

VIPER 4400e

1/8 ON ROAD SCALE

INSTRUCTION
MANUAL

EP ELECTRIC
POWERED

SERPENT

INTRODUCTION

The Serpent Viper 990e is designed to be a world champion, while still being easy to use, assemble, and set up. The Serpent Viper 990e 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 bag numbers, 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 later on 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. Fine-tuning the initial setup is an essential part of building a high-performance racecar like your Serpent Viper 990e.

EXPLODED VIEWS AND PARTS LIST

The exploded views and parts lists for the Serpent Viper 990e are presented in the Reference Guide section in the back of this manual. The exploded views show all the 990e 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 gloves.
- 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

• REAR ASSEMBLY	4
• CENTRAL ASSEMBLY	14
• TRANSMISSION ASSEMBLY	16
• FRONT ASSEMBLY	19
• RADIO ASSEMBLY	29
• SHOCKS ASSEMBLY	30
• BUMPER AND BODYMOUNT ASSEMBLY	32
• FINAL ASSEMBLY	35
• EXPLODED VIEWS	42
• TEAM SERPENT NETWORK	52

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.



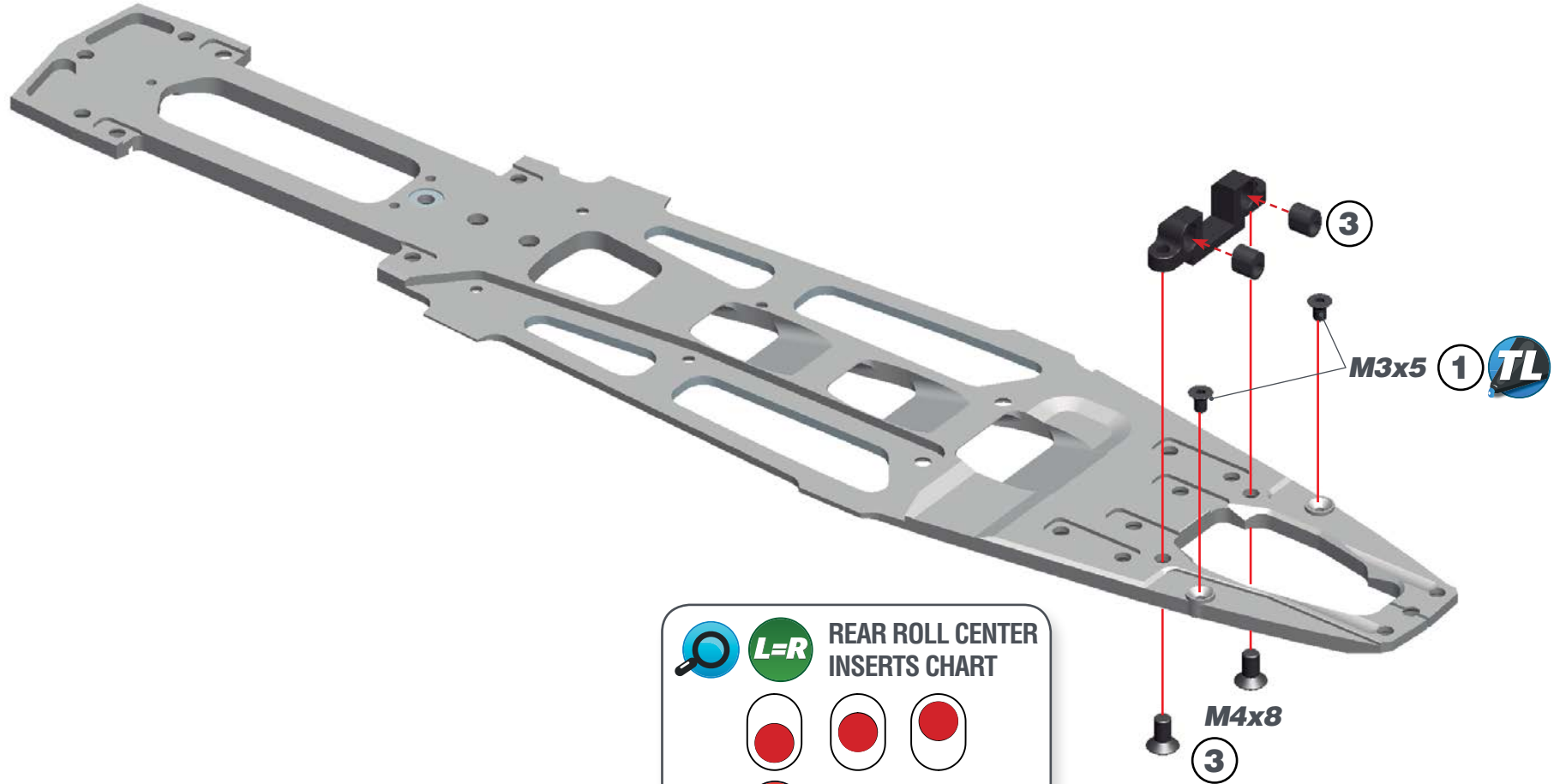
Parts or items not included in the kit.







Optional part, not standard in the kit.


STEP 1

BAG 1



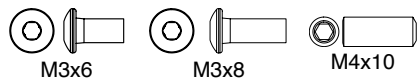
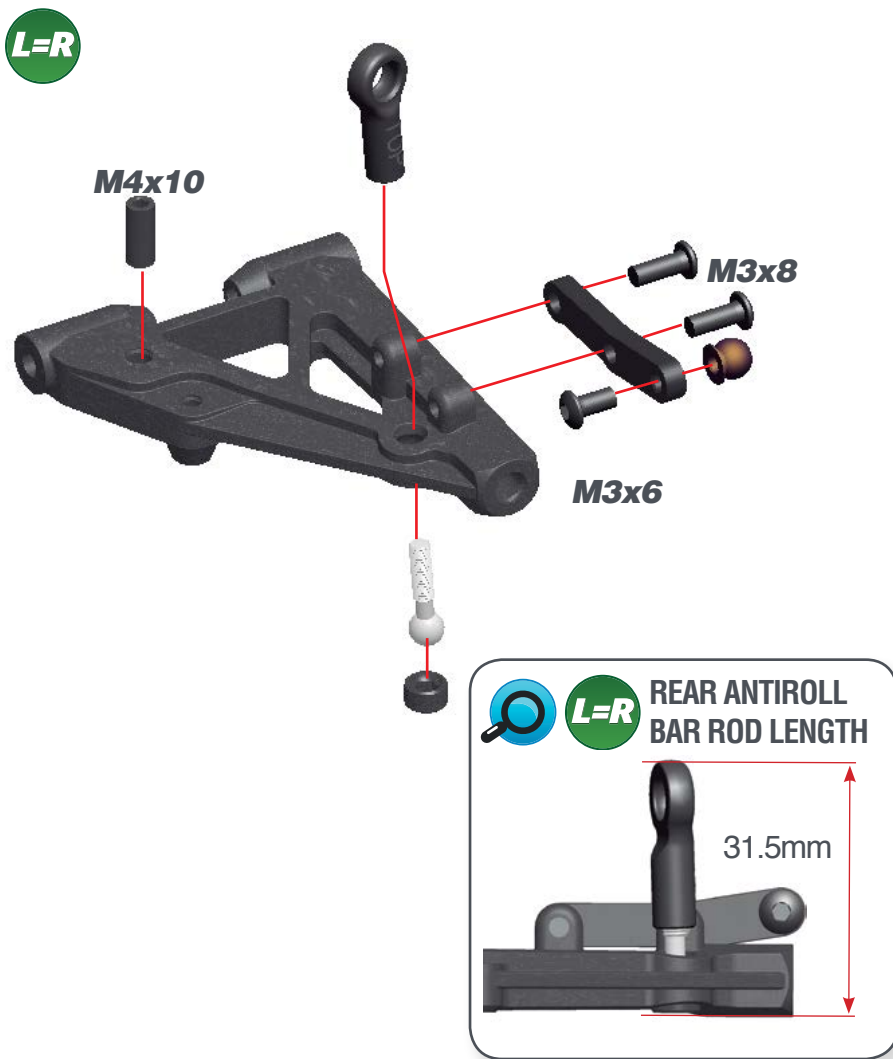
 **L=R** REAR ROLL CENTER
INSERTS CHART

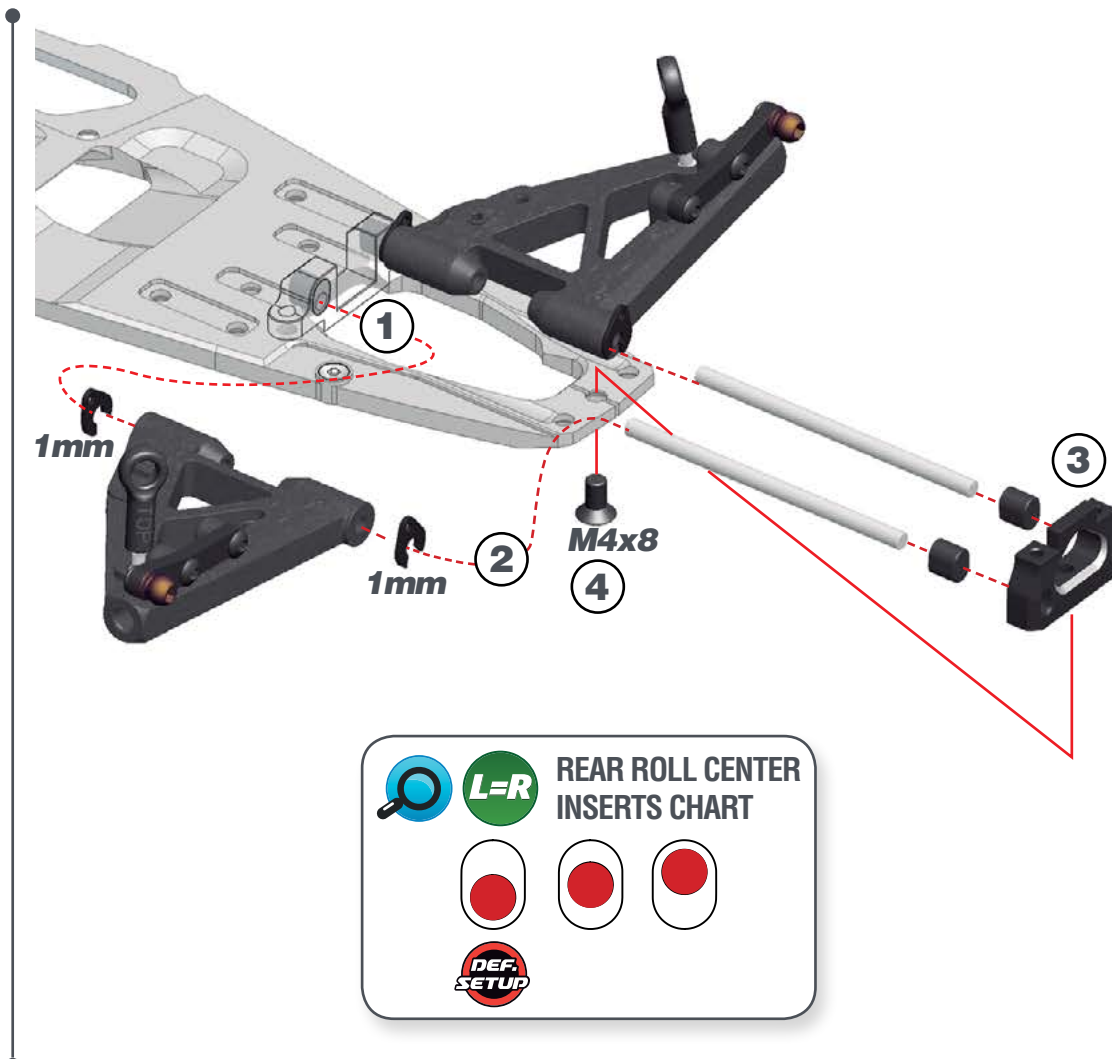




STEP 2

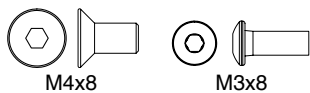
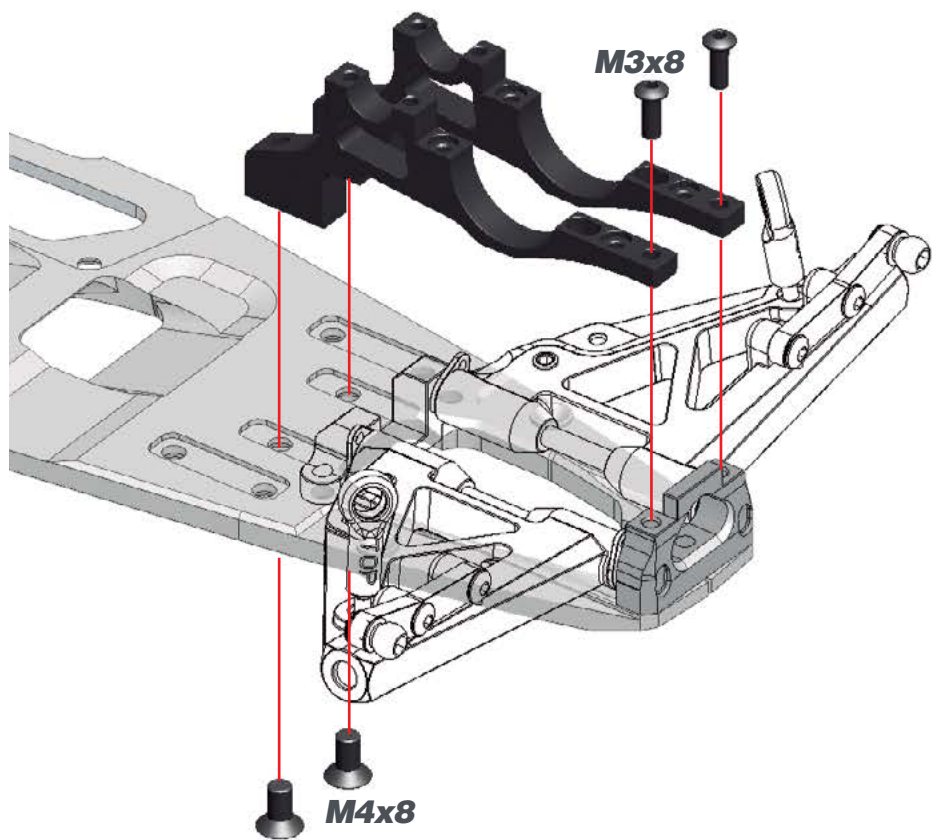


STEP 3

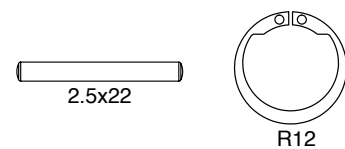
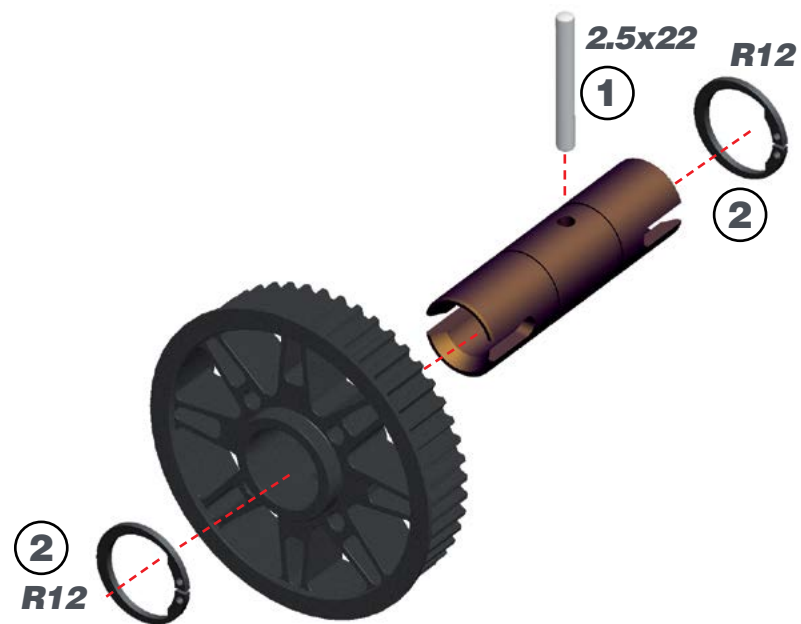


STEP 4

BAG 2



STEP 5

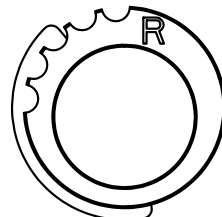
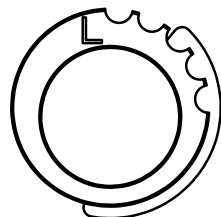


STEP 6

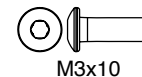
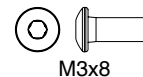
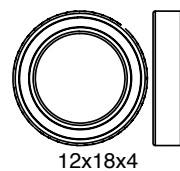
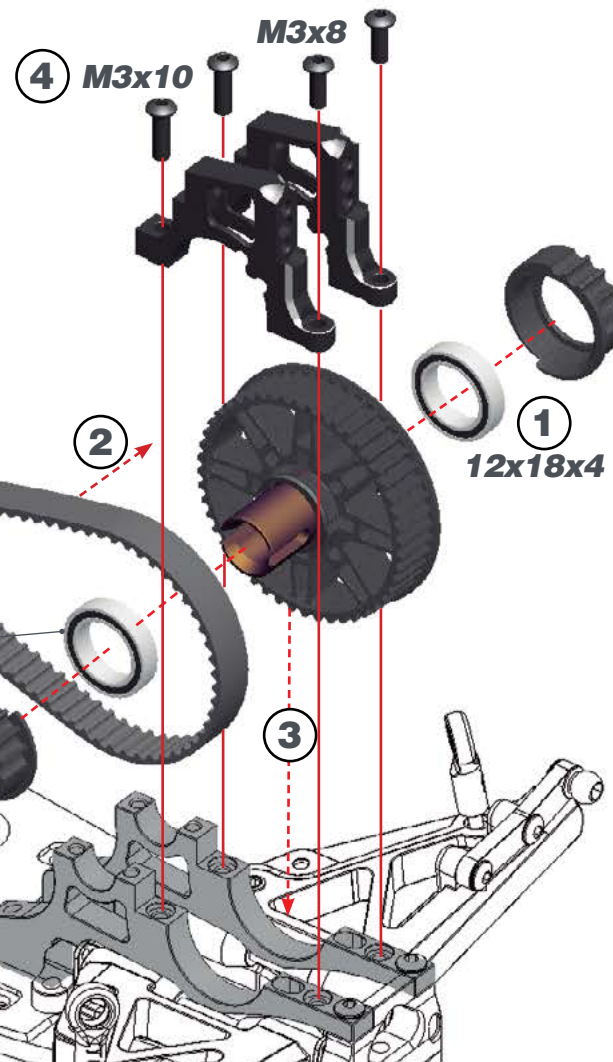
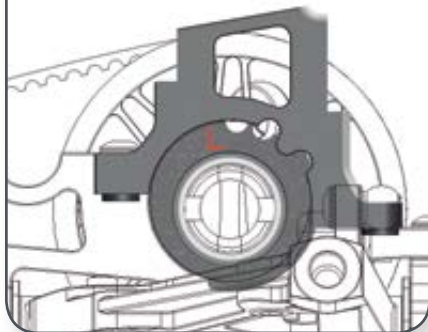
REAR SOLID AXLE EXCENTERS
 Note that the rear solid axle excenters are not symmetrical and are marked with L (=left) and R (=right).

LEFT

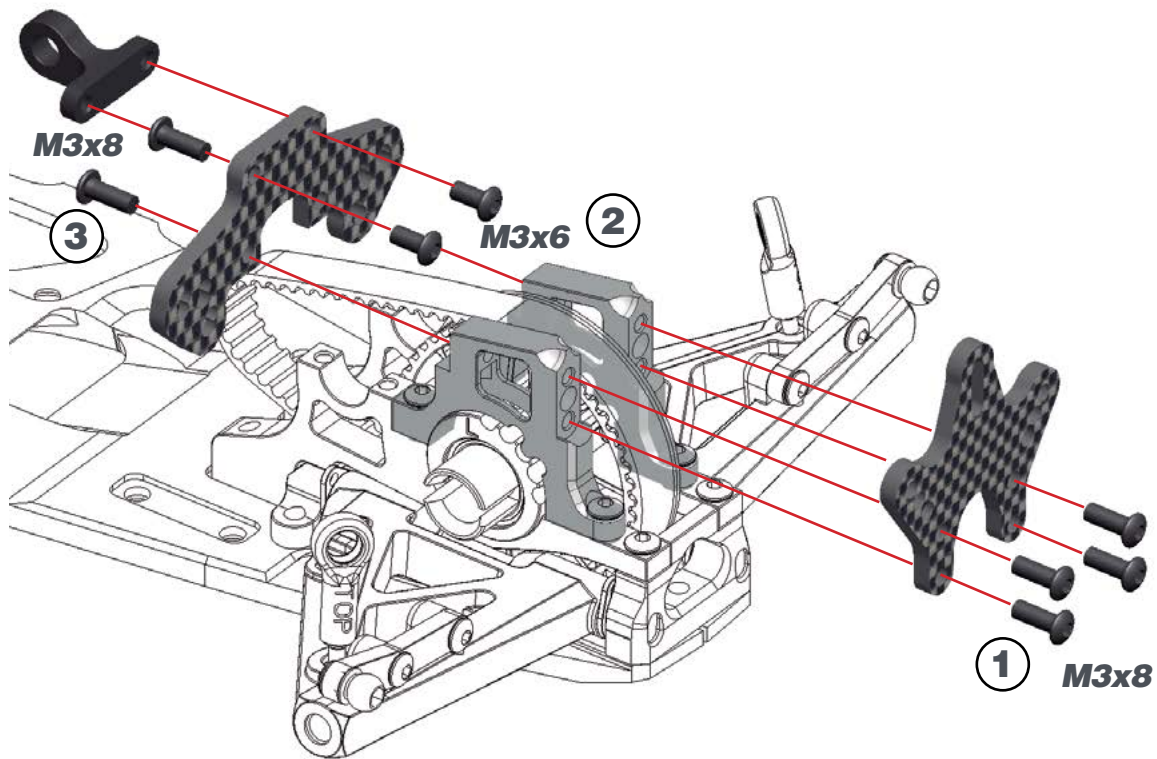
RIGHT



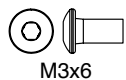
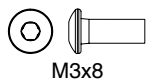
REAR BELT TENSION
 Use the central slot as starting position



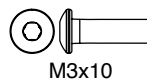
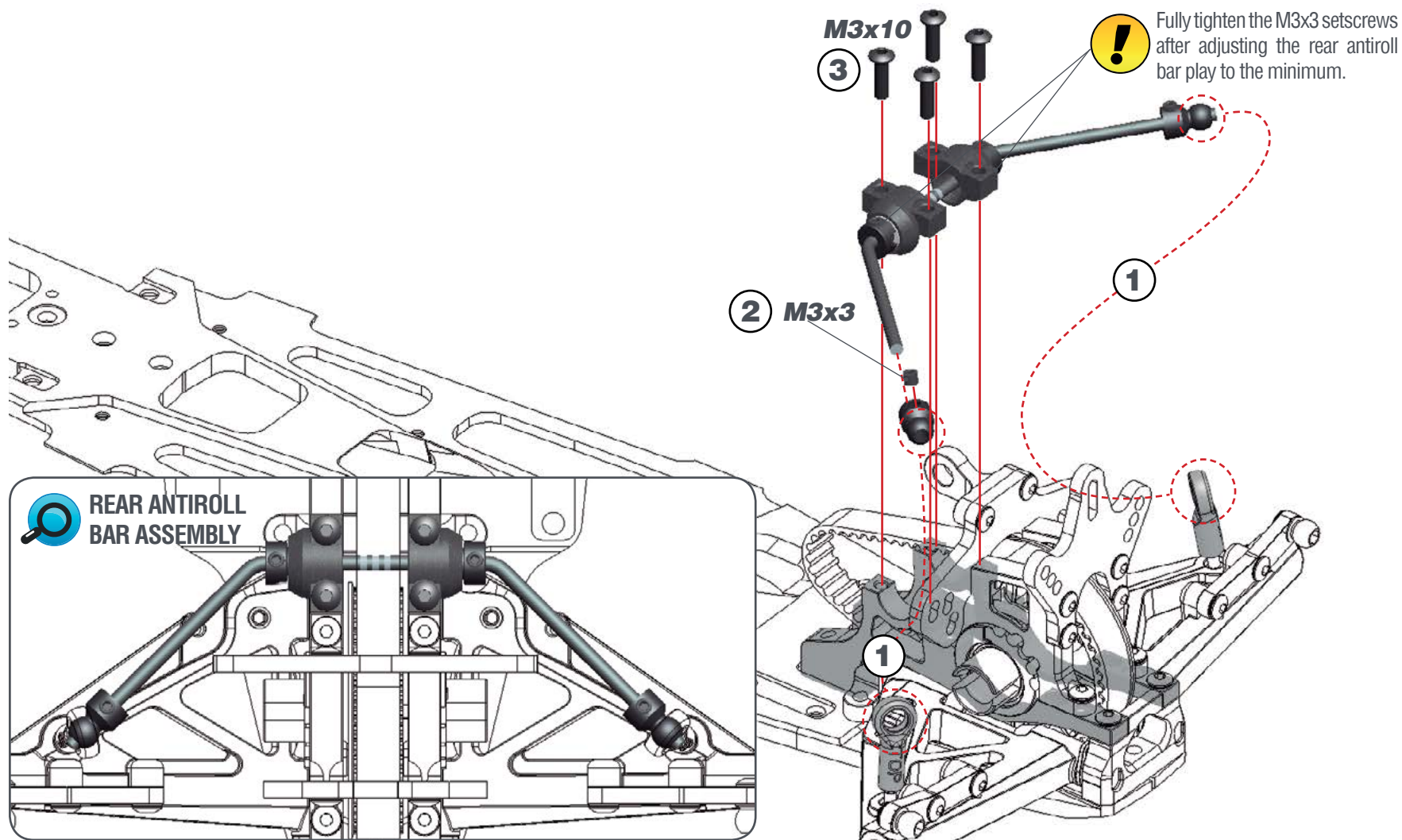
STEP 8



STEP 9



STEP 10



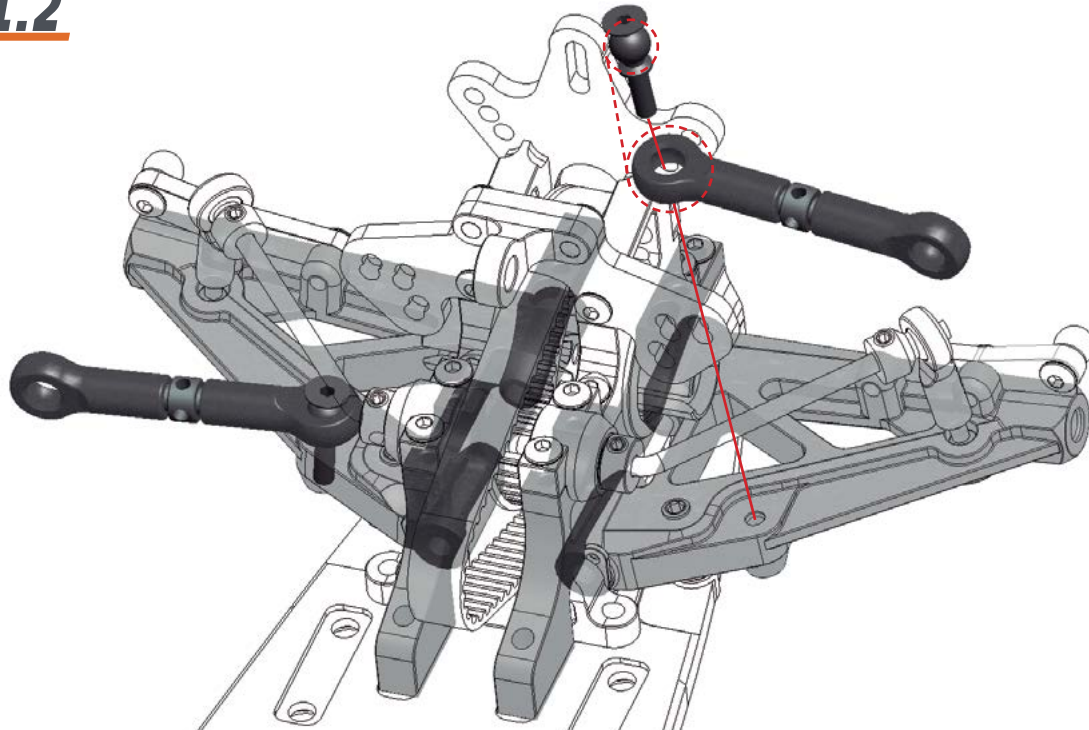
STEP 11

BAG 3

11.1



11.2

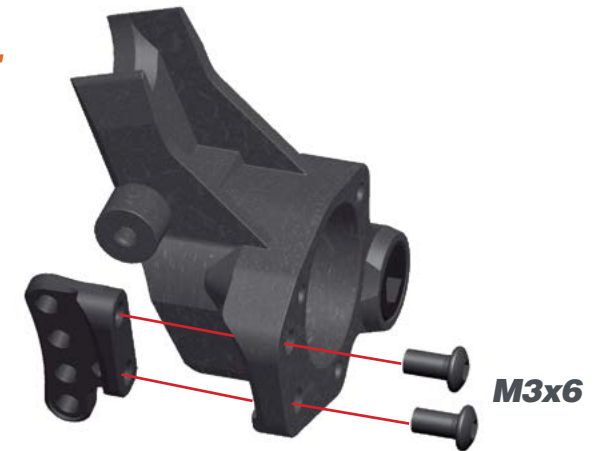


STEP 12

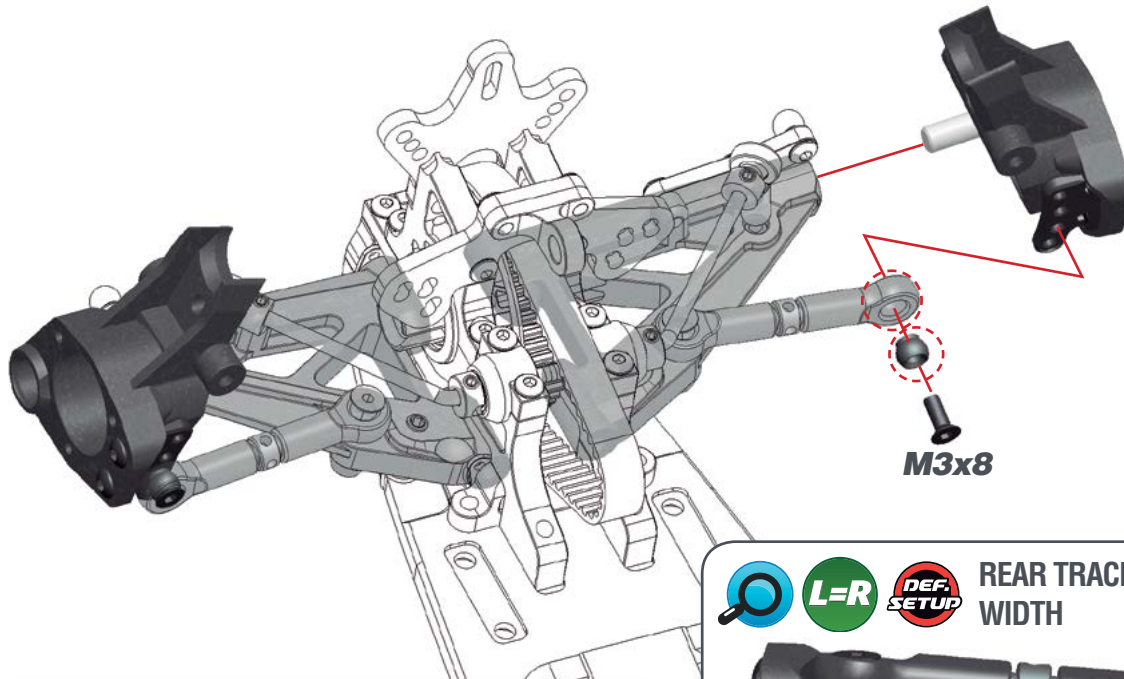
12.1



12.2



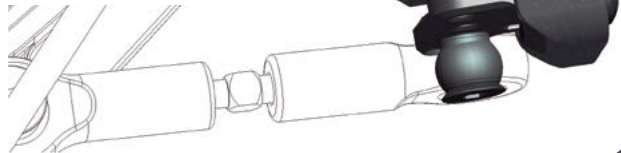
STEP 13



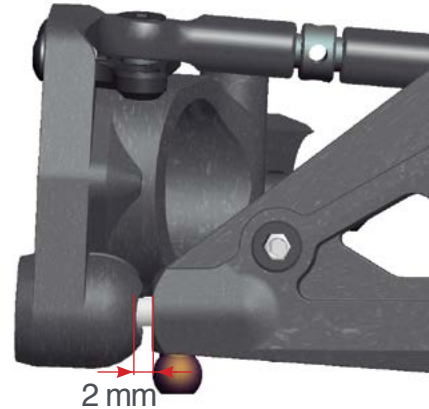
M3x8



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



REAR TRACK WIDTH



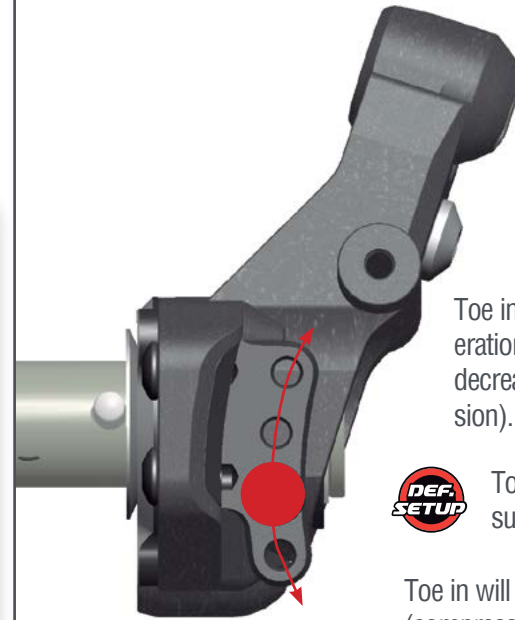
2 mm



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:

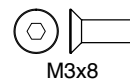


Toe in will increase under acceleration (compression) and will decrease under braking (extension).



Toe in will not change over the suspension travel.

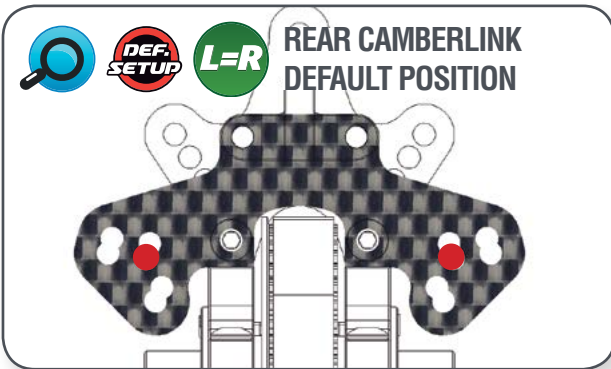
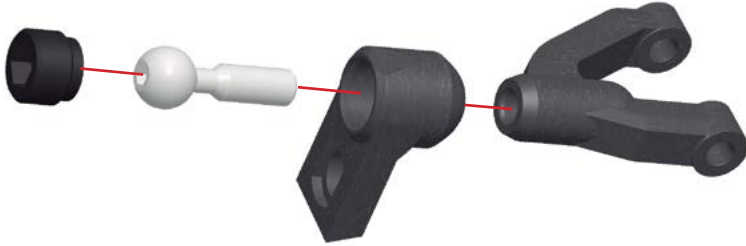
Toe in will decrease under acceleration (compression) and will increase under braking (extension).



M3x8

STEP 14

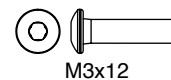
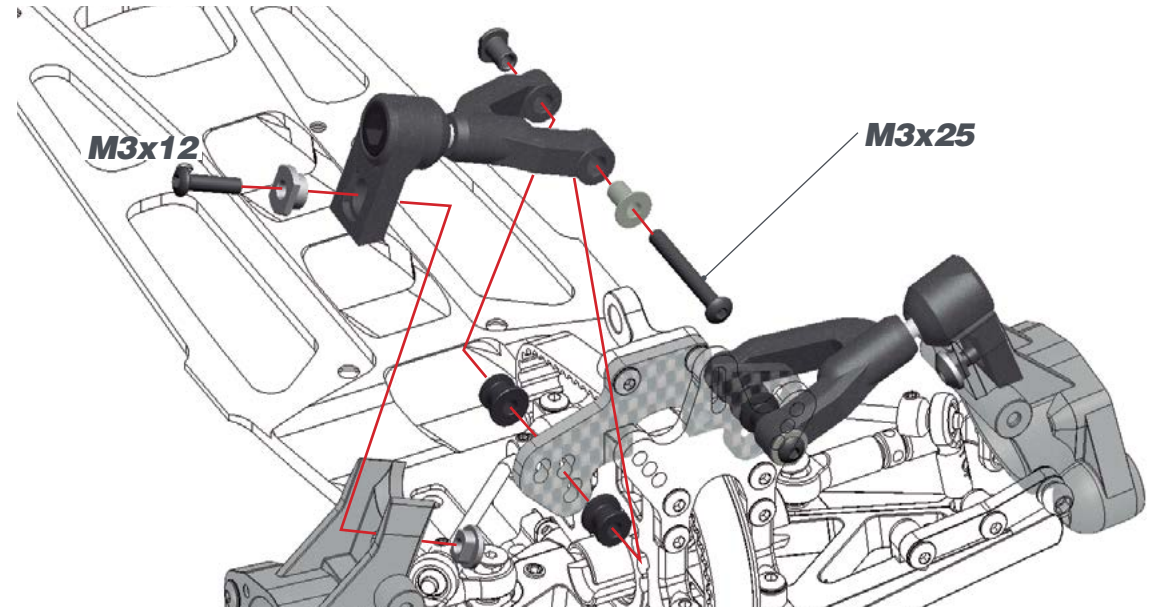
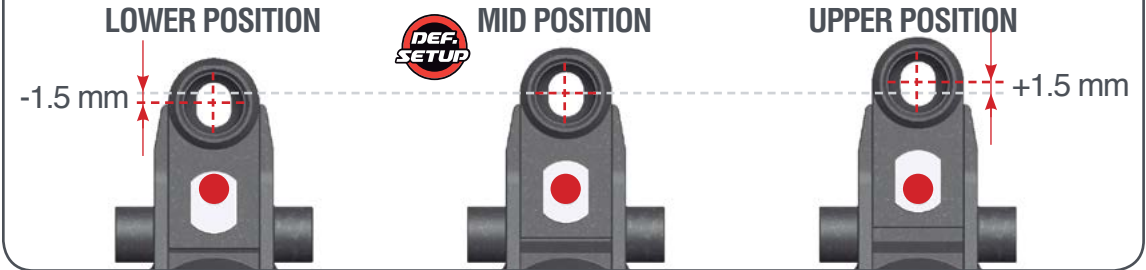
14.1



14.2

L=R REAR UPPER WHSIBONE ANGLE

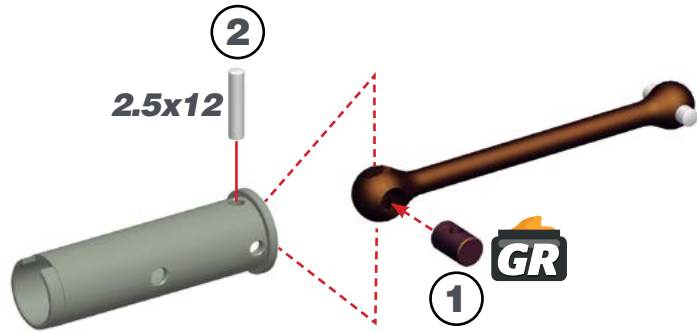
Serpent introduces a new way to adjust the height of the upper pivot on the upright. By changing the excenter, it is possible to move the position up or down by 1.5mm as well as using a "neutral" position.



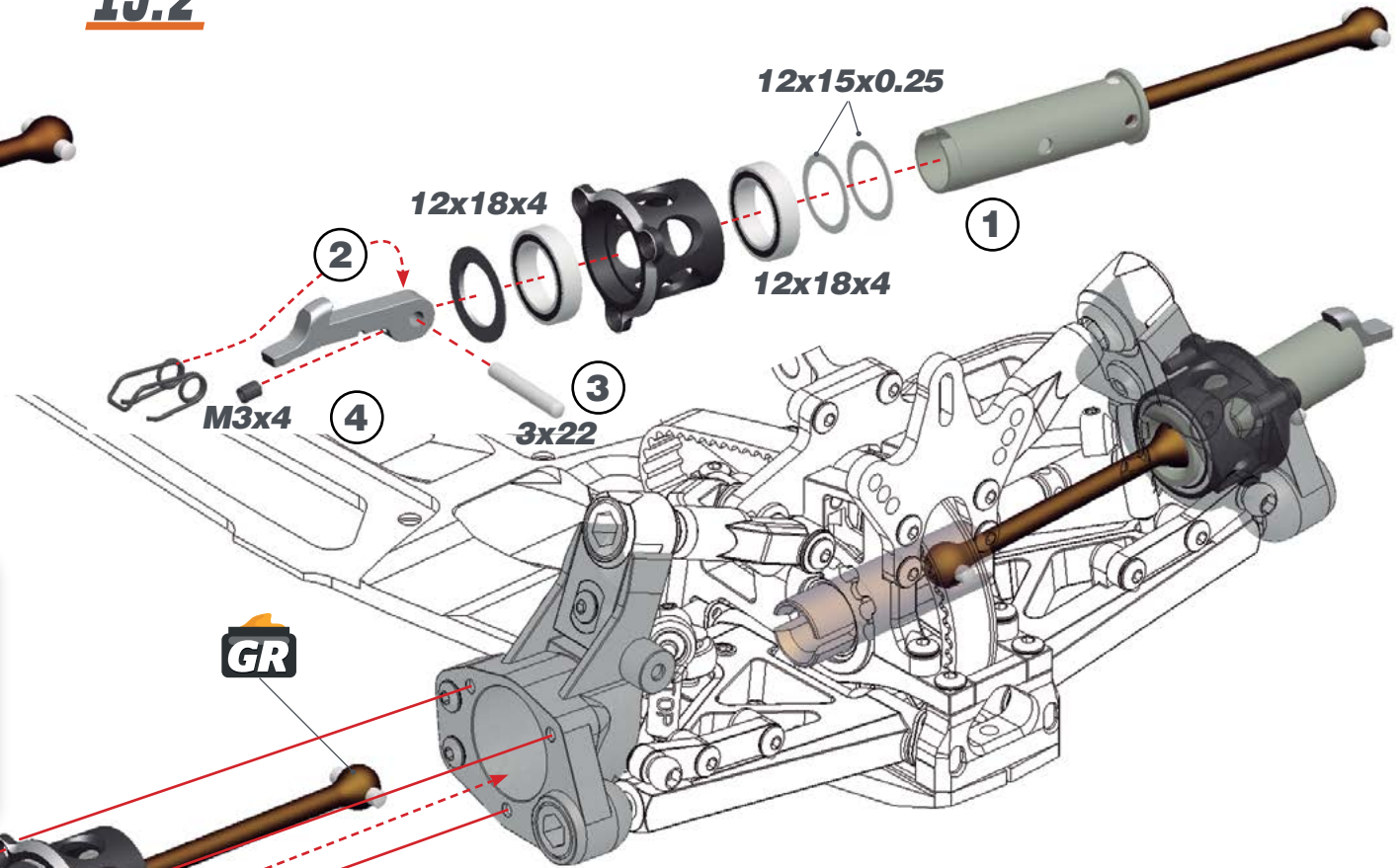
STEP 15

BAG 4



15.1

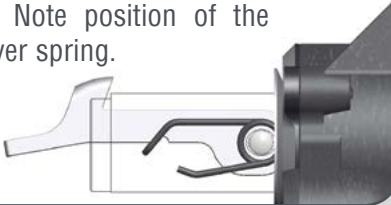


15.2

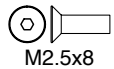


15.3



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

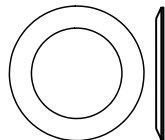


M2.5x8

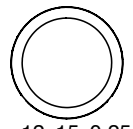


M2.5x8

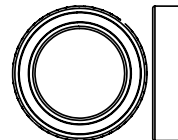
2.5x12



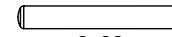
12x18x1 Conical



12x15x0.25



12x18x4



3x22



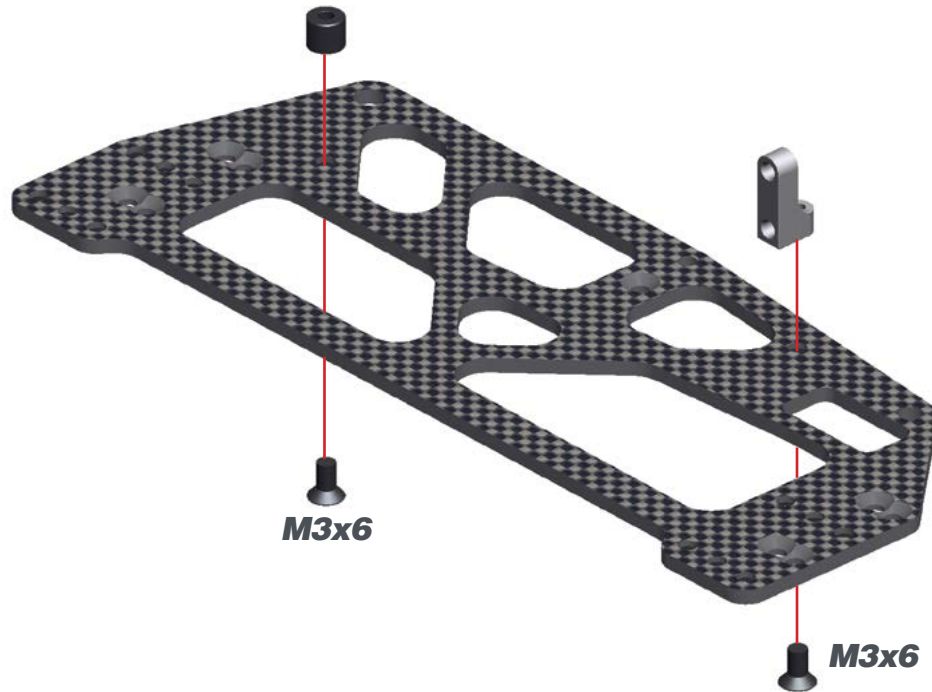
M3x4

STEP 16

BAG 5



RIGHT BATTERY PLATE

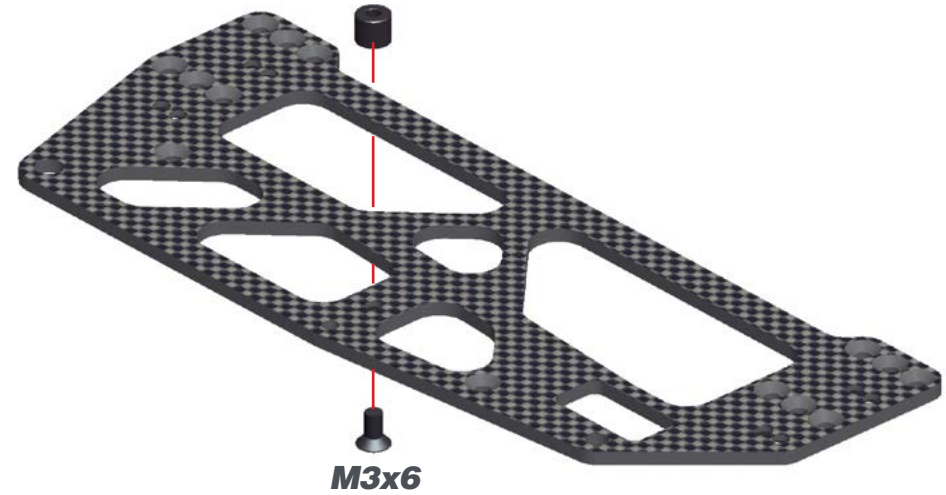


M3x6

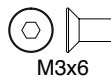
M3x6



LEFT BATTERY PLATE



M3x6

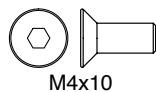
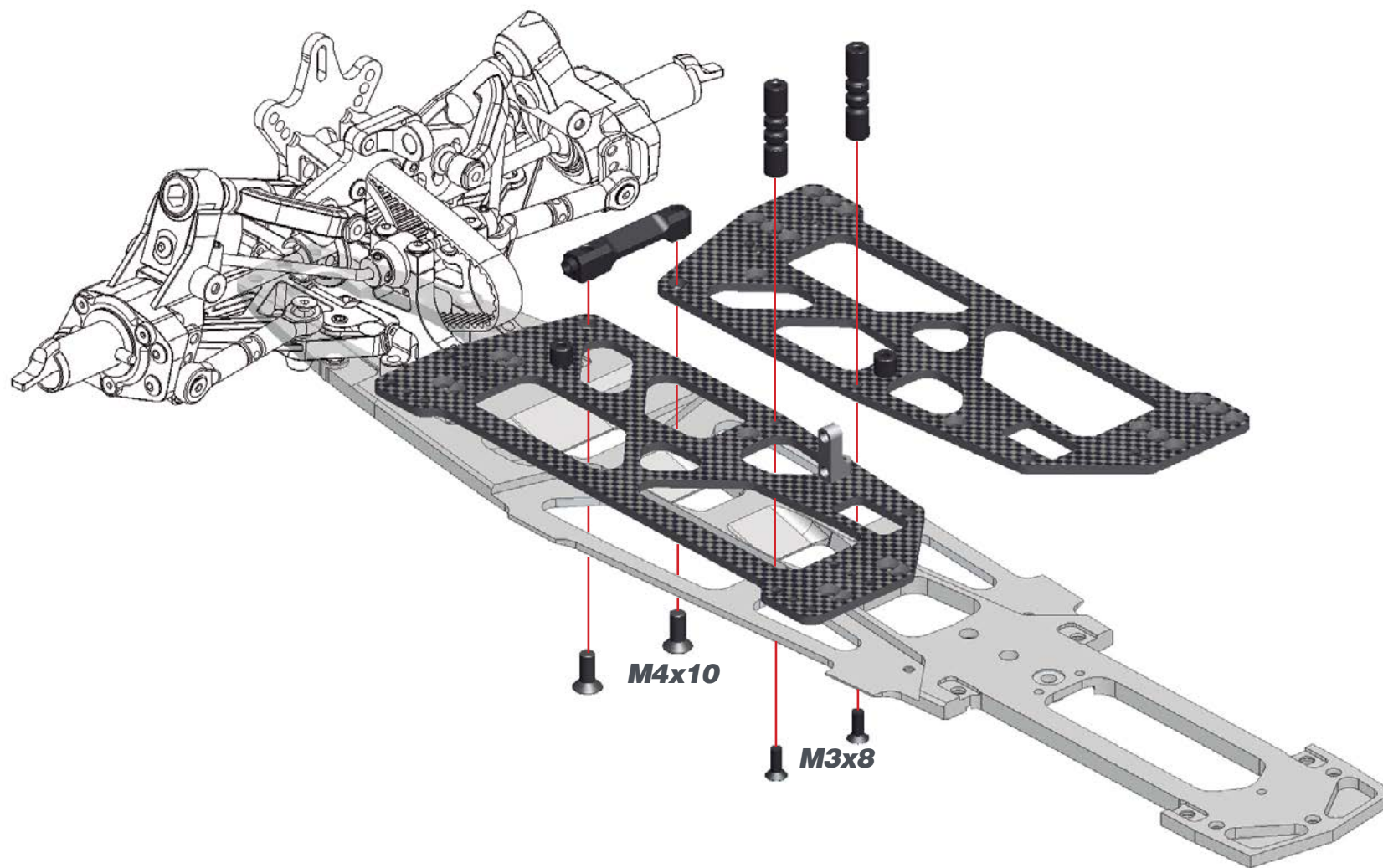


M3x6



M3x6

STEP 17



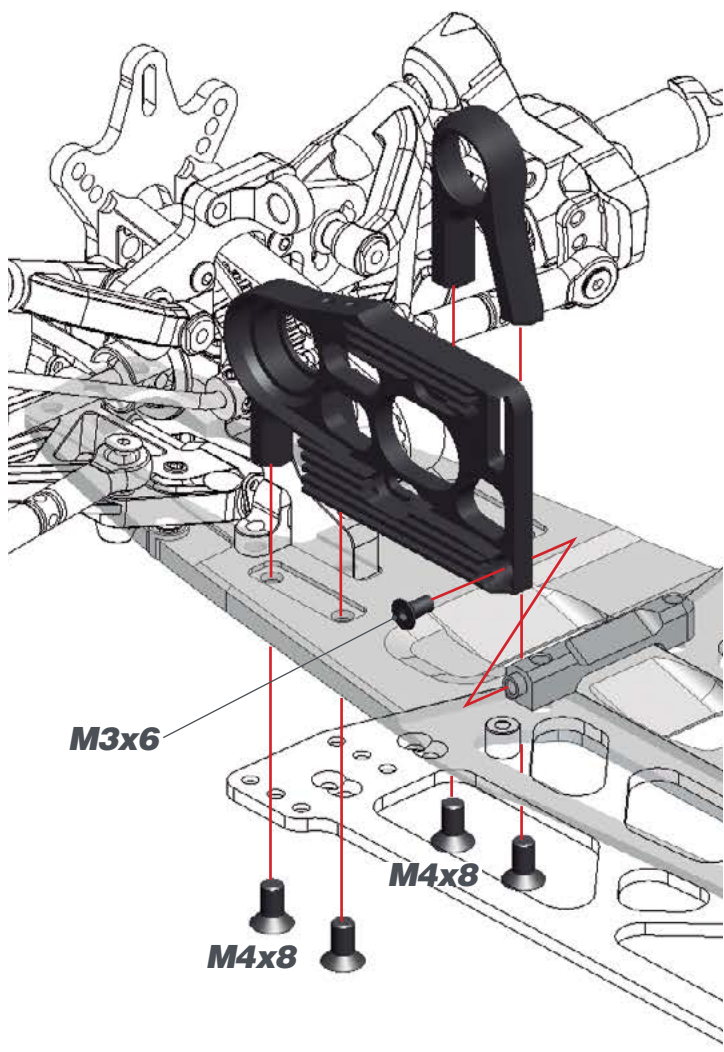
M4x10



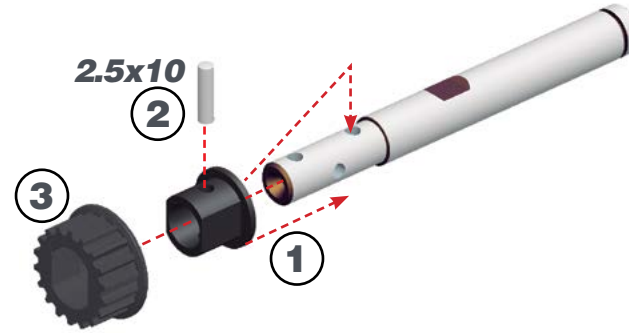
M3x8

STEP 18

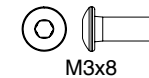
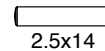
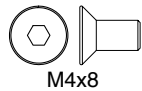
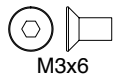
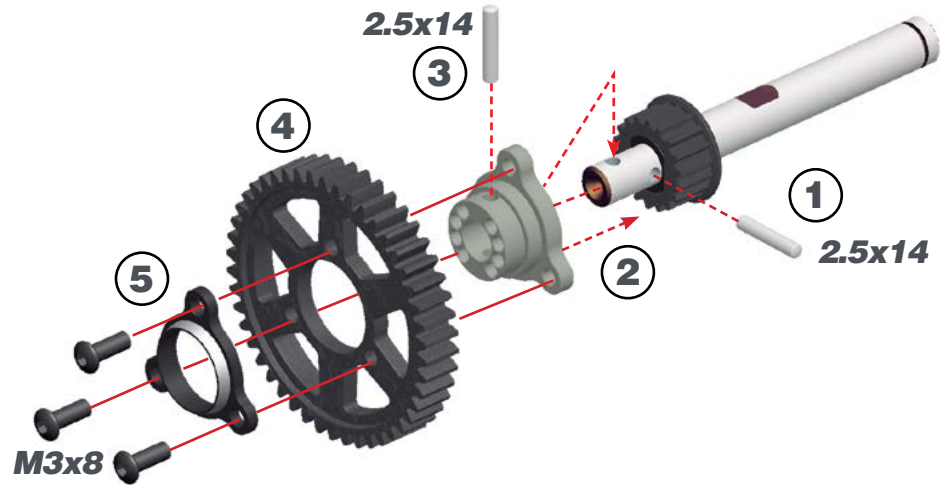
STEP 19 **BAG 6**



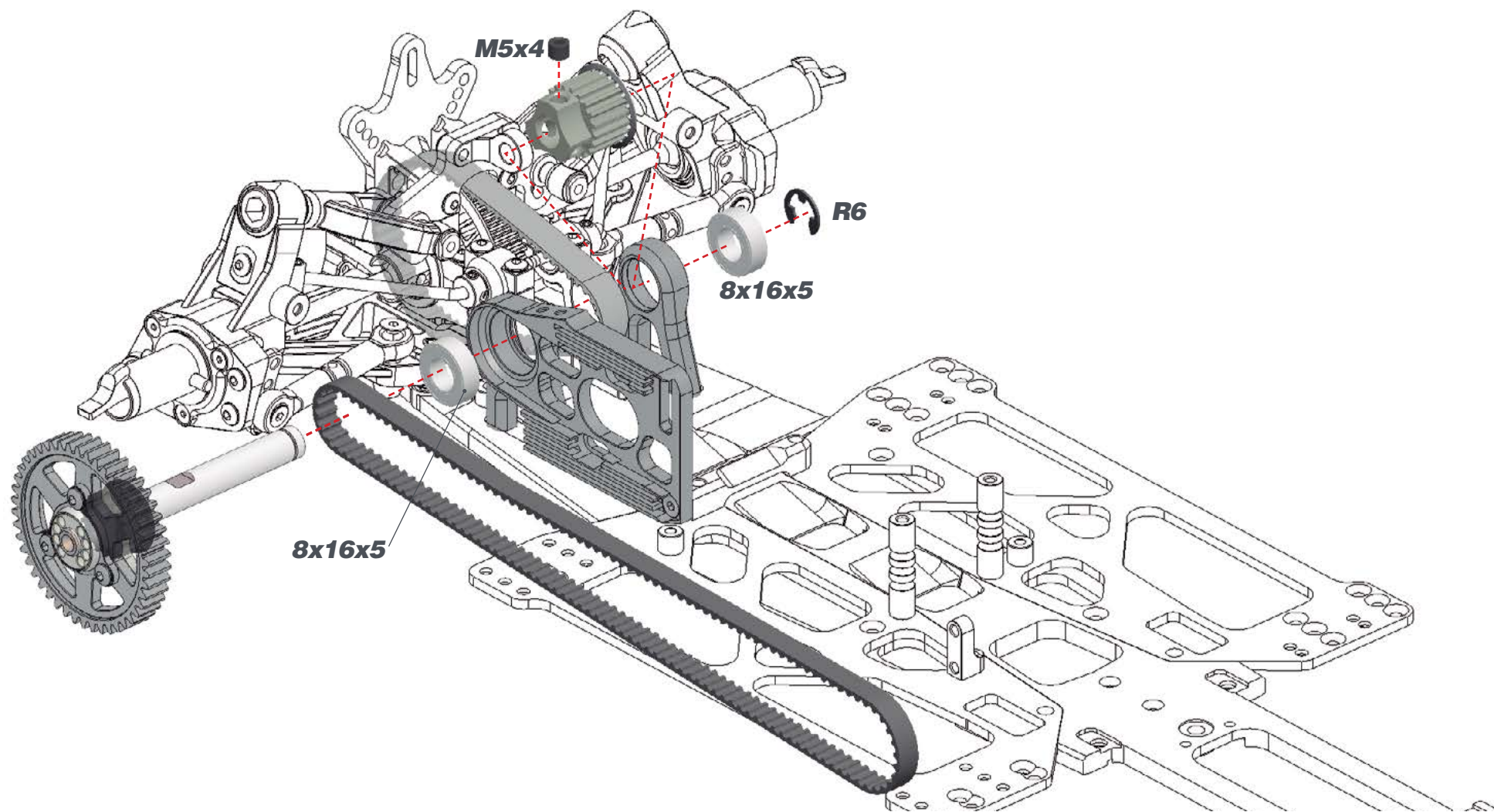
19.1



19.2



STEP 20

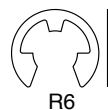
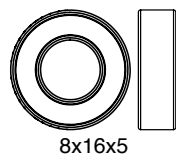


M5x4

R6

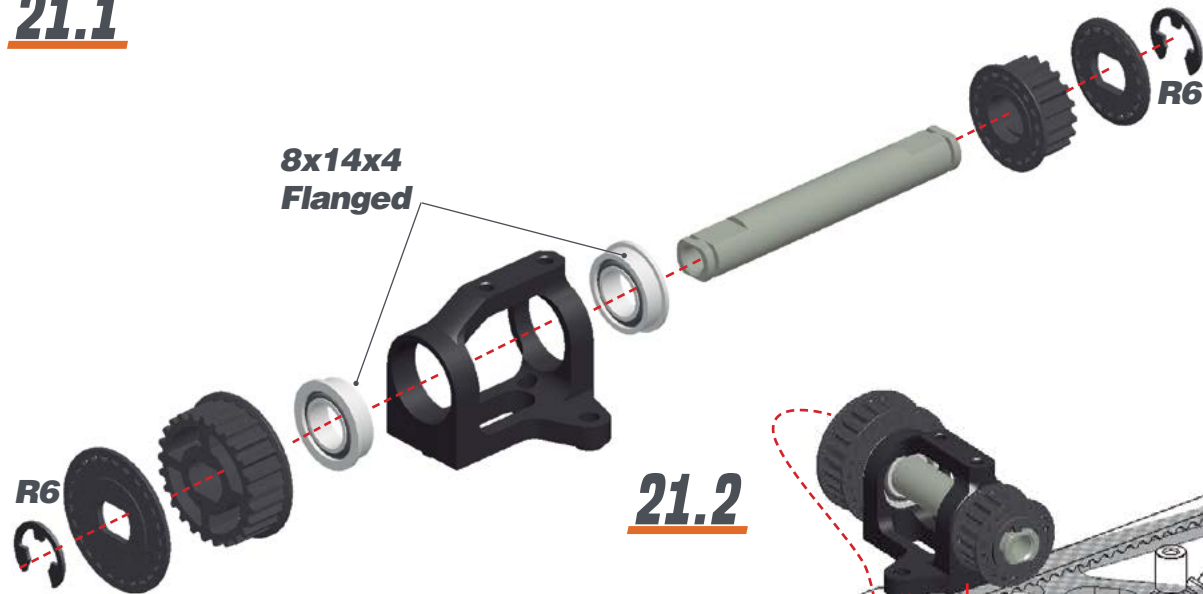
8x16x5

8x16x5

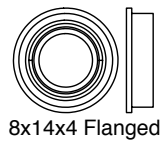
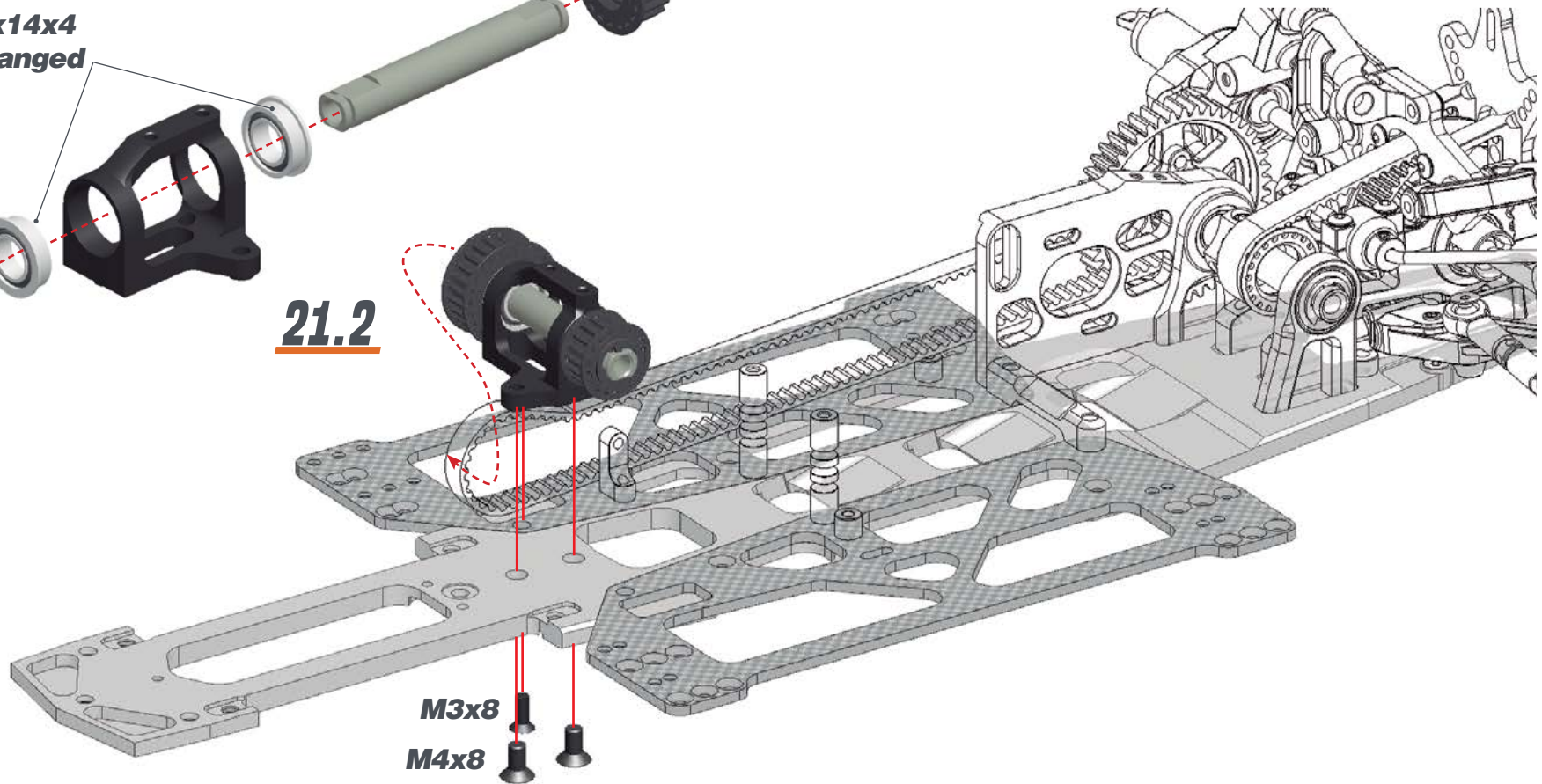


STEP 21

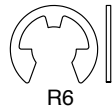
21.1



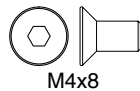
21.2



8x14x4 Flanged



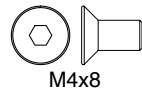
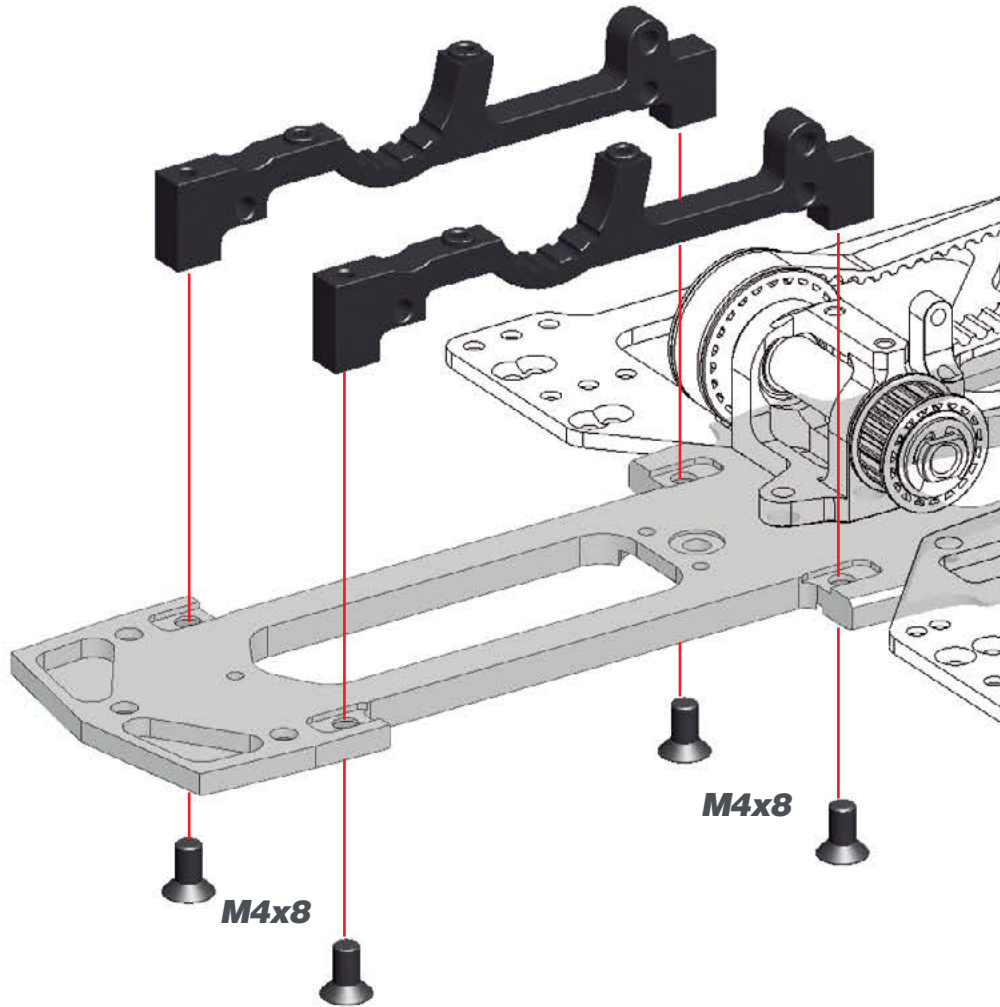
R6



M4x8

STEP 22

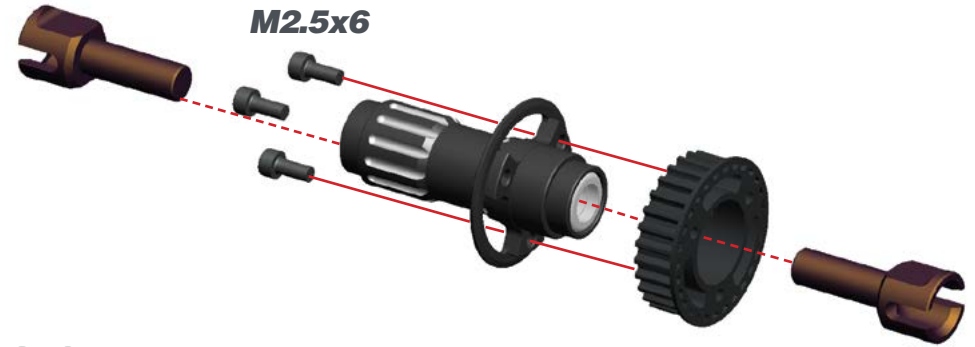
BAG 7



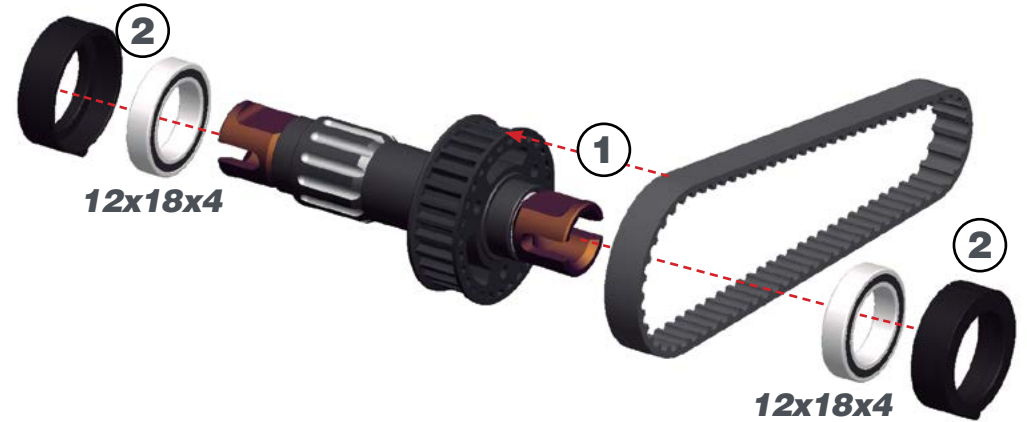
M4x8

STEP 23

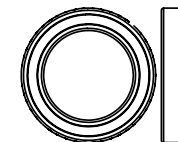
23.1



23.2

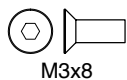
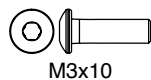
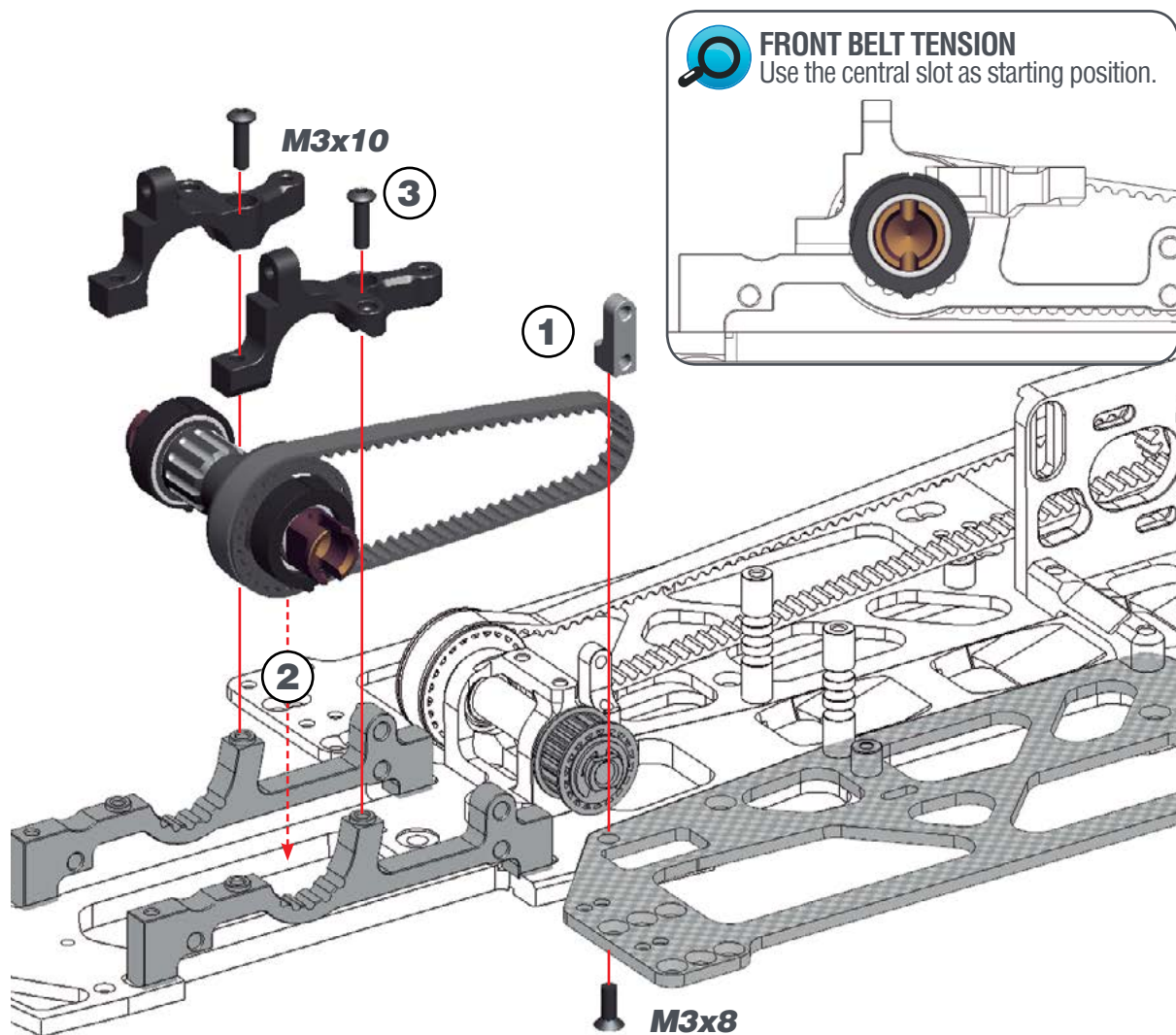


M2.5x6



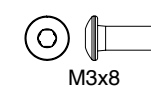
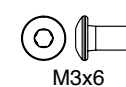
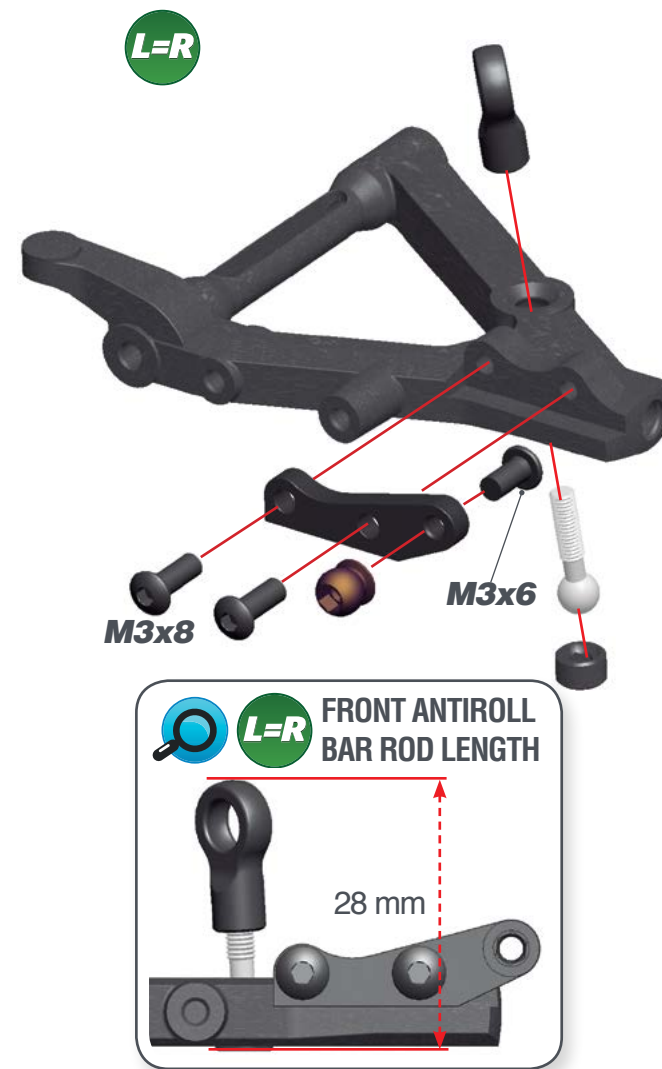
12x18x4

STEP 24



STEP 25

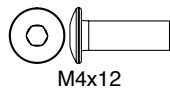
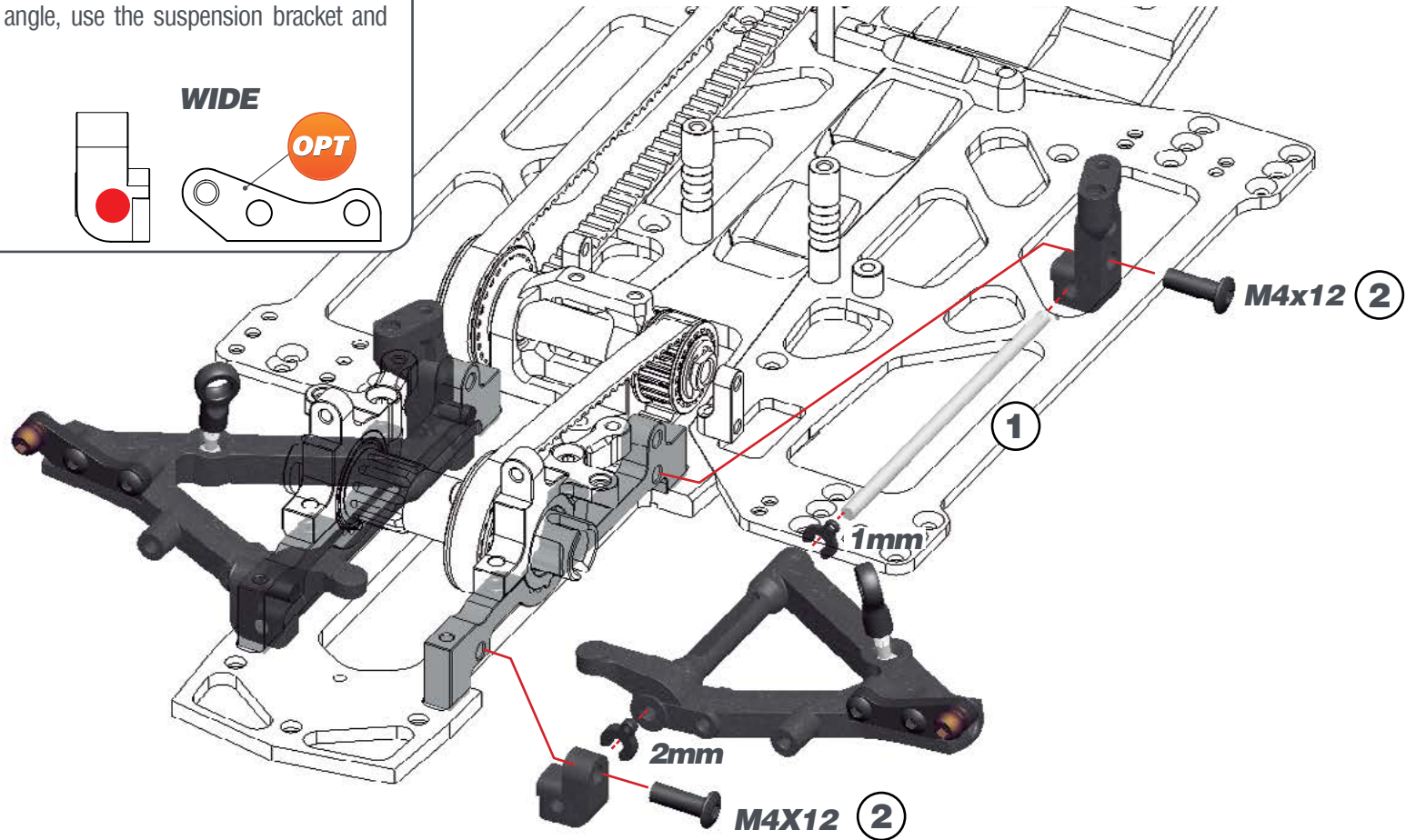
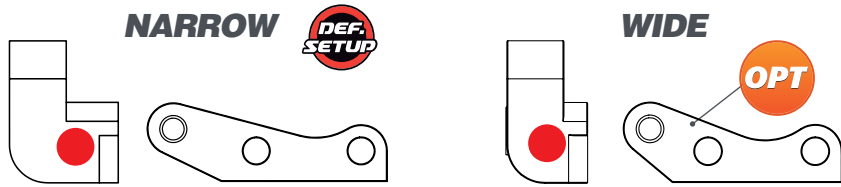
BAG 8



STEP 26

L=R 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



FRONT DOWN STOPS

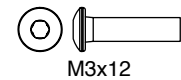
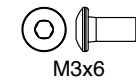
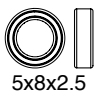
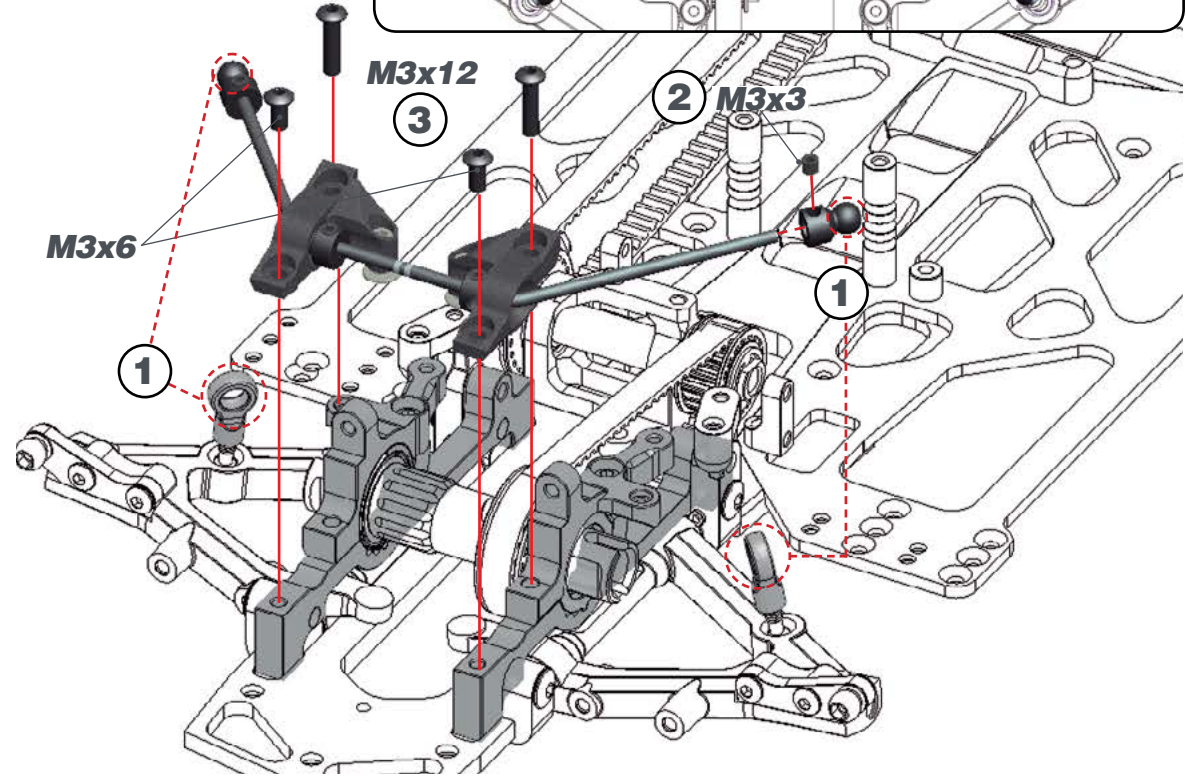
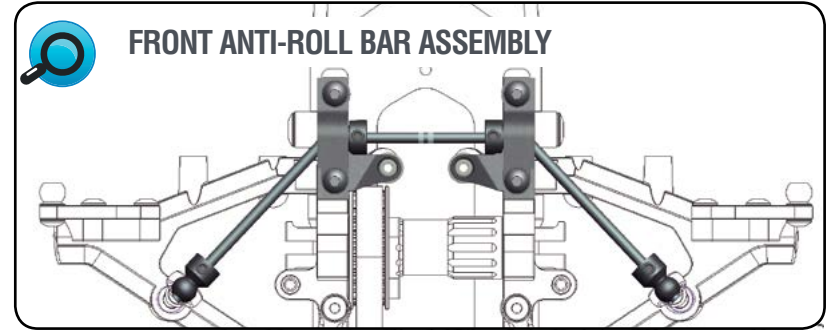
DEF. SETUP **L=R**

1 mm

27.2



27.3



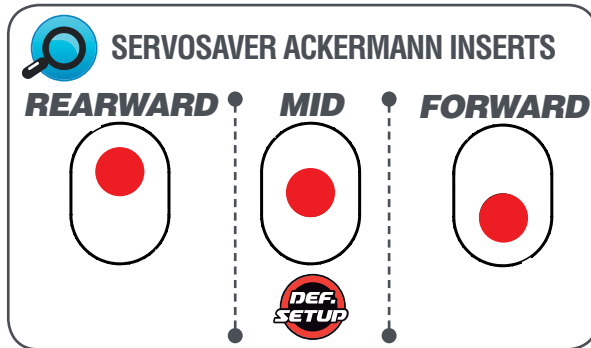
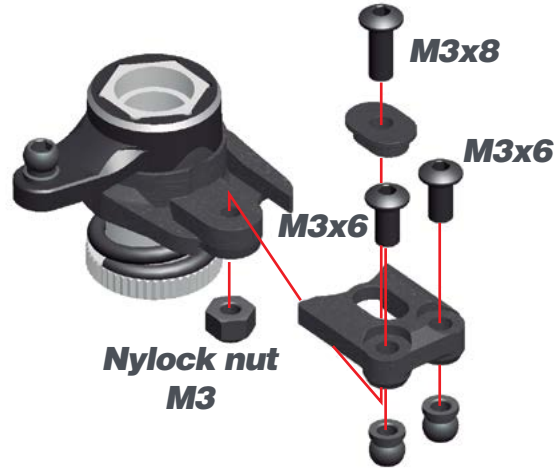
STEP 28

BAG 9

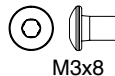
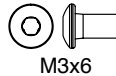
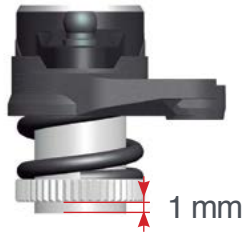
28.1



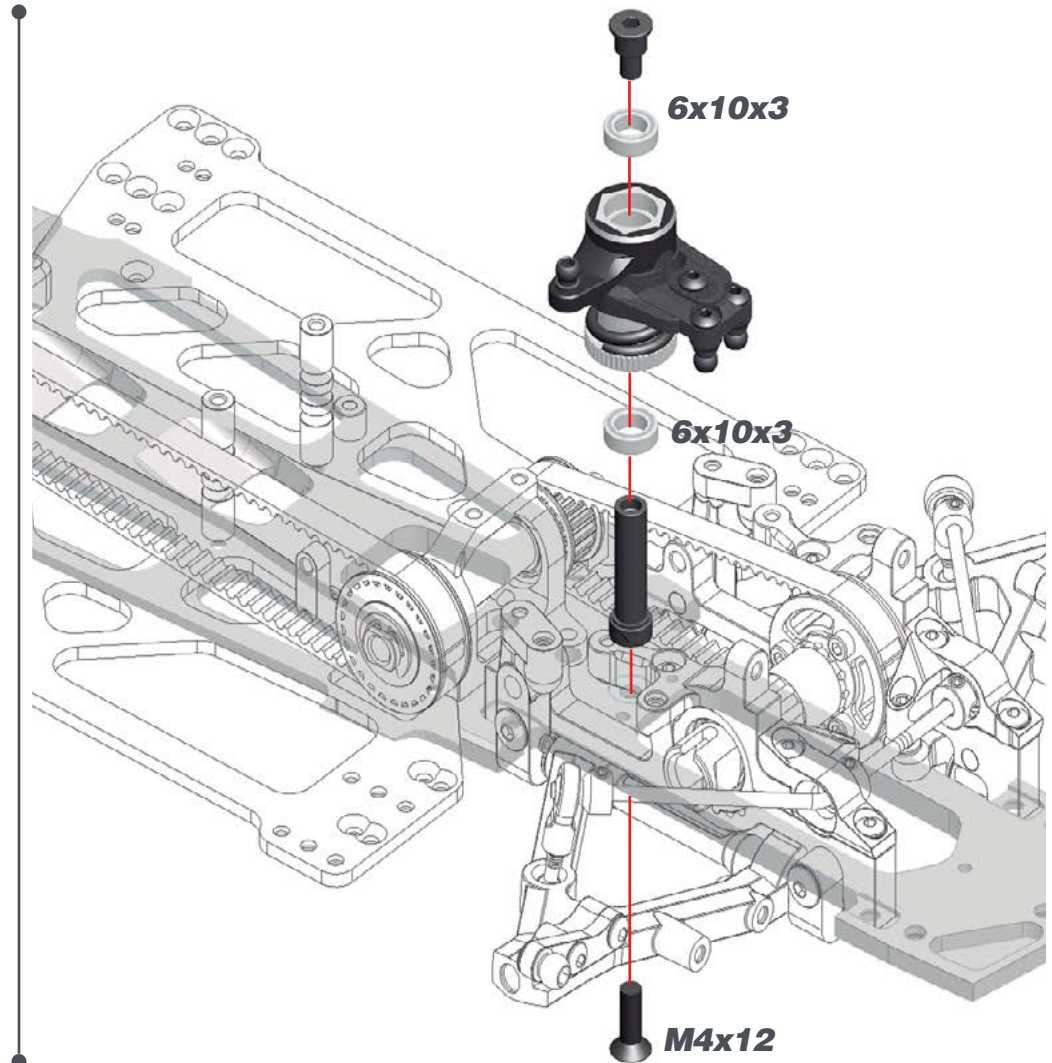
28.2



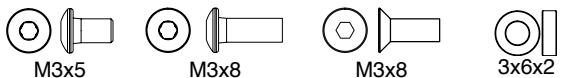
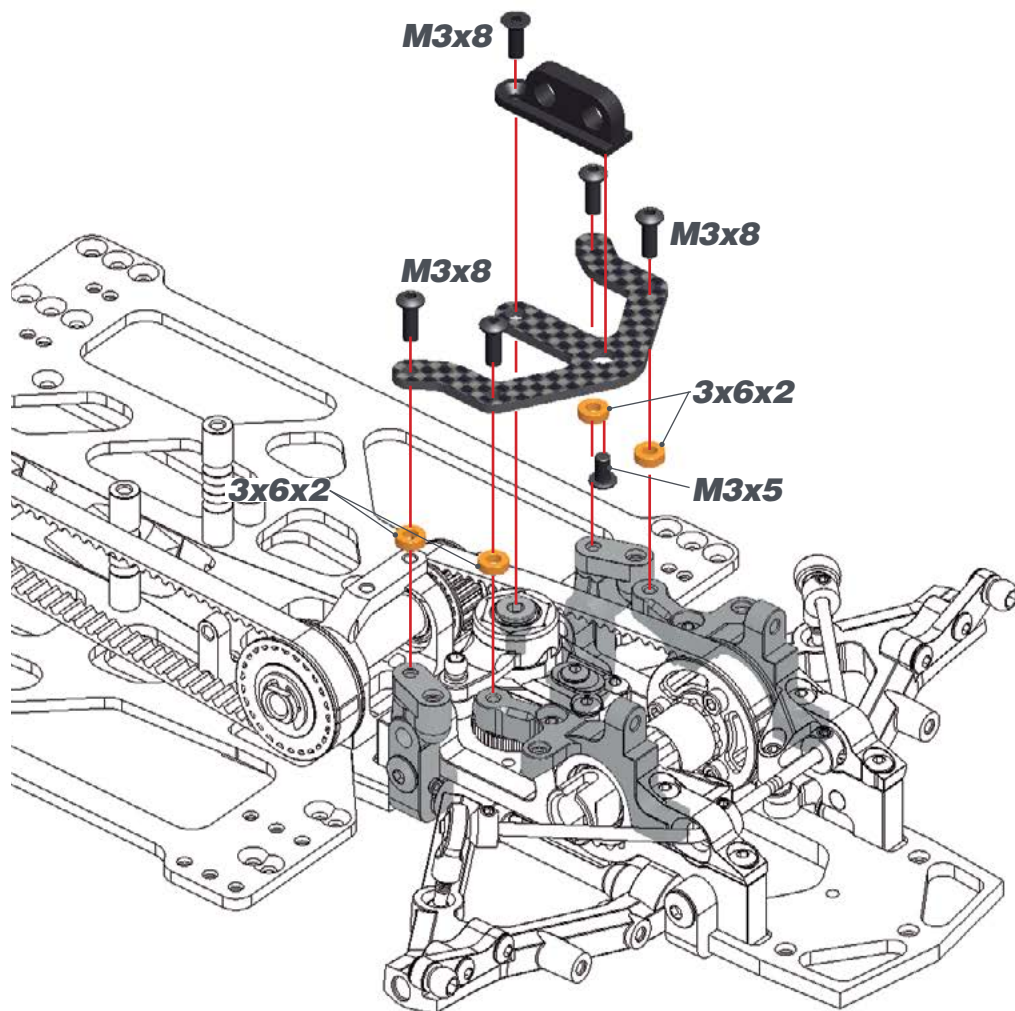
Preload the servo-saver-spring 1mm.



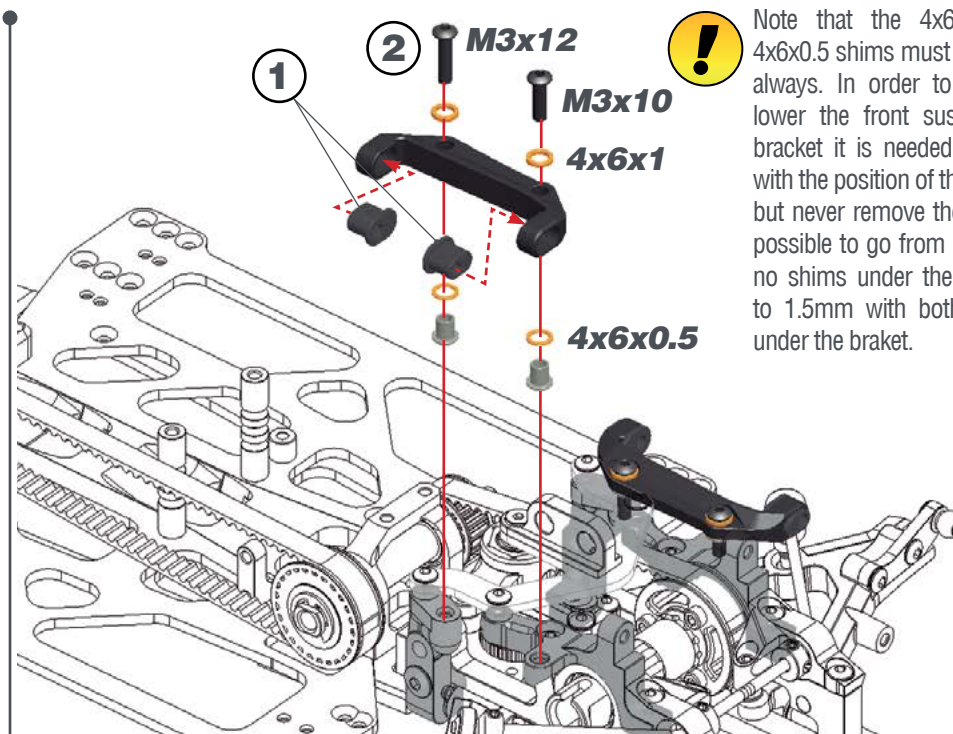
STEP 29



STEP 30



STEP 31

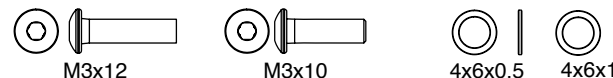


Note that the 4x6x1 and 4x6x0.5 shims must be used always. In order to rise or lower the front suspension bracket it is needed to play with the position of the shims but never remove them. Is it possible to go from "0" with no shims under the bracket to 1.5mm with both shims under the bracket.

L=R FRONT SUSPENSION INSERTS CHART

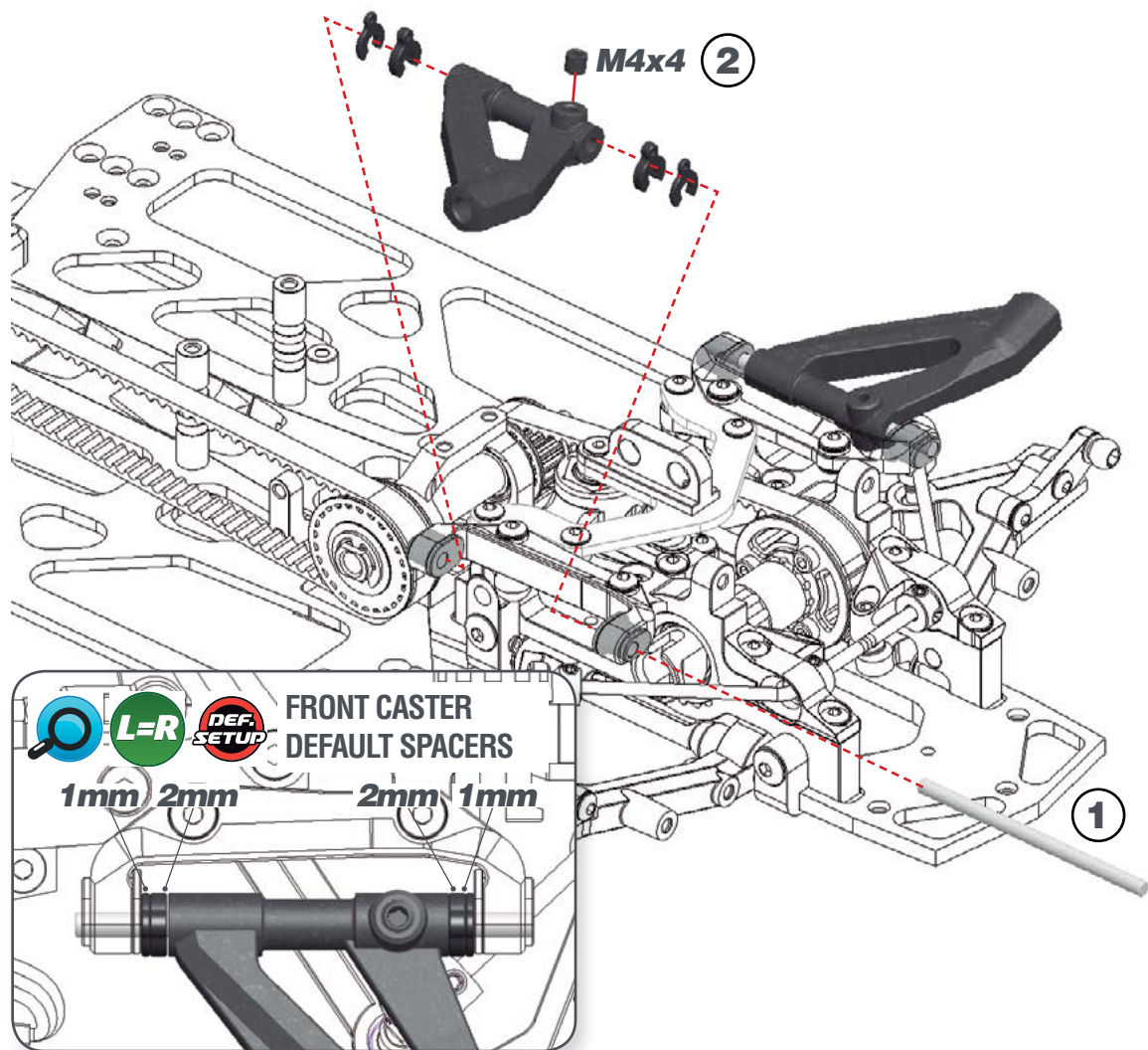
INSIDE		MID		OUTSIDE	
RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT

DEF. SETUP

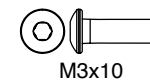
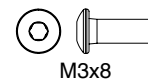
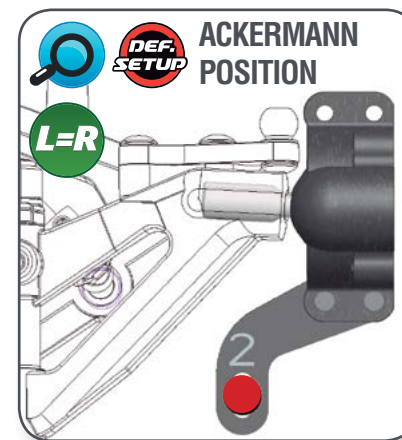
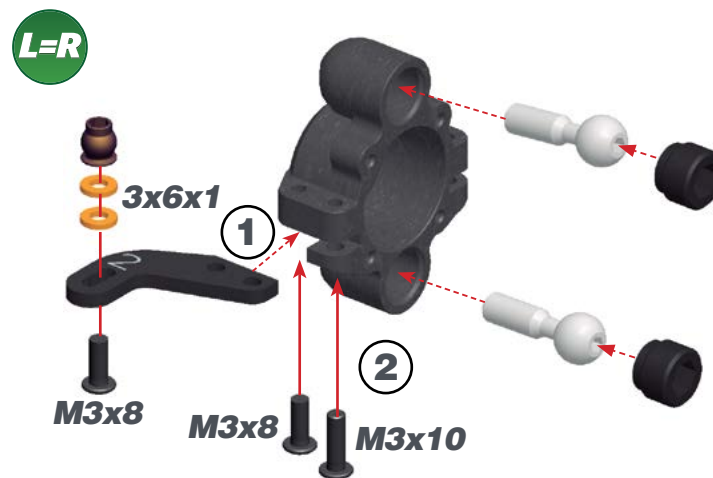


STEP 32

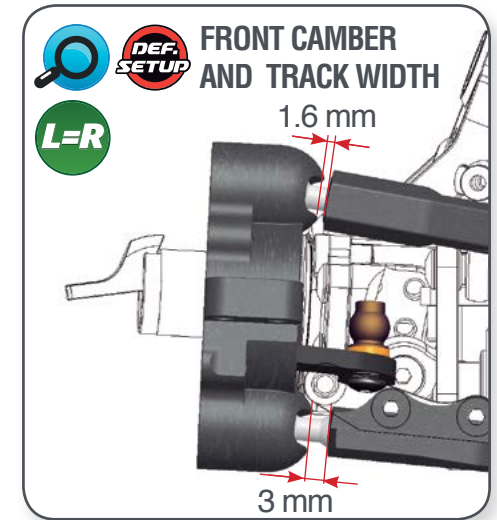
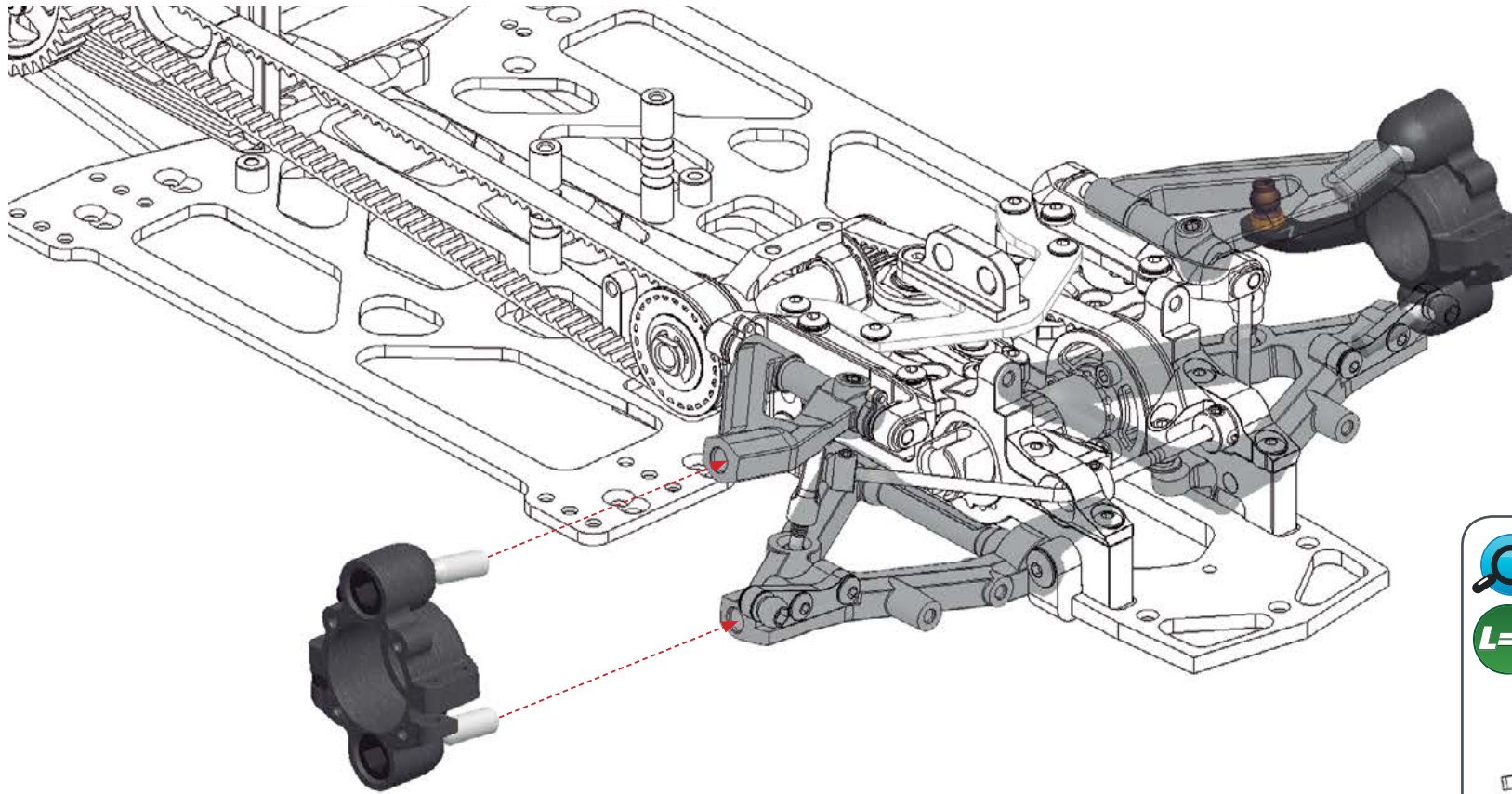
BAG 10



STEP 33



STEP 34



STEP 35

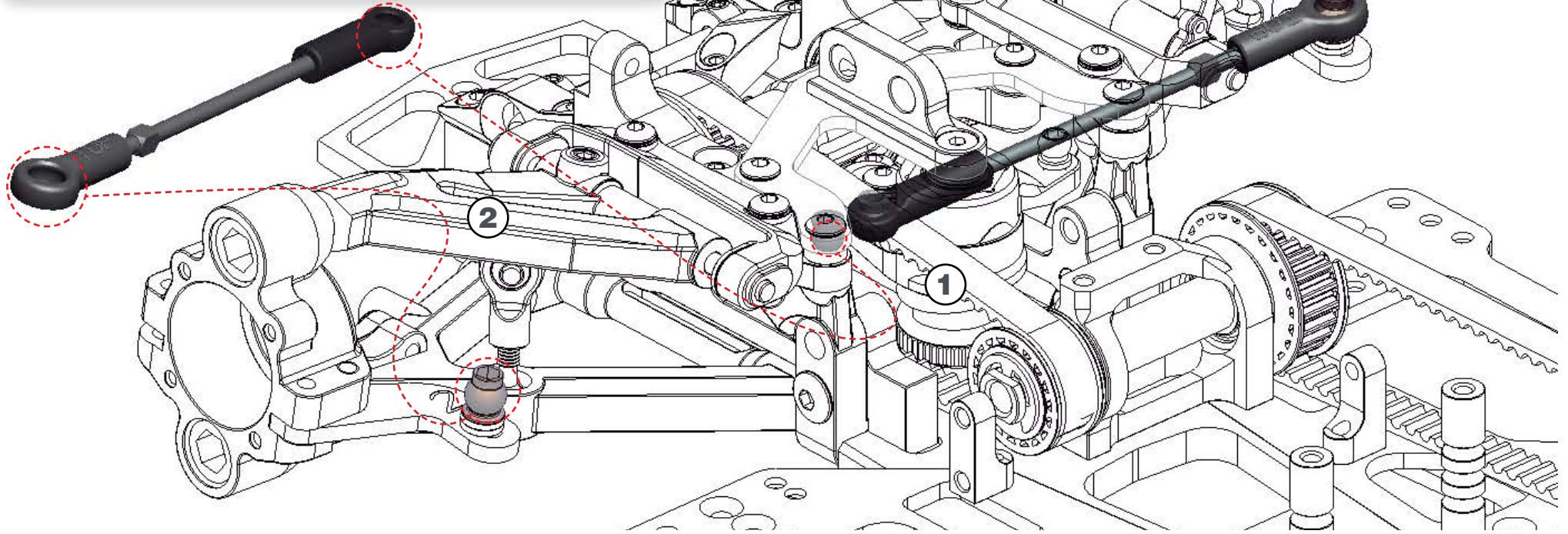
35.1



35.2

STEERING TRACKROD LENGTH

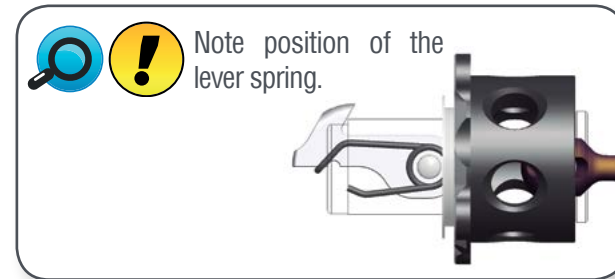
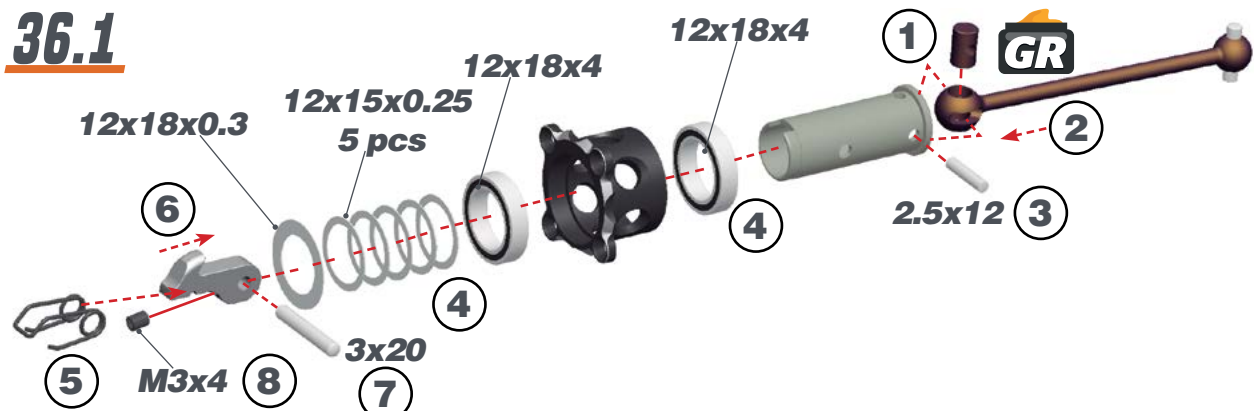
41.5 mm



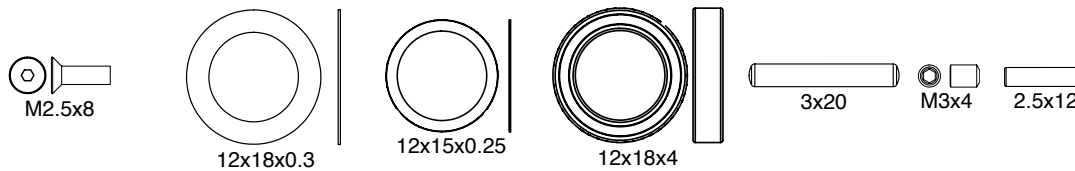
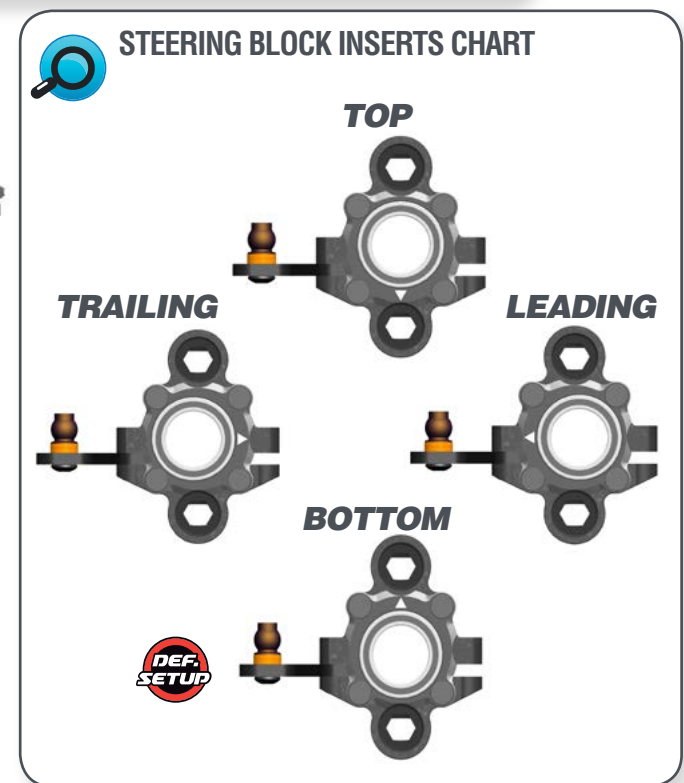
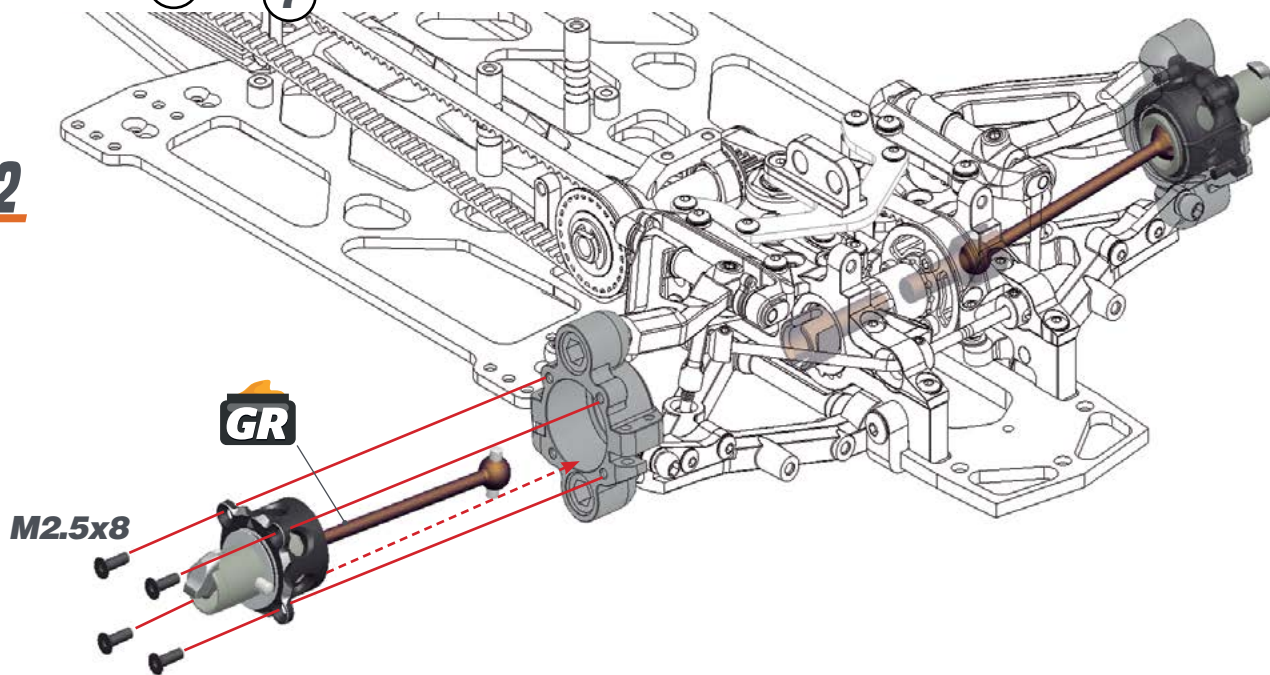
STEP 36

BAG 11

36.1



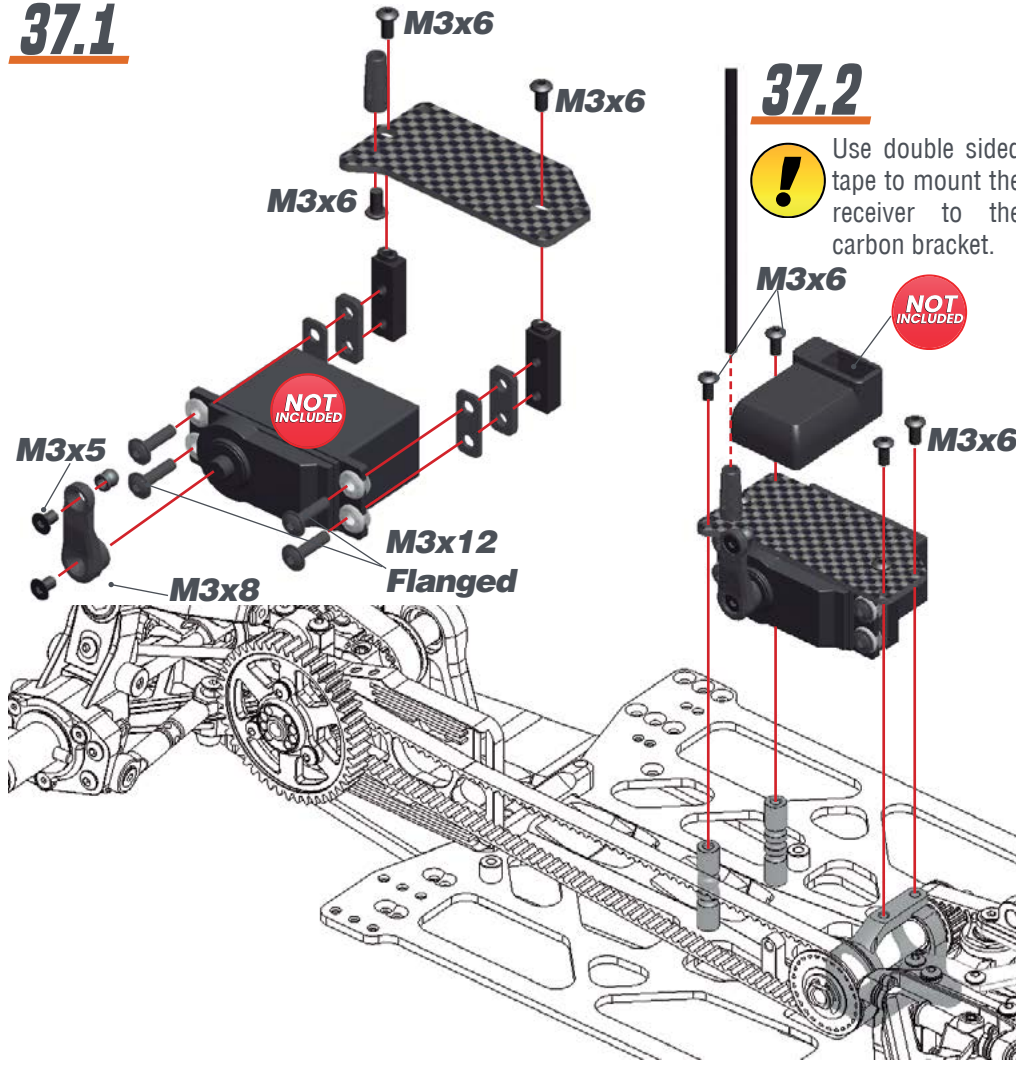
36.2



STEP 37

BAG 12

37.1



37.2



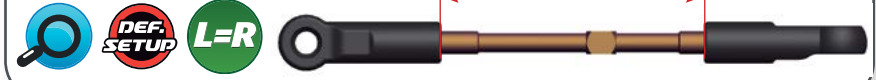
Use double sided tape to mount the receiver to the carbon bracket.

NOT INCLUDED

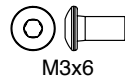
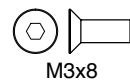
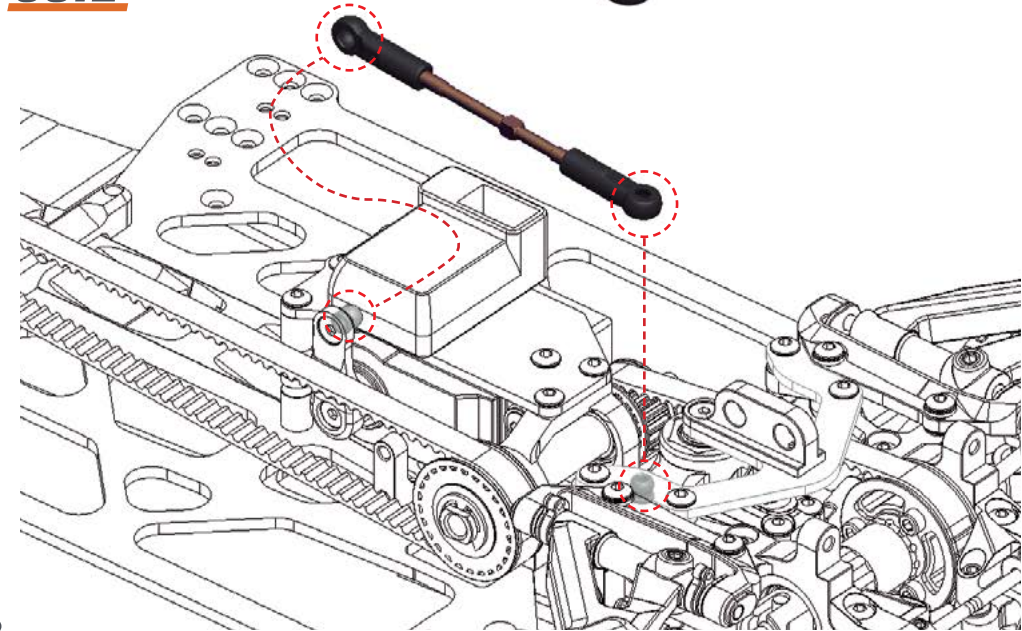
38.1

STEERING TRACKROD LENGTH

35 mm



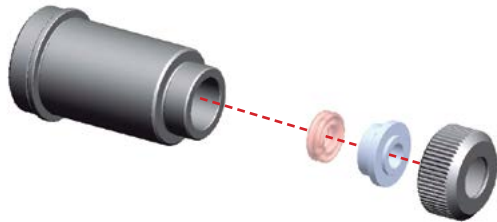
38.2



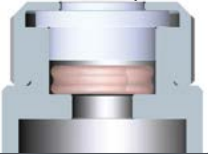
STEP 39 SHOCKS BAG

39.1

Use some silicone oil during the assembly.

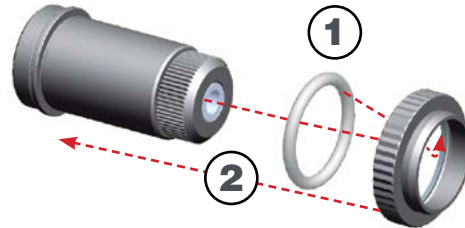


Note the correct orientation of the shock spacers.

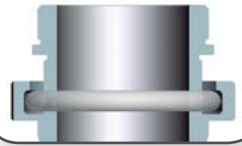


39.2

Insert the o-ring inside the spring collar.



Note the correct position of the o-ring.



STEP 40

40.1

Nut M2.5 **REAR**

Nut M2.5 **FRONT**



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.

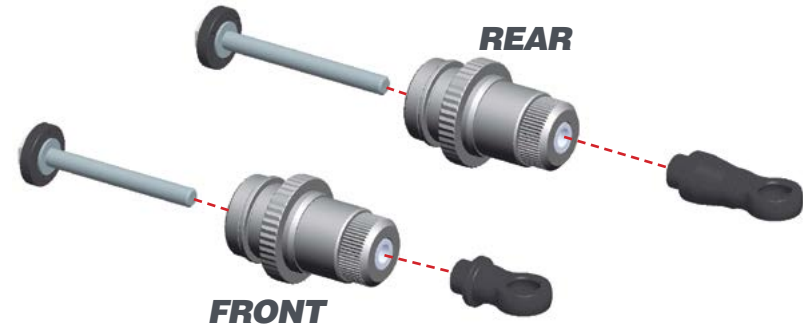
REAR

FRONT

40.2



Use some silicone oil during the assembly.



Nut M2.5

STEP 40

40.1

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



40.2

1- Fill up with silicone 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.



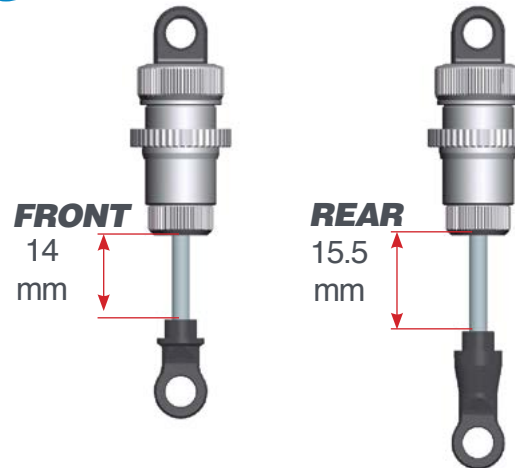
41.3

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

2- Close the shock cap completely.

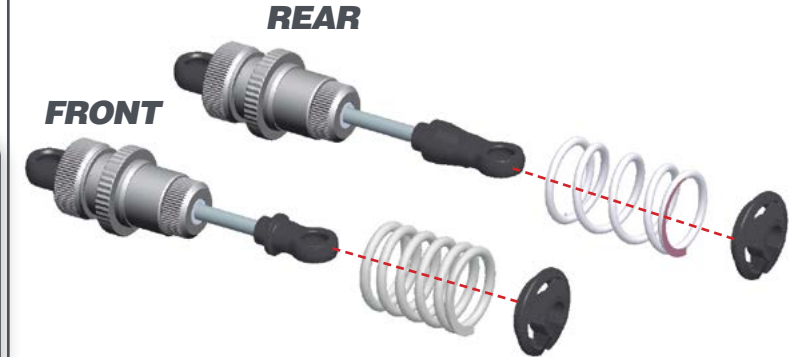


SHOCKS LENGTH: Measure the shock length fully extended.



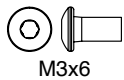
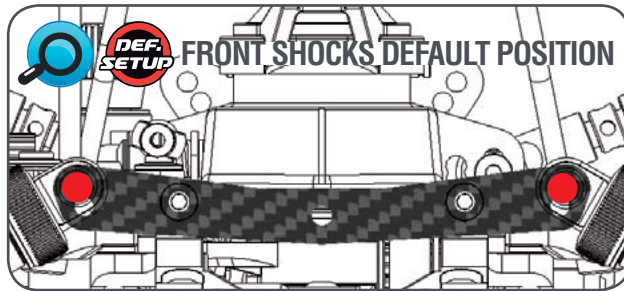
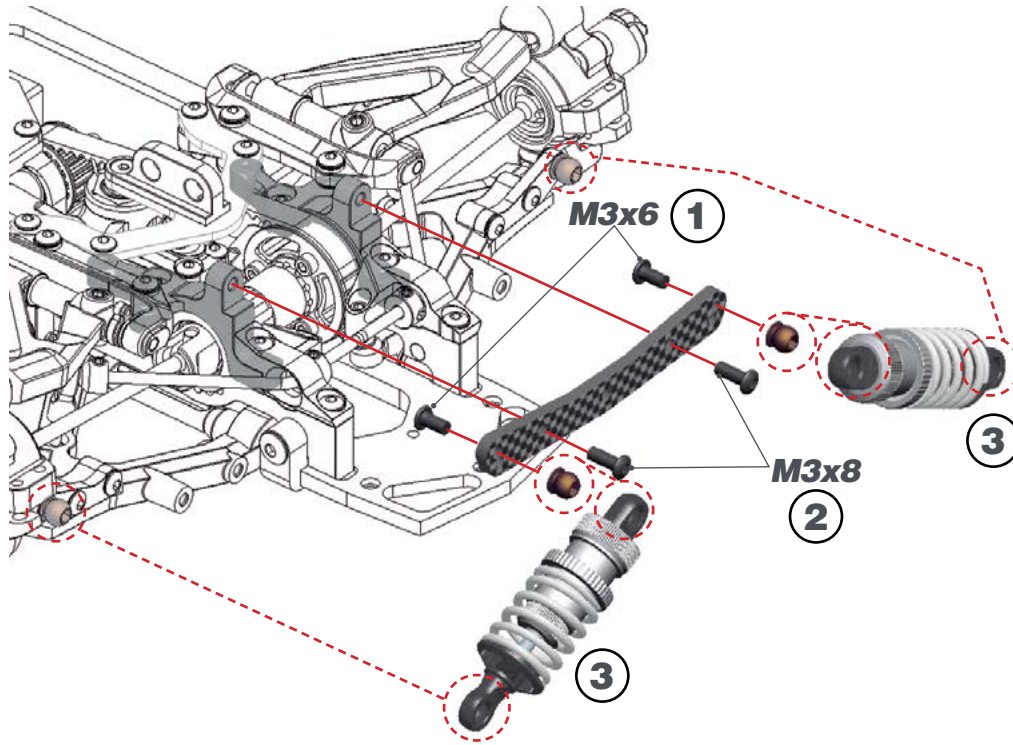
STEP 41

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

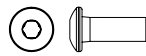


STEP 41

BAG 13

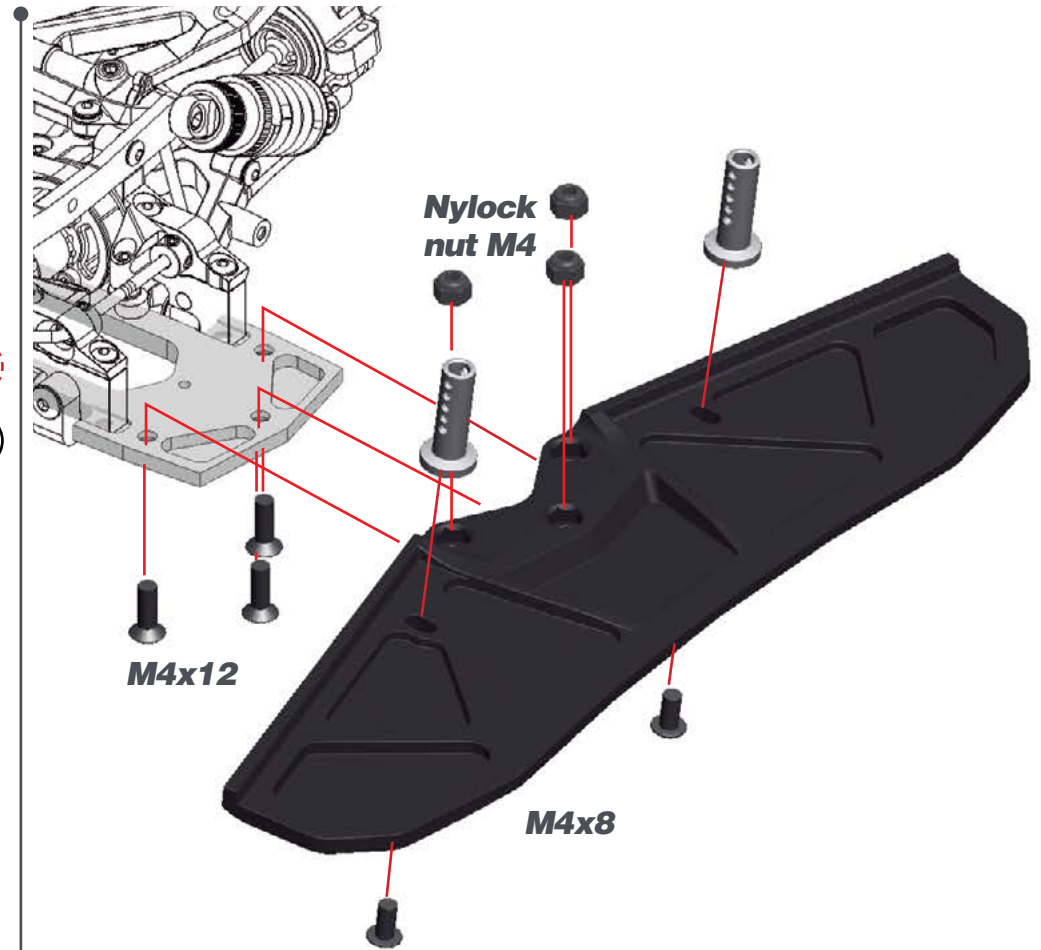


M3x6



M3x8

STEP 42



M4x8



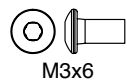
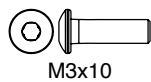
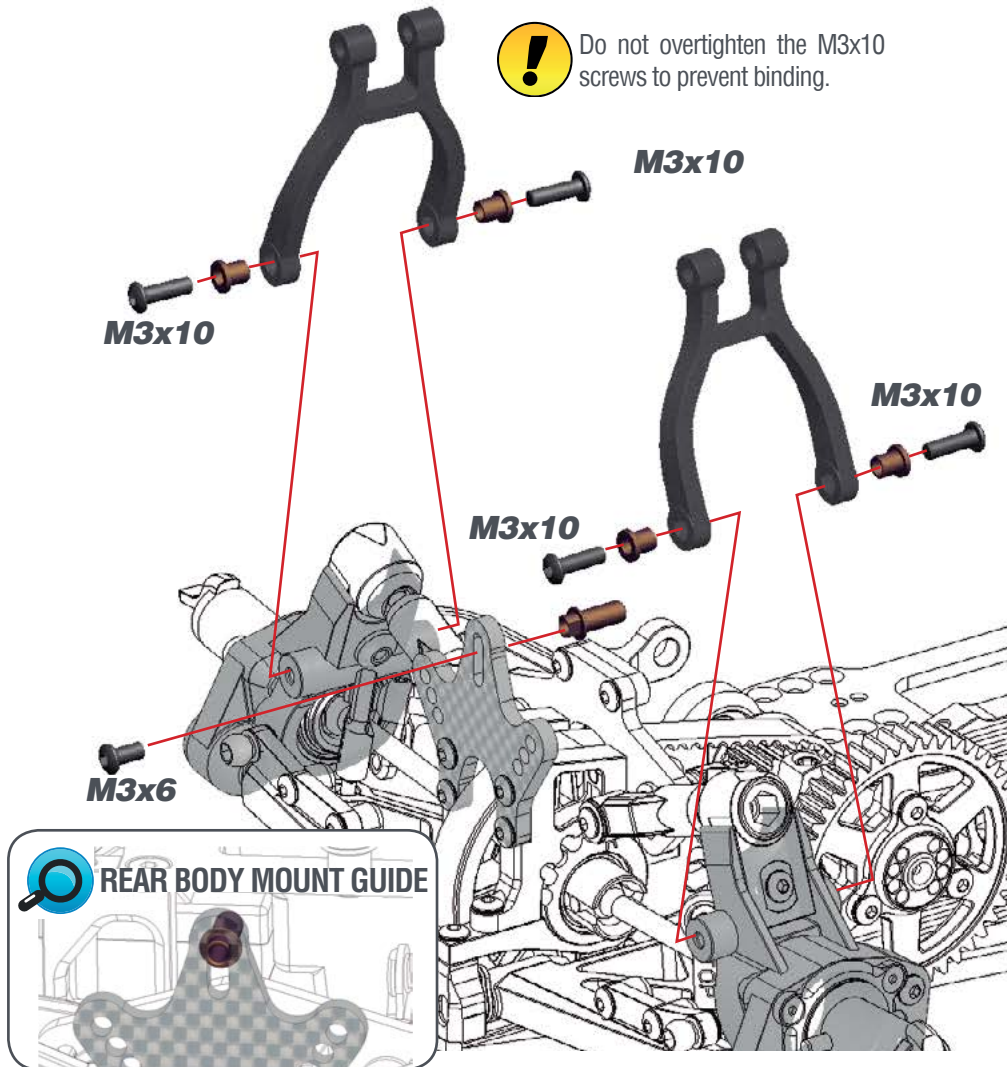
M4x12



Nylock Nut
M4

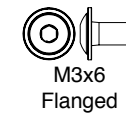
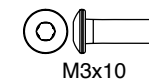
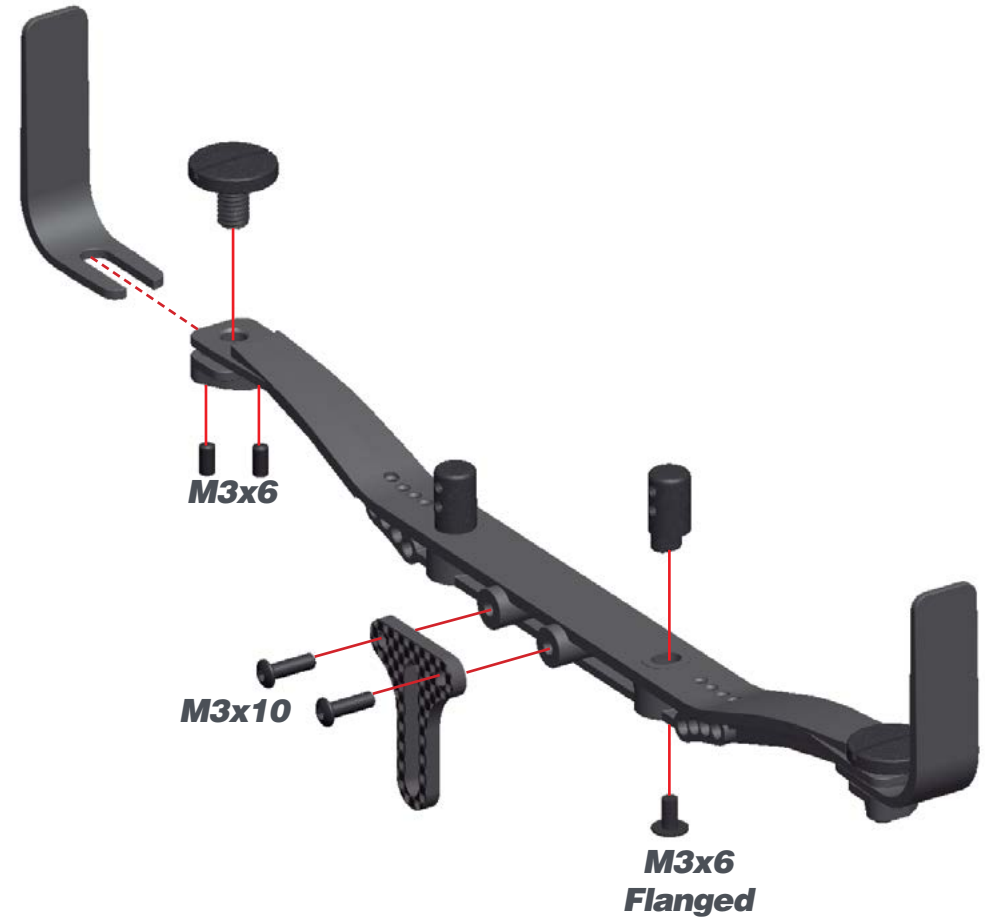
STEP 43

! Do not overtighten the M3x10 screws to prevent binding.

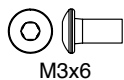
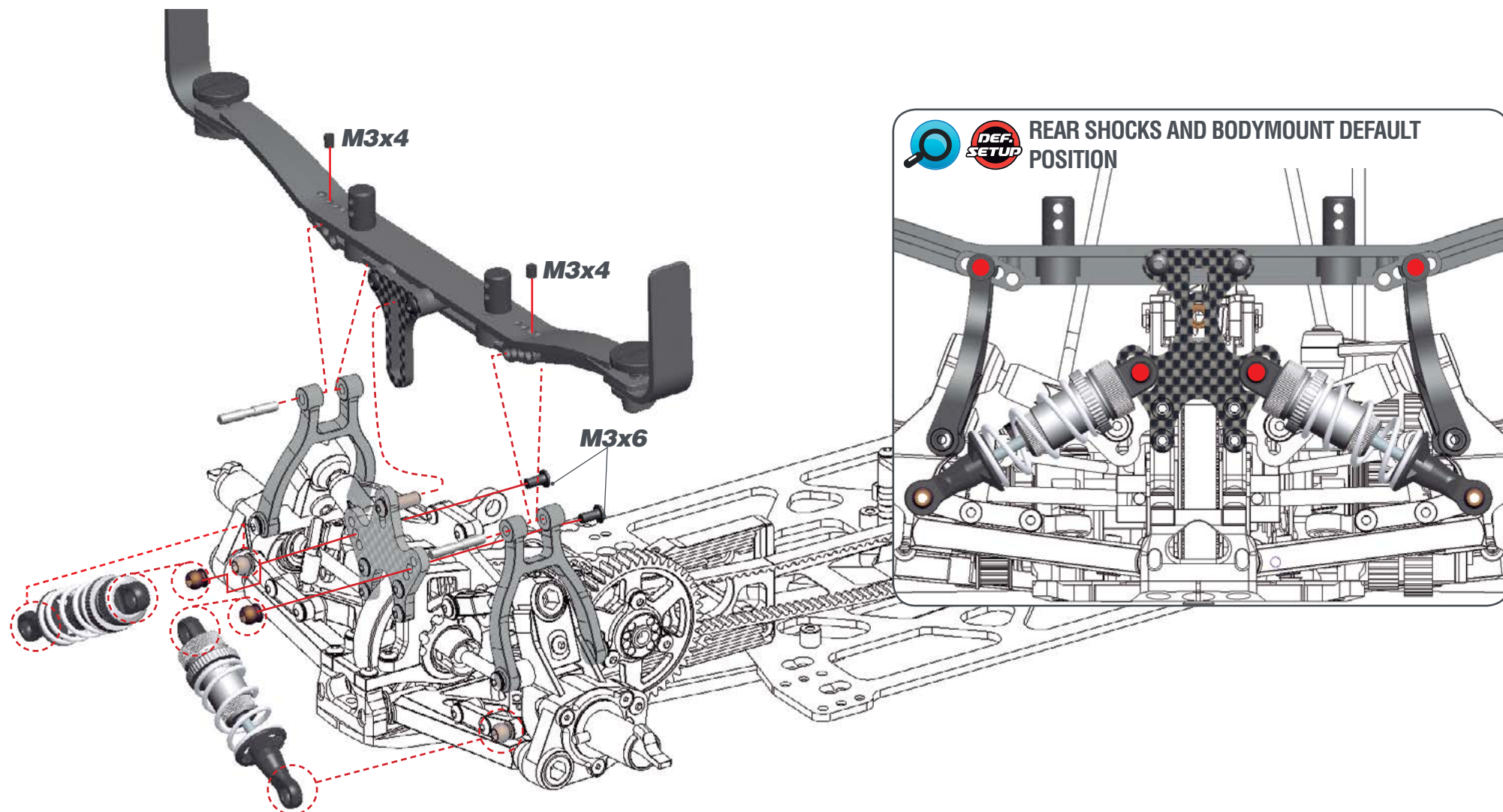


STEP 44

! Do not overtighten M3x6 Flanged screws.

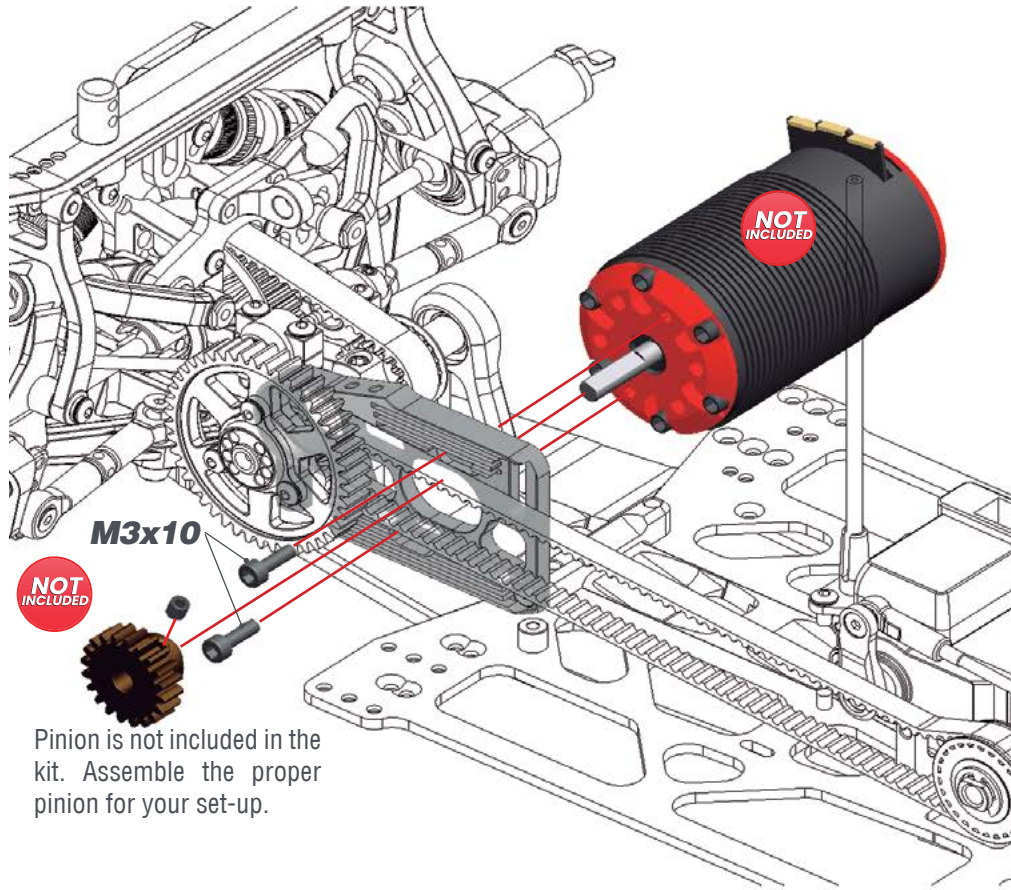


STEP 45



STEP 46

BAG 14

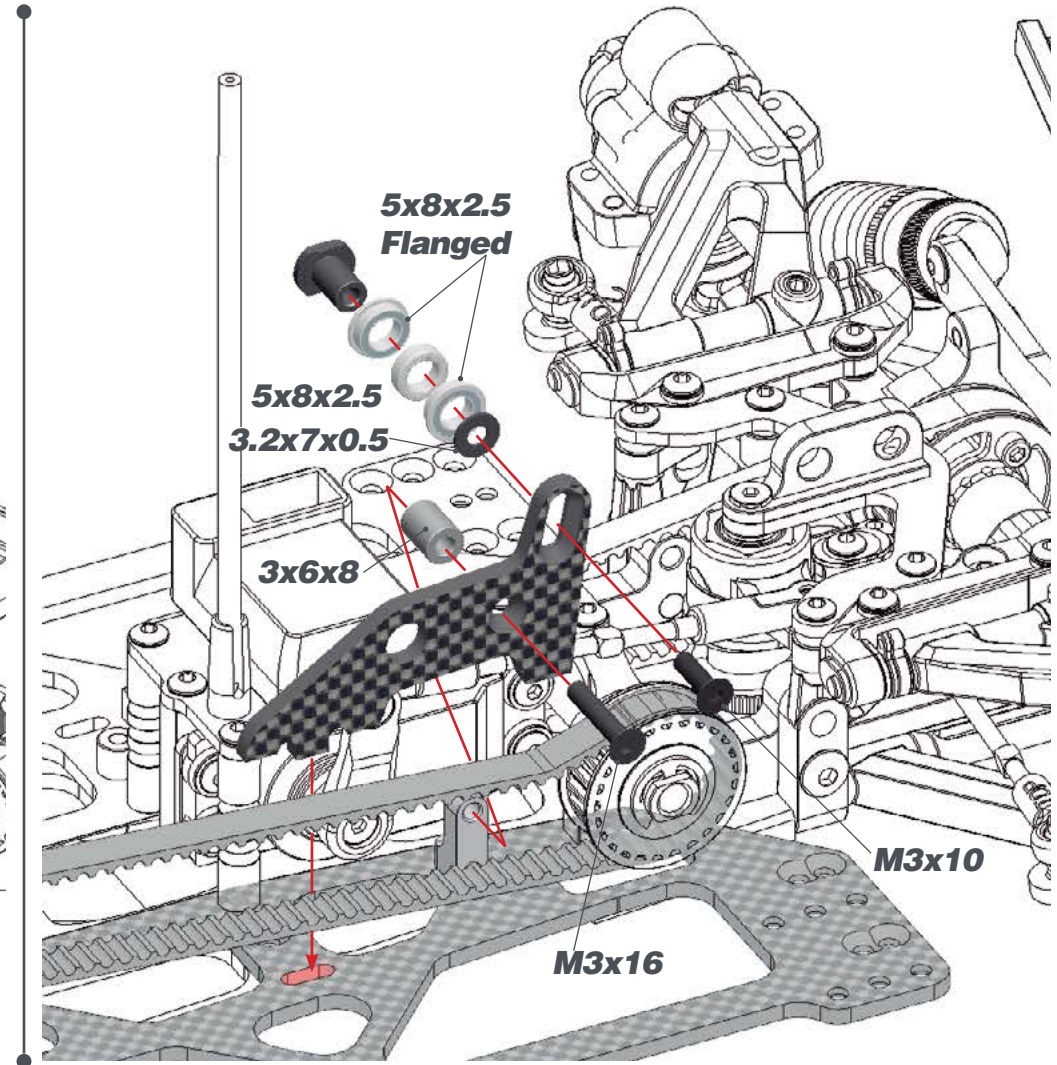


M3x10

NOT INCLUDED

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

STEP 47



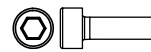
5x8x2.5
Flanged

5x8x2.5
3.2x7x0.5

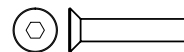
3x6x8

M3x10

M3x16



M3x10



M3x16



M3x10



5x8x2.5 Flanged



5x8x2.5

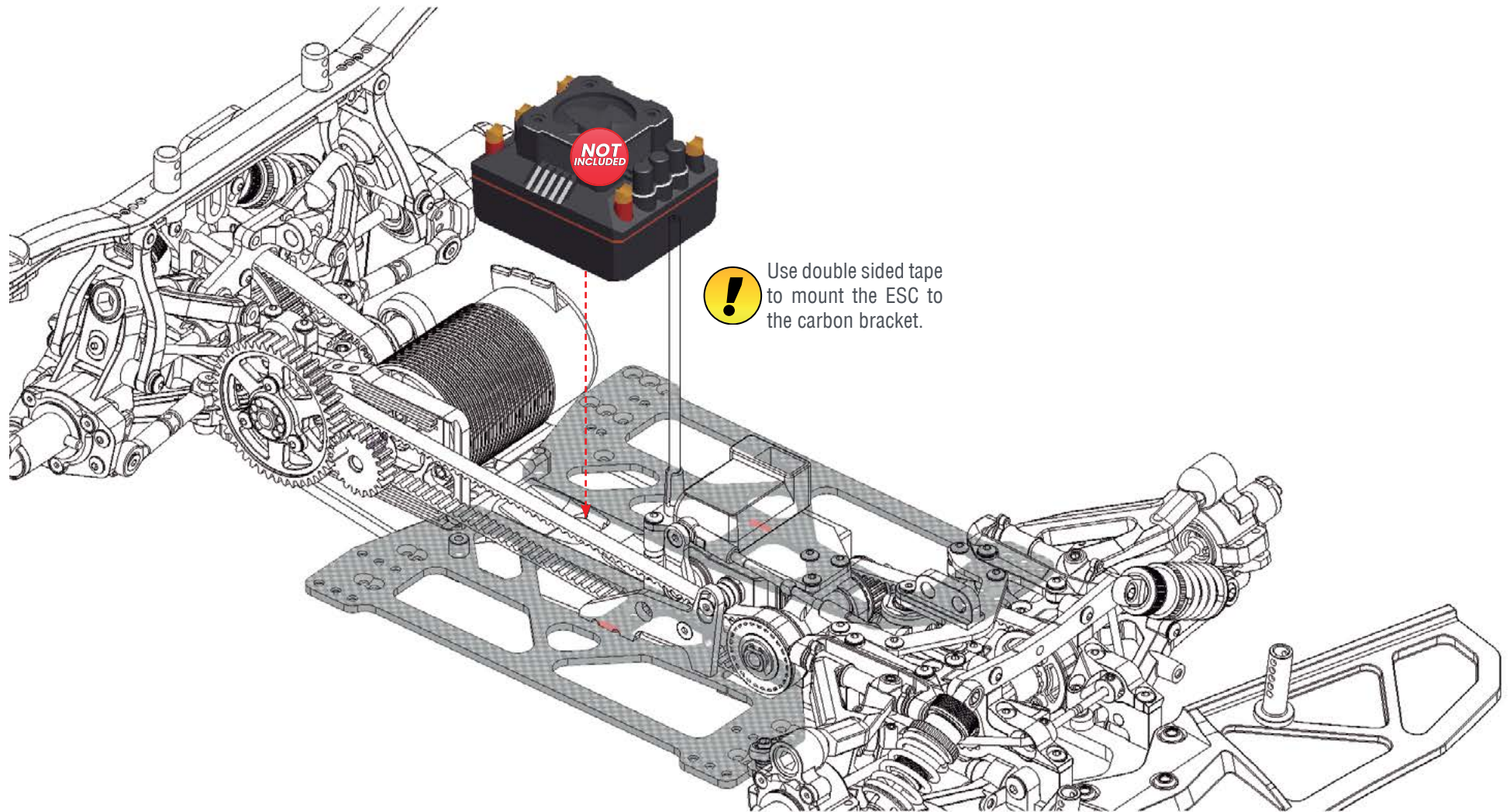


3x6x8

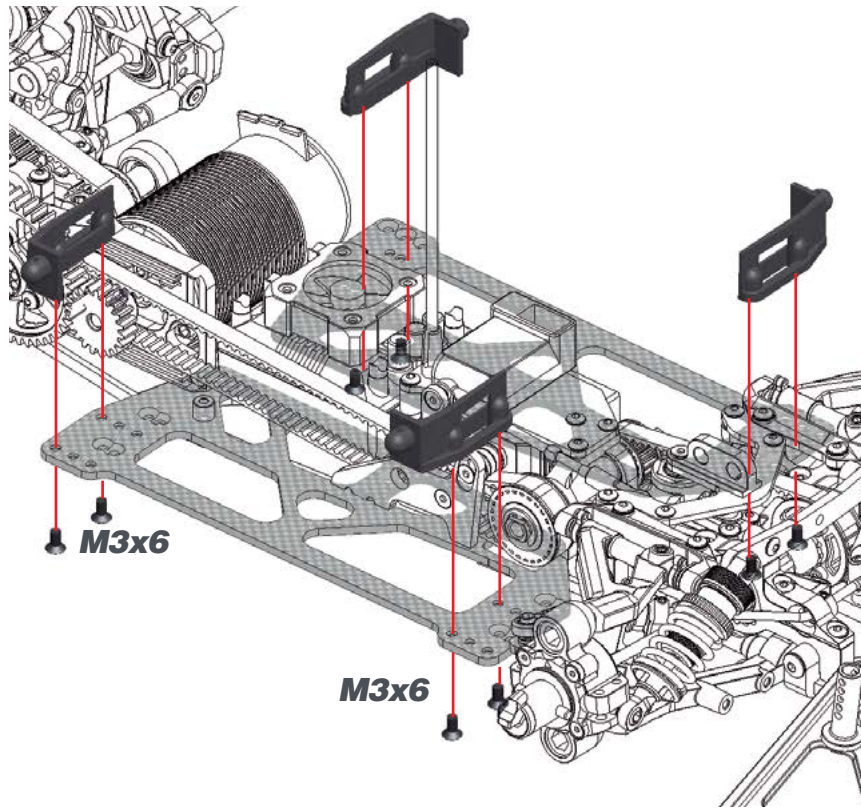


3.2x7x0.5

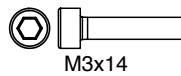
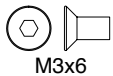
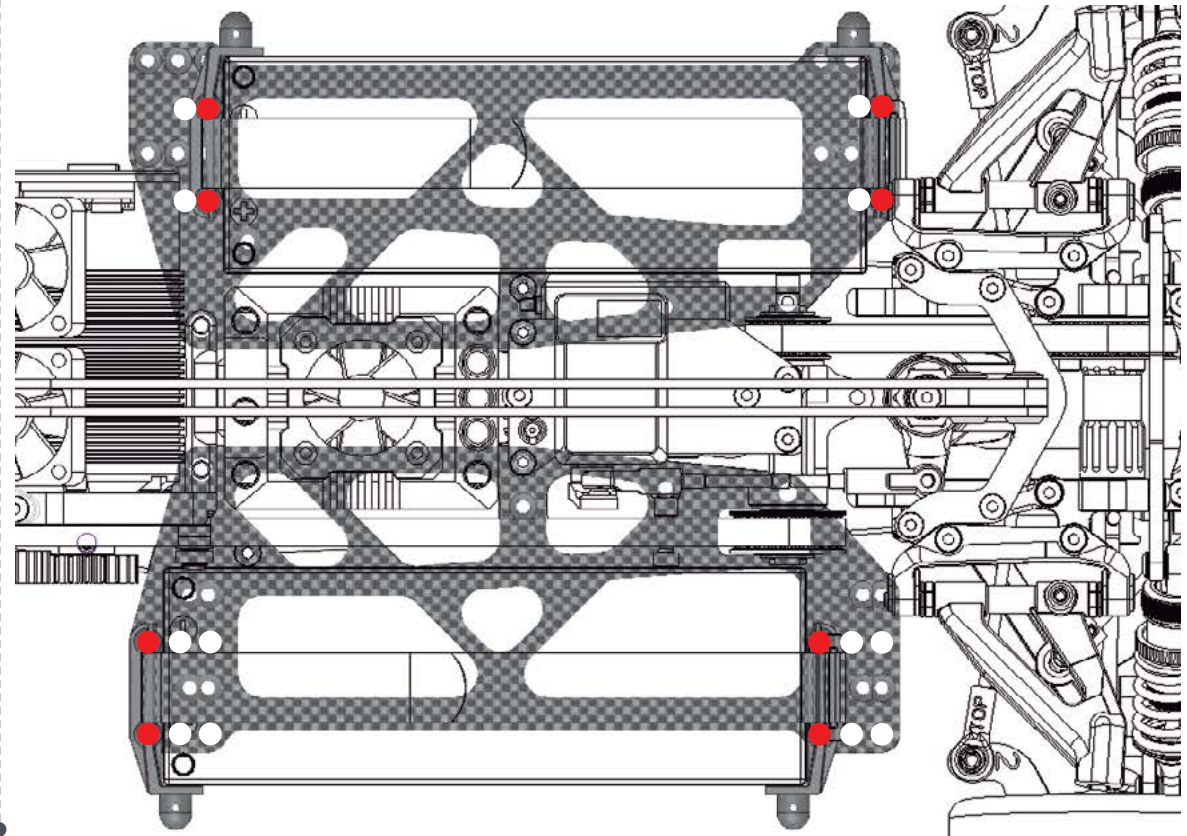
STEP 48



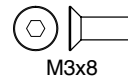
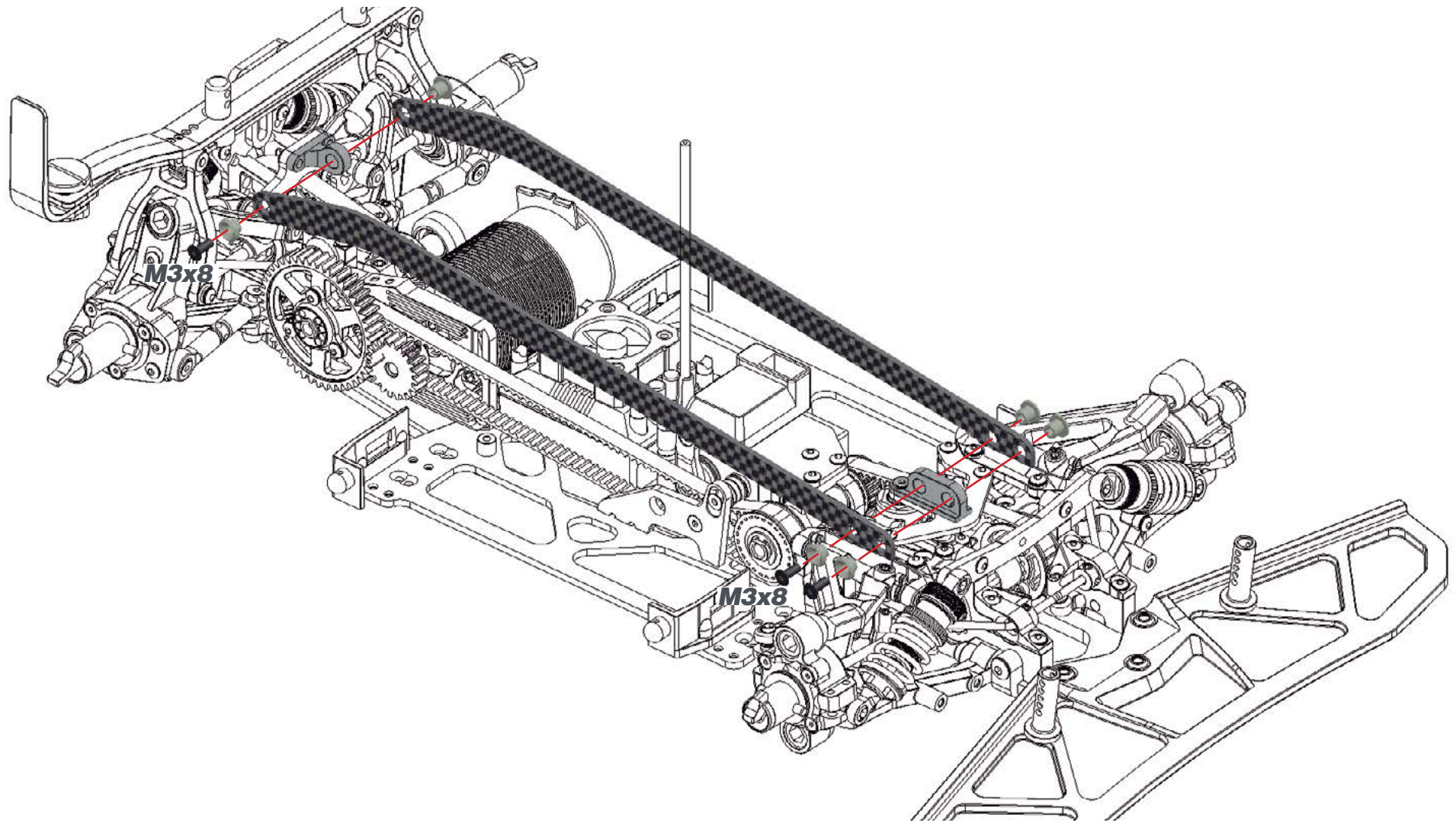
STEP 49



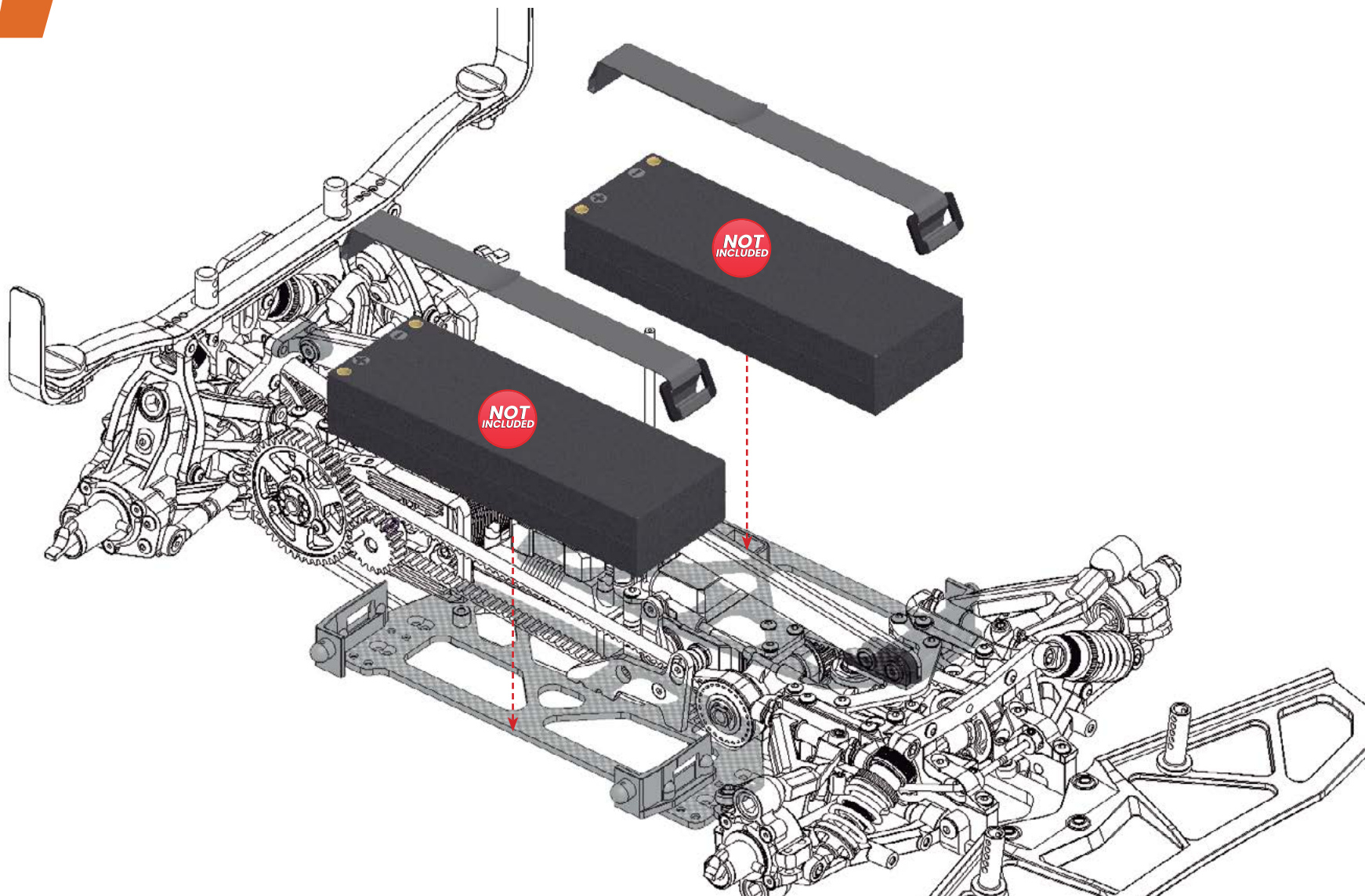
- Right and left batteries are not symmetrically placed.
- The default position of the battery brackets in order to have a proper weight balance of the whole car is the showed by the red dots in the picture.
- It is possible to change the weight balance by moving the batteries more forward (more understeer)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



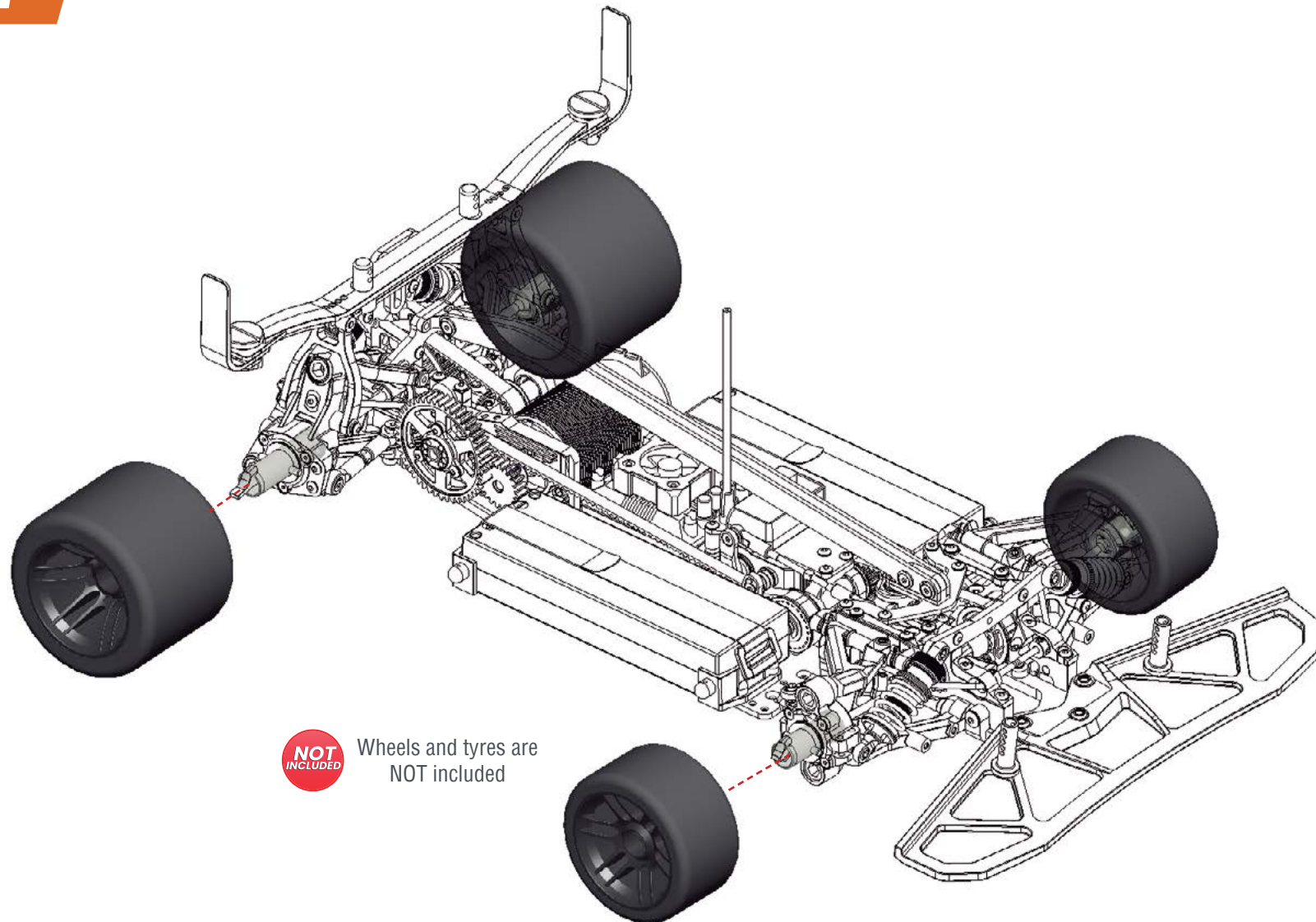
STEP 49



STEP 50



STEP 51



NOT INCLUDED

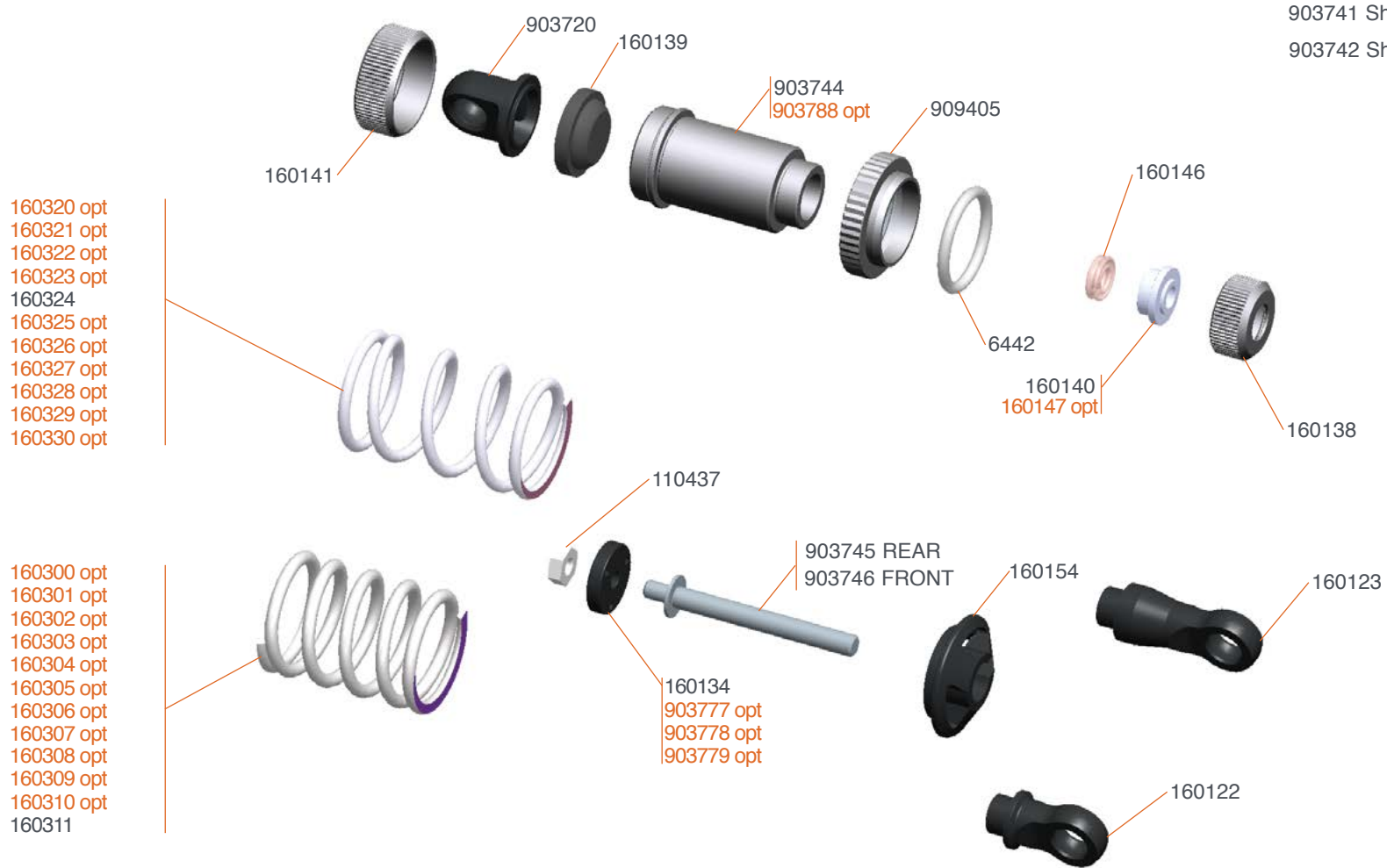
Wheels and tyres are NOT included

NOTES:

A series of horizontal dashed lines for writing notes, consisting of 14 rows.

INDEX

SHOCKS EXPLODED VIEW	43
RR UPRIGHTS ANB FR STEERING BLOCKS EXP. VIEW	44
REAR EXPLODED VIEW	45
TRANSMISSION EXPLODED VIEW	46
FRONT 1 EXPLODED VIEW	47
FRONT 2 EXPLODED VIEW	48
ELECTRONICS EXPLODED VIEW	49
BUMPER AND BODYMOUNT EXPLODED VIEW	50
FINAL ASSEMBLY EXPLODED VIEW	51
TEAM SERPENT NETWORK	52



903741 Shockset XLV short (2)
903742 Shockset XLV long (2)

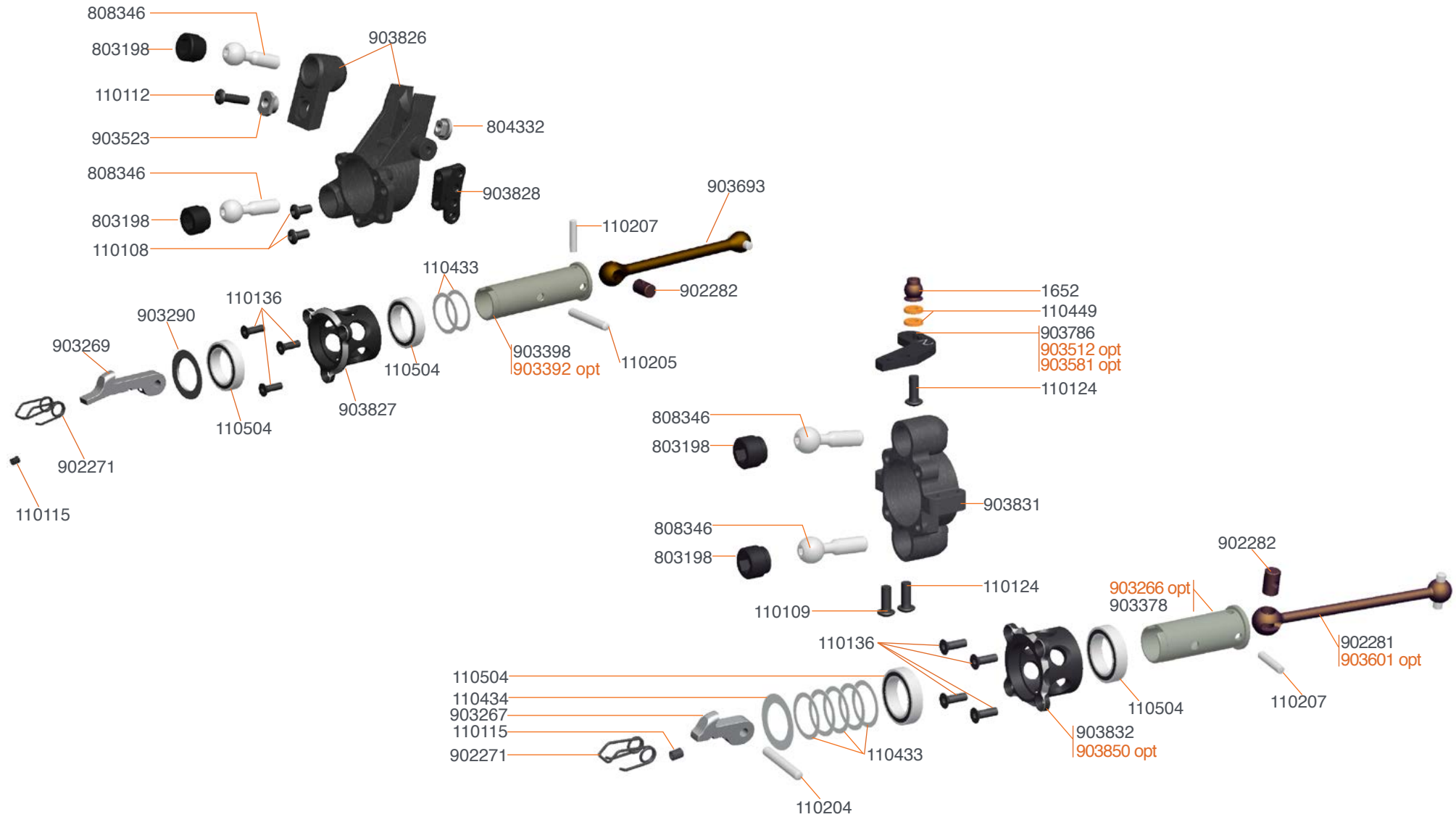
- 160147 Shock onroad big bore bushing LF (4)
- 160300 Spring white L23 (2.3/13) (2)
- 160301 Spring yellow L23 (2.8/16) (2)
- 160302 Spring orange L23 (3.4/19.5) (2)
- 160303 Spring red L23 (4.1/23.5) (2)
- 160304 Spring pink L23 (4.0/28) (2)
- 160305 Spring blue L23 (5.8/33) (2)
- 160306 Spring purple 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)



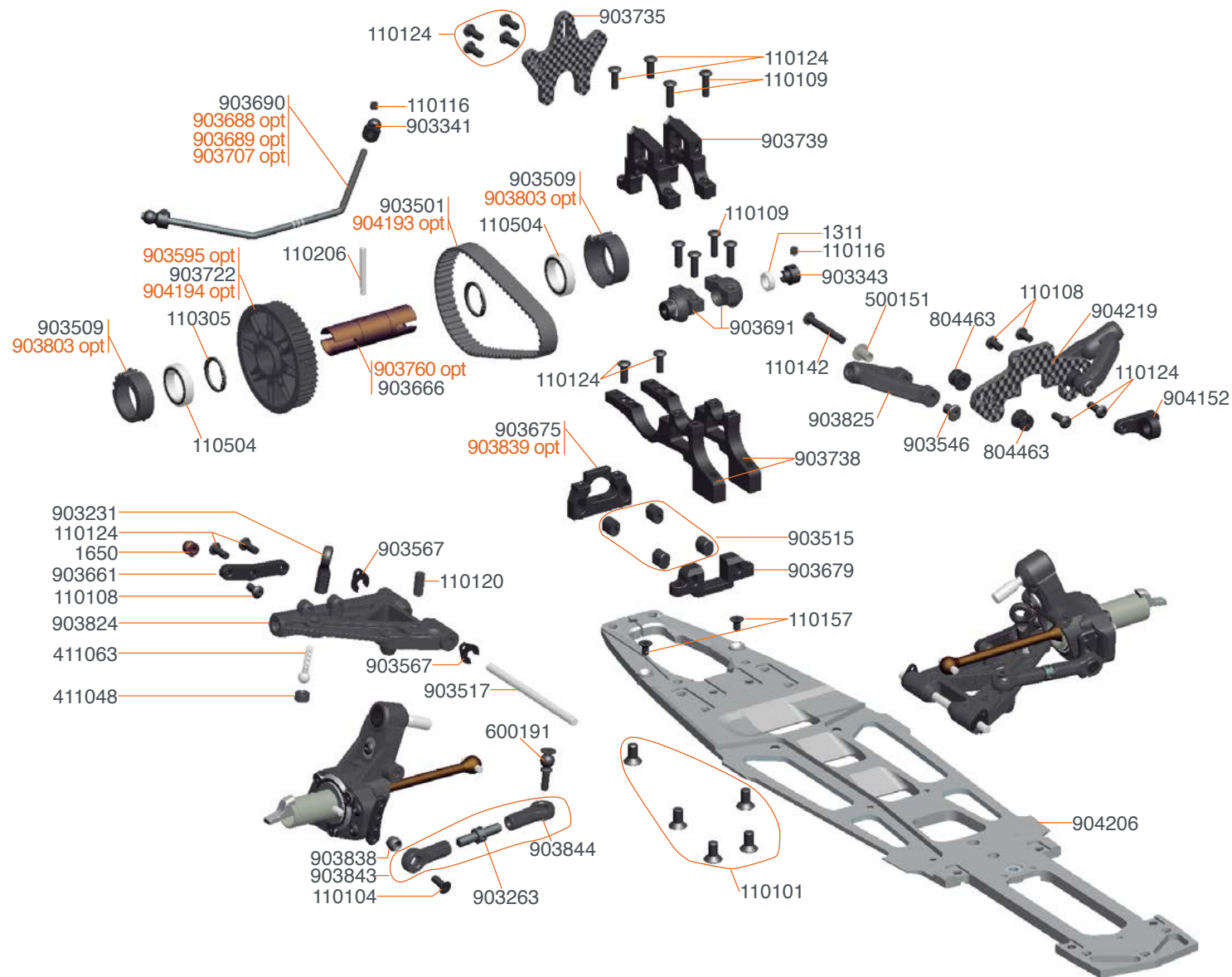
RR UPRIGHTS AND FR STB. EXPLODED VIEW



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

- 903850 Steering block excenter 990 double X (2) S990
- 903851 Offset shim excenters 0.5mm (4) S990





- 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

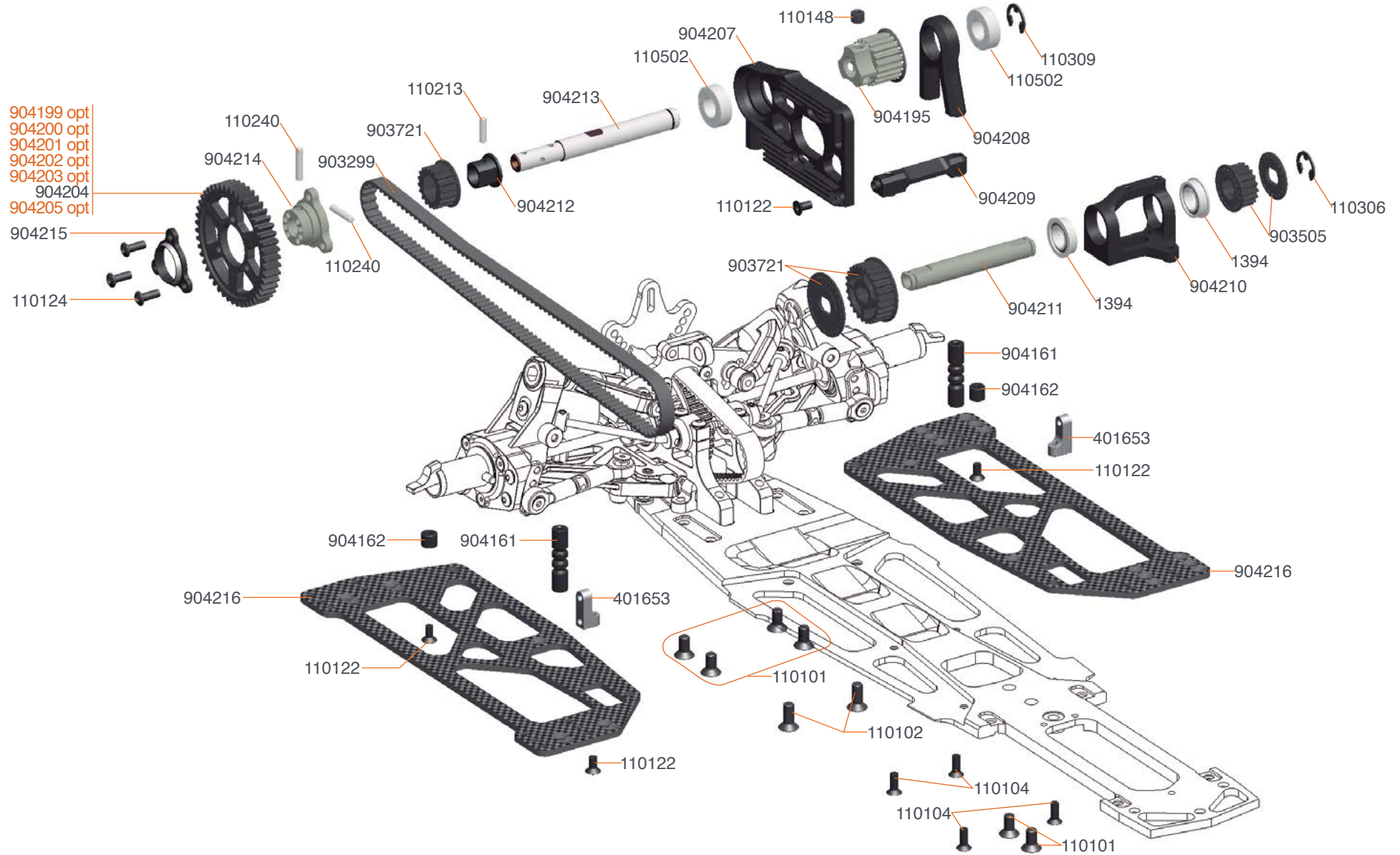
- 903839 Rearplate flex S990
- 903840 Weight bridge fr carbon S990
- 903780 Heave demper set rear
- 904193 Belt rear 100S3M201 low friction
- 904194 Pully solid axle rr S989E



TRANSMISSION EXPLODED VIEW

VIPER
990

SERPENT

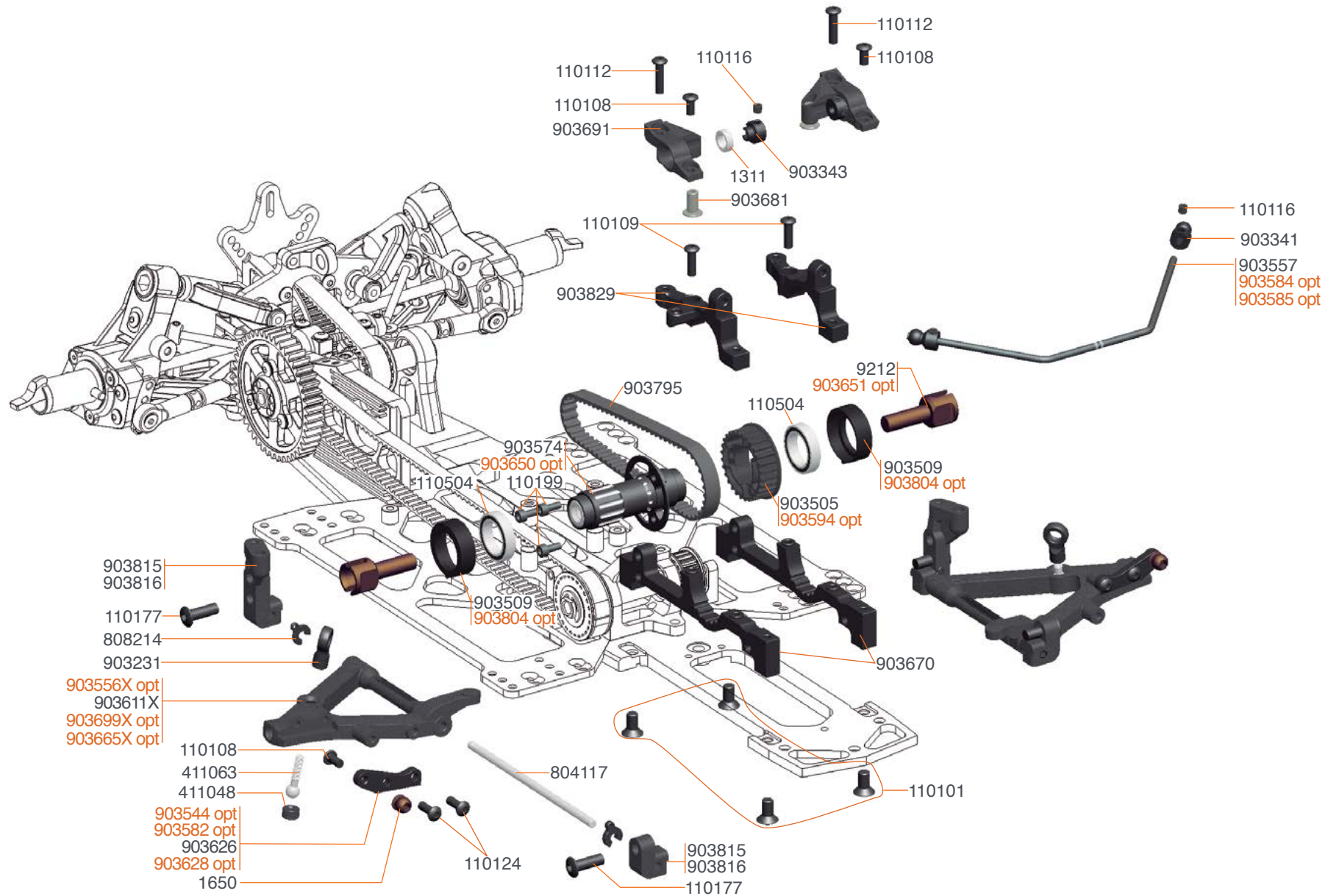


904199 Spurgear composite 36T M1
904200 Spurgear composite 38T M1
904201 Spurgear composite 40T M1
904202 Spurgear composite 42T M1

904203 Spurgear composite 44T M1
904205 Spurgear composite 45T M1

OPT

FRONT 1 EXPLODED VIEW



- 903544 Shock extension bracket FR alu (2)
- 903584 Antirroll bar FR soft S989
- 903585 Antirroll bar FR hard S989
- 903582 Shock extension bracket FR carbon (2)

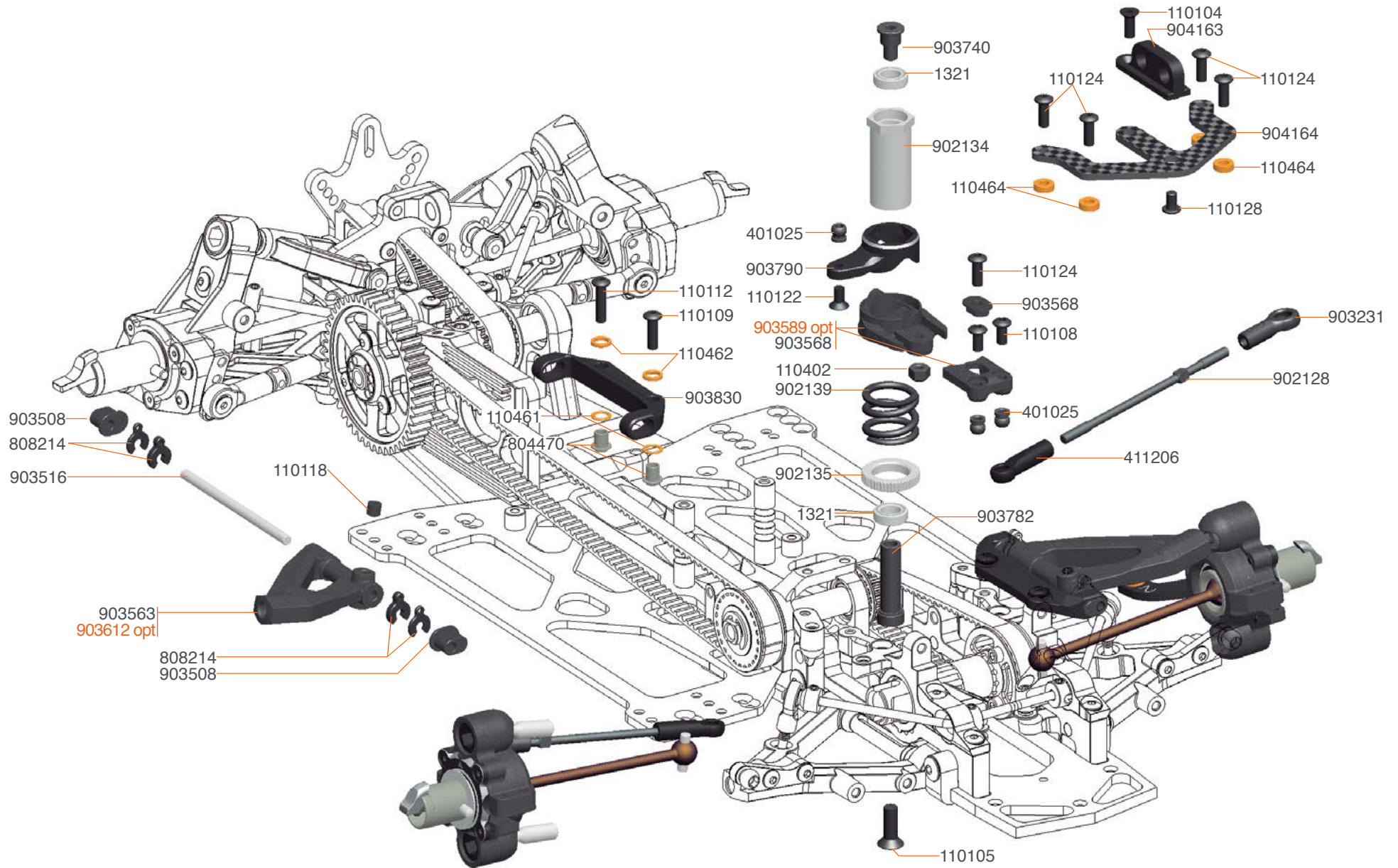
- 903628 Shock extension bracket FR wide carbon (2)
- 903650 Oneway front axle Hard anodized
- 903651 Inner driveshaft adapter light
- 903665X Wishbone FR lw V2 L+R S988

- 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

FRONT 2 EXPLODED VIEW

VIPER
990

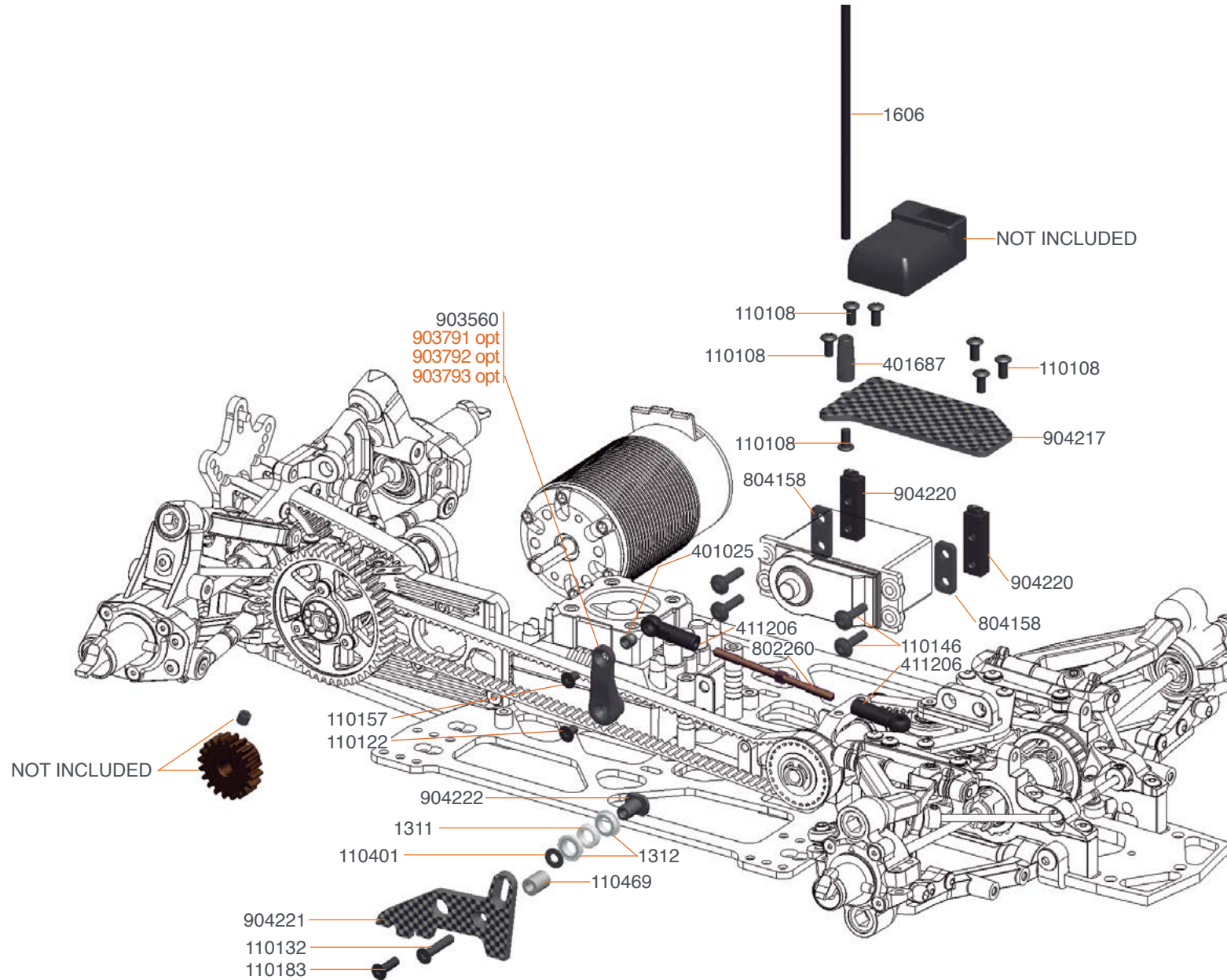
SERPENT



ELECTRONICS ASSEMBLY EXPLODED VIEW

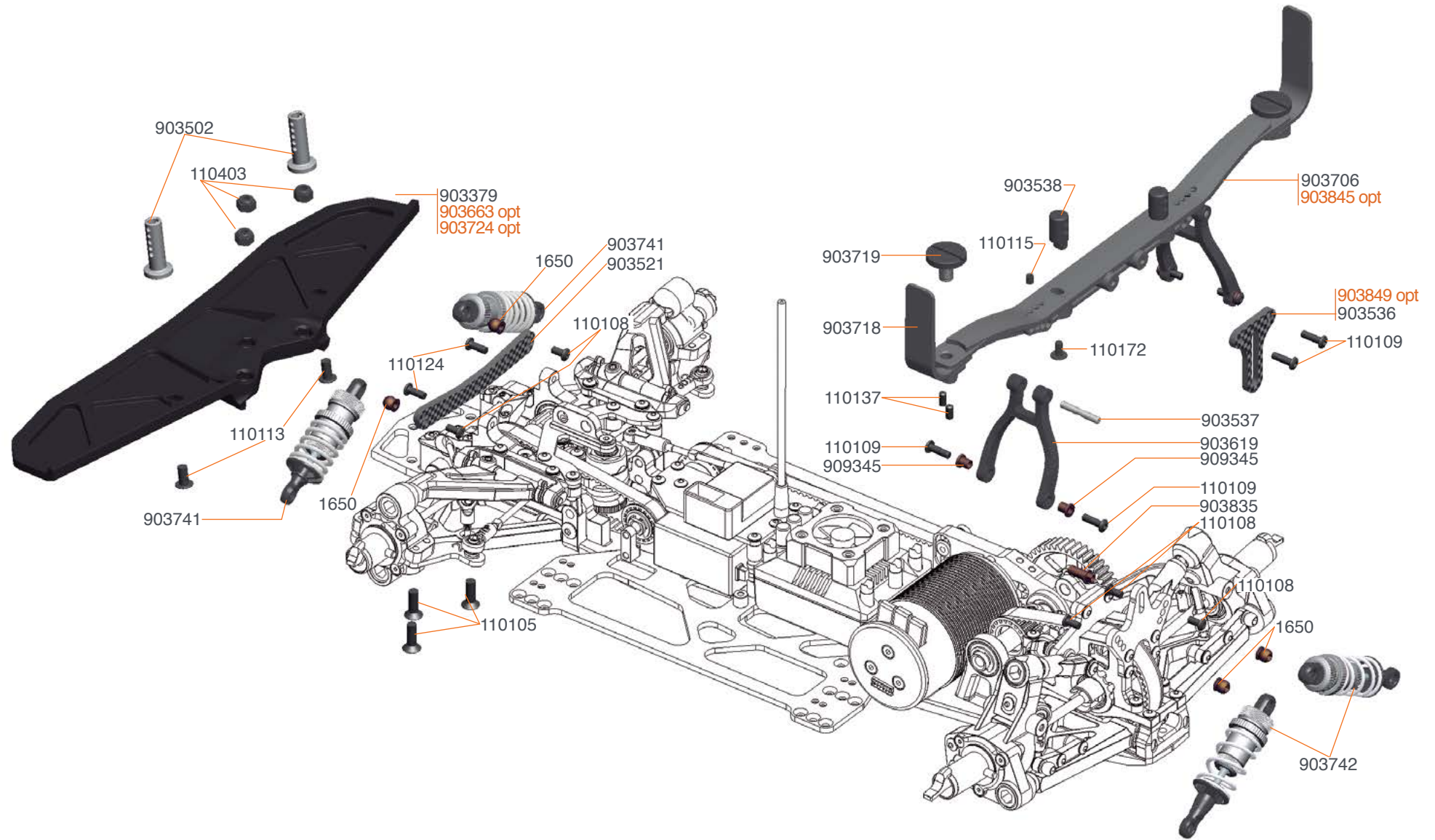
VIPER 990

SERPENT



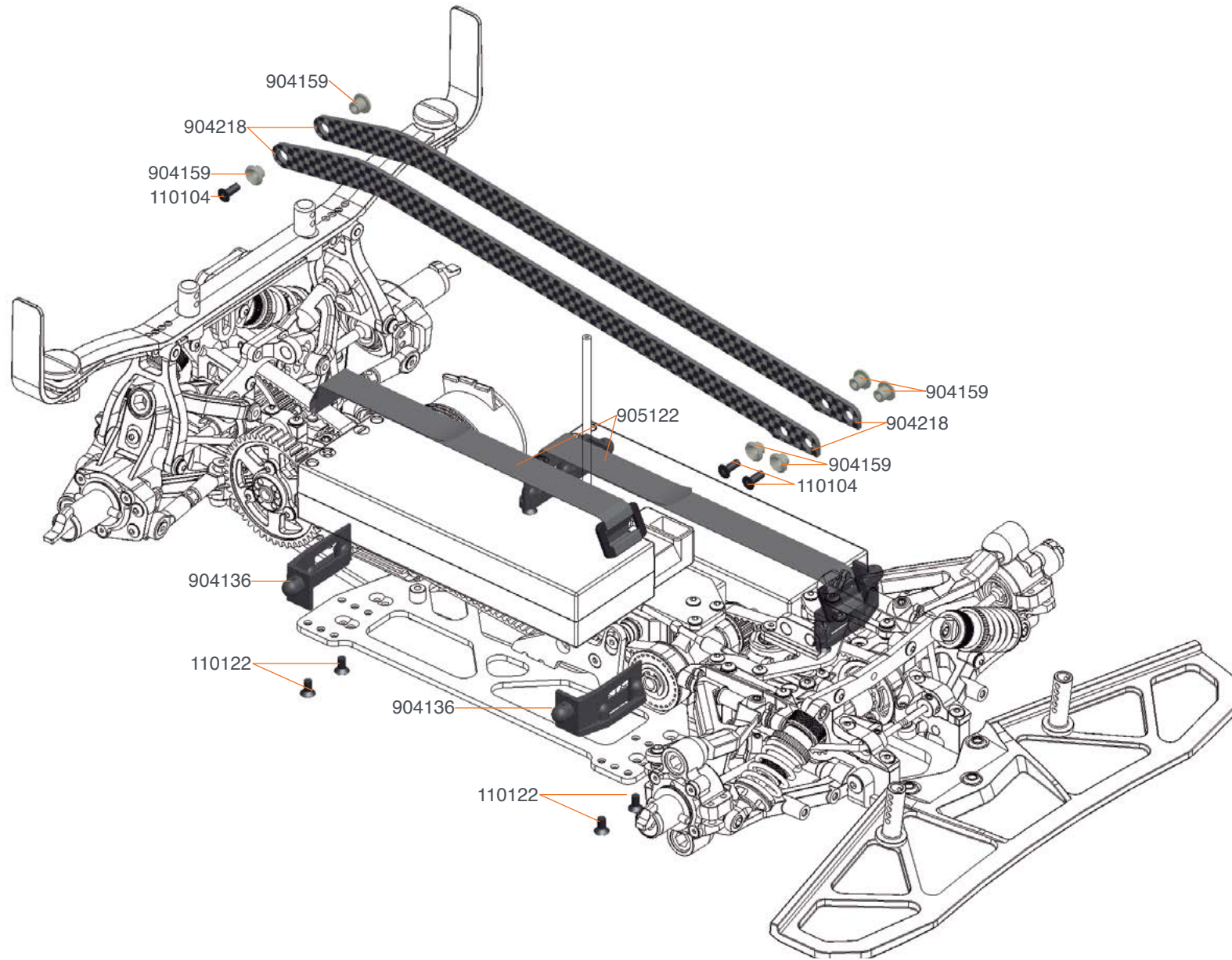
903791 Servo lever 23T alu
903792 Servo lever 24T alu
903793 Servo lever 25T alu

BUMPER AND BODYMOUNT EXPLODED VIEW



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



TEAM SERPENT NETWORK

990e SPARE PARTS



990e OPTIONALS PARTS



SERPENT TOOLS



SERPENT MERCHANDISING



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