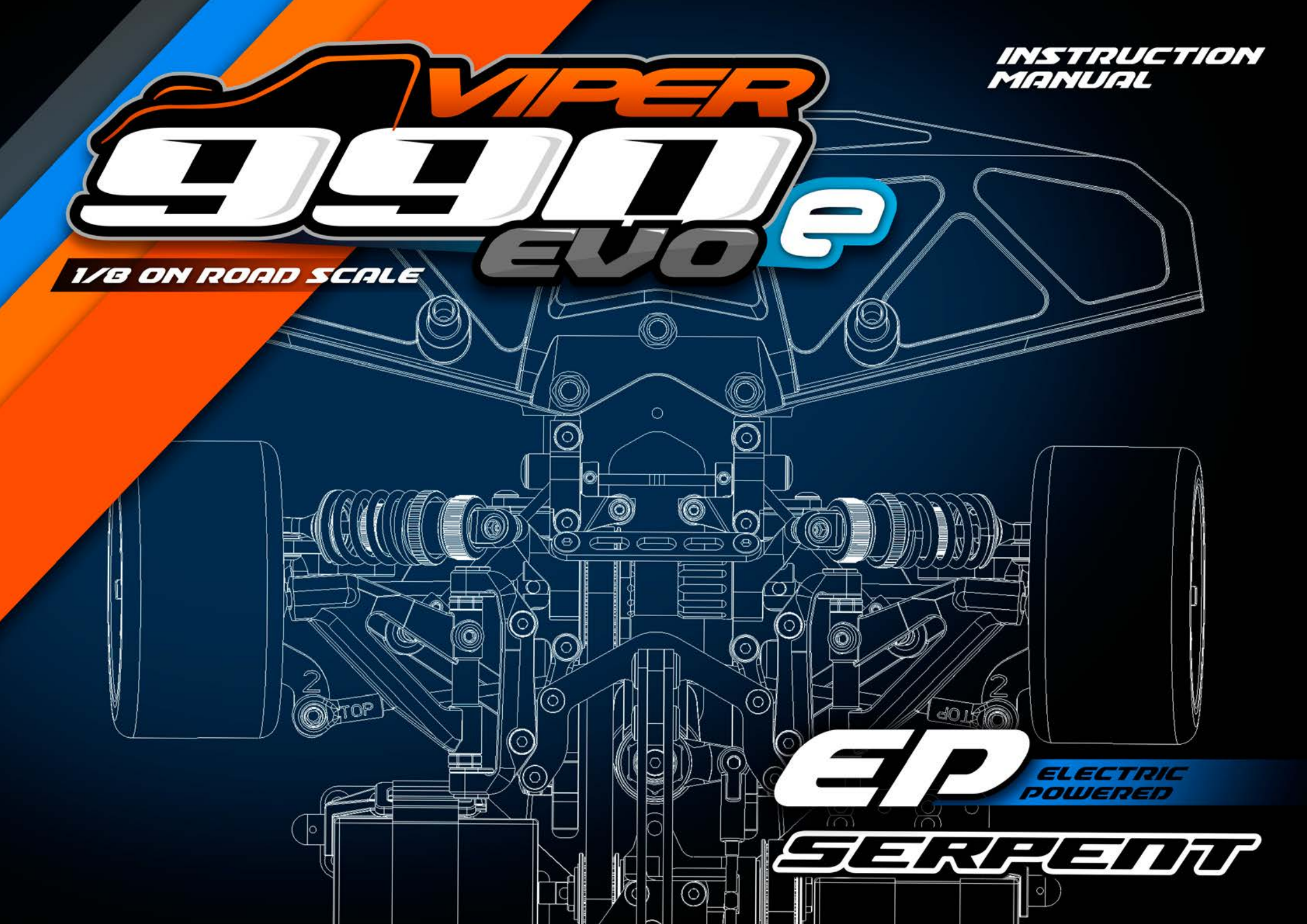
VIPER 911e EVO

INSTRUCTION MANUAL

1/8 ON ROAD SCALE



EP ELECTRIC POWERED

SERPENT

INTRODUCTION

The Serpent Viper 990e EVO is designed to be a world champion, while still being easy to use, assemble, and set up. The Serpent Viper 990e EVO offers state of the art specifications and leads the way in chassis design, using all the knowledge we have from 1/8 scale racing into this design too. Continuously pushing the performance envelope, Serpent's engineers have added new and innovative features that help take your Serpent Viper 990e into the winner's circle.

Designed by Michael Salven

Team Serpent
Multiple World Champions

INSTRUCTIONS

Serpent's long tradition of excellence extends to the instruction manuals, and this instruction manual is no exception. The easy-to-follow layout is richly illustrated with 3D-rendered full-color images to make your building experience quick and easy. Following the instructions will result in a well-built, high-performance race-car that will soon be able to unleash its full potential at the racetrack. The kit includes bags, with bagnumbers, which refer to the same step in the manual. Open only the indicated bag(s) per step and finish that part of the assembly. Remaining parts will be needed lateron in the assembly process.

PLASTIC PARTS

The Serpent moulded parts are very durable and hard. When assembling longer screws in new composite parts, make sure to use new hex bits in your (power) tools. Pre-threading also helps to avoid screw damage.

SETUP

In certain assembly steps you need to make basic adjustments, which will give you a good initial setup for your Serpent Viper 990e EVO. Fine-tuning the initial setup is an essential part of building a high-performance racecar like your Serpent Viper 990e EVO.

EXPLODED VIEWS AND PARTS LIST

The exploded views and parts lists for the Serpent Viper 990e EVO are presented in the Reference Guide section in the back of this manual. The exploded views show all the 990e EVO parts of a particular assembly step along with the Serpent part number and hotlink to the Serpent website. Part numbers in orange indicates that this part is an optional. Optionals part names and numbers are showed below.

CUSTOMER SERVICE

Serpent has made a strong effort to make this manual as complete and clear as possible. Additional info may be published in our website: www.serpent.com or you may ask your dealer or the Serpent distributor for advice, or email Serpent direct: info@serpent.com. The Serpent Facebook, Twitter and Youtube pages give additional means of support and communications.

SAFETY

Read and take note of the 'Read this First section' before proceeding to assemble the car-kit. This car-kit is intended for persons aged 16 or older.

READ THIS FIRST!

- This is a highly technical hobby product, intended to be used in a safe racing environment. This car is capable of speeds in excess of 80 km/h or 50mph. Please follow these guidelines when building and operating this model.
- Parental guidance is required when the builder/user of this car is under 16.
- Follow the building instructions. If in doubt, contact your dealer or importer.
- Be sure to use the proper tools when assembling the car. Always exercise caution when using electric tools, knives and other sharp objects.
- Be careful when using liquids like lubrication oil, fuel or glue. Do not swallow.
- Follow the manufacturer's instruction in case you experience irritation after using the product.
- Be careful when operating the car. Stay away from any rotating parts such as wheels, gears and transmission. Stay away from motor, engine and exhaust pipe system or speedo during and immediately after use, as these parts may be very hot. We advise to use protective hand cloves.
- Only operate this car in a safe environment, like a special racing track or a closed parking lot. Avoid using this car on public roads, crowded places or near infants.
- Before operating this car, always check the mechanical status of the car. Also check that the transmitter and receiver frequencies correspond and are not used by any other racer at the same time. Check that the batteries of the transmitter and receiver- are fully charged.
- After use, always check all the mechanics of the car. We advise to clean the car immediately after use, and inspect the parts for wear or fractures. Replace when necessary. Do not use water, methanol, thinner or other solvents to clean the car.
- Empty the fuel tank (depending on model) if needed and disconnect the receiver battery.
- Store the car in a dry and heated place to avoid corrosion of metal parts.
- Avoid using this car in wet conditions as the water will cause corrosion on the metal parts and bearings and these parts will cease to function properly. If driven in the wet, ensure that all the electric equipment is waterproofed and after use, that all moving parts are dried immediately.

CONTENTS

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LINES DESCRIPTION

Each step contains a variety of numbers, lines, and symbols. The numbers represent the order in which the parts should be assembled. The lines are described below.

Step number; the order in which you should assemble the indicated parts

Length after assembly

Assembly path of one item into another

Group of items (within lines) should be assembled first

Direction the item should be moved

Glue one item to another

Connect one item to another

Gap between two items

Press/Insert one item into another

ICONS DESCRIPTION

Each step contains a variety of symbols described below.

Carefull, read and check very well.

Apply a small amount of cyano glue. Use wear protection for eyes and hands.

Detail view to explain assembly or order of parts better.

Default set-up: This symbol indicates the default setup.

Grease: apply a small amount of grease to the parts shown.

Silicone grease: apply a small amount of grease to the parts shown.

Thread lock: apply a small amount on the parts shown. Before to apply the threadlock, make sure to degrease the parts very well, as otherwise the threadlock will not work.

Silicone oil: use the indicated silicone oil for the shocks and differentials.

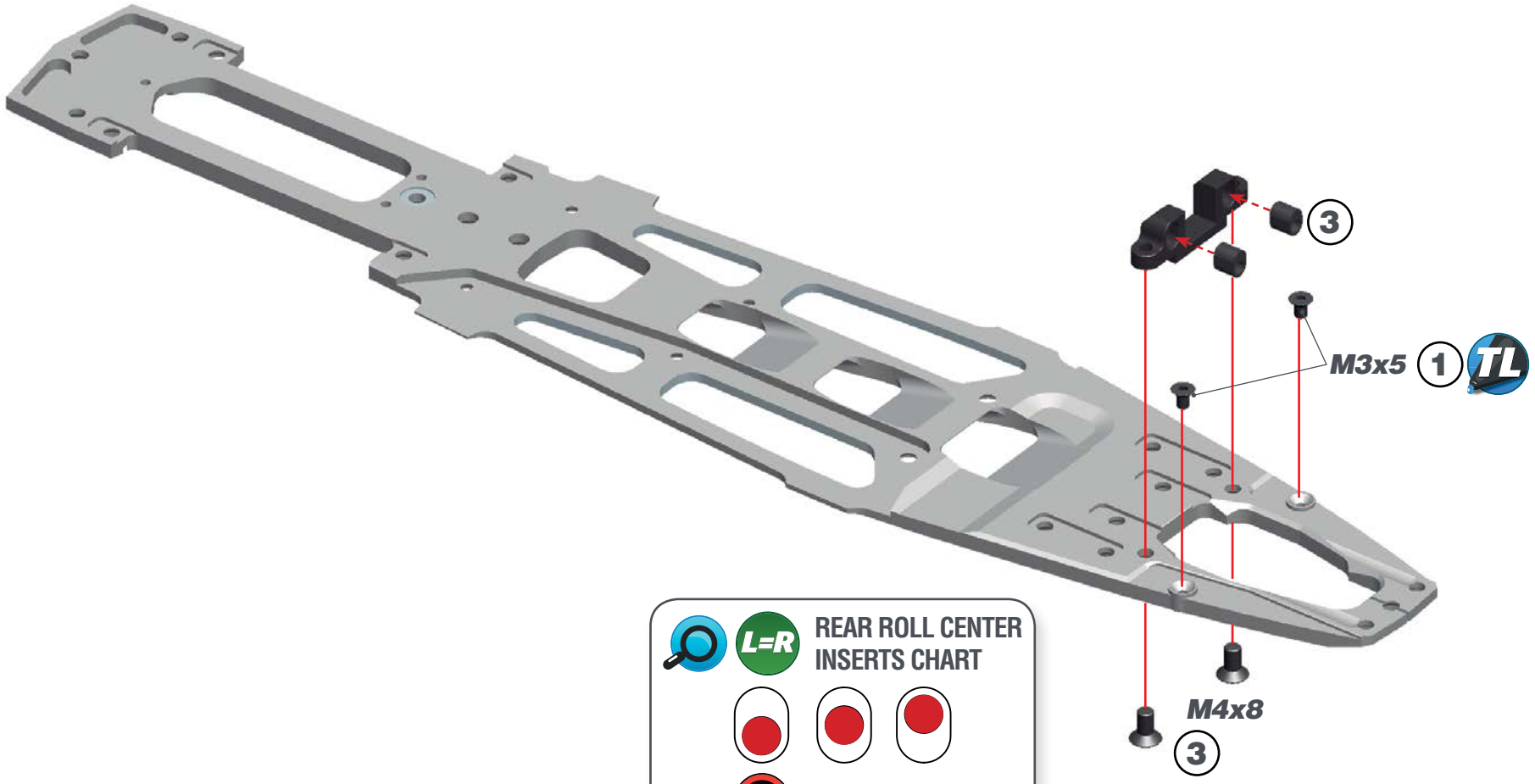
Oil: apply a small amount of oil to the parts shown.

Left and right parts should be assembled in the same way.

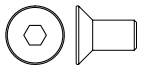
Parts or items not included in the kit.

Optional part, not standard in the kit.

STEP 1 BAG 1



M3x5

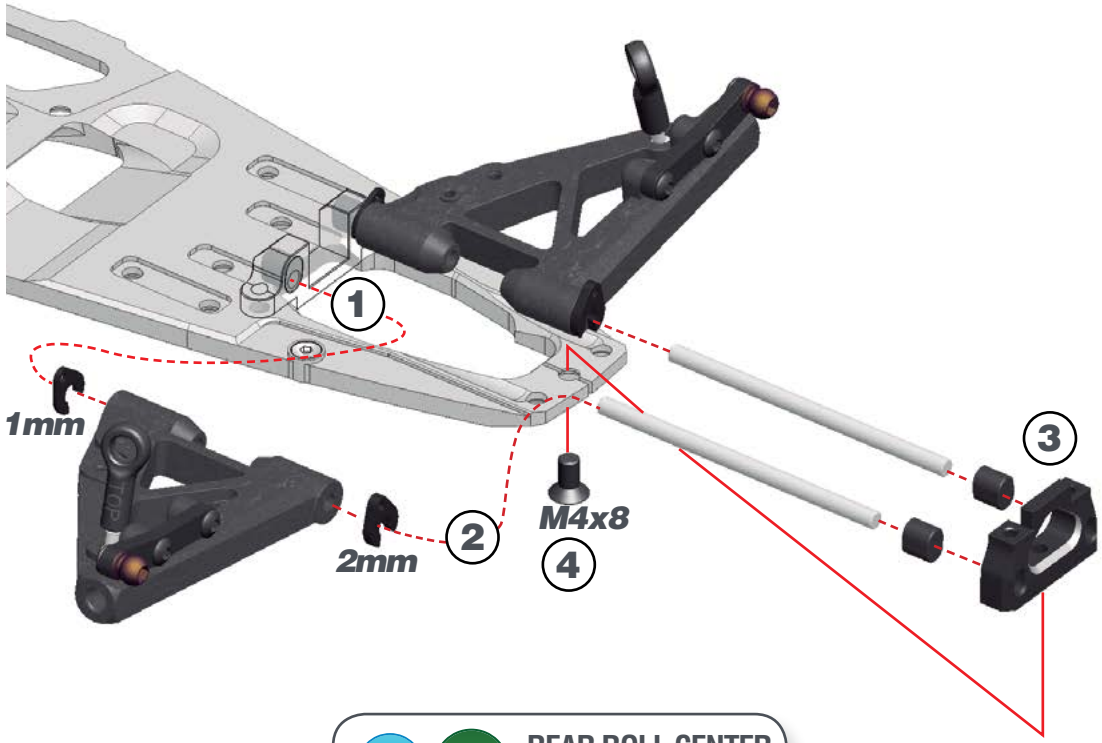

M4x8

STEP 2

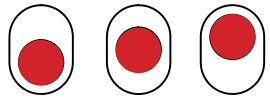
L=R Remove the red area using a Cutter Knife.

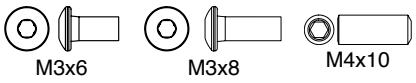
L=R REAR ANTIROLL BAR ROD LENGTH

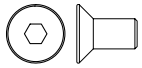
STEP 3



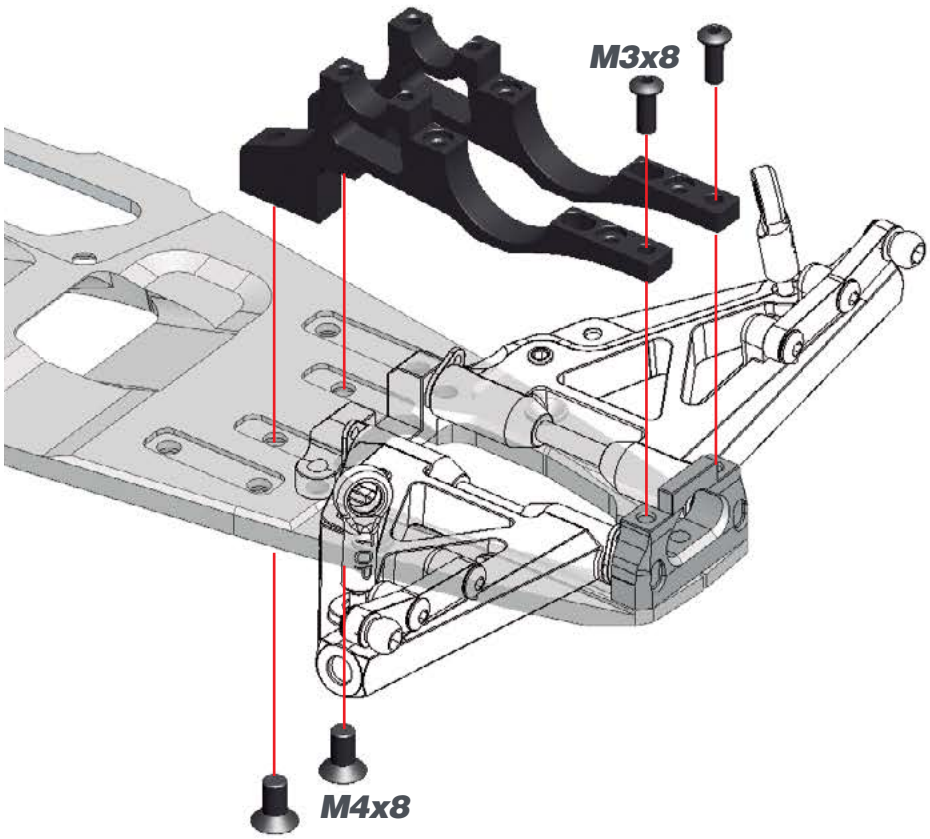
L=R REAR ROLL CENTER INSERTS CHART



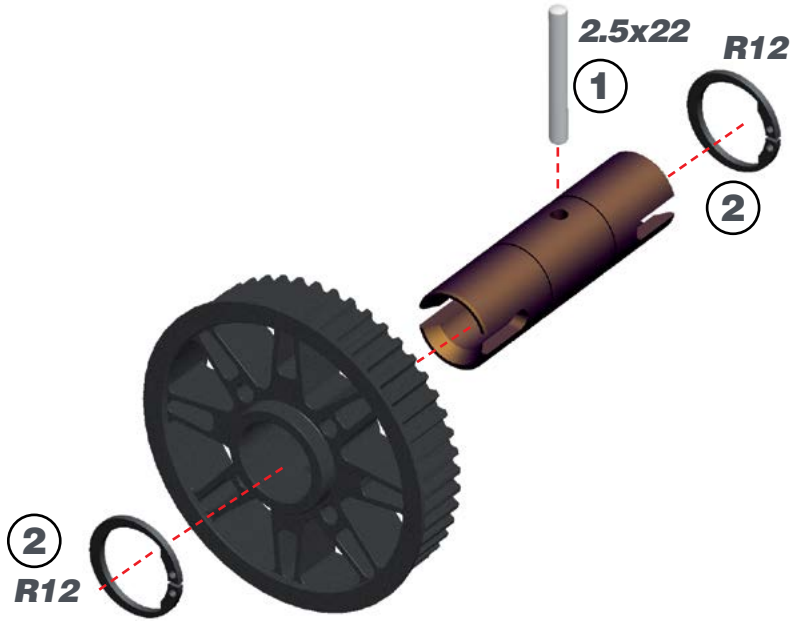


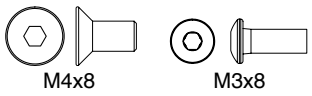


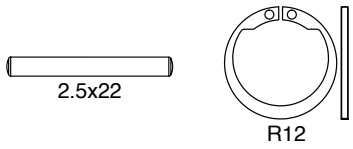
STEP 4 BAG 2



STEP 5



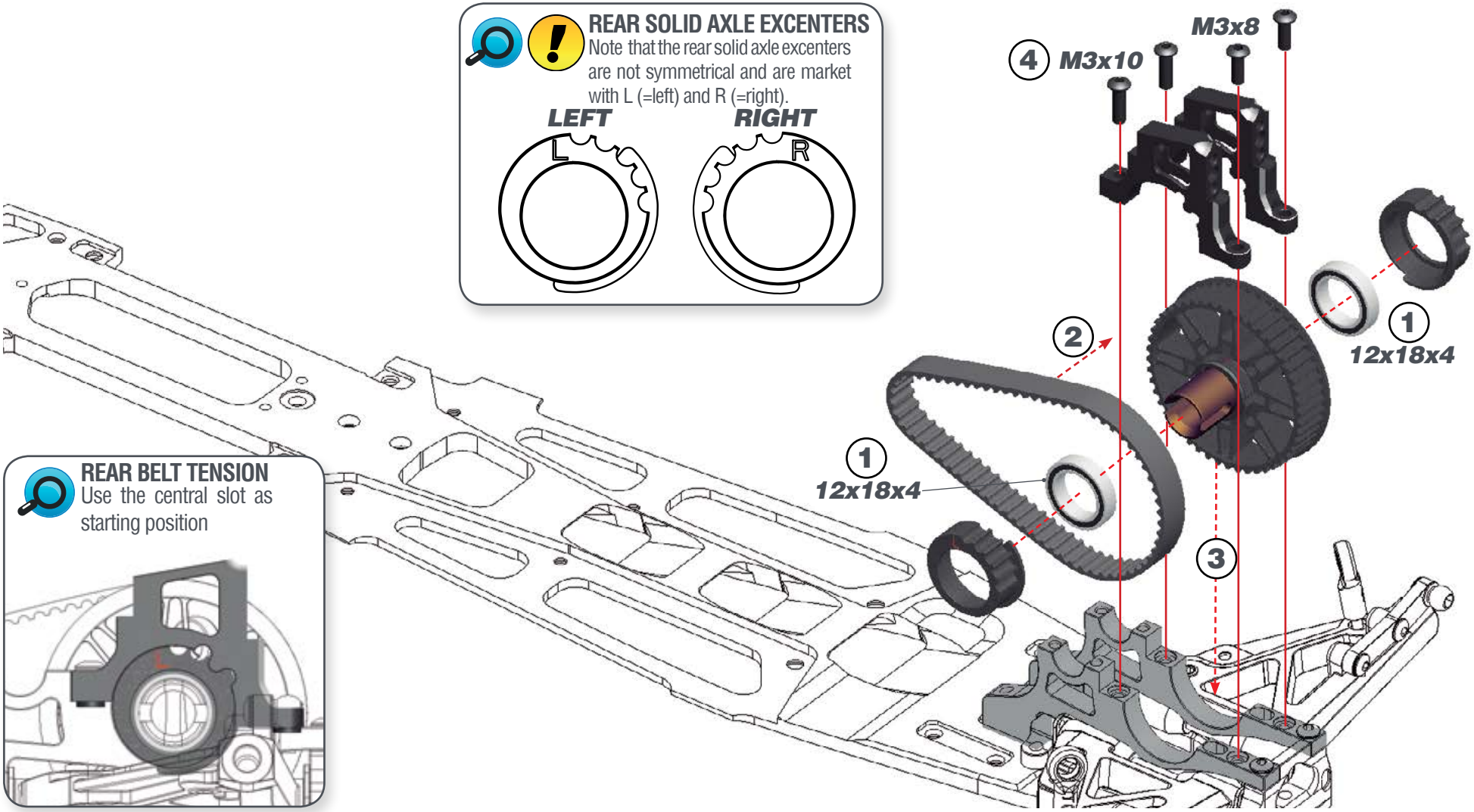


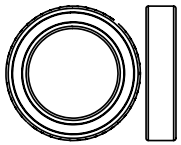


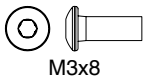
STEP 6

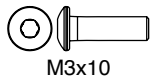
REAR SOLID AXLE EXCENTERS
Note that the rear solid axle excenters are not symmetrical and are market with L (=left) and R (=right).

REAR BELT TENSION
Use the central slot as starting position

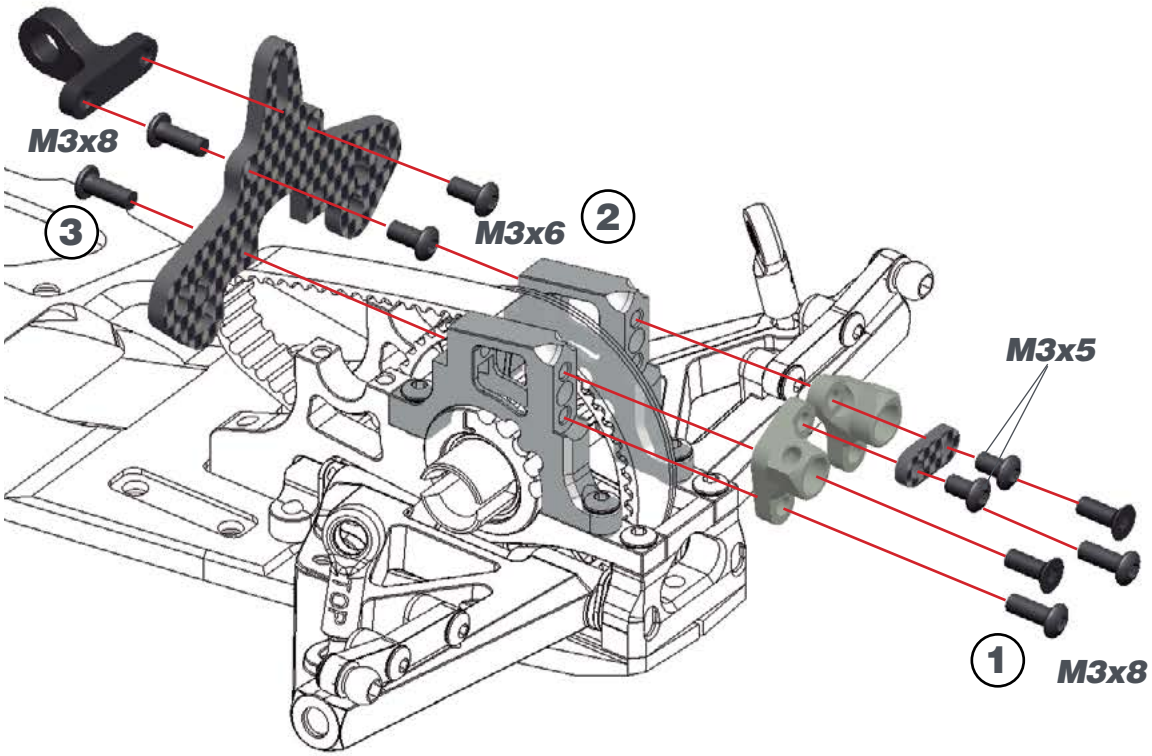



12x18x4


M3x8


M3x10

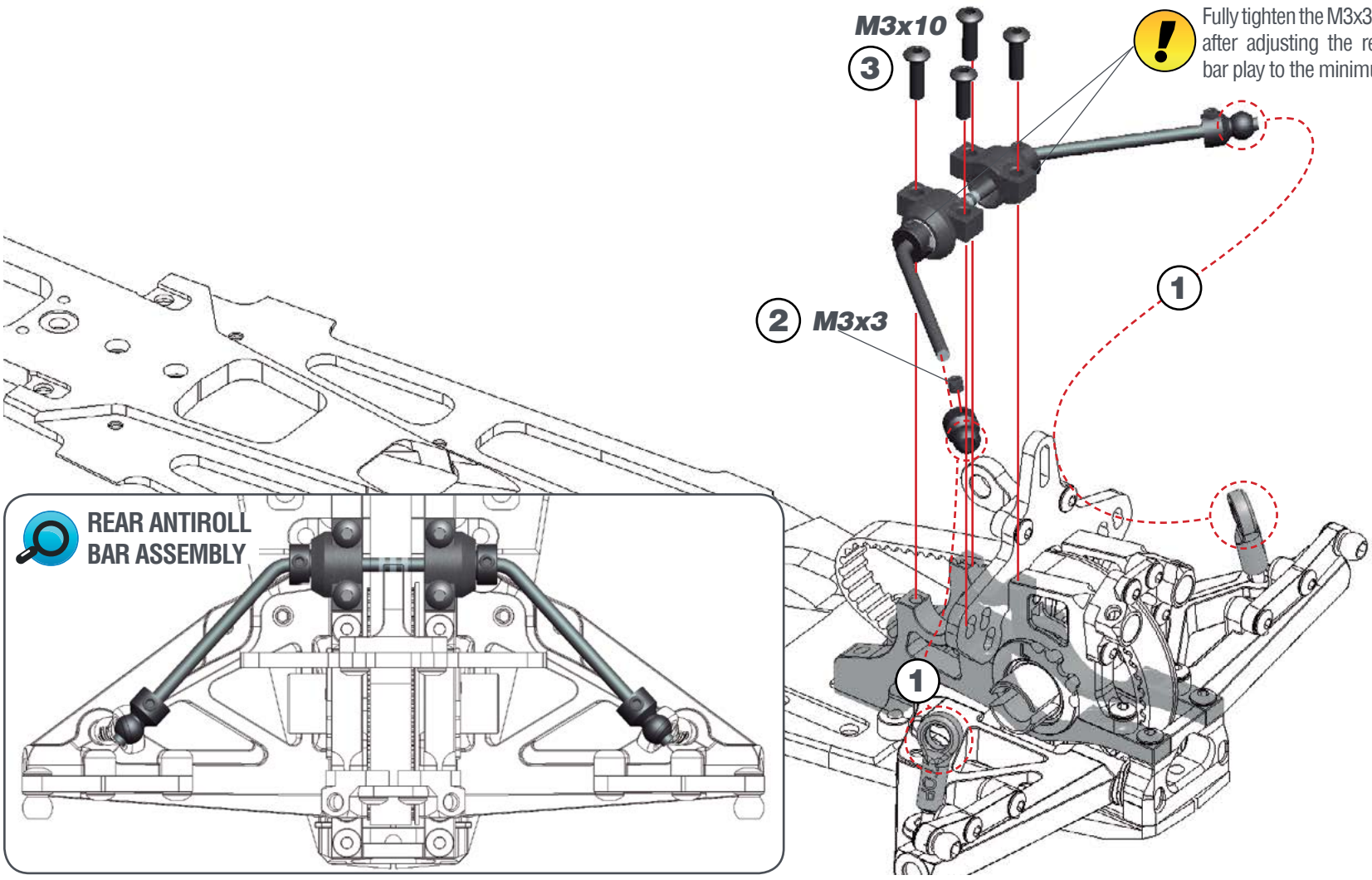
STEP 8



STEP 9

Do not tighten the M3x3 setscrews until step 10

STEP 10

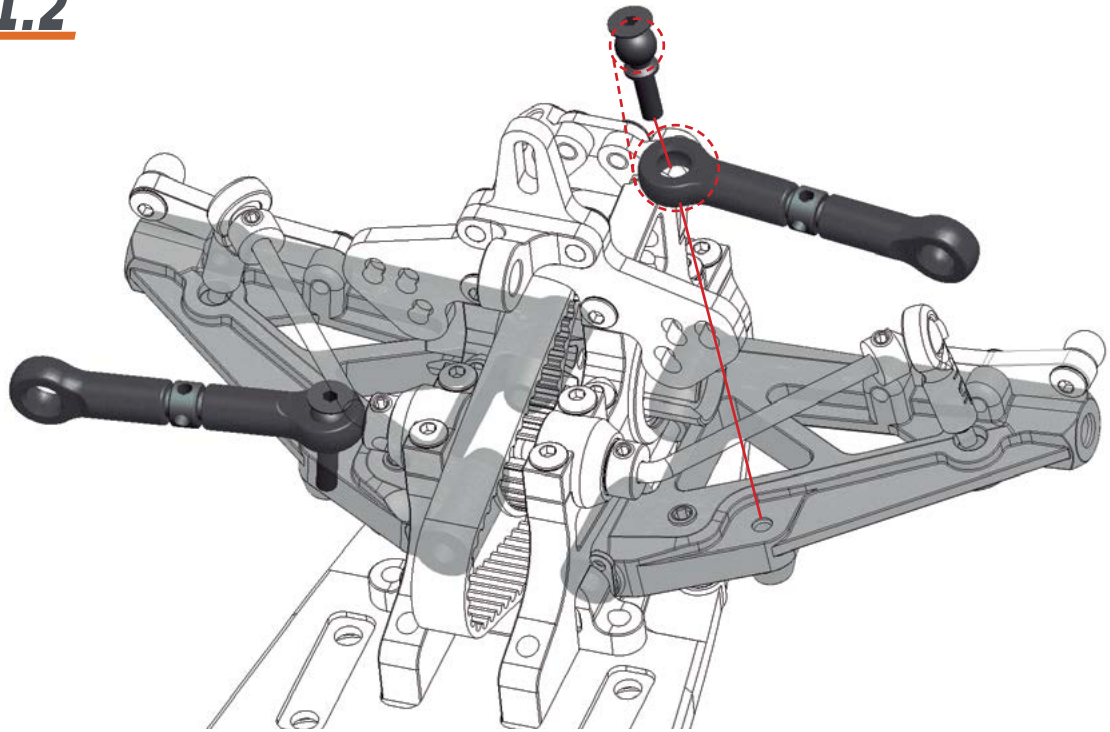

M3x10
3
Fully tighten the M3x3 setscrews after adjusting the rear antiroll bar play to the minimum.
2 M3x3
1
1
REAR ANTIROLL BAR ASSEMBLY

M3x3
5x8x2.5
M3x10

STEP 11 BAG 3

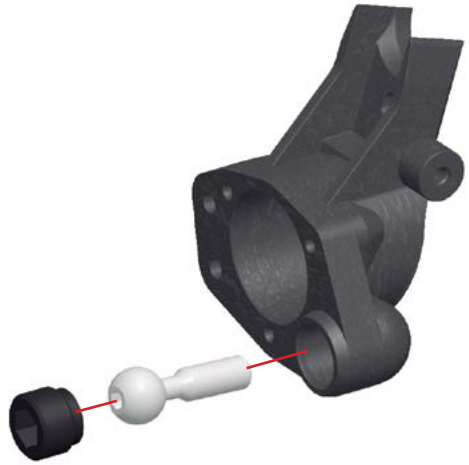
11.1

11.2

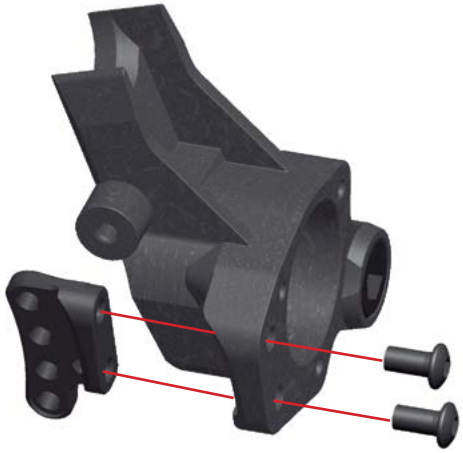


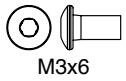
STEP 12

12.1

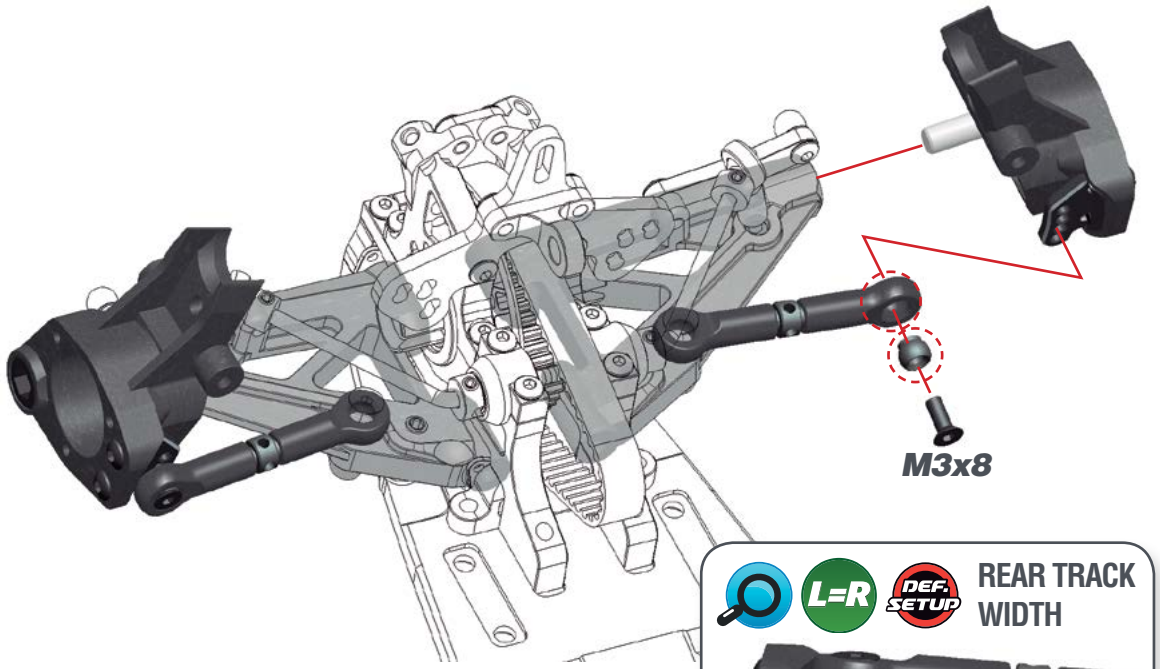


12.2





STEP 13



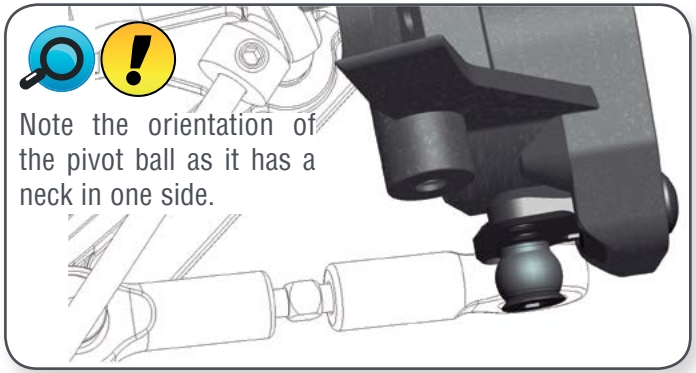
REAR REACTIVE STEERING SYSTEM

Serpent 990 introduce the Active rear toe-in. It brings a new dimension to setup changing the toe-in characteristics of the rear tires under rolling effect. It allows to run less static toe-in and still have a good traction coming out of the corner.
Serpent RRS System brings the possibility to adjust the amount of toe-change over the suspension travel from zero to positive or negative toe-change depending on the linking point selected as explained below:

Toe in will increase under acceleration (compression) and will decrease under braking (extension).

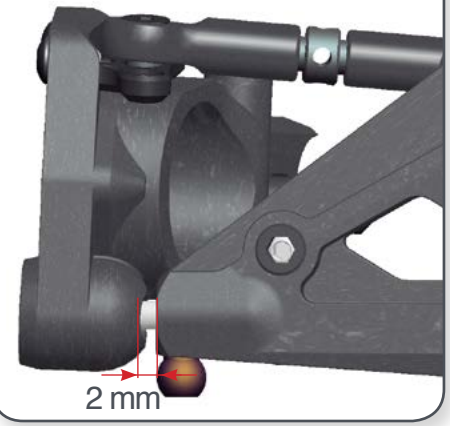
Toe in will not change over the suspension travel.

Toe in will decrease under aceleration (compression) and will increase under braking (extension).



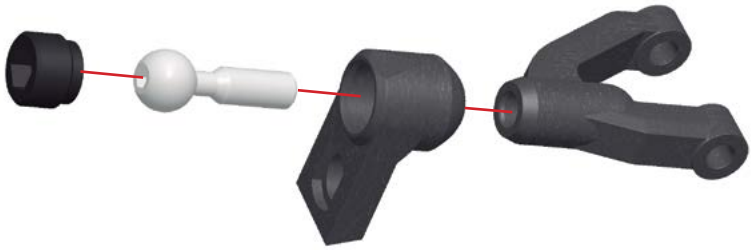
Note the orientation of the pivot ball as it has a neck in one side.

REAR TRACK WIDTH



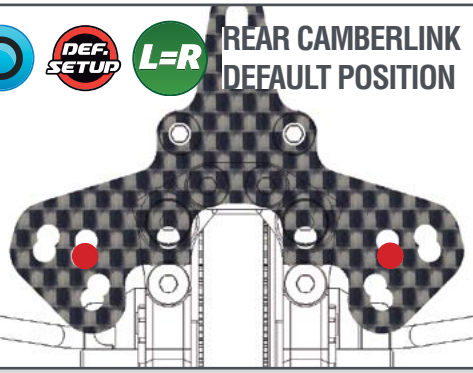
STEP 14

14.1



REAR CAMBERLINK LENGTH

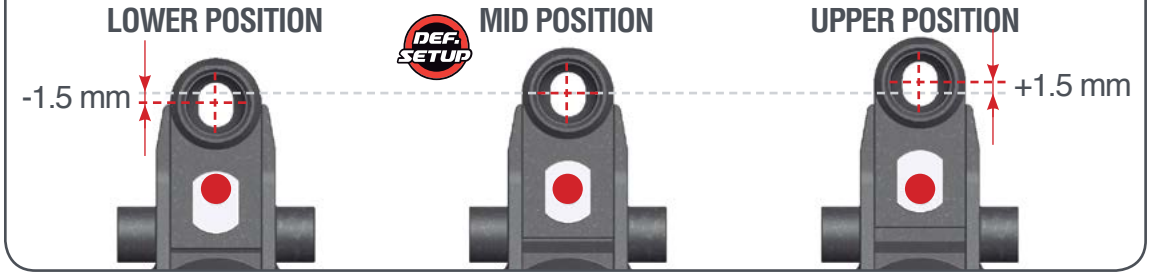
REAR CAMBERLINK DEFAULT POSITION

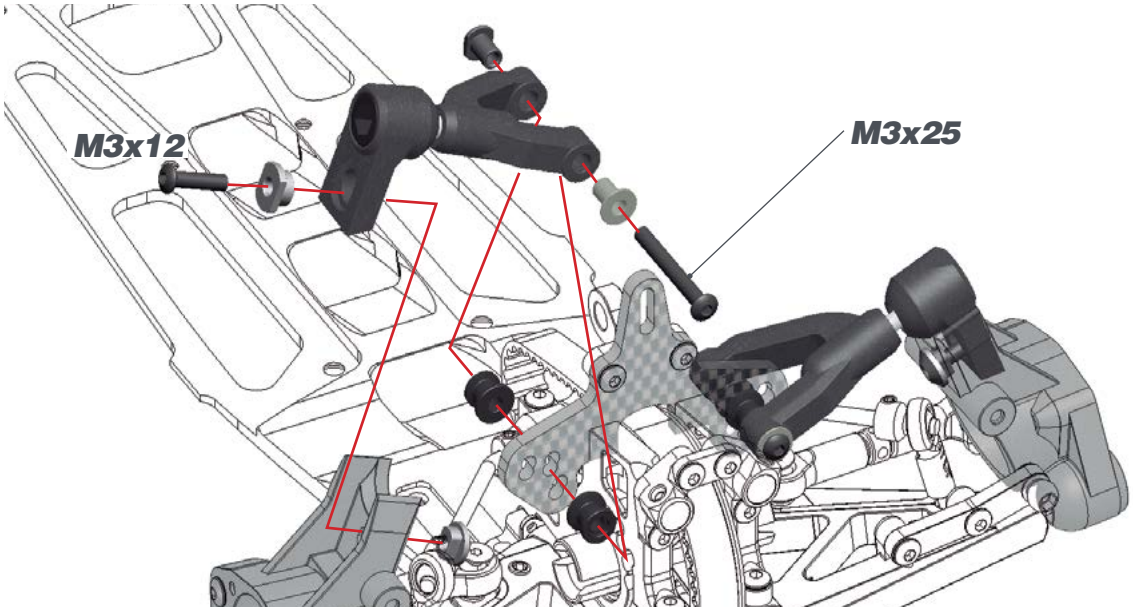


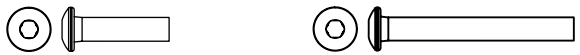
14.2

REAR UPPER WHSIBONE ANGLE

Serpent introduces a new way to adjust the height of the upper pivot on the upright. By changing the excenter, it is possible to move the position up or down by 1.5mm as well as using a “neutral” position.

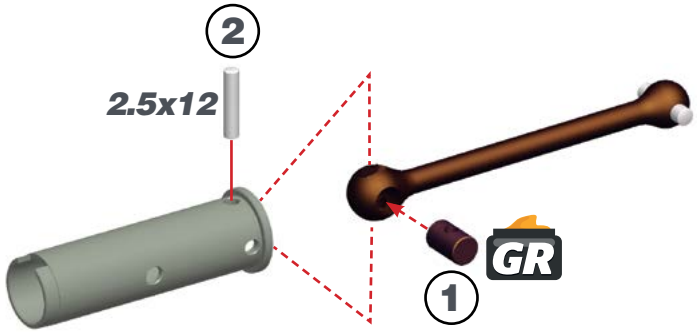




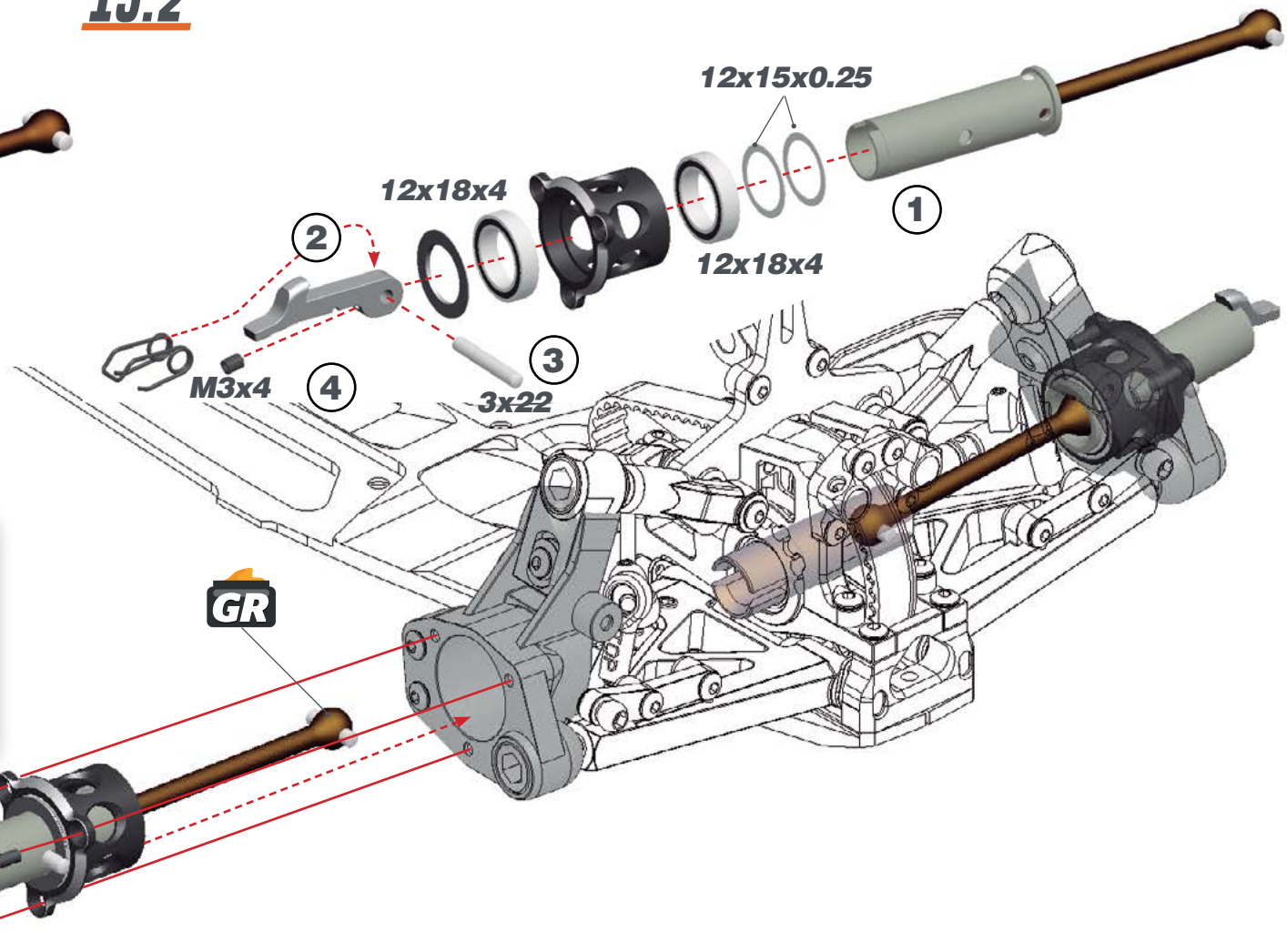


STEP 15 BAG 4

15.1

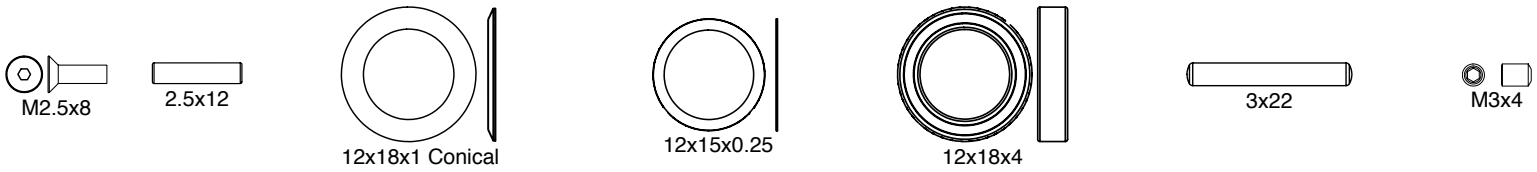


15.2



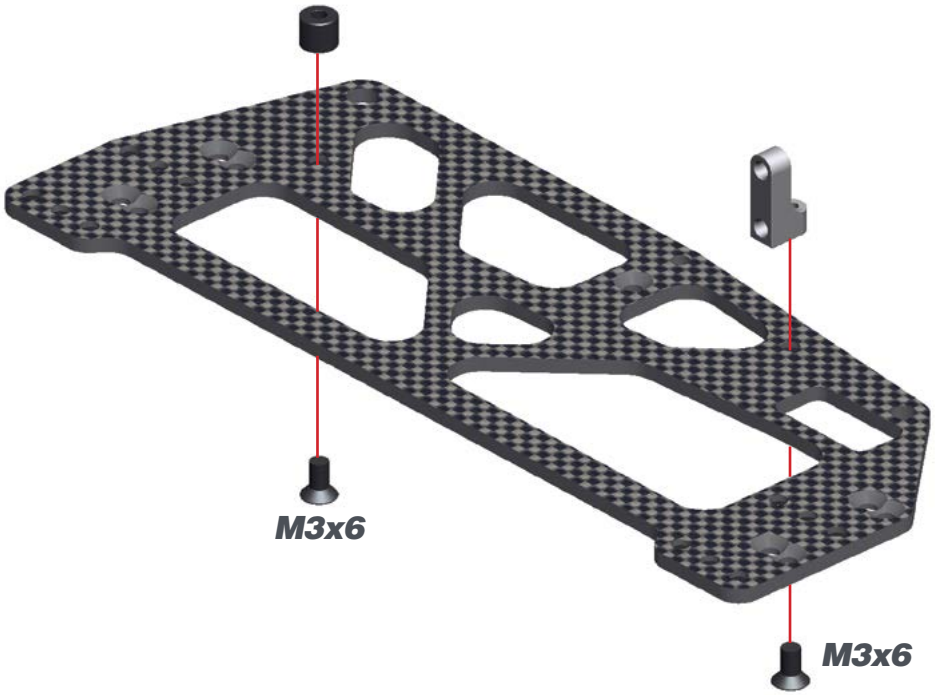
15.3

1- Note orientation of the outside wheel axle shim.
2- Note position of the lever spring.

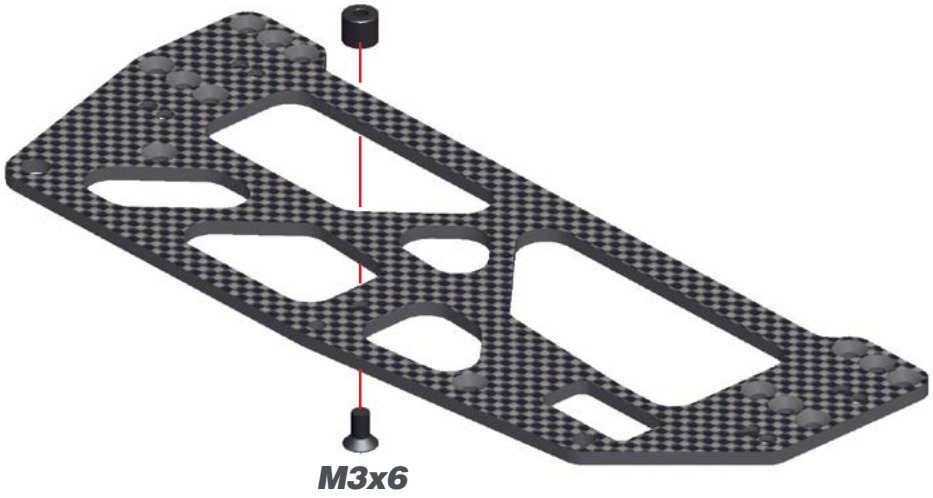


STEP 16 BAG 5

RIGHT BATTERY PLATE



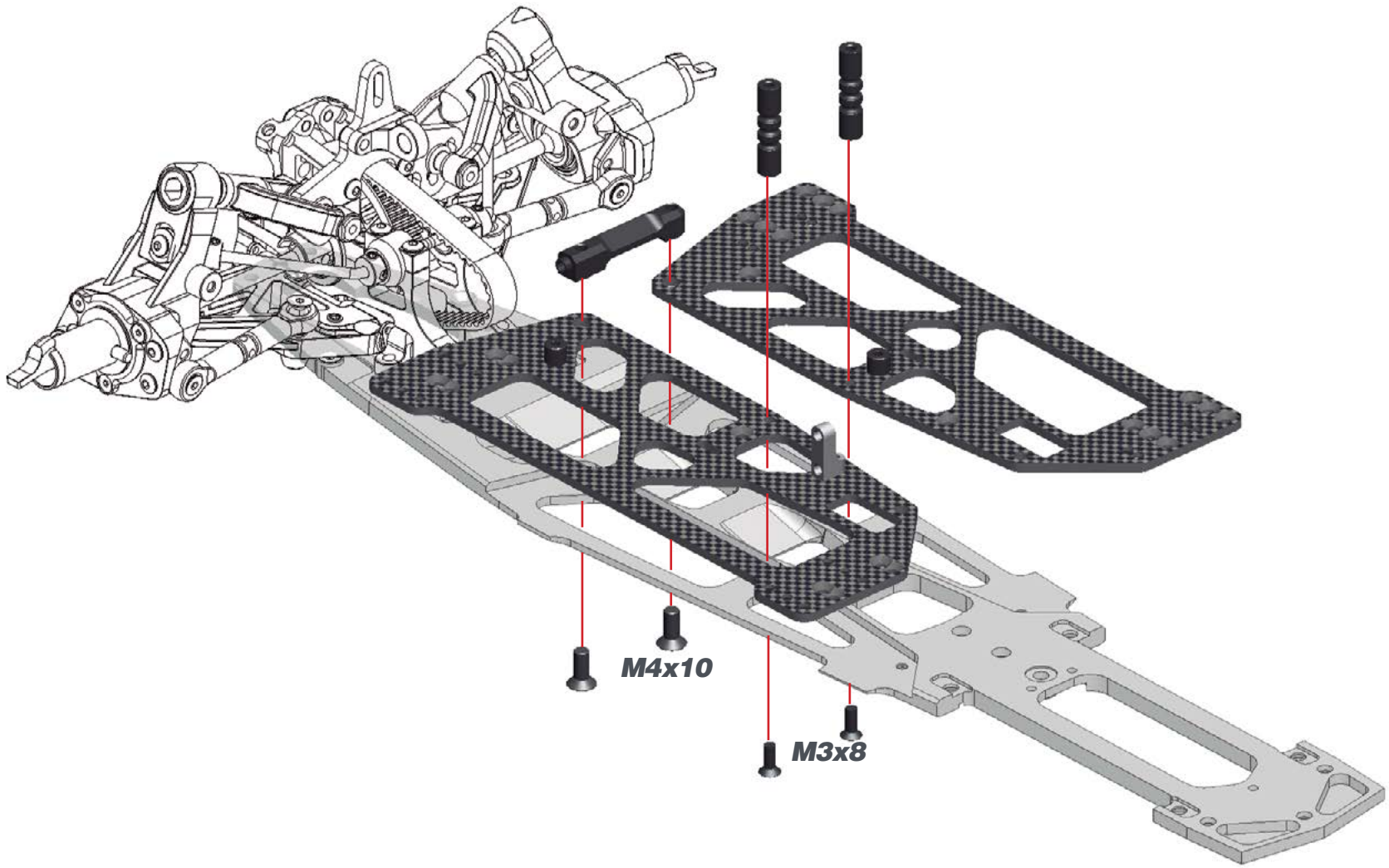
LEFT BATTERY PLATE

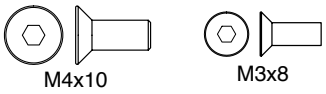


M3x6

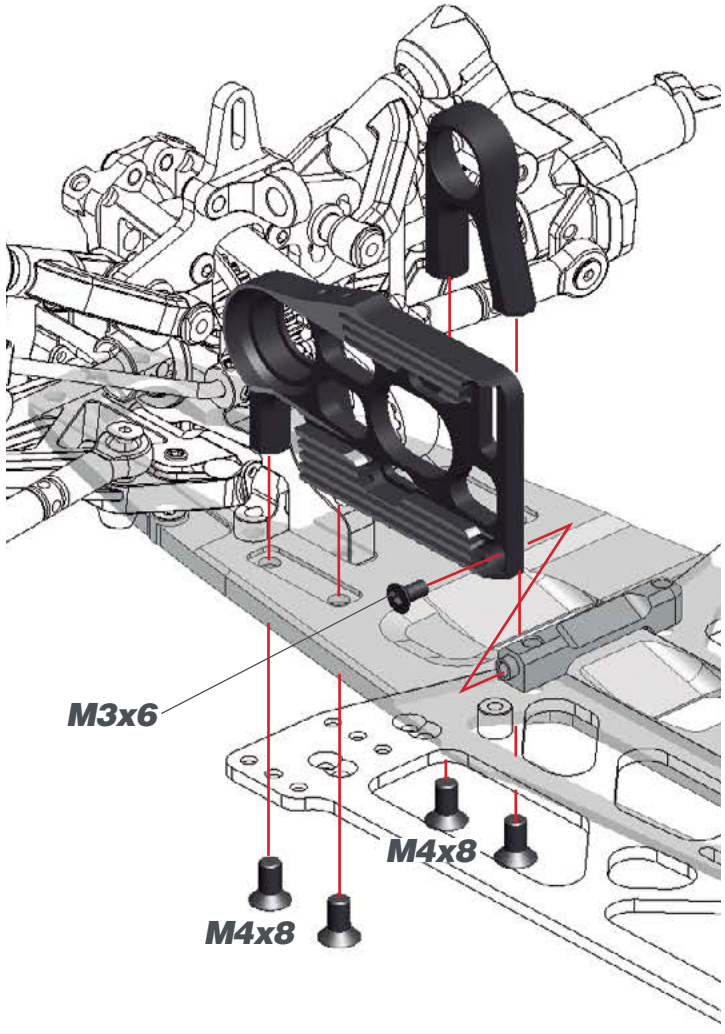
M3x6

STEP 17





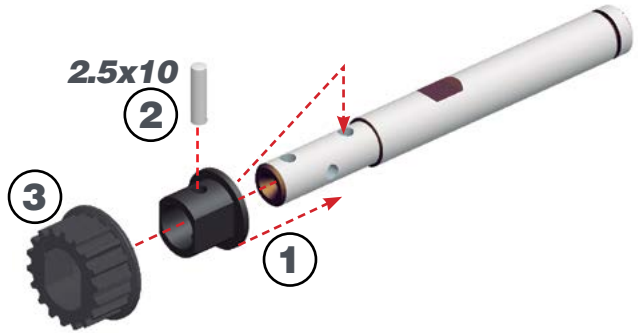
STEP 18



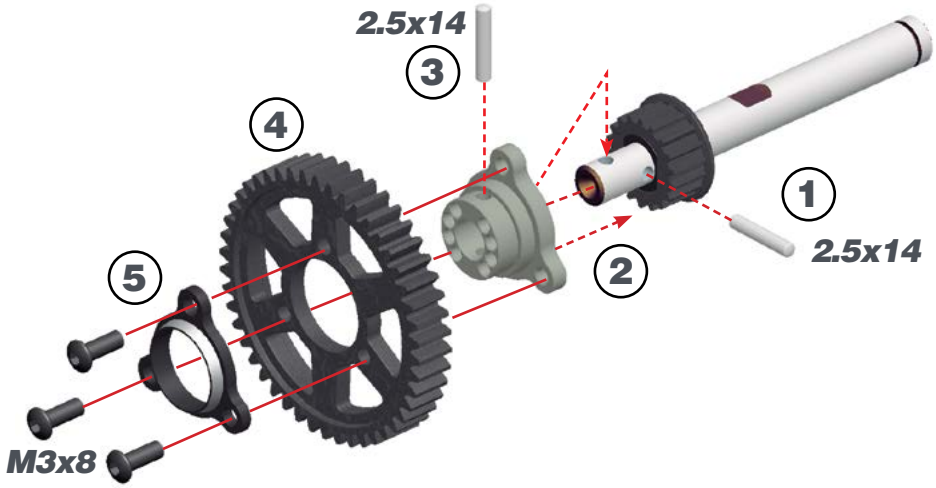
STEP 19

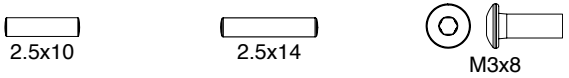
BAG 6

19.1

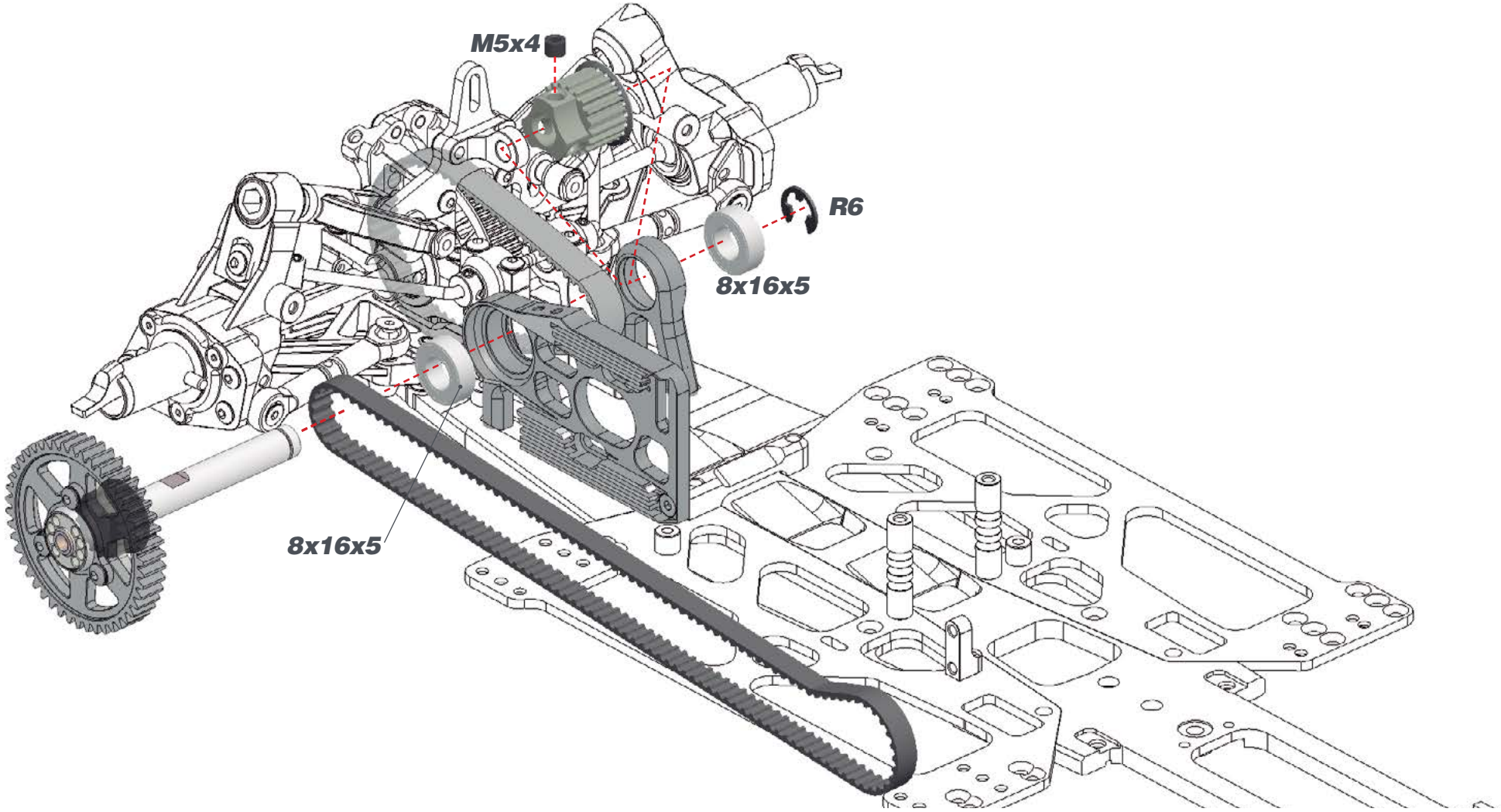


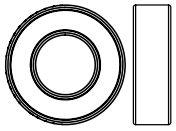
19.2





STEP 20



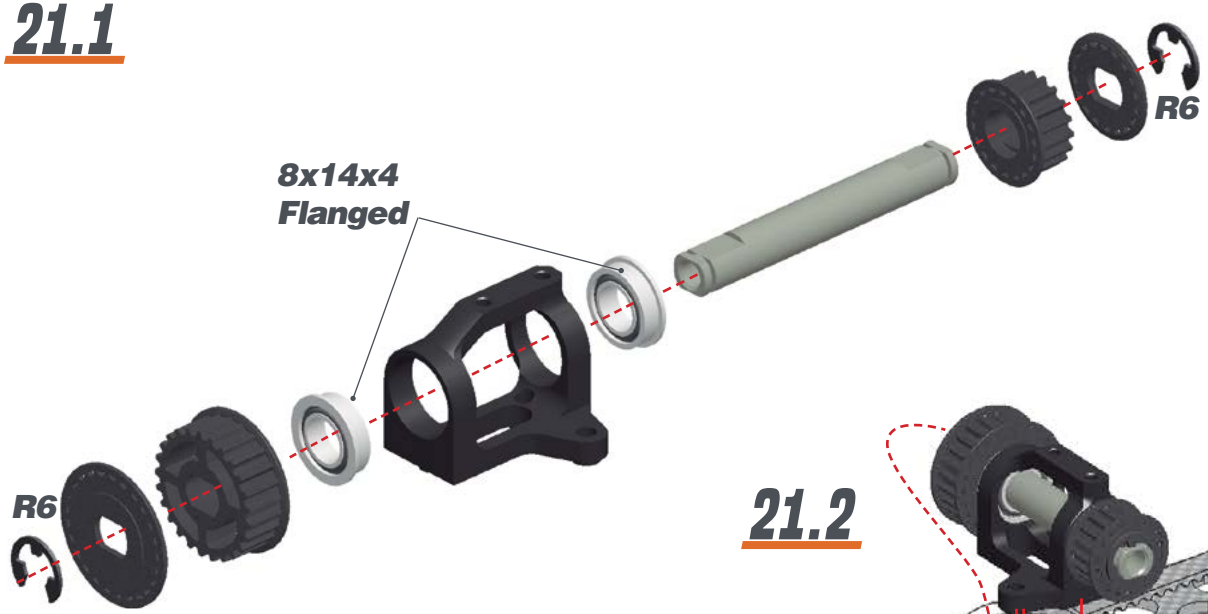

8x16x5

M5x4

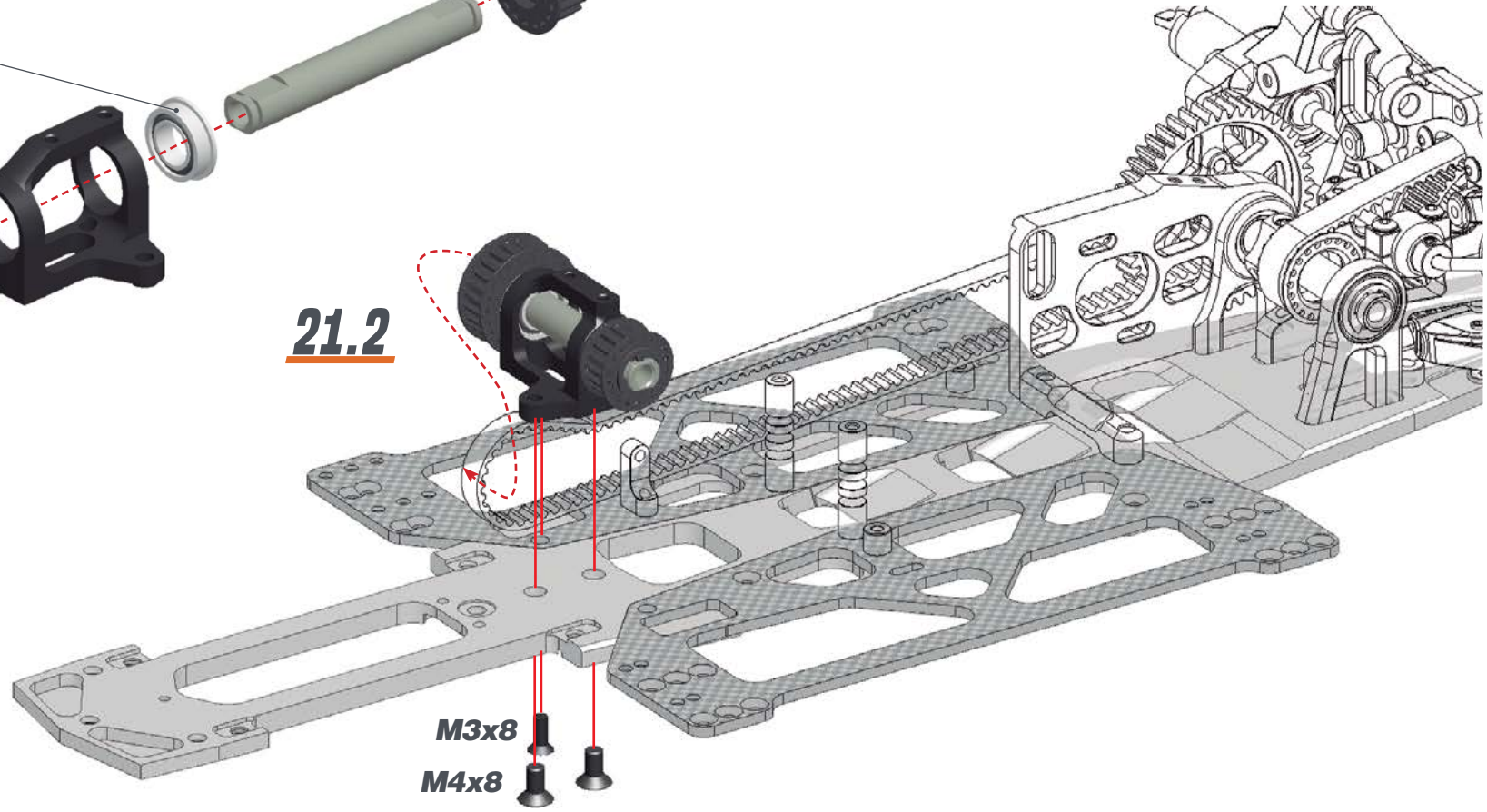
R6

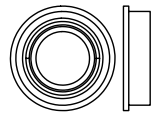
STEP 21

21.1

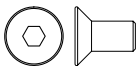


21.2

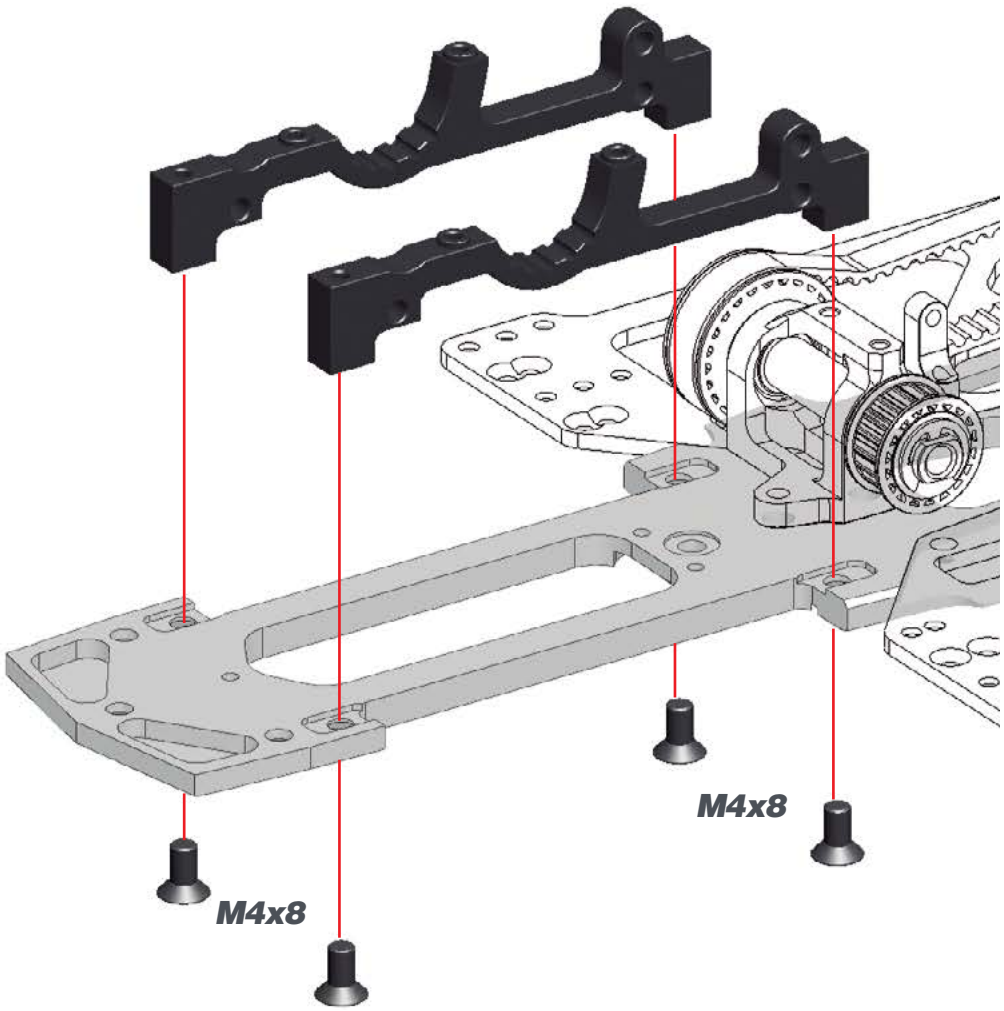



8x14x4 Flanged

R6


M4x8

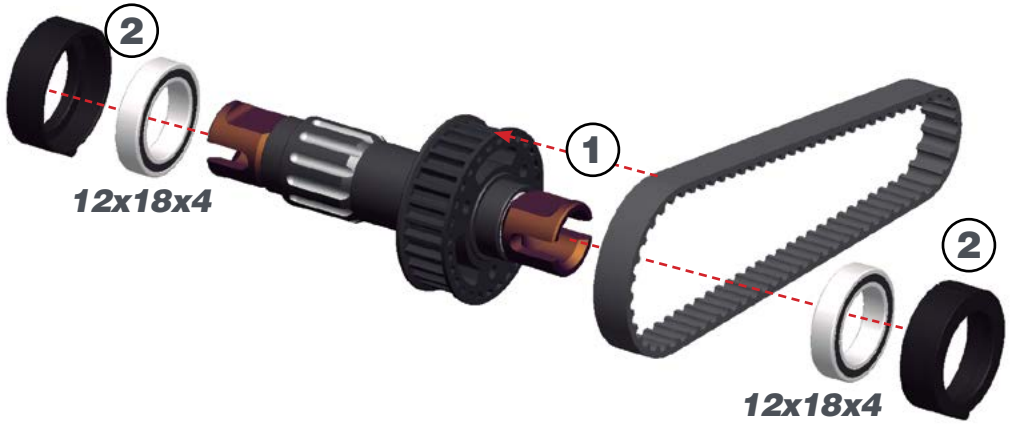
STEP 22 BAG 7

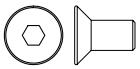


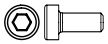
STEP 23

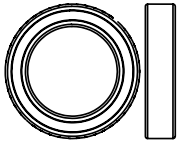
23.1

23.2

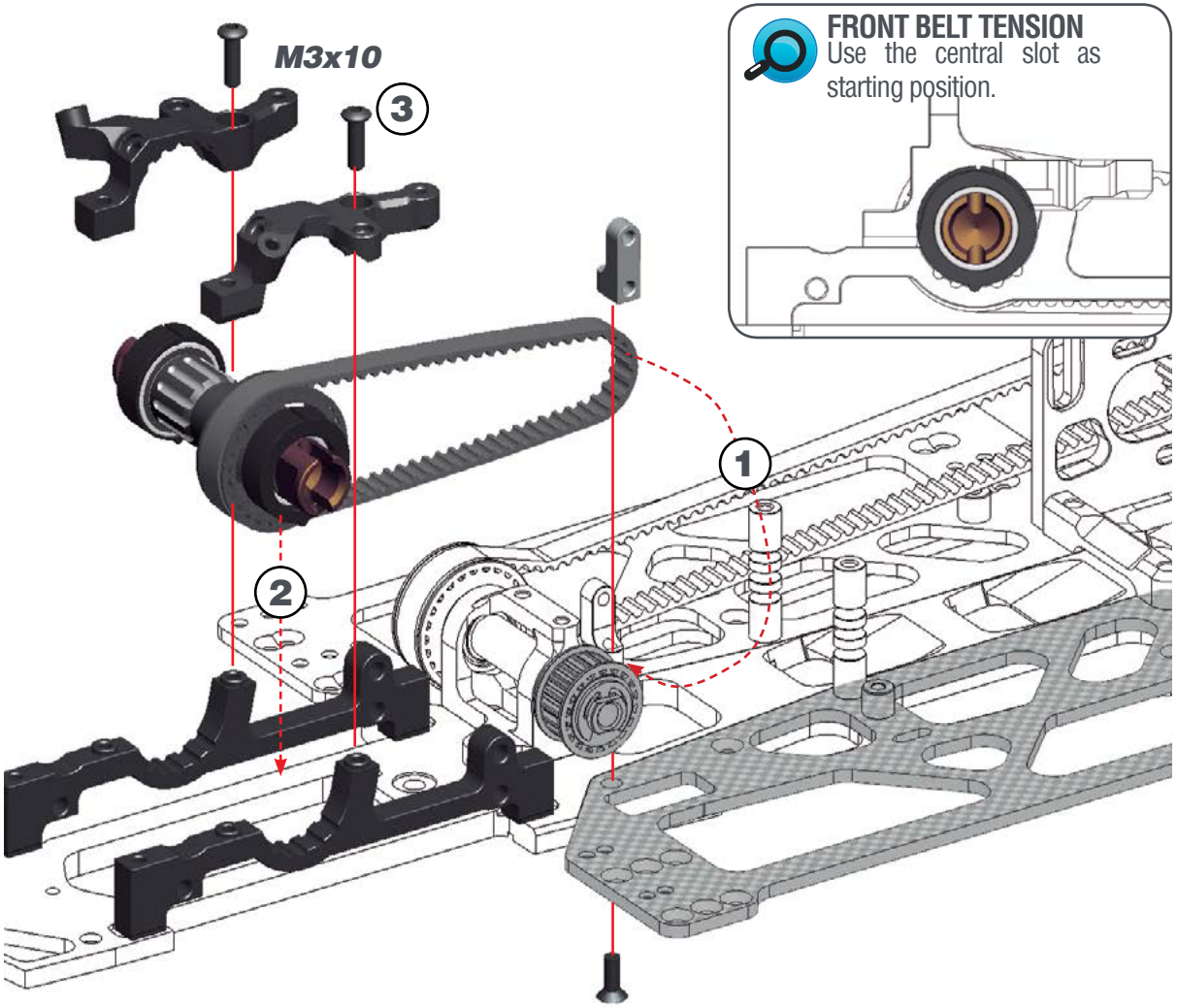



M4x8


M2.5x6


12x18x4

STEP 24



FRONT BELT TENSION
Use the central slot as starting position.

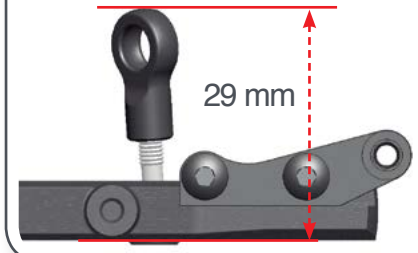
M3x10 M3x8

STEP 25 BAG 8

25.1 L=R

25.2

L=R FRONT ANTIROLL BAR ROD LENGTH

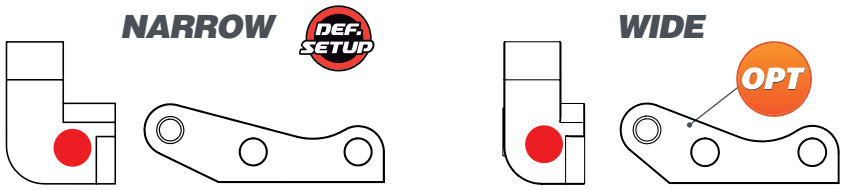


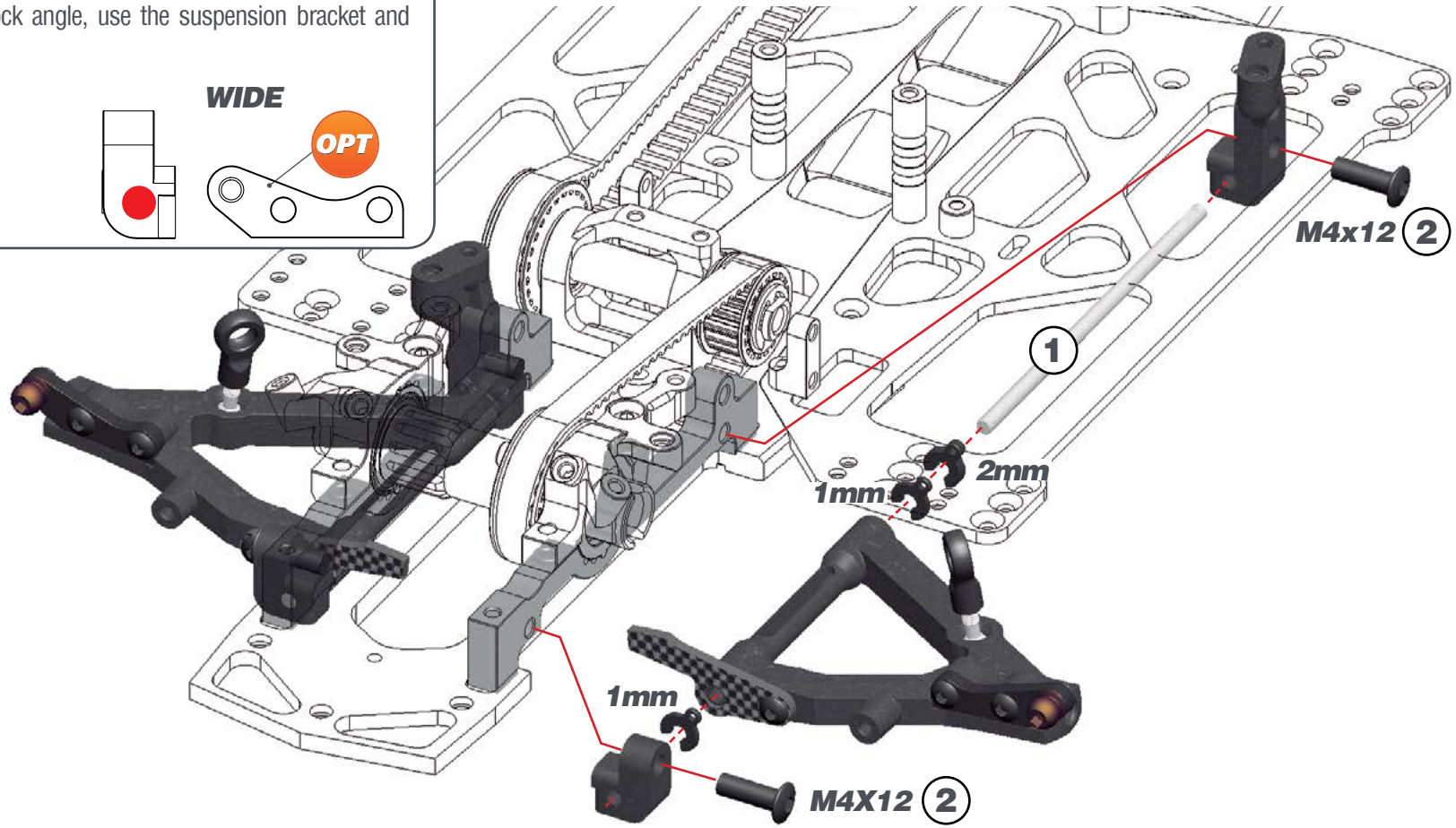
M3x6 M3x8

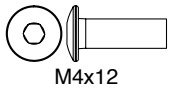
STEP 26

FRONT LOWER SUSPENSION AND SHOCK BRACKETS

Serpent 990 allows to move front bottom arms 3 mm in (NARROW) and out (WIDE). To maintain the same shock angle, use the suspension bracket and shock bracket as shown here.





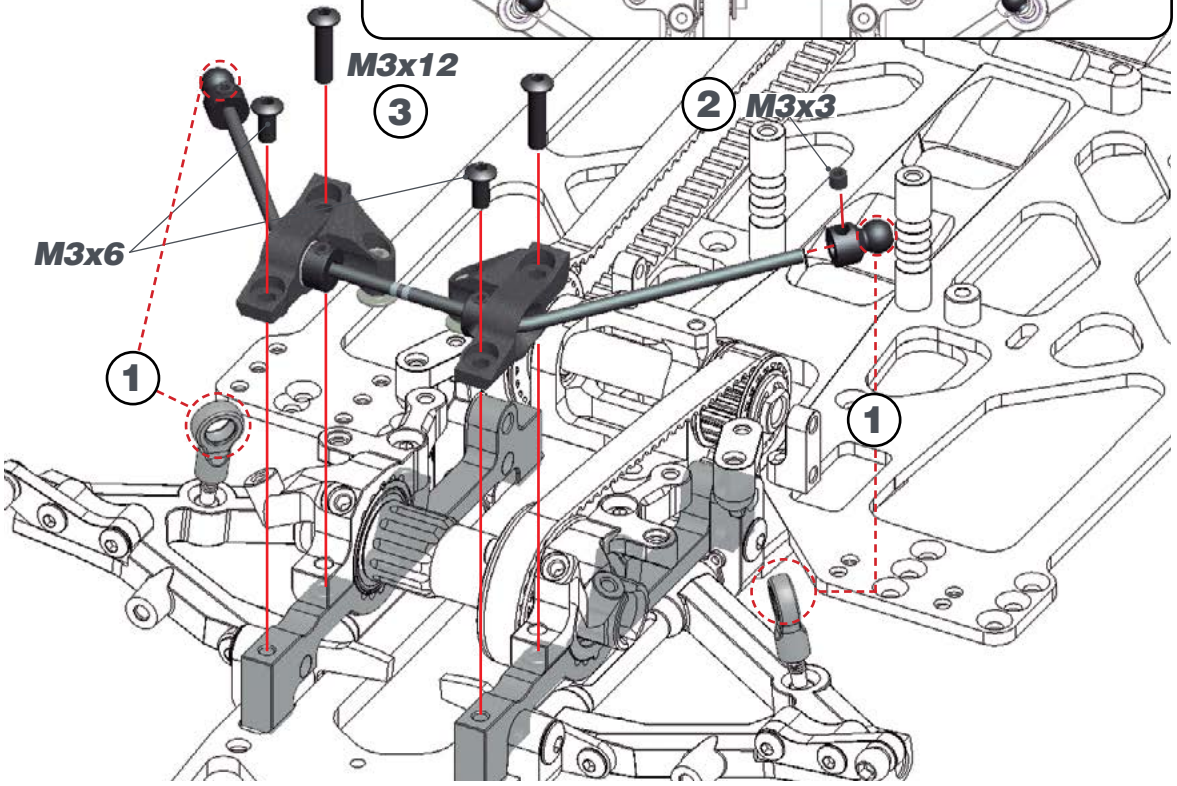


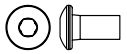
STEP 27

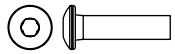
27.1

27.2

27.3



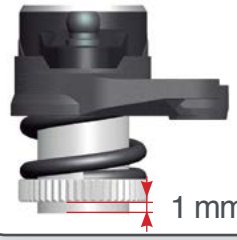




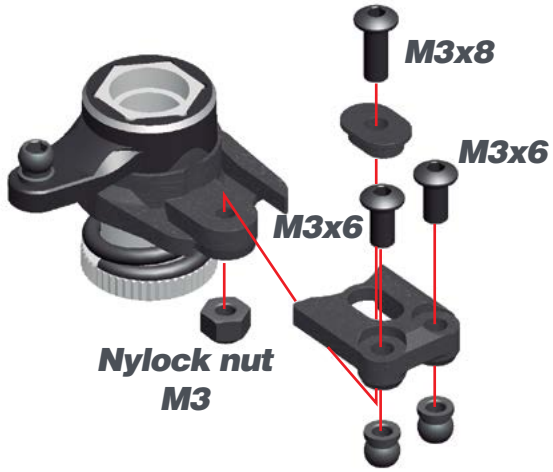
STEP 28 BAG 9

28.1

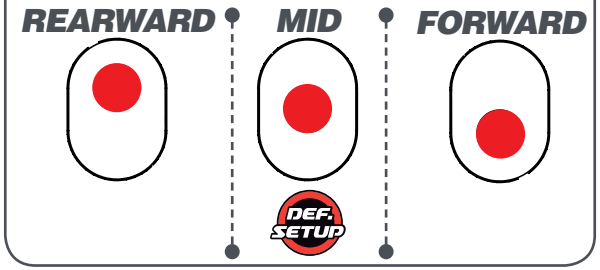
Preload the servo-saver-spring 1mm.



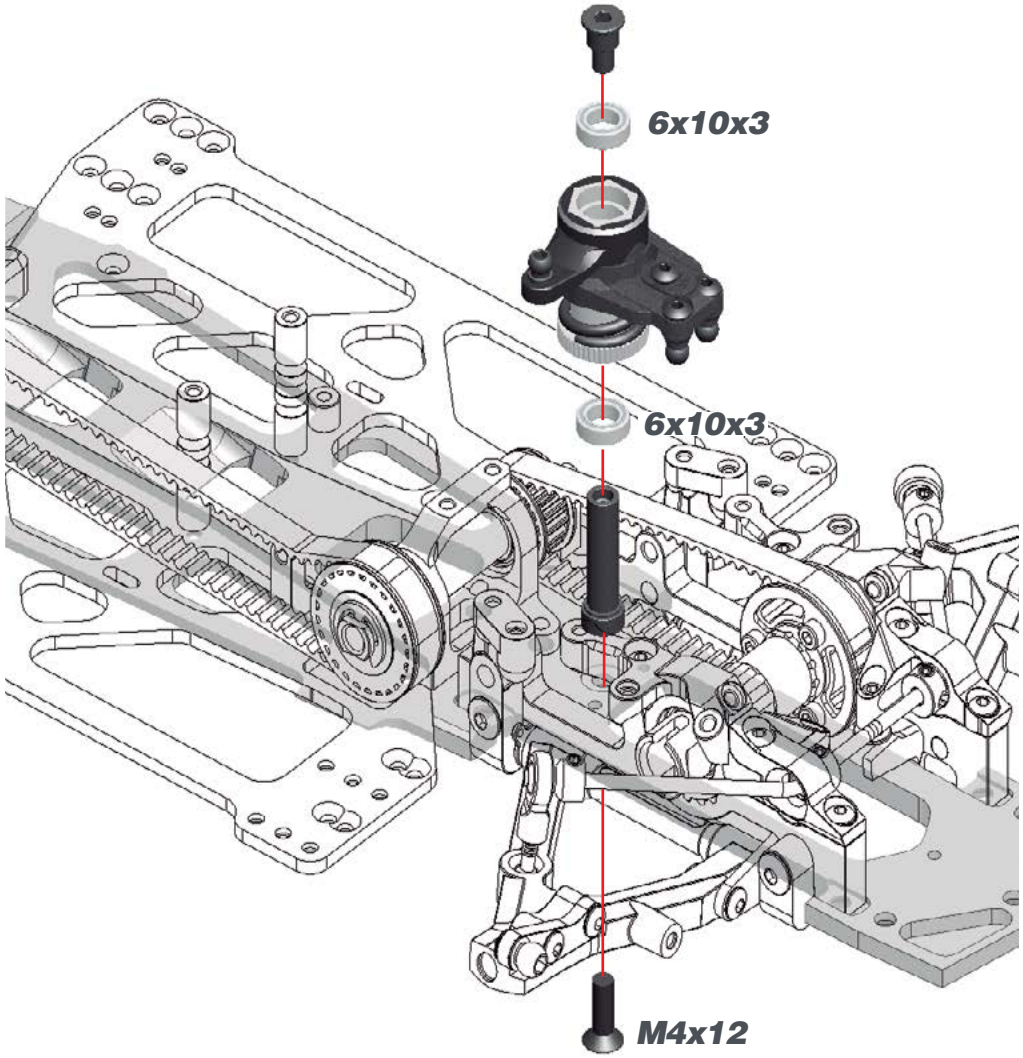
28.2

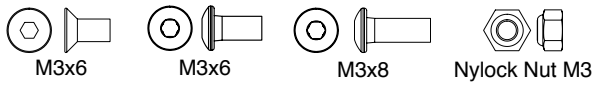


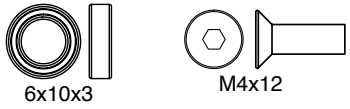
SERVOSAVER ACKERMANN INSERTS



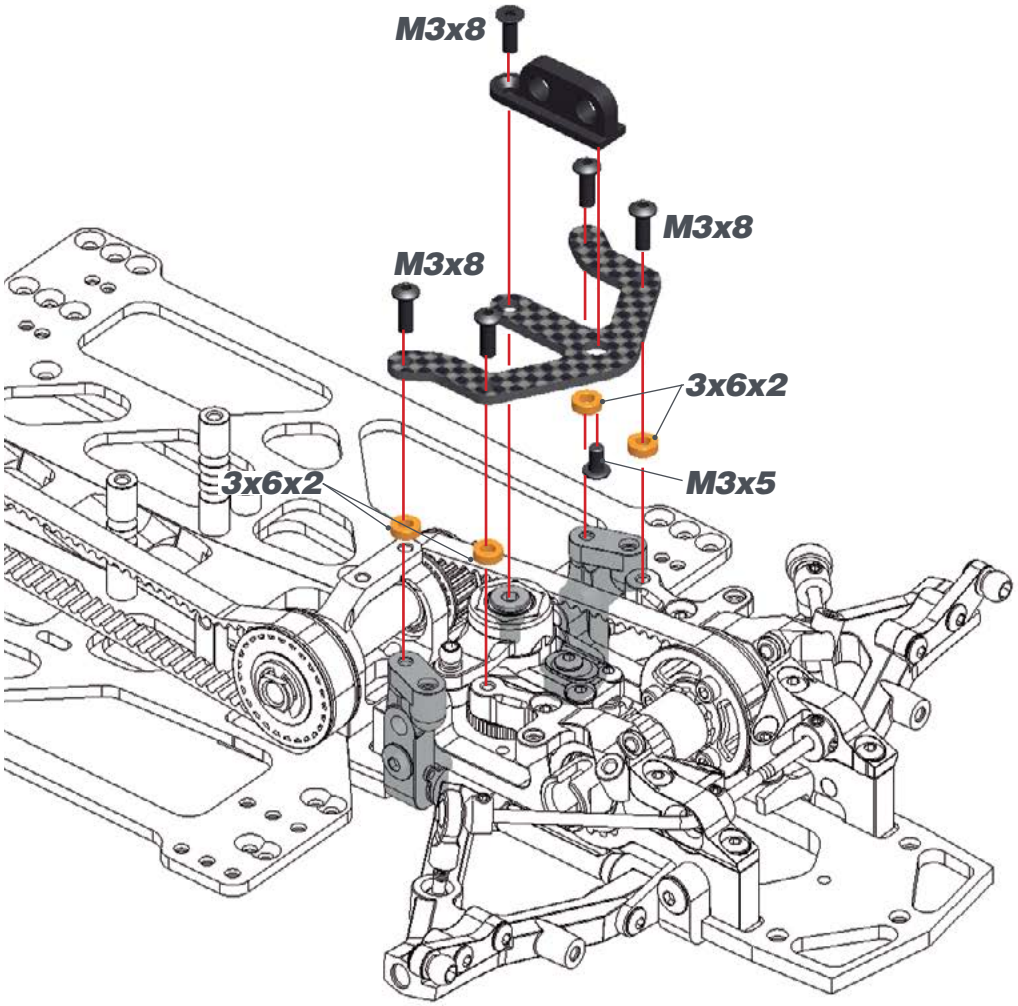
STEP 29



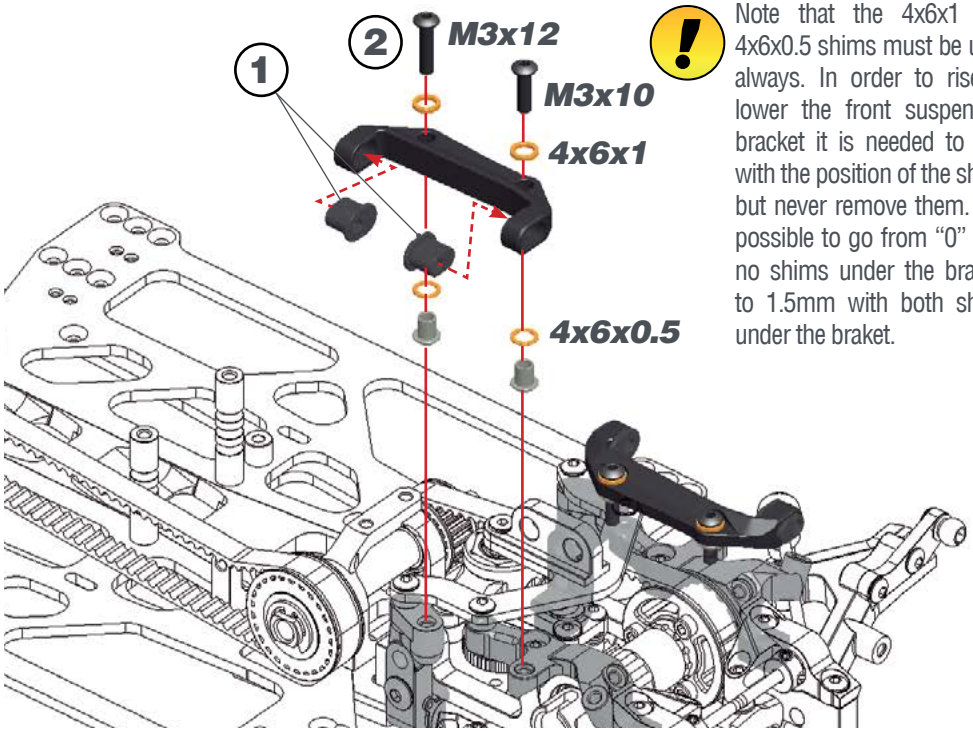




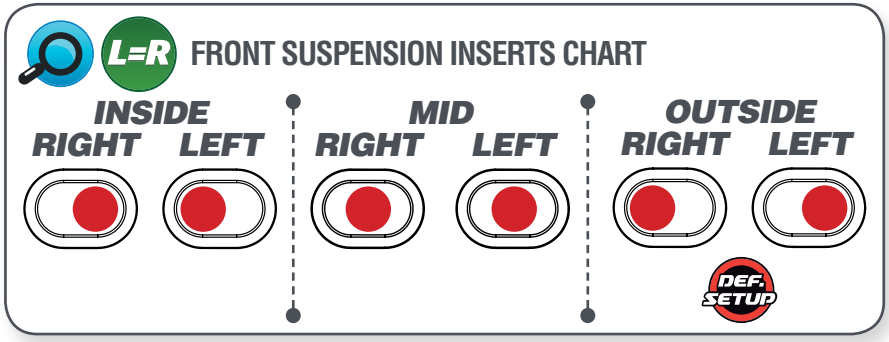
STEP 30

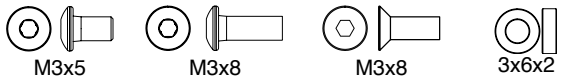


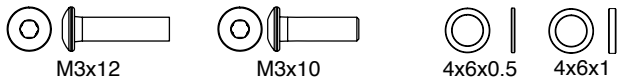
STEP 31



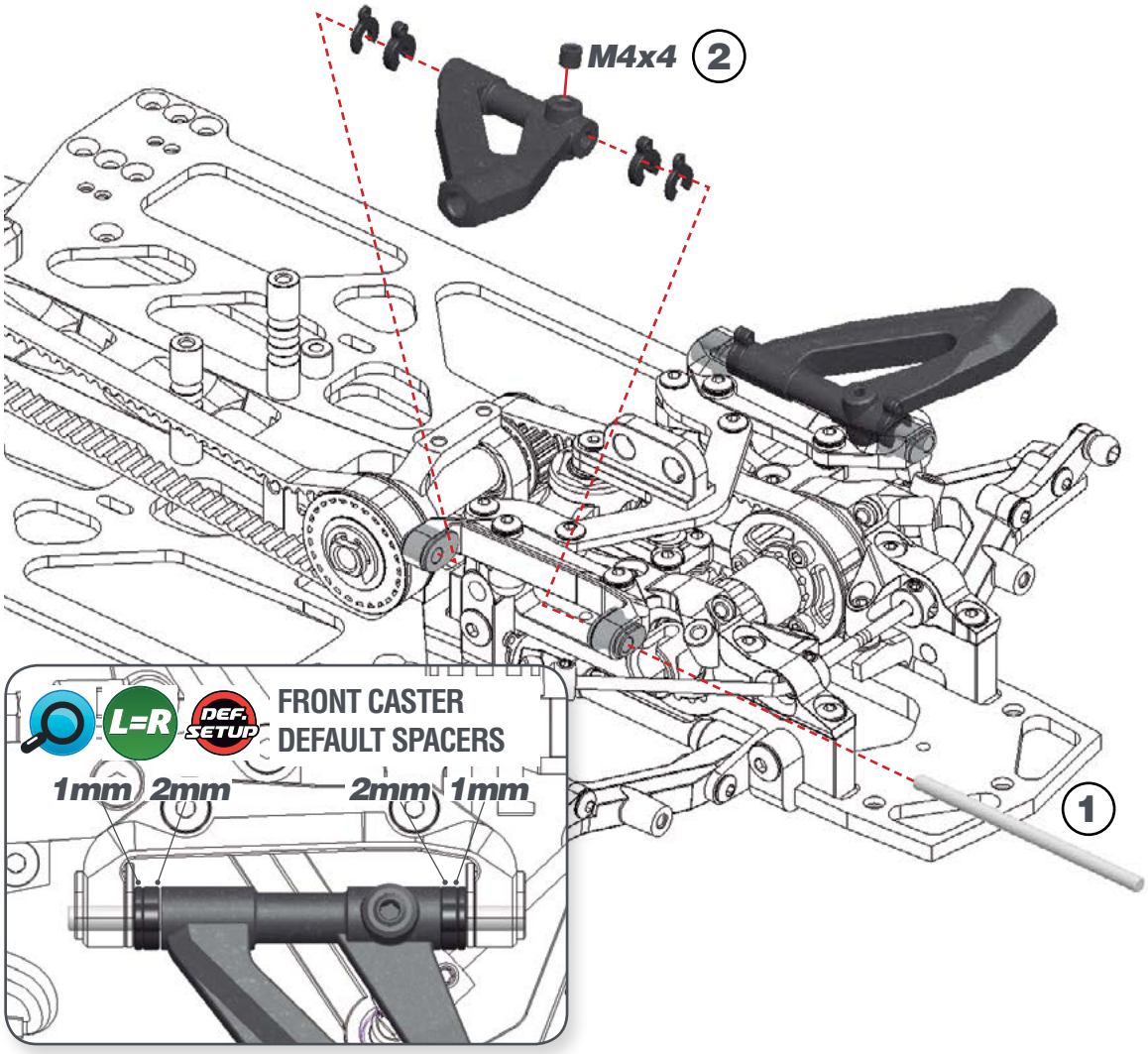
Note that the 4x6x1 and 4x6x0.5 shims must be used always. In order to rise or lower the front suspension bracket it is needed to play with the position of the shims but never remove them. Is it possible to go from "0" with no shims under the bracket to 1.5mm with both shims under the braket.





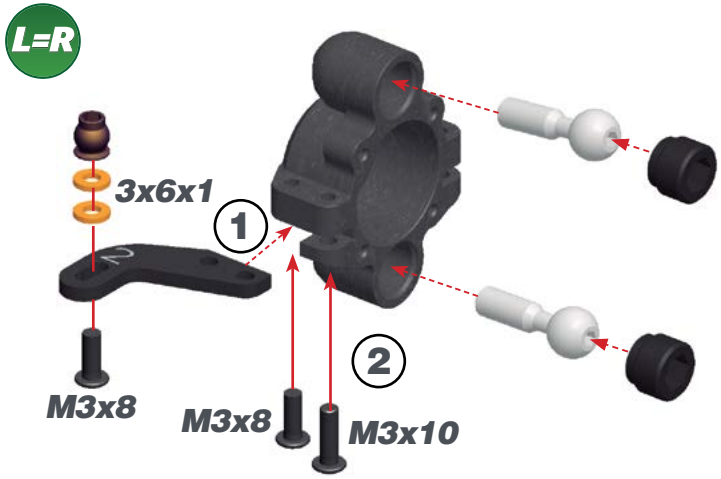


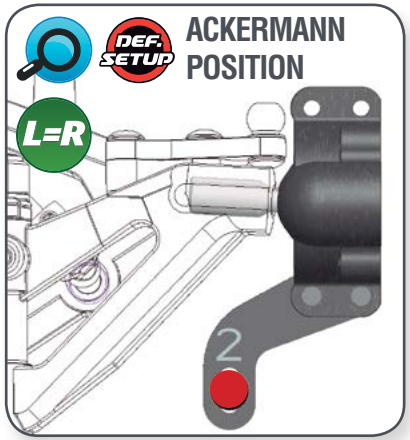
STEP 32 BAG 10



M4x4

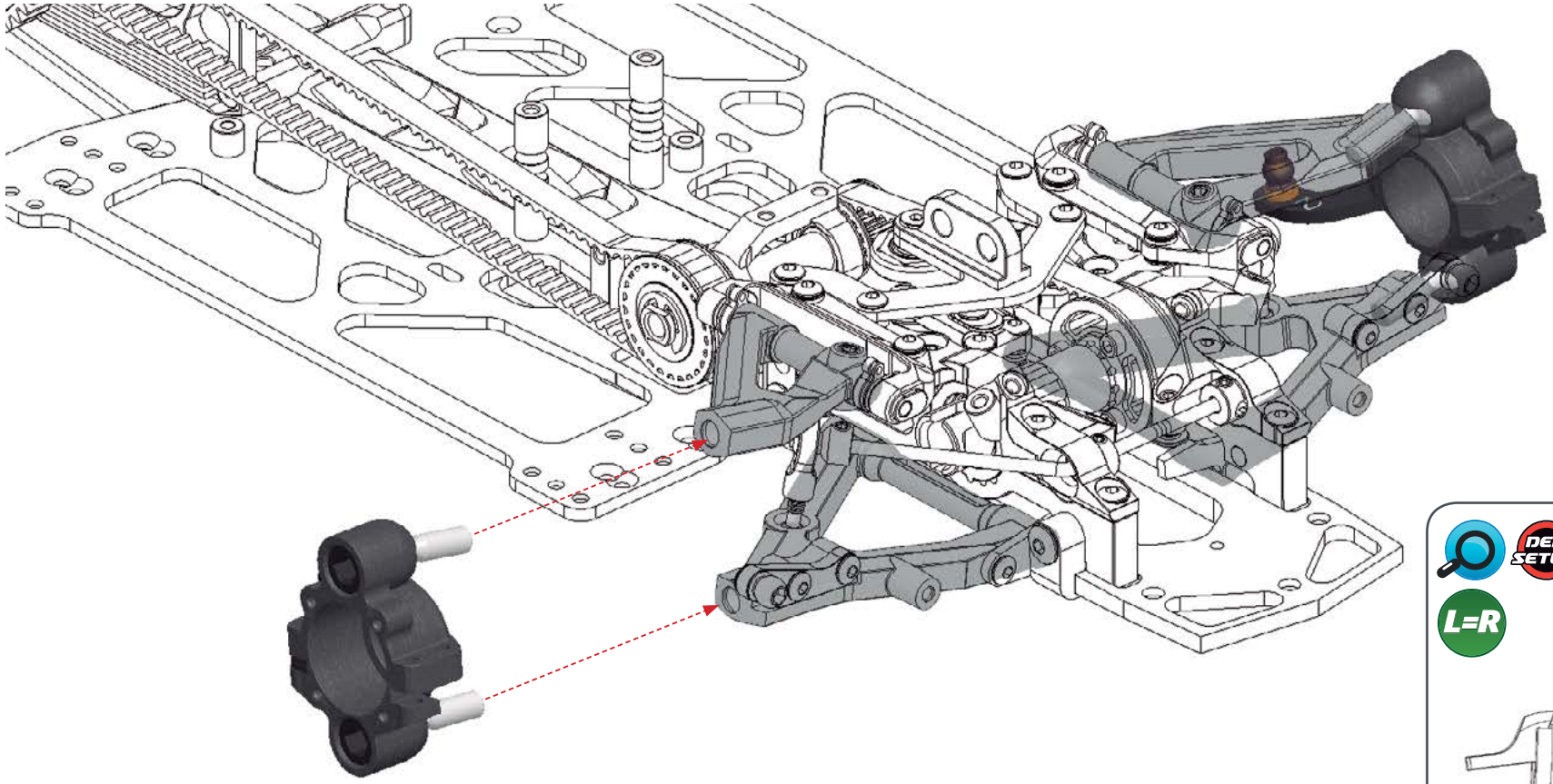
STEP 33

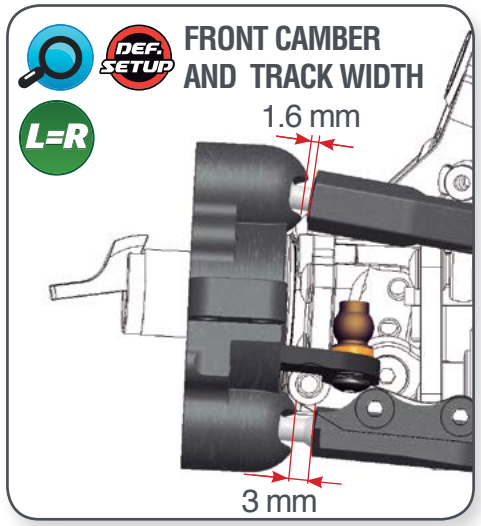




M3x8 3x6x1 M3x10

STEP 34



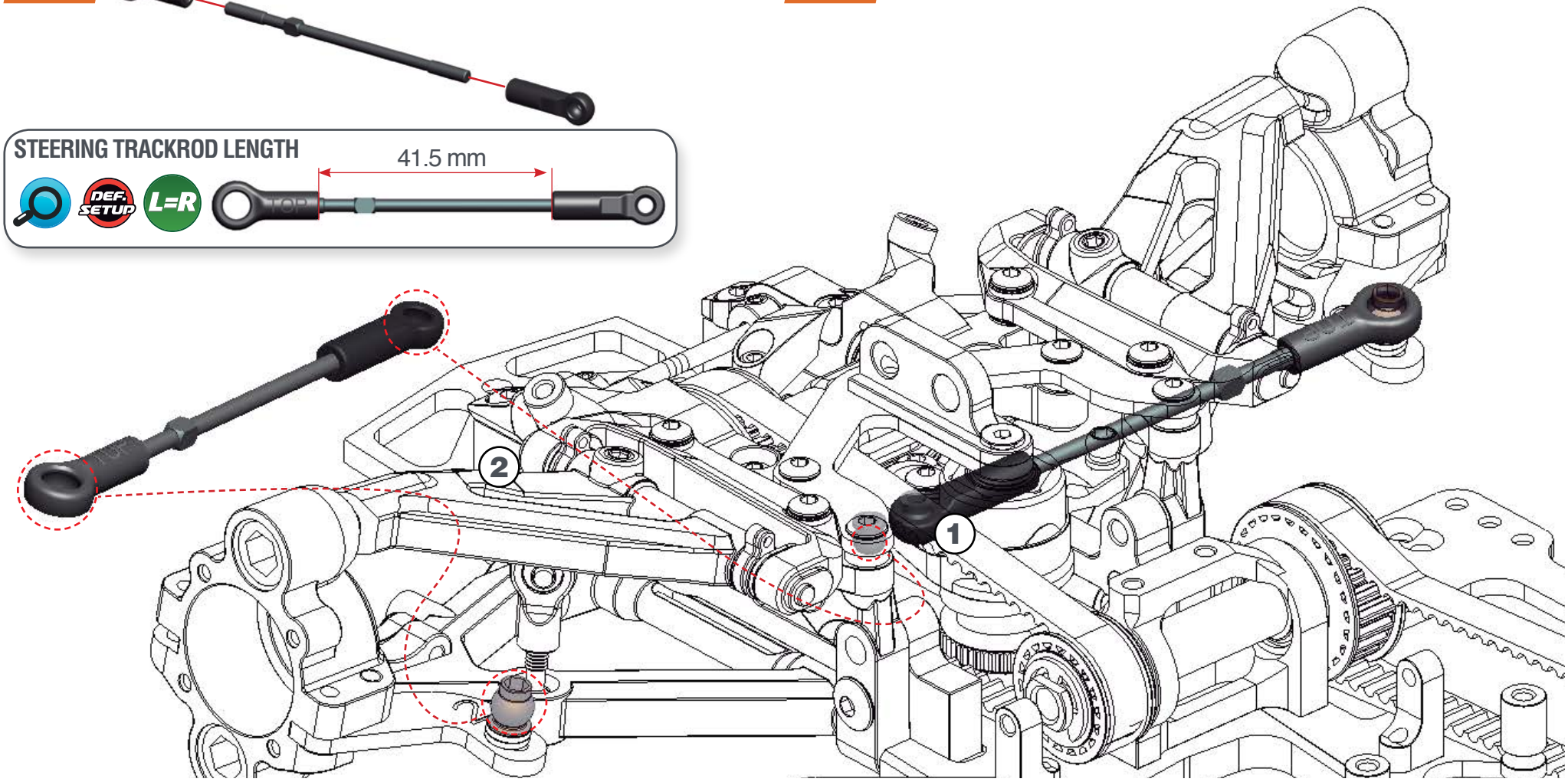


STEP 35

35.1

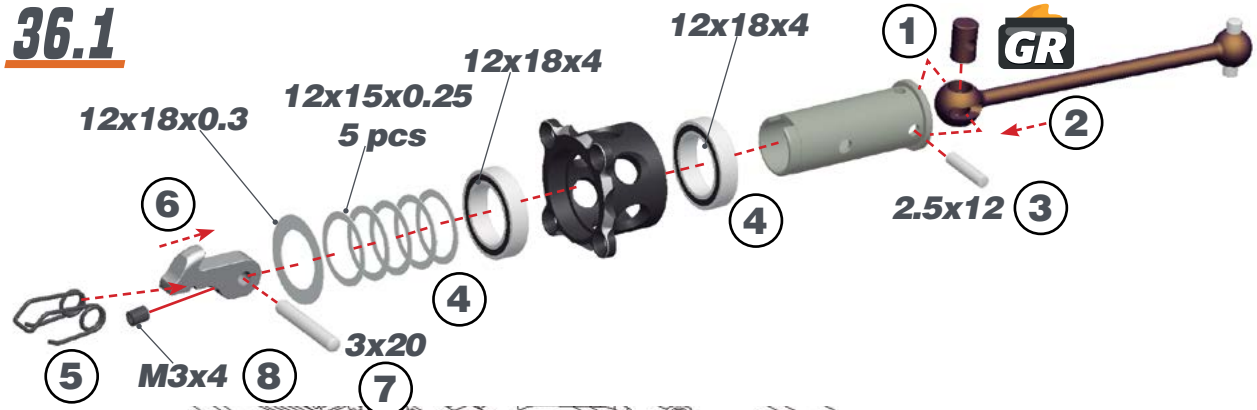
STEERING TRACKROD LENGTH

35.2

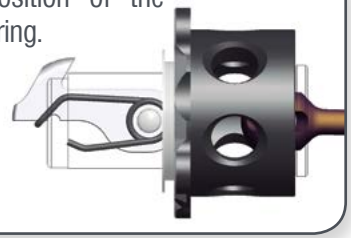


STEP 36 BAG 11

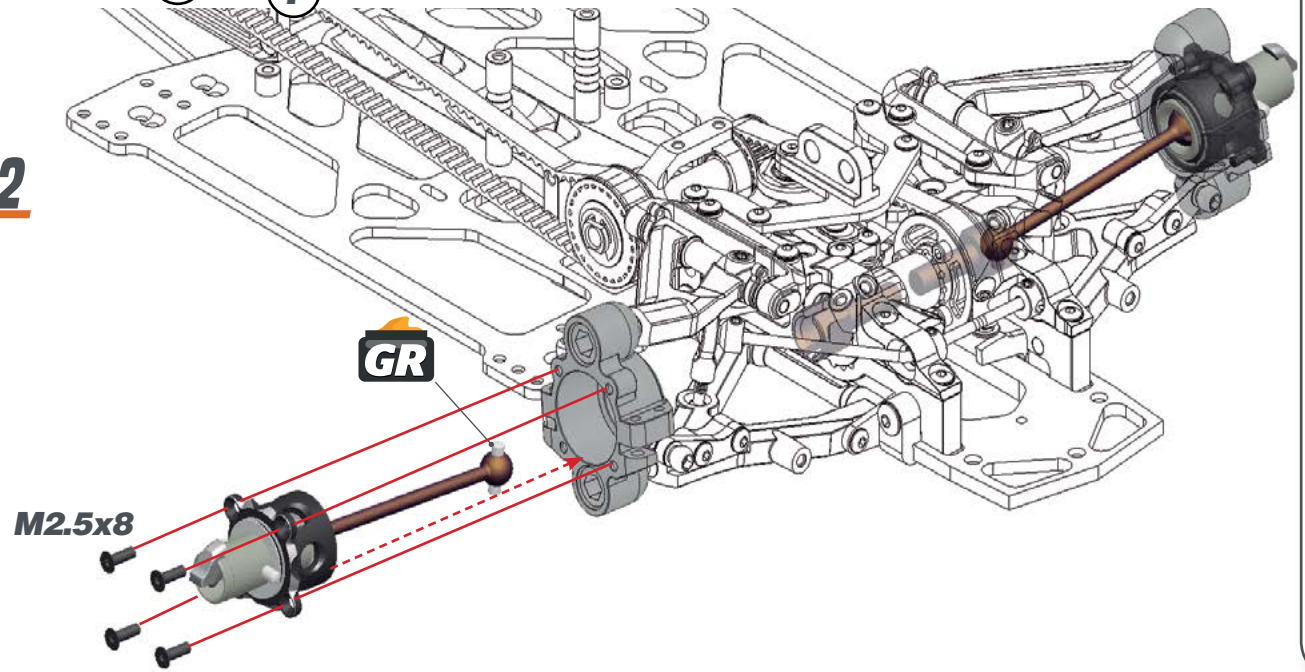
36.1



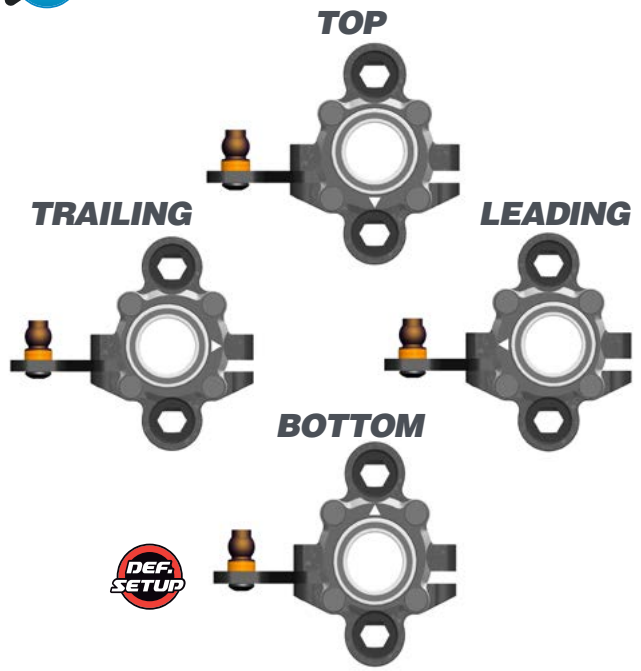
Note position of the lever spring.

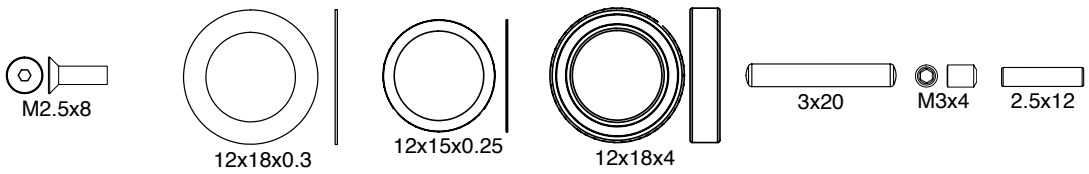


36.2



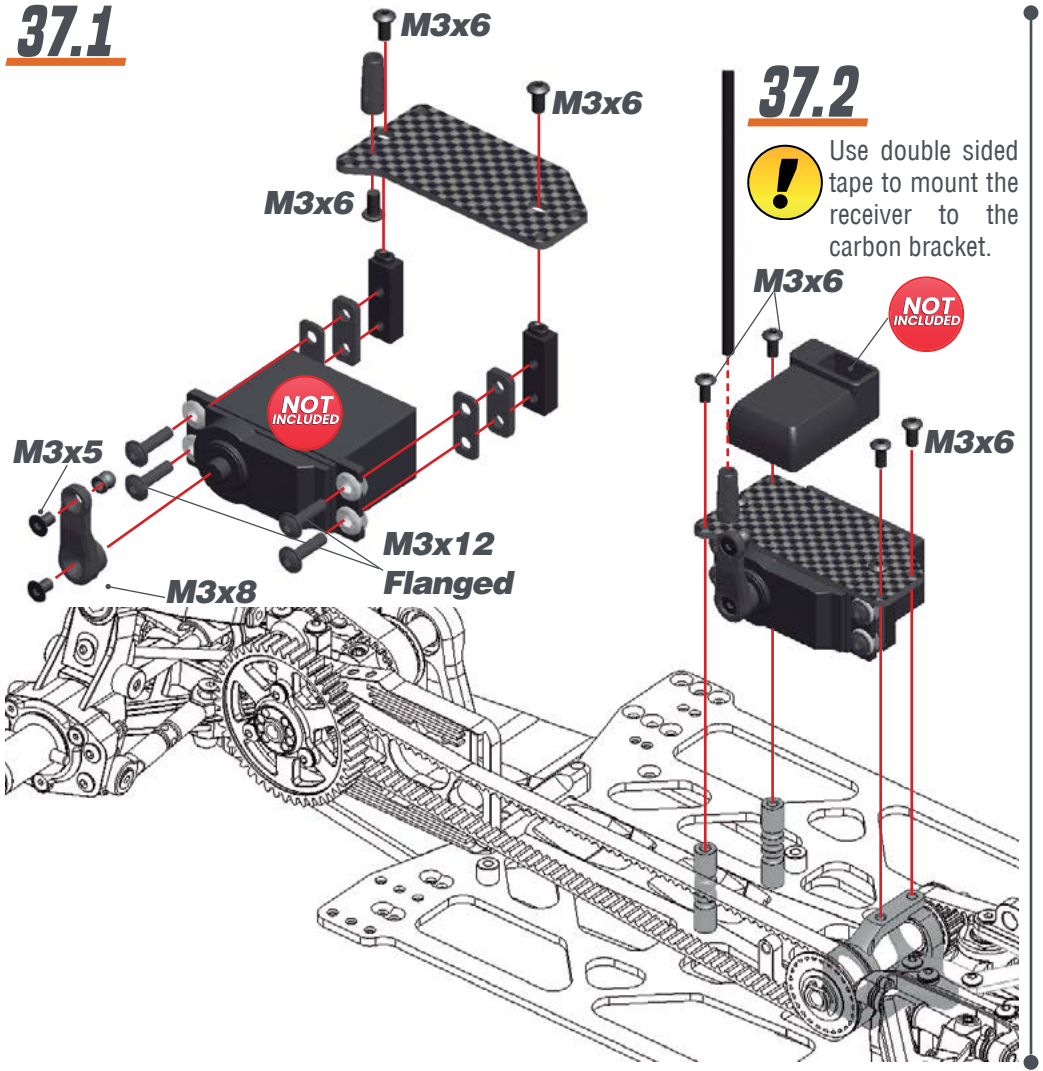
STEERING BLOCK INSERTS CHART





STEP 37 BAG 12

37.1



37.2

Use double sided tape to mount the receiver to the carbon bracket.

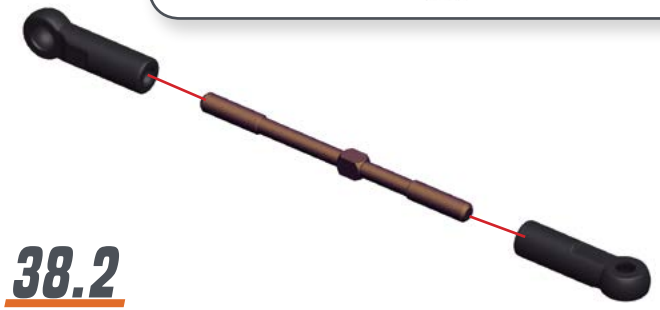
STEP 38

38.1

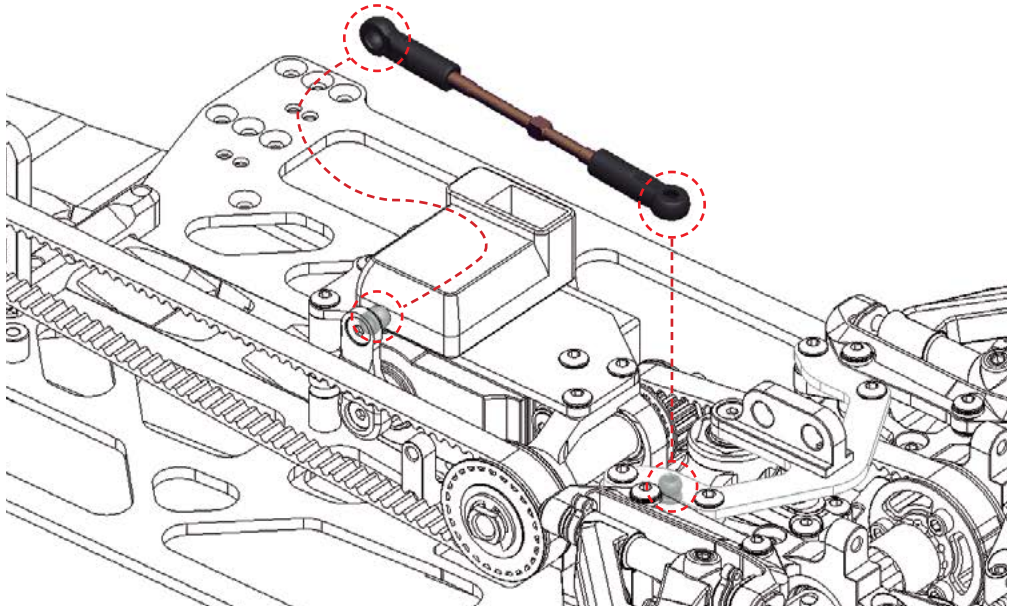
STEERING TRACKROD LENGTH

35 mm

DEF. SETUP L=R



38.2



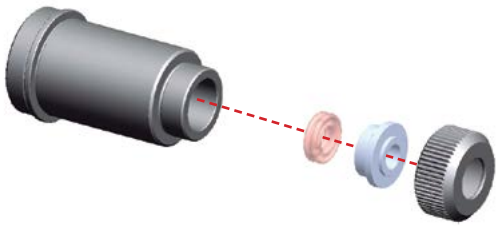
M3x12 Flanged M3x5 M3x8 M3x6

STEP 39 SHOCKS BAG

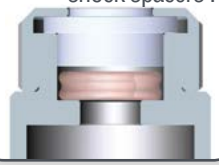
39.1

Use some silicone oil during the assembly.

SO

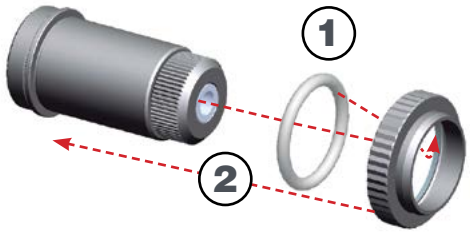


Note the correct orientation of the shock spacers .



39.2

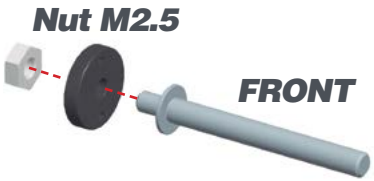
Insert the o-ring inside the spring collar.



Note the correct position of the o-ring .

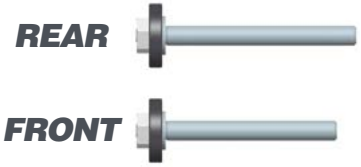
STEP 40

40.1



For the correct piston holes please check the default setupsheet.

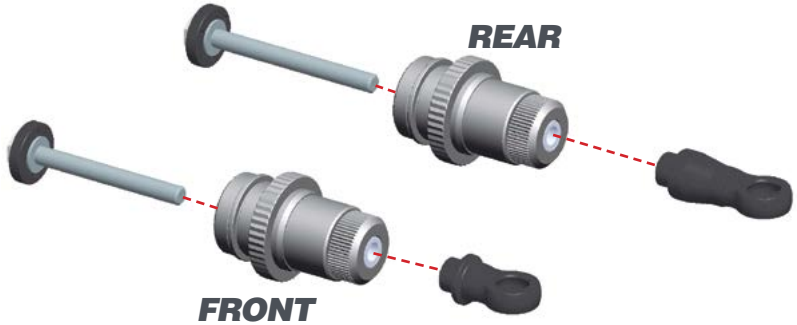
Use the shorter shock shaft in the front and the longer one in the rear shock absorber.



40.2

SO

Use some silicone oil during the assembly.



Nut M2.5

STEP 41

41.1

Push the shock top and the membrane into the shock cap.

41.2

1- Fill up with sillicone oil fully using the silicone oil supplied in the kit. For the correct cst value please check the default setupsheet.

2- Extend the shockrod fully

3- Move the shockrod slowly up and down to let ALL air bubbles escape.

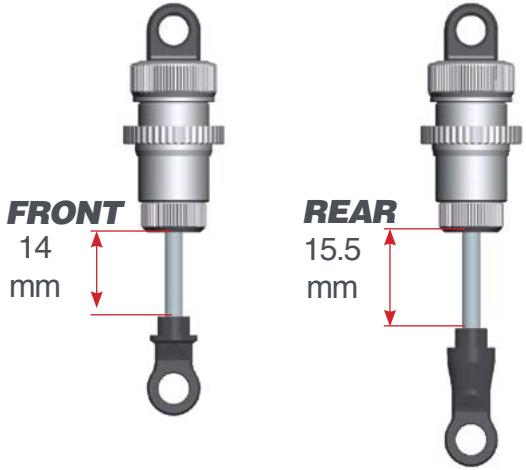
4- Close top only 3/4.

41.3

1-Bleed: push the shockrod all the way in slowly, to allow excessive oil to escape.

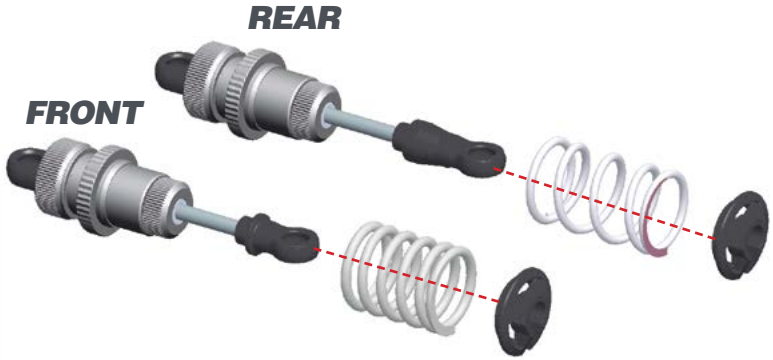
2- Close the shock cap completely.

SHOCKS LENGTH: Measure the shock length fully extended.

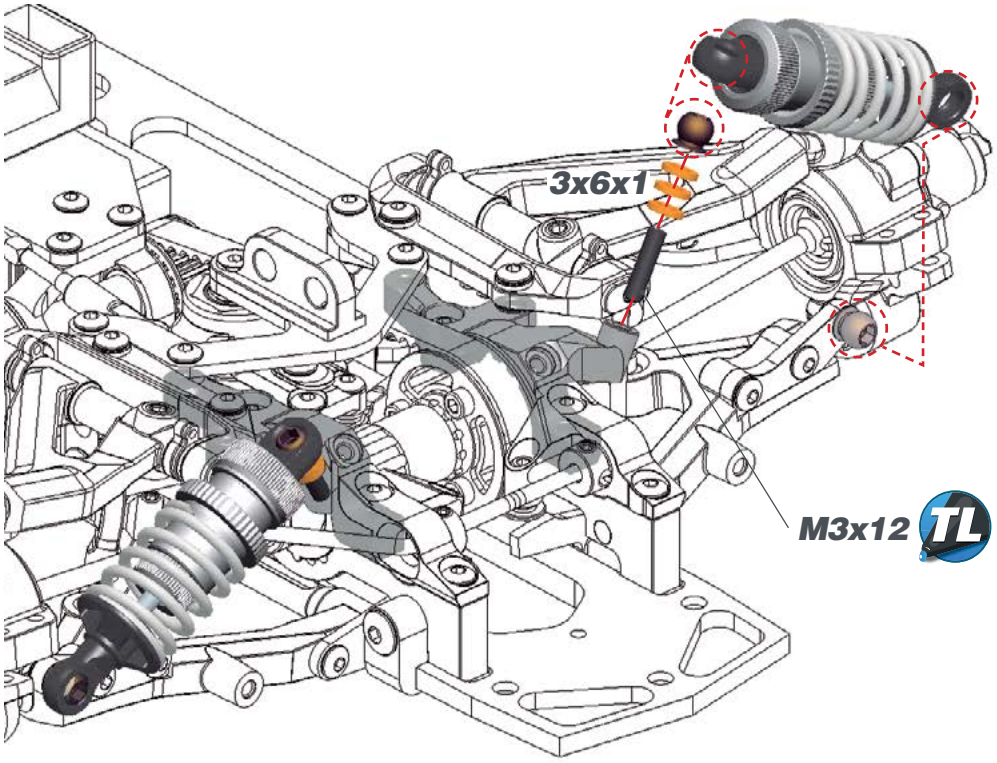


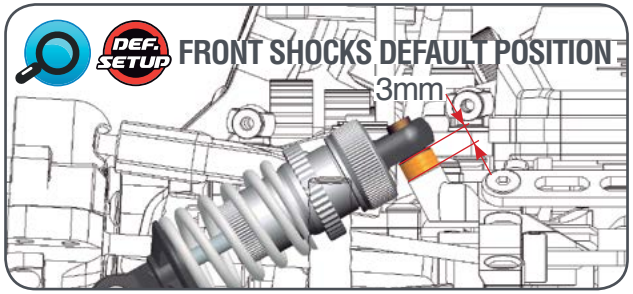
STEP 42

Assemble the spring and spring-cup (align correctly) to complete the shock.



STEP 43 BAG 13

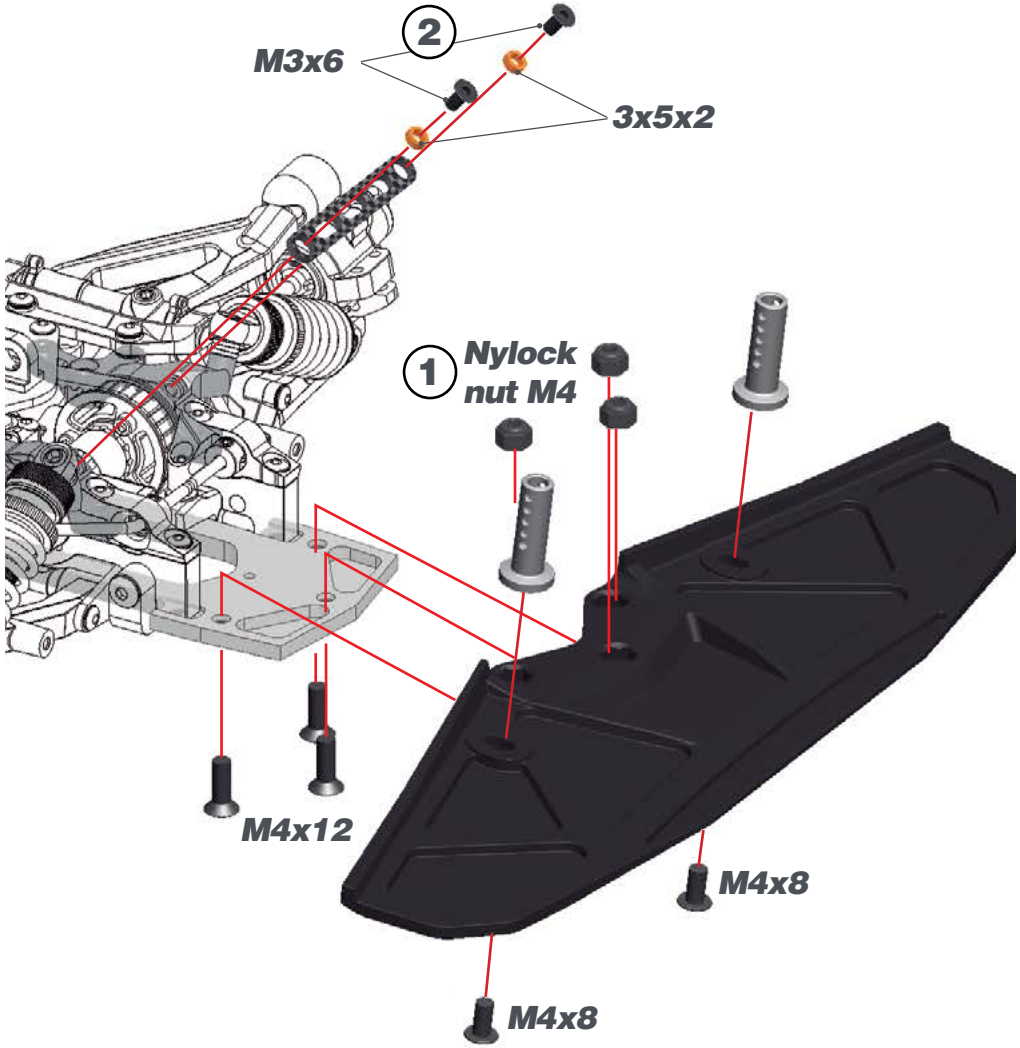




M3x12

3x6x1

STEP 44



M3x6

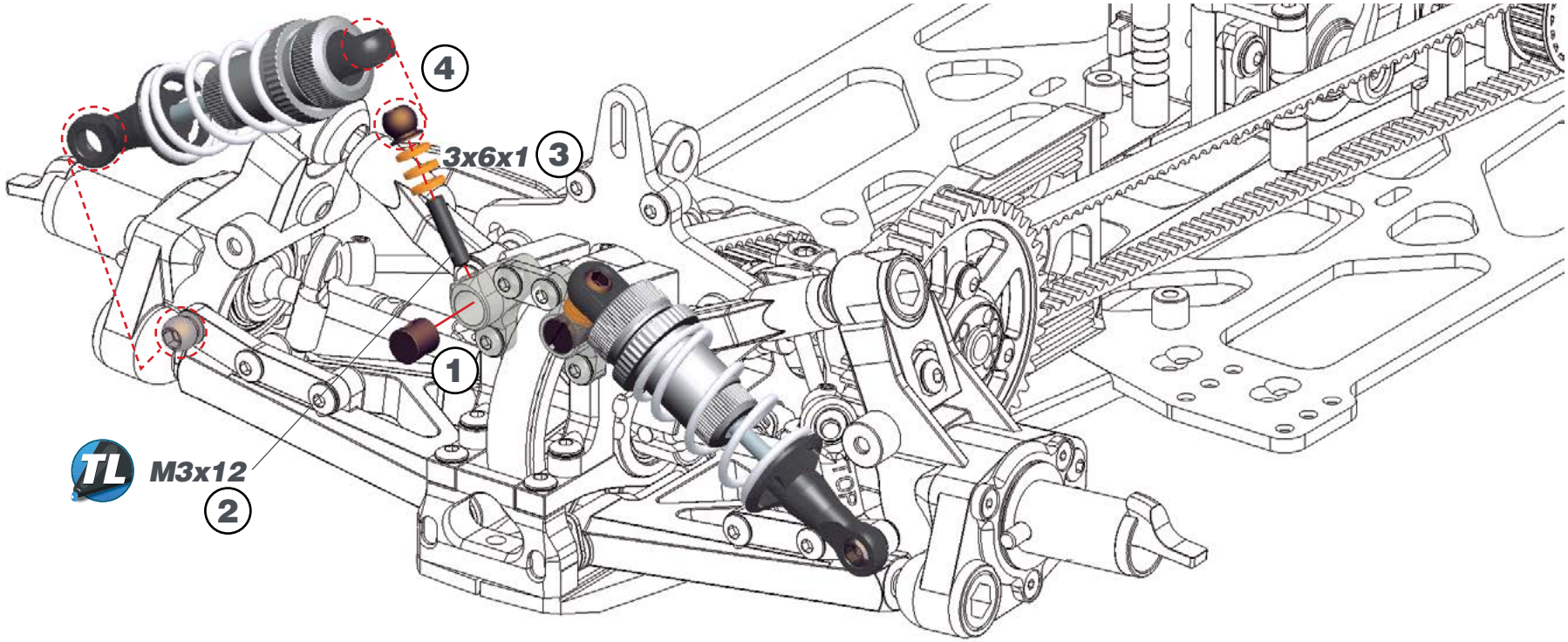
3x5x2

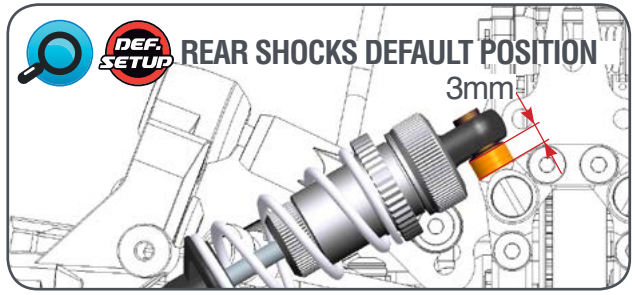
M4x12

Nylock Nut M4

M4x8

STEP 45

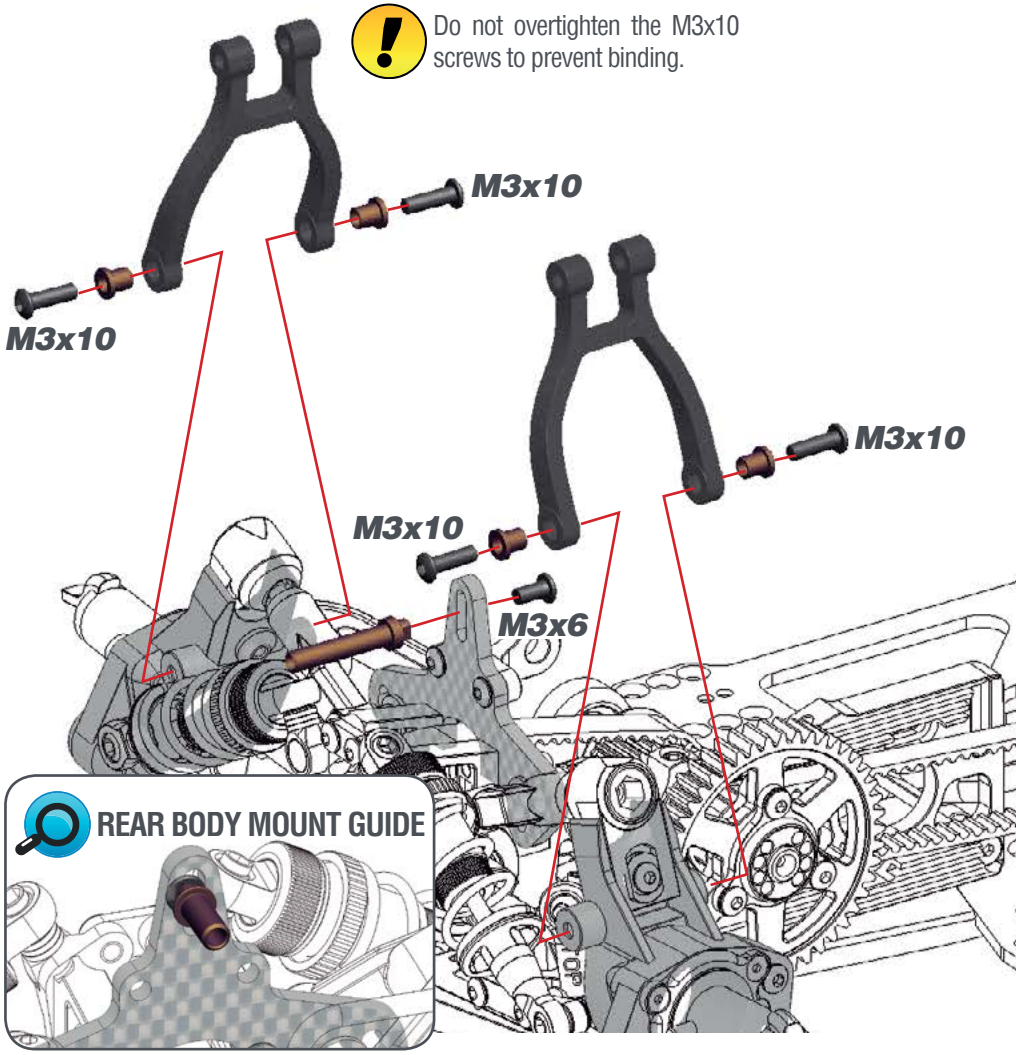

4
3x6x1
3
1
TL
M3x12
2


DEF. SETUP
REAR SHOCKS DEFAULT POSITION
3mm

M3x12
3x6x1

STEP 46 BAG 14

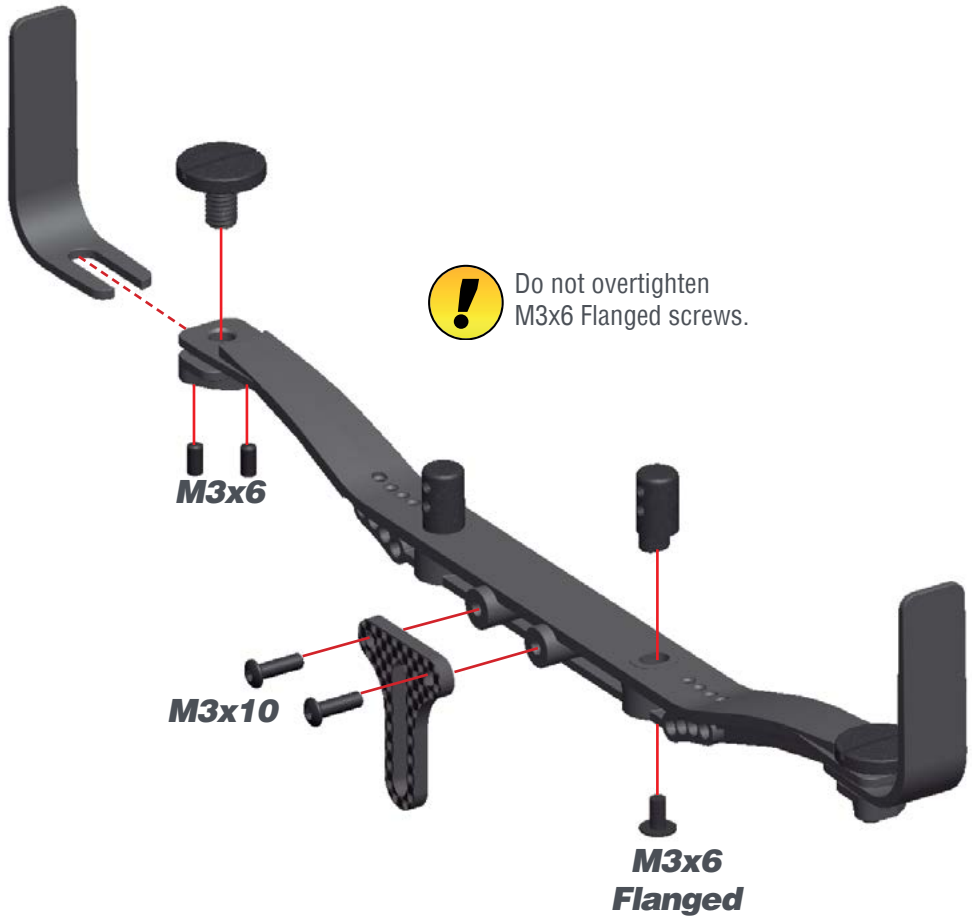
Do not overtighten the M3x10 screws to prevent binding.



M3x10 M3x6

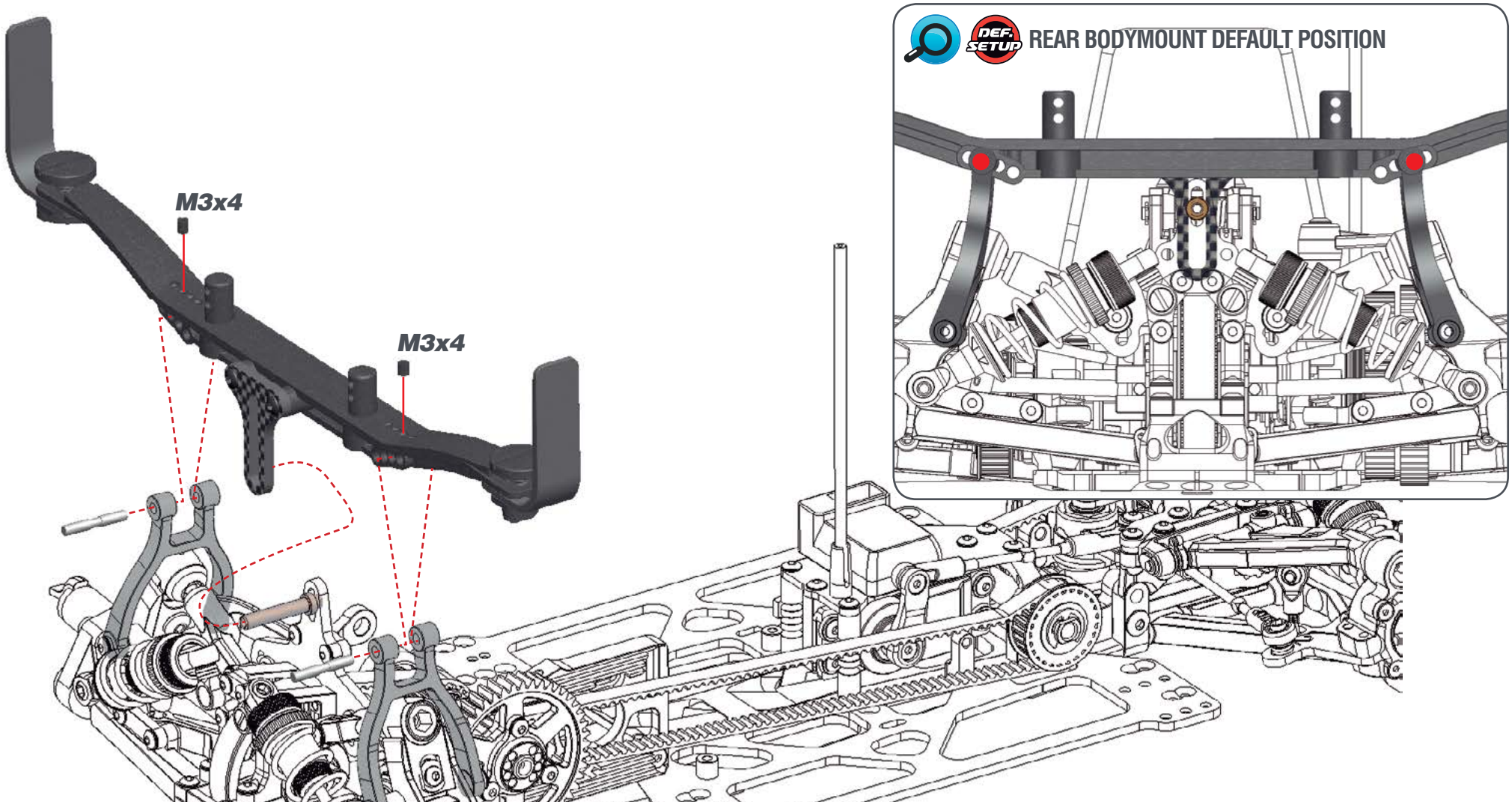
STEP 47

Do not overtighten M3x6 Flanged screws.



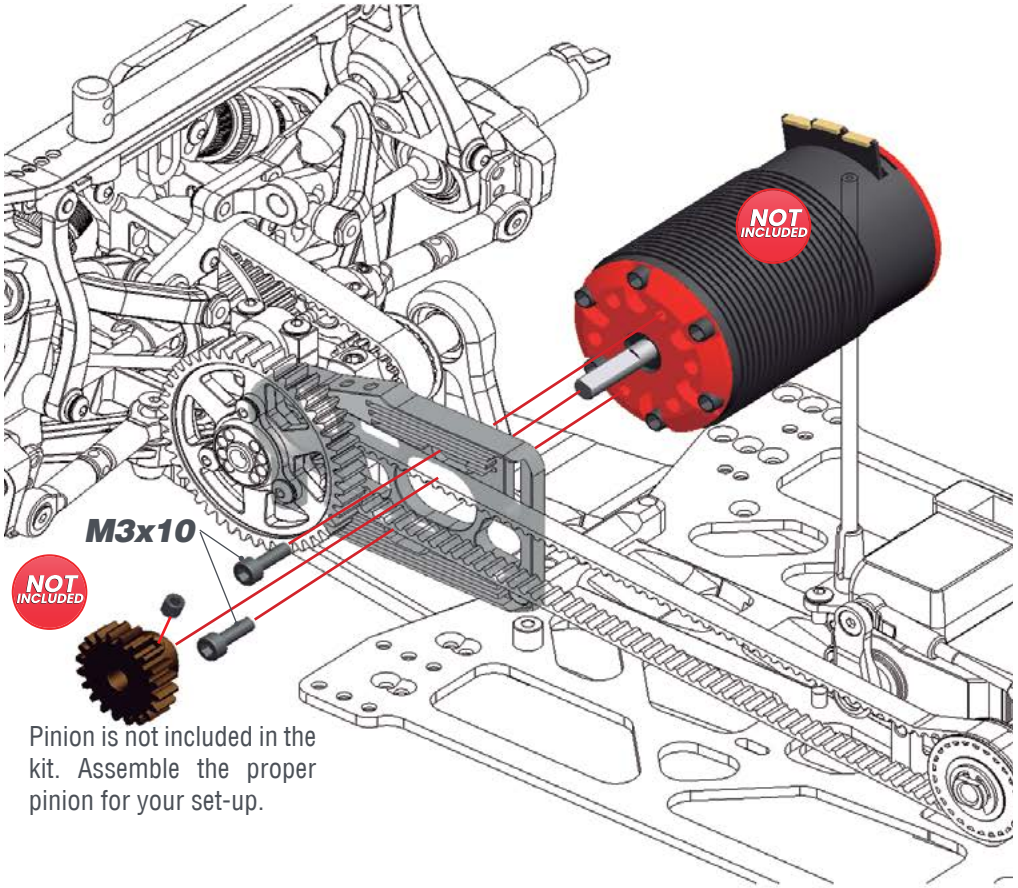
M3x6 M3x10 M3x6 Flanged

STEP 48



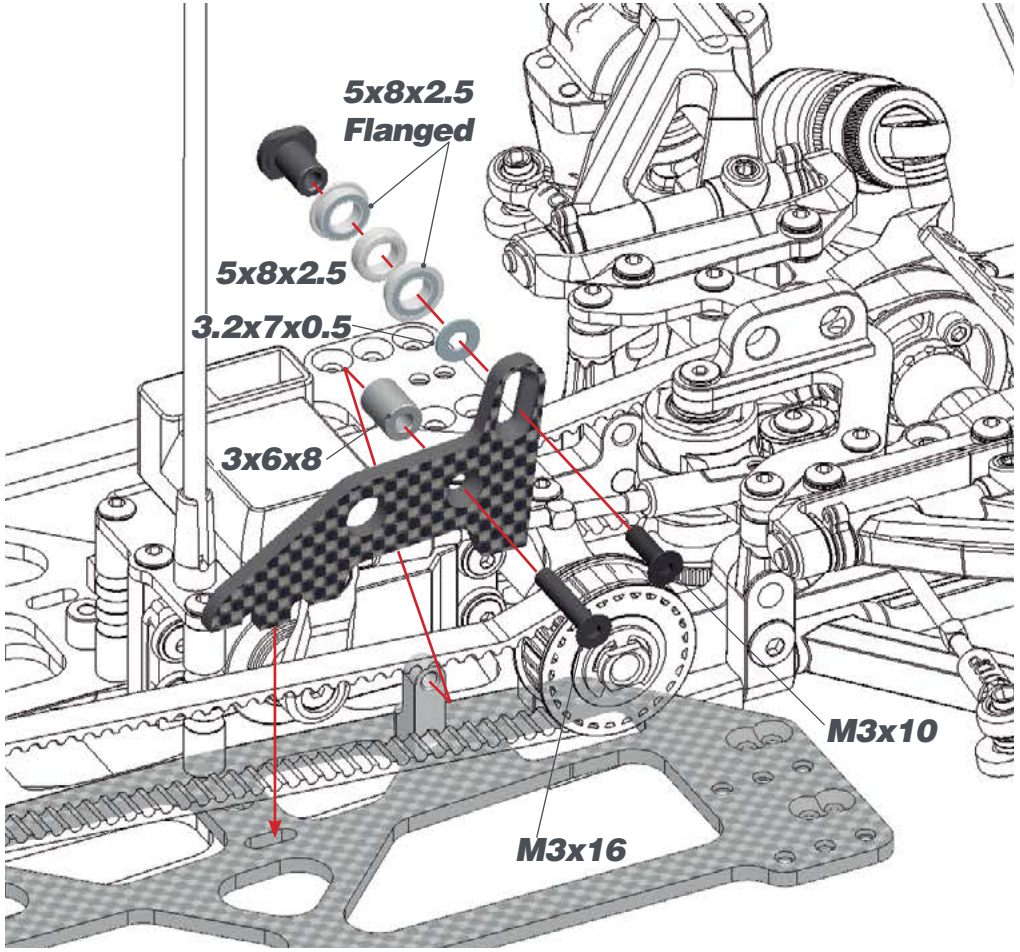
M3x4

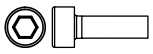
STEP 49 BAG 14



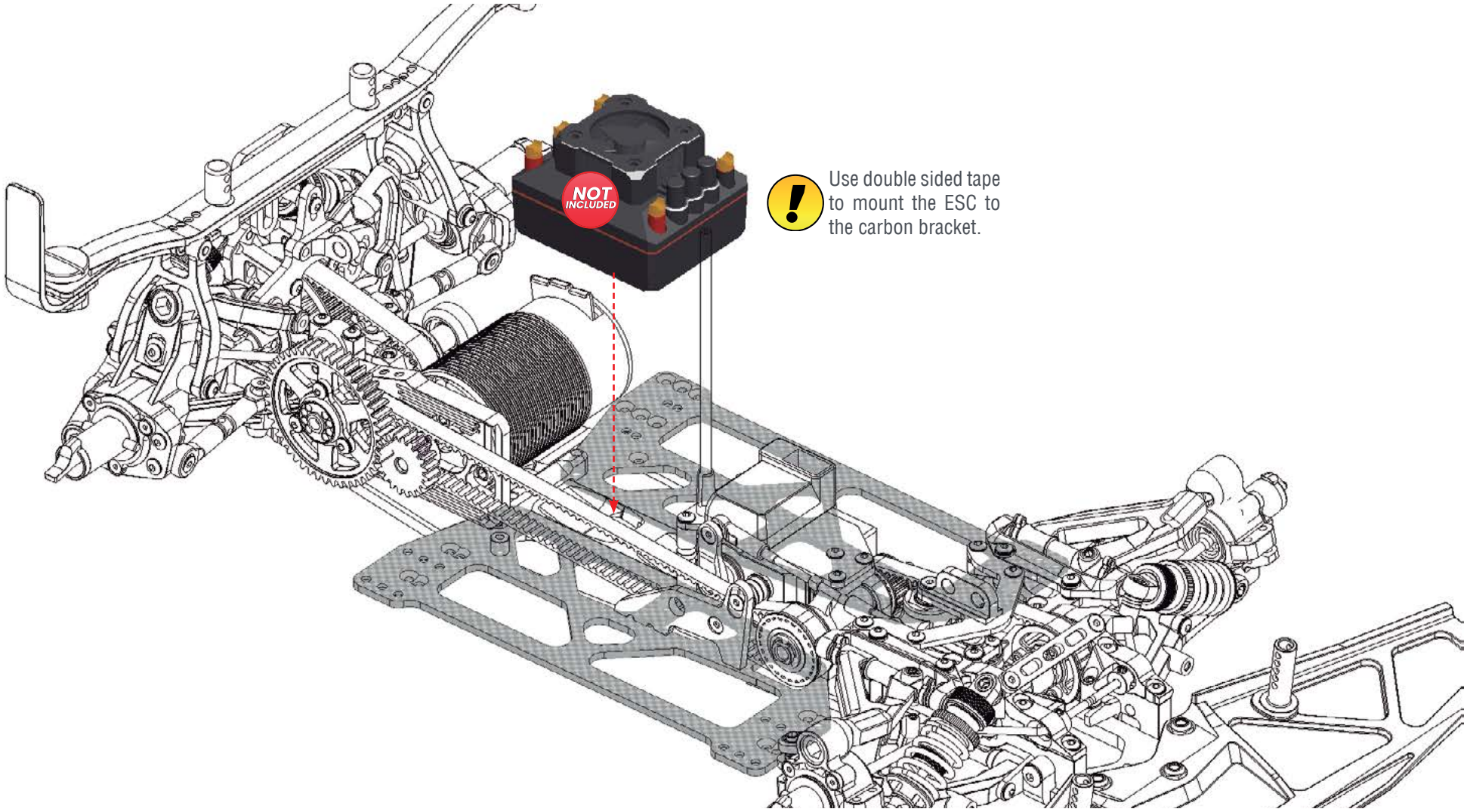
Pinion is not included in the kit. Assemble the proper pinion for your set-up.

STEP 50



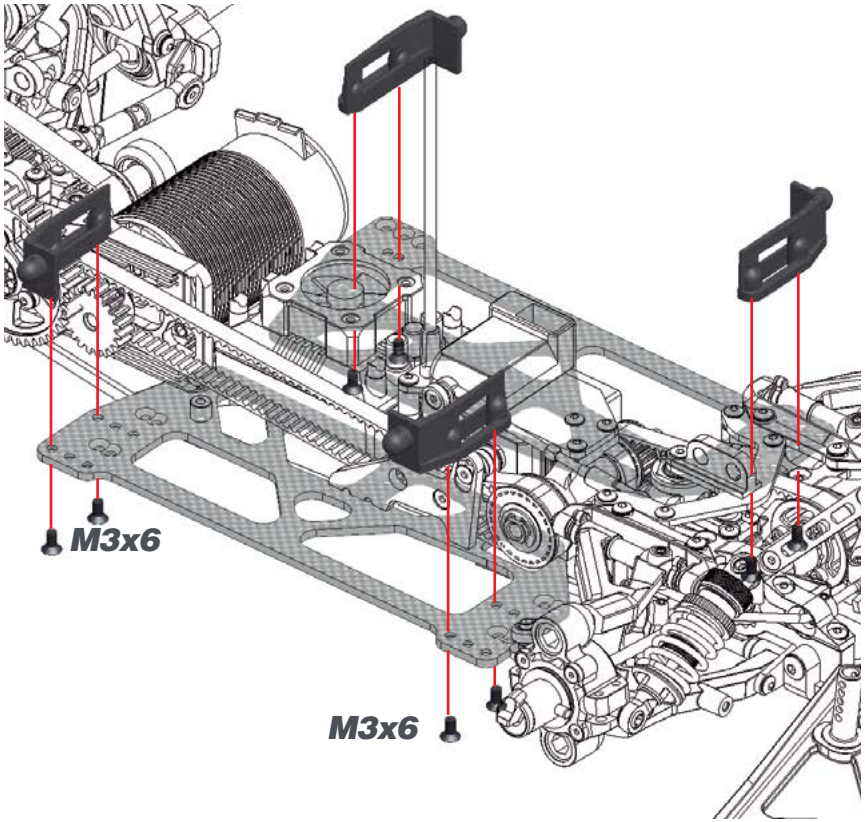

M3x10

STEP 51

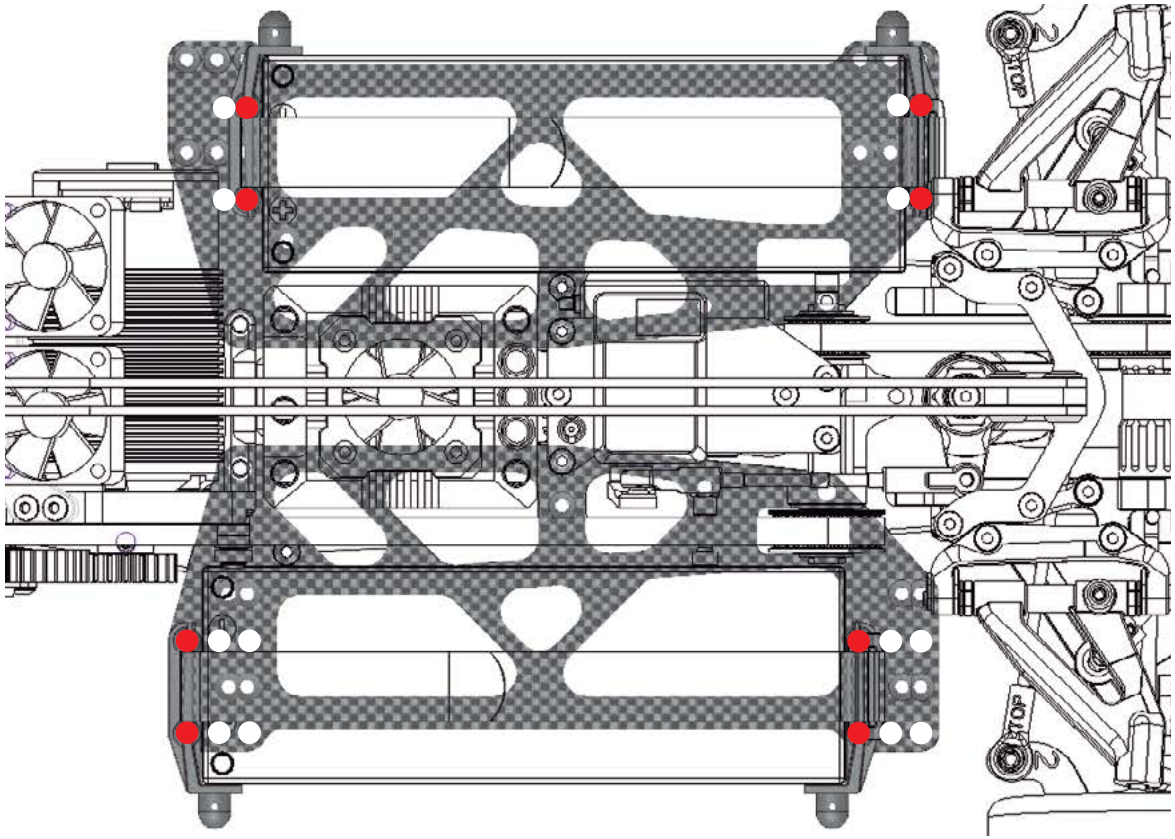


Use double sided tape to mount the ESC to the carbon bracket.

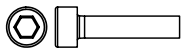
STEP 52



- Right and left batteries are not symmetrically placed.
- The default position of the battery brackets in order to have a proper weight balance of the whole car is the showed by the red dots in the picture.
- It is possible to change the weight balance by moving the batteries more forward (more understeer) or more rearward (less understeer). The rearward position of the left side battery is not available with all pinion/spur combination

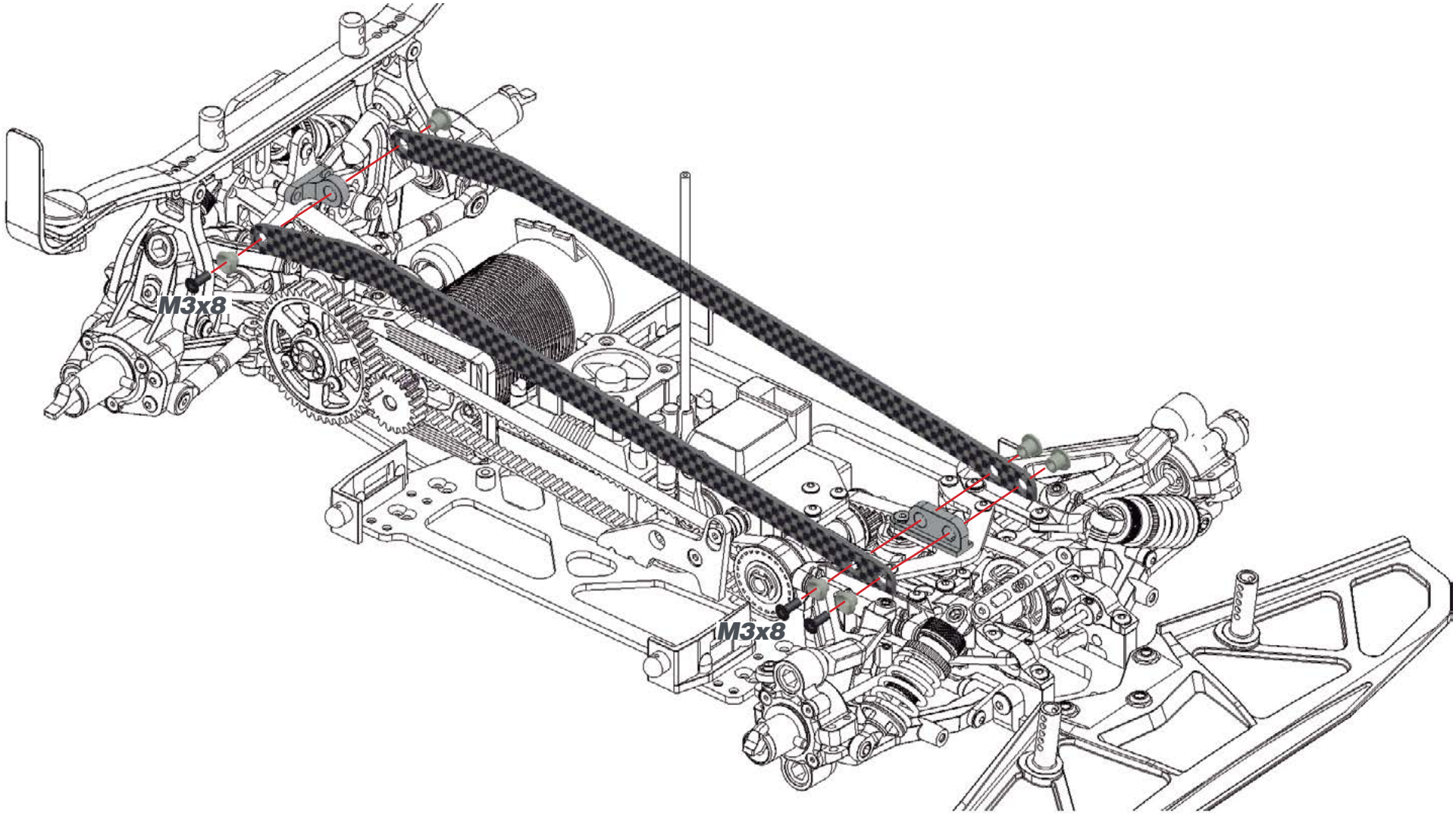


M3x6

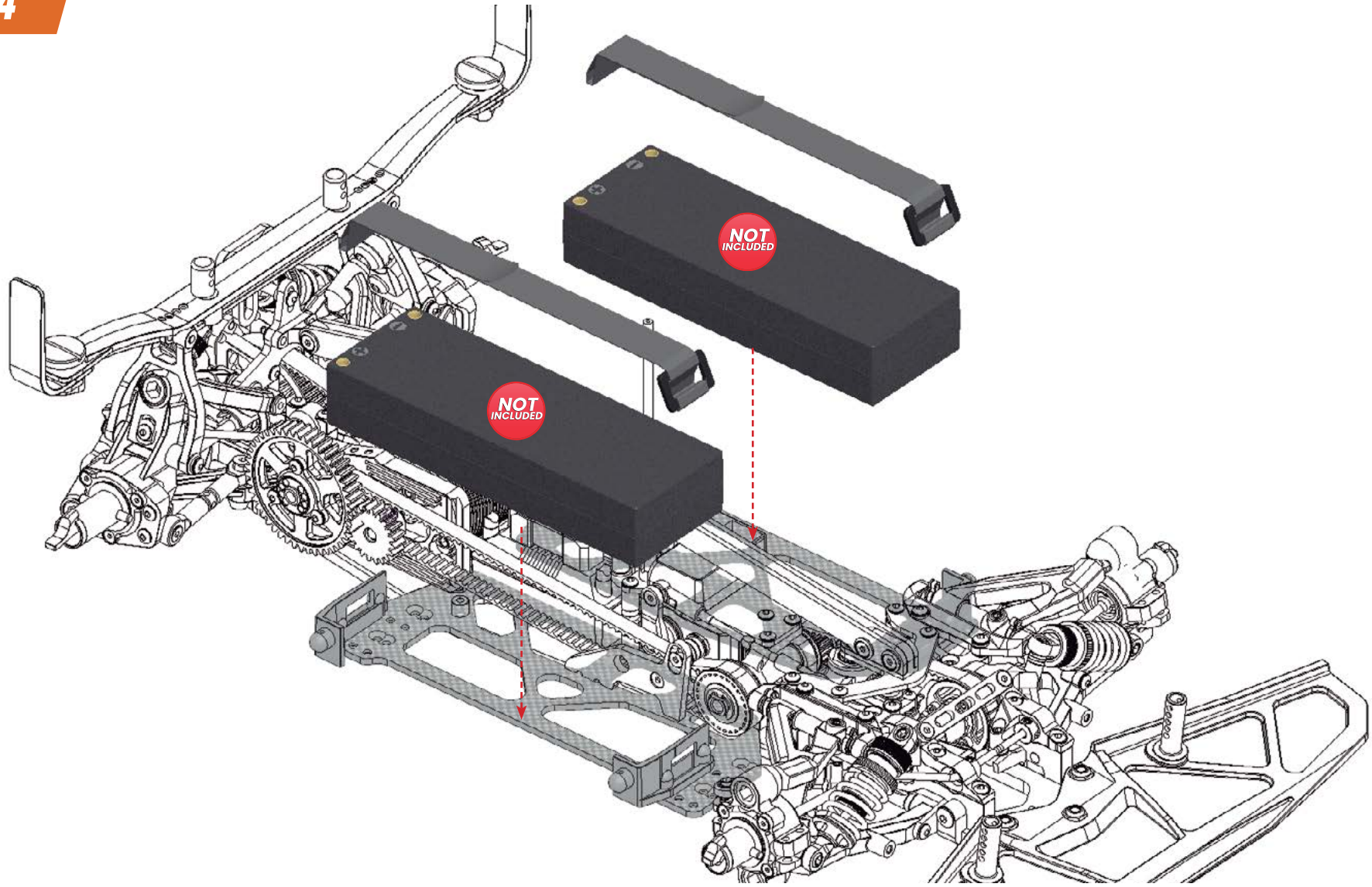

M3x14

Nut M3

STEP 53

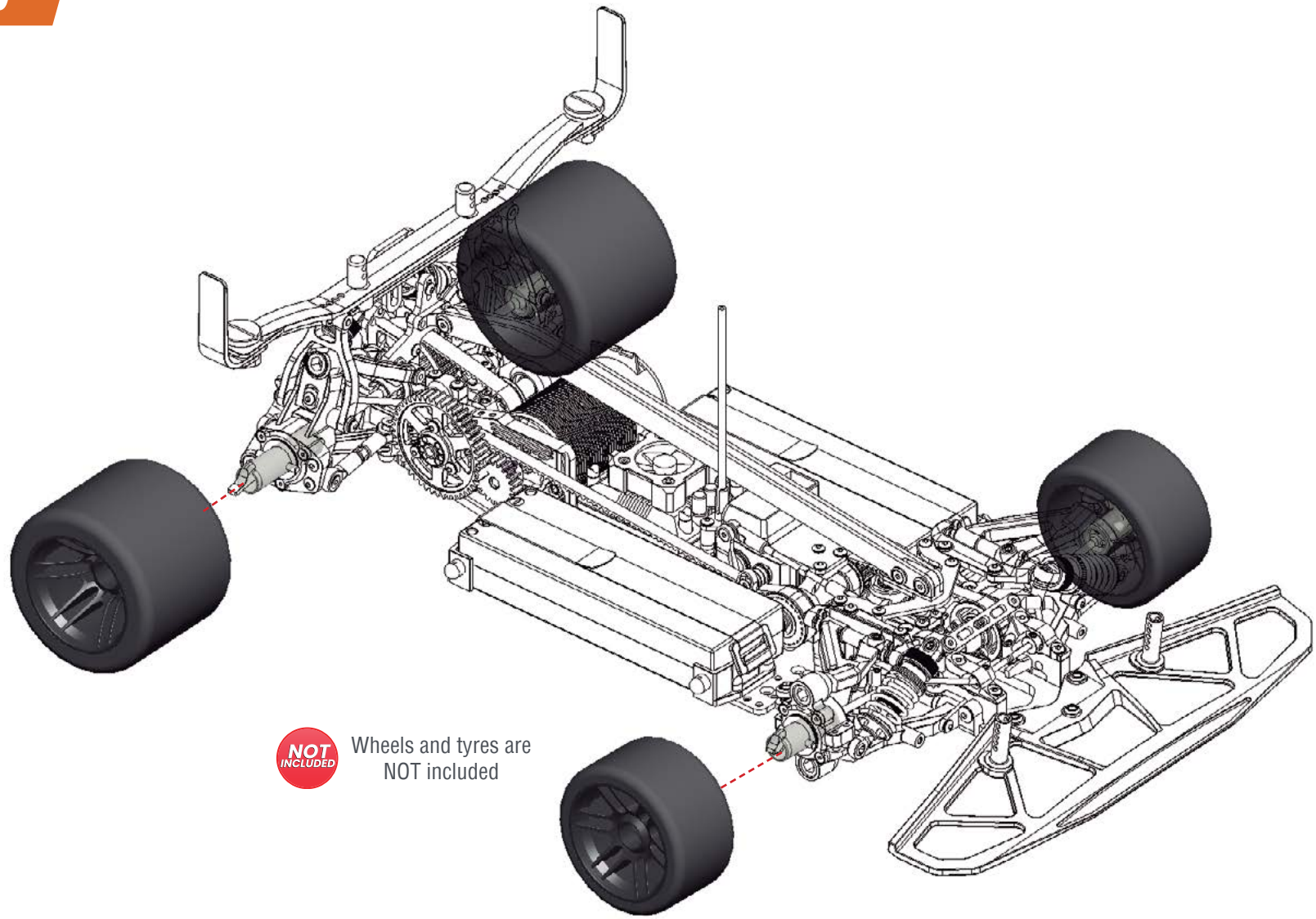


STEP 54



M3x8

STEP 55



NOT INCLUDED

Wheels and tyres are NOT included

INDEX

SHOCKS EXPLODED VIEW	43
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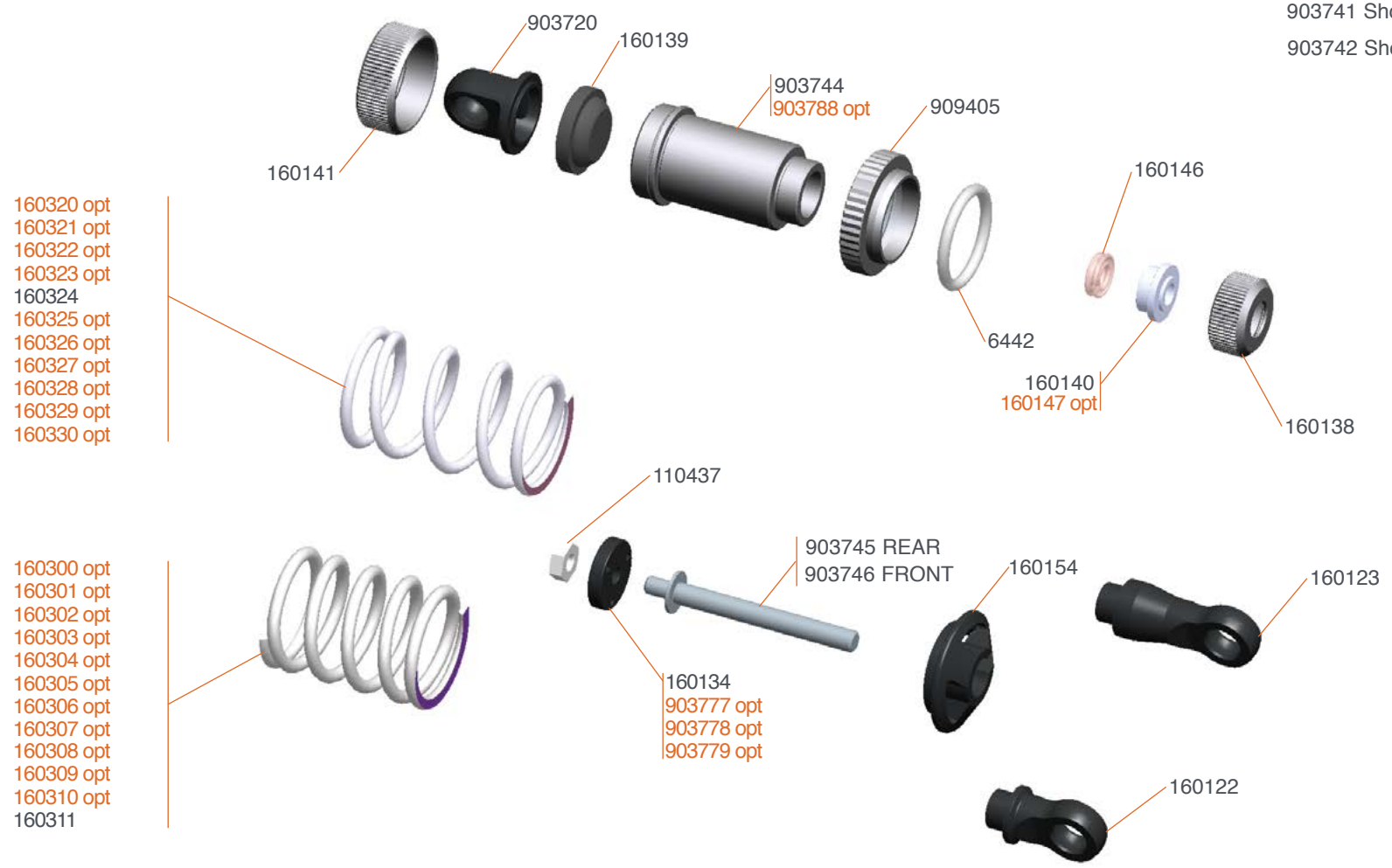
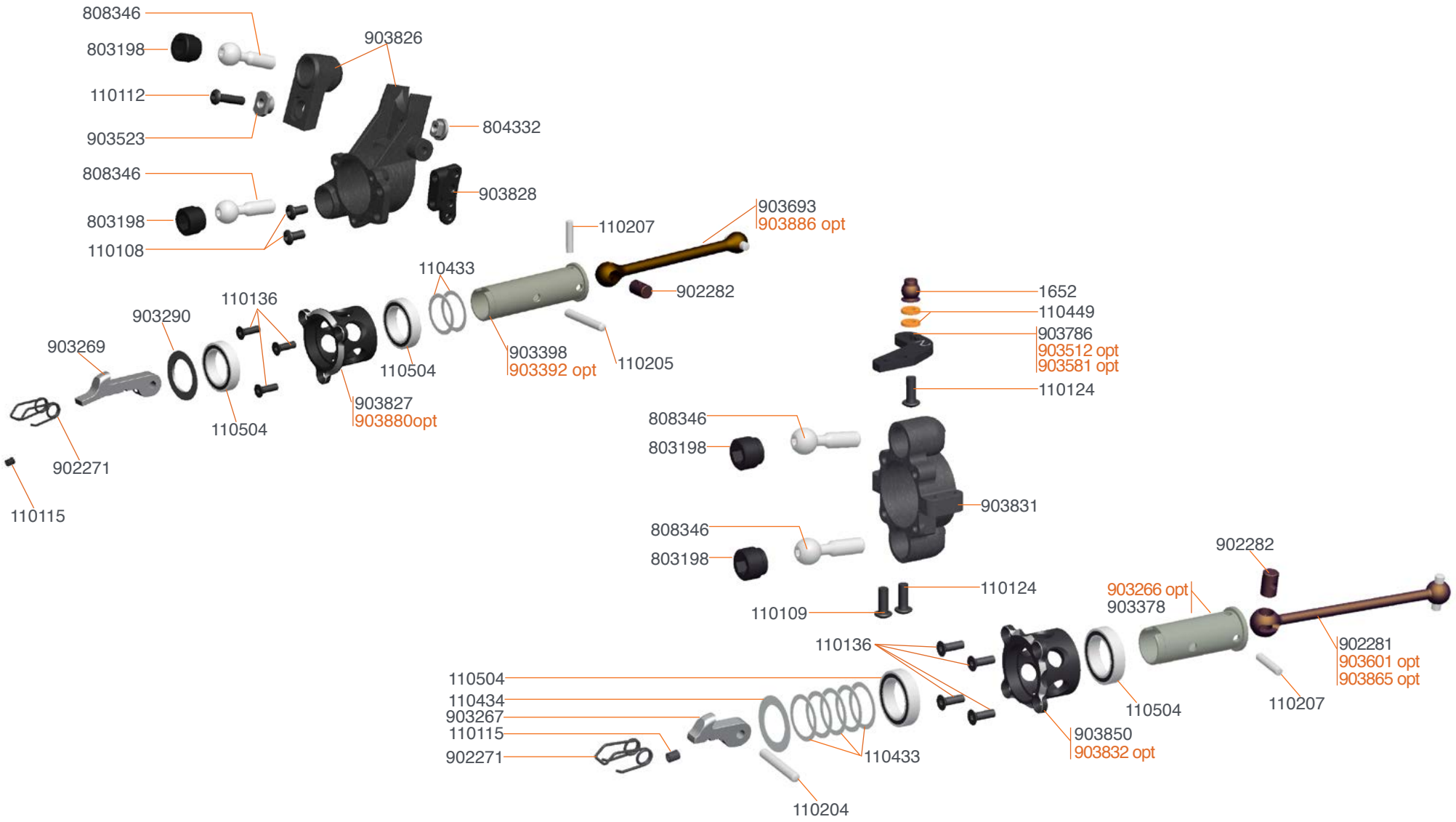
903741 Shockset XLV short (2)
903742 Shockset XLV long (2)



160147 Shock onroad big bore bushing LF (4)
160300 Spring white L23 (2.3/13) (2)
160301 Spring yellow L23 (2.8/16) (2)
160302 Spring orange L23 (3.4/19.5) (2)
160303 Spring red L23 (4.1/23.5) (2)
160304 Spring pink L23 (4.0/28) (2)
160305 Spring blue L23 (5.8/33) (2)
160306 Spring purple L23 (6.8/39) (2)
160307 Spring green L23 (8/45.5) (2)
160308 Spring grey L23 (9/51.5) (2)
160309 Spring black L23 (10/57) (2)
160310 Spring-set short (5x2)
160320 Spring white L27 (2.3/13) (2)
160321 Spring yellow L27 (2.8/16) (2)
160322 Spring orange L27 (3.4/19.5) (2)
160323 Spring red L27 (4.1/23.5) (2)
160325 Spring blue L27 (5.8/33) (2)
160326 Spring purple L27 (6.8/39) (2)
160327 Spring green L27 (8/45.5) (2)
160328 Spring grey L27 (9/51.5) (2)
160329 Spring black L27 (10/57) (2)
160330 Spring-set L27 (5x2)
903777 Shock piston XLV 1 hole (4)
903778 Shock piston XLV 2 hole (4)
903779 Shock piston XLV 3 hole (4)
903780 Heave demper set rear
903781 Heave demper set front
903788 Shockbody XLV short NiCoated (2)

OPT

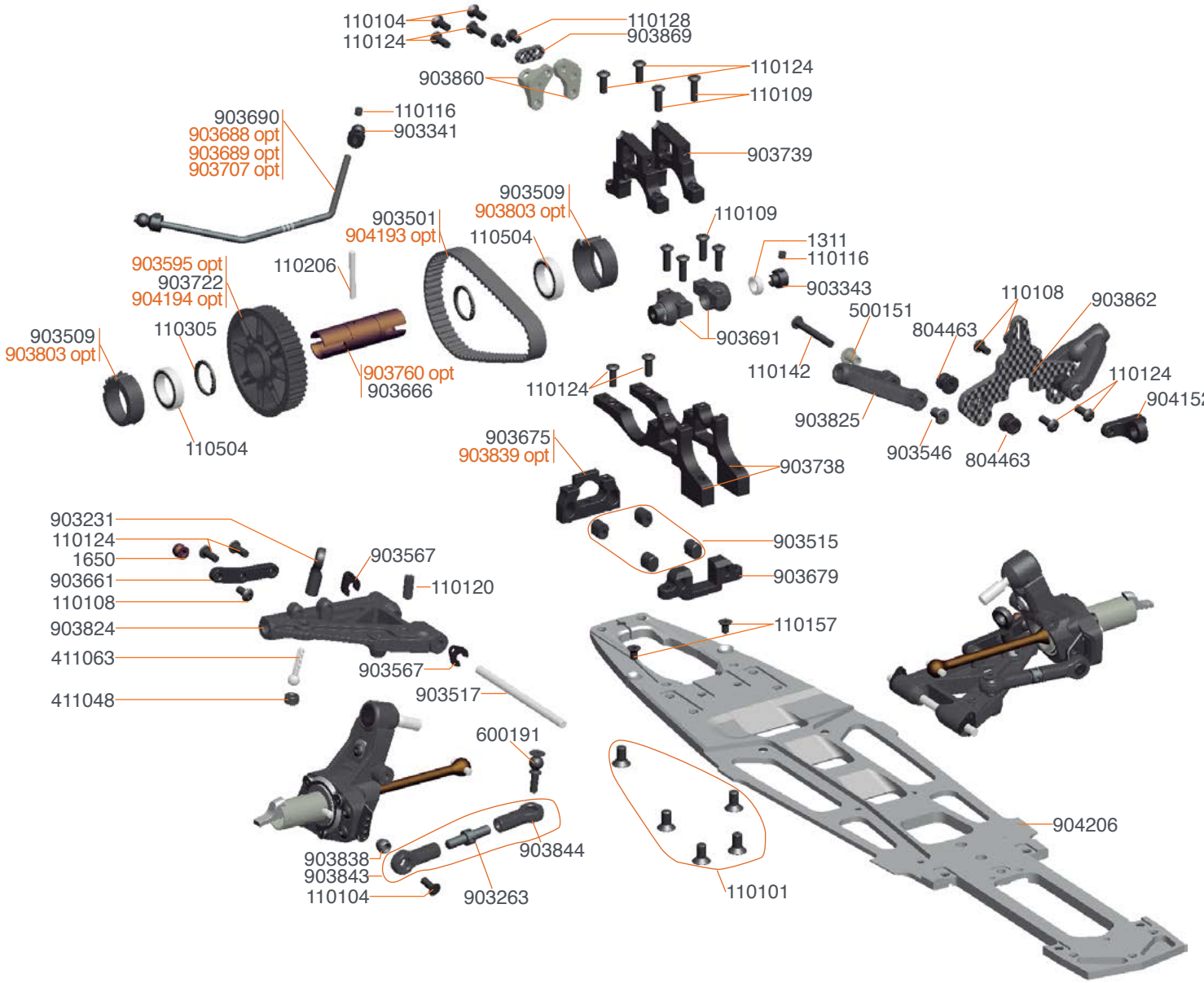
RR UPRIGHTS AND FR STB. EXPLODED VIEW



903392 Wheel-axle CVD RR (2)
903266 Wheel-axles cvd OS2 FR (2)
903512 Steeringblock lever alu (2)
903581 Steeringblock lever carbon (2)
903601 Driveshaft cvd FR alu (2)

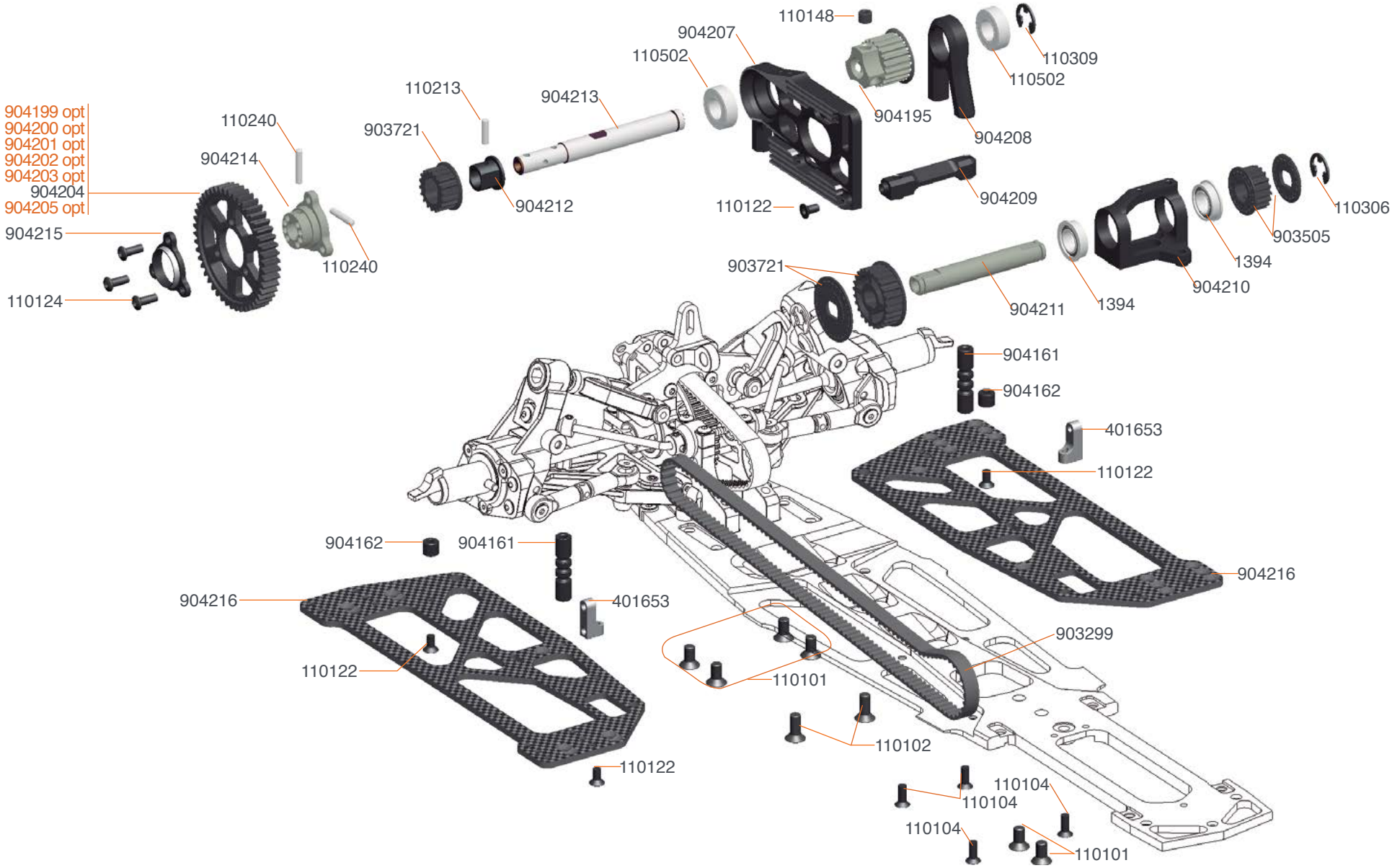
903851 Offset shim excenters 0.5mm (4) S990
903832 Steeringblock excenter alu (2) S990
903865 Driveshaft cvd FR alu short (2)
903880 Upright insert excenter alu (2) S990 EVO

903886 Driveshaft cvd RR HD (2) S9XX



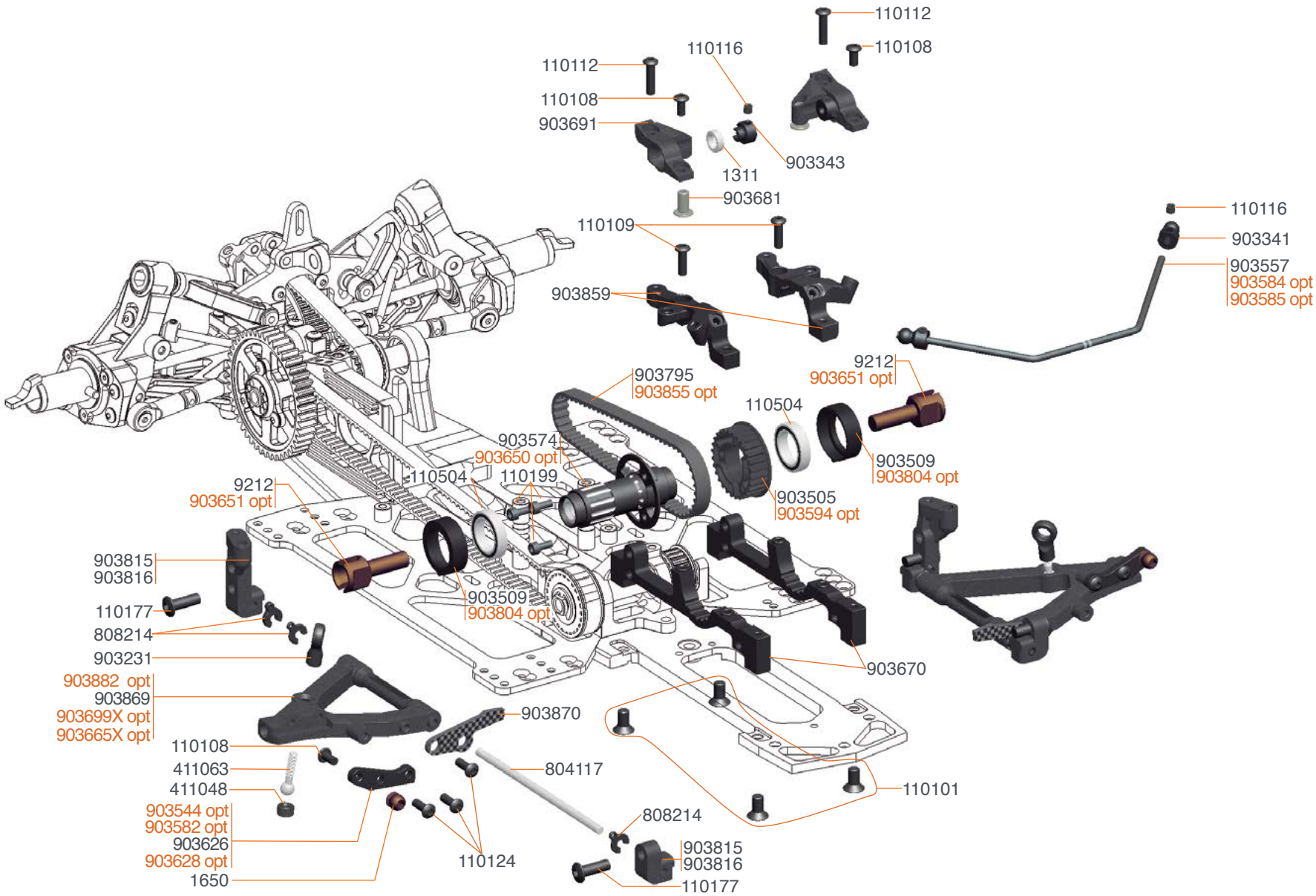
OPT

903688 Antiroll bar FR/RR soft S988
903689 Antiroll bar FR/RR medium S988
903707 Antiroll bar FR/RR X-hard S988
903759 Chassis weight 14gr brass S989
903803 Excenter set rr alu L+R S9XX
903839 Rearplate flex S990
903840 Weight bridge fr carbon S990
903780 Heave demper set rear
904193 Belt rear 100S3M201 low friction
904194 Pully solid axle rr S989E



OPT

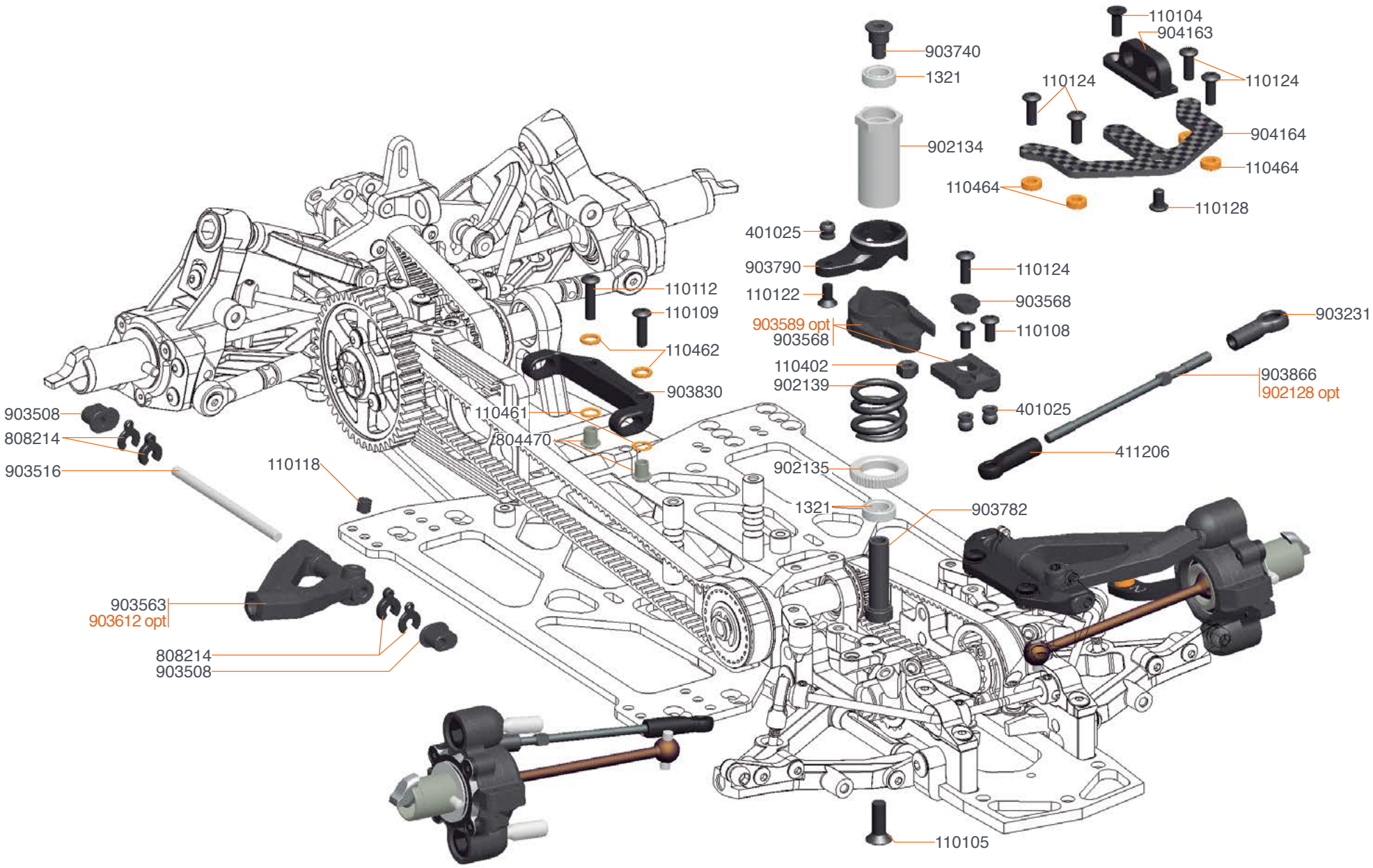
904199 Spurgear composite 36T M1
904200 Spurgear composite 38T M1
904201 Spurgear composite 40T M1
904202 Spurgear composite 42T M1
904203 Spurgear composite 44T M1
904205 Spurgear composite 45T M1



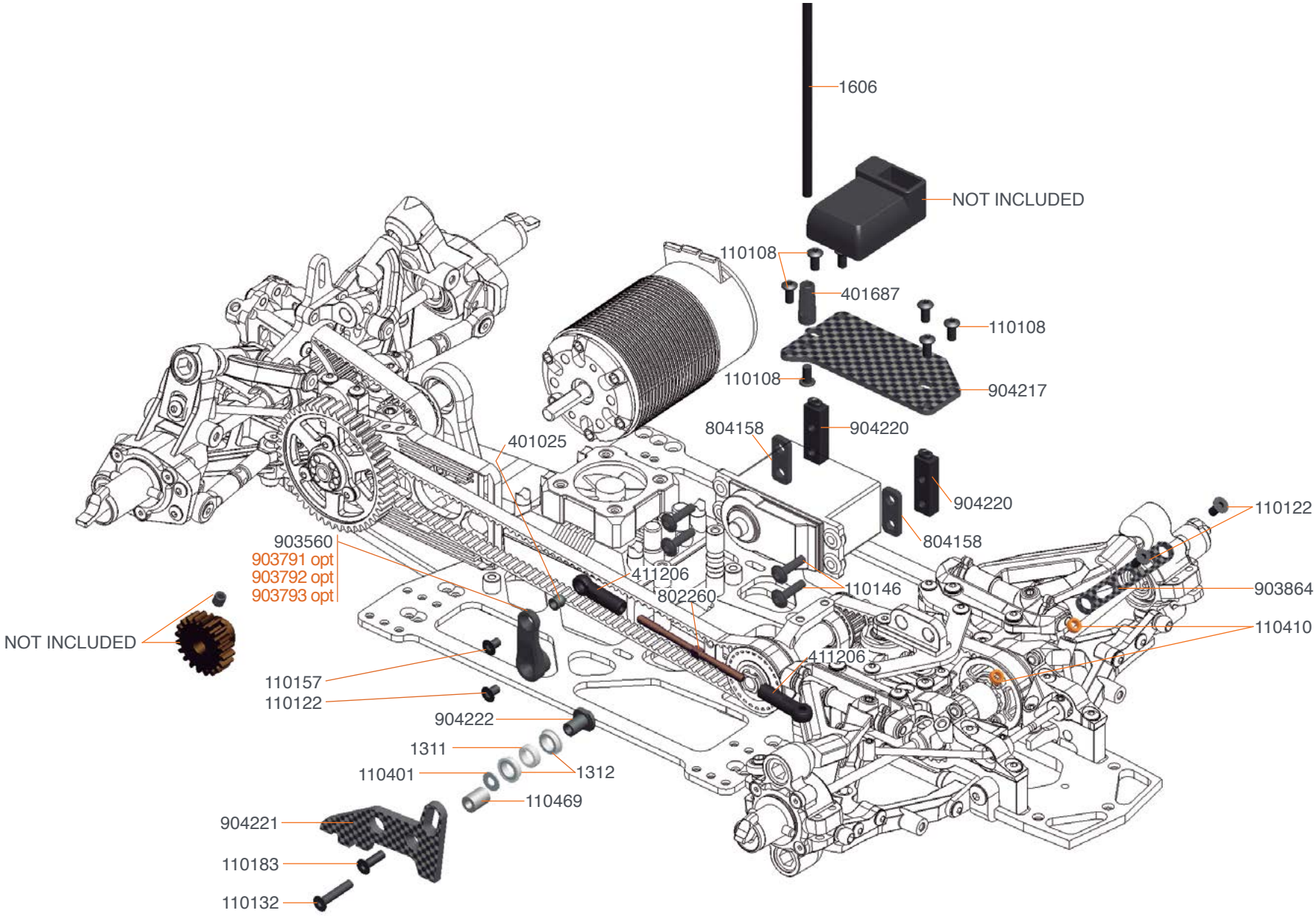
OPT

903544 Shock extension bracket FR alu (2)
903584 Antiroll bar FR soft S989
903585 Antiroll bar FR hard S989
903582 Shock extension bracket FR carbon (2)
903628 Shock extension bracket FR wide carbon (2)
903651 Inner driveshaft adapter light
903665X Wishbone FR lw V2 L+R S988
903695 Wishbone insert carbon FR lw (2)
903699X Wishbone FR lw V2 L+R hard S988
903781 Heave demper set front
903806 Oneway diff fr S9XX
903882 Wishbone FR lw L+R hard 990 EVO

FRONT 2 EXPLODED VIEW



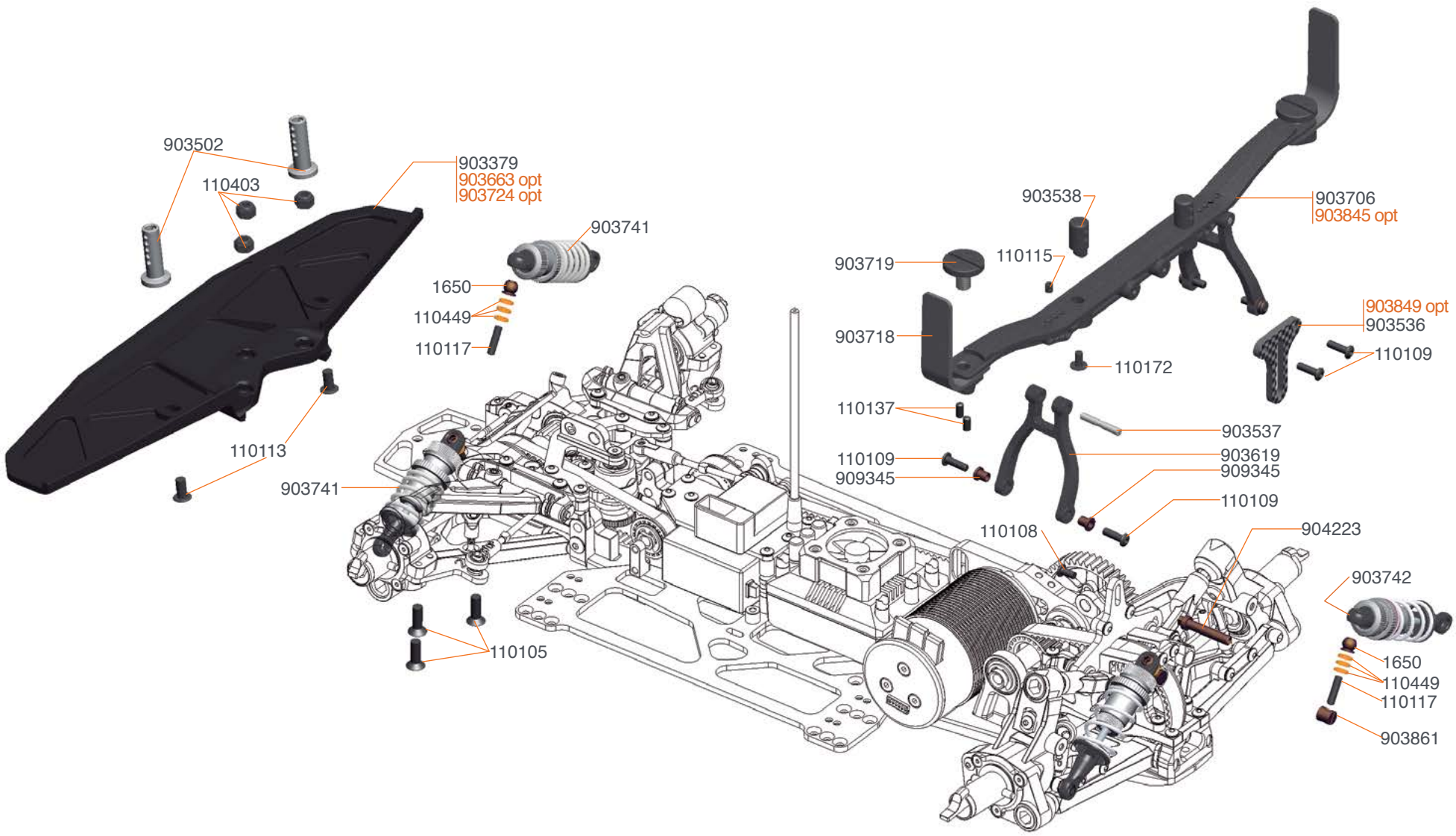
ELECTRONICS ASSEMBLY EXPLODED VIEW



OPT

903791 Servo lever 23T alu
903792 Servo lever 24T alu
903793 Servo lever 25T alu

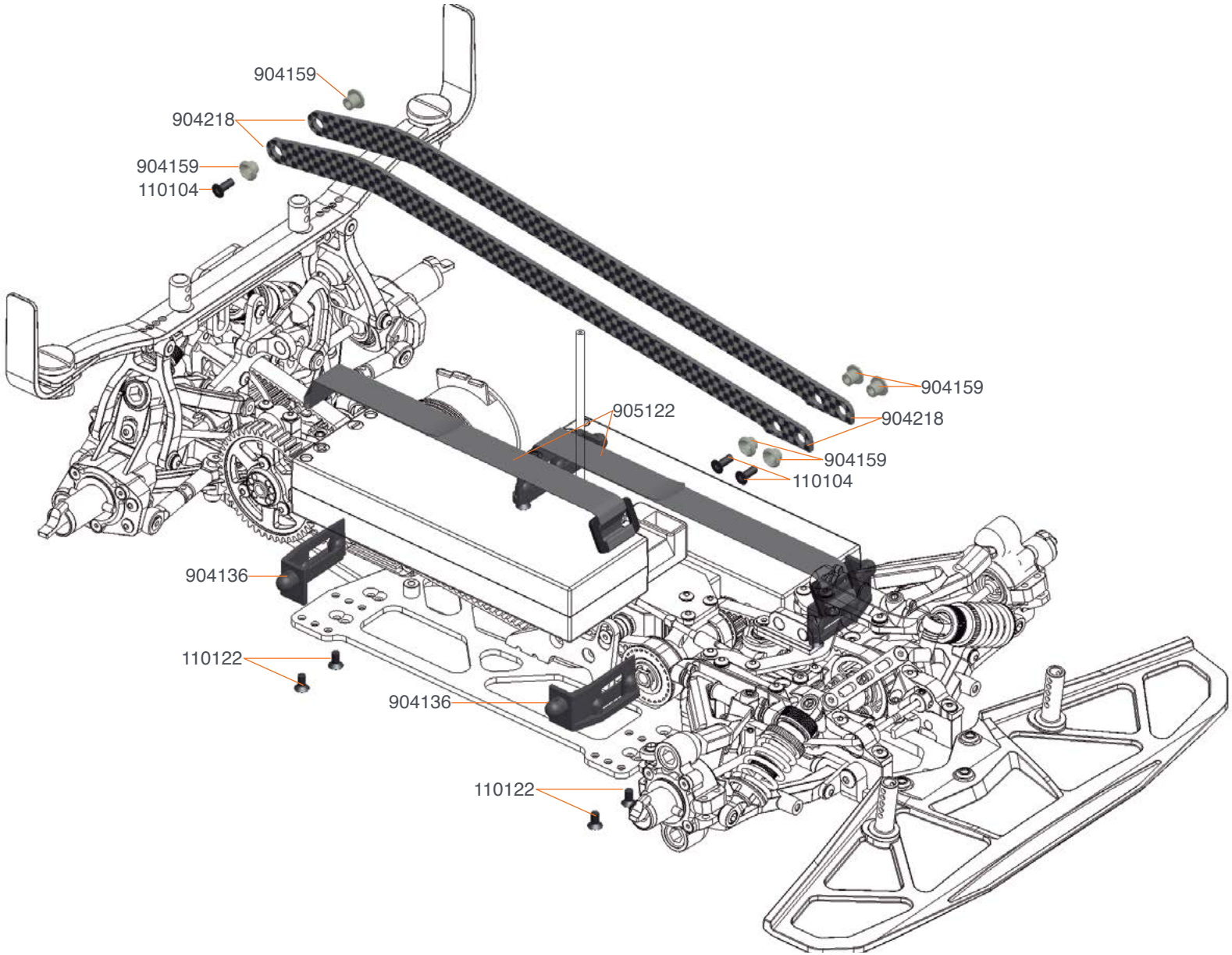
BUMPER AND BODYMOUNT EXPLODED VIEW



OPT

903663 Bumper 1/8 FLOW
903664 Bumper insert set (2+2) FLOW
903724 Bumper light S989

903845 Bodymount carbon set S9XX
903849 Bodymount centerplate BB S9XX


904159
904218
904159
110104
904159
905122
904218
904159
110104
904136
110122
904136
110122

OPT

TEAM SERPENT NETWORK

990e EVO SPARE PARTS

990e EVO OPTIONALS PARTS

SERPENT TOOLS

SERPENT MERCHANDISING

SERPENT WEBSITE AND BLOG

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VIPER 990e EVO

1/8 ON ROAD SCALE

SERPENT