



Build Guide - Model 2: Rancher 4x4 Hardtop

3D printed radio controlled
4WD scale model.

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[YouTube video guide](#)



Version 1.4.0, March, 2022

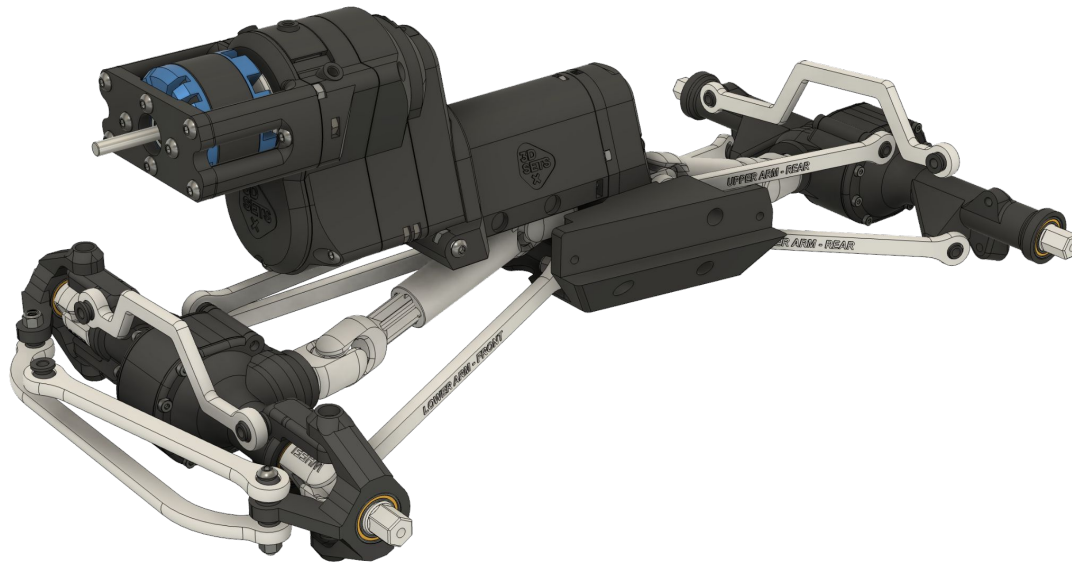
For BuildGuide for [version 1.3.2 click here](#)



Rancher 4x4 Hardtop – version 1.4.0 changelog

Changelog:

- “Model 2: Rancher 4x4” v1.4.0, release date: March, 2022
 - New BeltDrive 4x4 - silent & reliable, because it uses timing belts. Designed for brushless motors only.
 - Front & Rear Axle - opened differential - now you can 3d print and build real differentials, which can be combined with locked axles too. You can make a specific setup that fits your needs.
 - New Cardan joint - snap-on design without tiny screws gives smooth operation and reliability.
 - 3-link suspension - allows better kinematics and smoother movements of the body.

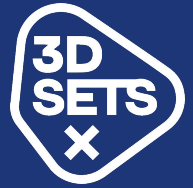




Rancher 4x4 Hardtop – version 1.4 technical specs.

- Dimensions: 51.0 cm length, 24.5 cm width (including mirrors), 22.5 cm height
- Model weights roughly 3,2 kg (including battery)
- Permanent 4 wheel drive, all differentials are in locked state
- Remote controlled steering and speed control
- Suspension with real springs and dampers for good off-road capabilities
- Reduction gearbox with 1:40 gear ratio for slow motion and high torque
- Doors, hood and trunk can be manually opened



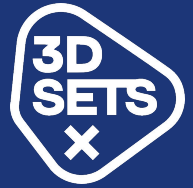


Before you start

- 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 Plate 0”.
- 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 car.
- Model 2: Rancher 4x4 Hardtop includes 2 different wheel designs. Both designs shares the same tire dimension, so feel free to choose the right design for you:



- For “Wheel A”, print plates with “Wheel A” in name.
- For “Wheel B”, print plates with “Wheel B” in name.



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 – 3dsets](#)





Rancher 4x4 Hardtop – version 1.4: What do you need?

- **NEW!** → list of all required non-printed parts is here (will be continuously updated): [click for non-printed parts spreadsheet](#)
- **Print Filament:** To print this model you will need around 3000 g of print filament in total. We print our models from PLA material. If you will use the geared gearbox with 540DC motor, you should use **ASA/Prusament PC Blend filament for Motor Pulley, Motor Frame**, as it has better temperature resistance. **For the differential gears its recommended to use Prusament PC Blend.** You can use variable color for chassis and body. Tested and recommended filament: [Fillamentum PLA Extrafill](#) or [Prusament PLA](#).
- Gearboxes choices ([more info about gearboxes is on page 16](#)):
 - **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) – 4 pcs**
 - All parts can be printed from PLA or other filaments
 - **Geared Gearbox** (older design):
 - Model is driven by 540 DC motor (27 T)
 - All gears and shaft are 3D printed. Don't use PETG, ASA or ABS for gears!
- Steering servo in standard size (39x19,5x38,5mm) – minimum torque: 10kg, optimum 20kg
- Speed controller (ESC) max size 40x30x25mm
- Ball Bearing 10x15x4 mm - 6700ZZ: 38 pcs. (or less depending on gearbox type and axles configuration)
- Shock -Coil springs, inner diameter max 18mm, length 75-90mm: 4 pcs.
- Rubber tires - Outer Diameter: 90-100mm, Inner Diameter: 46-48mm
- 7.2V (2S) Battery with dimensions max 138x48x26mm
- Electric connectors: 2 pairs (battery connectors, motor <--> ESC connectors)
- Twin cable & soldering equipment
- 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

Rancher 4x4 Hardtop – version 1.4: Required hardware

Screws and nuts (in metric size):

- M2x6: 97 or 147 pcs.
- M2x8: 10 pcs.
- M2x10: 81 or 131 pcs.
- M2x12: 10 pcs.
- M2x16: 1 or 51 pcs.
- M3x6: 5 pcs.
- M3x8: 15 pcs.
- M3x10: 84 pcs.
- M3x12: 32 pcs
- M3x16: 44 pcs.
- M3x20: 1 pcs.
- M3x25: 11 pcs.
- M3 nuts: 26 pcs.
- M3 locknuts: 26 pcs.
- M3x6 Set Screw : 2 pcs.
- M3x6 **Socket(!)** Head : 5 pcs.



with wheels A - 147 pcs., with wheels B - 97 pcs.

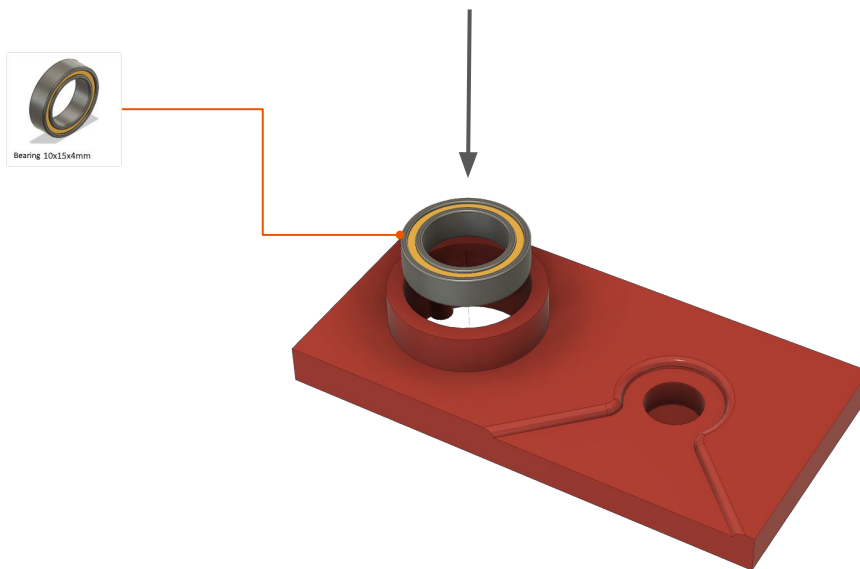
With wheels A - 81 pcs., with wheels B - 131 pcs.

with wheels A - 51 pcs., with wheels B - 1 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.



Subassembly #0 – Arms

In this 1-step procedure you will assemble axle arms, steering rods and trackbar. These parts consists of “arm” and “ball joints” and they need to be pressed together.

Required print plates:

- “Print 0 - Calibration + Front Panel” - you can print alternative color filament
- “Print 1 - “Chassis 0”

Non-printed parts:

- Grease
- Any Hammer or Vise (for pressing)

Arms + Ball joints

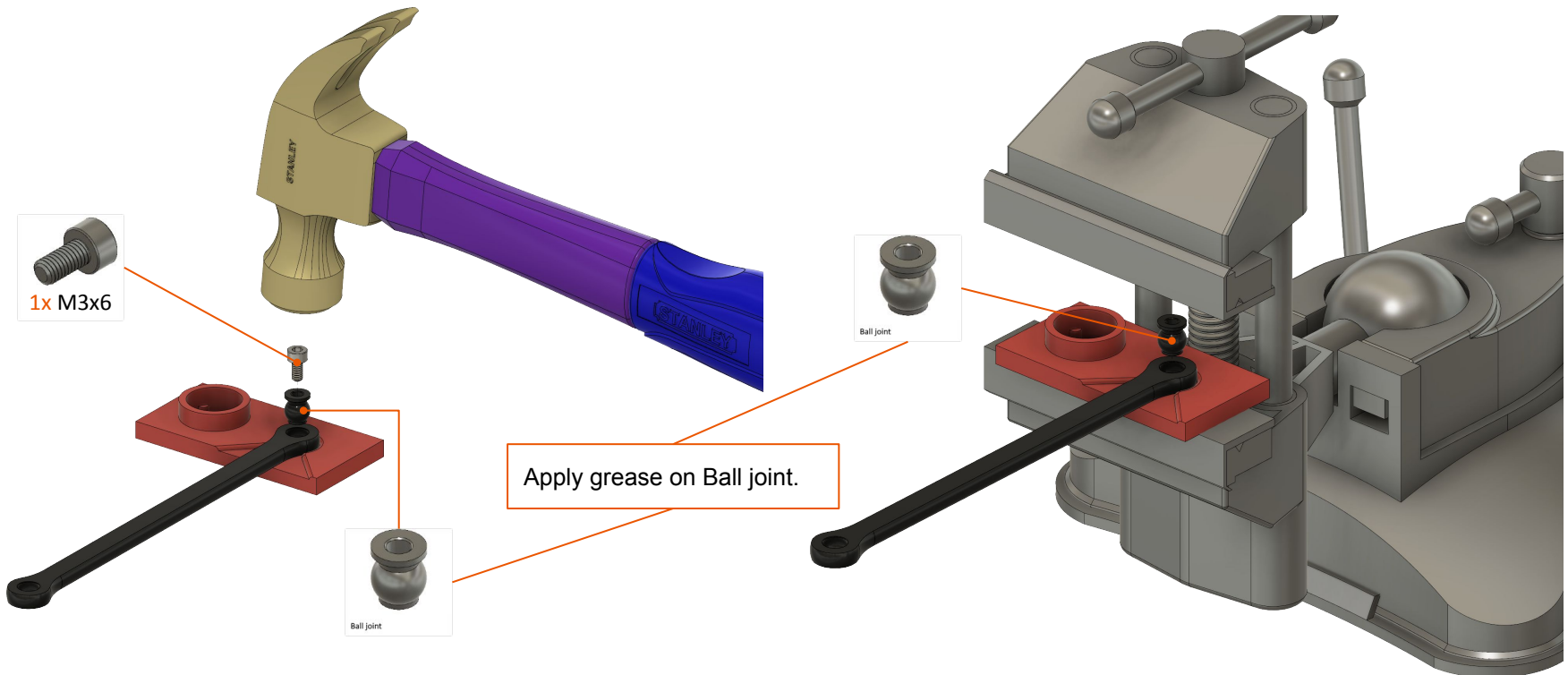
Option A: use a hammer

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

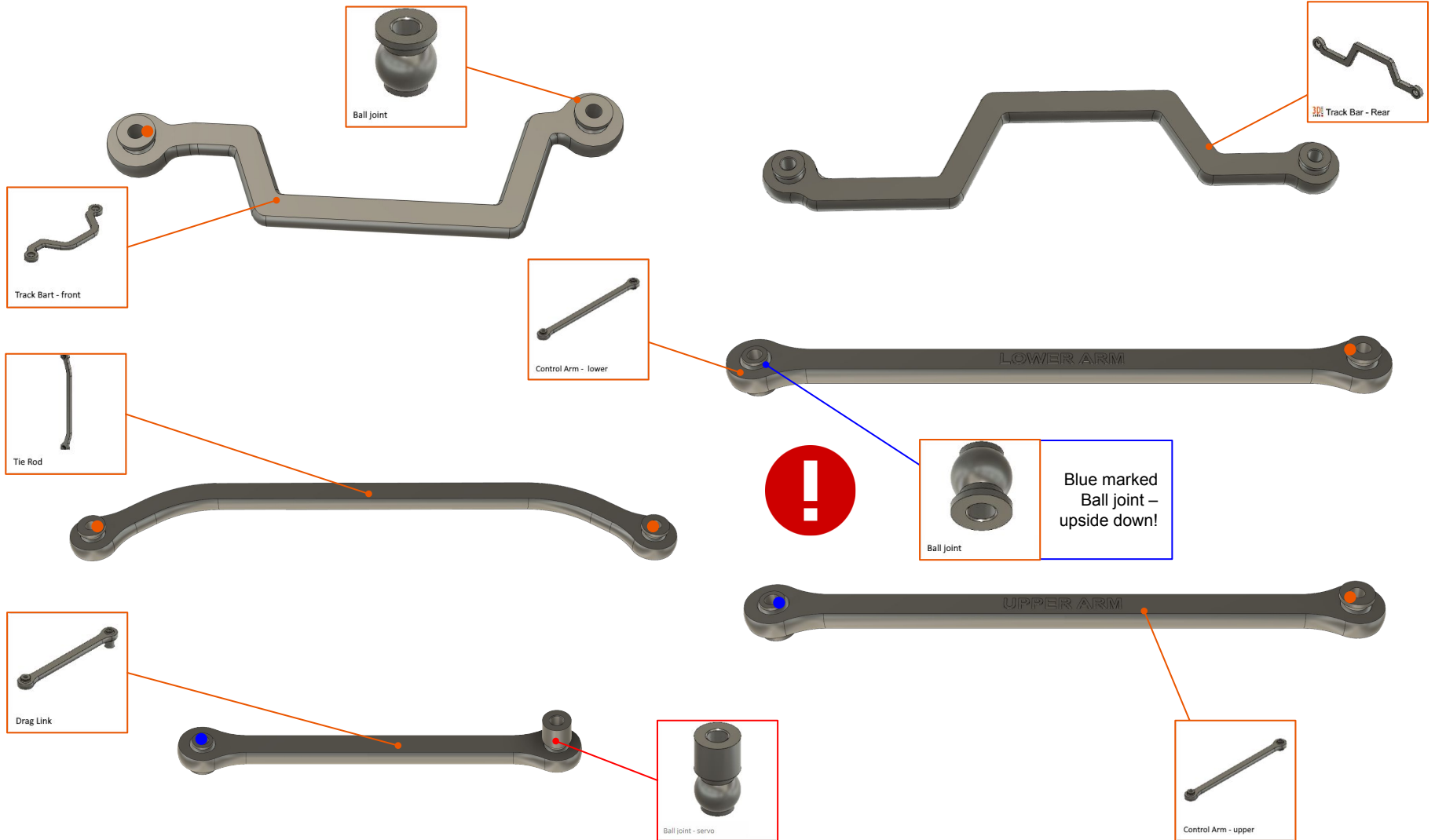
This is a preferred method as you can proceed slowly.



[See this step on YouTube video](#)

Arms + ball joints

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



Rancher 4x4 – chassis

In this 5-step procedure you will assemble chassis of the car and front panel.

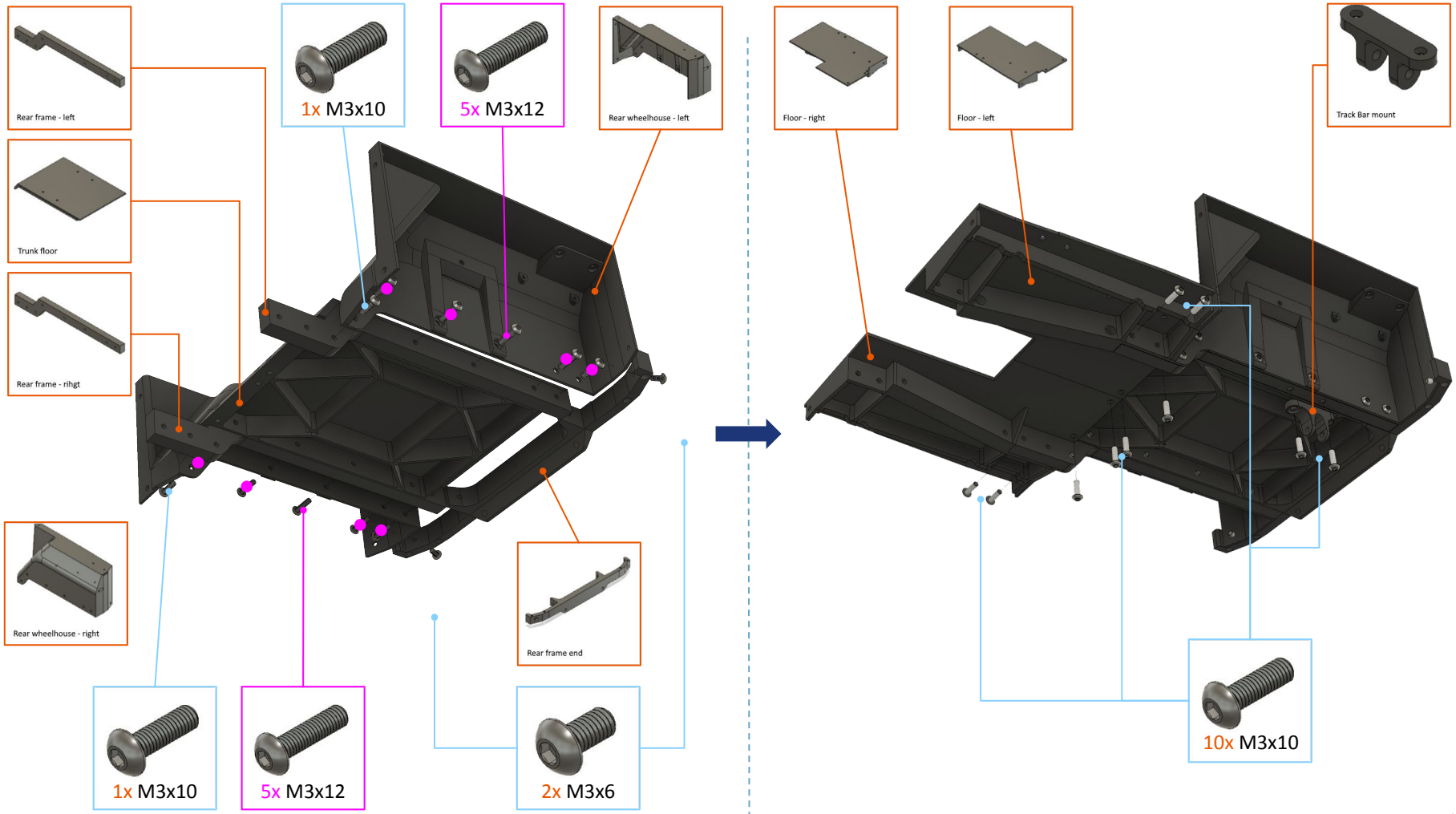
Required print plates:

- “Print 0 - Calibration + Front Panel” - you can print alternative color filament
- “Print 1 - Chassis 1”
- “Print 2 - Chassis 2”
- “Print 3 - Chassis 3”
- “Print 4 - Chassis 4
- “Print 5 - Chassis 5 + hinges”

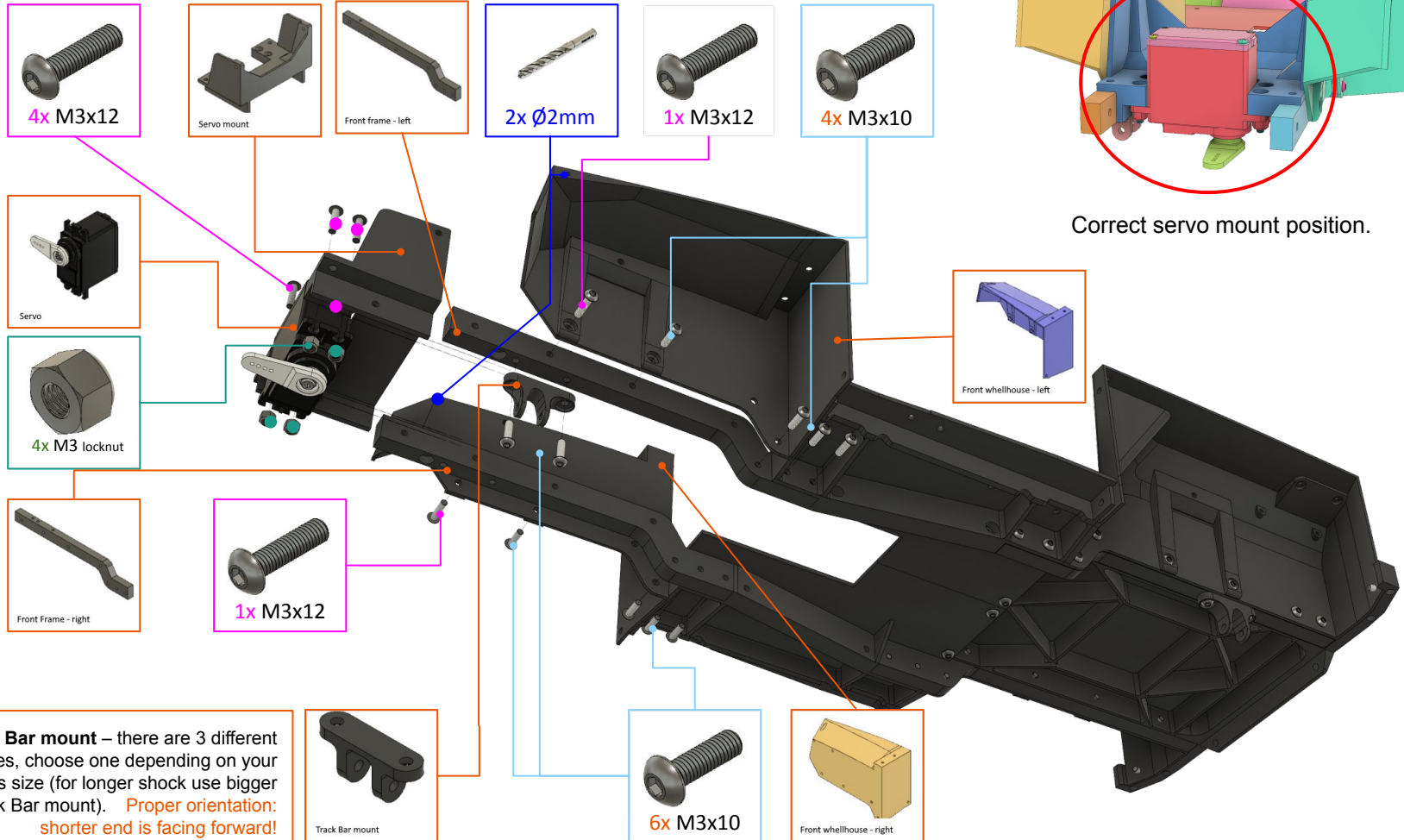
Non-printed parts:

- Screw M2x6: 4 pcs.
- Screw M2x10: 4 pcs.
- Screw M3x6: 2 pcs.
- Screw M3x10: 26 pcs.
- Screw M3x12: 15 pcs.
- Screw M3x16: 2 pcs.
- M3 locknuts: 4 pcs.

Rancher 4x4 Chassis - step 1-2/5

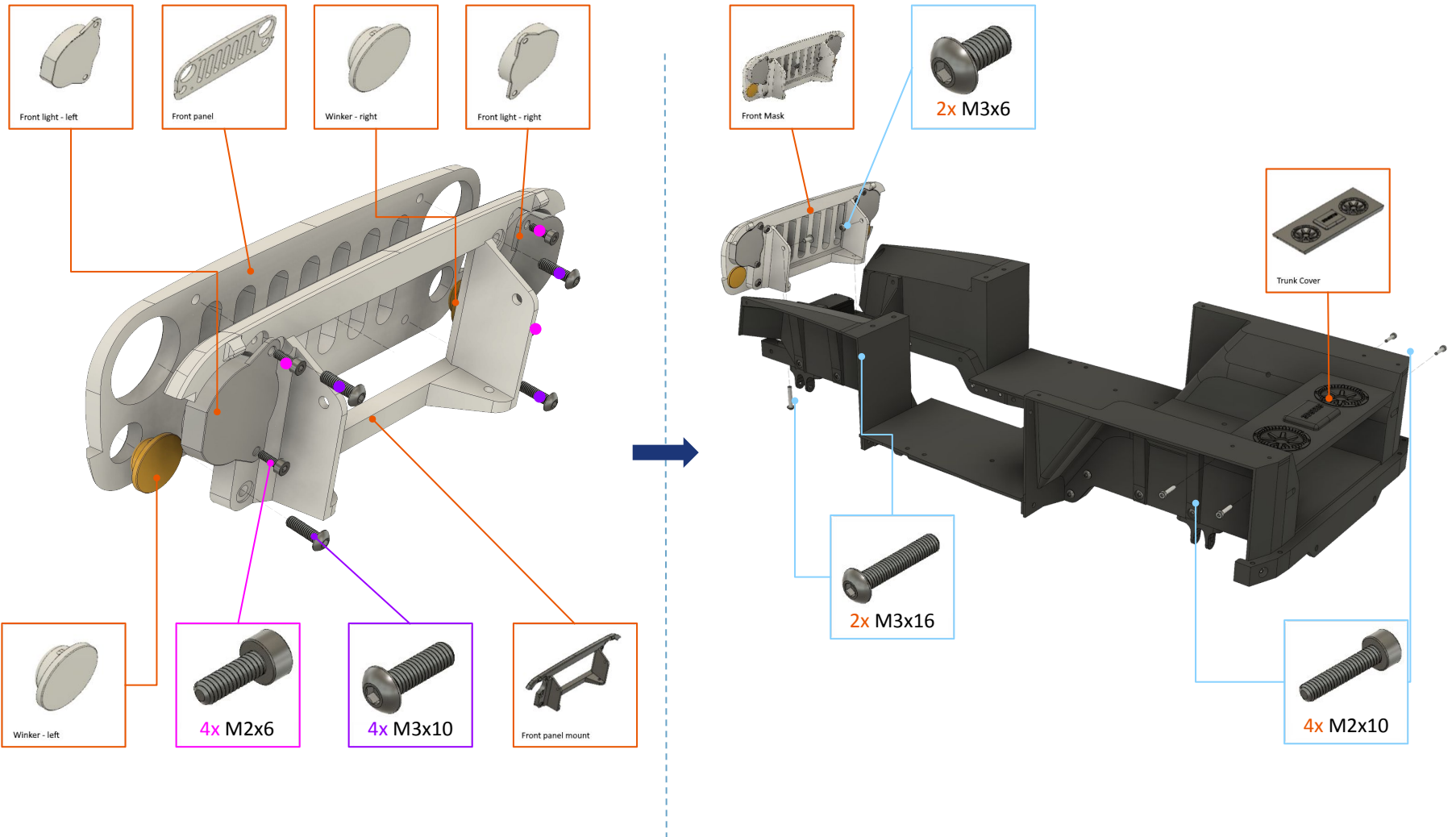


Rancher 4x4 Chassis - step 3/5



Track Bar mount – there are 3 different sizes, choose one depending on your shocks size (for longer shock use bigger Track Bar mount). **Proper orientation:** shorter end is facing forward!

Rancher 4x4 Chassis - step 4-5/5



Rancher 4x4 – Gearbox choice

There are two different gearboxes available for Rancher 4x4:

new *BeltDrive 4x4*
classic *Geared Gearbox*

New *BeltDrive 4x4* features:

- silent running
- brushless 3530 motor compatible
- requires timing belts HTD 144-3M-06
- easy to print
- 2S-3S battery compatible
- slightly faster than geared gearbox
- can be printed from various filaments

New BeltDrive 4x4 is **recommended choice**. It can handle more power (up to 3S battery) and is very silent. *It is compatible with all 3D Sets 4x4 models.*

For *BeltDrive 4x4*, [proceed to next page \(17\)](#).

Classic *Geared Gearbox* features:

- noisier than *BeltDrive4x4*
- 540-size DC 27T motor compatible
- uses 3D printed gears
- requires more 3D printing experience
- 2S battery compatible
- slower than *BeltDrive 4x4* gearbox
- requires high-quality PLA or high-strength filament (PC Blend, Nylon..)

Classic *Geared Gearbox* is **good choice** if you have **previous experience with** and if you require 540 DC 27T motor and maximum precision of throttle response.

For *Geared Gearbox*, [proceed to page 32](#).



BeltDrive 4x4 Gearbox

In this 8-step procedure you will assemble belted gearbox with the motor. The whole gearbox can be printed from PLA, unless you will drive in some extreme conditions or in very hot environment. To complete this task, get the following parts ready:

Required print plates:

- “Print 6A - Belt Drive Gearbox - 1”
- “Print 7A - Belt Drive Gearbox - 2”
- “Print 8 - Shafts”

Non-printed parts:

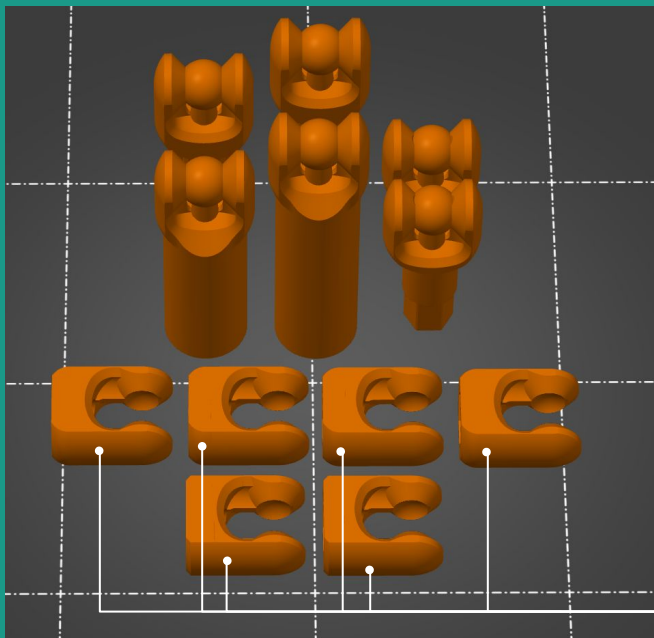
- Screw M3x6: 3 pcs.
- Screw M3x8: 9 pcs.
- Screw M3x10: 2 pcs.
- Screw M3x12: 8 pcs.
- Screw M3x16: 8 pcs.
- Screw M3x25: 6 pcs.
- M3 nuts: 22 pcs.
- Electric motor: 1 pc.
- Bearings: 10 pcs.
- Timing Belt: 4 pcs.



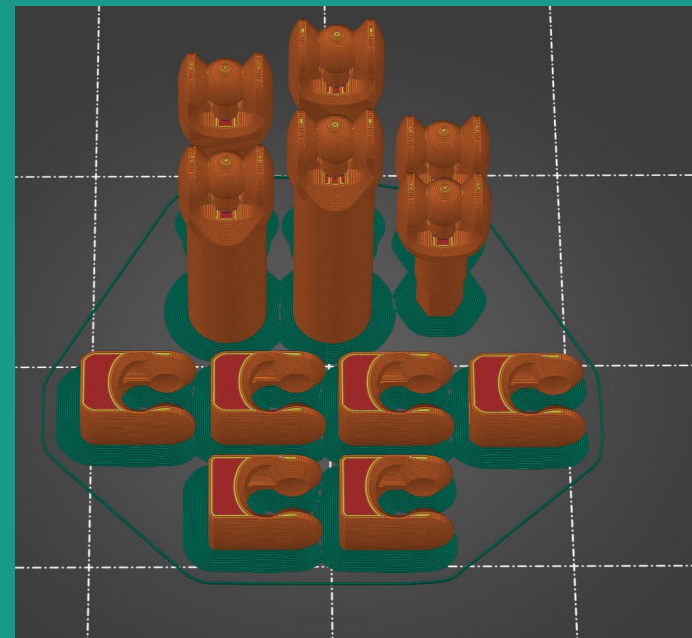
Shafts

If you will print the part “Shafts” from the .stl file instead of printing from provided gcode, please use following slicer setup:

- Infill density: 100%
- Infill type: Rectilinear
- Perimeters: 3

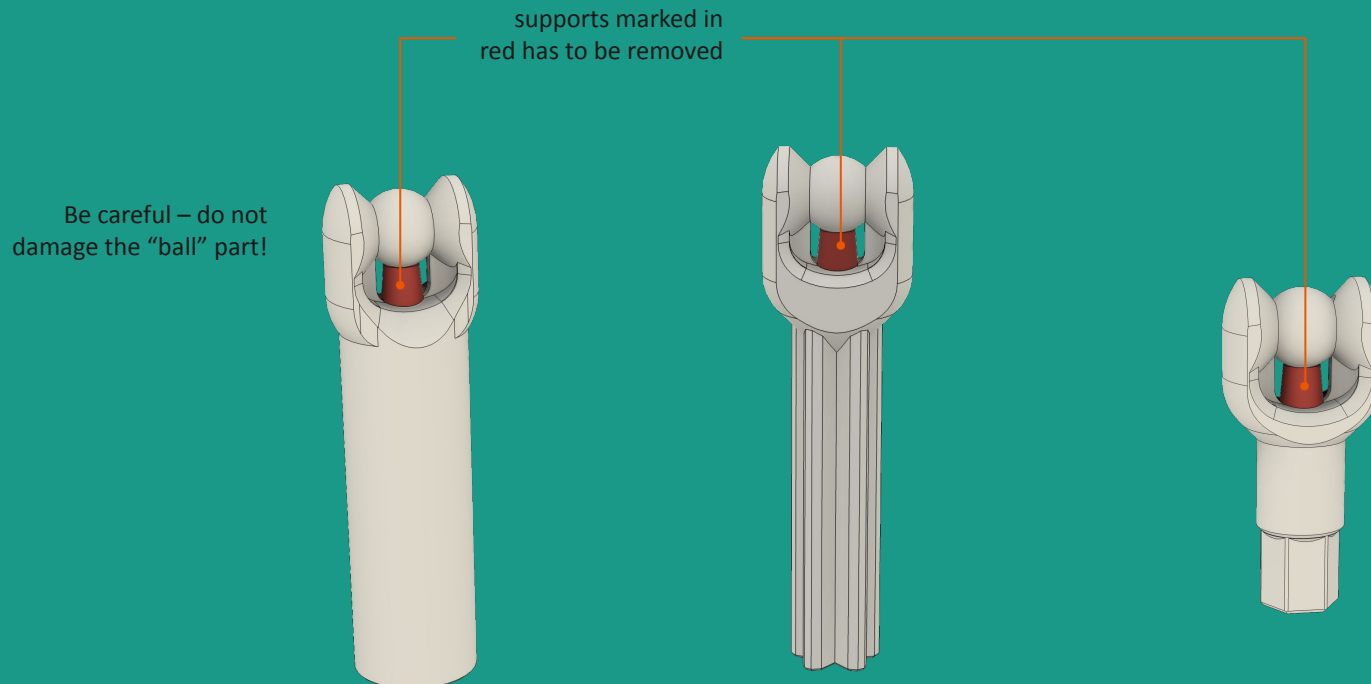


correct printing bed
orientation of the
Drive Shaft - Cardan and
Front Wheel Shaft –
marked part **MUST LAY
FLAT** on the bed!



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!

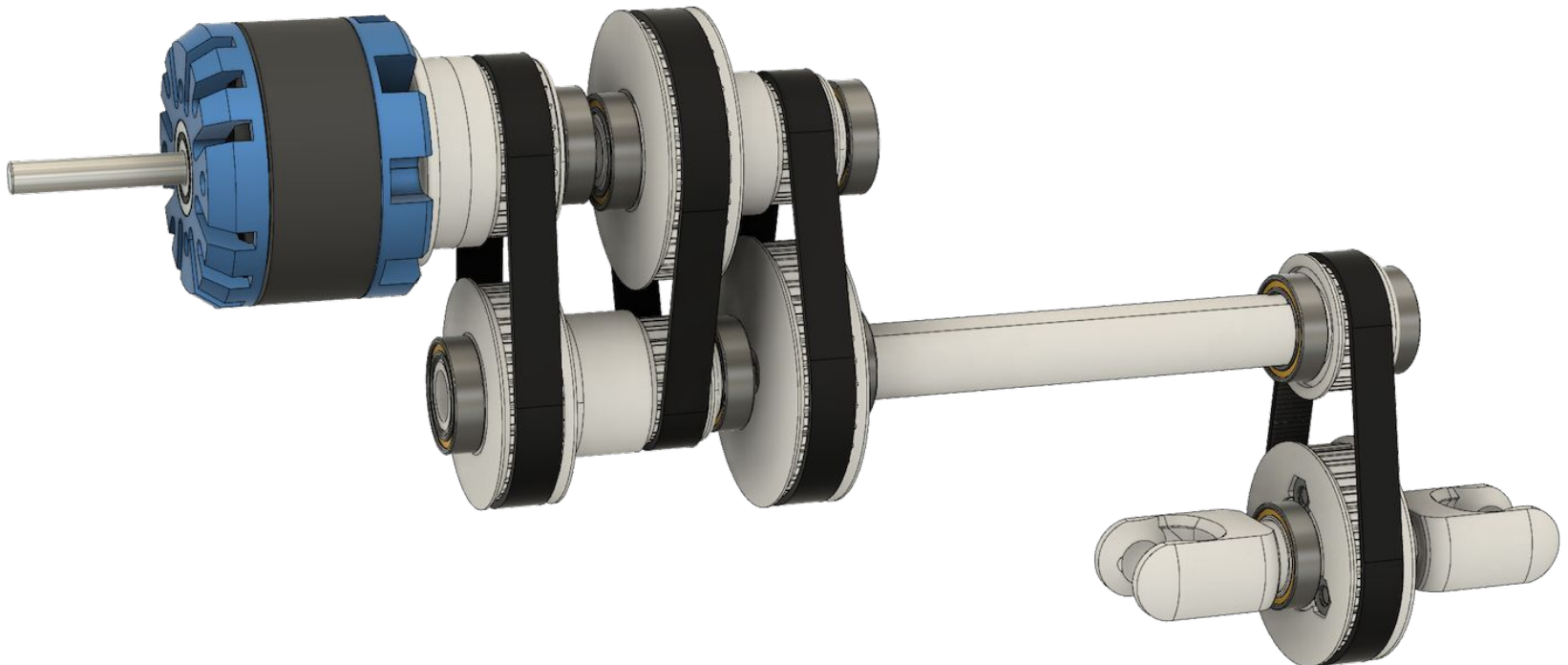


BeltDrive 4x4 Gearbox – introduction

BeltDrive 4x4 Gearbox uses 4 identical timing belts – HTD 144-3M-06 (HTD profile, 144 mm long, 3 mm teeth distance, 6 mm wide).

BeltDrive 4x4 Gearbox is **compatible with all 4x4 3D Sets models**, so you can use it in your older Rancher/Landy without any modifications.. With this gearbox model is moving faster and has more power. Gearbox is very **silent and reliable** when assembled properly. Gearbox work with brushless outrunner 750-1000 kV and 2S-3S battery.

Internal belts/pulley configuration is shown below:



Important features

Bearings calibration

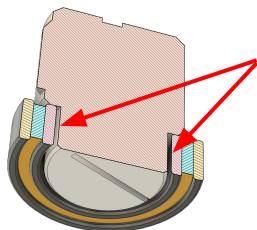
It is very important to check if small 3d printed shaft ends fit the bearings properly, because such small printed objects may shrink too much.

There are two sizes of the “*Pulley Shaft small*” parts (located on print “*Belt Drive Gearbox - 2*”):

“*S*” = *standard size*; “*L*” = *larger size*



Please try if the “*S*” sized part fits the bearing without any gap. The bearing must hold on place firmly, otherwise, the gearbox can be damaged! If there is any gap between the bearing and printed part, then use a slightly larger “*L*” sized part.



Is there any gap? Then use the “*L*” marked part!

Service holes

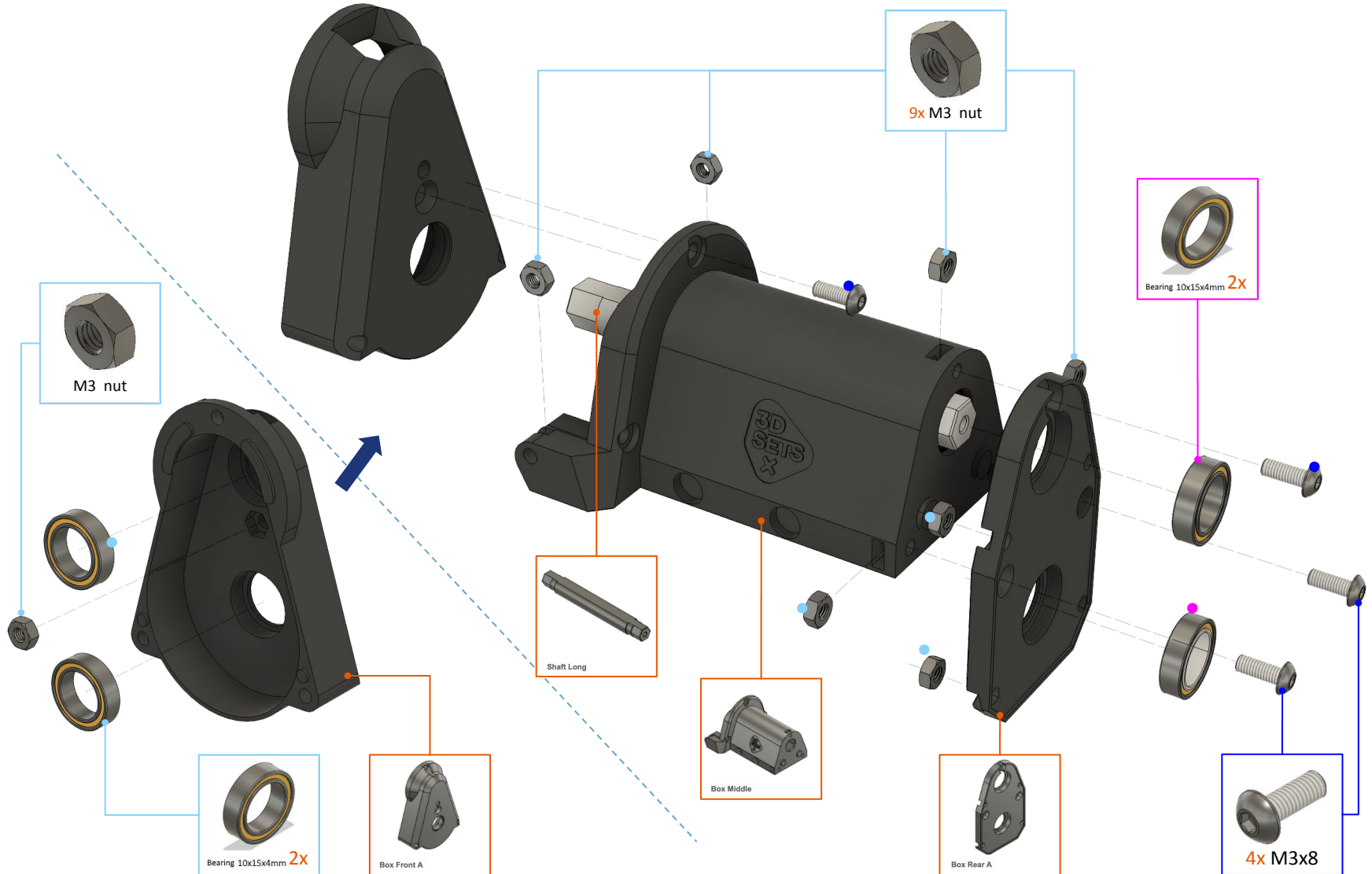
BeltDrive 4x4 v1.1 features 3 service holes with covers. These holes have following purposes:

- to help assembly of the gearbox; you can use the tip of the screwdriver to place belts in their position on the pulleys
- allows you to check the internals of the gearbox without disassembling (heat, noises, wobbling, etc.)

Service holes are marked white on the picture below:

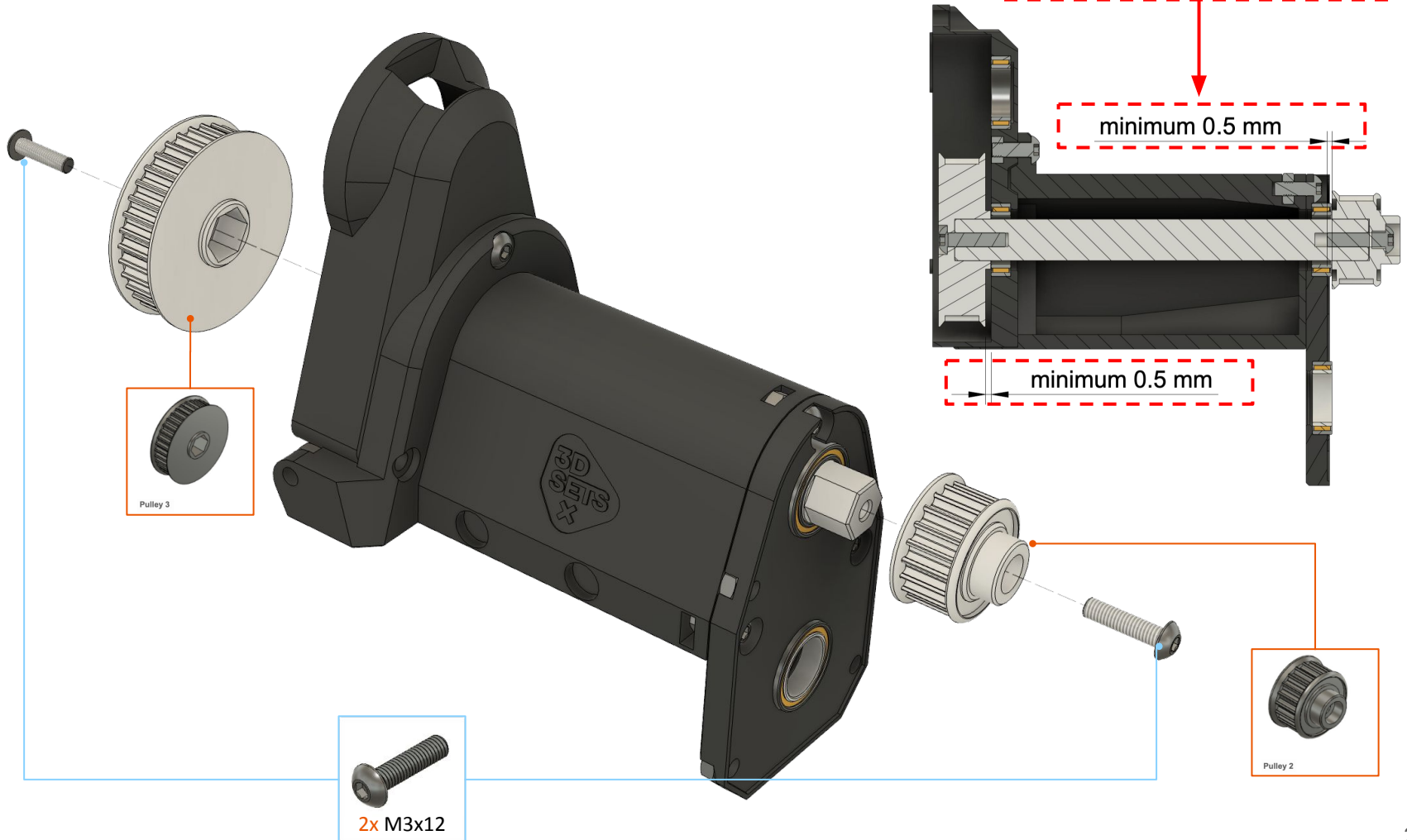


BeltDrive 4x4 Gearbox – step 1/9

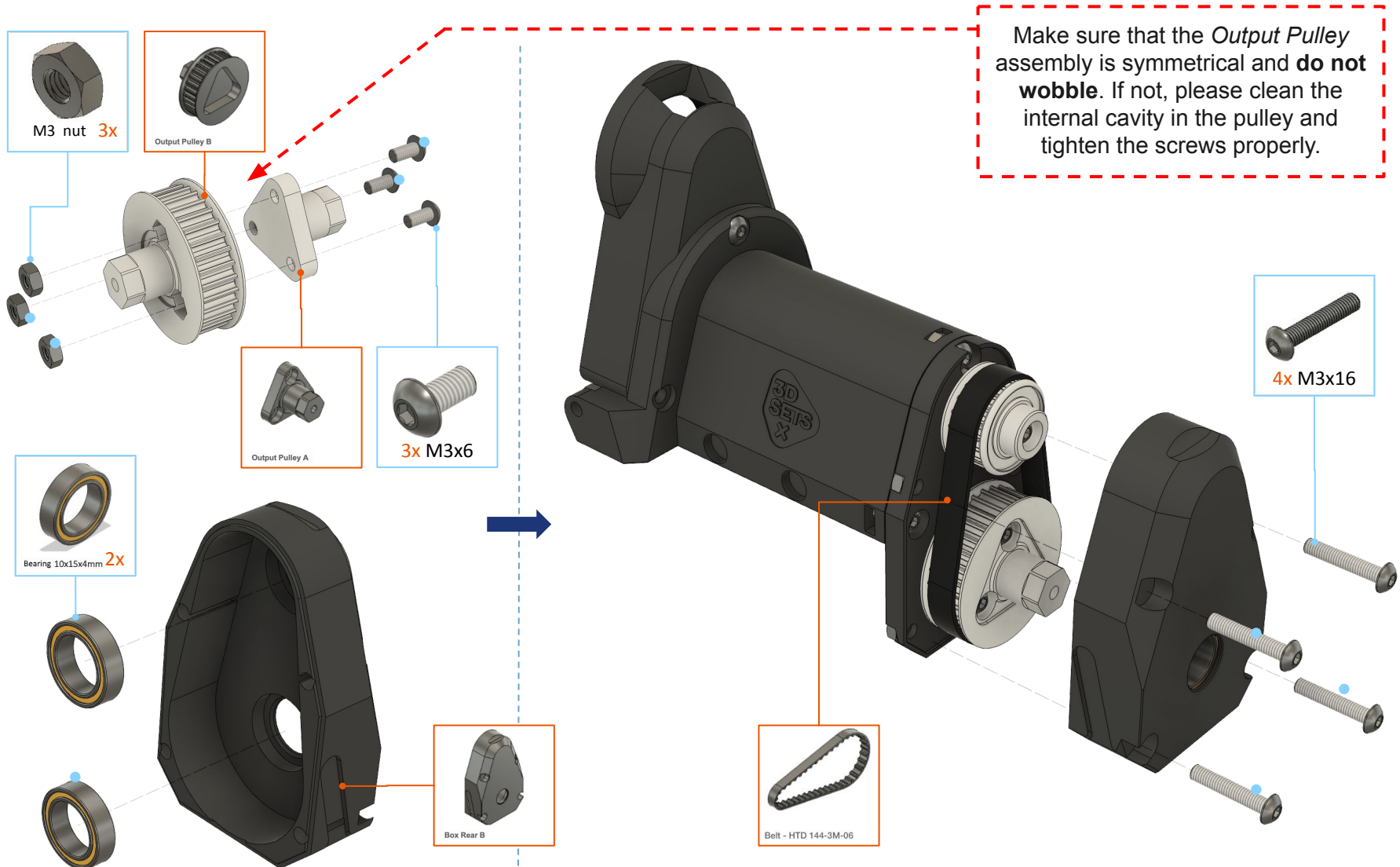


BeltDrive 4x4 Gearbox – step 2/9

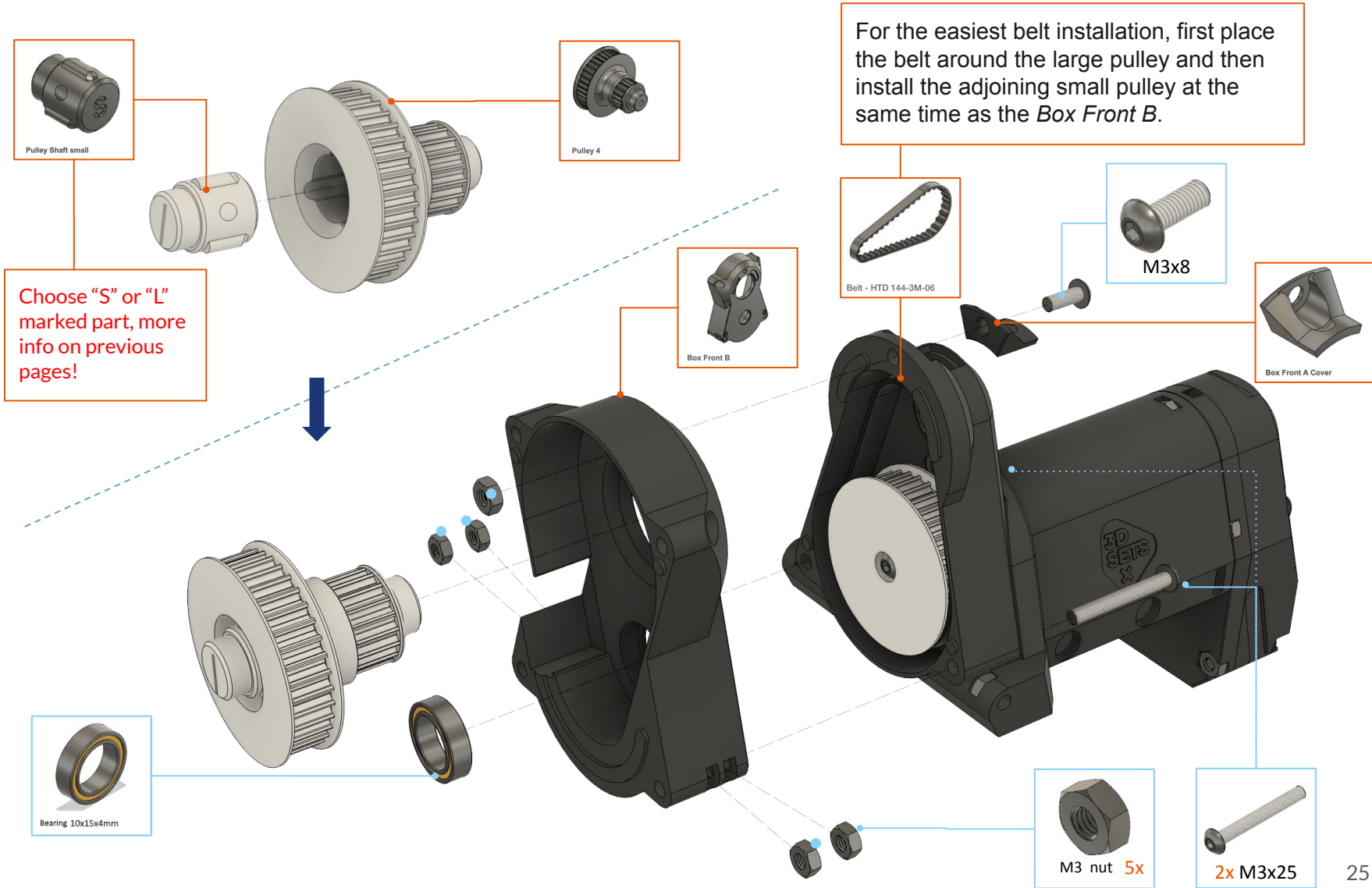
Double check that the pulleys are **perpendicular** to the shaft and do not wobble. Make sure there is **NO CONTACT** between the casing walls and the pulleys!



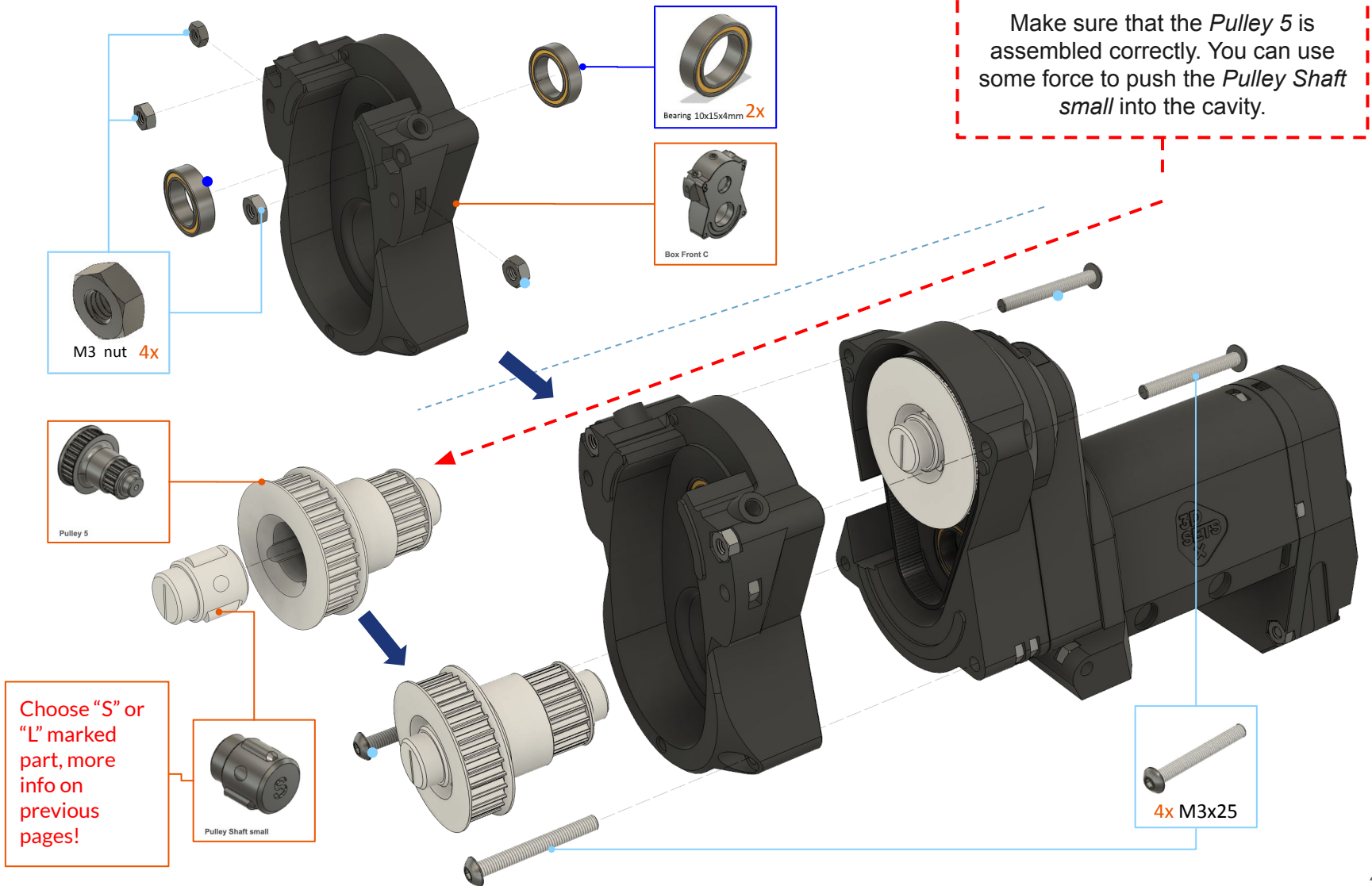
BeltDrive 4x4 Gearbox – step 3/9



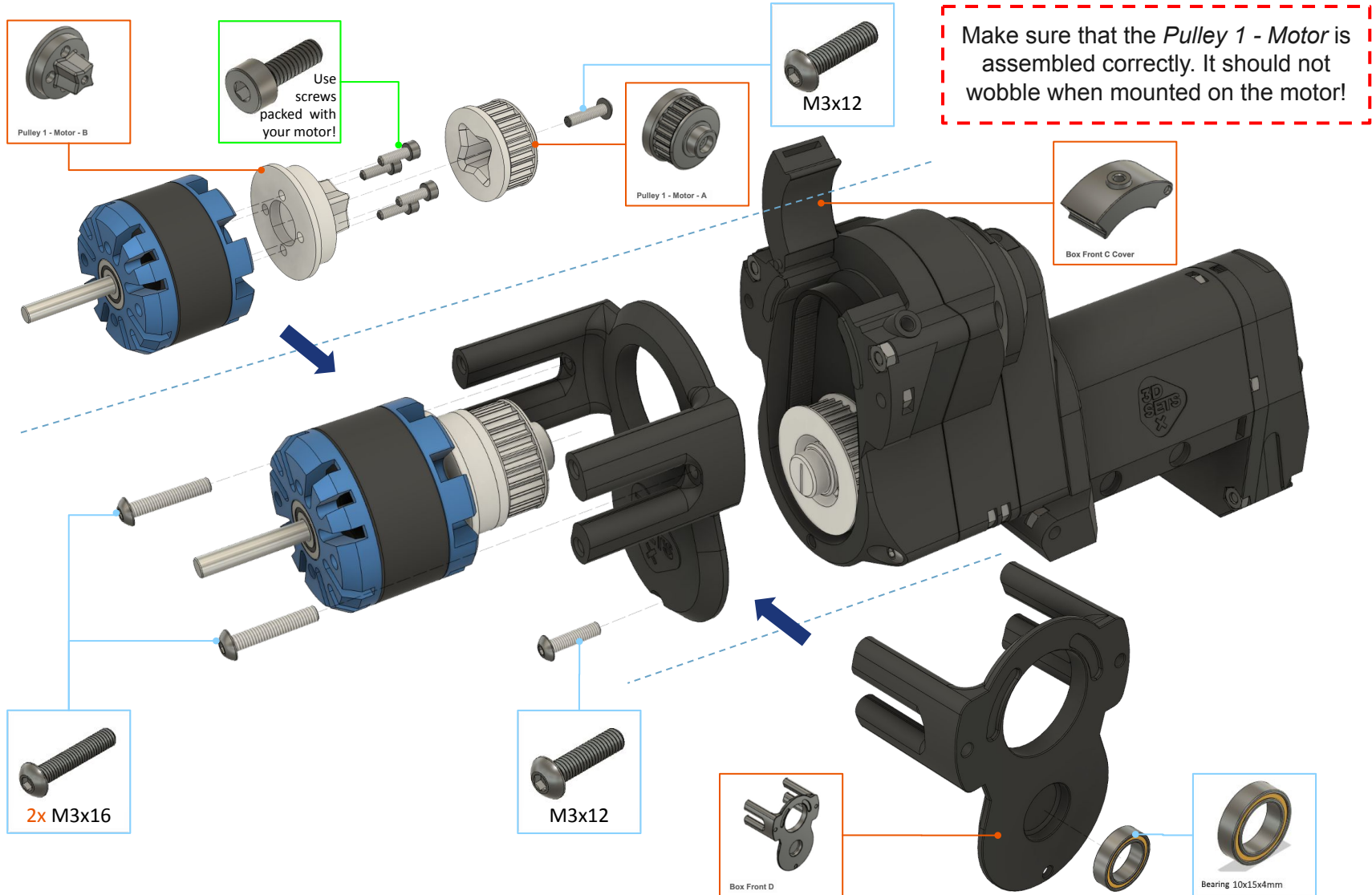
BeltDrive 4x4 Gearbox – step 4/9



BeltDrive 4x4 Gearbox – step 5/9

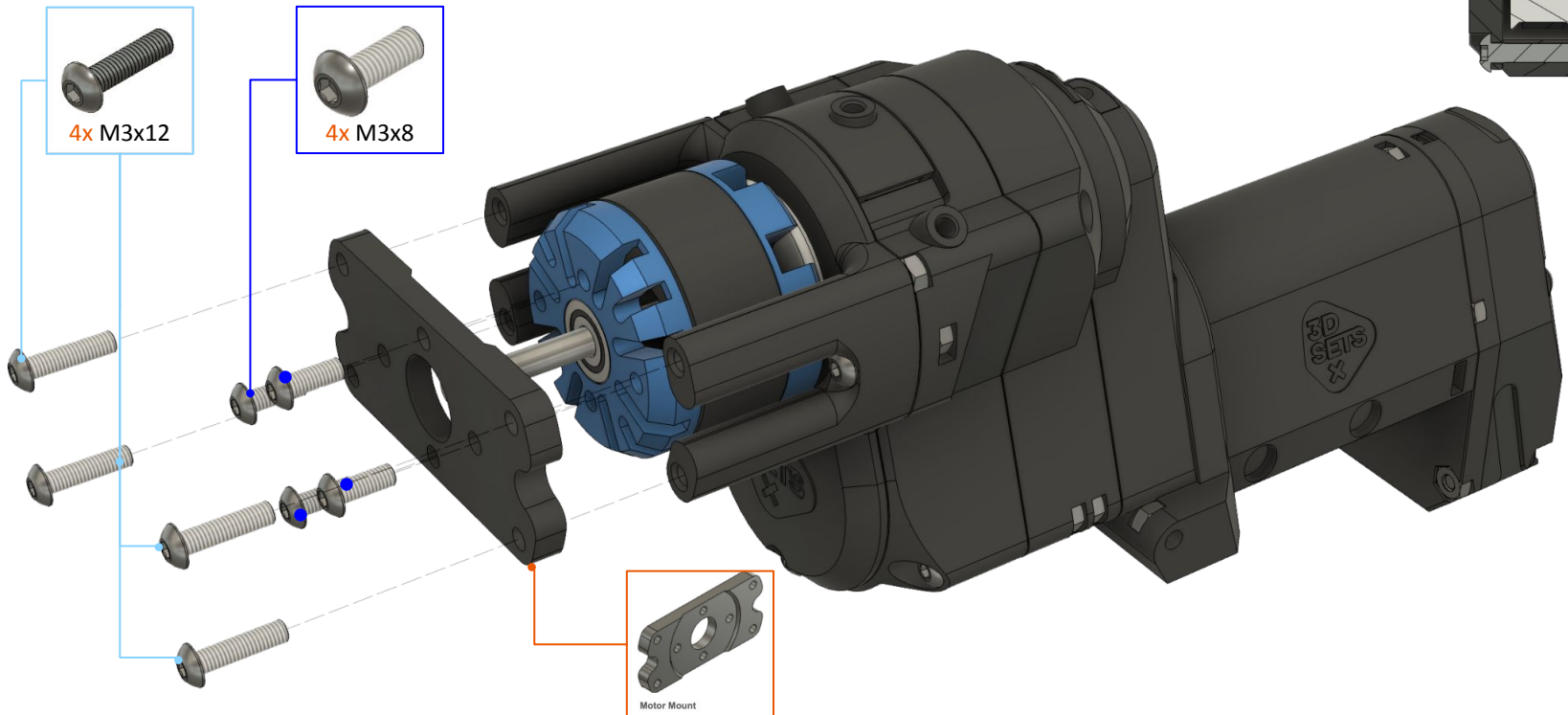
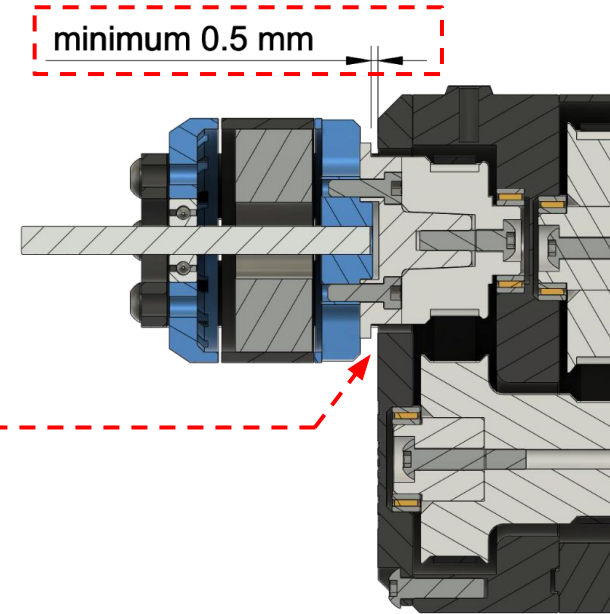


BeltDrive 4x4 Gearbox – step 6/9

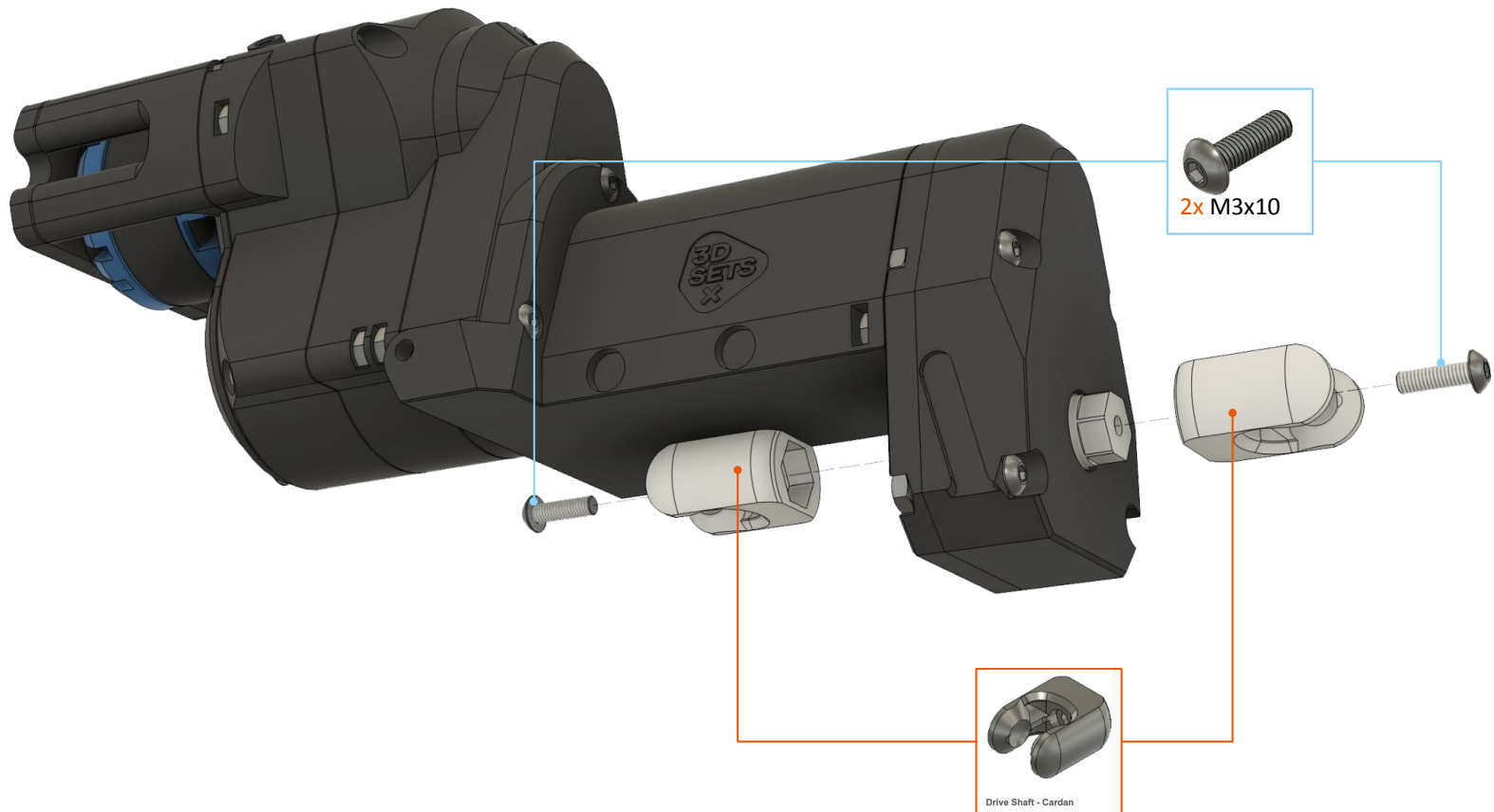


BeltDrive 4x4 Gearbox – step 7/9

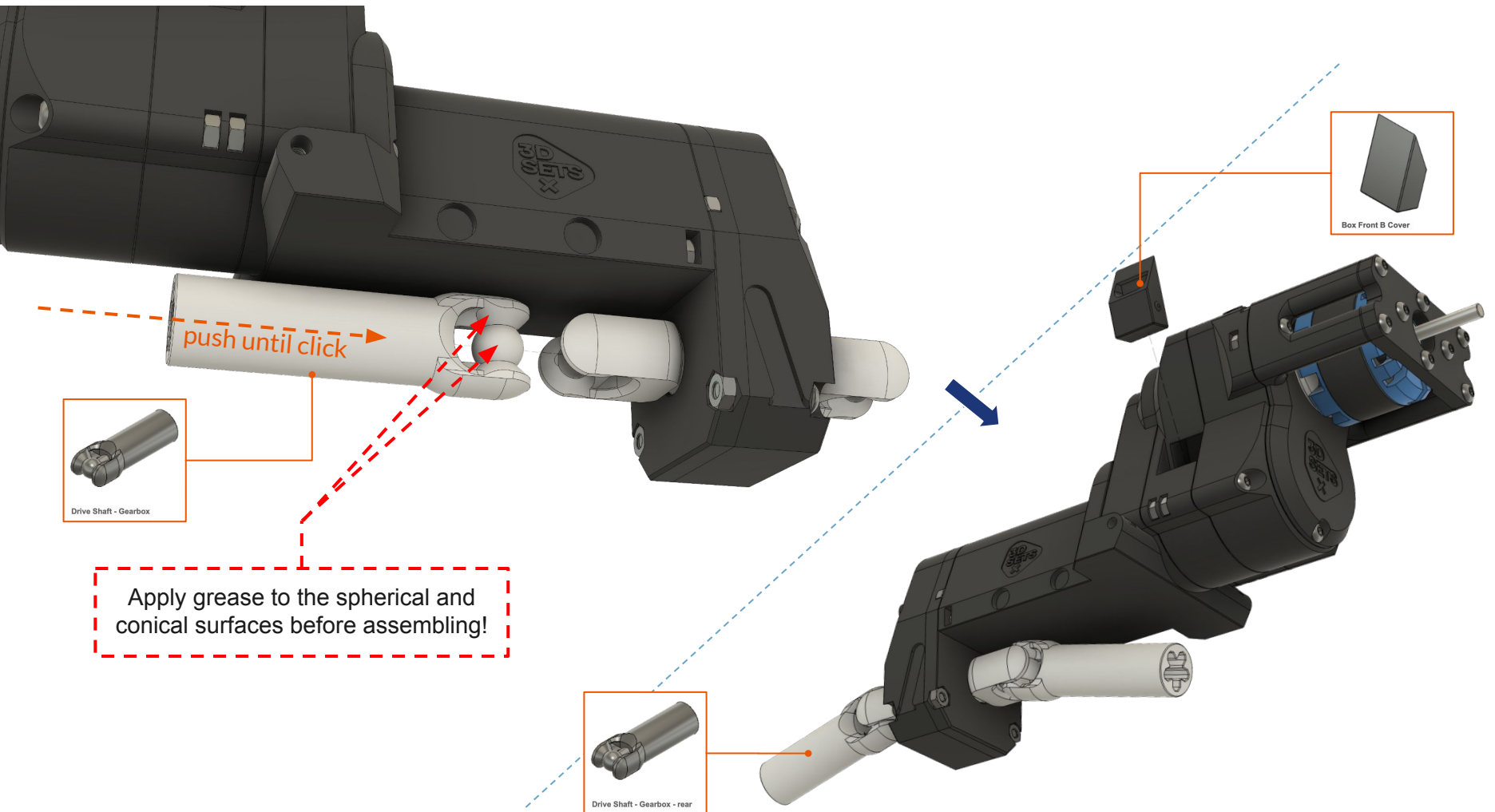
It is very important to check proper motor position - there must be **0.5-1 mm clearance** between the **Pulley 1 - motor rim** and the **Box Front D!** If these parts are too close together, you can adjust their position by underlaying the **Motor Mount** with washers to achieve the correct clearance.



BeltDrive 4x4 Gearbox – 8/9

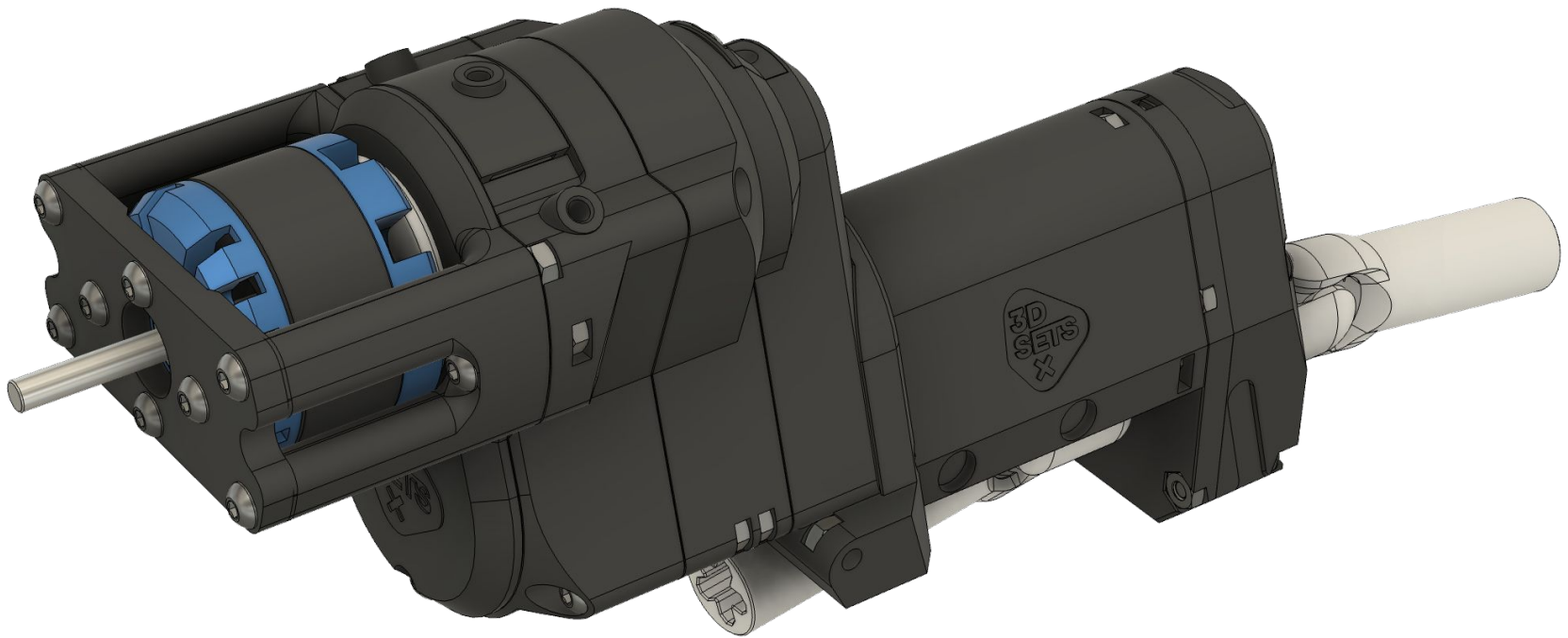


BeltDrive 4x4 Gearbox – 9/9





BeltDrive 4x4 Gearbox – finished



Geared Gearbox

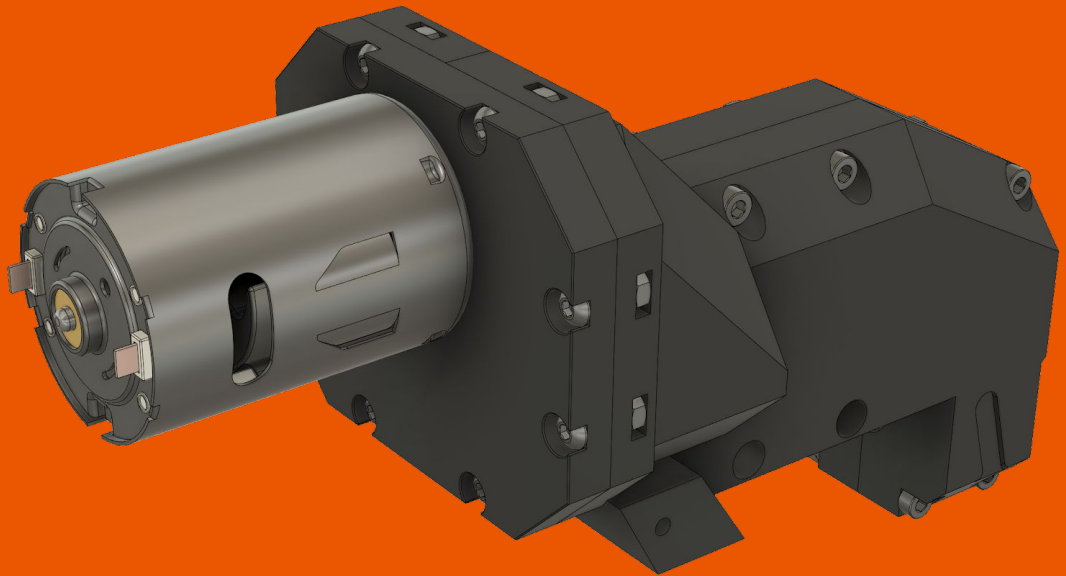
In this 8-step procedure you will assemble the gearbox with the motor. To complete this task, get the following parts ready:

Required print plates:

- “Print 6B - Geared Gearbox - 1”
- “Print 7B - Geared Gearbox - 2”
- “Print 8 - Shafts”

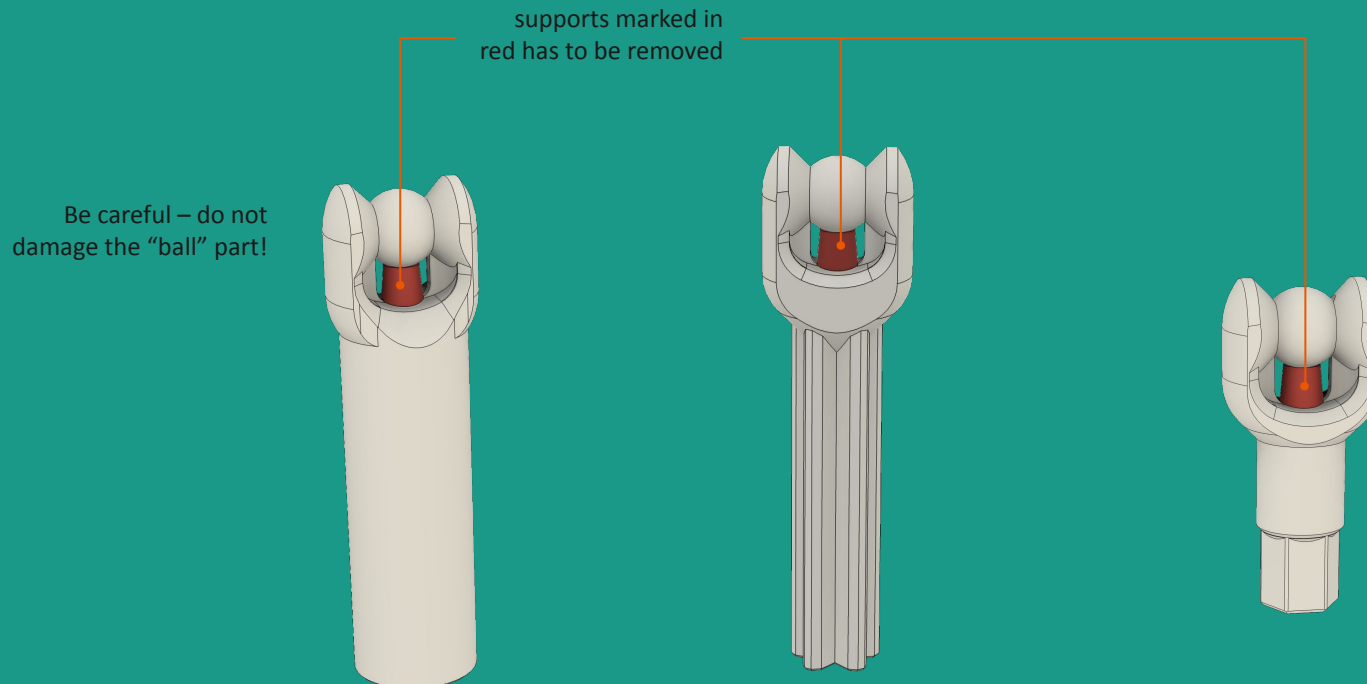
Non-printed parts:

- Screw M3x10: 12 pcs.
- Screw M3x25: 7 pcs.
- M3 locknuts: 7 pcs.
- M3 nuts: 10 pcs.
- M3x6 setscrew: 2 pcs.
- Electric motor: 1 pc.
- Bearings: 12 pcs.
- Grease

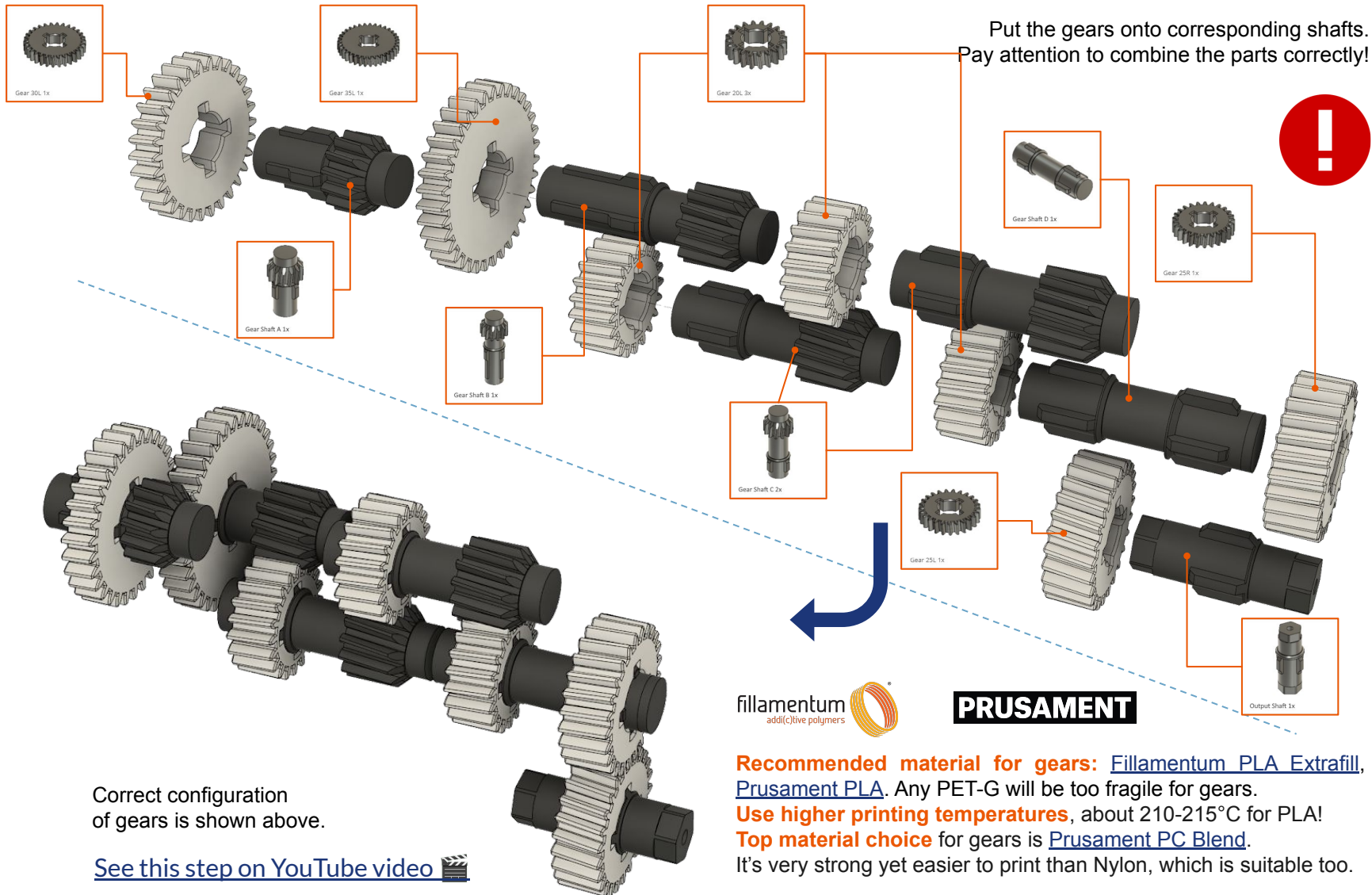


Postprocessing – removing supports

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!



Geared Gearbox – step 1/7



Put the gears onto corresponding shafts.
Pay attention to combine the parts correctly!

Correct configuration
of gears is shown above.

[See this step on YouTube video](#) 

fillamentum
add(itive) polymers 

PRUSAMENT

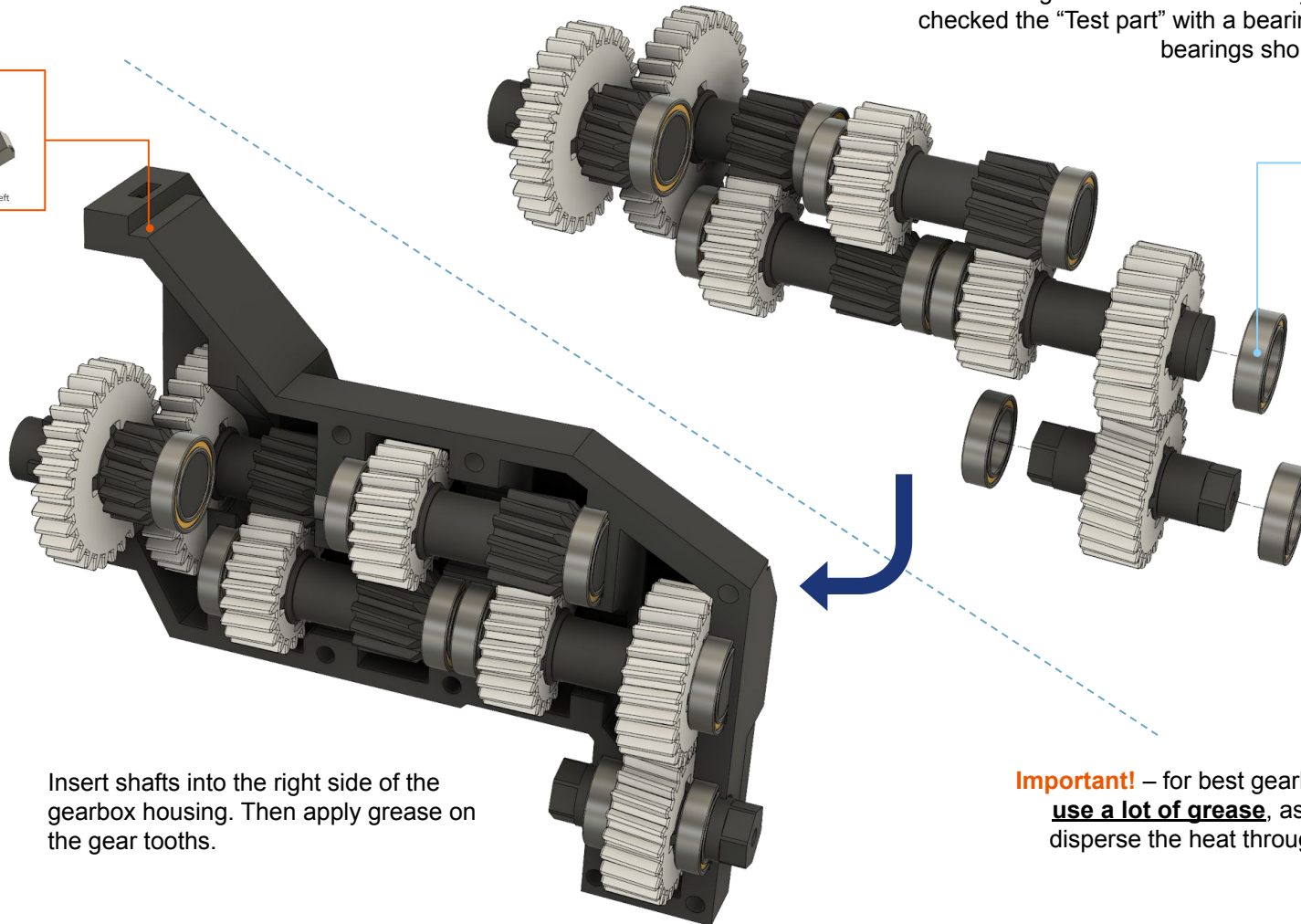
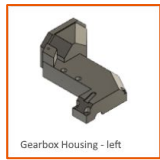
Recommended material for gears: [Fillamentum PLA Extrafill](#),
[Prusament PLA](#). Any PET-G will be too fragile for gears.

Use higher printing temperatures, about 210-215°C for PLA!

Top material choice for gears is [Prusament PC Blend](#).

It's very strong yet easier to print than Nylon, which is suitable too.

Geared Gearbox – step 2-3/7



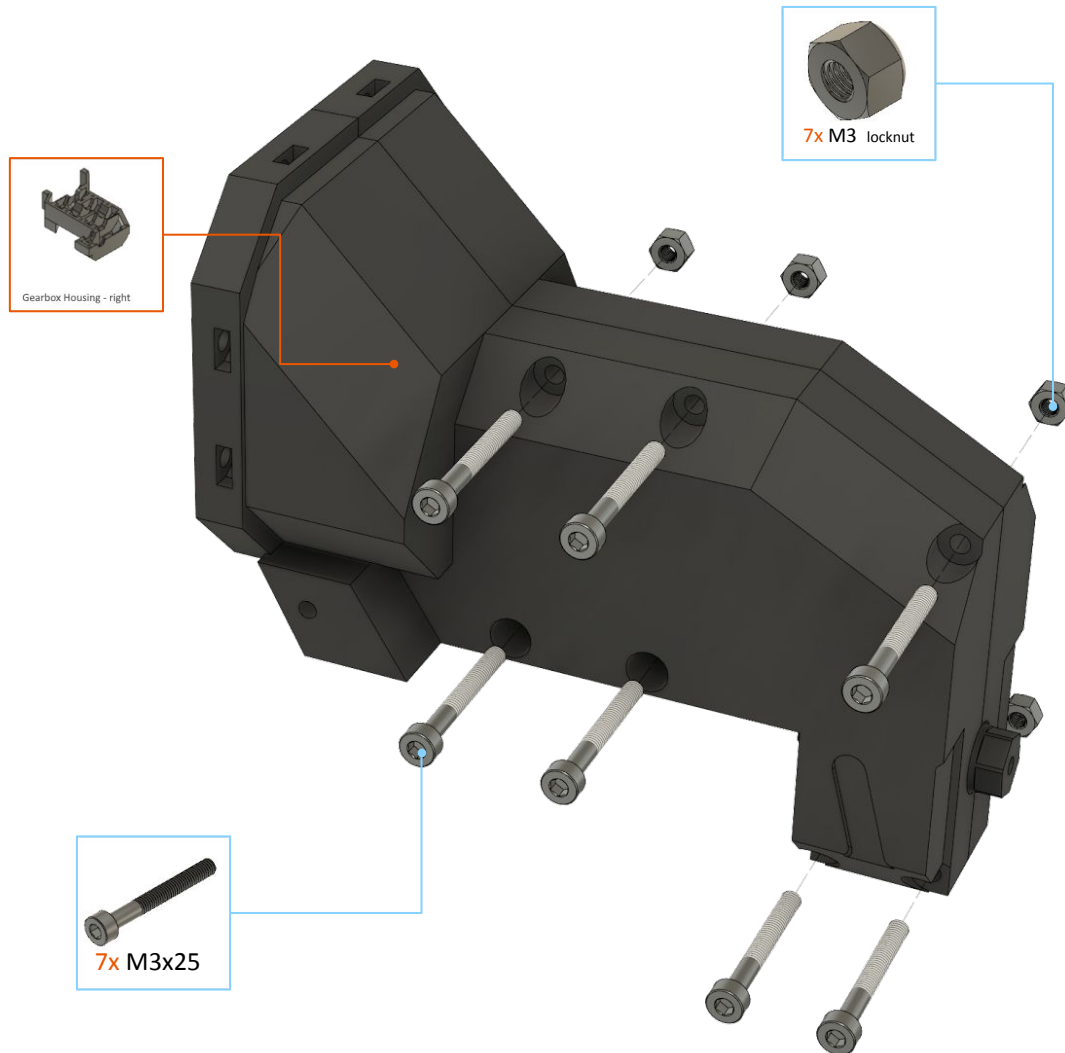
Put the bearings on each shaft end. If you printed and checked the “Test part” with a bearing successfully, bearings should fit smoothly.



Important! – for best gearbox endurance, use a lot of grease, as the grease will disperse the heat through the gearbox.

Insert shafts into the right side of the gearbox housing. Then apply grease on the gear teeth.

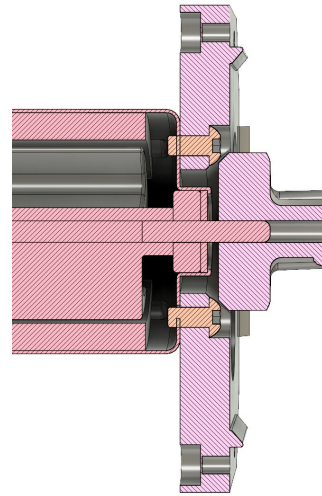
Geared Gearbox – step 4/7



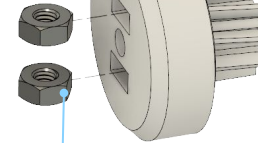
Geared Gearbox – step 5/7

Motor pinion – version A:

use this pinion if you are using “round head screws”

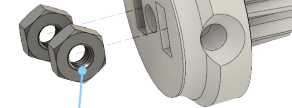
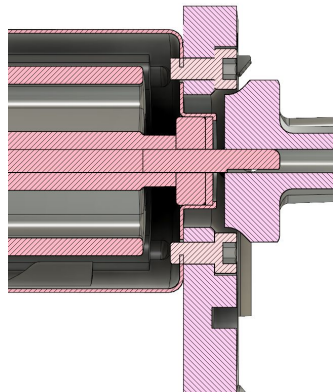


Insert nuts into the holes in the motor pinion.



Motor pinion – version B:

use this pinion if you are using “socket head screws”



Recommended material for motor pinion: ABS or CPE, as the PLA can melt due the heat from the motor shaft and PET is too flexible (pinion will slip from the shaft).

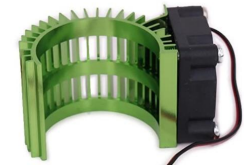
Geared Gearbox – step 6-7/7

Now mount the motor and bearings to their positions.
Then install the motor pinion on motor shaft.

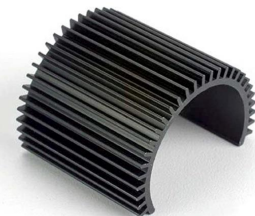
Recommended material for “Gearbox housing - front”: ABS, ASA, CPE or PET-G, as the PLA can melt due to the heat from the motor if you drive continuously or in warm weather. It is strongly recommended to install an optional motor heatsink, preferably active! Purchase links are [here](#) or use any similar

heatsinks.

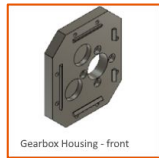
active heatsink



passive heatsink



Motor



Gearbox Housing - front



2x M3x6



2x M3x10



Bearing 10x15x4mm 2x



8x Ø3,2mm



8x M3x10

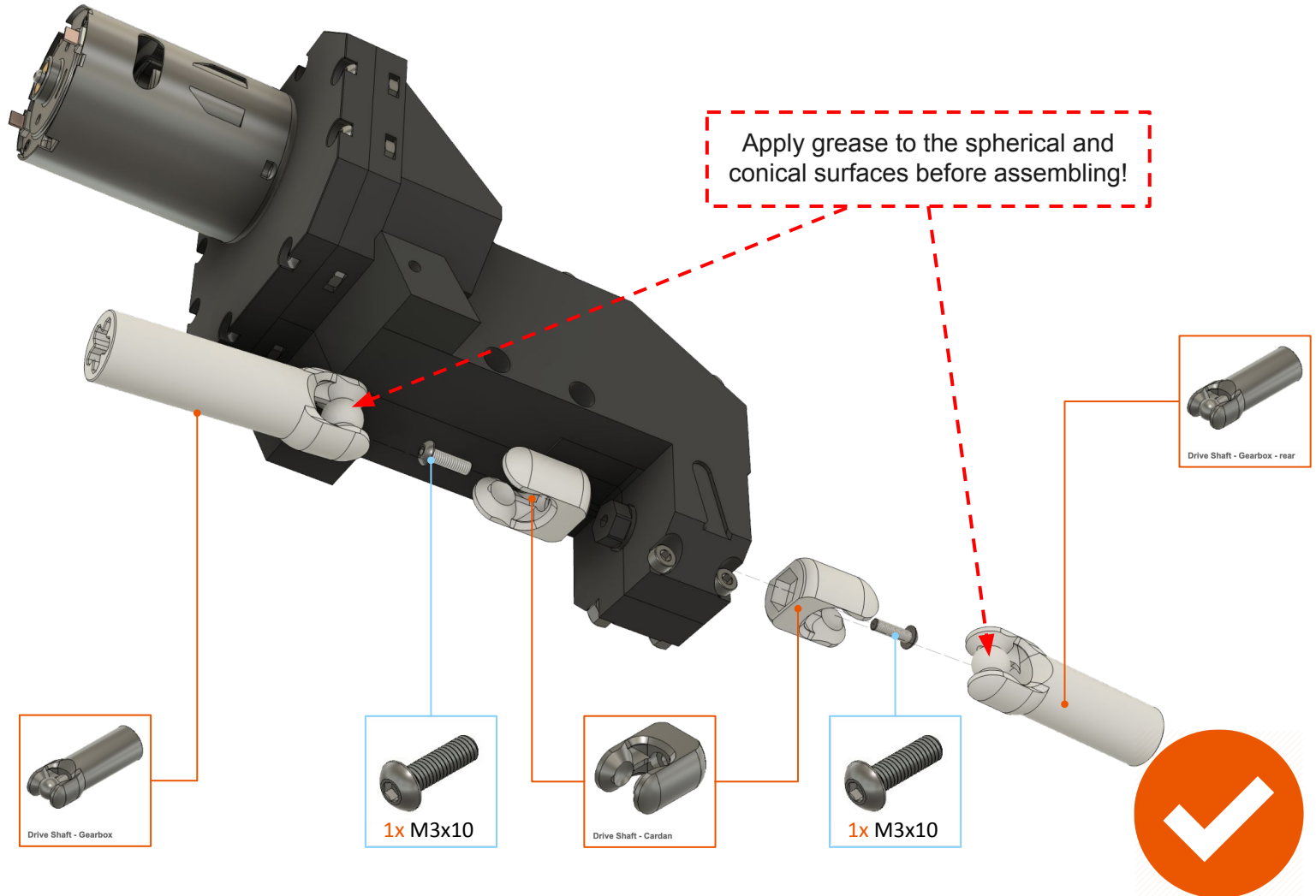


8x M3 nut

Test the gearbox before mounting to the chassis!

You should be able to turn the gearbox output shaft by hand with some force (attach Cardan Joint Yoke to the output shaft). After that, you can connect a 3 - 7 V battery directly to the motor, it should run.

Geared Gearbox – step 8/8

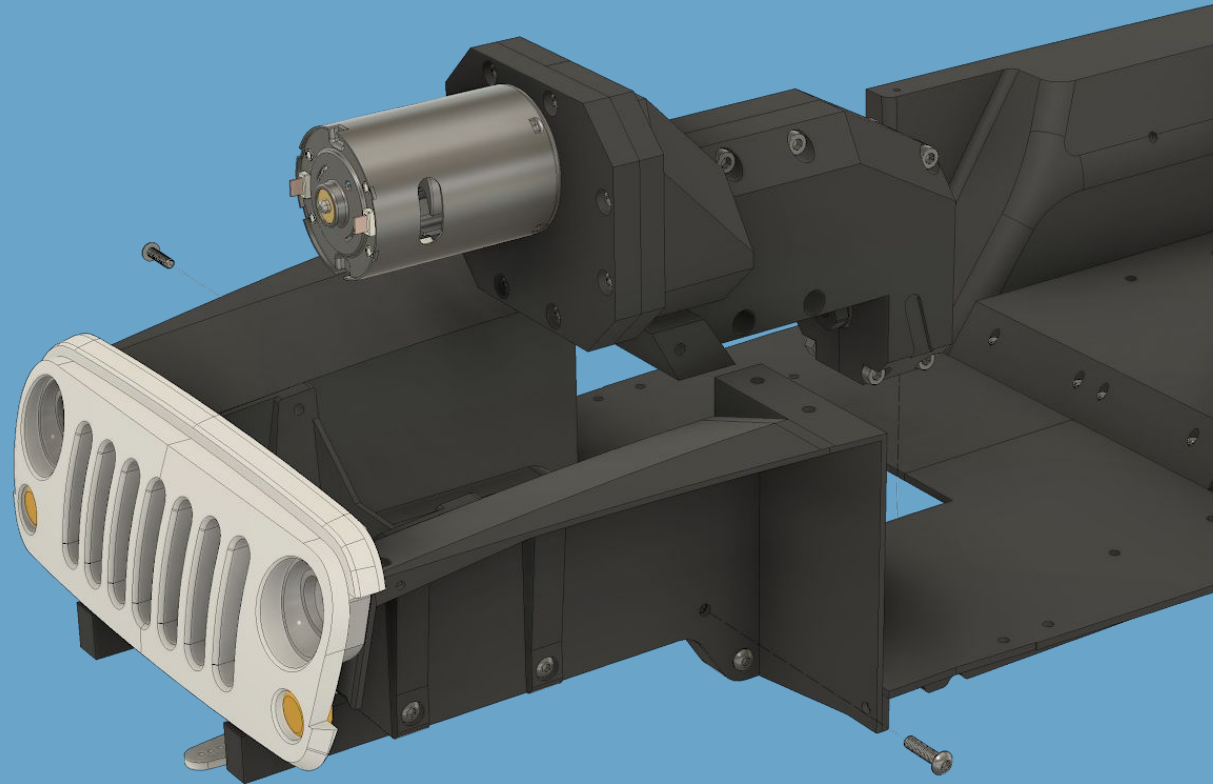


Rancher 4x4 – gearbox installation

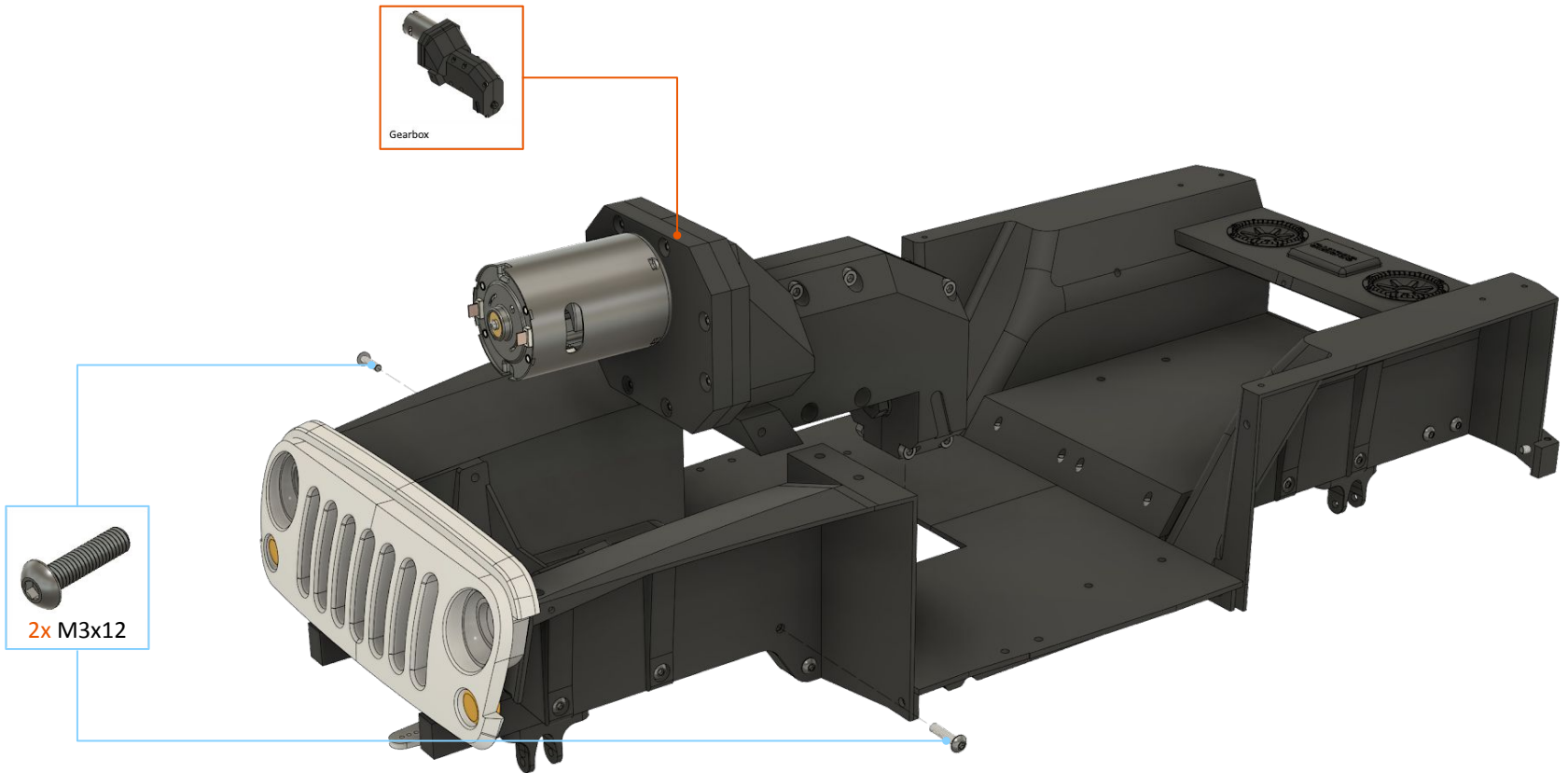
In this simple 1-step procedure you will install Gearbox in the center of the chassis.

Required non-printed parts:

- Screw M3x12: 2 pcs.



Rancher 4x4 - step 1/1



Rancher 4x4 – Axles choice



There are two different axles available for Rancher 4x4:

With new *Opened Differential*
With *No Differential (locked)*

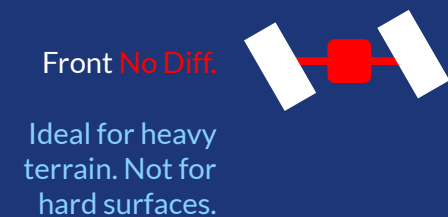
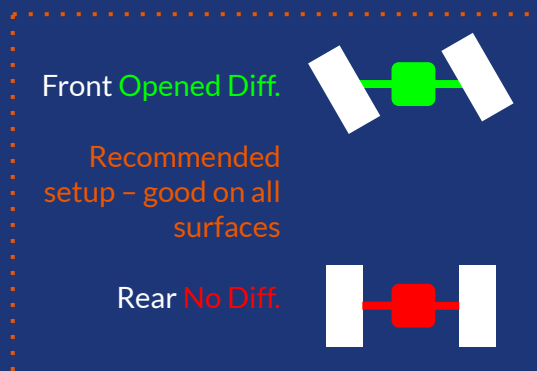
New *Opened Differential* features:

- Medium print and assemble difficulty
- Excellent for indoor driving and exterior hard surfaces
- Excellent maneuverability and small turning radius
- Low drivetrain/gearbox stress

Classic *No Differential* features:

- Easier to print and assemble
- Excellent for heavy terrain driving
- Not recommended for hard surfaces (interior floors etc.) – using locked differentials on both axles results in high stress on drivetrain/gearbox parts.

Both types of axles can be combined to achieve optimum performance:

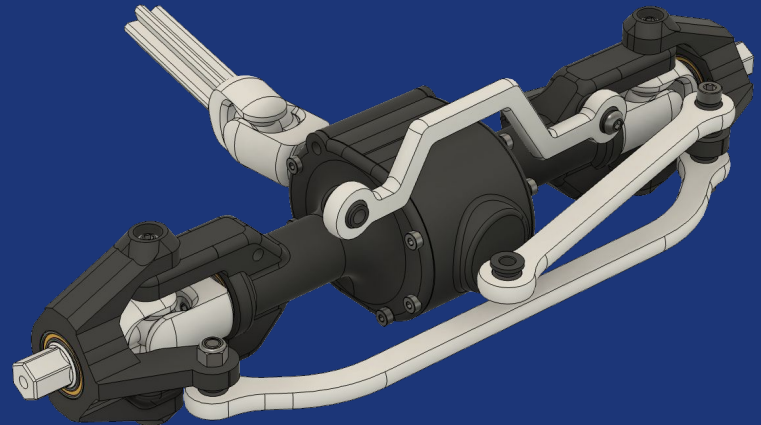
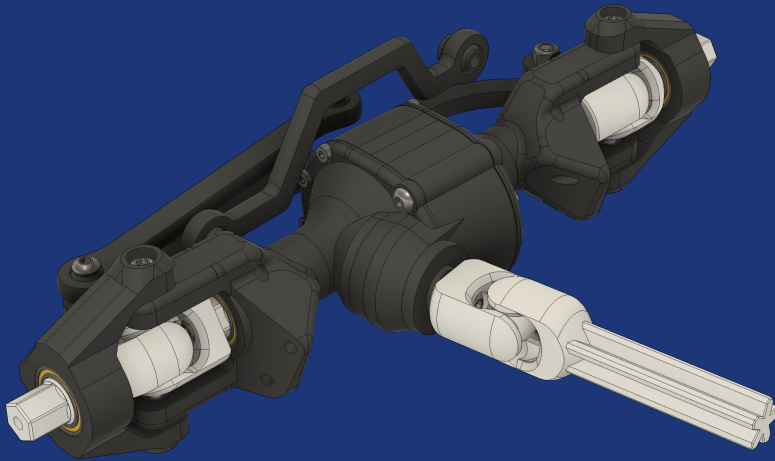


Front Axle

On the previous slide, you chose your preferred Axles configuration. Let's start with Front Axle first:

For Front Axle with **Opened Differential**, proceed to next page (44).

For Front Axle with **No Differential**, proceed to page 50.



Front Axle - with Differential

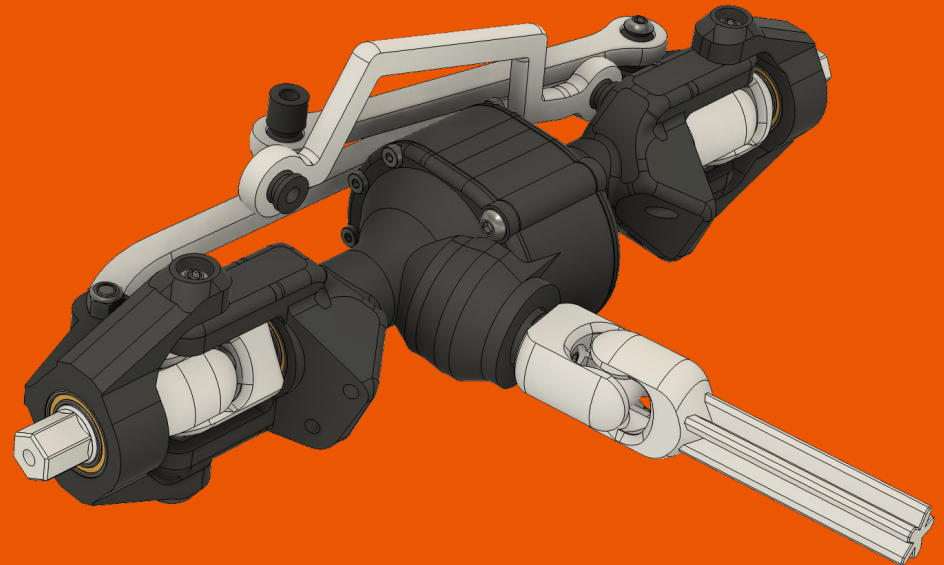
In this 6-step procedure you will assemble the front axle. The axle includes a open differential, driveshaft and complete steering assembly.

Required print plates:

- “Print 8 - Shafts”
- “Print 10B - Differential Axe - 1”
- “Print 11B - Differential Axe - 2” - print from **PLA or PC Blend**

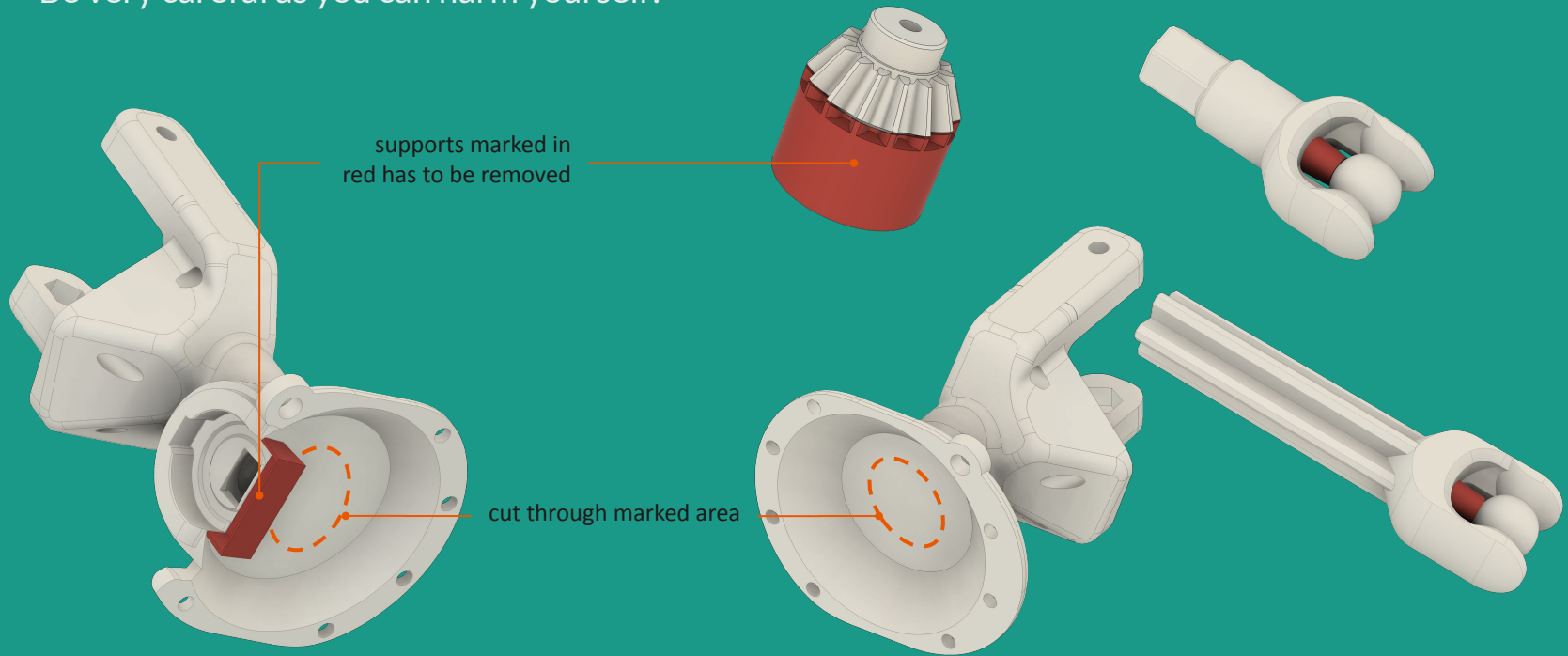
Non-printed parts:

- Screw M2x10: 18 pcs.
- Screw M3x8: 3 pcs.
- Screw M3x10: 10 pcs.
- Screw M3x16: 2 pcs.
- Screw M3x25: 1 pcs.
- Nut M3: 4 pcs.
- Locknut M3: 2 pcs.
- Bearing: 15 pcs.
- Grease



Axles – postprocessing

Before you start building Axles, 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 (with differential) – step 1/6

It is recommended to print these specific parts from high-strength material like **Prusament PC Blend**: specifically the **Axle Gears** and **Differential Pinions**. Do not use ABS or PETG for gears, as they are weaker even than PLA!

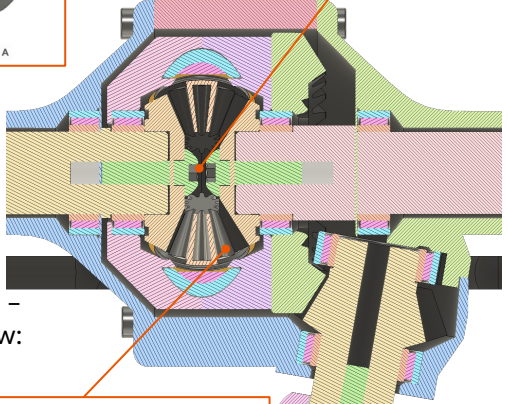
PRUSAMENT



Use screw ISO 7380 or screw with max height head 2mm!



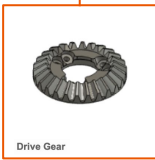
Use screw ISO 7380 or screw with max height head 2mm!



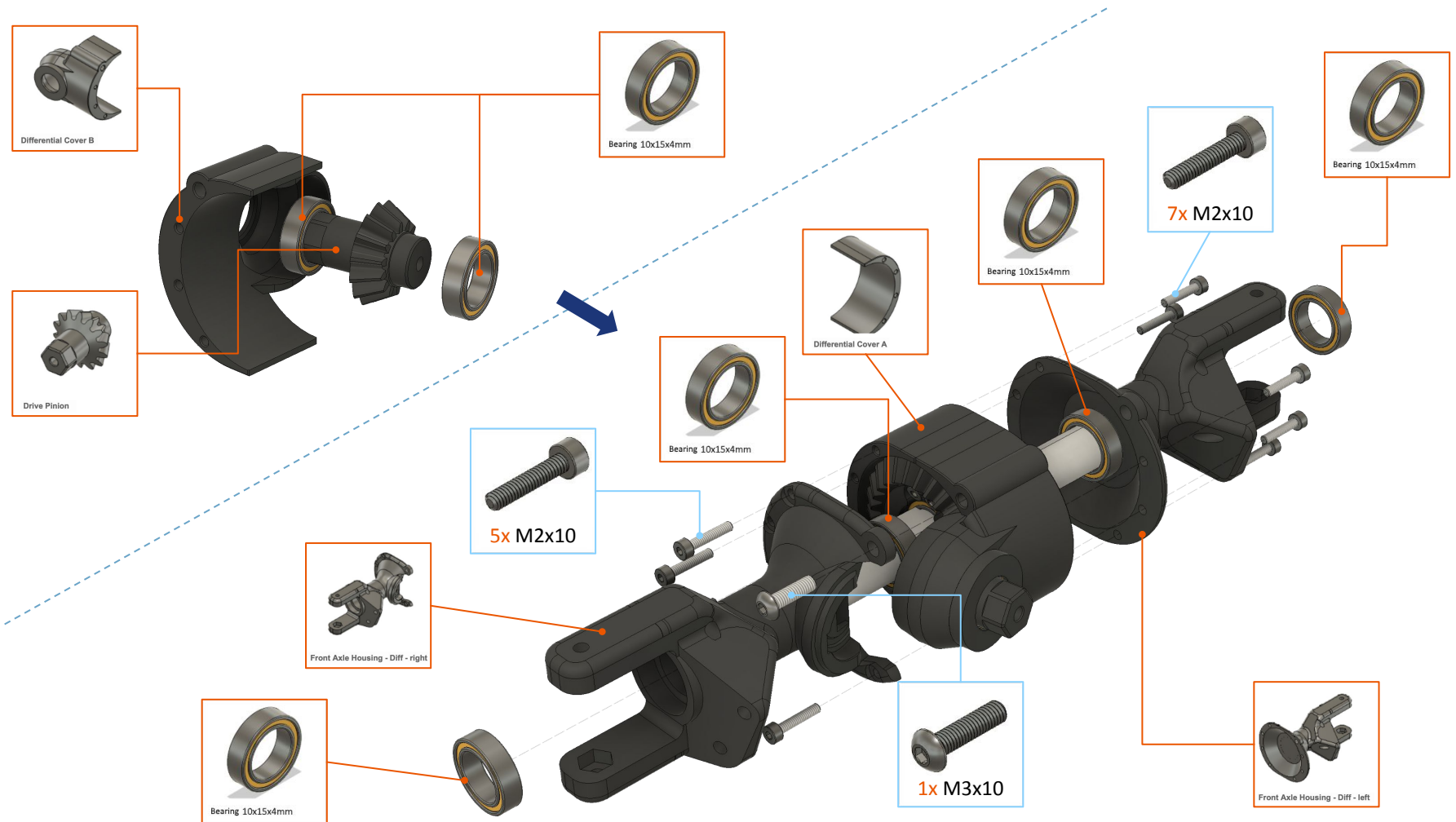
Apply grease on gear teeth.



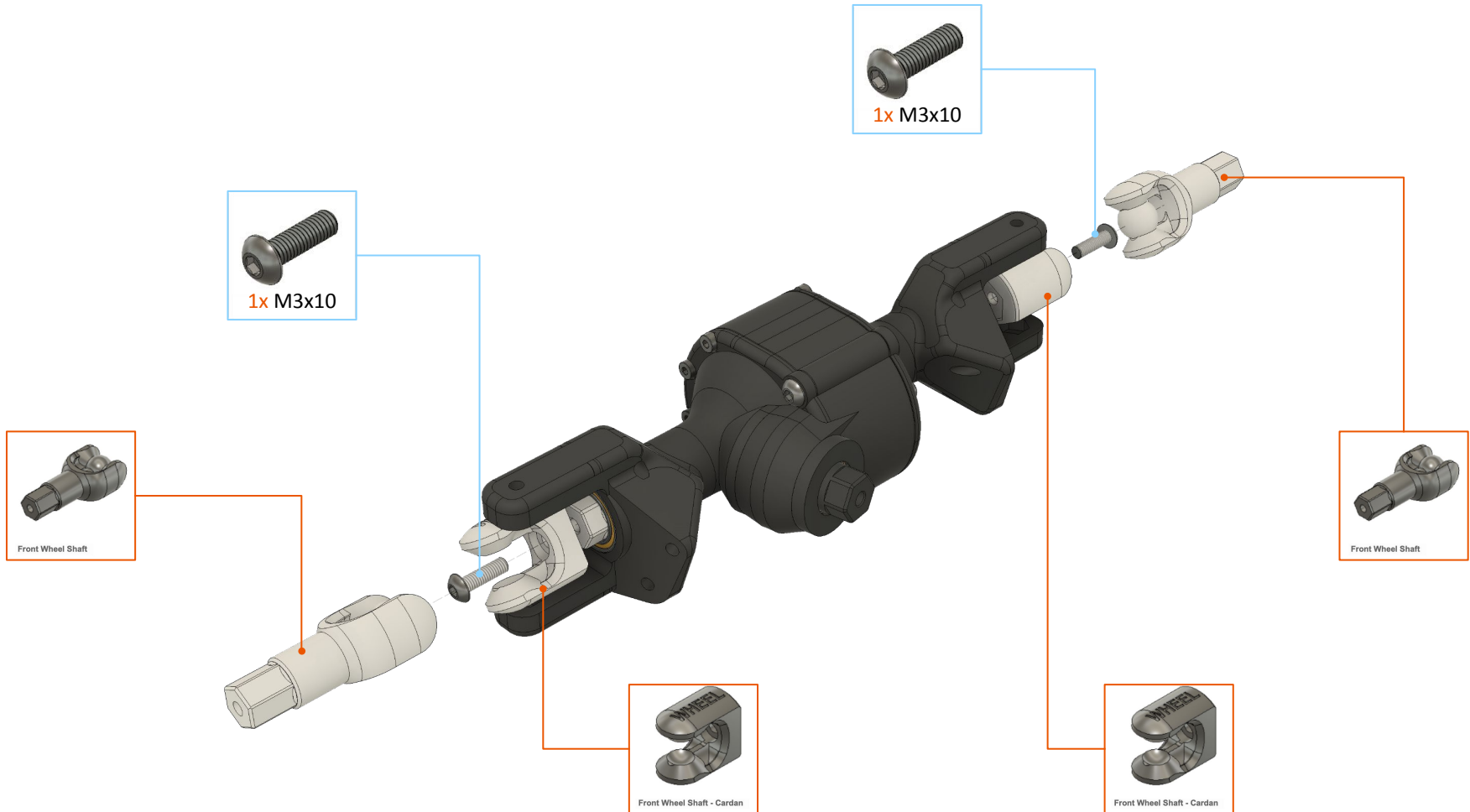
PRUSAMENT



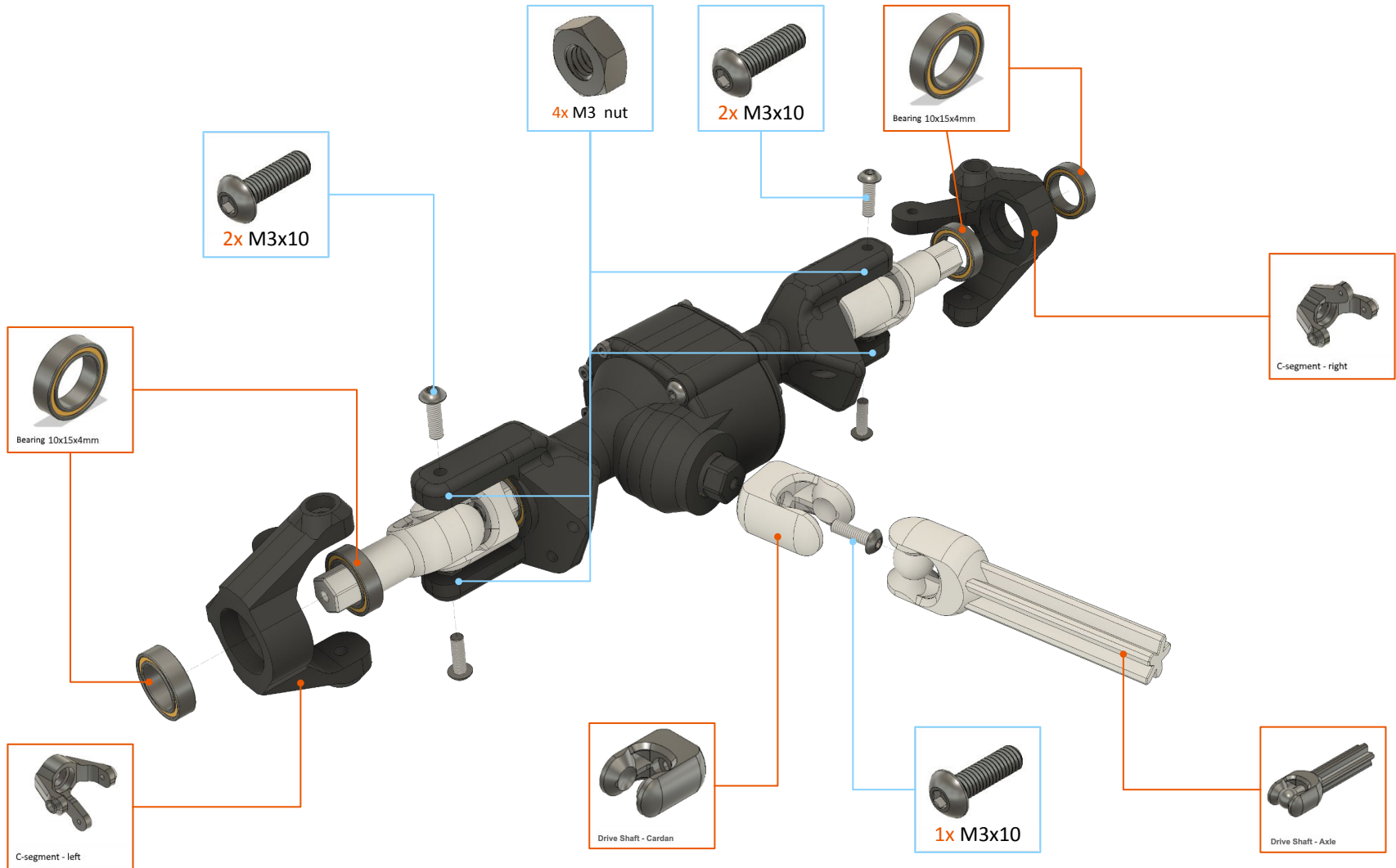
Front Axle (with differential) – step 2-3/6



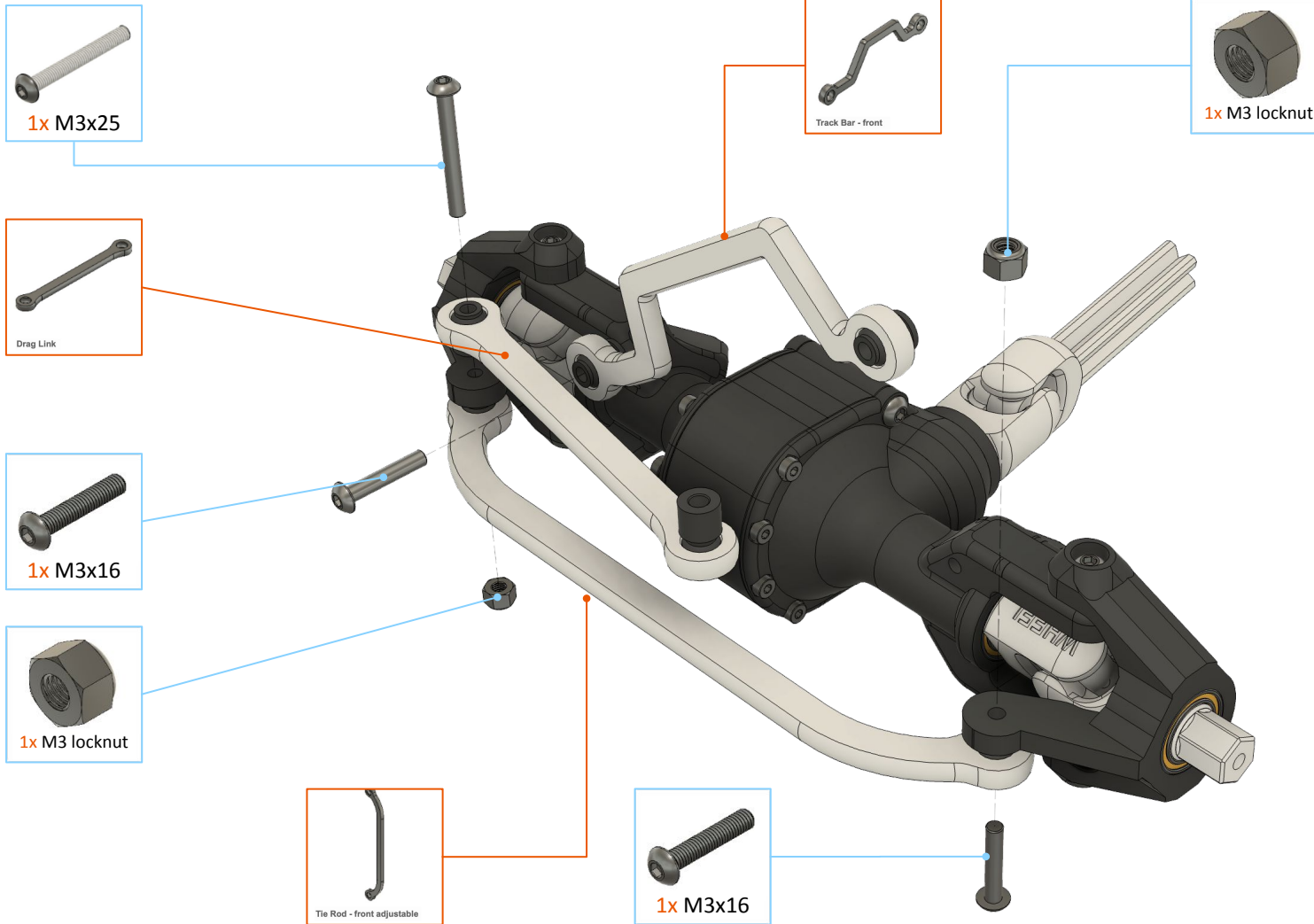
Front Axle (with differential) – step 4/6



Front Axle (with differential) – step 5/6



Front Axle (with differential) – step 6/6



Subassembly #3 – Front axle

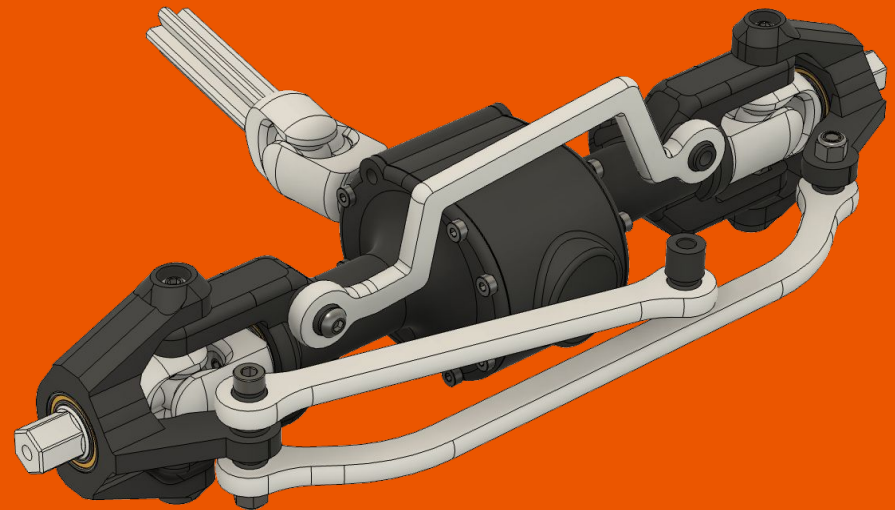
In this 10-step procedure you will assemble the front axle. The axle includes a locked differential, driveshaft and complete steering assembly.

Required print plates:

- “Print 8 - Shafts”
- “Print 10A - Locked Axle - 1”
- “Print 11A - Locked Axle - 2”

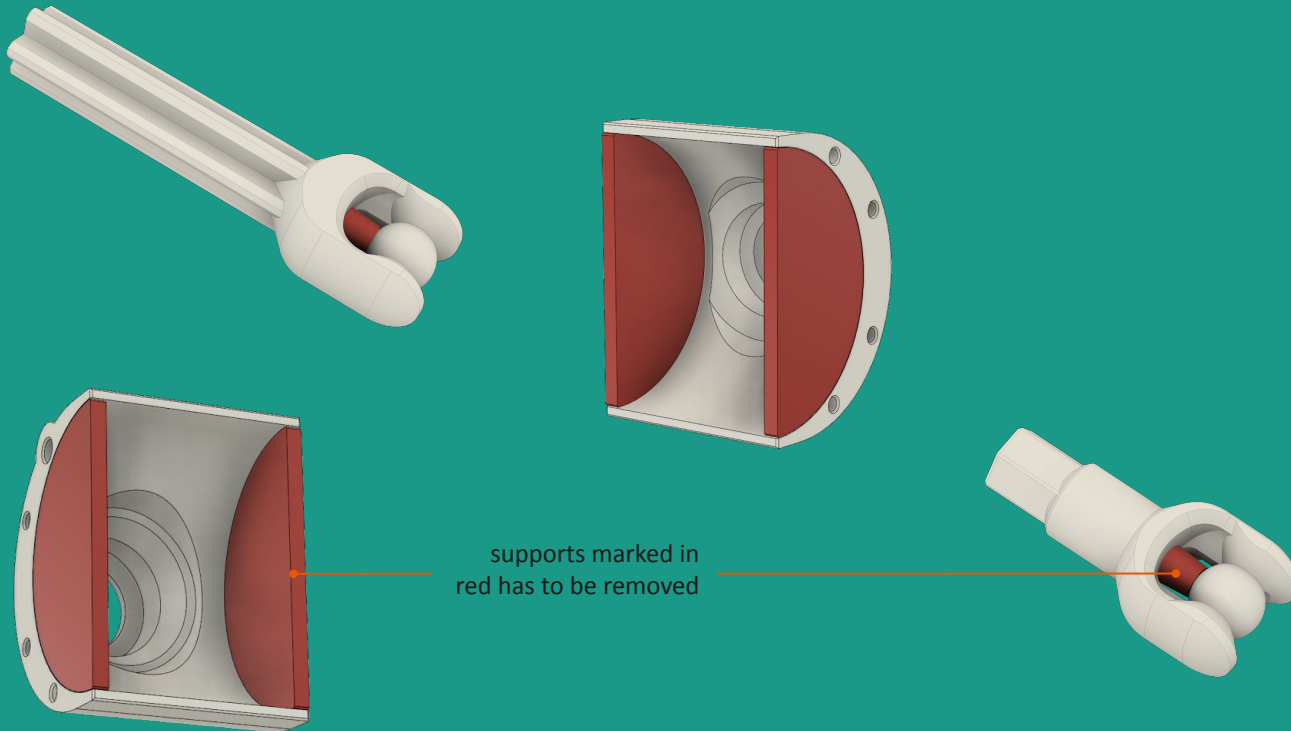
Non-printed parts:

- Screw M2x6: 14 pcs.
- Screw M3x10: 9 pcs.
- Screw N3x12: 1 pcs.
- Screw M3x16: 2 pcs.
- Screw M3x25: 1 pcs.
- Nut M3: 4 pcs.
- Locknut M3: 2 pcs.
- Bearing: 10 pcs.
- Grease

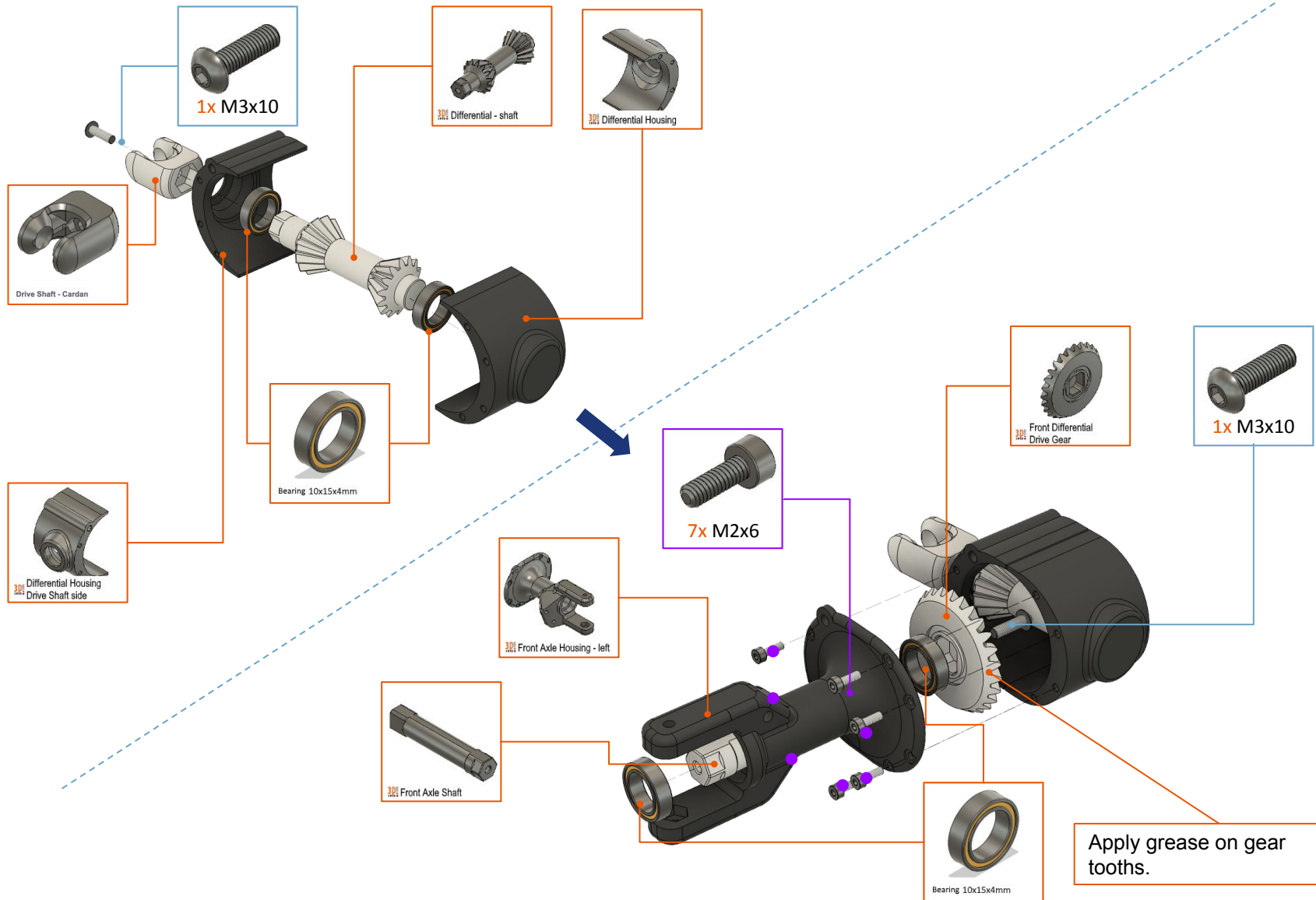


Axles – postprocessing

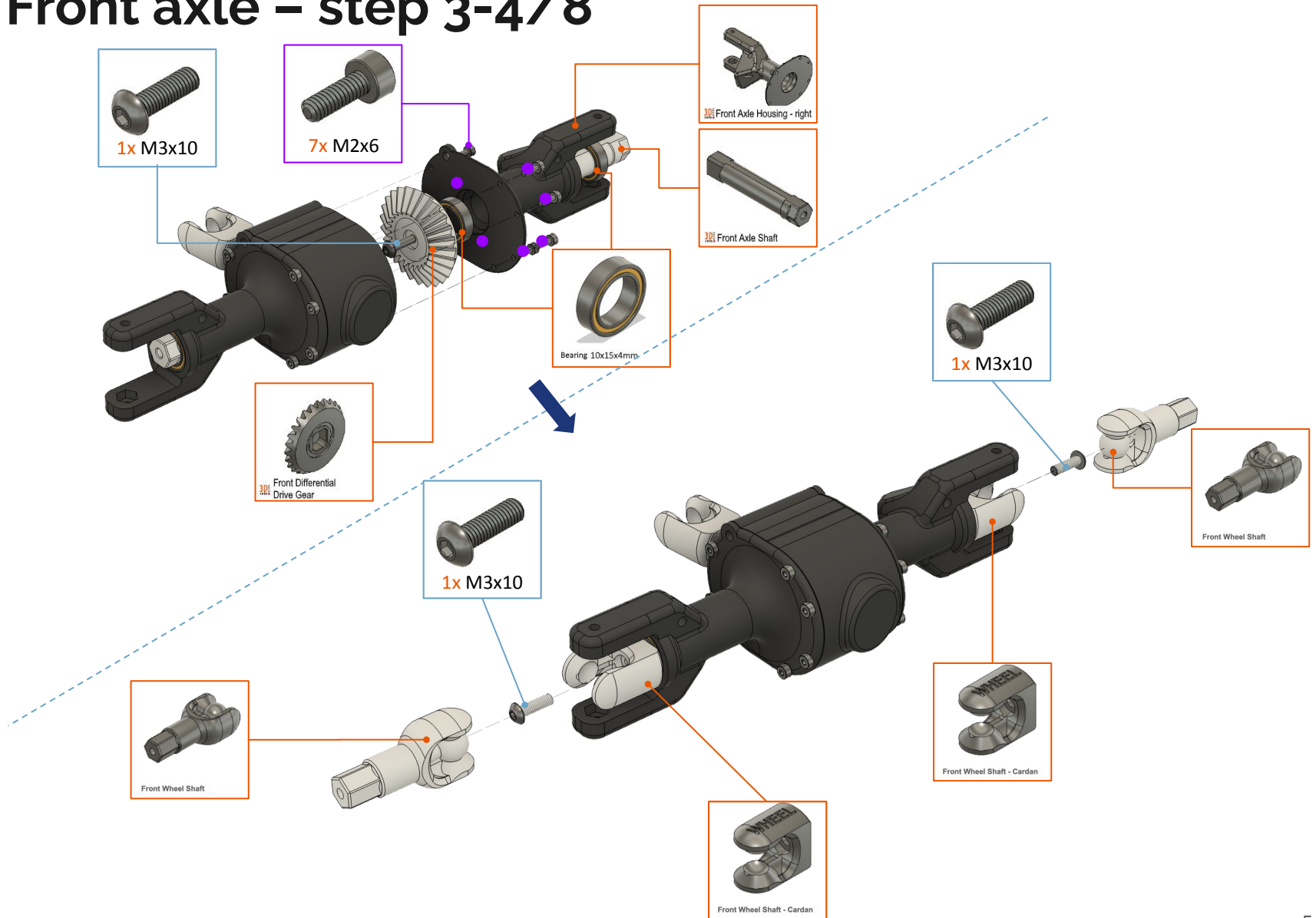
Before you start building Axles, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!



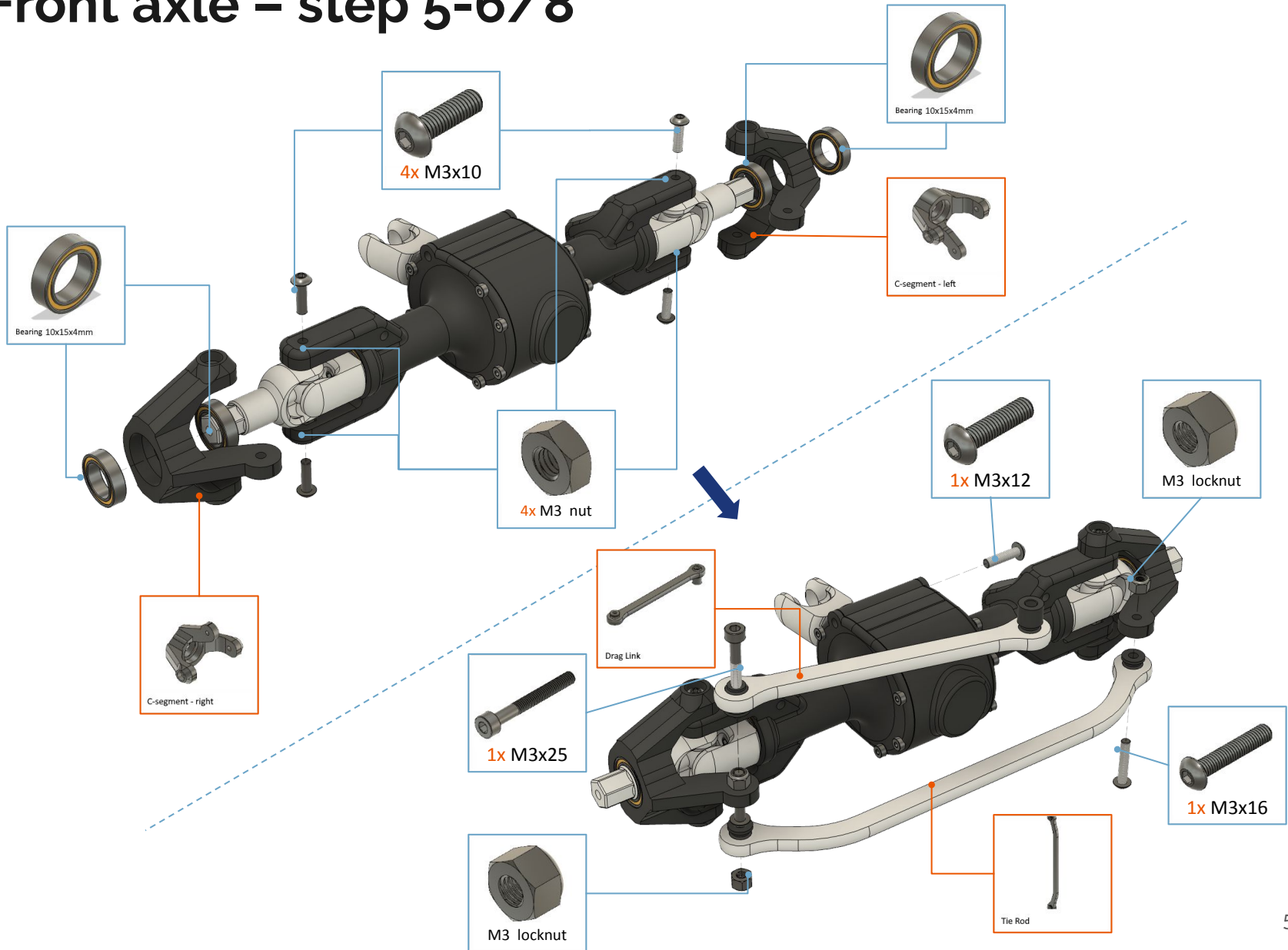
Front axle – step 1-2/8



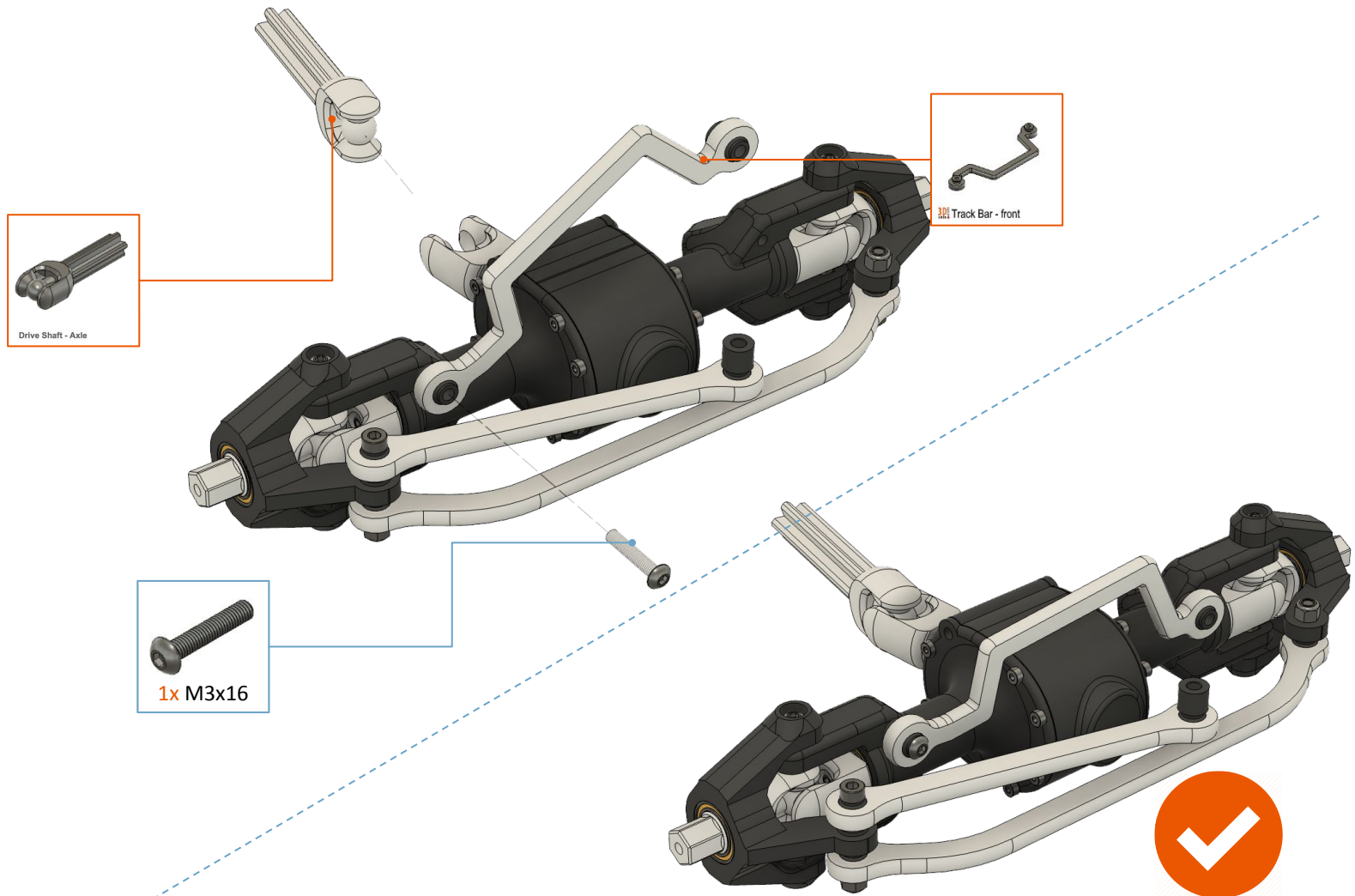
Front axle – step 3-4/8



Front axle – step 5-6/8



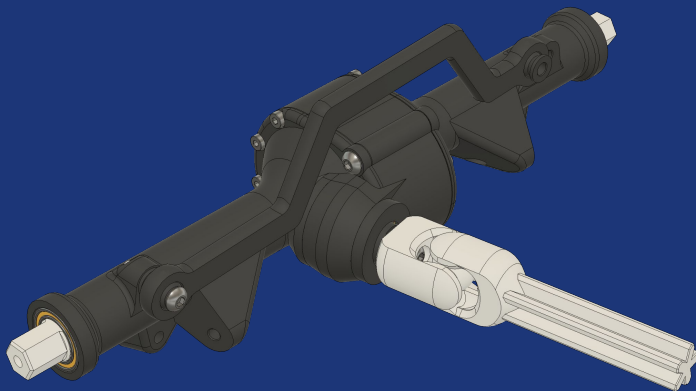
Front axle – step 7-8/8



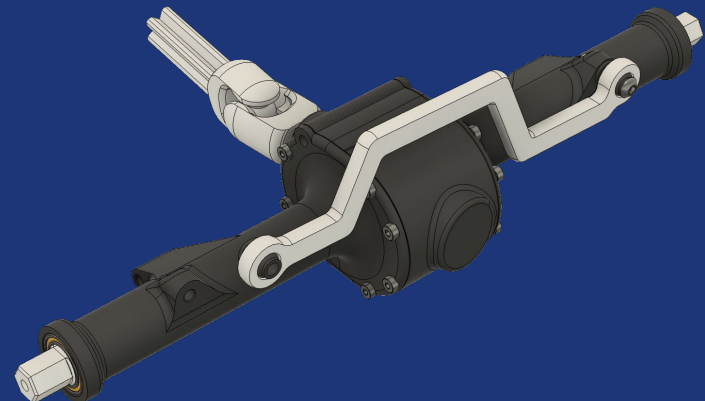
Rear Axle

On the [slide 42](#), you chose your preferred Axles configuration. Continue with the Rear Axle:

For Rear Axle with **Opened Differential**,
[proceed to next page \(57\)](#).



For Rear Axle with **No Differential**, [proceed to page 61](#).



Rear Axle with Differential

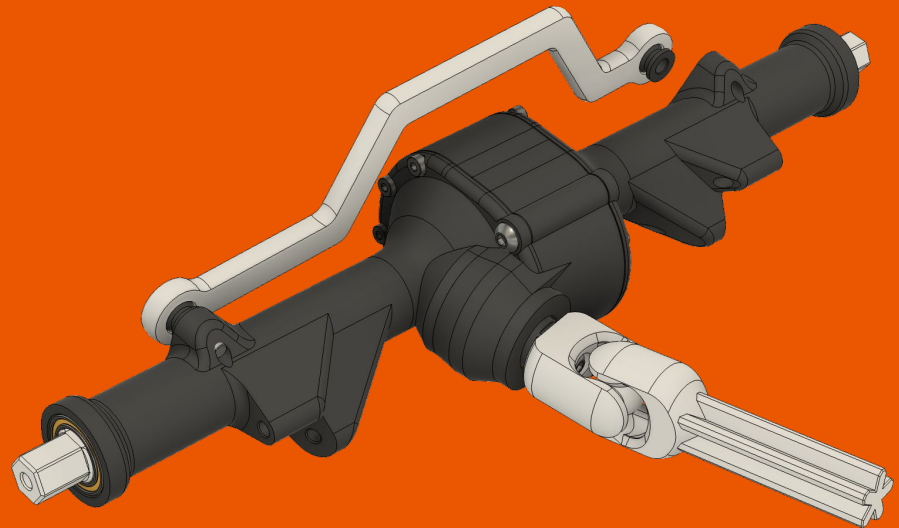
In this 4-step procedure you will assemble the rear axle. The axle includes a open differential and driveshaft.

Required print plates:

- “Print 8 - Shafts”
- “Print 10B - Differential Axe - 1”
- “Print 11B - Differential Axe - 2” - print from **PLA or PC Blend**

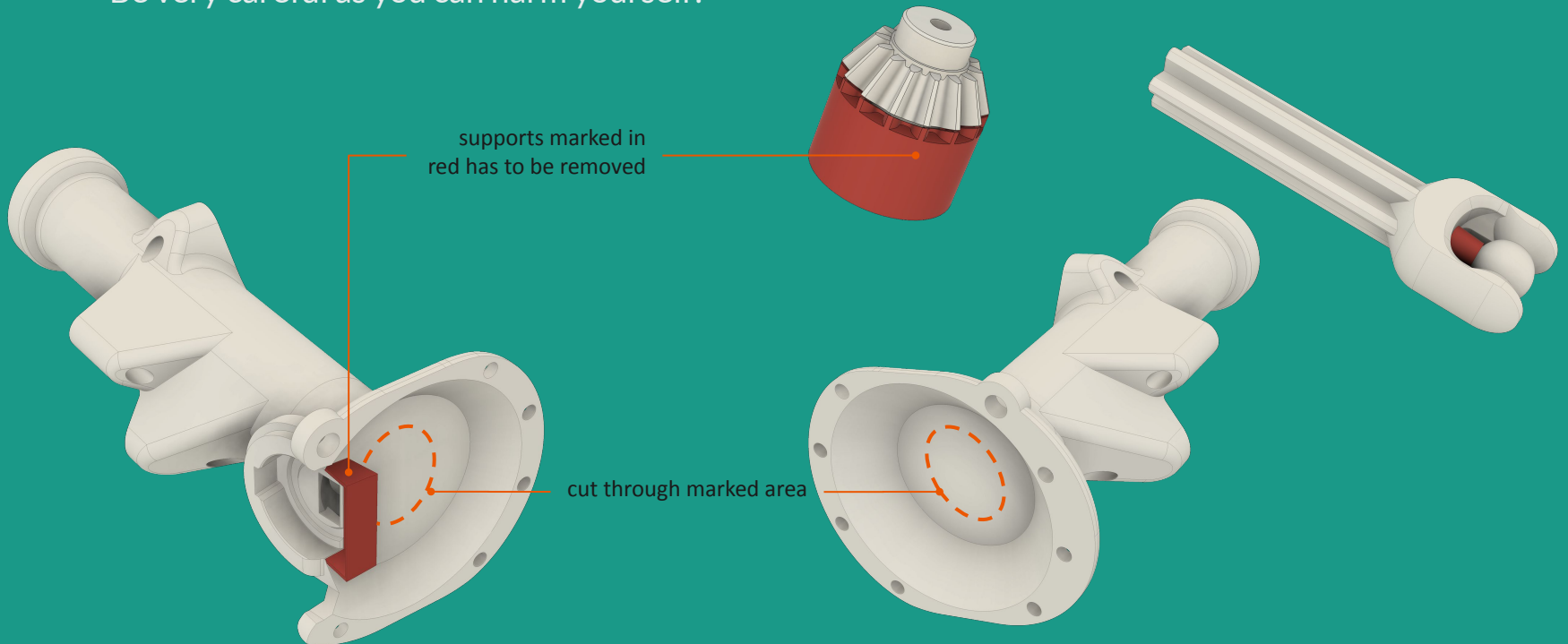
Non-printed parts:

- Screw M2x10: 18 pcs.
- Screw M3x8: 3 pcs.
- Screw M3x10: 4 pcs.
- Screw M3x16: 1 pcs.
- Bearings: 11 pcs.
- Grease
- Thread Locker



Axles – postprocessing

Before you start building Axles, 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!



Rear Axle (with differential) – step 1/4

It is recommended to print these specific parts from high-strength material like **Prusament PC Blend**: specifically the **Axle Gears** and **Differential Pinions**. Do not use ABS or PETG for gears, as they are weaker even than PLA!

PRUSAMENT

Axle Gear.

2x M3x10

Bearing 10x15x4mm

Rear Axle Shaft - Diff - right



Use screw ISO 7380 or screw with max height head 2mm!

6x M2x10

3x M3x8



Use screw ISO 7380 or screw with max height head 2mm!

Differential Cage A

Axle Gear.

Prusament PC Blend

Open differential – section view:

Apply grease on gear teeth.



Rear Axle Shaft - Diff - left



Drive Gear



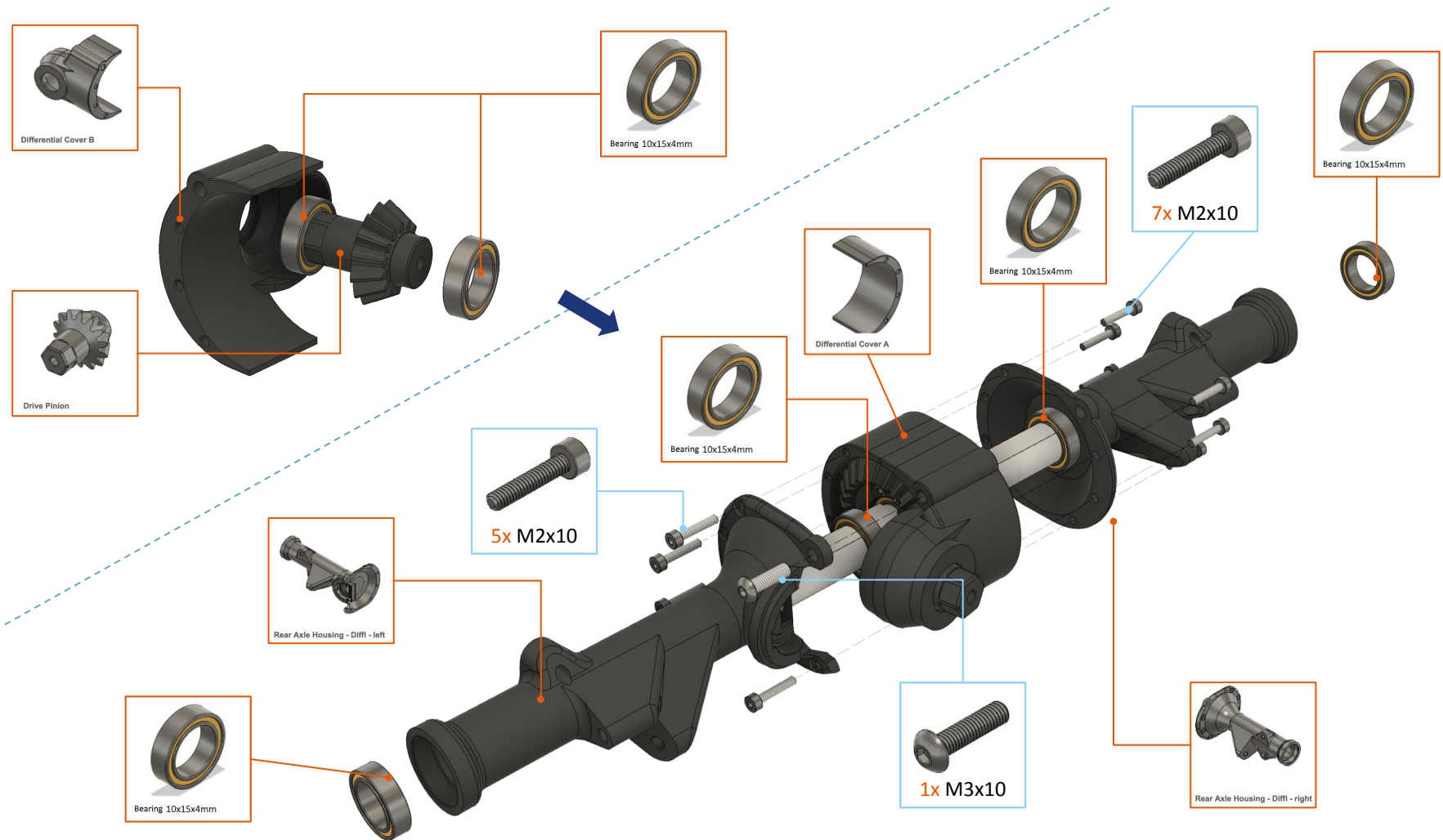
Differential Cage B



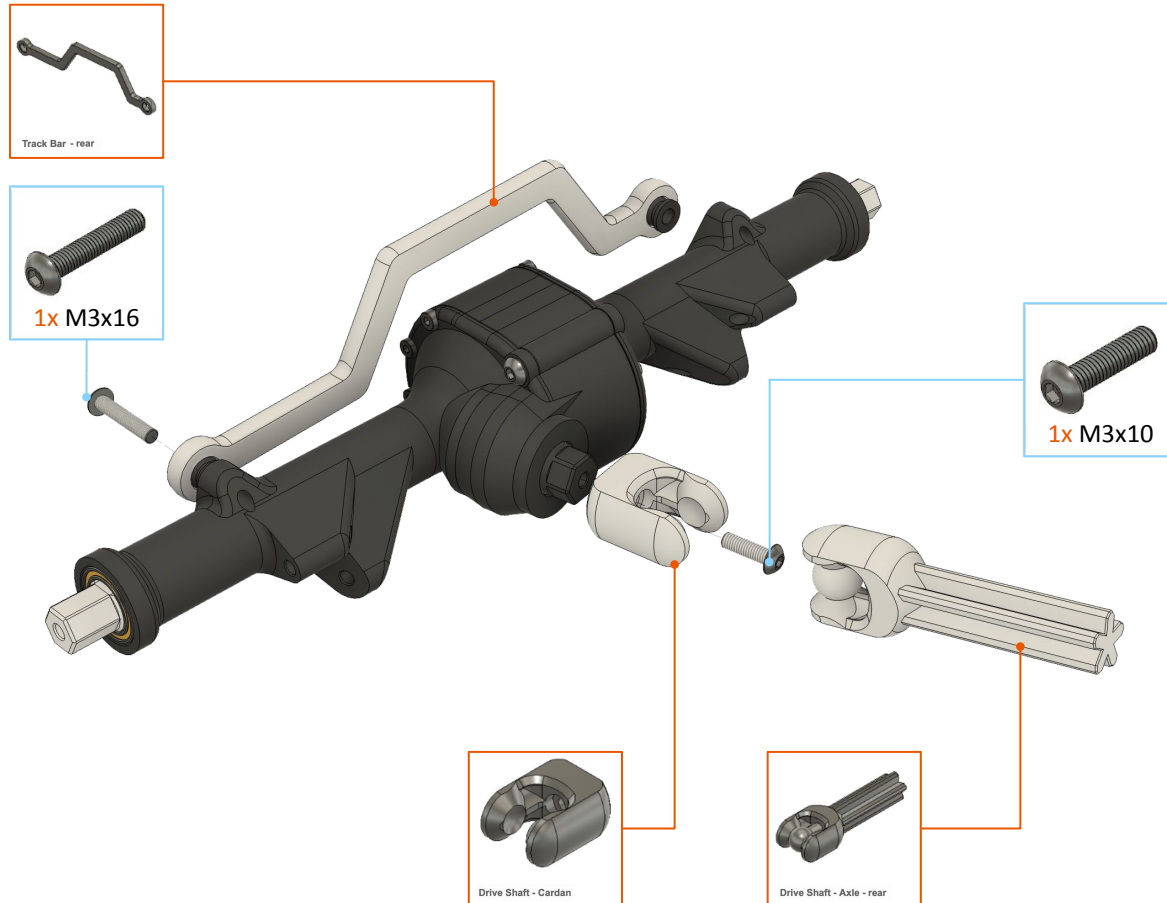
Differential Pinion

Prusament PC Blend
PRUSAMENT

Rear Axle (with differential) – step 2-3/4



Rear Axle (with differential) – step 4/4



Subassembly #2 – Rear axle

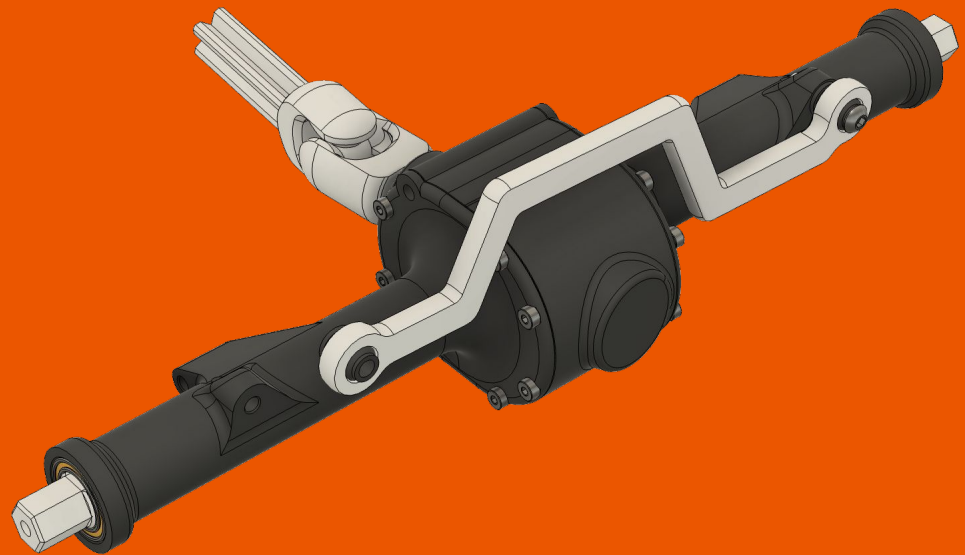
In this 6-step procedure you will assemble the rear axle. The axle includes a locked differential and driveshaft.

Required print plates:

- “Print 8 - Shafts”
- “Print 10A - Locked Axle - 1”
- “Print 11A - Locked Axle - 2”

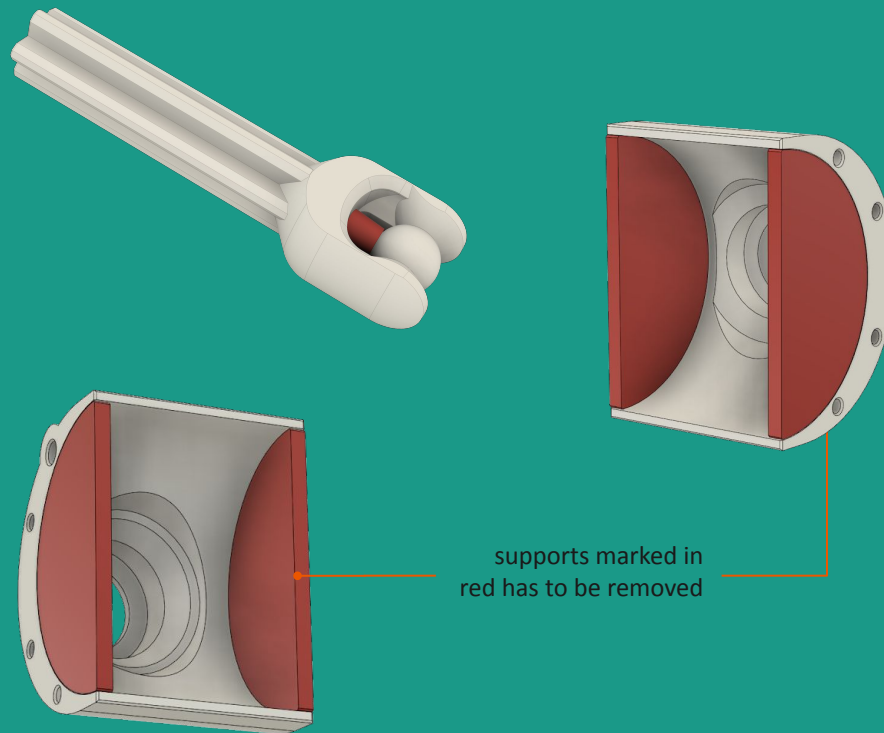
Non-printed parts:

- Screw M2x6: 14 pcs.
- Screw M3x10: 3 pcs.
- Screw M3x12: 1 pcs.
- Screw M3x16: 1 pcs.
- Bearings: 6 pcs.
- Grease
- Thread Locker

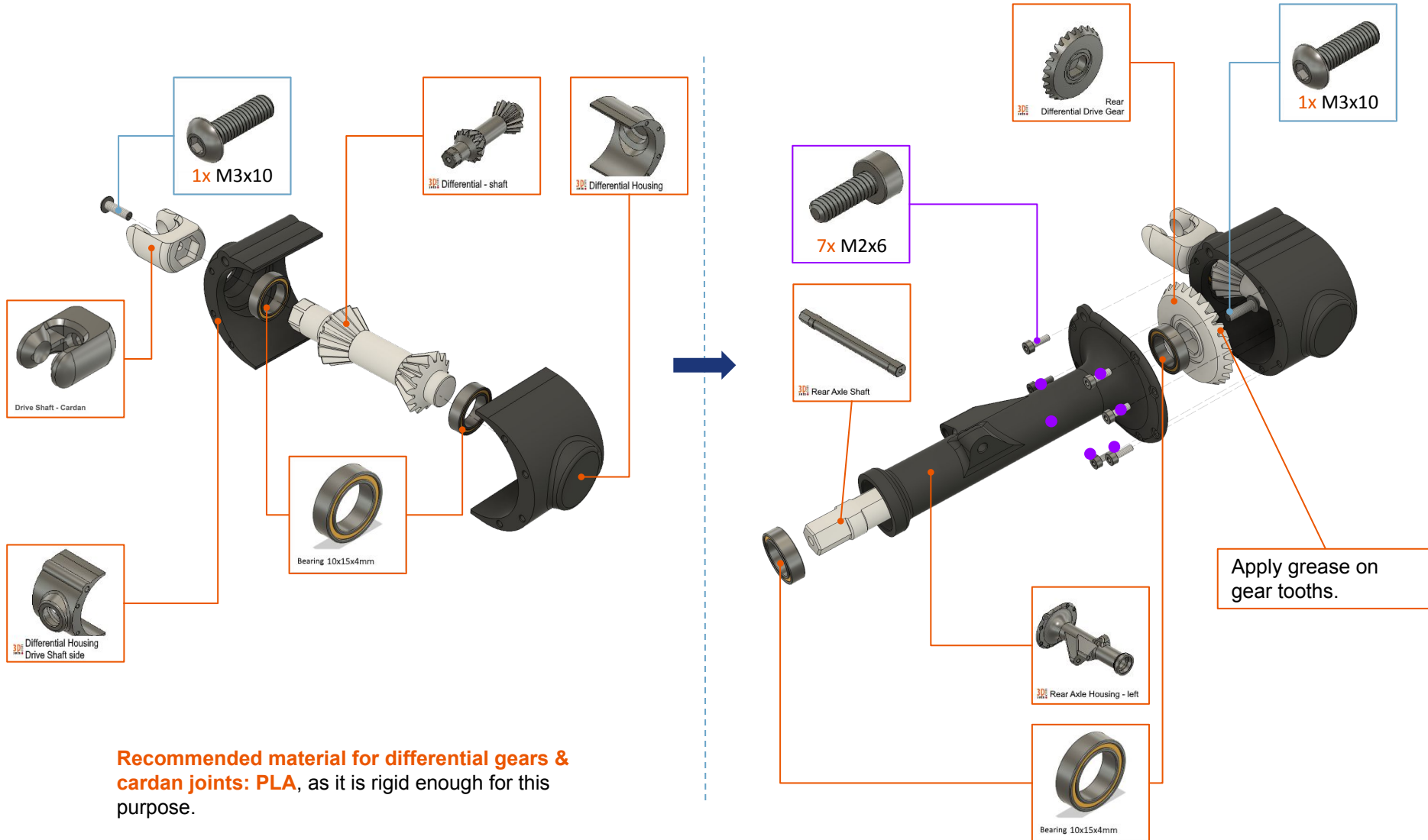


Axles – postprocessing

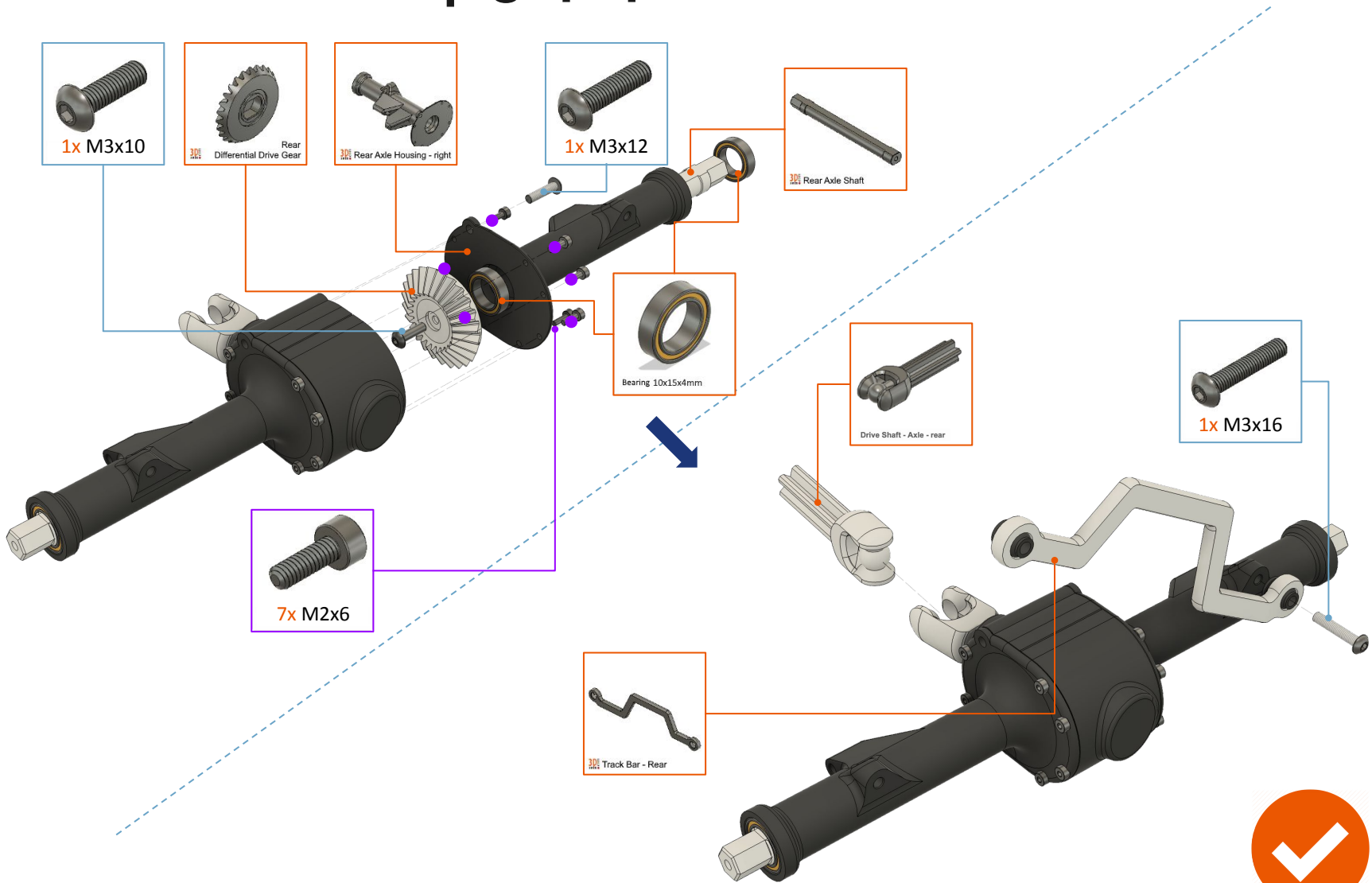
Before you start building Axles, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!



Rear axle – step 1-2/4



Rear axle – step 3-4/4



Rancher 4x4 – bodywork & axles

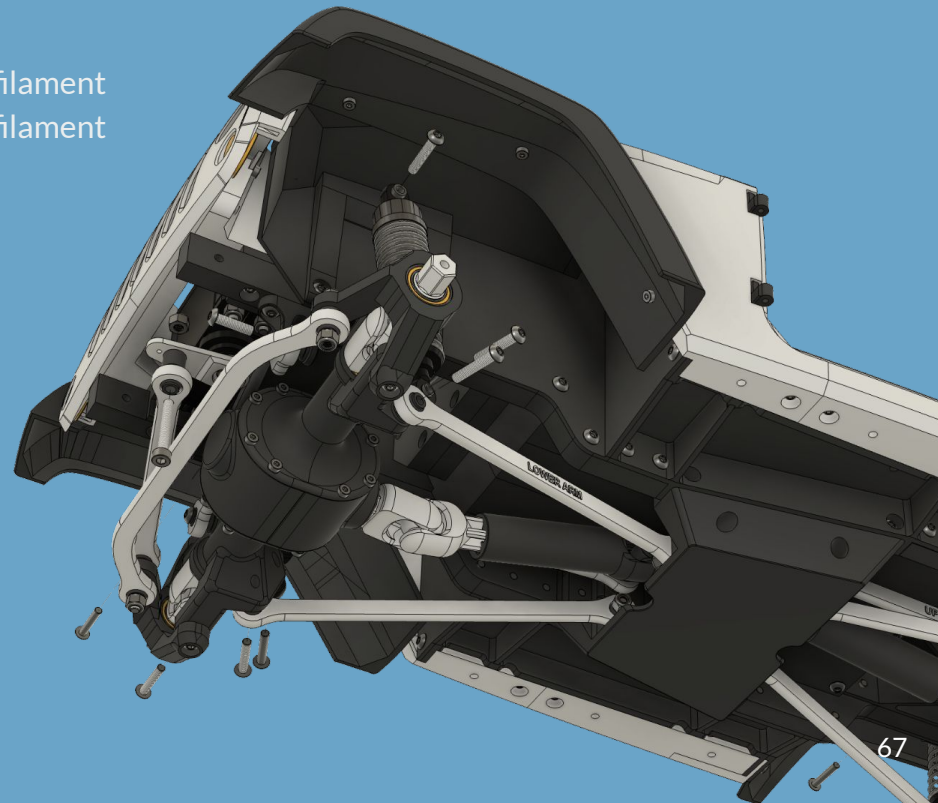
In this 10-step procedure you will assemble bodywork of the car and then you'll install axles, that you have finished from previous steps.

Required print plates:

- “Print 5 - Chassis 5 + hinges”
- “Print 9 - Fender Flare”
- “Print 12 - Body 1” - you can print alternative color filament
- “Print 13 - Body 2” - you can print alternative color filament

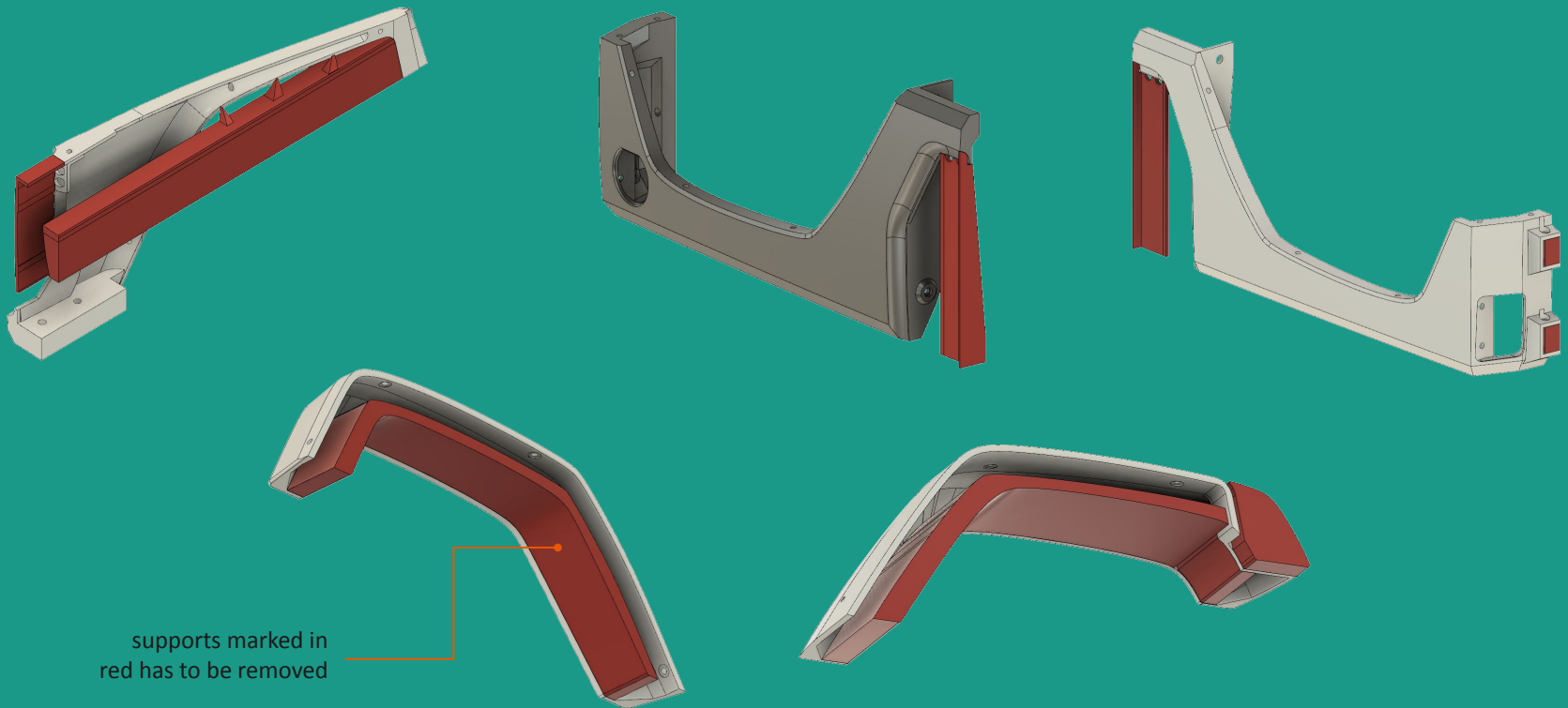
Non-printed parts:

- Screw M2x6: 30 pcs.
- Screw M2x8: 4 pcs.
- Screw M2x10: 10 pcs.
- Screw M2x12: 2 pcs.
- Screw M2x16: 1 pcs.
- Screw M3x6 Socket Head: 1 pcs.
- Screw M3x10: 16 pcs.
- Screw M3x16: 22 pcs.
- Screw M3x20: 1 pcs.
- Locknut M3: 5 pcs.

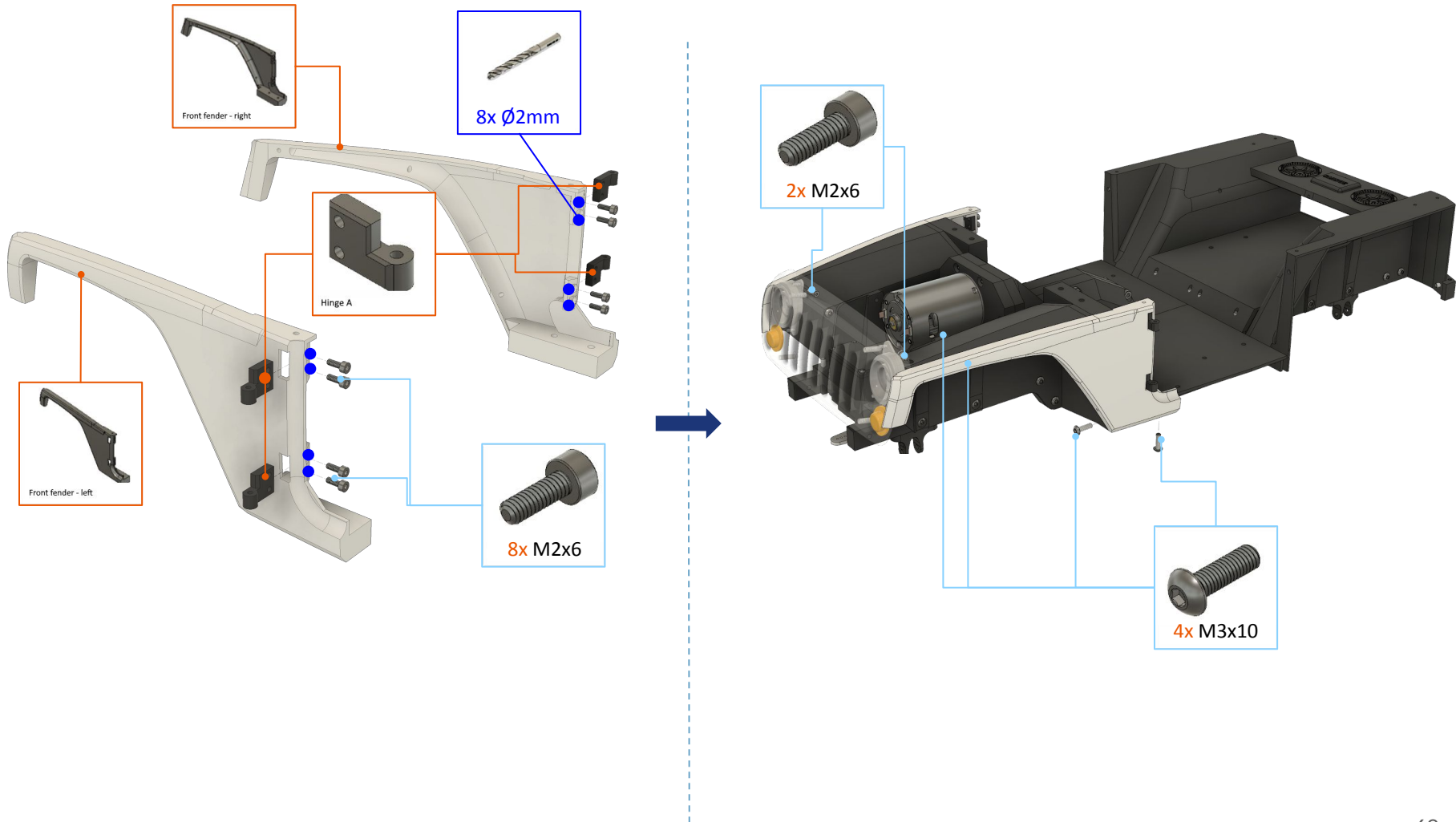


Bodywork – postprocessing

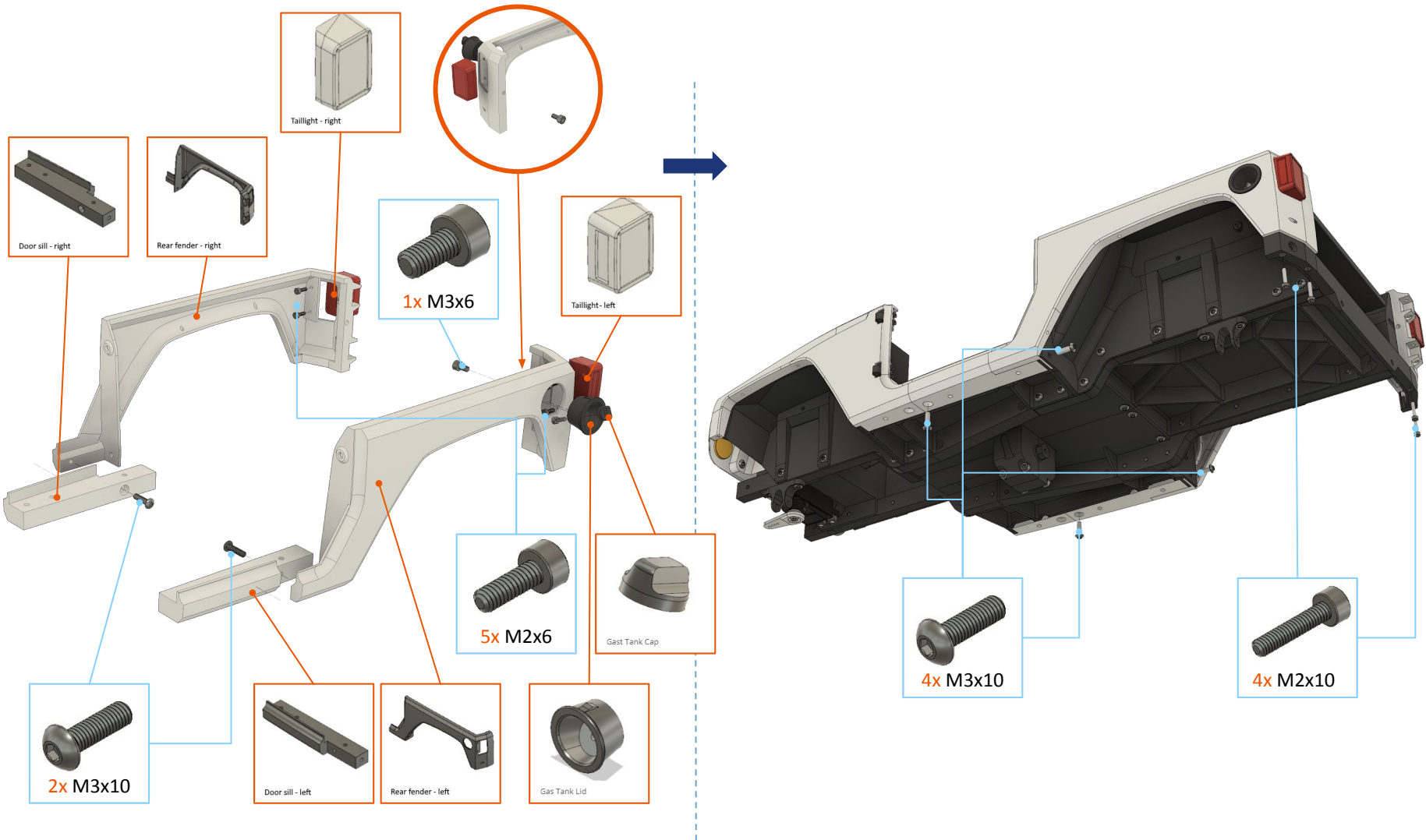
Before you start building Bodywork, carefully remove printing supports (marked red) integrated to specific parts rendered below. You can use pliers and sharp knife to make the procedure easier. Be very careful as you can harm yourself!



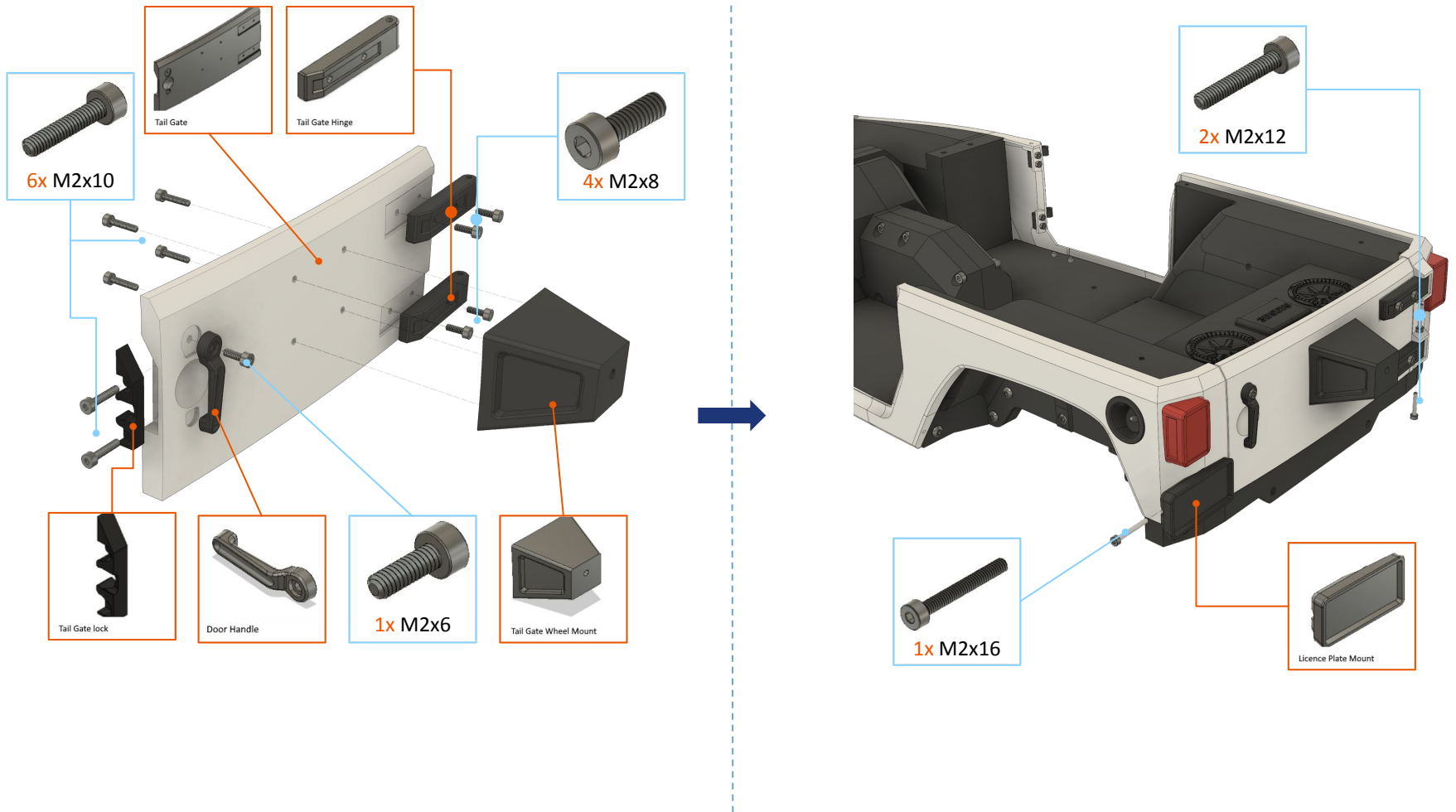
Rancher 4x4 - step 1-2/10



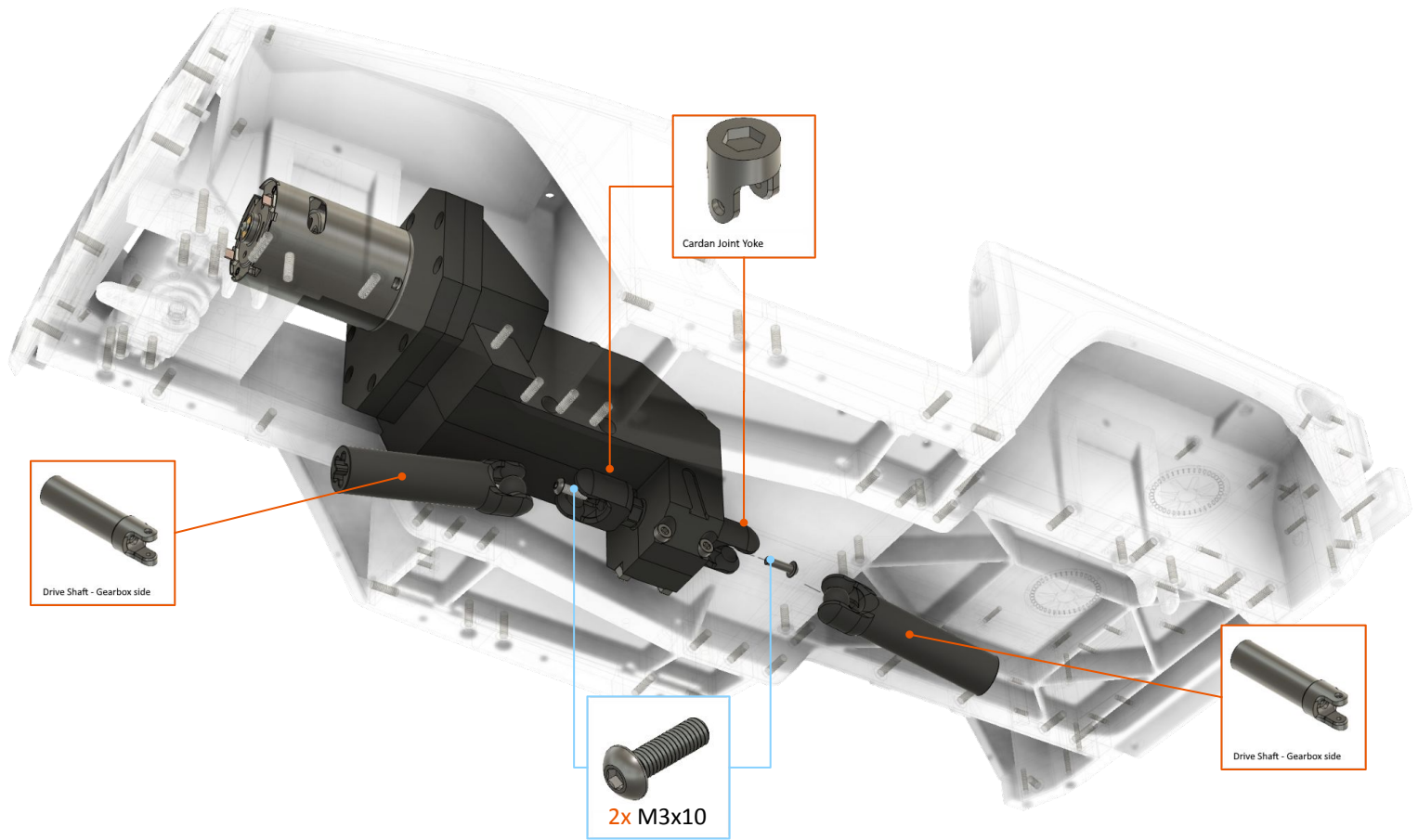
Rancher 4x4 - step 3-4/10



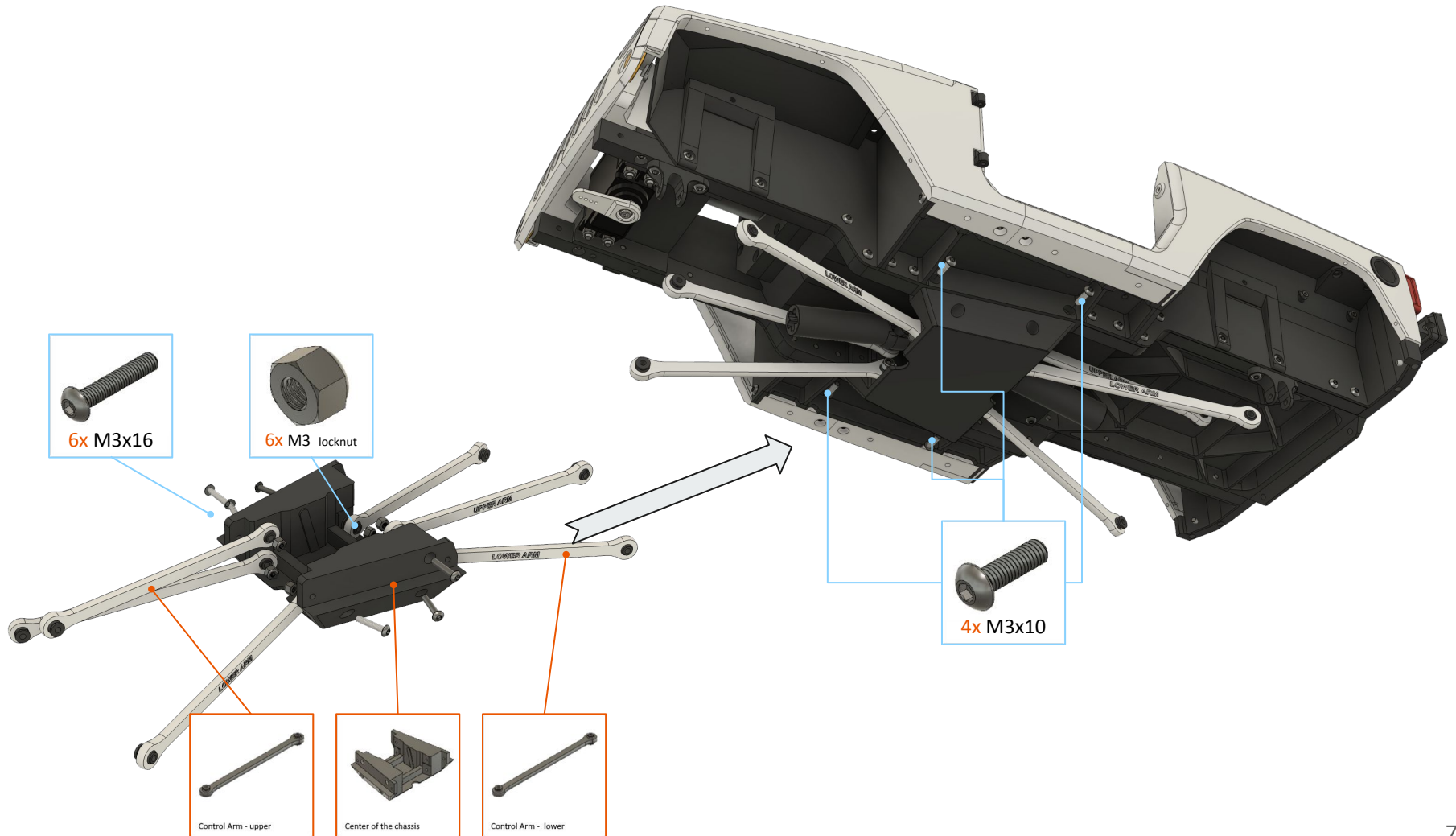
Rancher 4x4 - step 5-6/10



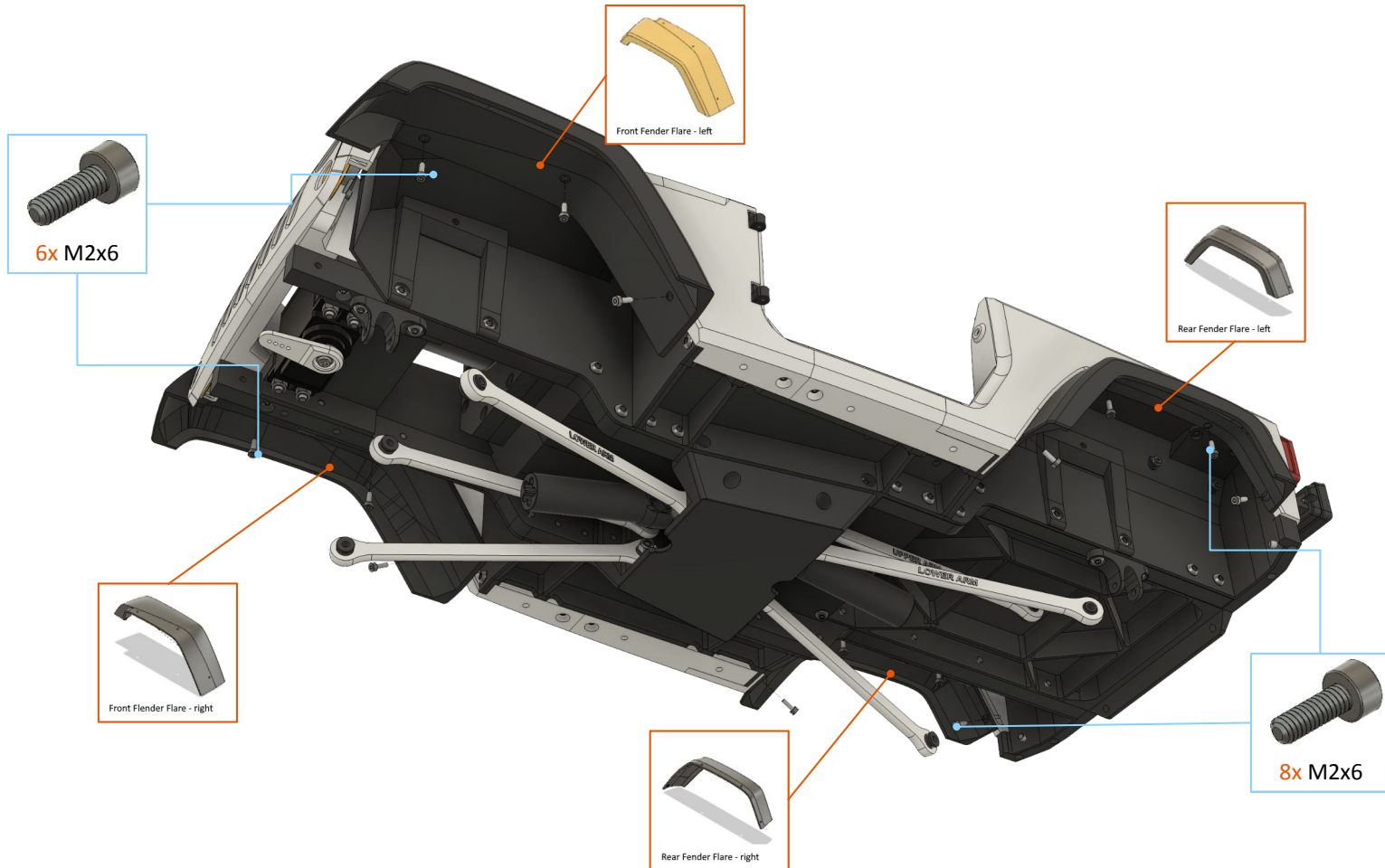
Rancher 4x4 - step 7/10



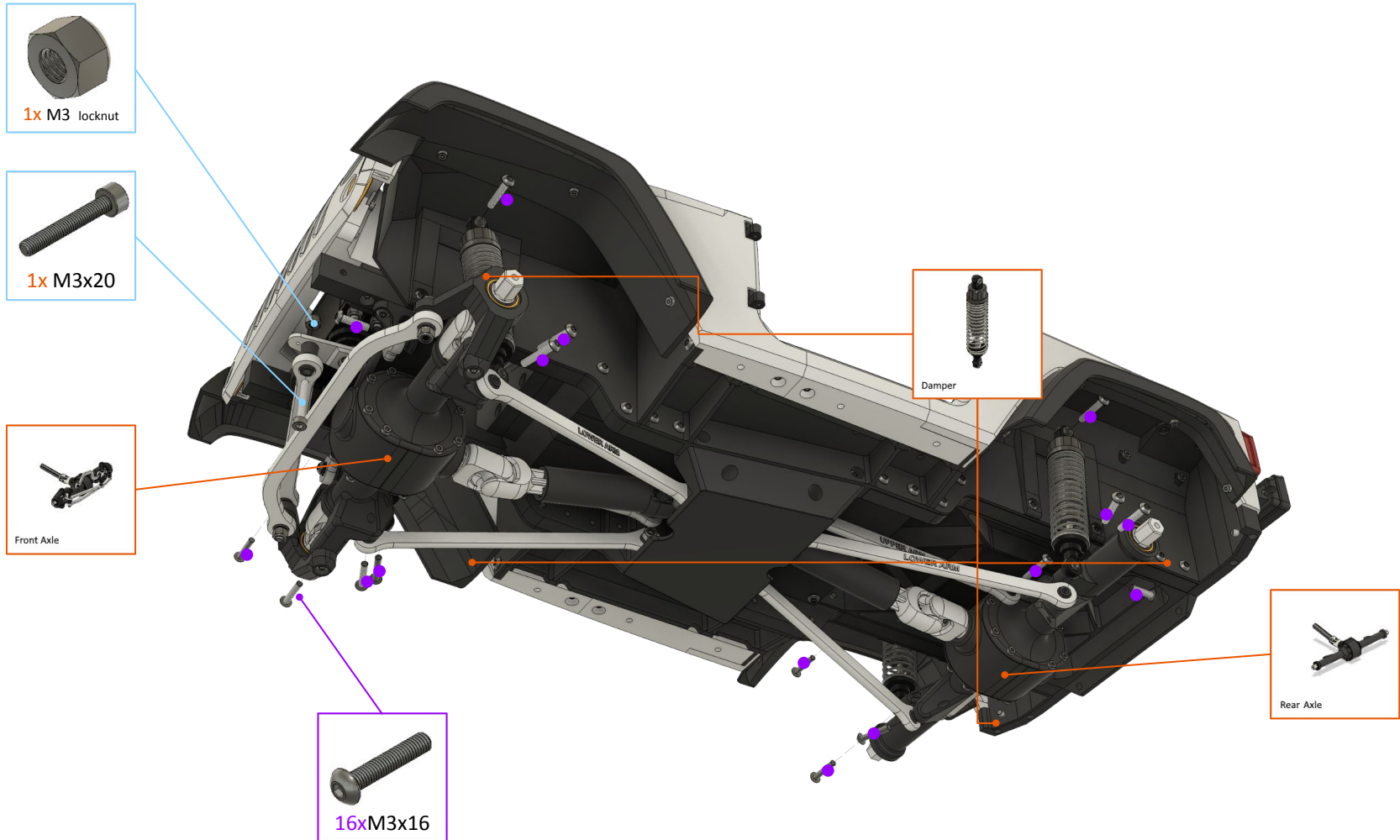
Rancher 4x4 - step 8/10



Rancher 4x4 - step 9/10



Rancher 4x4 - step 10/10



Rancher 4x4 - Electronics and Seats

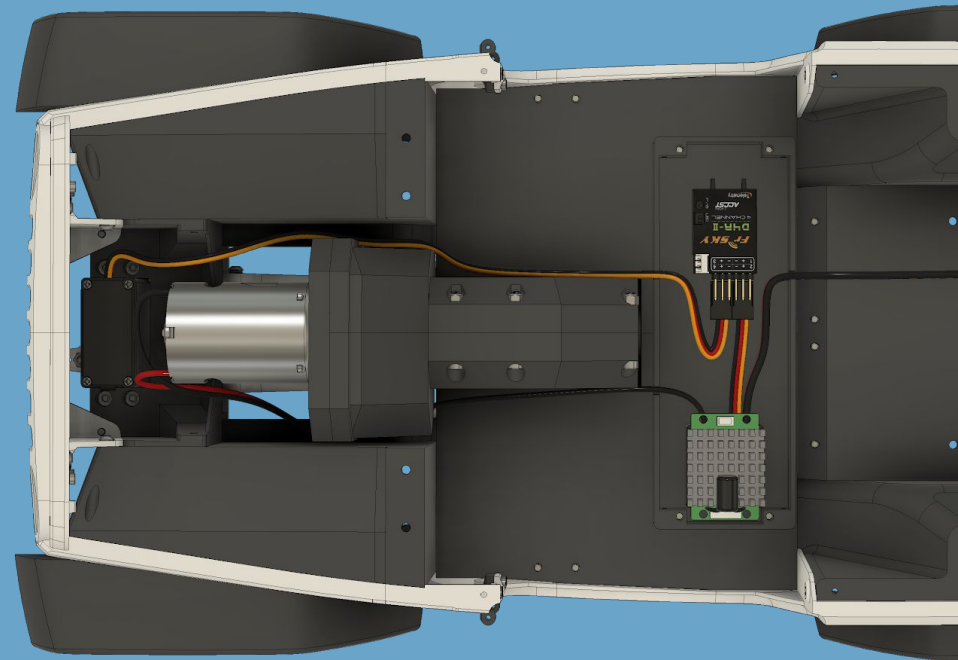
In this 4-step procedure you will install all electronics equipment and cables. Then you will mount seats on their positions.

Required print plates:

- “Print 17 - Interior 1”
- “Print 18 - Interior 2”
- “Print 19 - Interior 3”

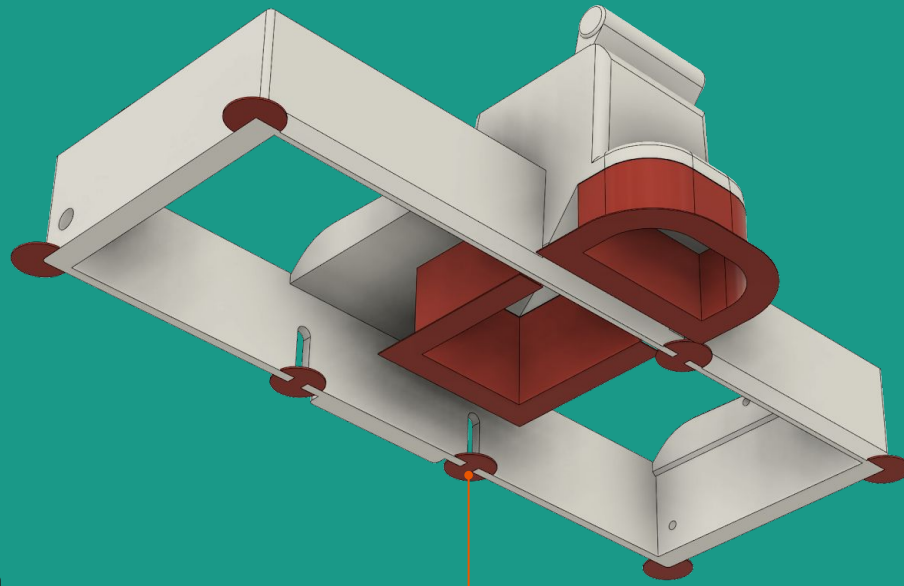
Non-printed parts:

- Screw M2x6: 4 pcs.
- Screw M2x10: 1pc.
- Screw M3x10: 8 pcs.



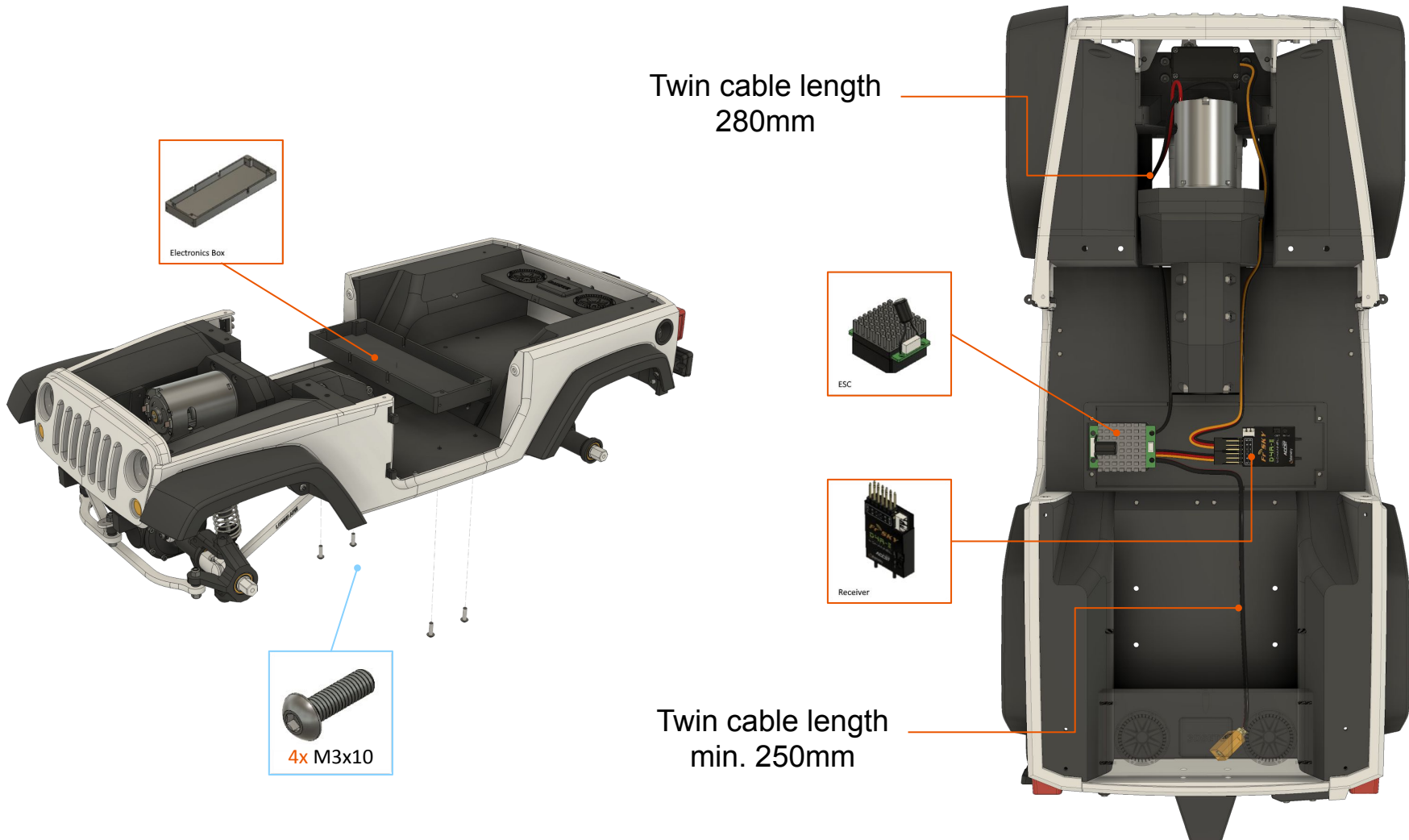
Electronics and Seats – postprocessing

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

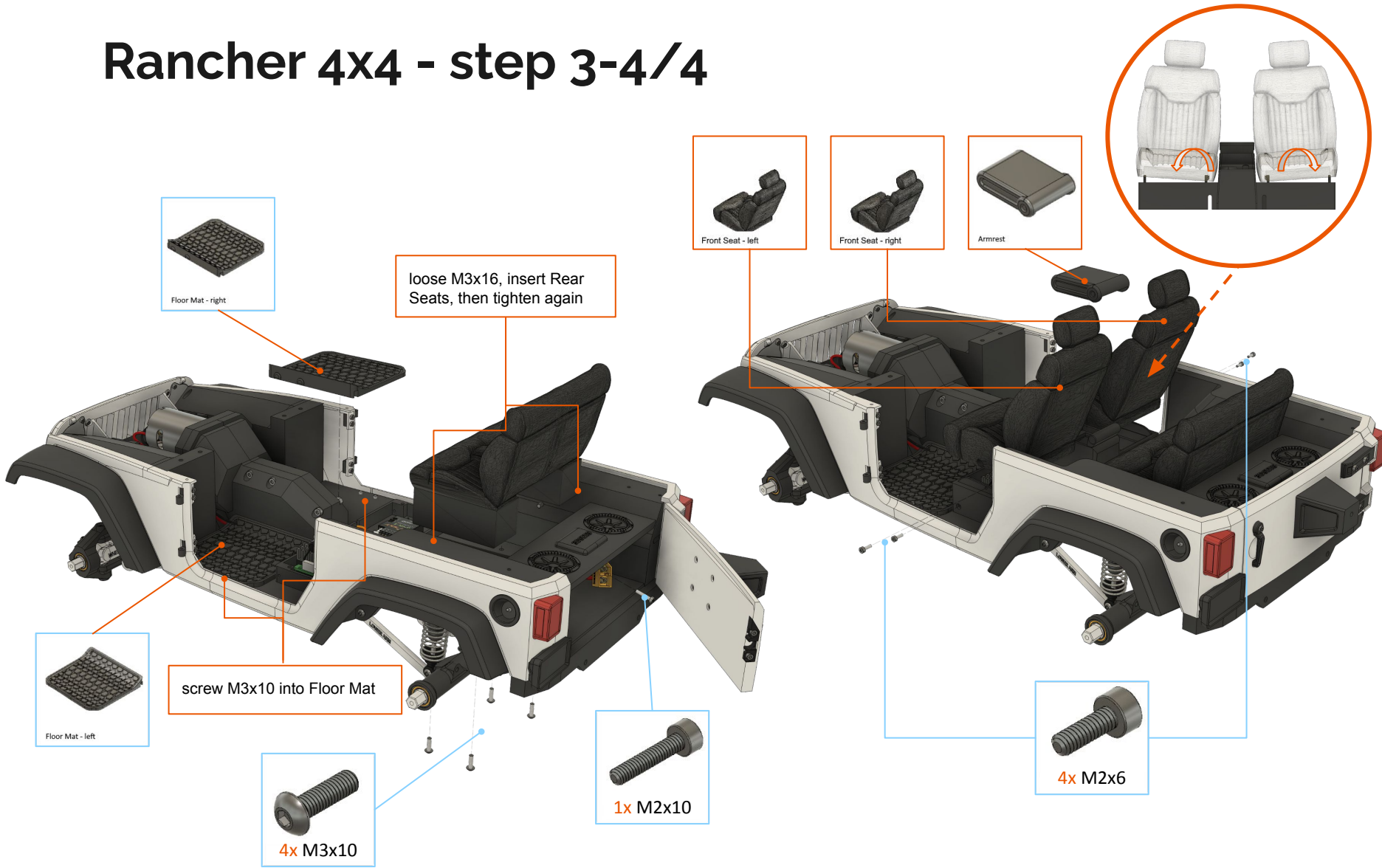


supports marked in red has to be removed

Rancher 4x4 - step 1-2/4



Rancher 4x4 - step 3-4/4



Subassembly #4 – Bumpers

In this 2-step procedure you will assemble front and rear bumpers. To complete this task, get ready all necessary parts:

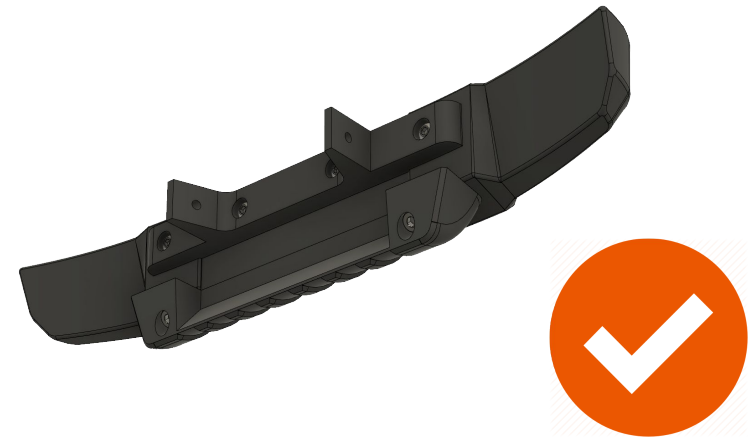
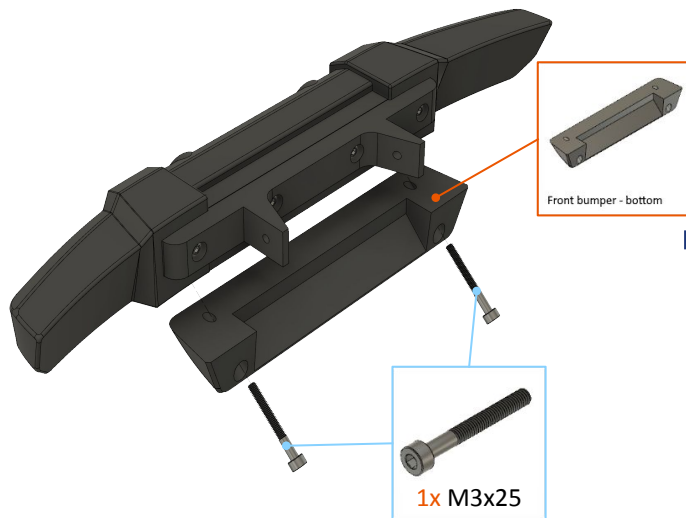
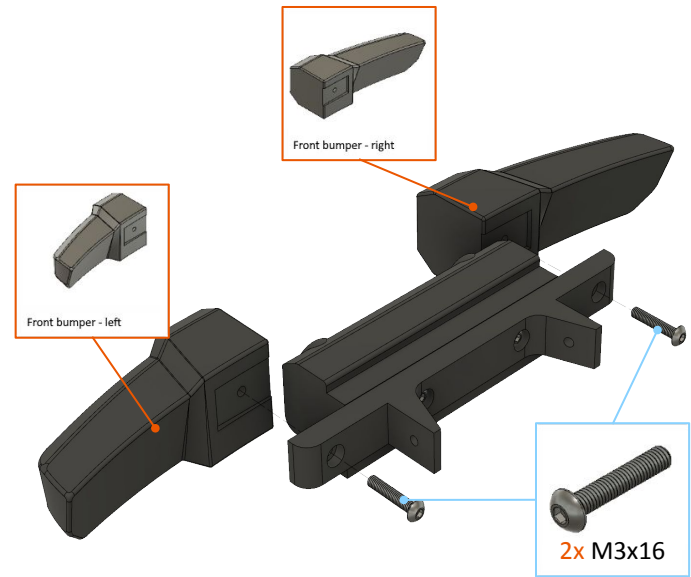
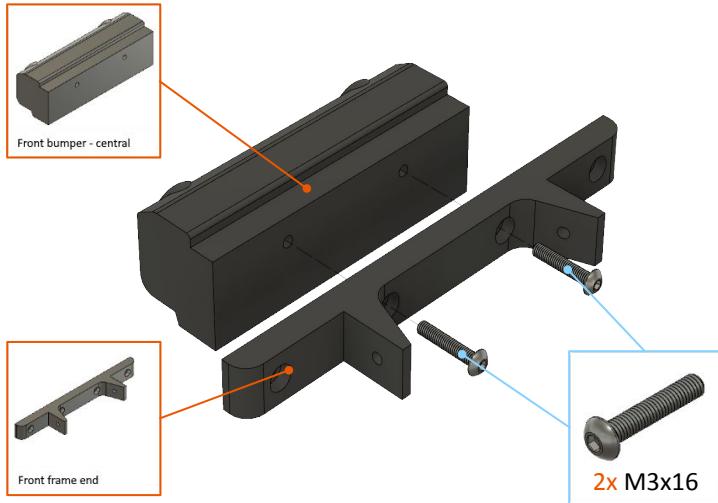
Required print plates:

- “Print 20 - Bumper + interior 4”

Non-printed parts:

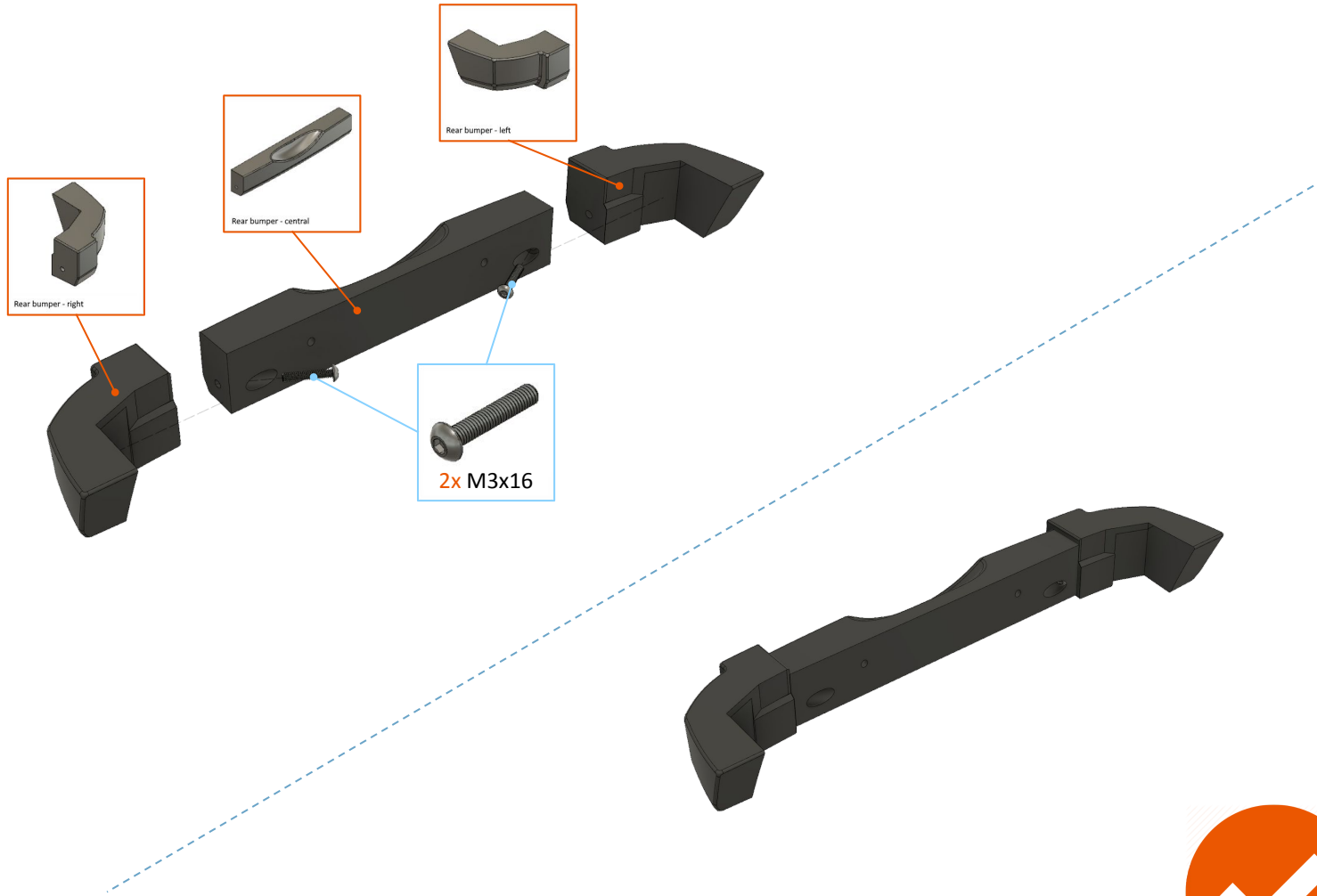
- Screw M3x16: 6 pcs.
- Screw M3x25: 2 pcs.

Front Bumper – step 1-4/4





Rear Bumper – step 1-2/2



Subassembly #5 – Windshield

In this 3-step procedure you will assemble windshield. To complete this task, get ready all necessary parts:

Required print plates:

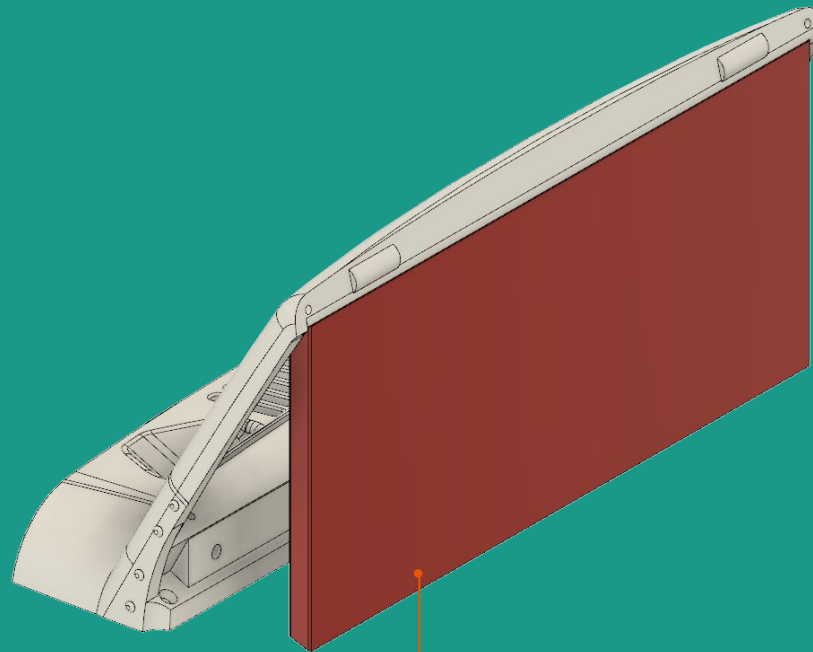
- “Print 13 - Body 2”
- “Print 19 - Interior 3”
- “Print 20 - Bumper + interior 4”

Non-printed parts:

- Screw M2x6: 4 pcs.
- Screw M2x12: 6 pcs.
- Clear Binding Covers, or any clear foil up to 0,5 mm thick

Windshield – postprocessing

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

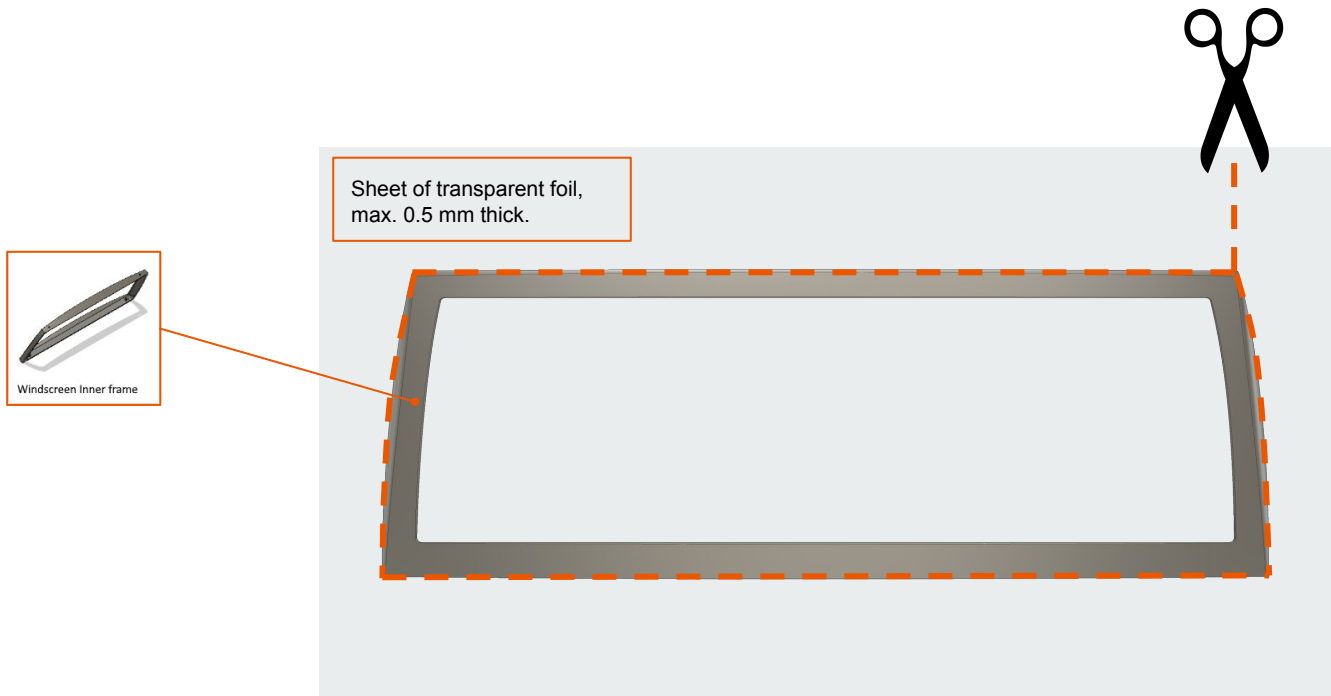


supports marked in red has to be removed

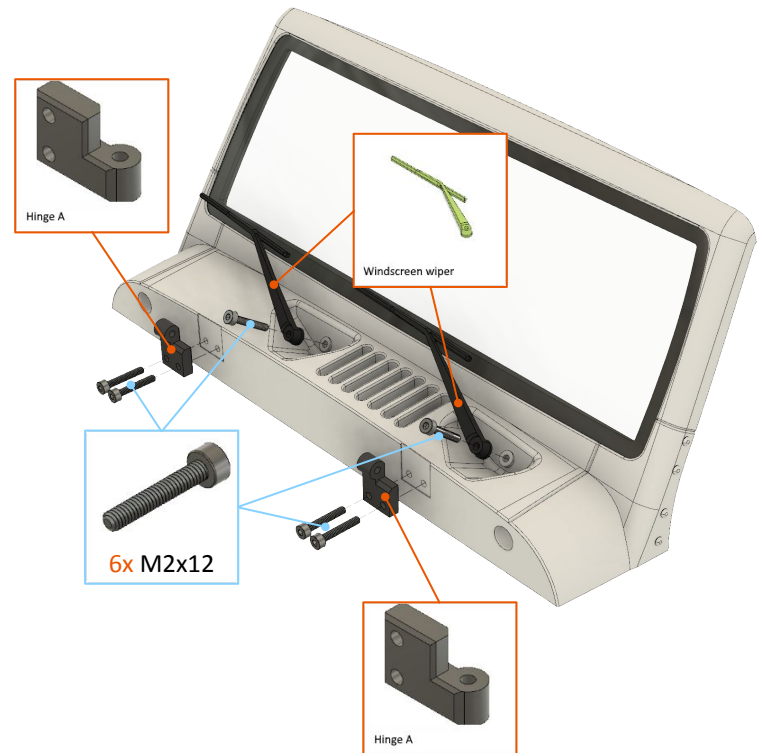
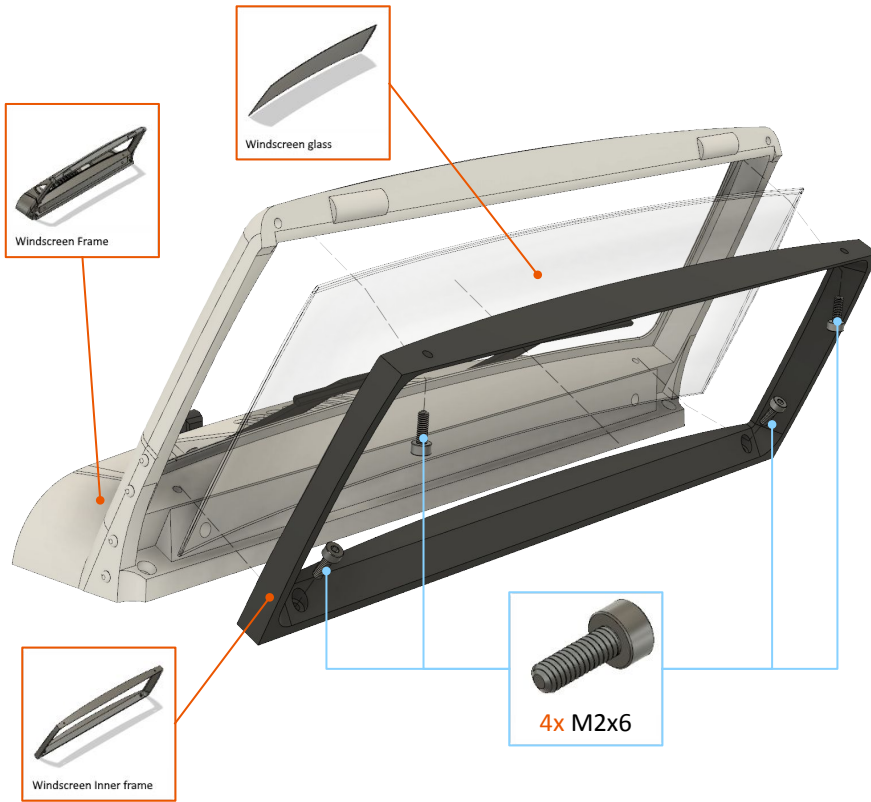
Windshield - step 1/3

At first, you will make a “windscreen 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 Windscreen Frame on the foil, sketch the Windscreen Frame to foil and then cut the Windscreen glass by scissors or sharp knife.



Windshield - step 2-3/3



Rancher 4x4 - windshield, bumpers and dashboard installation

In this 4-step procedure you will mount windscreen in place. Then you assemble the dashboard and attach it. Front and rear bumpers are installed too.

- Windshield subassembly
- Bumpers subassemblies

Required print plates:

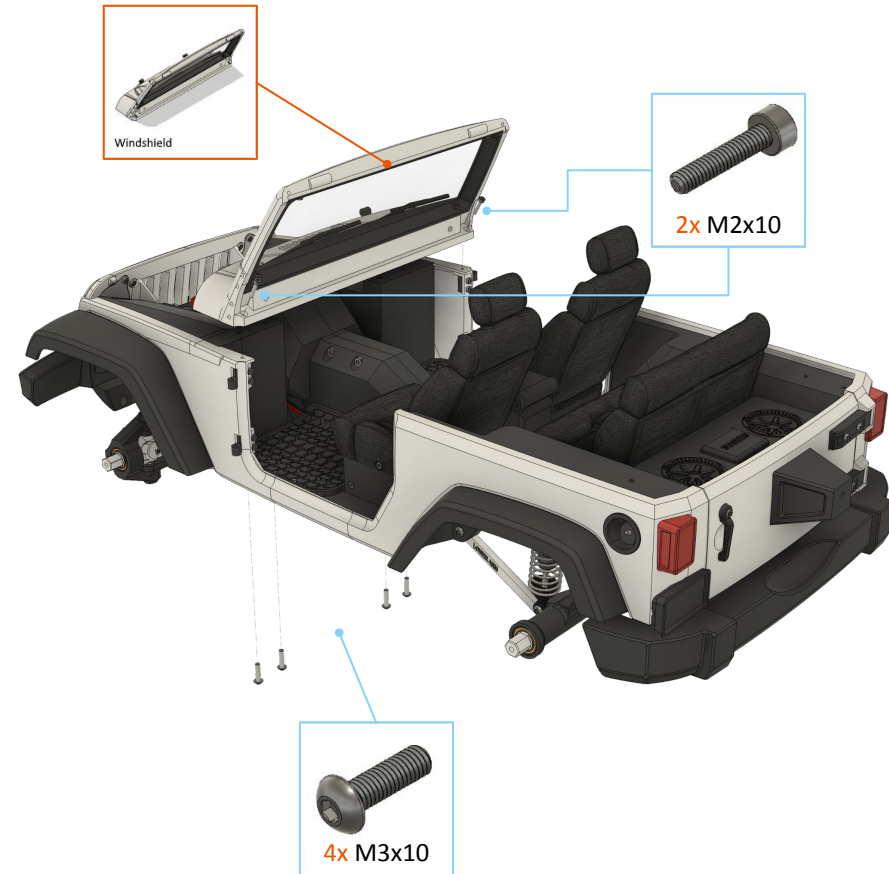
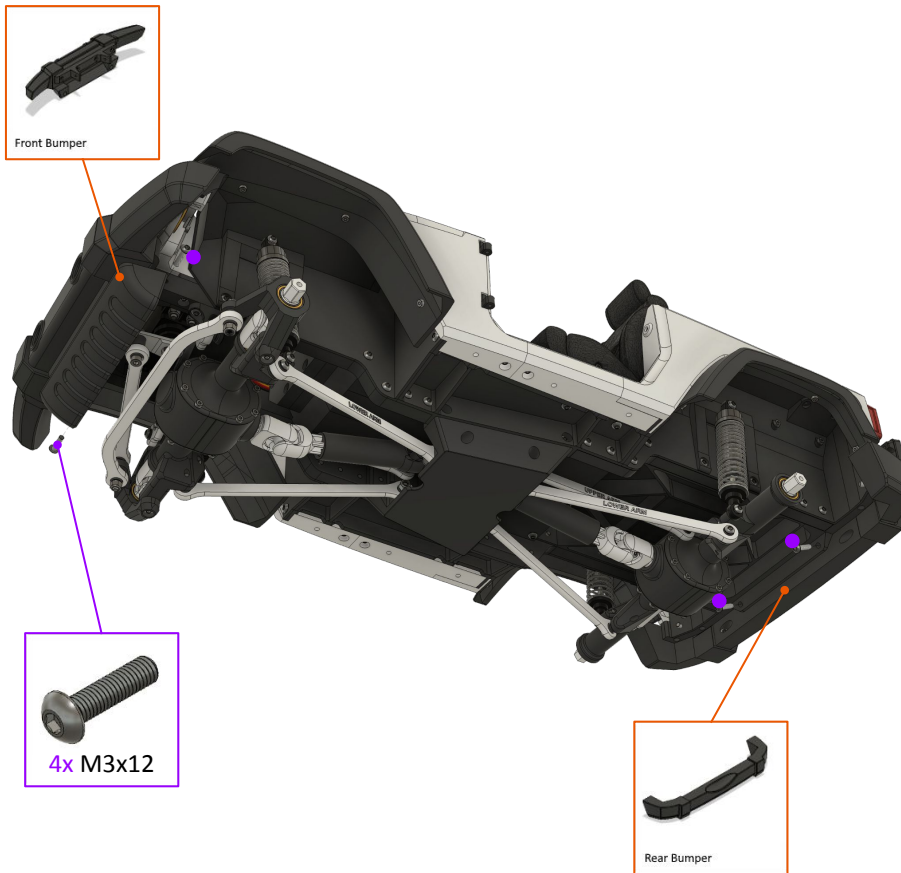
- “Print 19 - Interior 3”
- “Print 20 - Bumper + interior 4”

Non-printed parts:

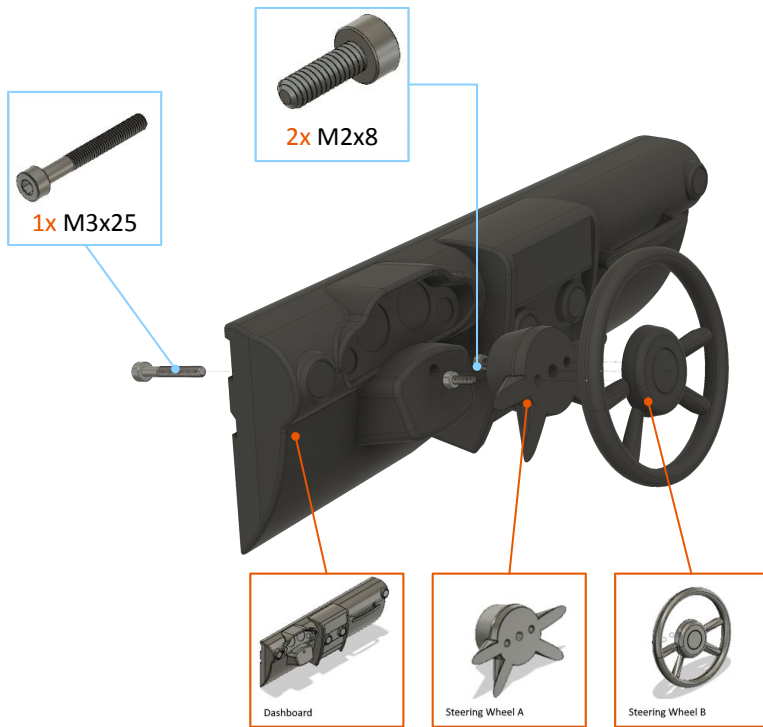
- Screw M2x8: 2 pcs.
- Screw M2x10: 2 pcs.
- Screw M3x10: 4 pcs.
- Screw M3x12: 4 pcs.
- Screw M3x16: 2 pcs.
- Screw M3x25: 1 pcs.



Rancher 4x4 - step 1-2/4



Rancher 4x4 - step 3-4/4



Subassembly #6 – Hardtop

In this 2-step procedure you will assemble Hardtop. To complete this task, get ready all necessary parts:

Required print plates:

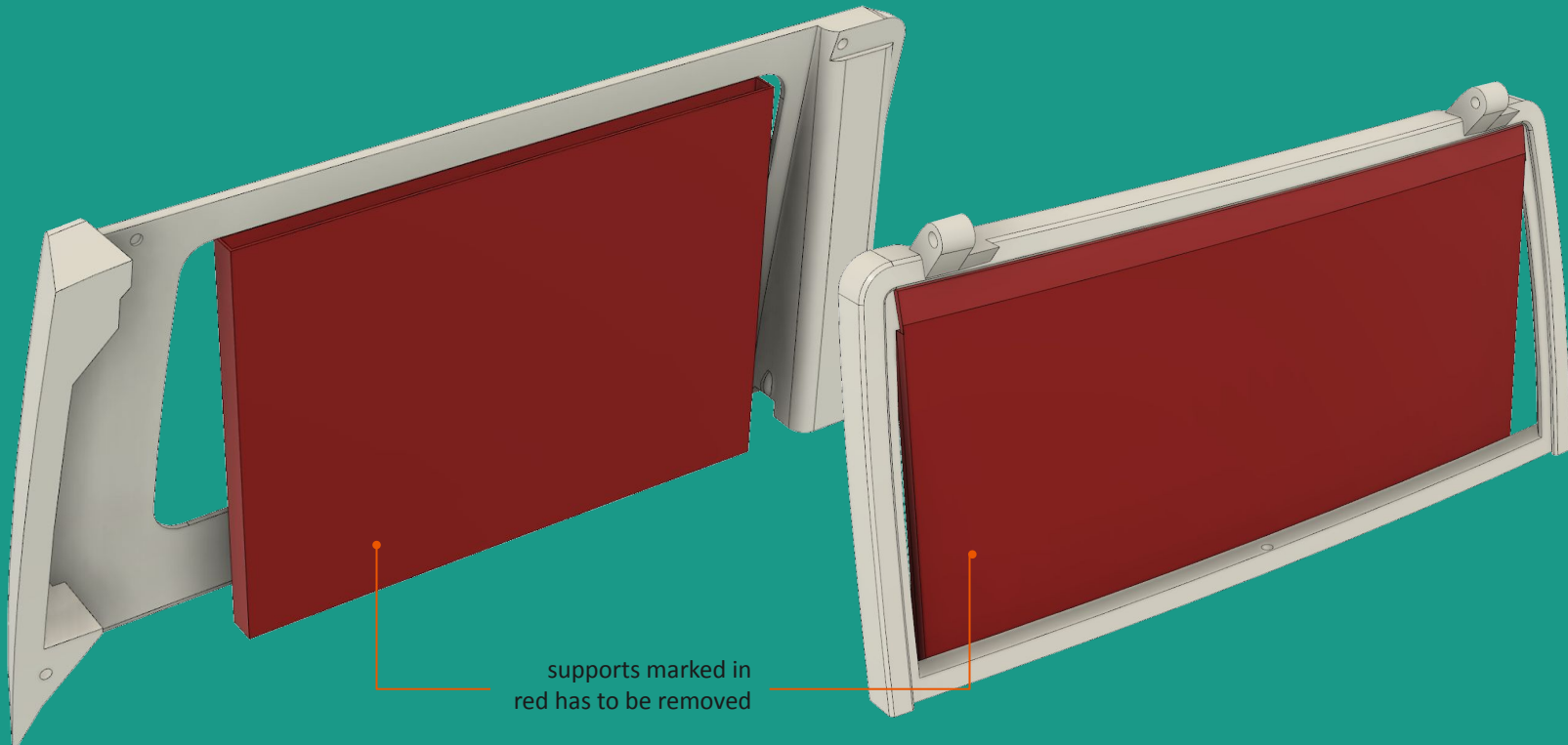
- “Print 22 - Hardtop 1 - with brim”
- “Print 23 - Hardtop 2”
- “Print 24 - Glass”

Non-printed parts:

- Screw M2x6: 7 pcs
- Screw M2x8: 4 pcs.
- Screw M2x10: 6 pcs.

Hardtop – postprocessing

Before you start building Hardtop, 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!



Hardtop - step 1/5

At first, you will make set of 5 “hardtop 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 3d printed templates on the foil, sketch the shapes to foil and then cut the foil by scissors or sharp knife. You need 5 pieces of “glass” in total.



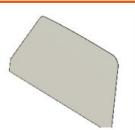
Sheet of transparent foil,
max. 0.5 mm thick.



Left Side glass



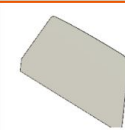
Left Side glass



Hardtop door glass - left

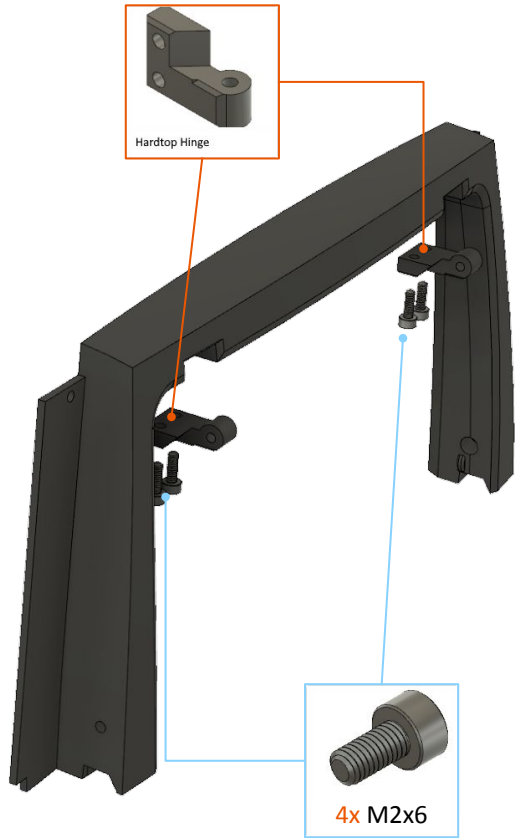


Tailgate glass

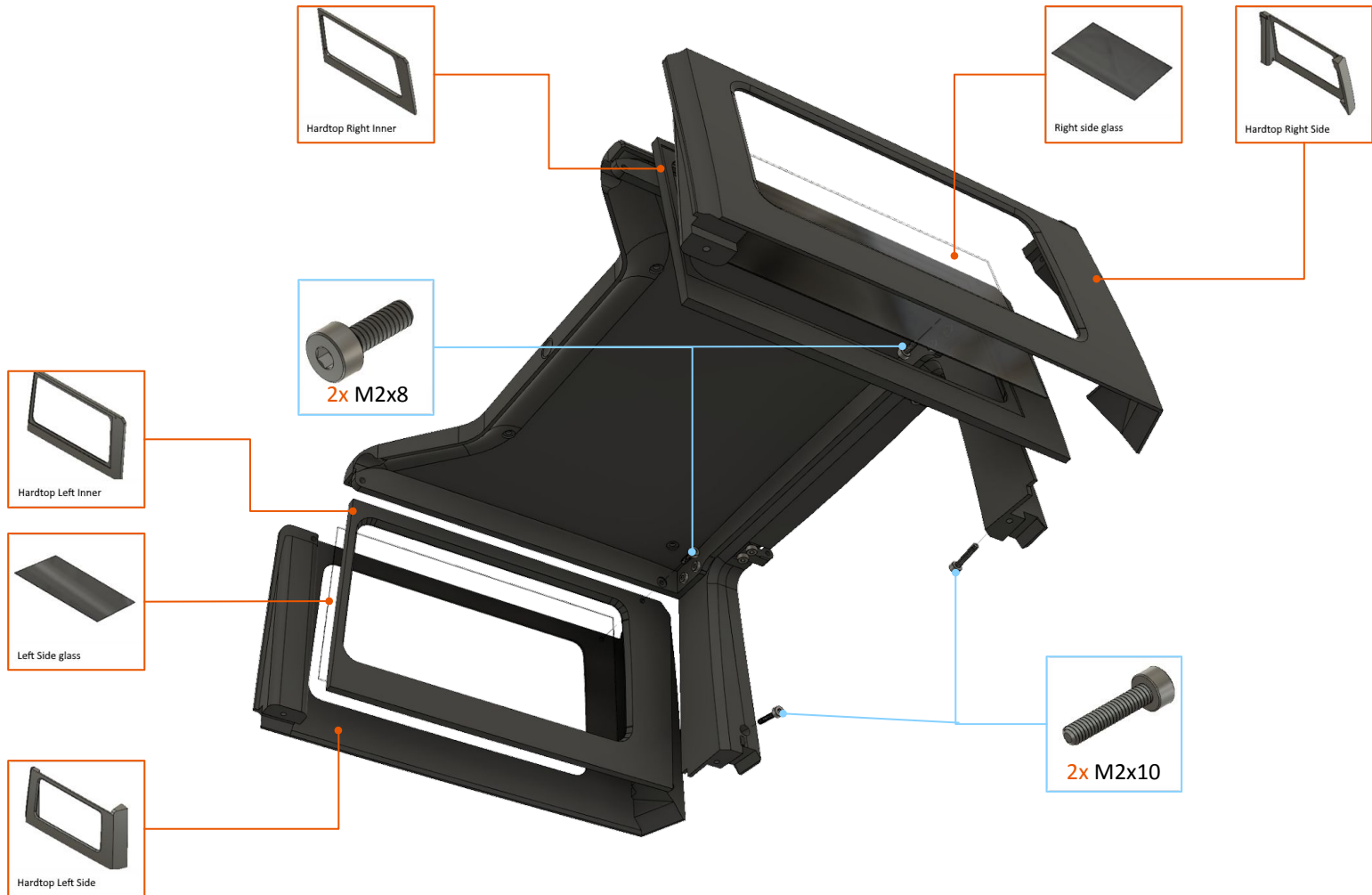


Hardtop door glass - left

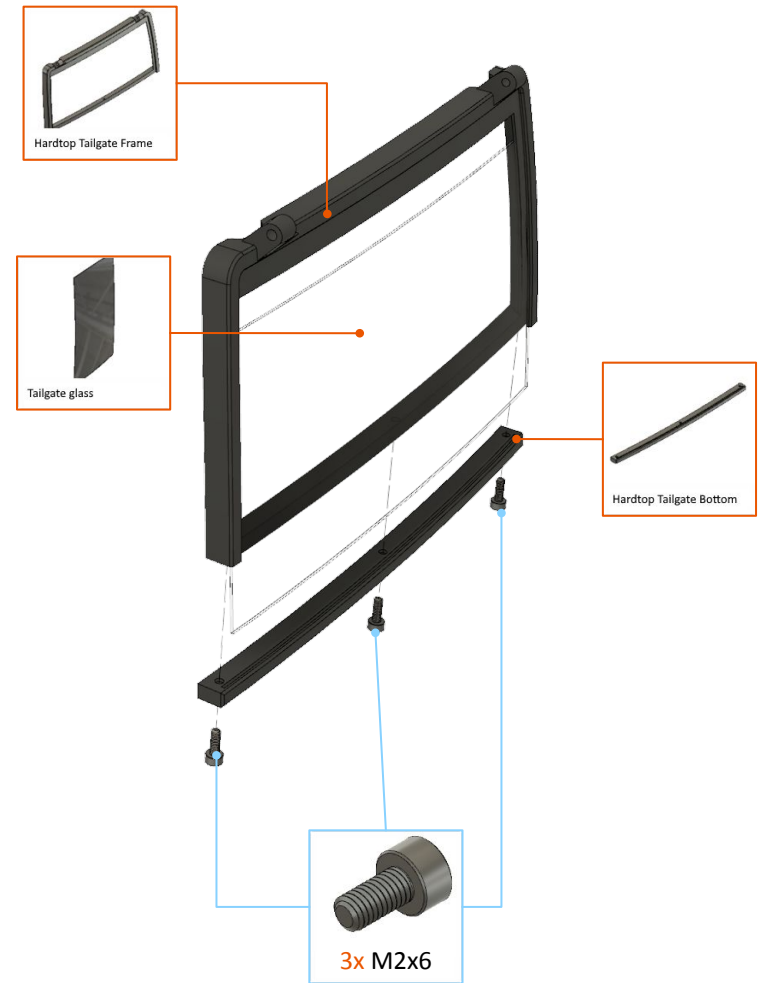
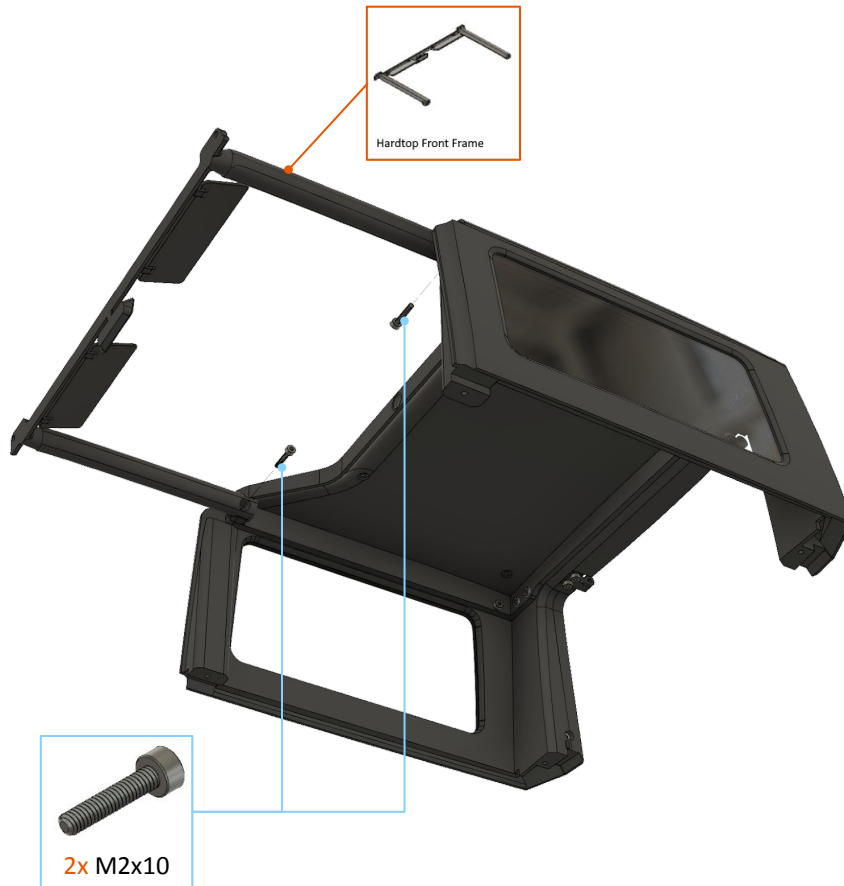
Hardtop - step 2/5



Hardtop - step 3/5



Hardtop - step 4/5





Hardtop - step 5/5



2x M2x10

Subassembly #7 – Wheel (A or B)

Now you will assemble wheels. You can choose between 2 designs (wheel A/wheel B):

Wheel A:

Required print plates:

- “Print 15 - Wheel A - Rim”
- “Print 16 - Wheel A - Beadlock”

Non-printed parts:

- Screw M2x6: 50 pcs.
- Screw M2x16: 50 pcs.



Wheel B:

Required print plates:

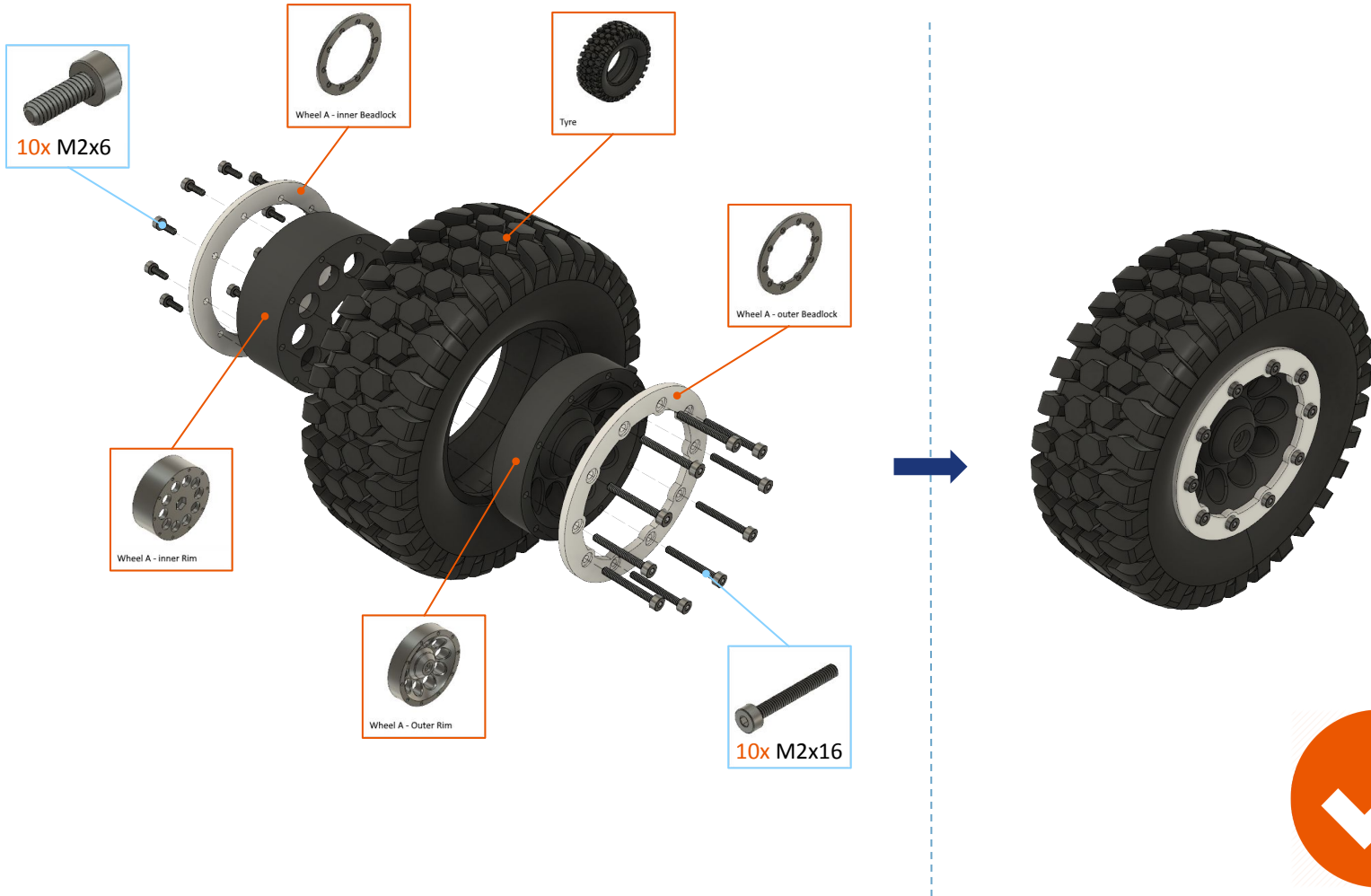
- “Print 15 - Wheel B”

Non-printed parts:

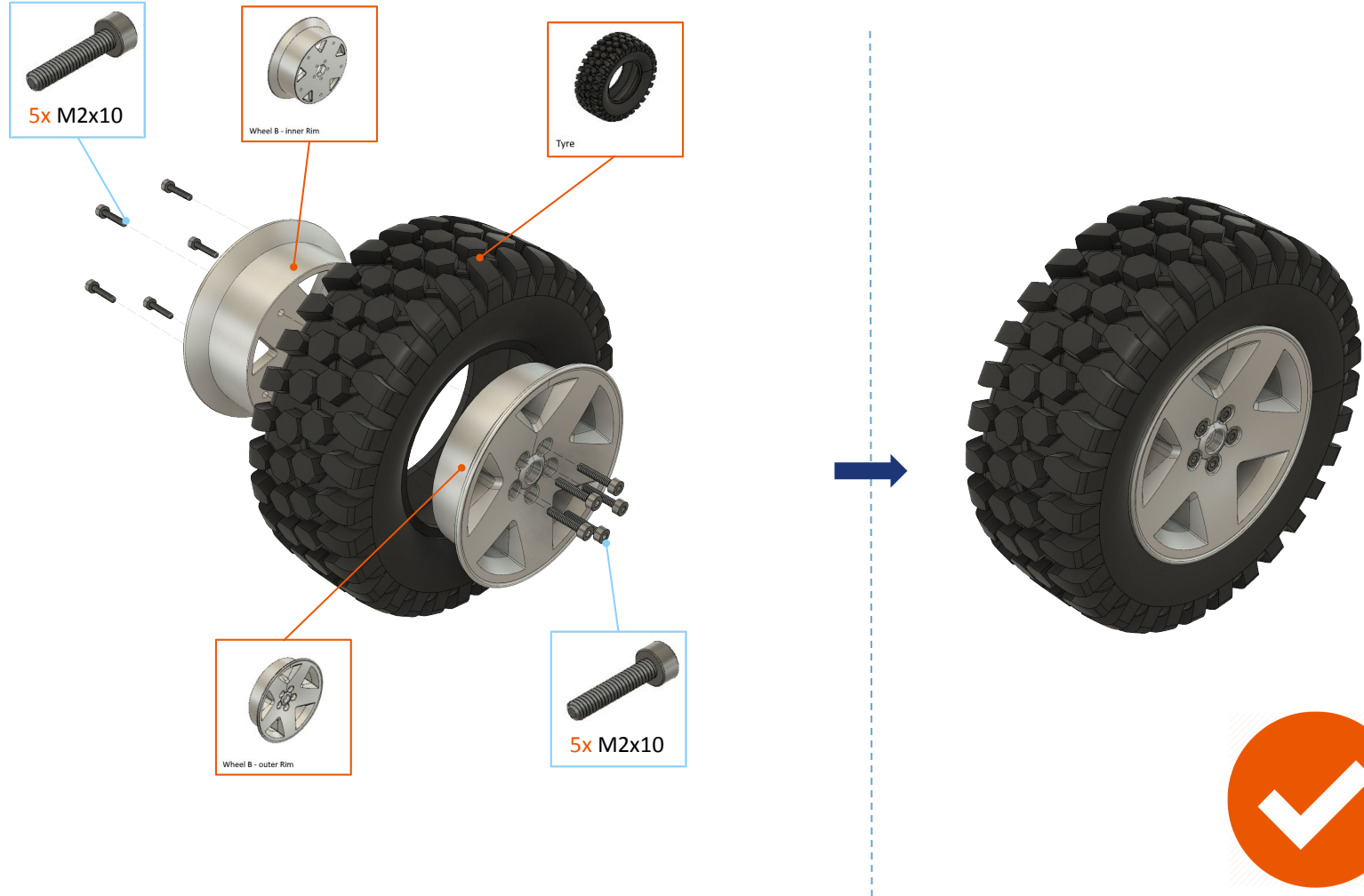
- Screw M2x10: 50 pcs.



Wheel A



Wheel B



Rancher 4x4 Hardtop - Wheels & Hardtop installation

In this 2-step procedure you will install the Rollcage and then mount 4 wheels on axles plus one wheel as a spare on trunk holder.

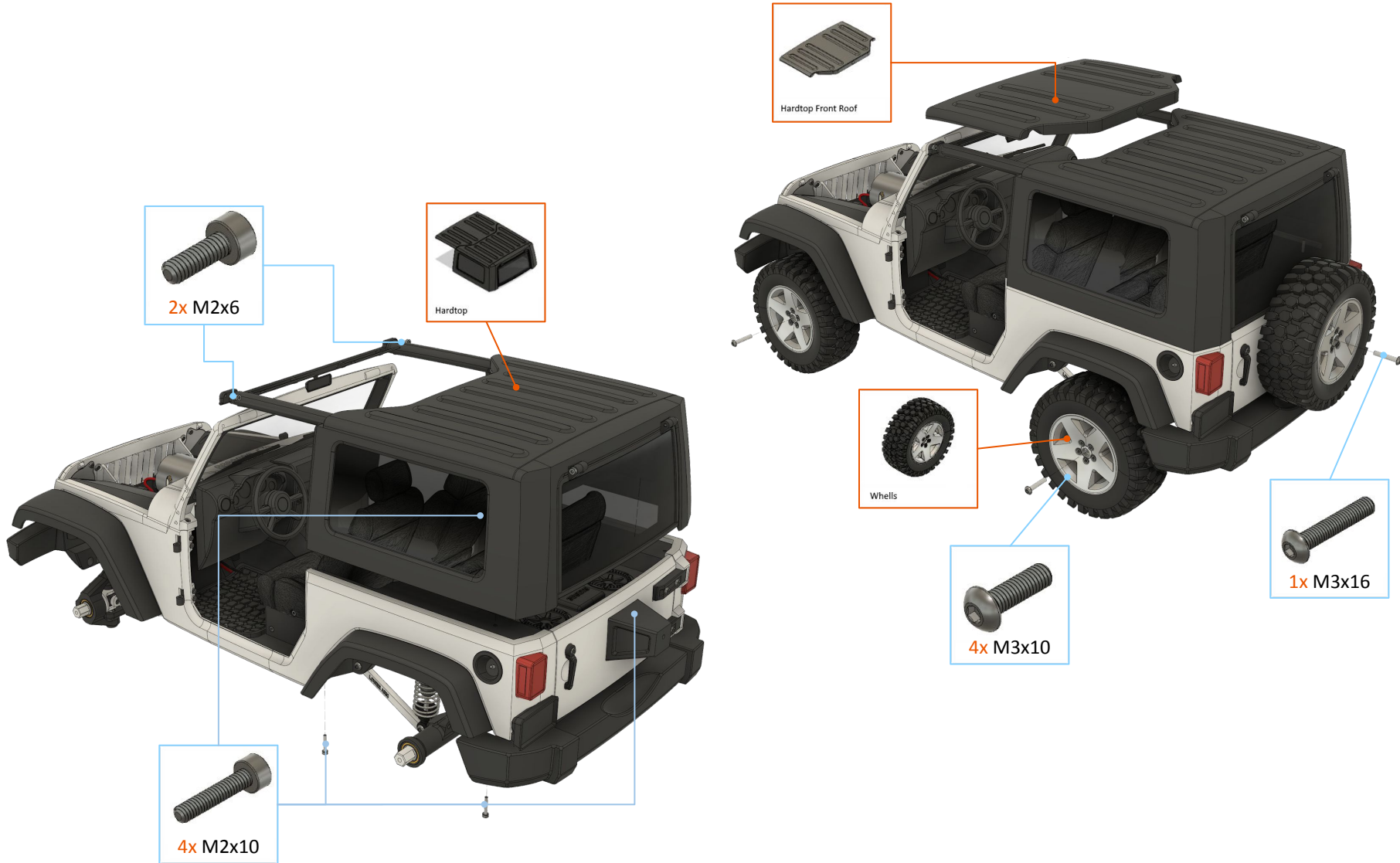
- Hardtop subassembly
- Wheel subassemblies

Non-printed parts:

- Screw M2x6: 2 pcs.
- Screw M2x10: 4 pcs.
- Screw M3x10: 4 pcs.
- Screw M3x16: 1 pcs.



Rancher 4x4 Hardtop - step 1-2/2



Subassembly #8 – Hardtop Doors

In this X-step procedure you will assemble doors. To complete this task, get ready all necessary parts:

Required print plates:

- “Print 13 - Body 2 with Brim”
- “Print 19 - Interior 3”
- “Print 21 - Door inner frame”

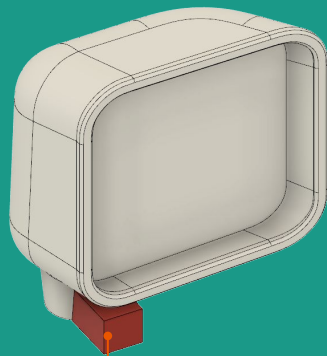
Non-printed parts:

- Screw M2x6: 14 pcs.
- Screw M2x10: 8 pcs.
- Screw M2x12: 2 pcs.

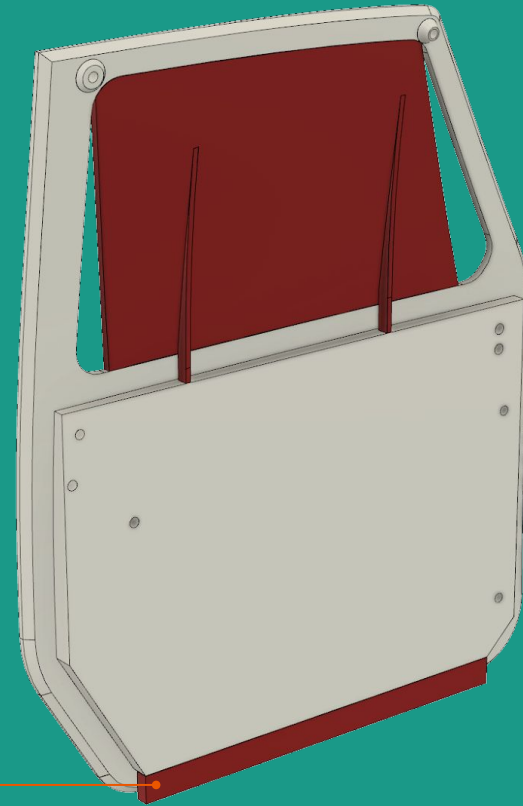


Hardtop Doors – postprocessing

Before you start building Hardtop Doors subassembly, 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!

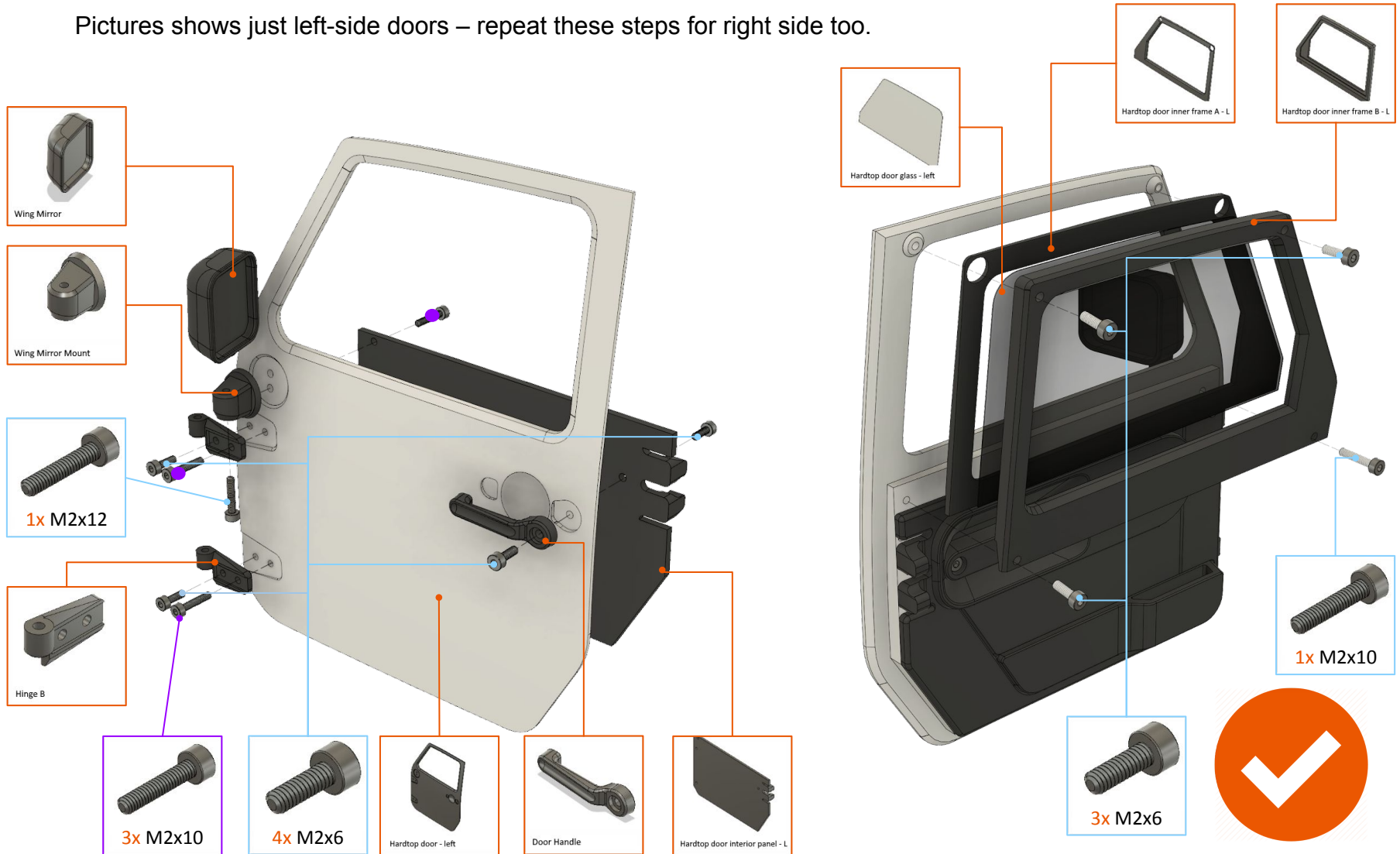


supports marked in red has to be removed



Doors – step 1-2/2

Pictures shows just left-side doors – repeat these steps for right side too.



Rancher 4x4 Hardtop - Hood & Doors installation

In this 2-step procedure you will install the Hood and then mount both Doors in their place. This is the last step, so then you are ready to ride the model.

- Doors assembly (left, right)

Required print plates:

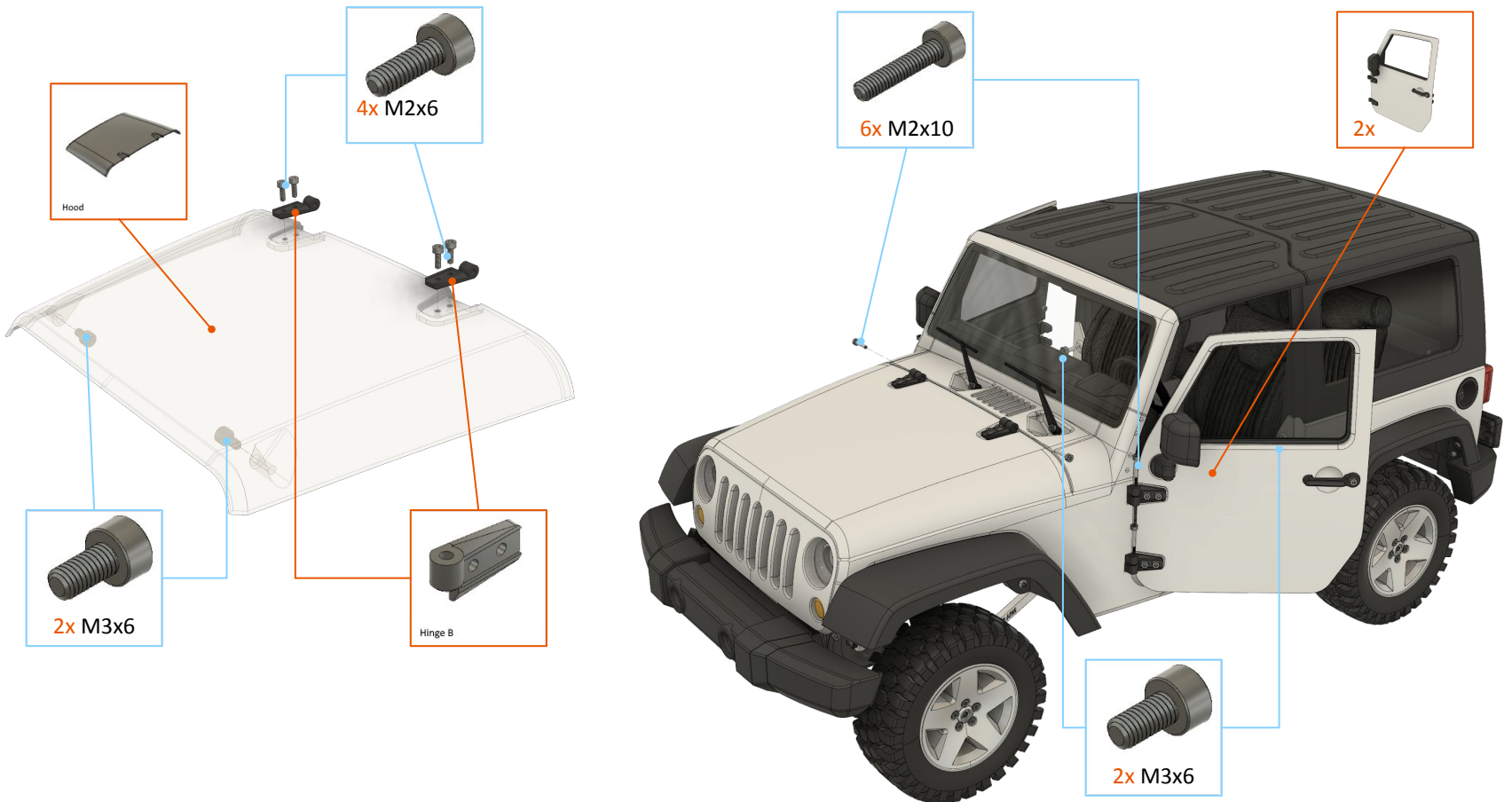
- “Print 12 - Body 1”

Non-printed parts:

- Screw M2x6: 4 pcs.
- Screw M2x10: 6 pcs.
- Screw M3x6 Socket Head: 4 pcs.



Rancher 4x4 Hardtop - step 1-2/2





Rancher 4x4 Hardtop - model complete



Now you are ready to drive :-)





Rancher 4x4 - general tips

- Always use a proper battery charger. Bad charging of the Li-Pol battery may lead to a risk of fire!
- Disconnect the battery when the model is not used. The small switch on the ESC doesn't disconnect the battery and the ESC may draw a small amount of current even in OFF-state.
- Do not go into water unless you have waterproof electronics!

- Adjust the steering in such a way that the **maximum steering angle is about 35 °**. A greater range of steering angle leads to high stress on the cardan joints and may cause damage. If your steering angle is too high, you can shorten the servo arm (use another hole) to reduce it.