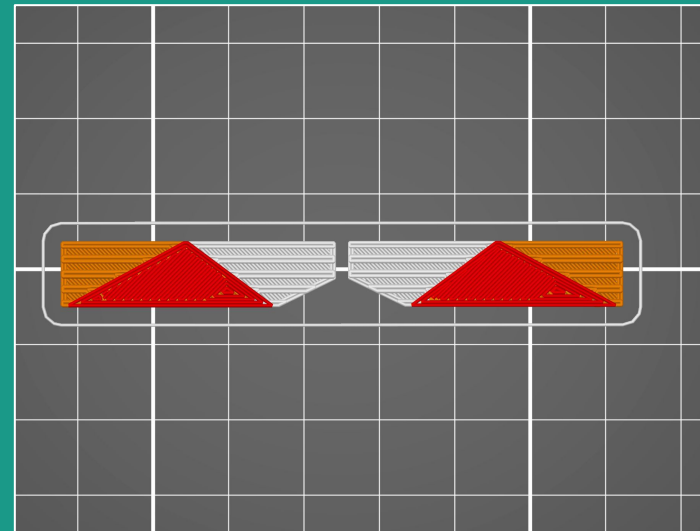
You can print Light Rear with filament changes to achieve color results. Please, setup filament changes in layer heights described below (setup is for layer height 0,15mm):

Change filament at:

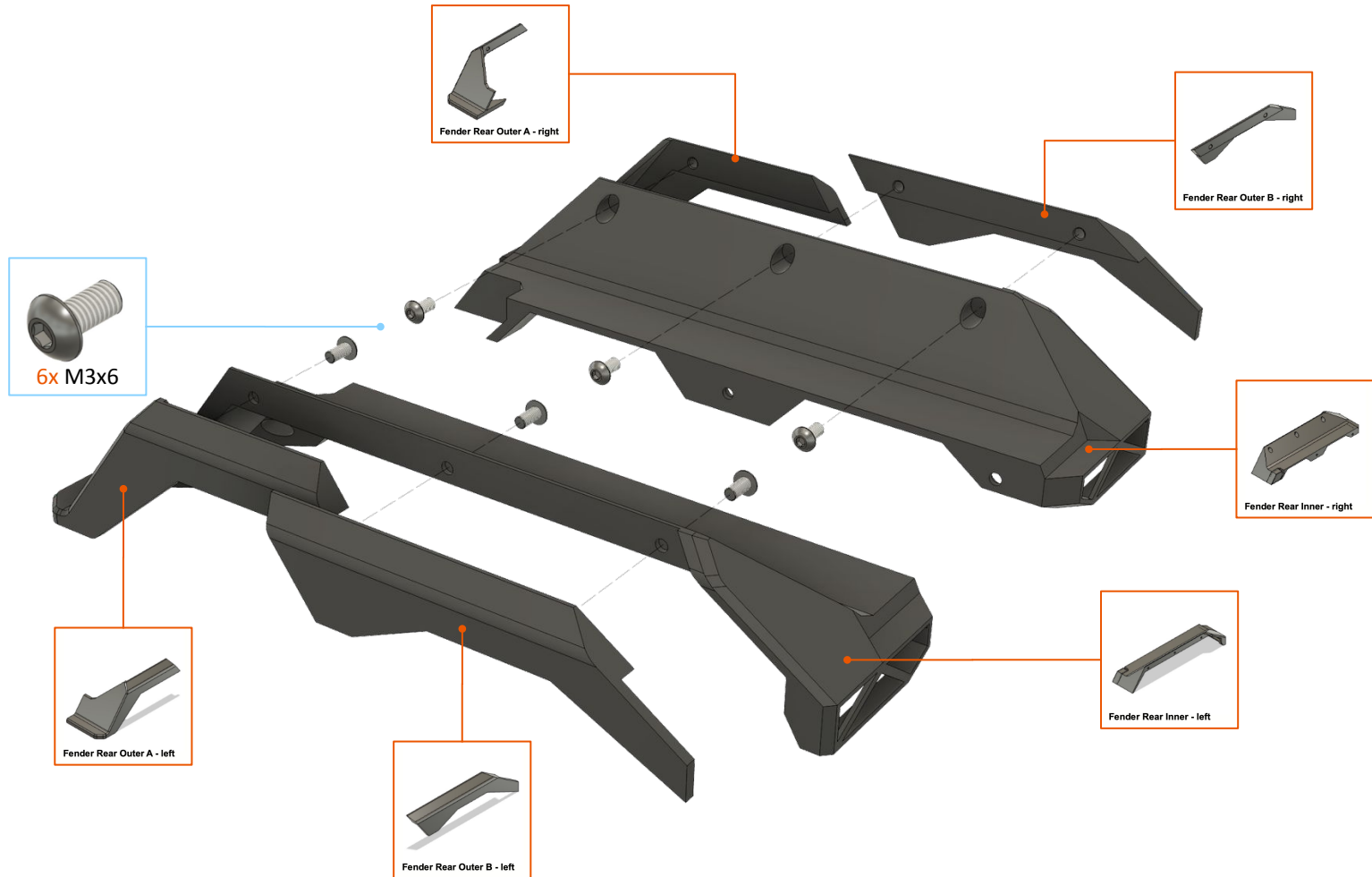
- Layer 15 - height 2,3mm
- Layer 19 - height 2,9mm

Starting color: transparent

- 1st color change: orange
- 2nd color change: red

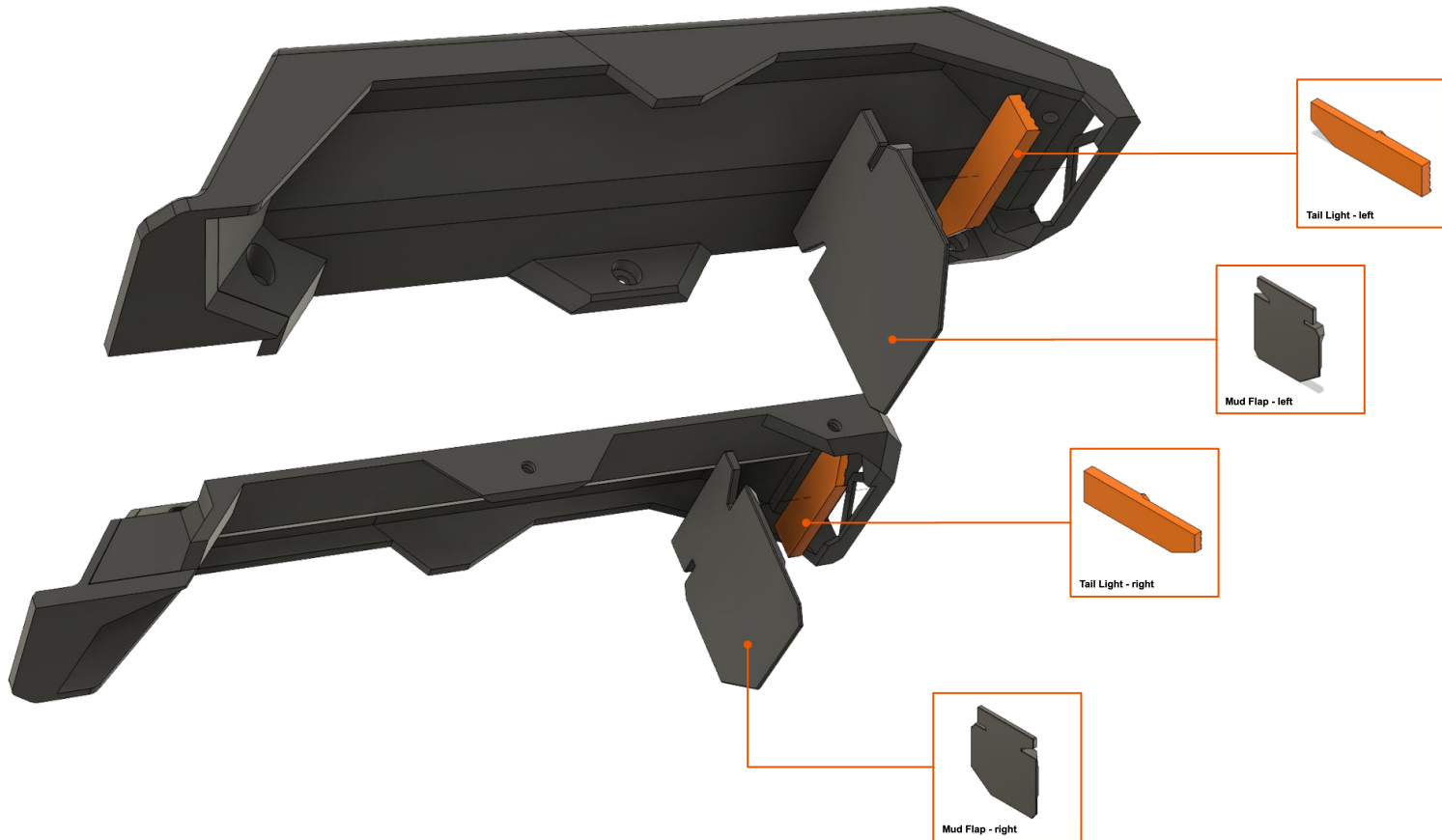


# Rear Fender – step 1/4



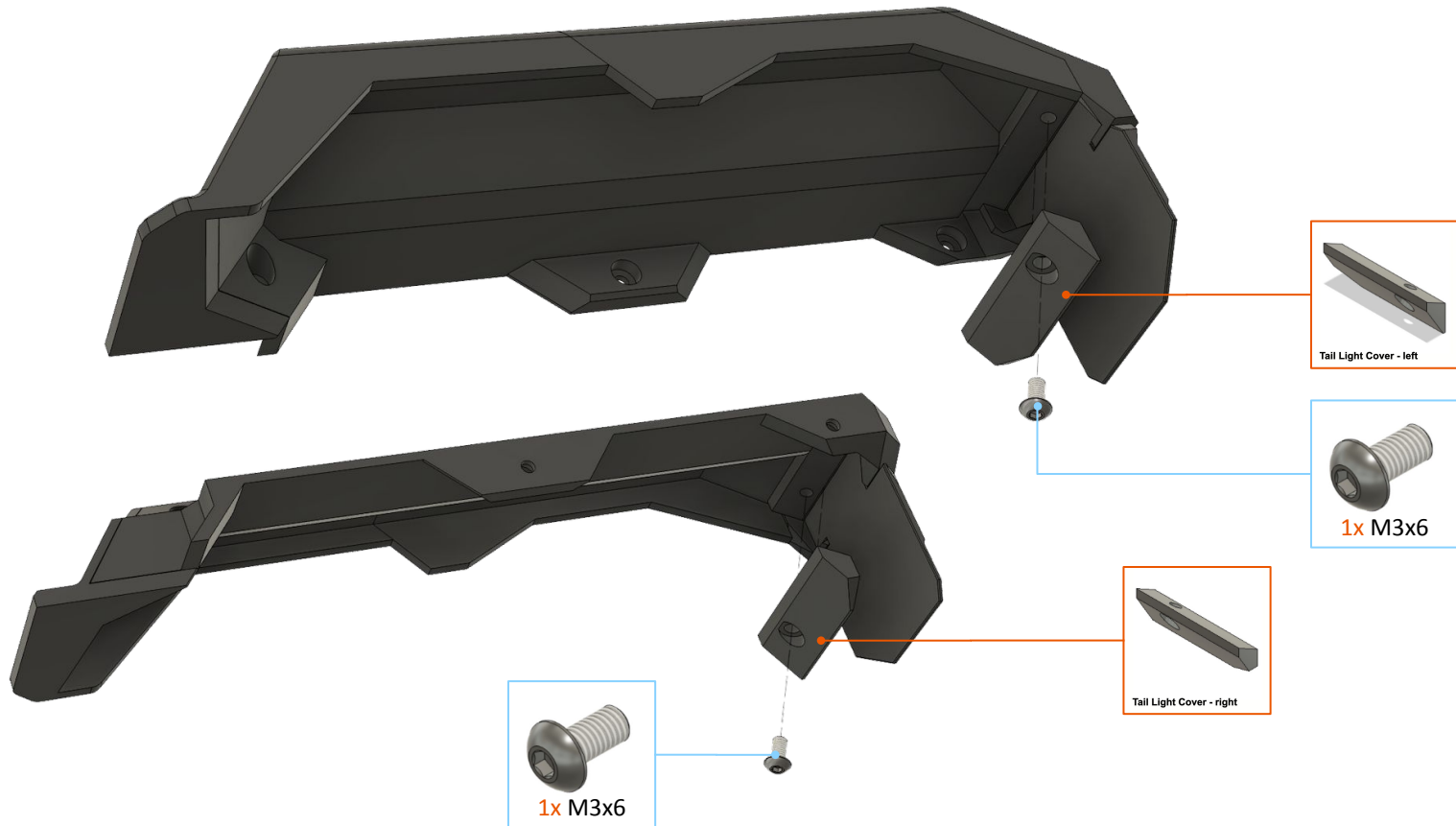


# Rear Fender – step 2/4



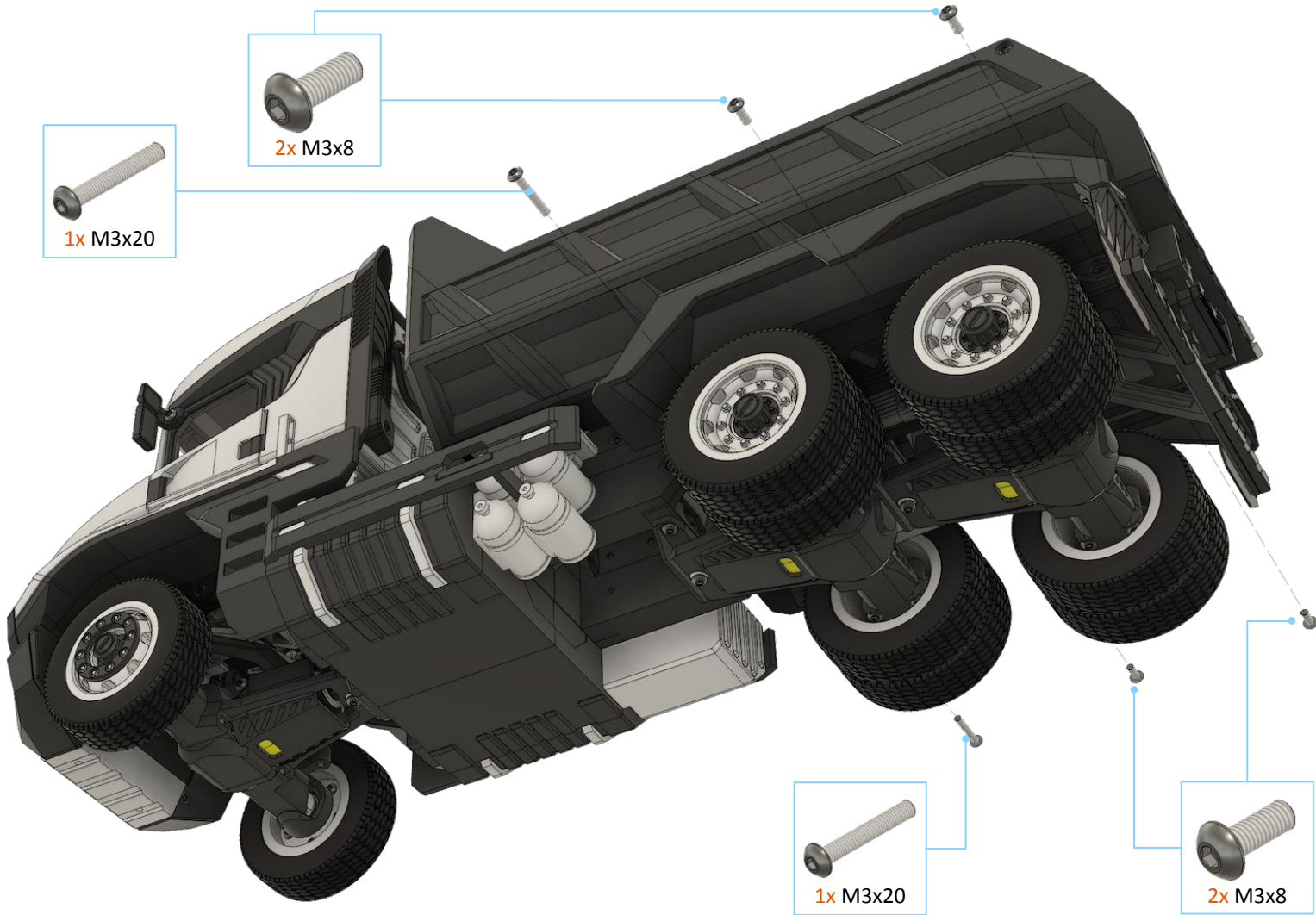


# Rear Fender – step 3/4





# Rear Fender – step 4/4





# Roady Dumper – finish

