

**INSTRUCTION
MANUAL**

977
EV02
VIPER




Serpent

GP

1/8 scale

INTRODUCTION

The Serpent Viper 977 EVO-2 is the latest generation of the successful 977 Viper gaspowered car, combining ultimate performance into a single package. The 265mm wide gas powered racing car offers superb handling, incredible acceleration and top-speed. Breath taking !

The Serpent Viper 977 EVO-2 is designed to be a world champion, while still being easy to use, assemble, and set up. The Serpent Viper 977 EVO-2 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 977 EVO-2 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 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 977-EVO-2. Fine-tuning the initial setup is an essential part of building a high-performance racecar like your Serpent Viper 977-EVO-2.

EXPLODED VIEWS AND PARTS LIST

The exploded views and parts lists for the Serpent Viper 977-EVO-2 are presented in the Reference Guide section in the back of this manual. The exploded views show all the parts of a particular assembly step along with the Serpent part number and hotlink to the Serpent website. Partnumbers 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
•	GEARBOX ASSEMBLY	13
•	FRONT I ASSEMBLY	15
•	RADIO ASSEMBLY	19
•	FRONT II ASSEMBLY	28
•	SHOCKS ASSEMBLY	31
•	CLUTCH ASSEMBLY	36
•	FINAL ASSEMBLY	38
•	EXPLODED VIEWS	43
•	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



Press/Insert one item into another



Connect one item to another



Gap between two items

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.



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



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.



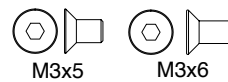
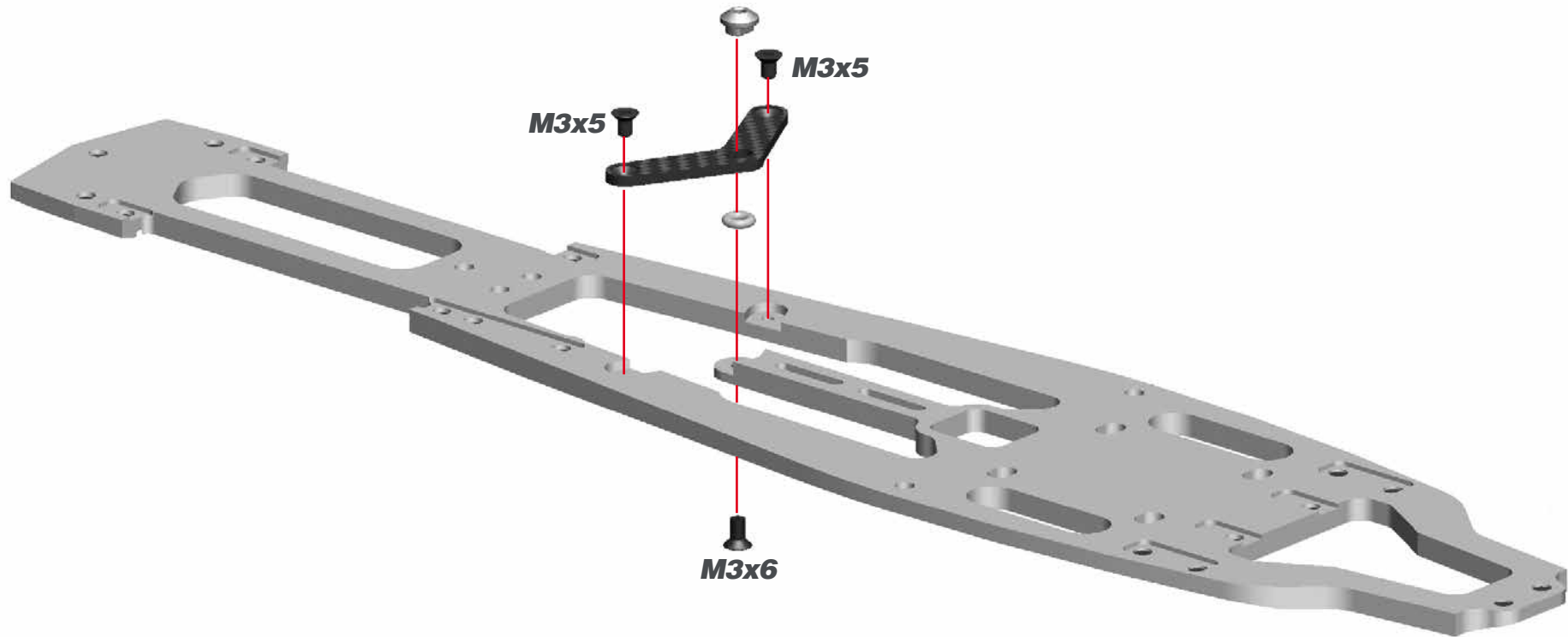
Parts or items not included in the kit.



Optional part, not standard in the kit.

STEP 1

BAG 1



STEP 2

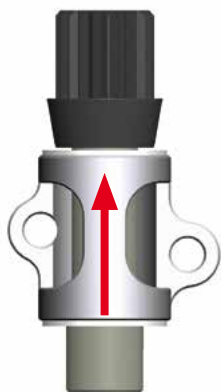
2.1

6x10x3
Flanged

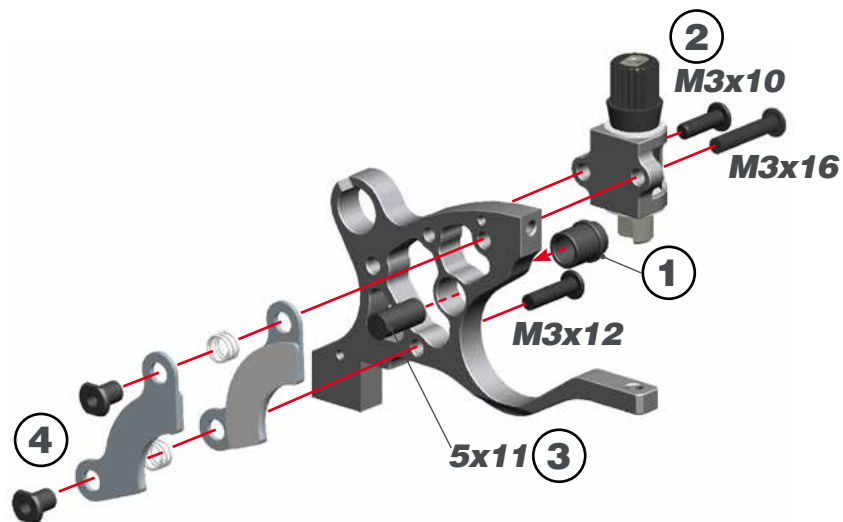
6x10x3
Flanged



The brake holder is not symmetrical.
Note the correct orientation.



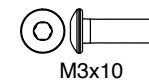
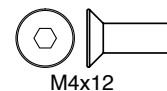
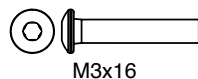
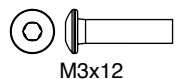
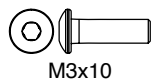
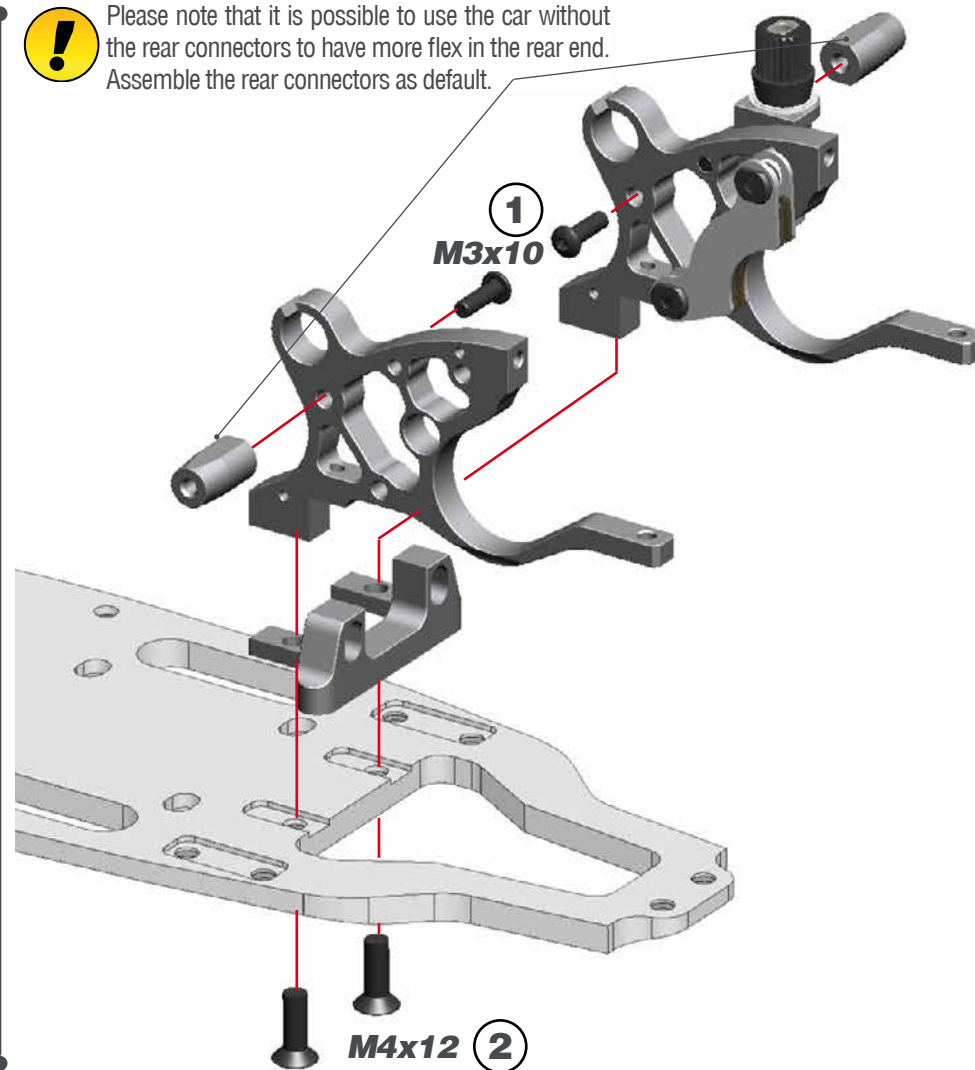
2.2



STEP 3

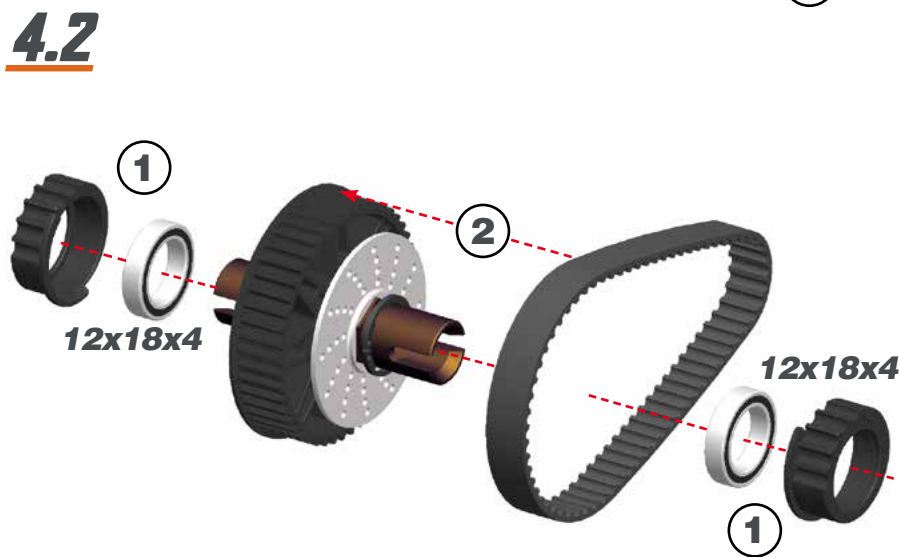
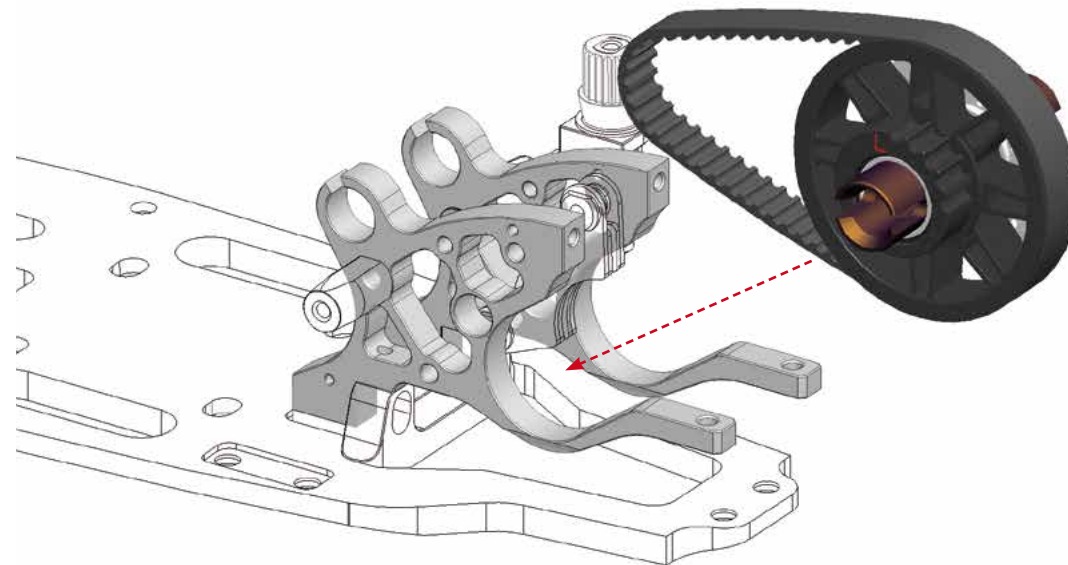
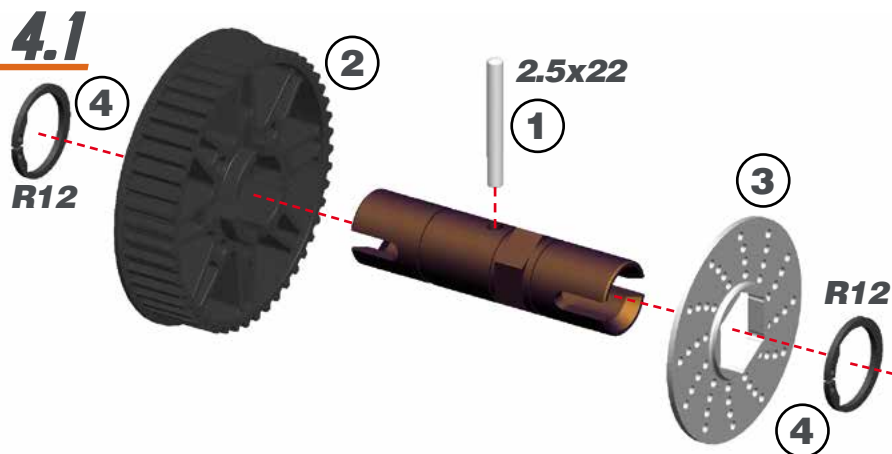




Please note that it is possible to use the car without
the rear connectors to have more flex in the rear end.
Assemble the rear connectors as default.

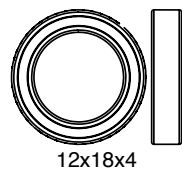
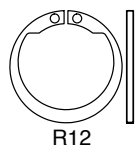
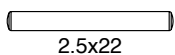
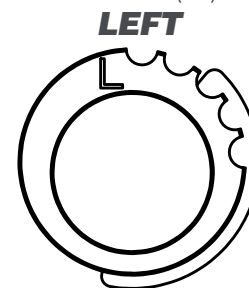


STEP 4

STEP 5

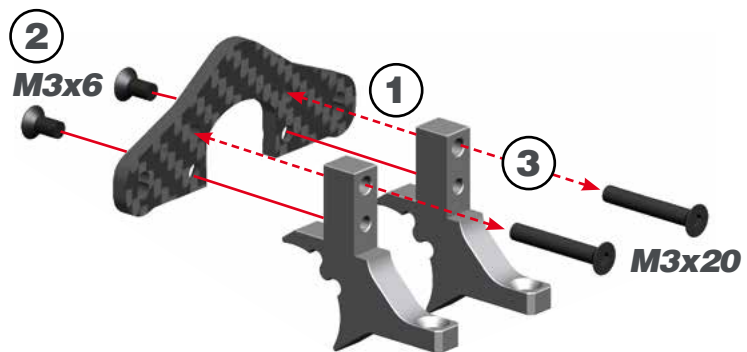


  **REAR SOLID AXLE EXCENTERS**
Note that the rear solid axle excenters are not symmetric and are marked with L (left) and R (right).

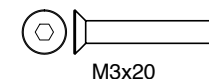
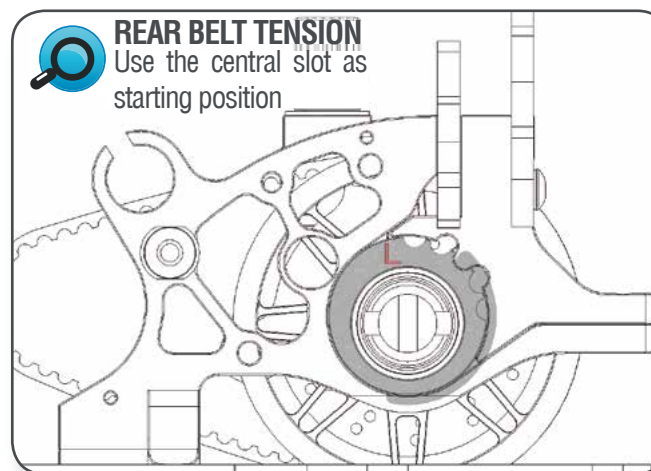
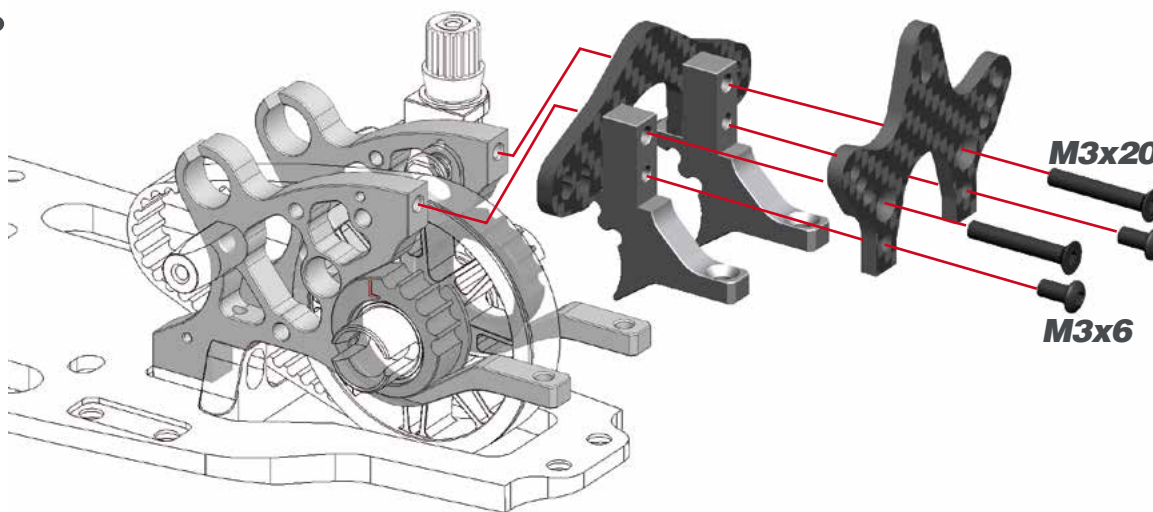


STEP 6

- 1- Assemble M3x20 screws to align the camber bracket.
- 2- Fix the camber bracket with the M3x6 screws.
- 3- Remove M3x20 screws proceed with step 4



STEP 7



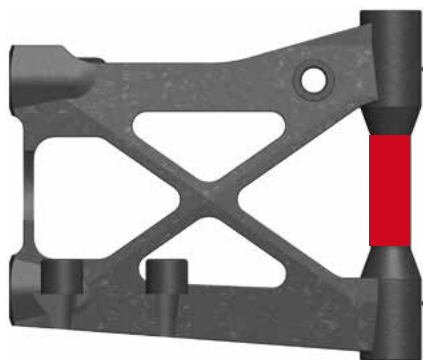
STEP 8

BAG 2

8.1

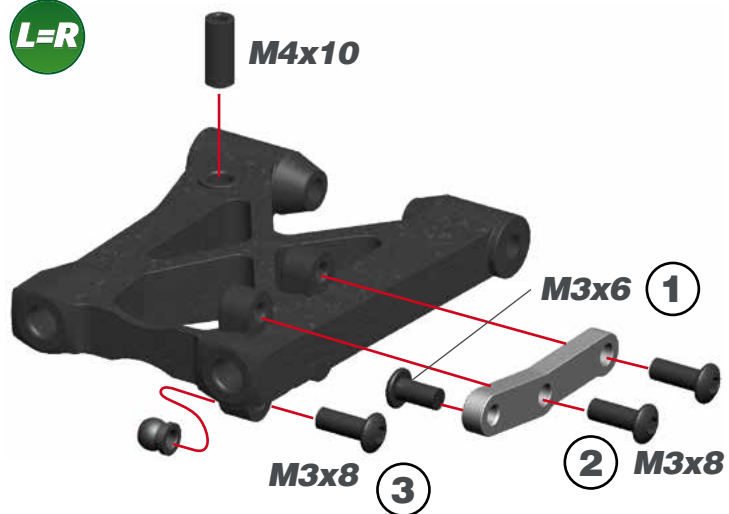


Before to assemble the rear lower arms, carefully remove the red area and smoothen the cut surface.

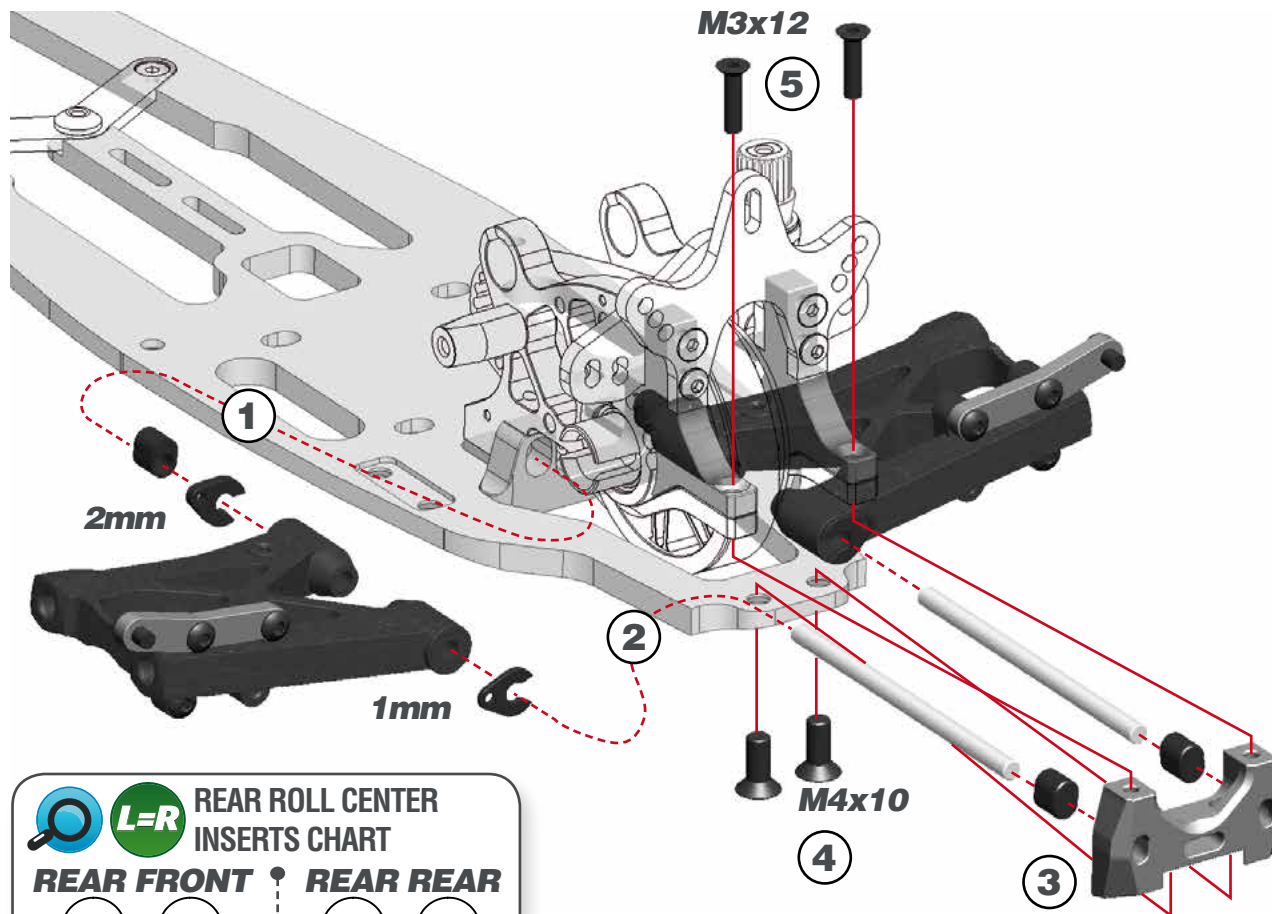


Before to assemble the rear lower arms, carefully sand the side part indicated in the left picture to remove any burr.

8.2

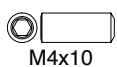


STEP 9



REAR ROLL CENTER INSERTS CHART

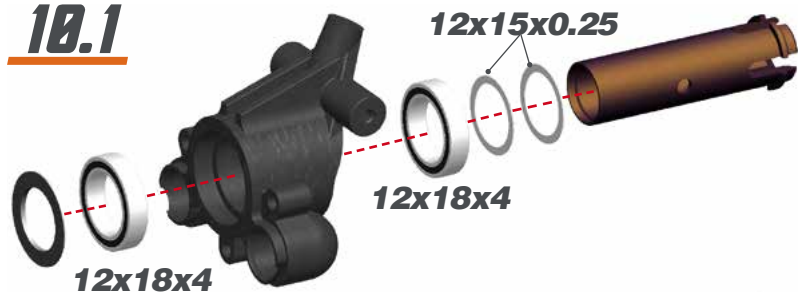
REAR FRONT		REAR REAR	



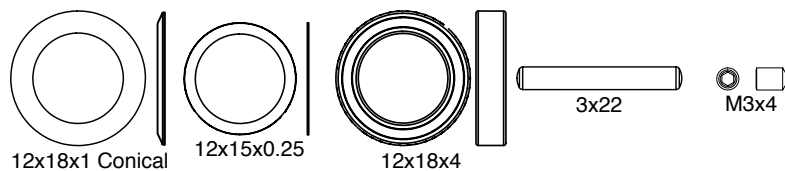
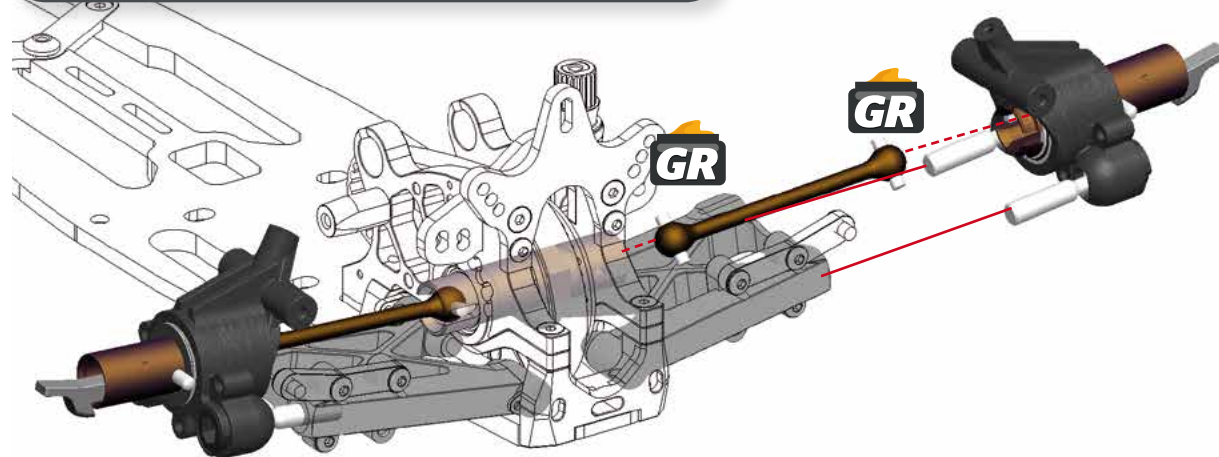
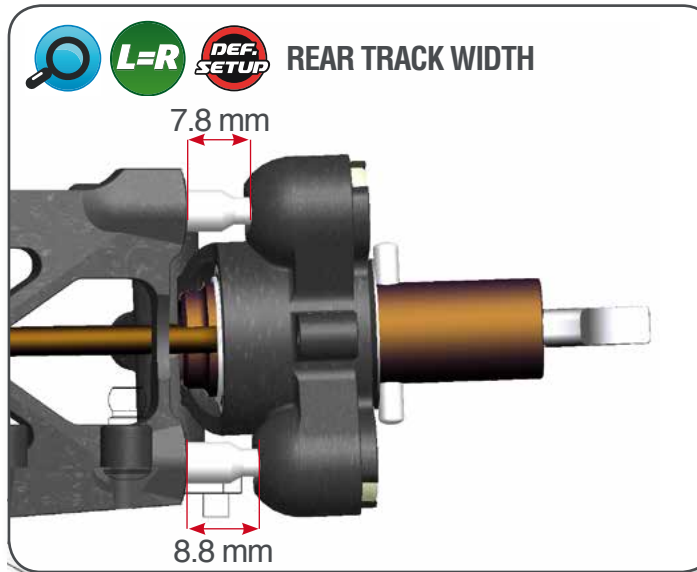
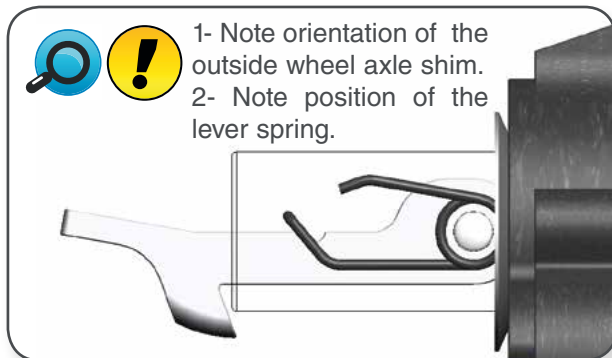
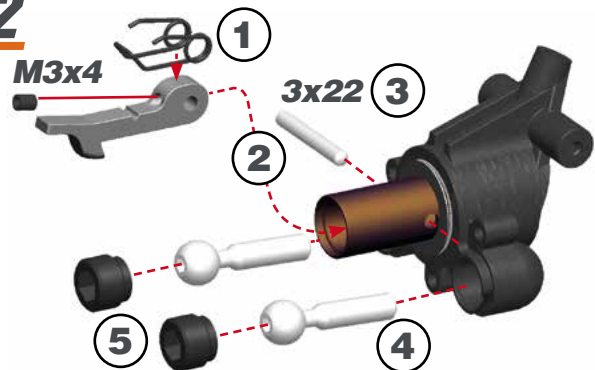
STEP 10

STEP 11

10.1

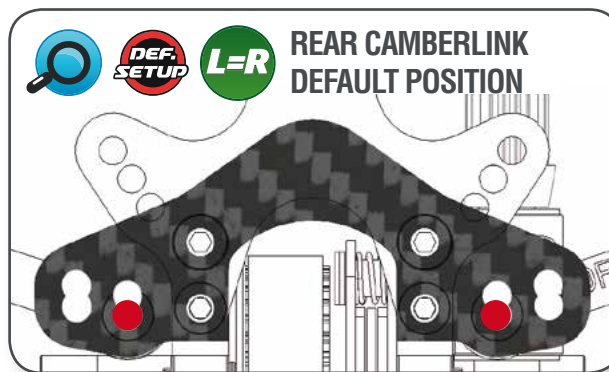
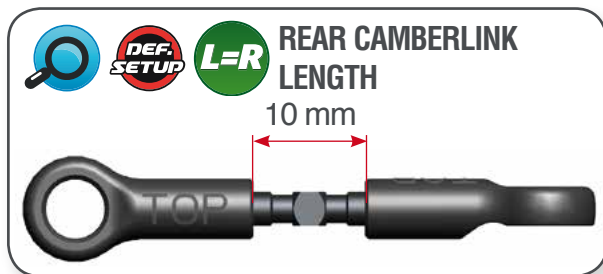


10.2

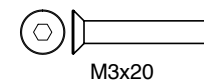
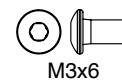
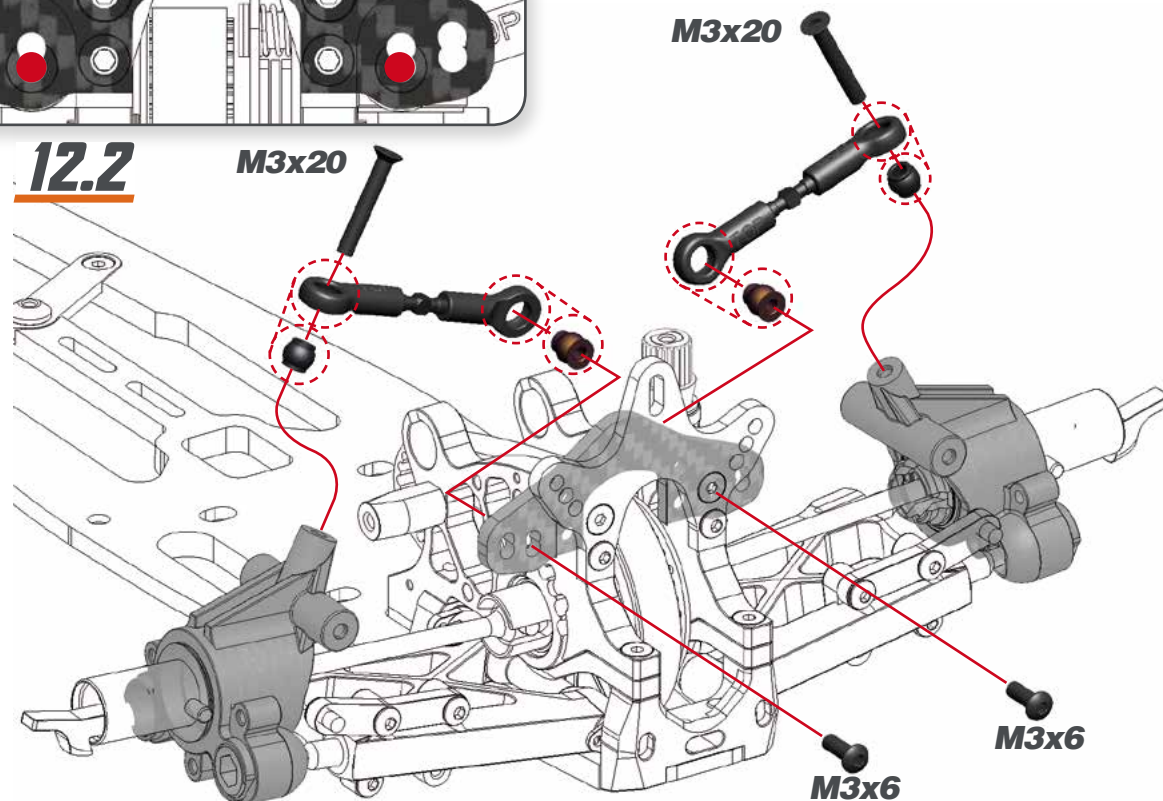


STEP 12

12.1



12.2



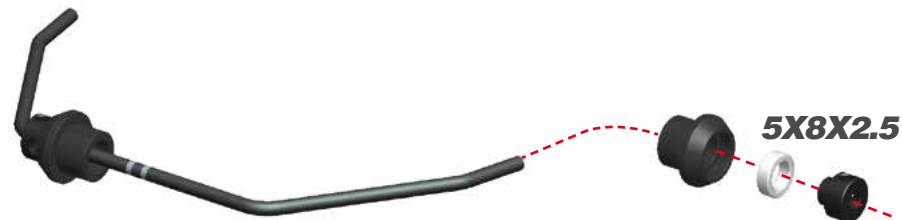
STEP 13 **BAG 3**

STEP 14

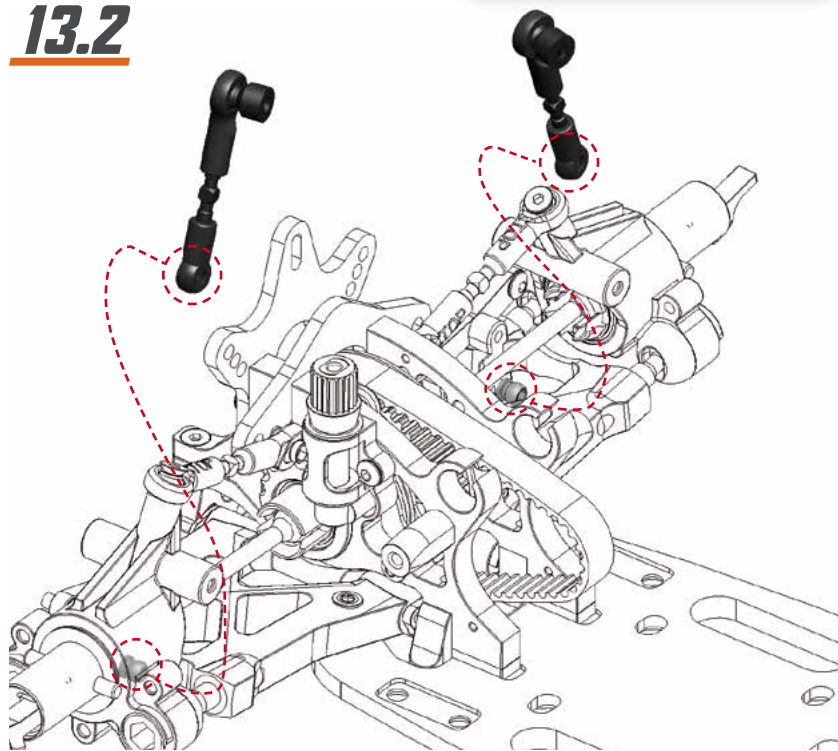
13.1



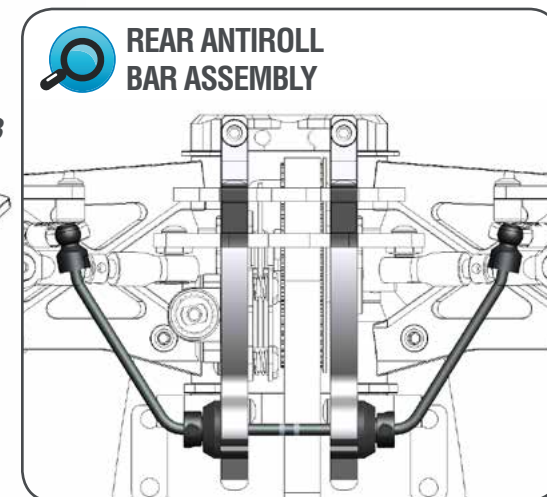
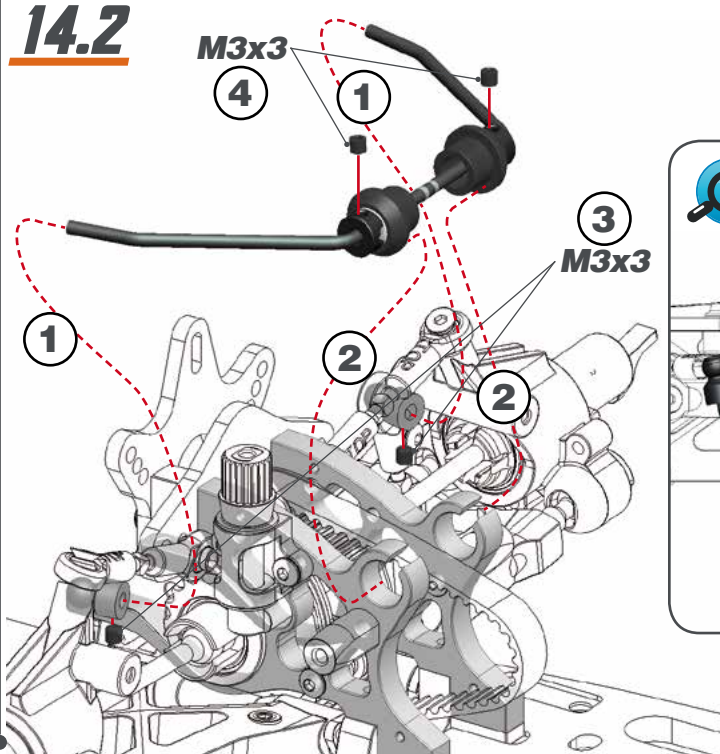
14.1



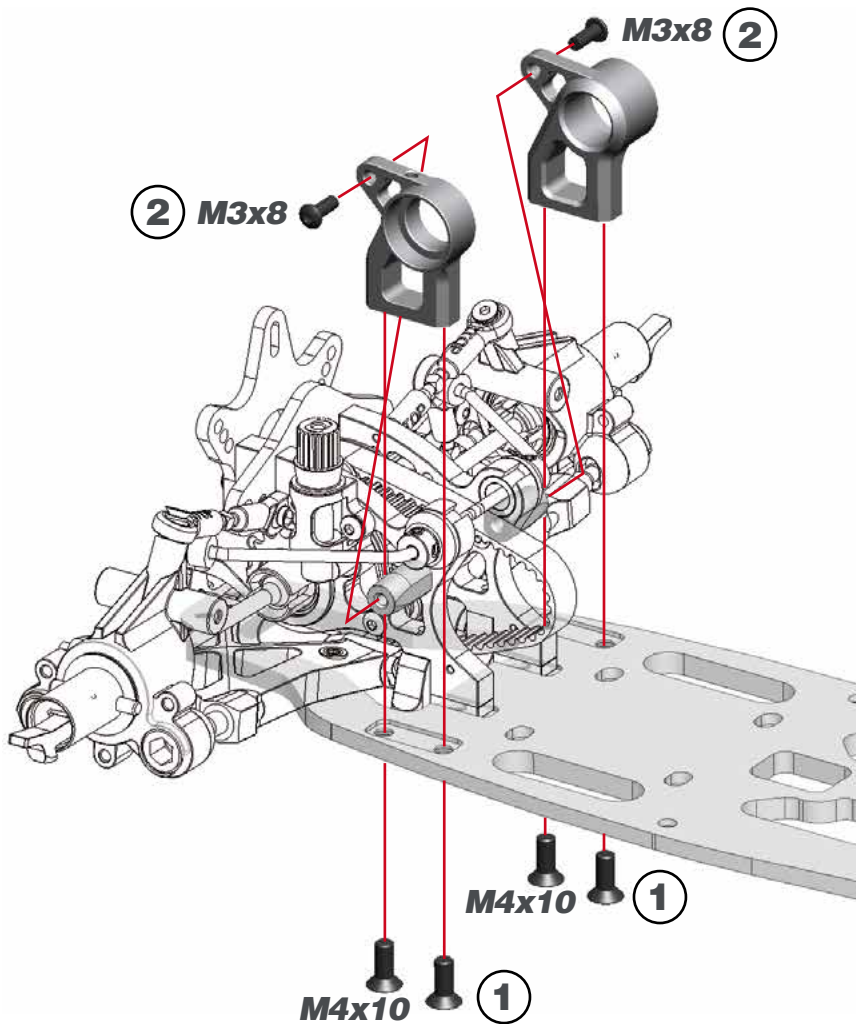
13.2



14.2

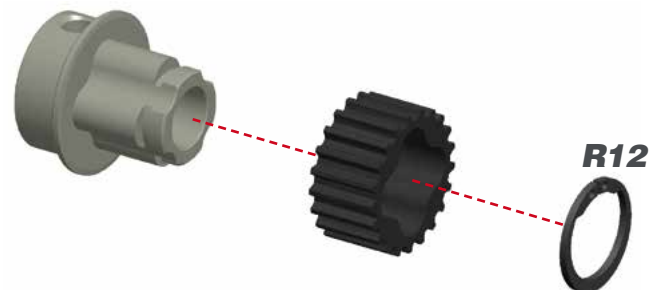


STEP 15

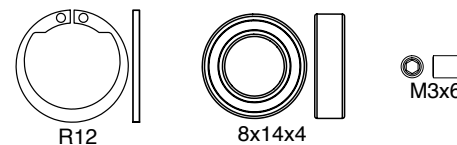
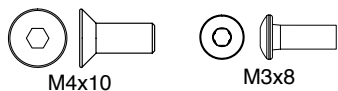
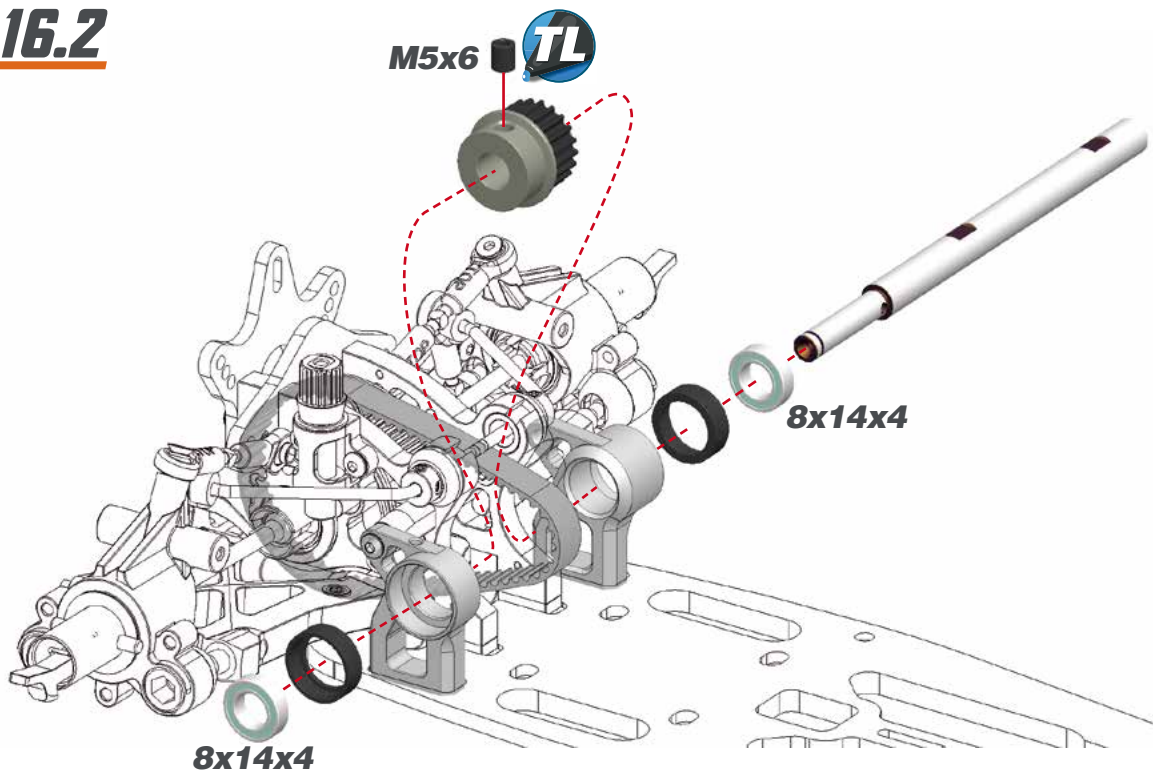


STEP 16

16.1



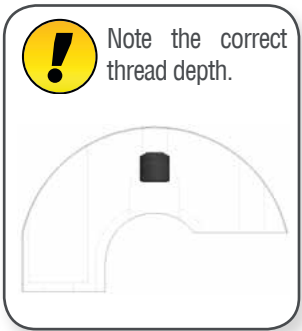
16.2



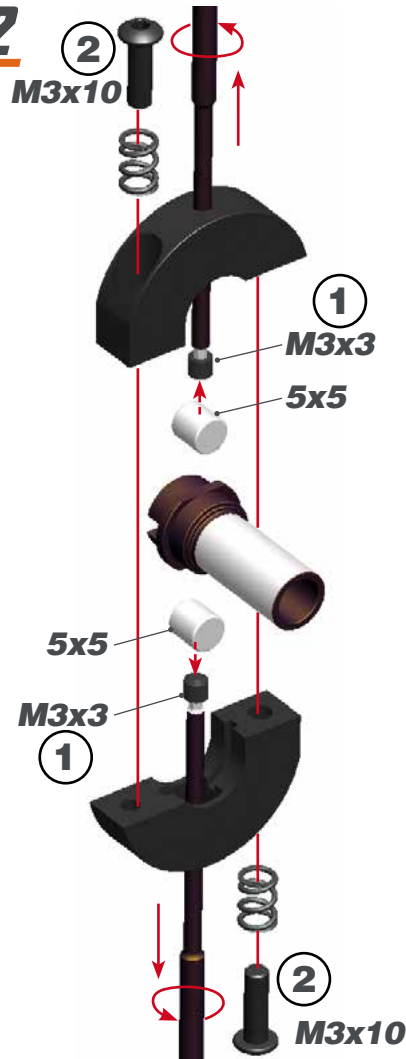
STEP 17

17.1

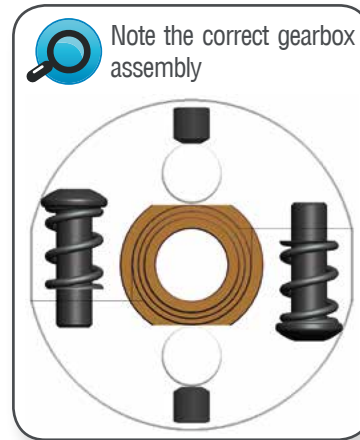
! For being able to assemble the M3x3 setscrew from the inside the first step is to pre-do a 2mm deep thread in the plastic shoe by the inside. After doing the thread please remove the set screw.



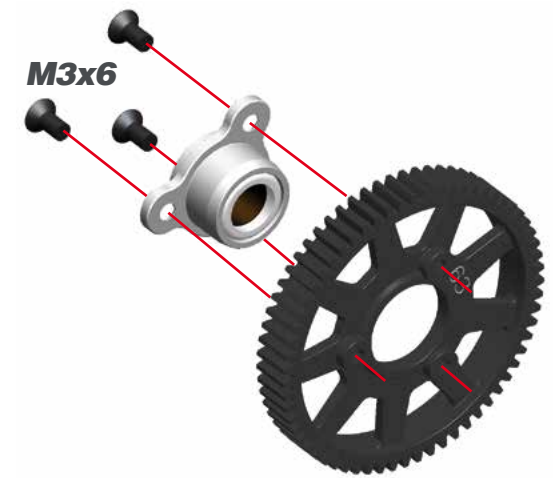
17.2



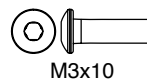
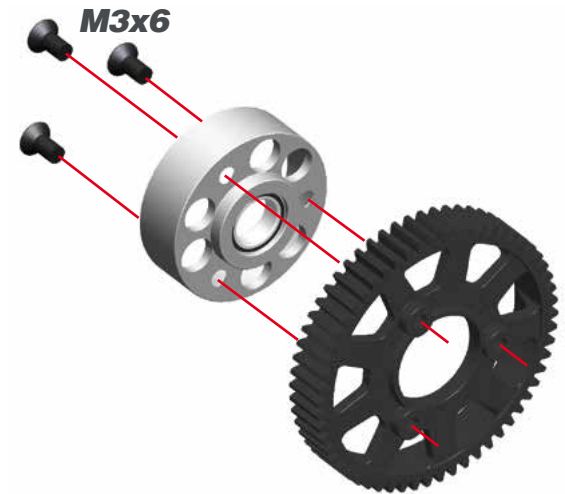
1- Assemble the M3x3 setscrew from the inside of the gearbox unscrewing it. Use the 5x5 cylinder for helping the set screw going inside the hole. Do not unscrew the M3x3 screw completely.
 2- The M3x10 screw adjust the SHIFT POINT. As default adjustment screw it in all the way (do not over tighten the spring deforming it), then unscrew 3 turns.
 3- Adjust the M3x3 screw to minimise the gap between the shoes to the bell. Check regularly.



17.3

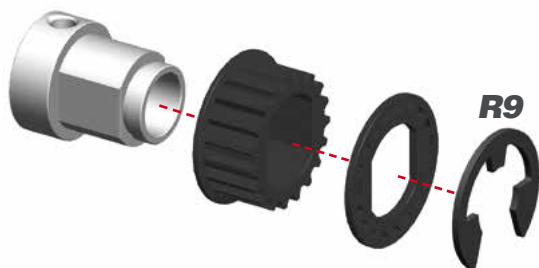


17.4



STEP 18

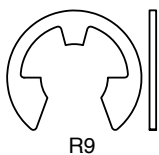
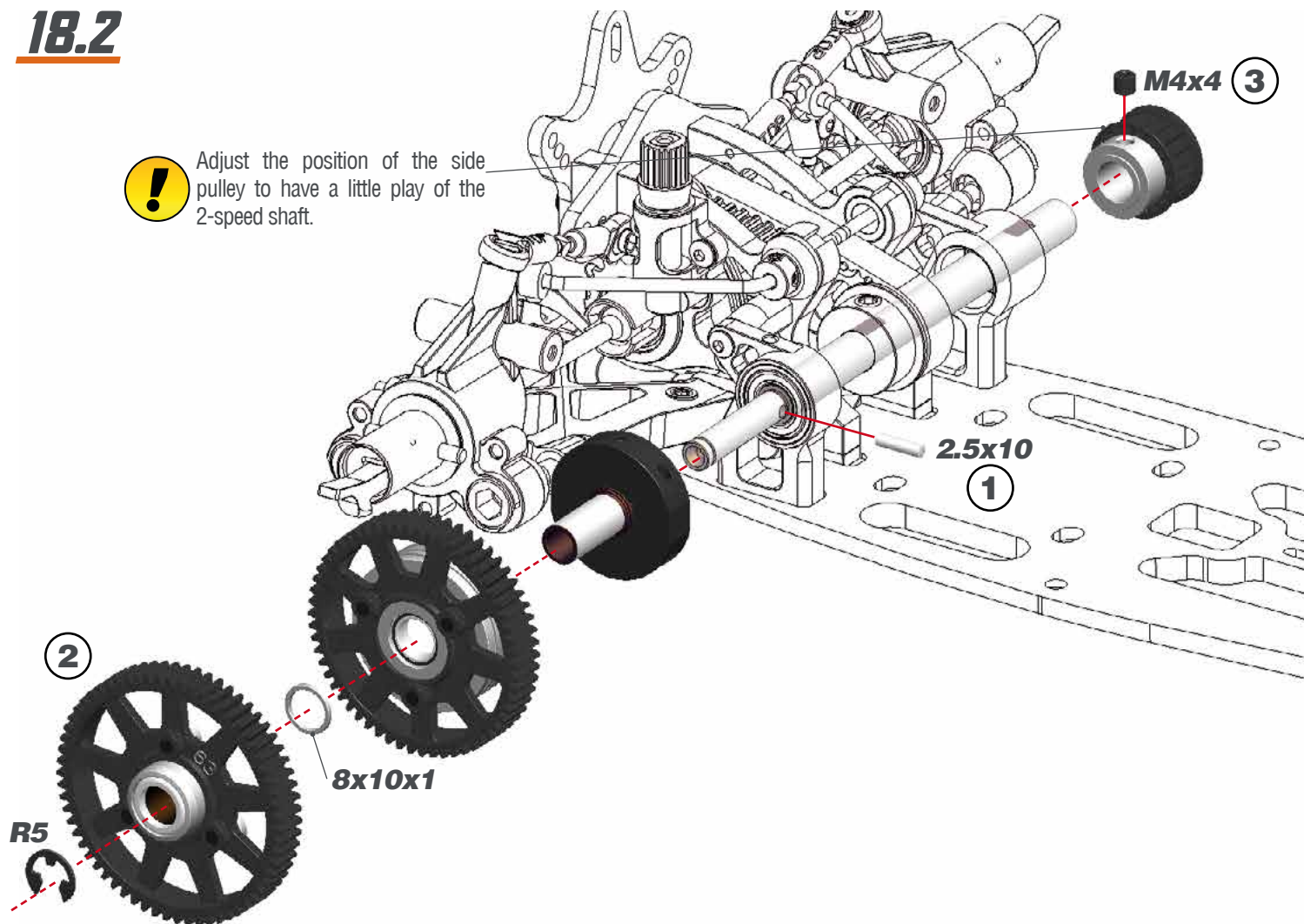
18.1



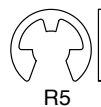
18.2



Adjust the position of the side pulley to have a little play of the 2-speed shaft.



R9



R5



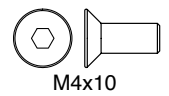
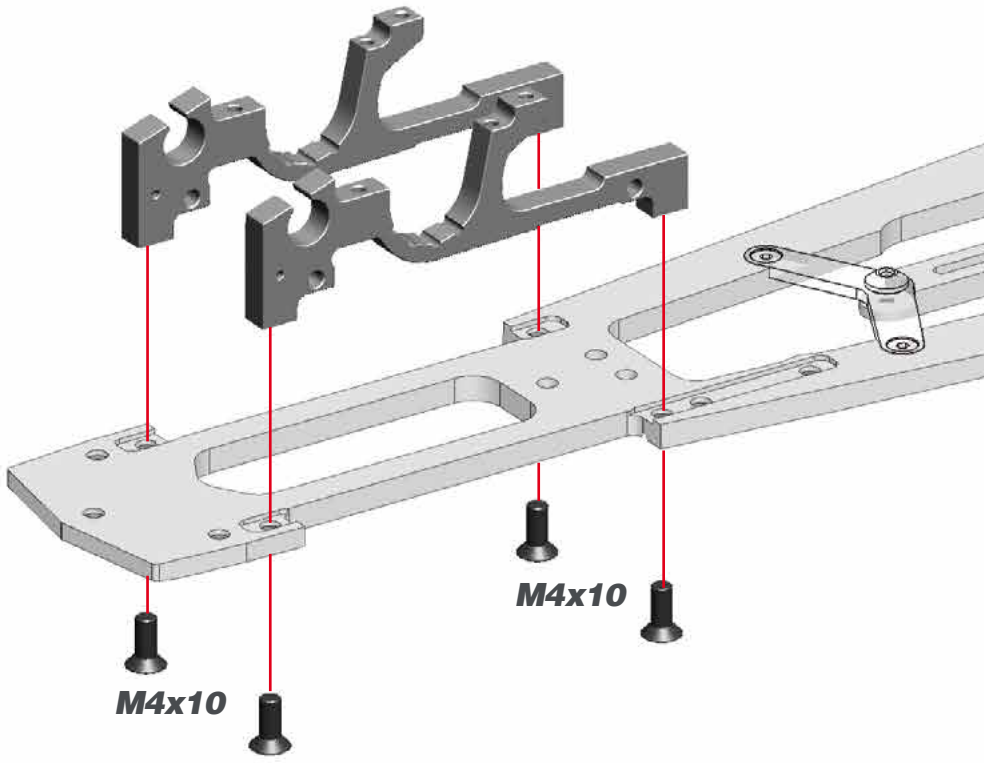
2.5x10



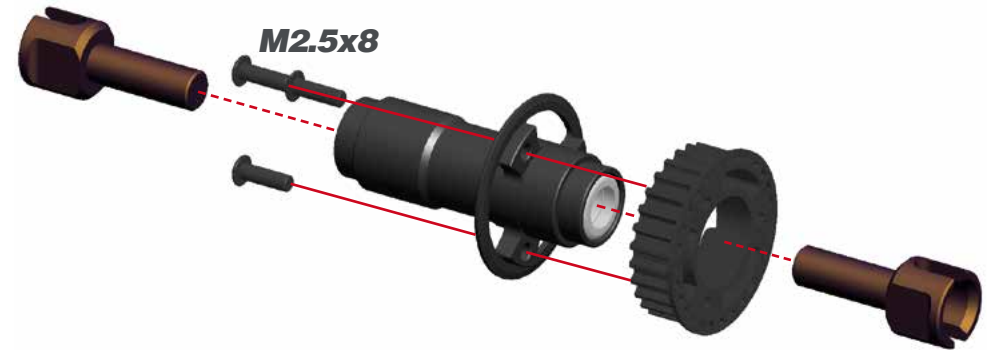
M4x4

STEP 19 BAG 4

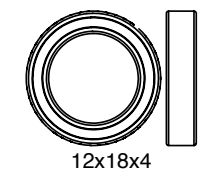
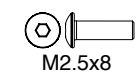
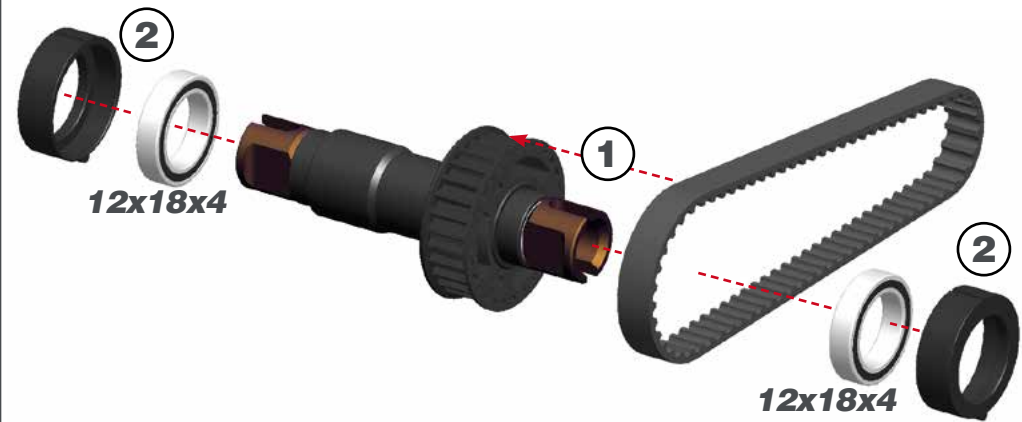
STEP 20



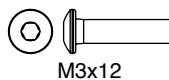
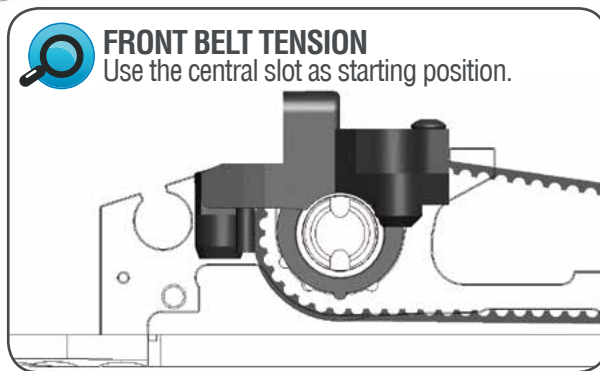
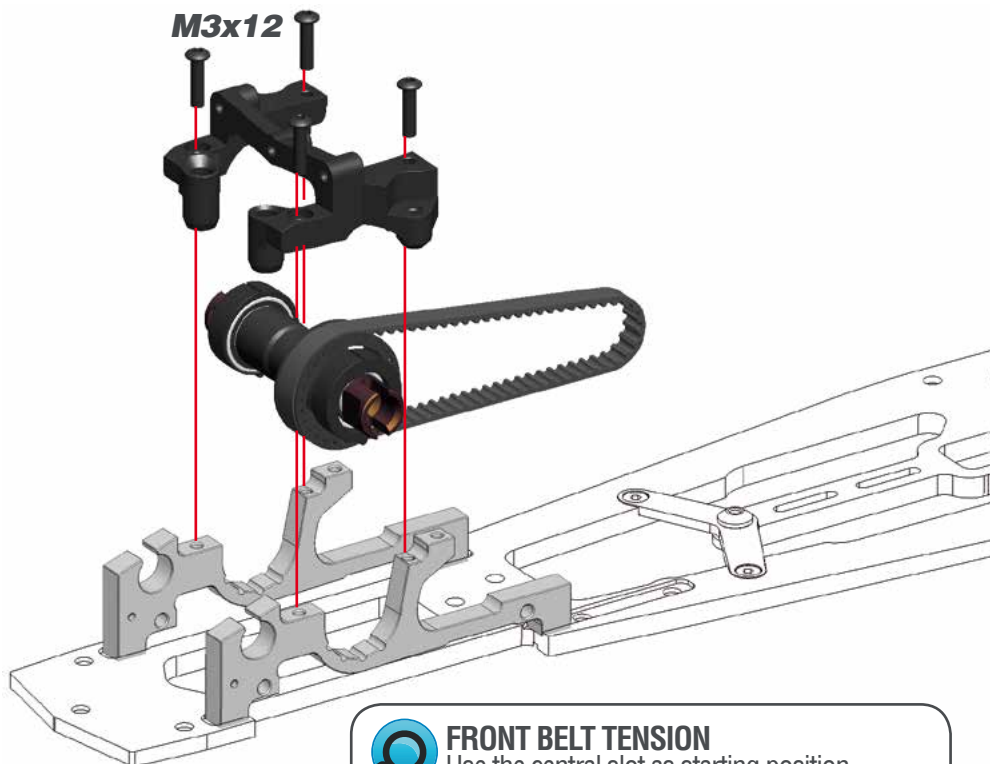
20.1



20.2



STEP 21

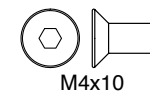
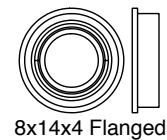
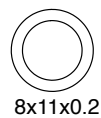
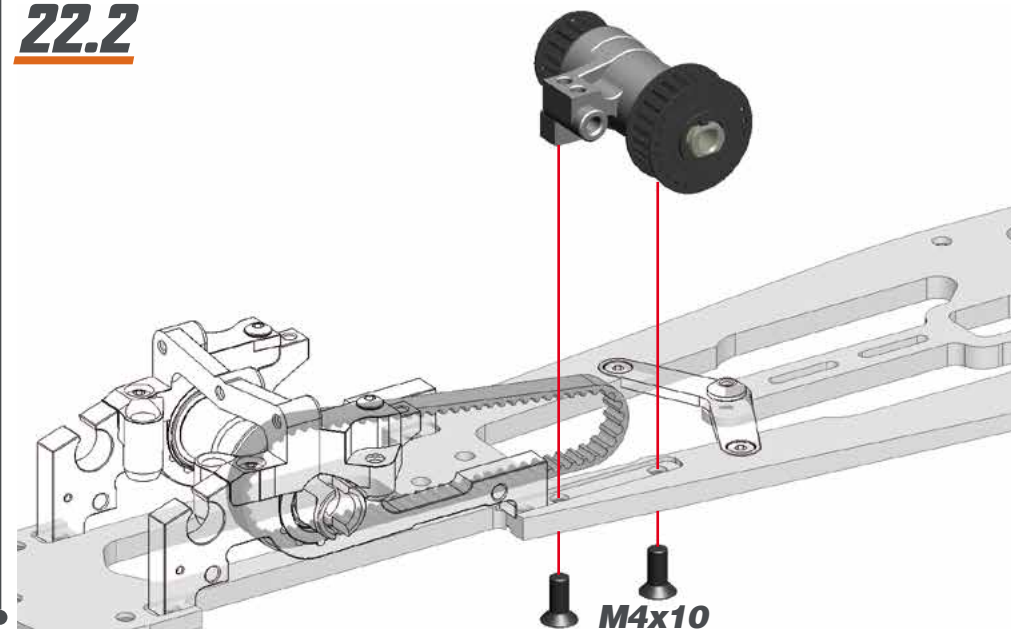


STEP 22

22.1



22.2

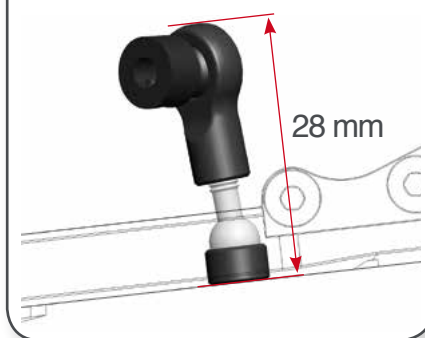


STEP 23

23.1



L=R FRONT ANTIROLL BAR ROD LENGTH

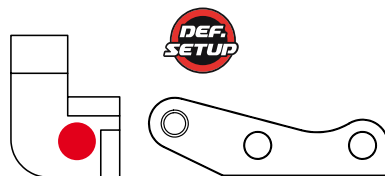


23.2

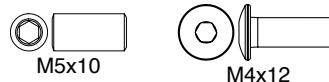
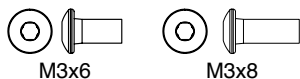
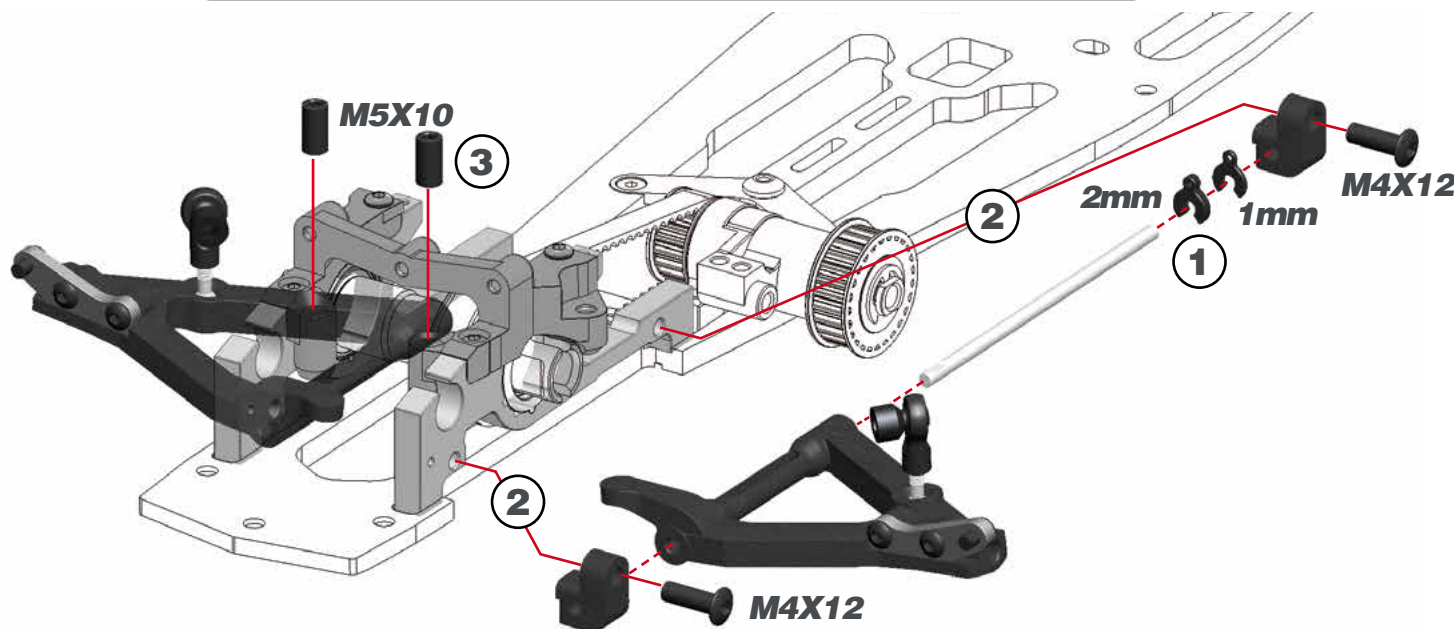
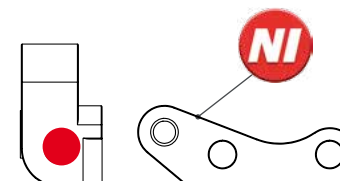
L=R FRONT LOWER SUSPENSION AND SHOCKS BRACKETS

Serpent 977evo allows to move front bottom arms 3 mm in (NARROW) and out (WIDE). For mantaing same shock angle use suspension and shock brackets as is shown below:

NARROW



WIDE

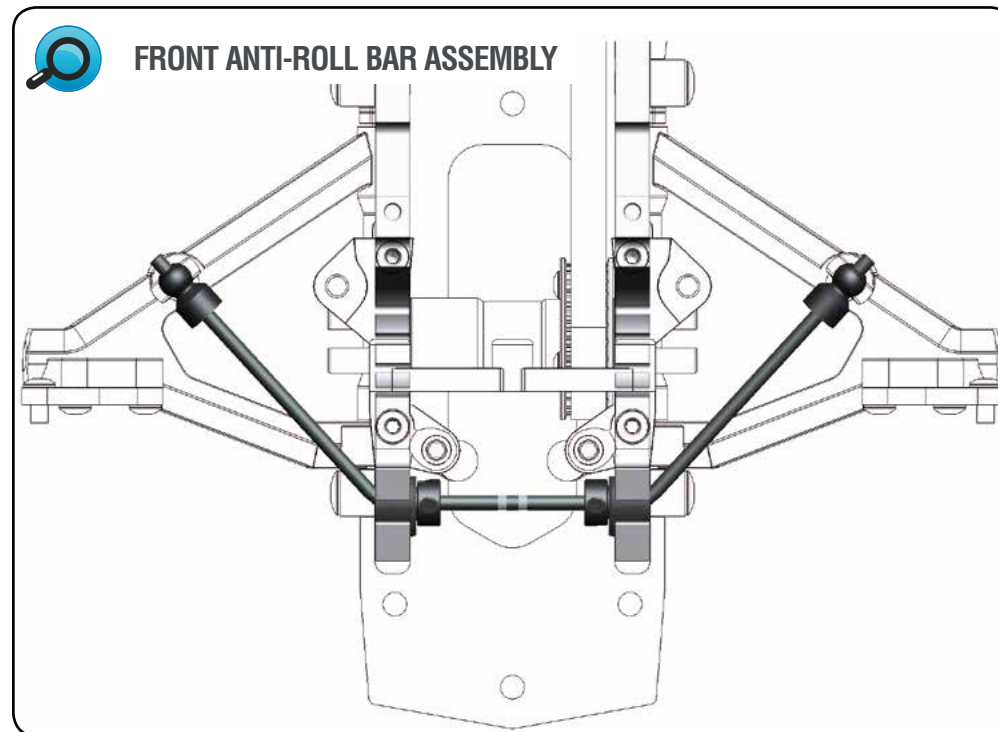
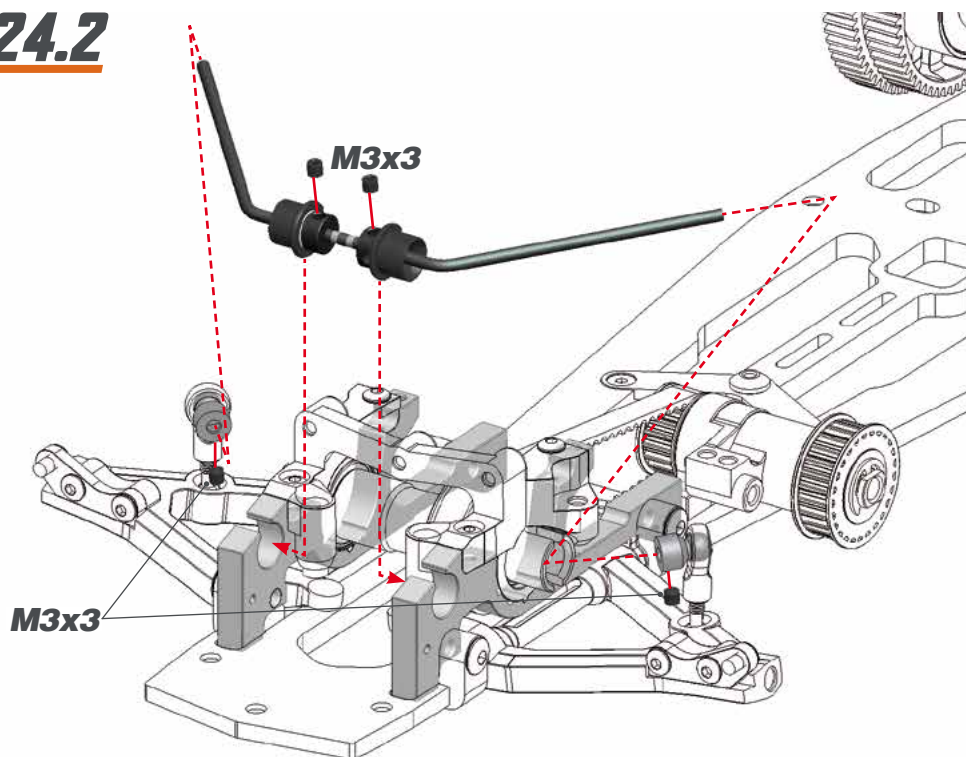


STEP 24

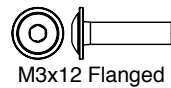
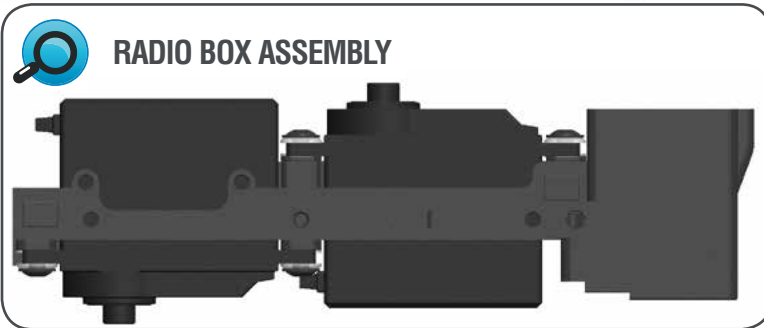
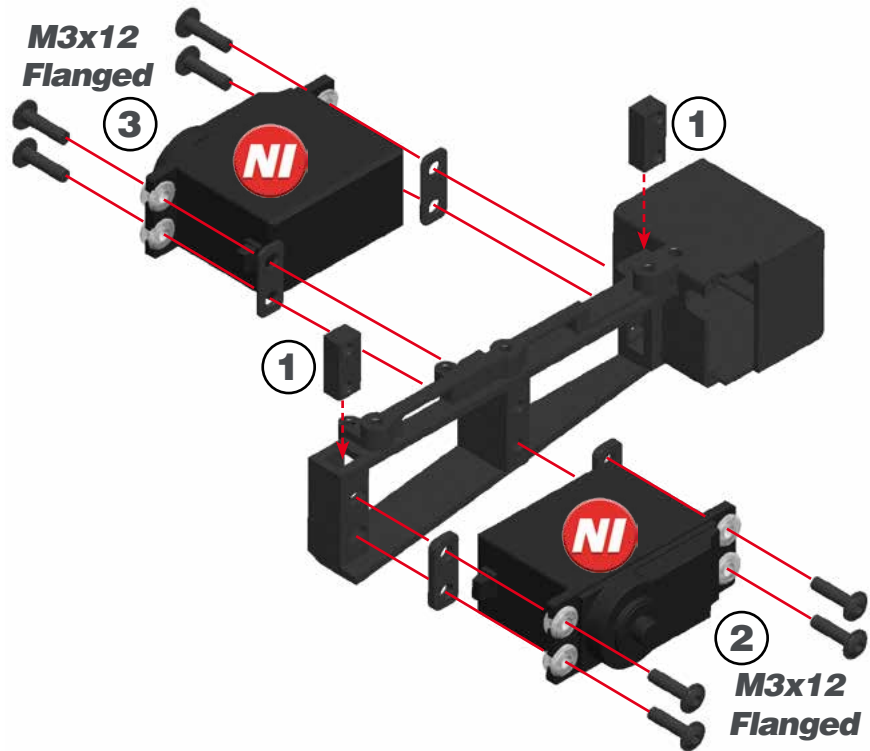
24.1



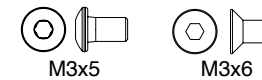
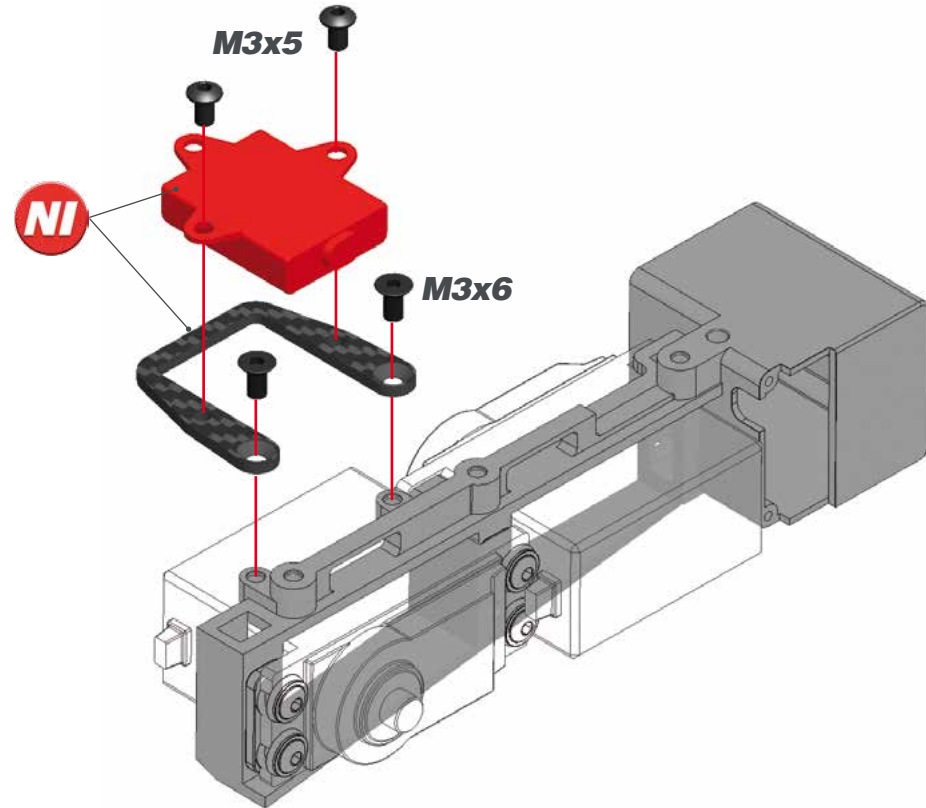
24.2



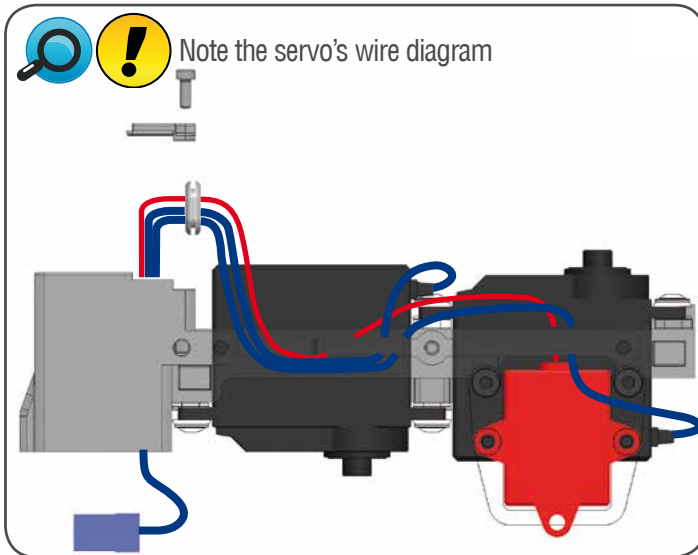
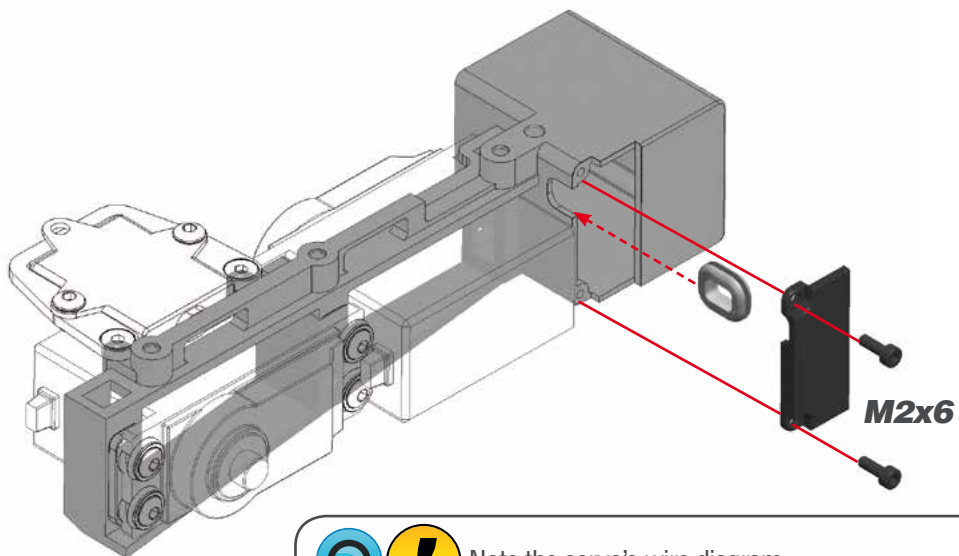
STEP 25 BAG 5



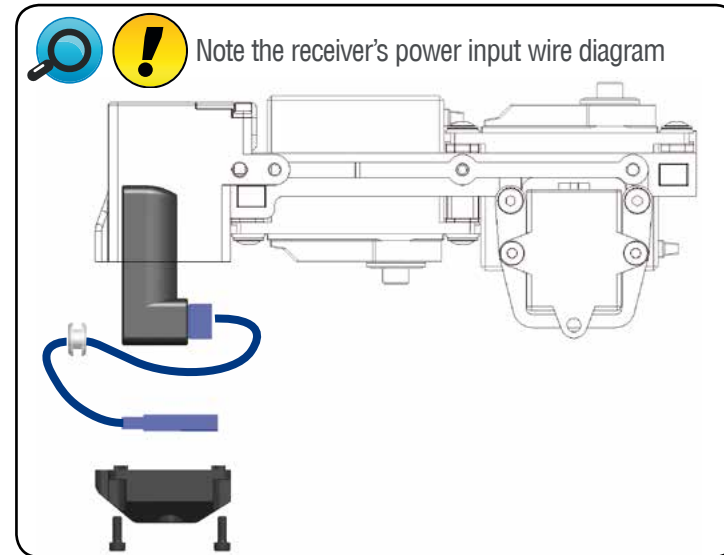
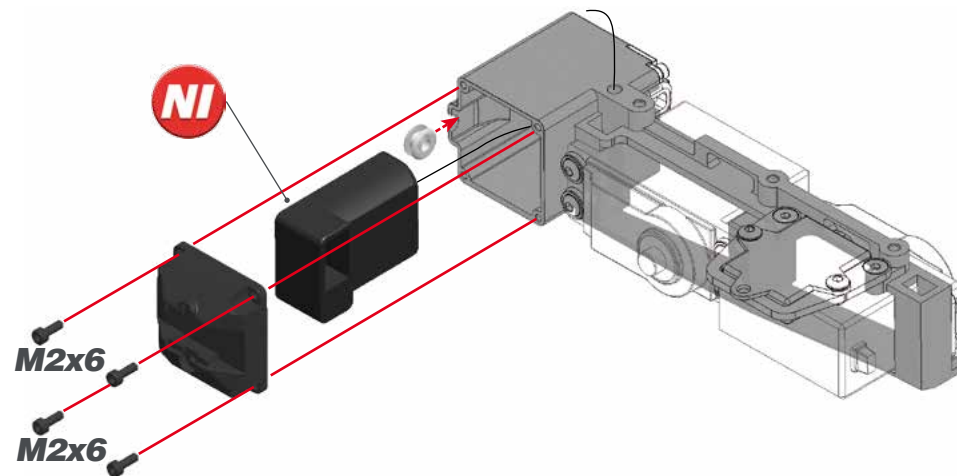
STEP 26



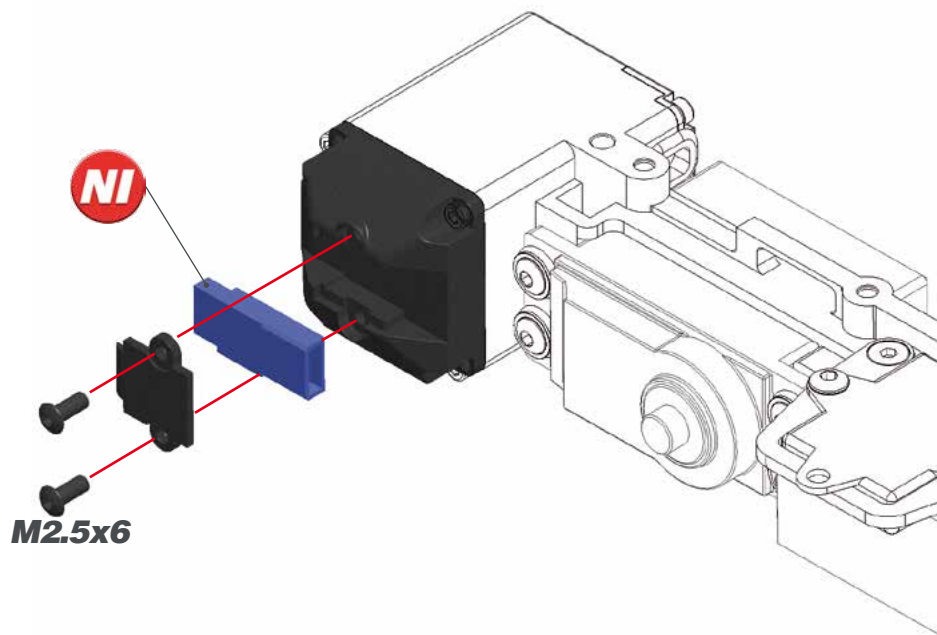
STEP 27



STEP 28



STEP 29



M2.5x6

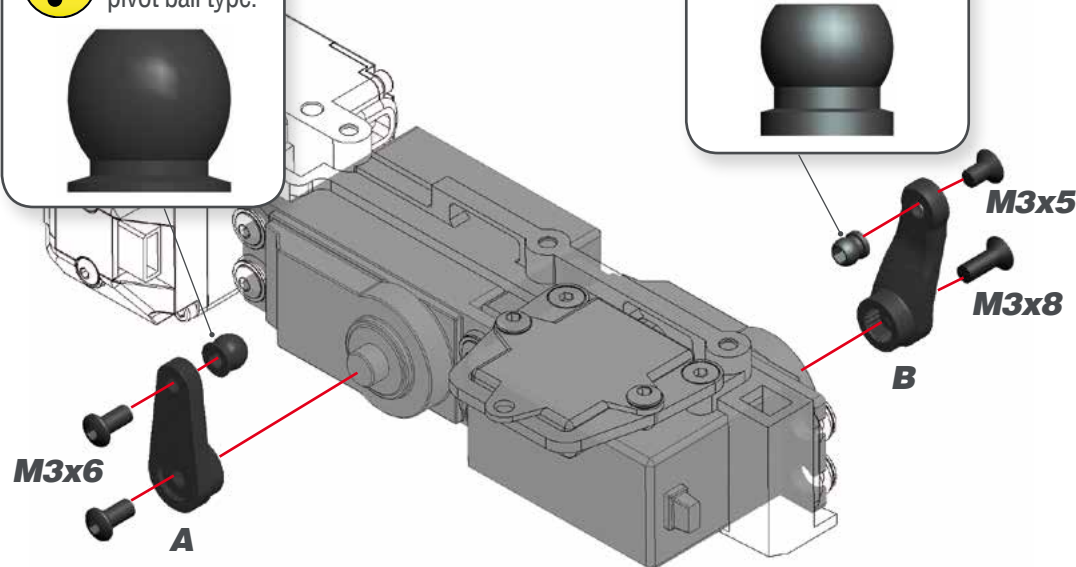
STEP 30

! Check how many teeth your servo spline has (23, 24 or 25) and use the right levers.

! Note correct pivot ball type.



! Note correct pivot ball type.



M3x6

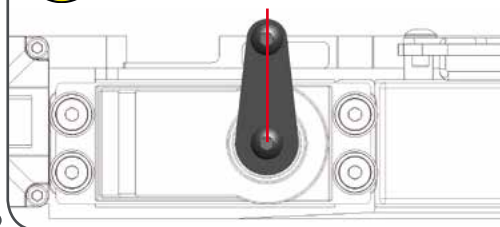
A

M3x5

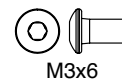
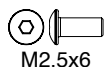
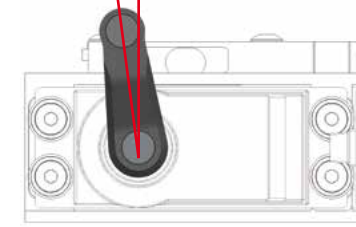
M3x8

B

! A: Note orientation of the throttle servo lever.

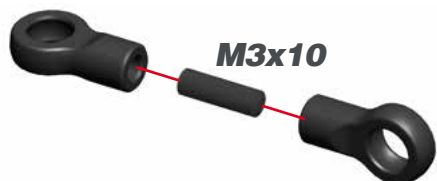


! B: Note orientation of the steering servo lever.

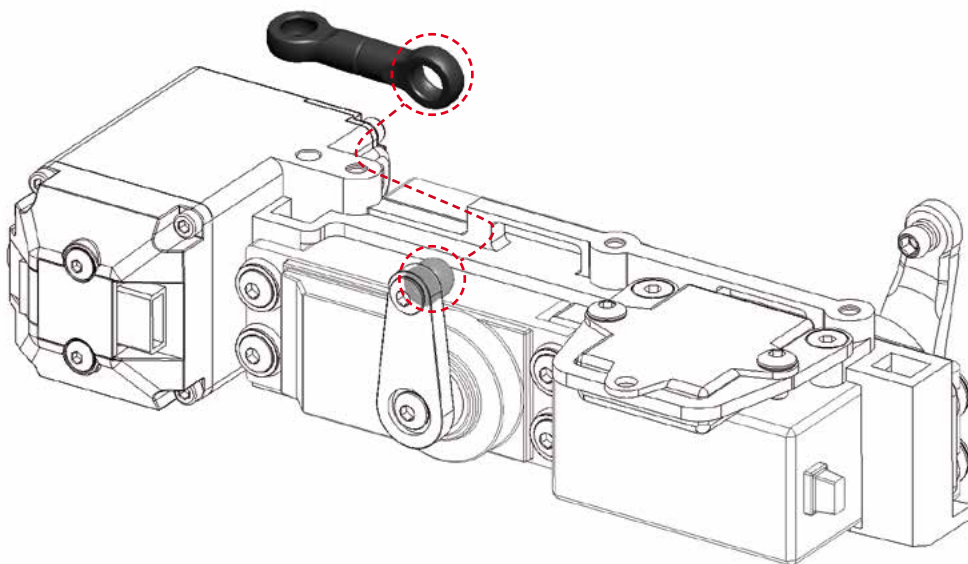


STEP 31

31.1



31.2



STEP 32 BAG 6



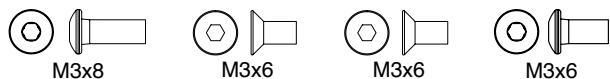
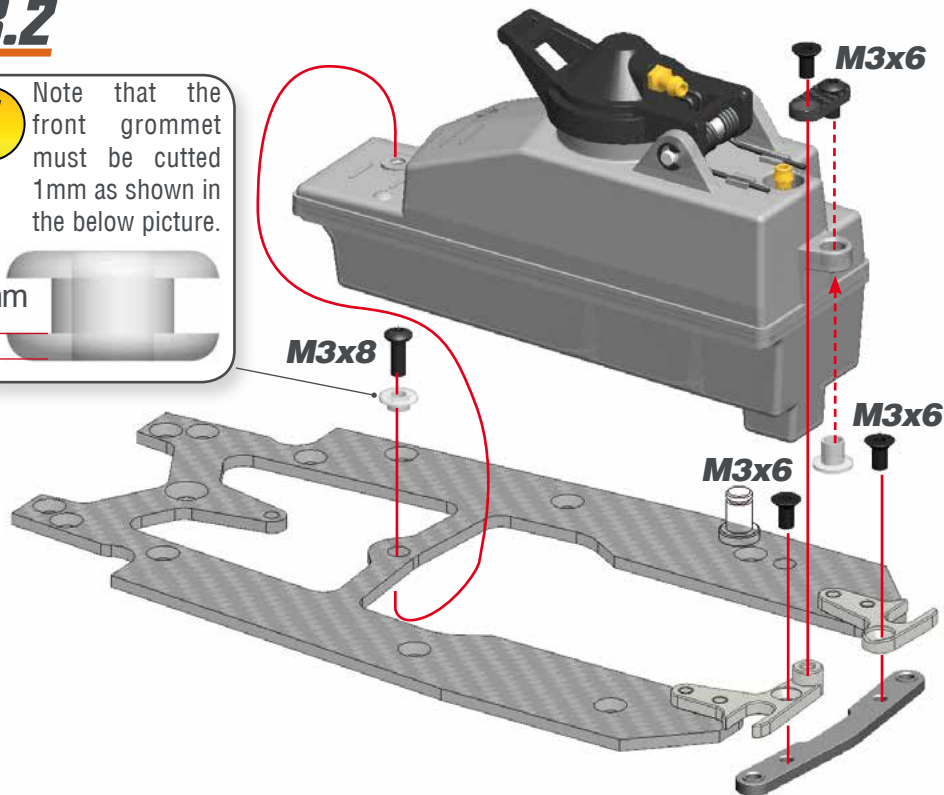
STEP 33

33.1

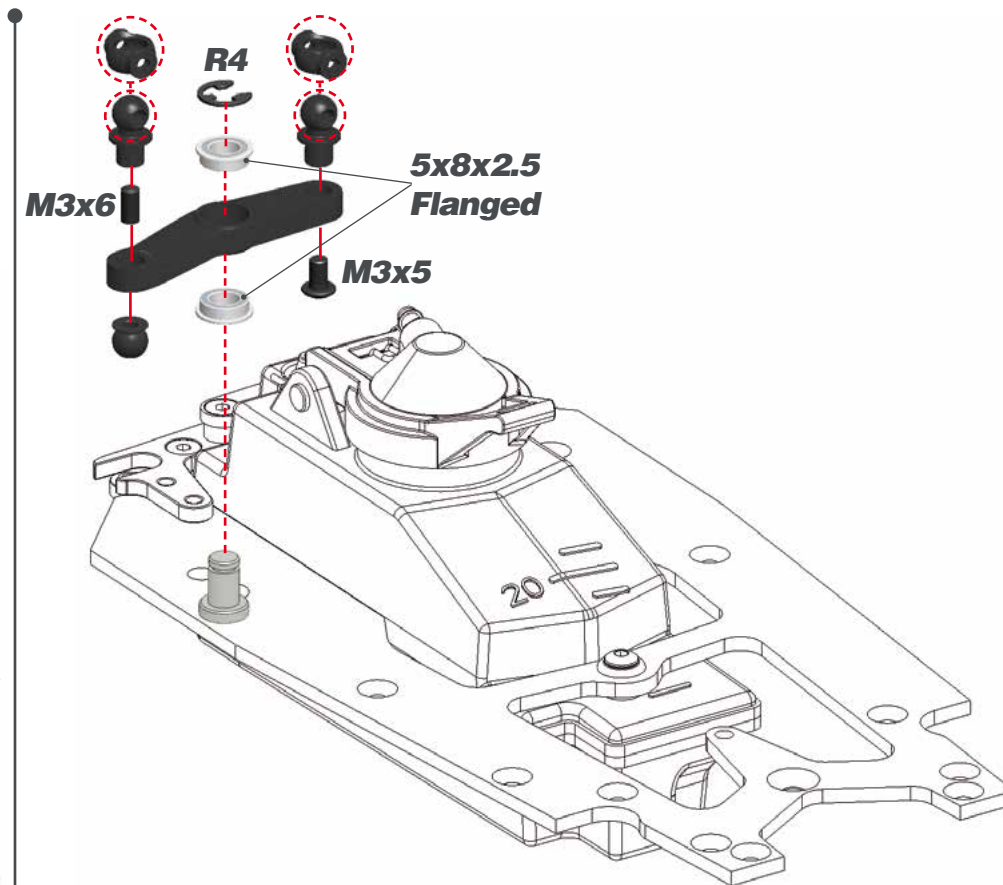


33.2

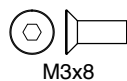
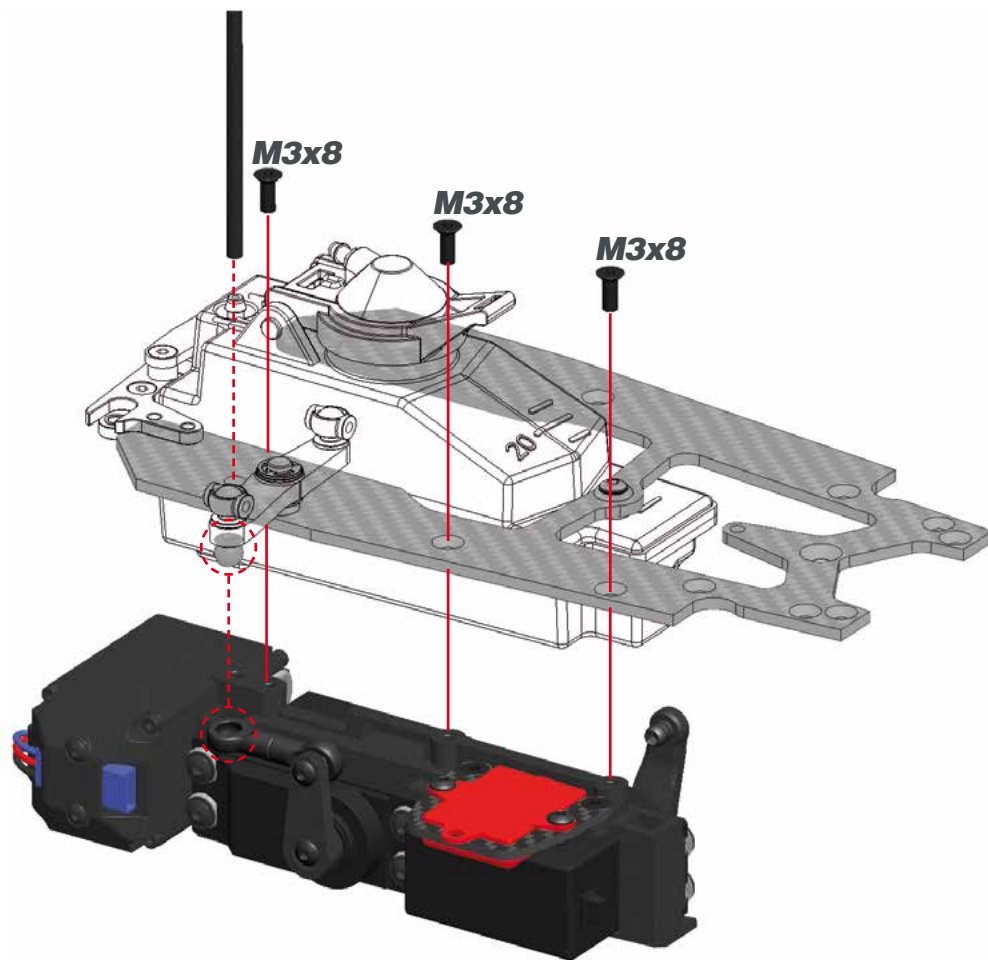
! Note that the front grommet must be cutted 1mm as shown in the below picture.



STEP 34



STEP 35

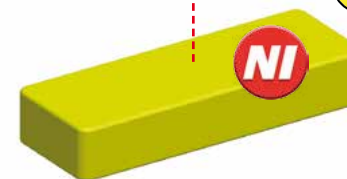


STEP 36

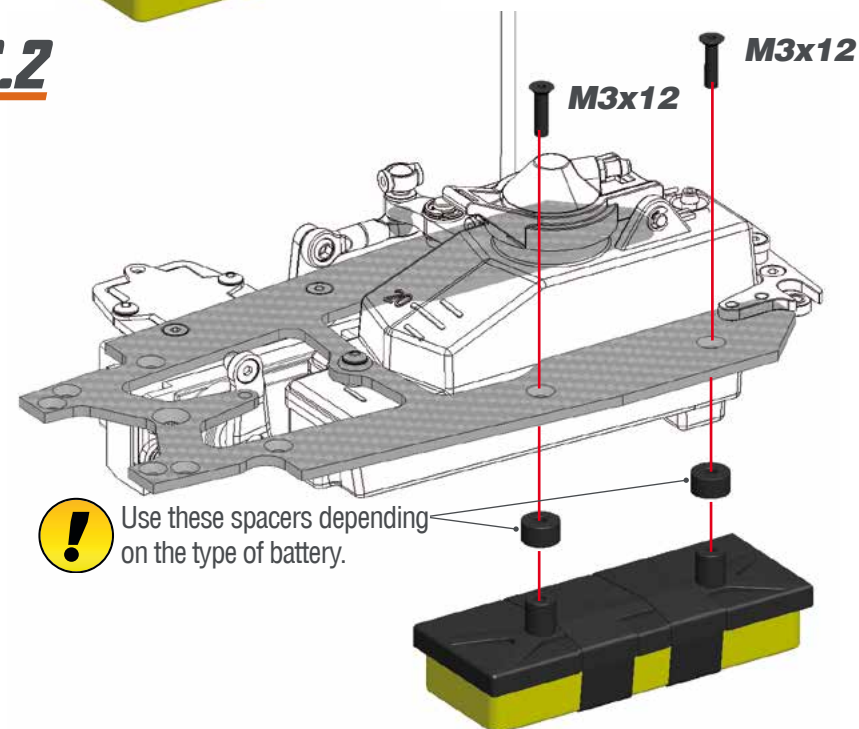
36.1



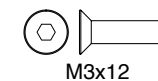
Use tape to mount the battery to the plastic support.



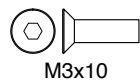
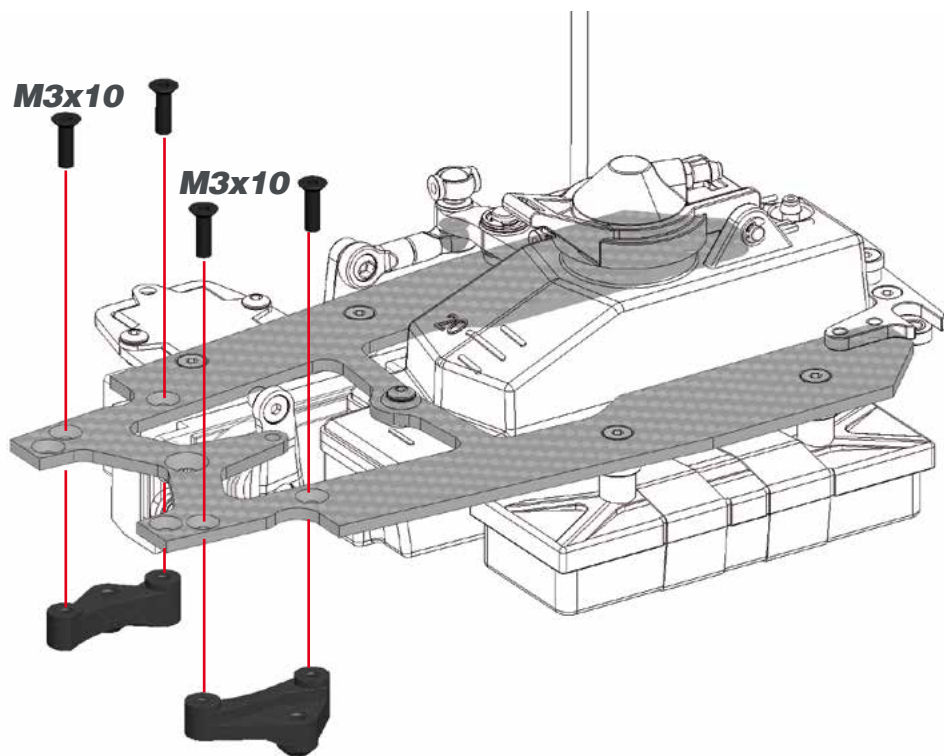
36.2



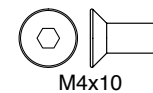
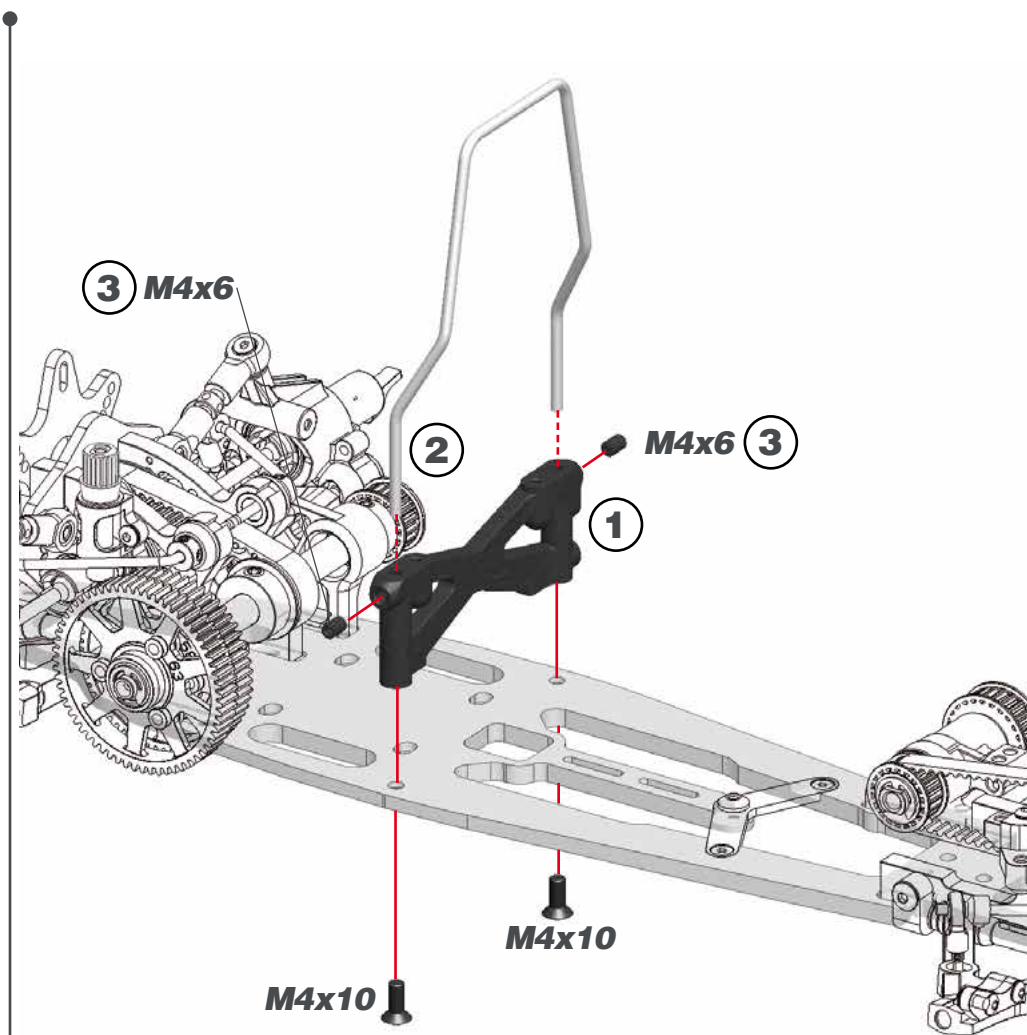
Use these spacers depending on the type of battery.



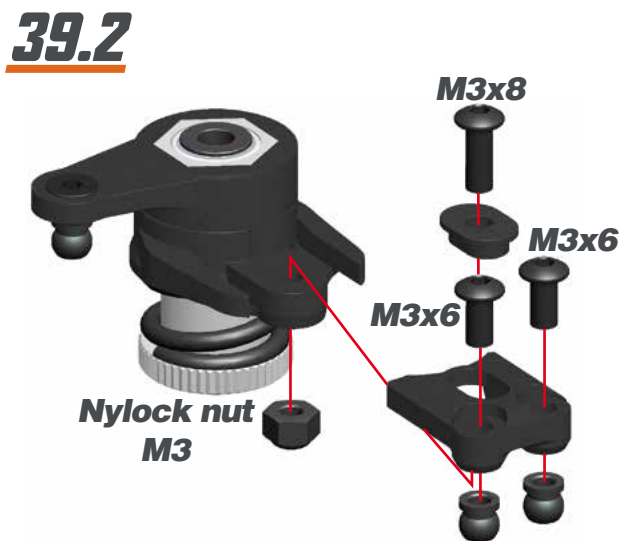
STEP 37



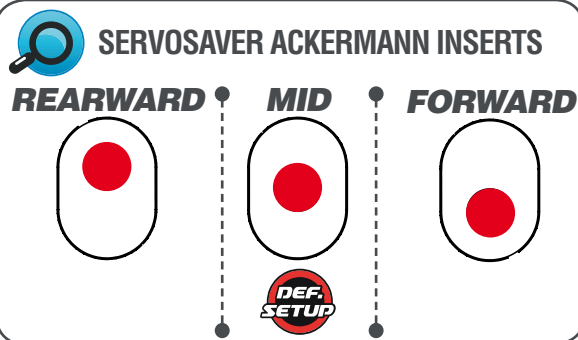
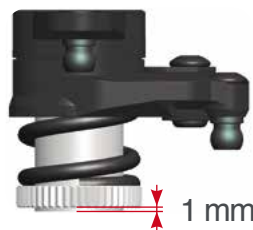
STEP 38



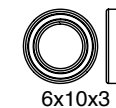
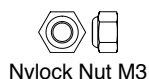
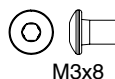
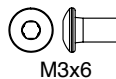
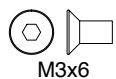
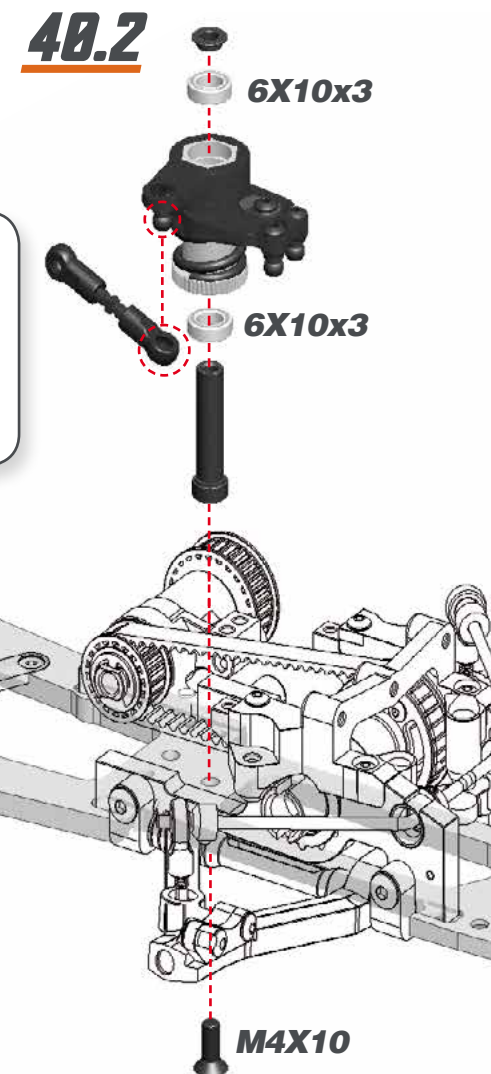
STEP 39 **BAG 7**



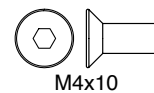
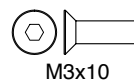
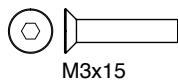
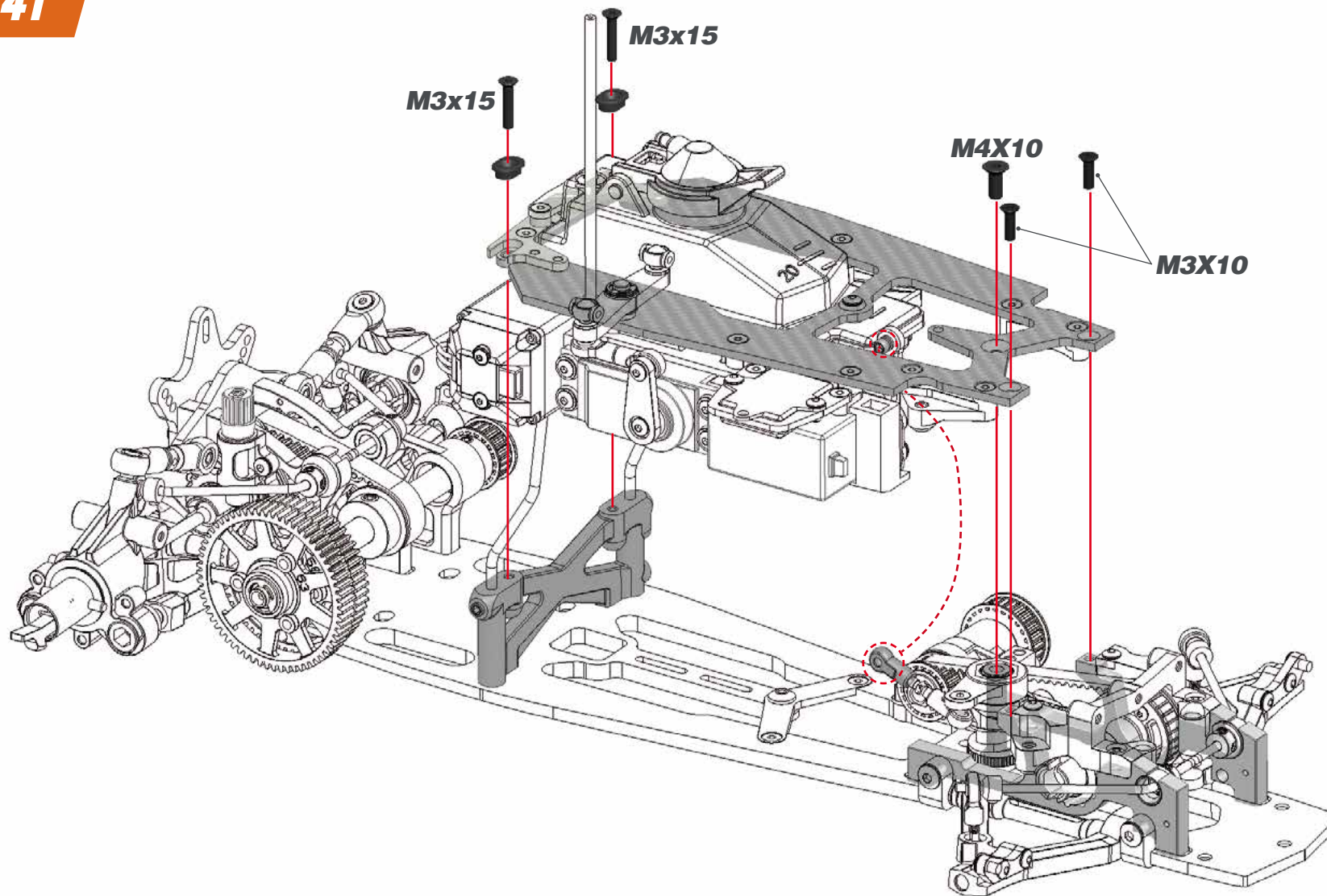
Preload the servo-saver-spring 1mm.



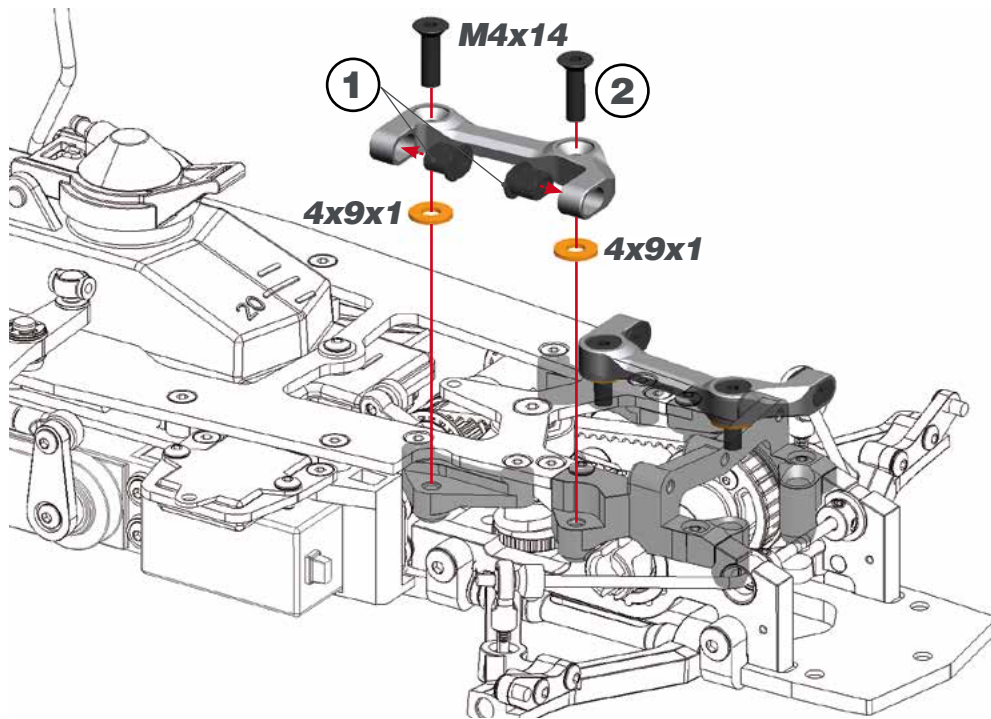
STEP 40



STEP 41

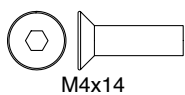


STEP 42

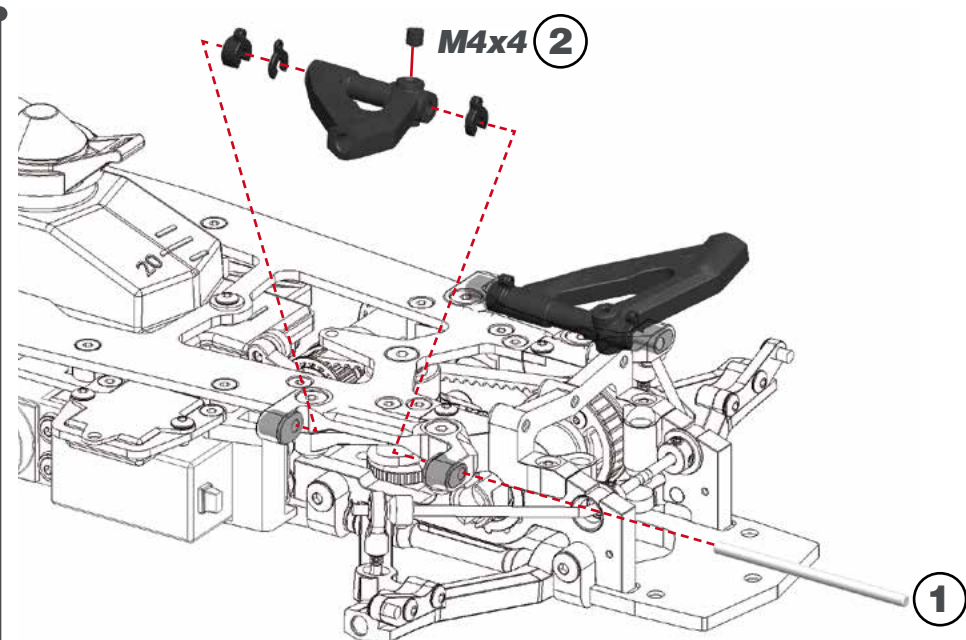


L=R FRONT SUSPENSION INSERTS CHART

INSIDE		MID		OUTSIDE	
RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
DEF. SETUP					



STEP 43



L=R FRONT CASTER DEFAULT SPACERS

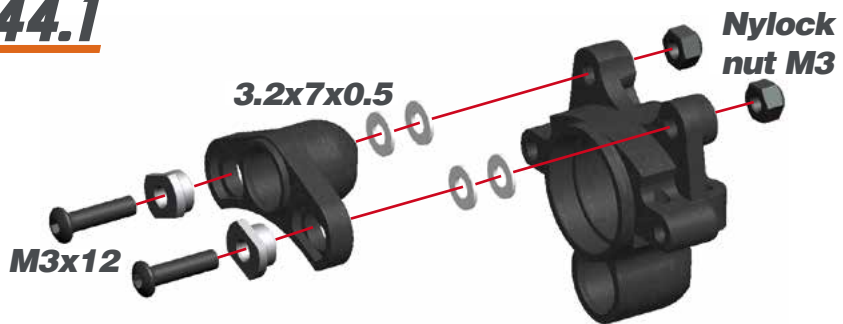
DEF. SETUP

4mm 1mm 2mm

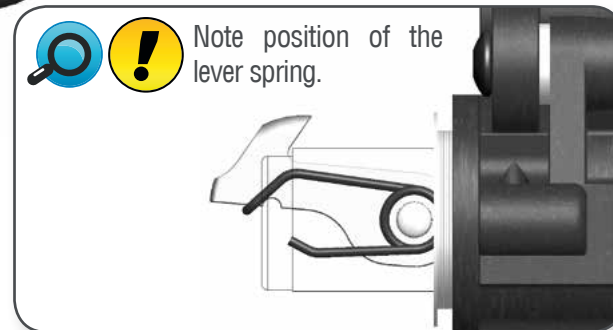
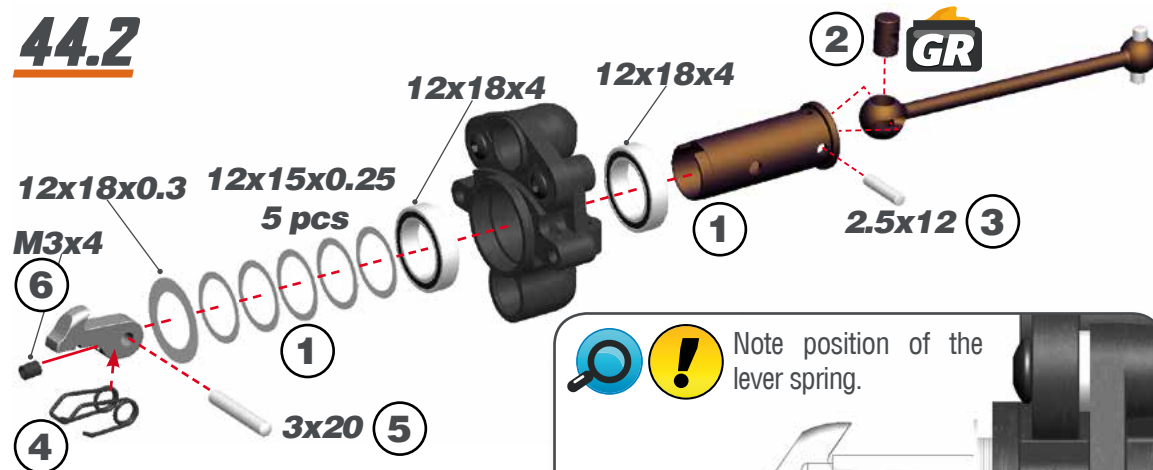


STEP 44 BAG 8

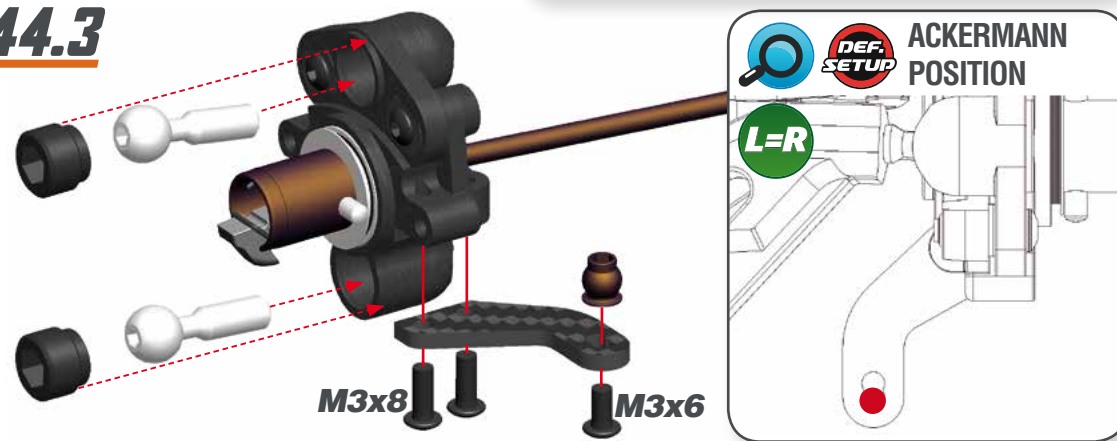
44.1



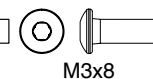
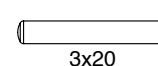
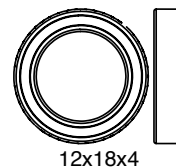
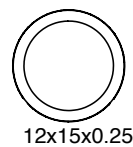
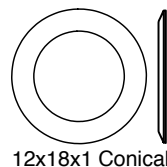
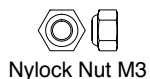
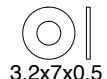
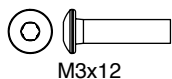
44.2



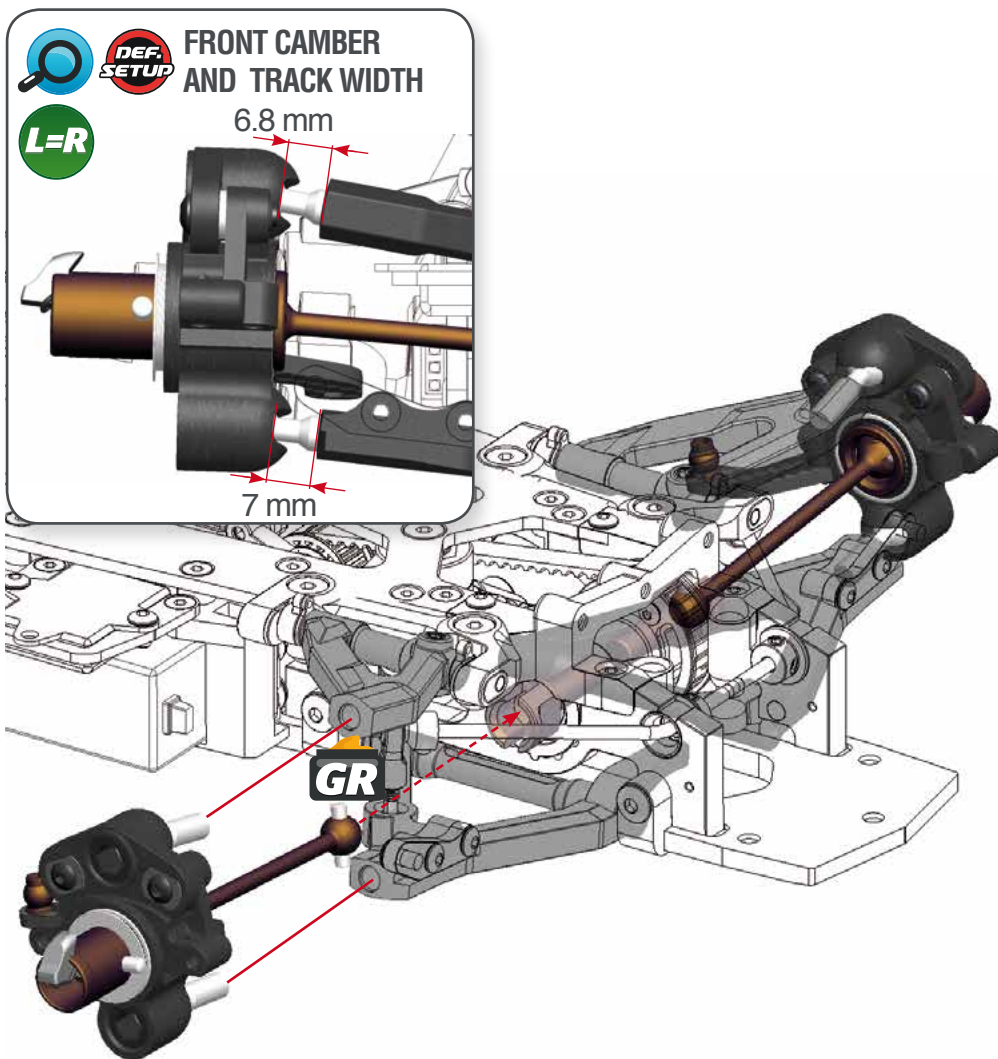
44.3



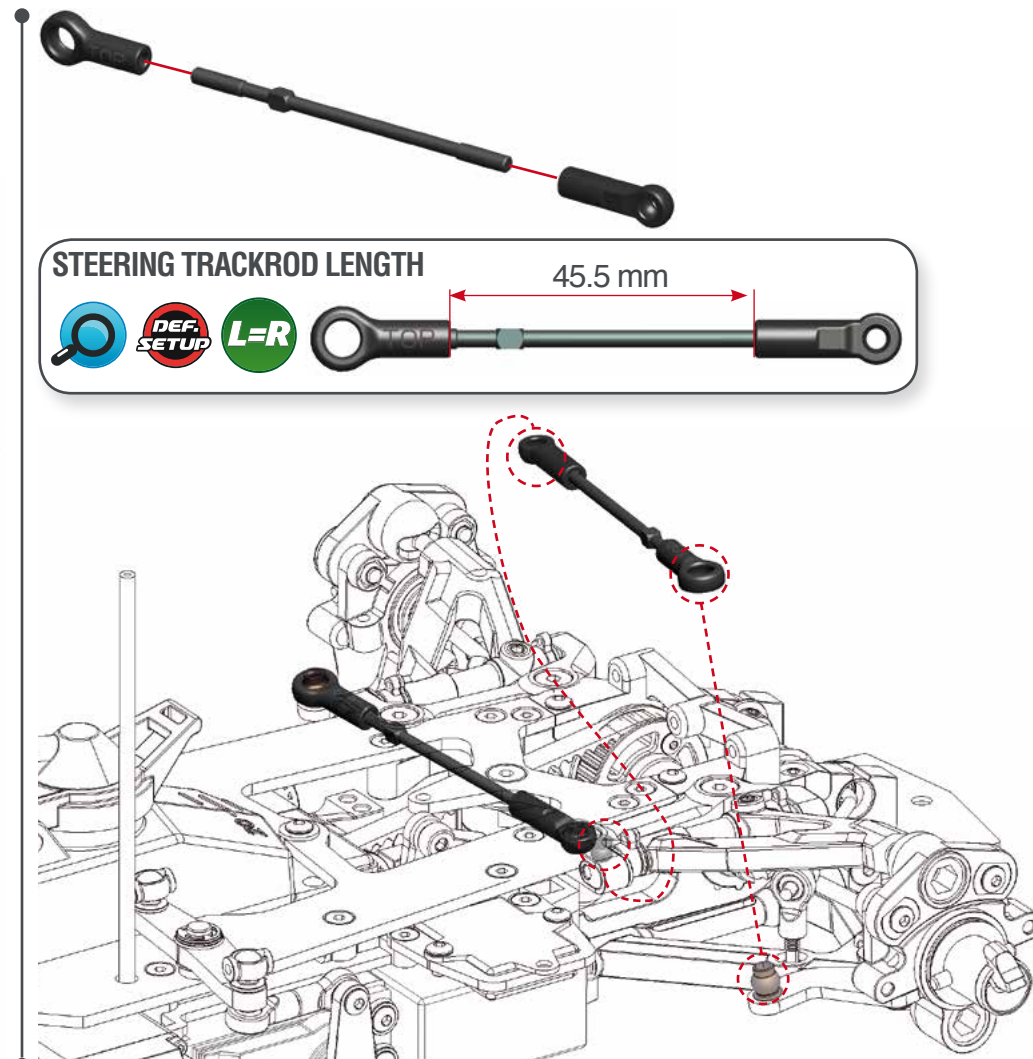
		STEERING BLOCK INSERTS CHART		
		LEADING	NEUTRAL <small>DEF. SETUP</small>	TRAILING
RIGHT				
LEFT				



STEP 45

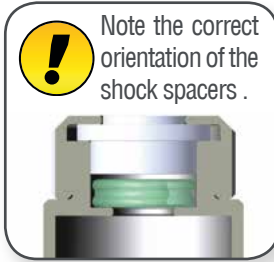
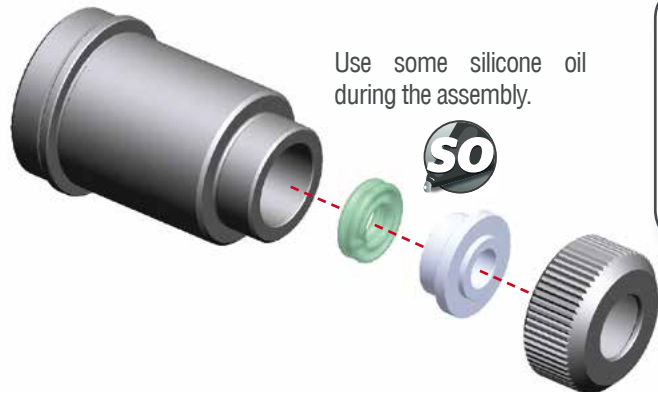


STEP 46

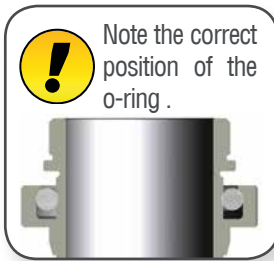


STEP 47 SHOCKS BAG

47.1



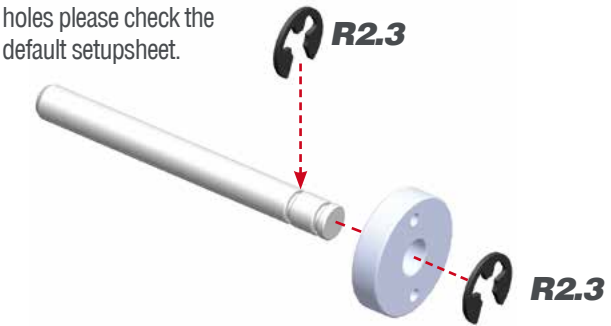
47.2



STEP 48

48.1

For the correct piston holes please check the default setupsheet.



48.2

FRONT



REAR



STEP 49

49.1

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



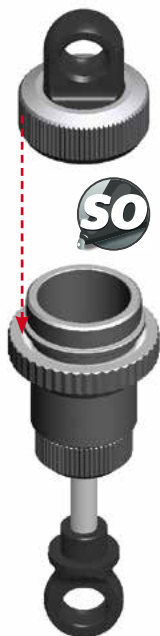
49.2

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.



49.3

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

2- Close completely the shock cap.



SHOCKS LENGTH:
Measure the shock length fully extended.

FRONT

14 mm

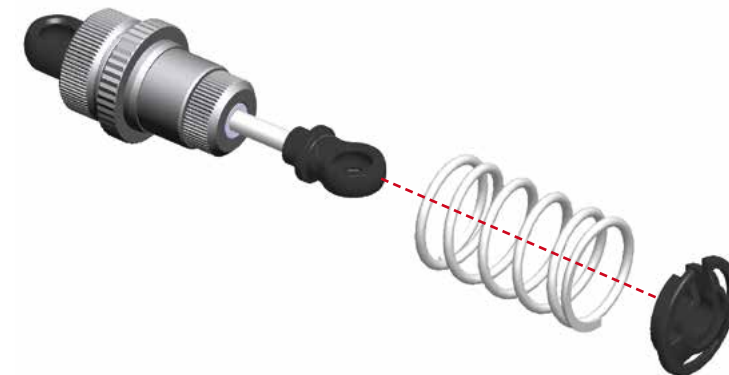
REAR

14.5 mm

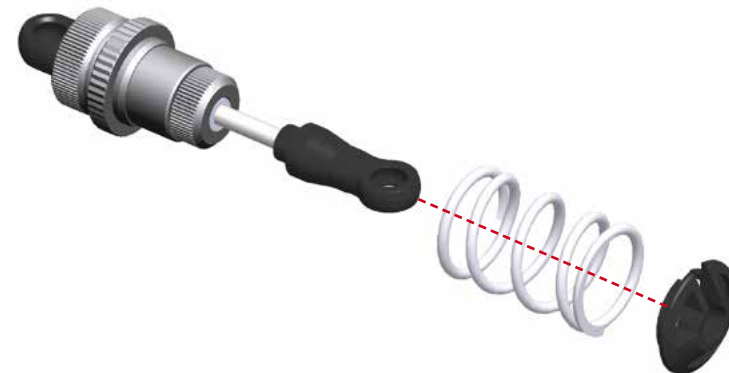
STEP 50

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

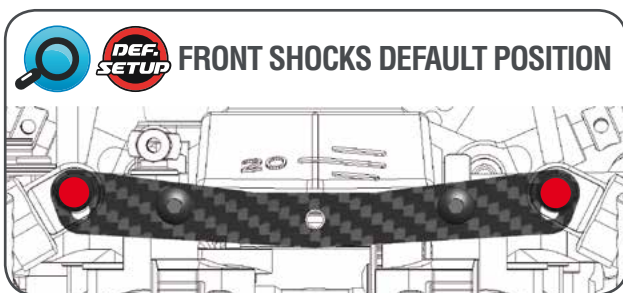
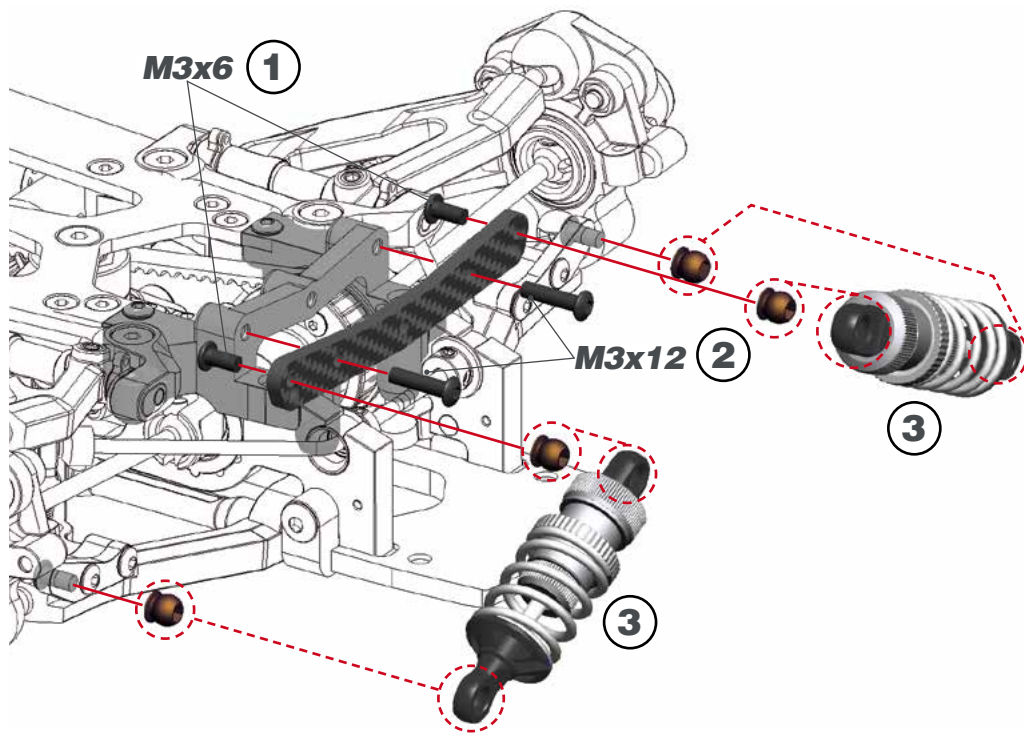
FRONT



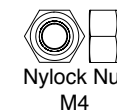
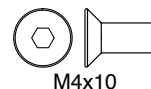
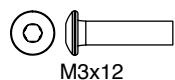
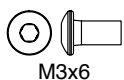
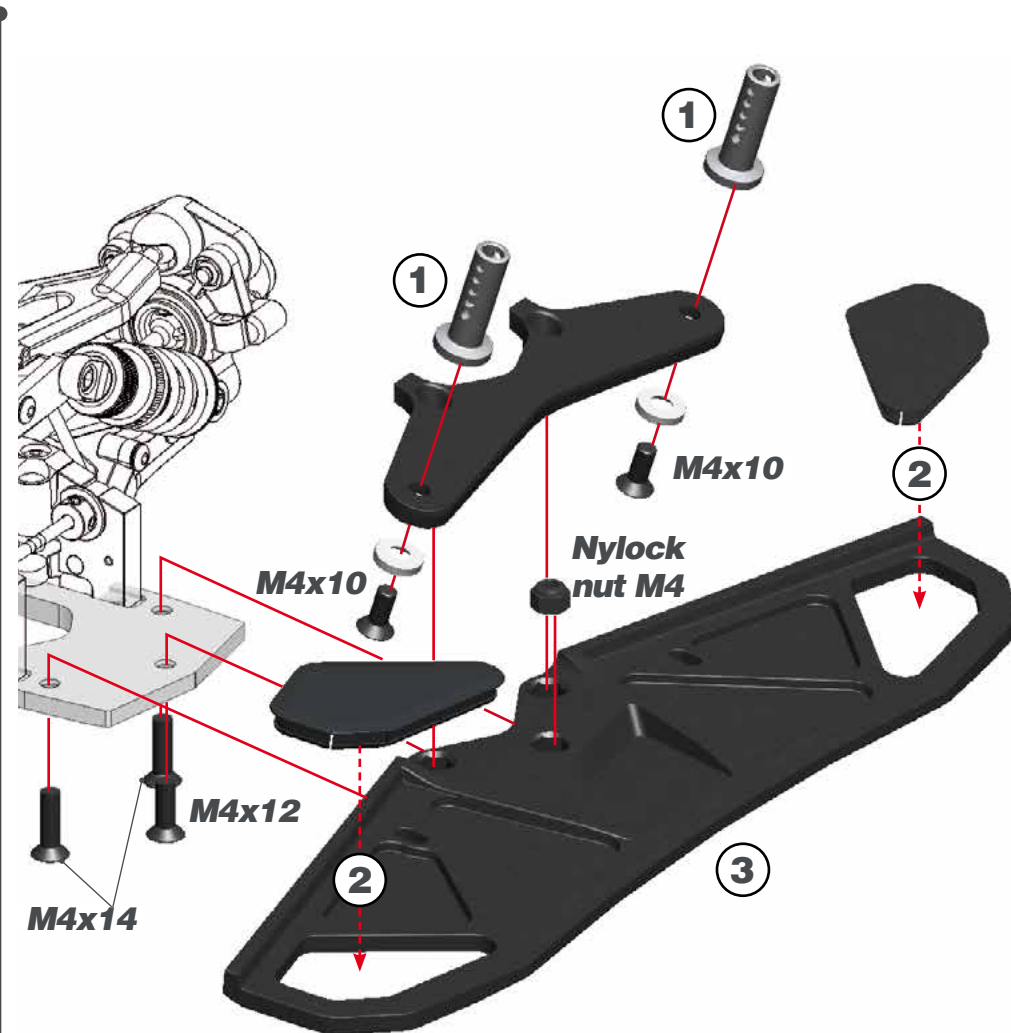
REAR



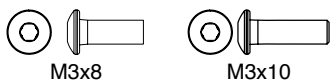
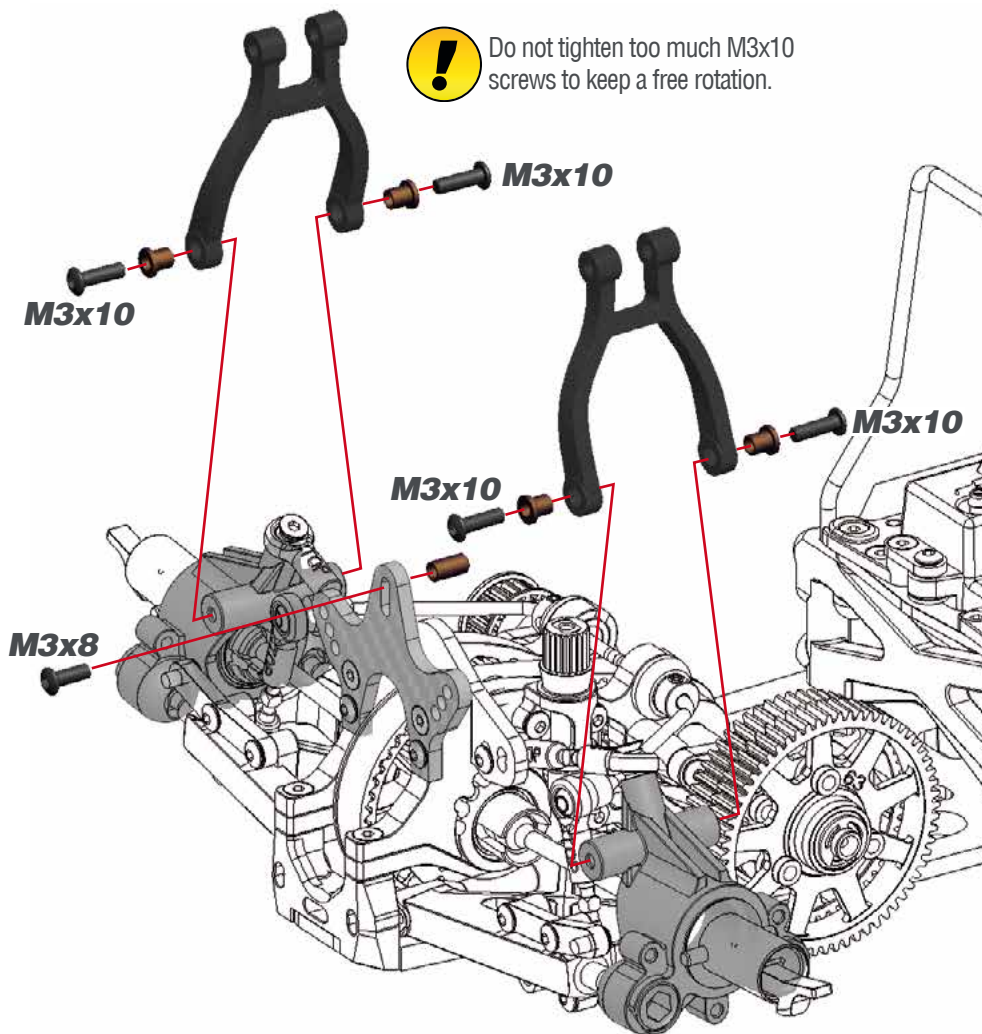
STEP 51 BAG 9



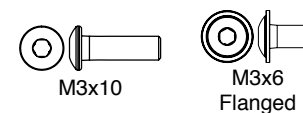
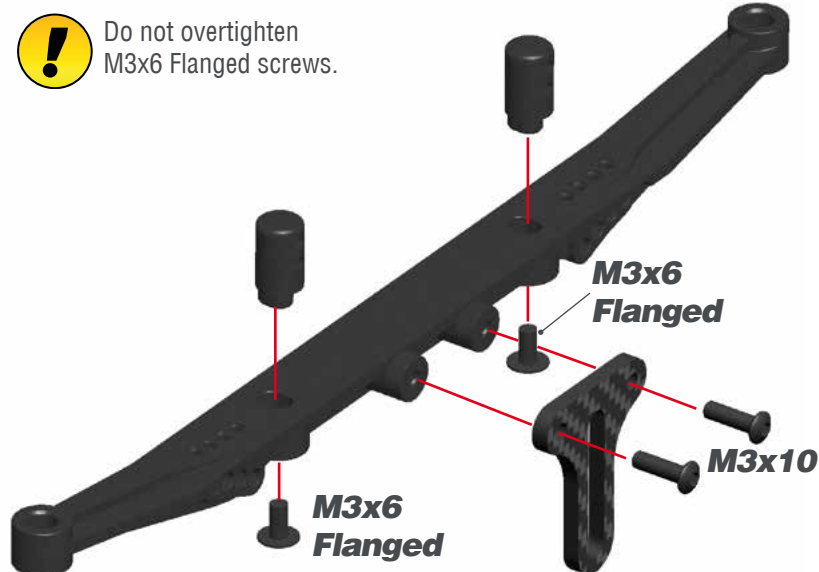
STEP 52



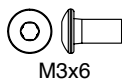
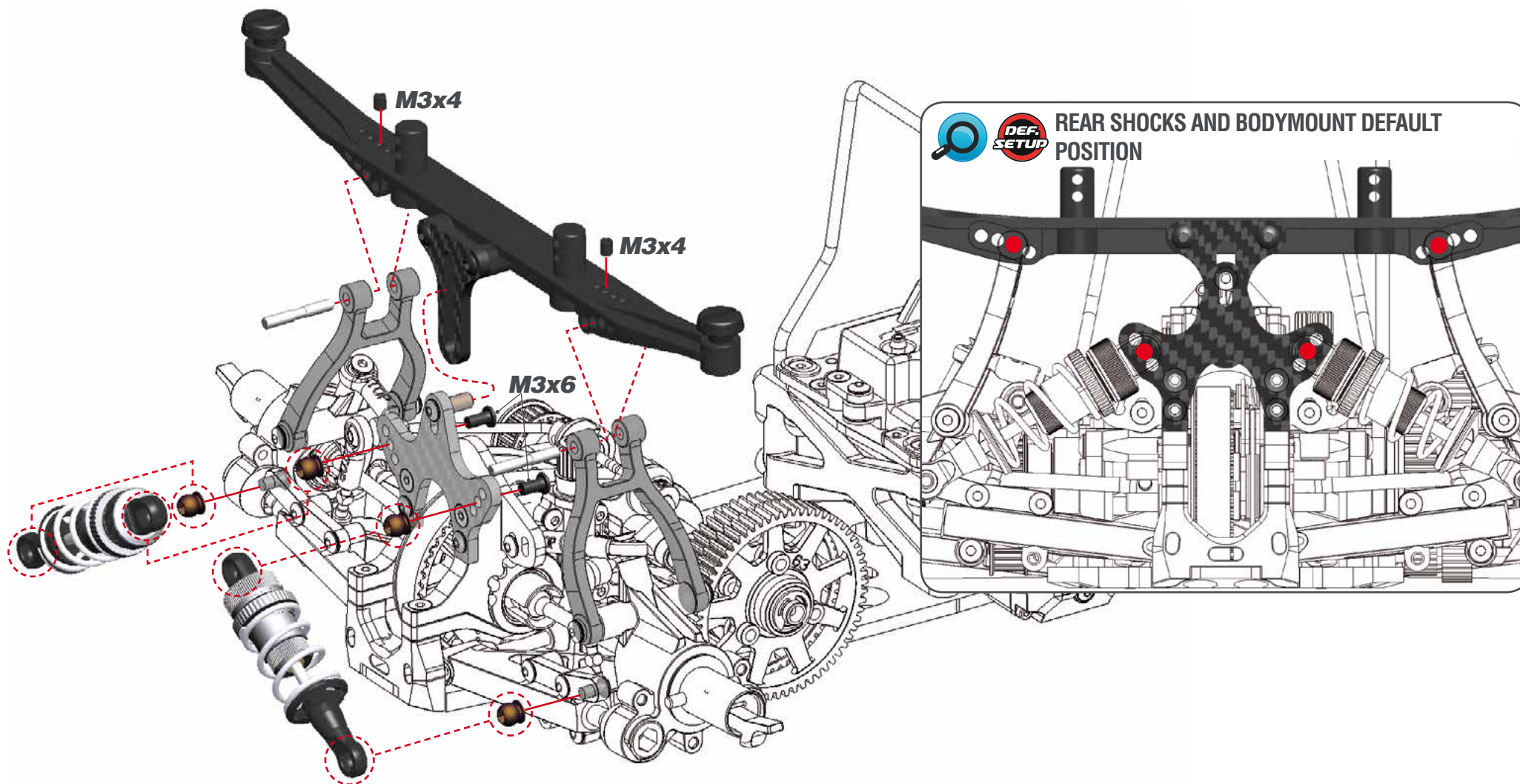
STEP 53



STEP 54

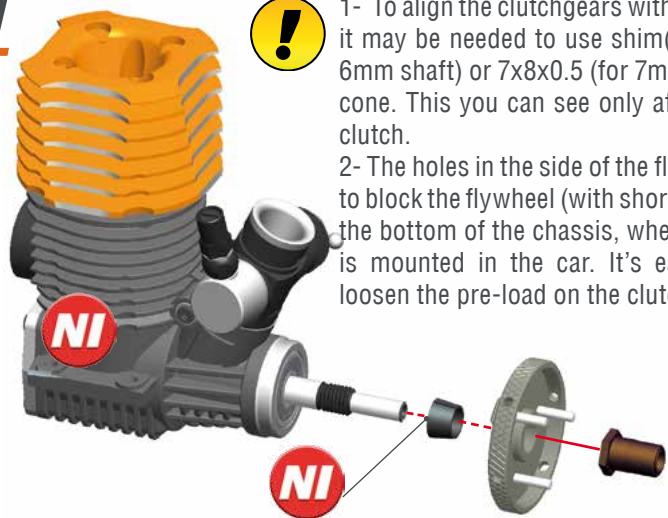


STEP 55



STEP 56 CLUTCH BAG

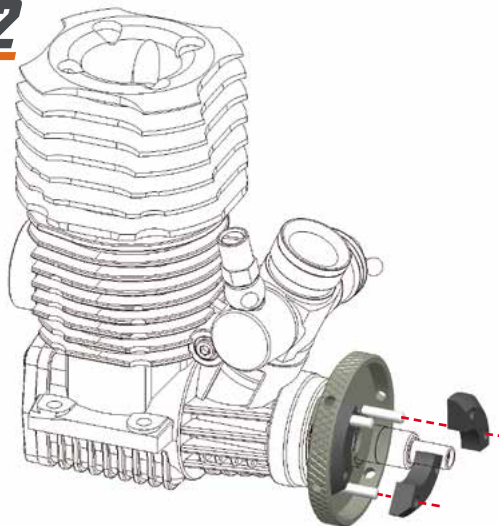
56.1



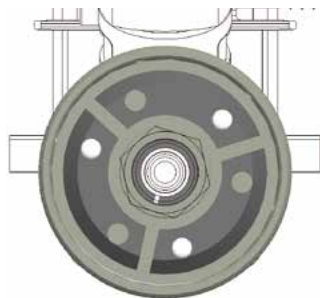
1- To align the clutchgears with the 2-speed gears, it may be needed to use shim(s) 6x8x0.5mm (for 6mm shaft) or 7x8x0.5 (for 7mm shaft) behind the cone. This you can see only after assembling the clutch.

2- The holes in the side of the flywheel can be used to block the flywheel (with short allen tool) through the bottom of the chassis, when the engine/clutch is mounted in the car. It's easier to tighten or loosen the pre-load on the clutch spring that way.

56.2

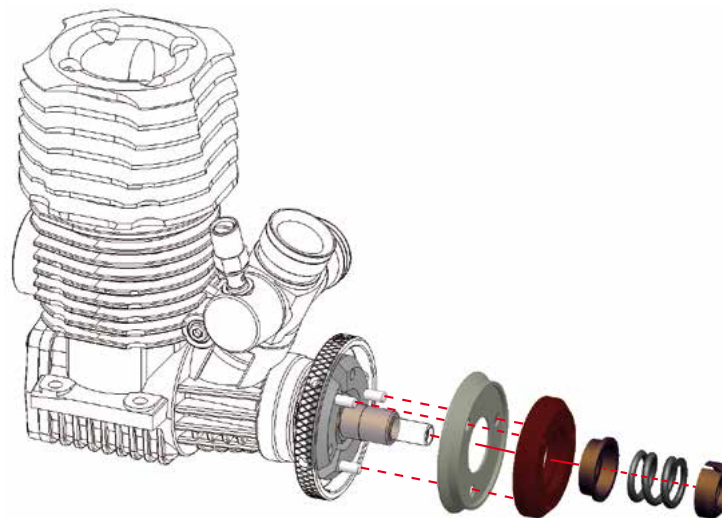


Note the orientation of the flyweights. Use the right hole for having a more aggressive clutch



STEP 57

57.1

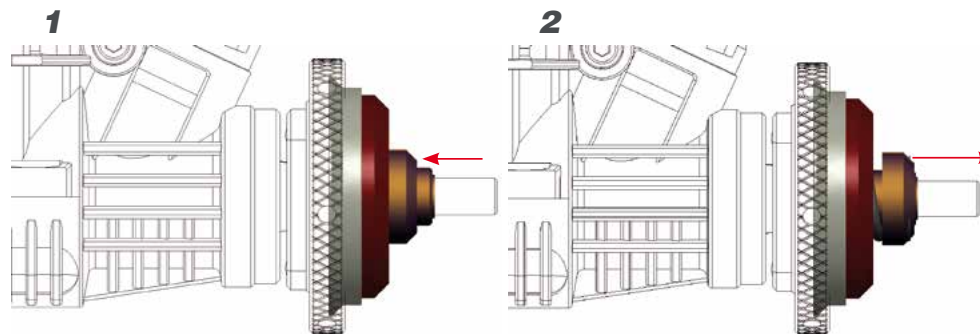


57.2



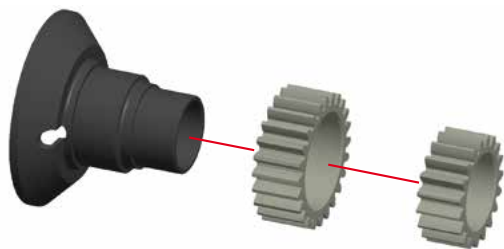
For adjusting the default clutch spring tension:

- 1- Screw in the adjusting nut all the way.
- 2- Unscrew it one and a half turns.
- 3- Fine tune the setup of your clutch on the track according to your driving style, track and weather conditions.



STEP 58

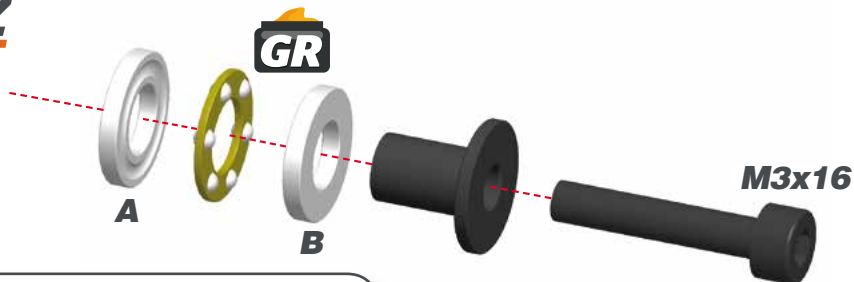
58.1



! Note the orientaion of the gears

2ND 1ST

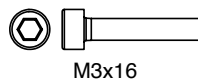
58.2



! IMPORTANT! Install thrust bearing plates as shown.

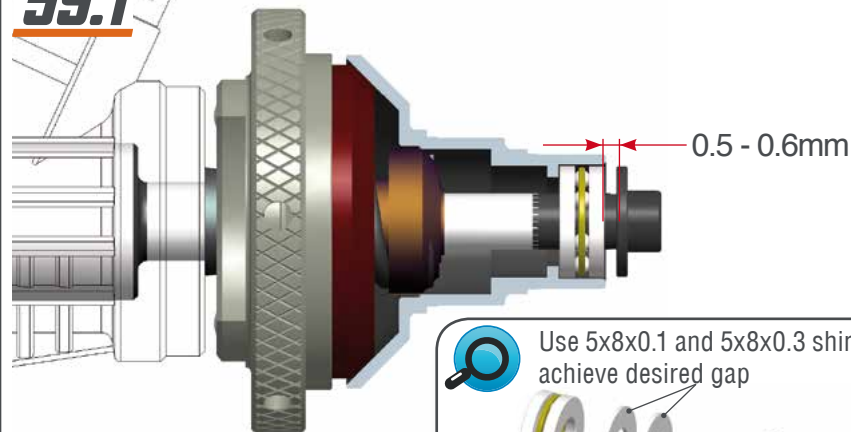
A B

5.2 mm 5.0 mm



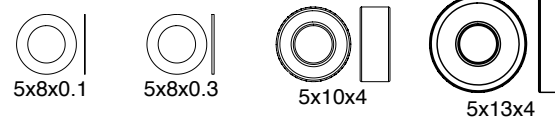
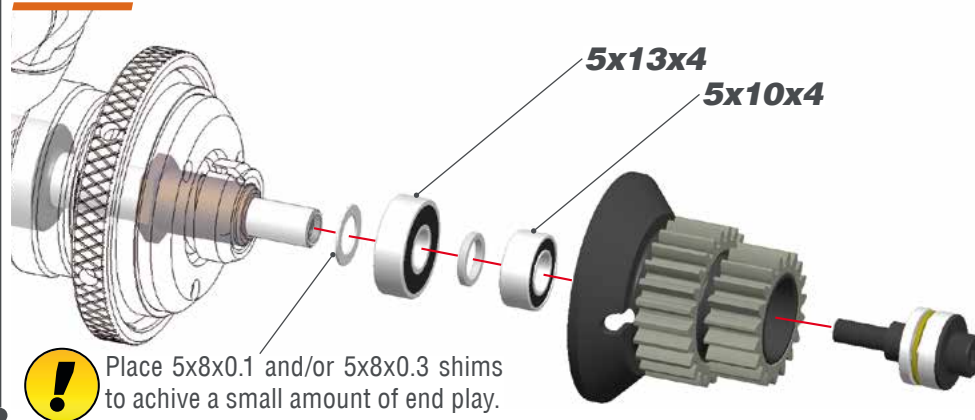
STEP 59

59.1 SETTING THE CLUTCH GAP



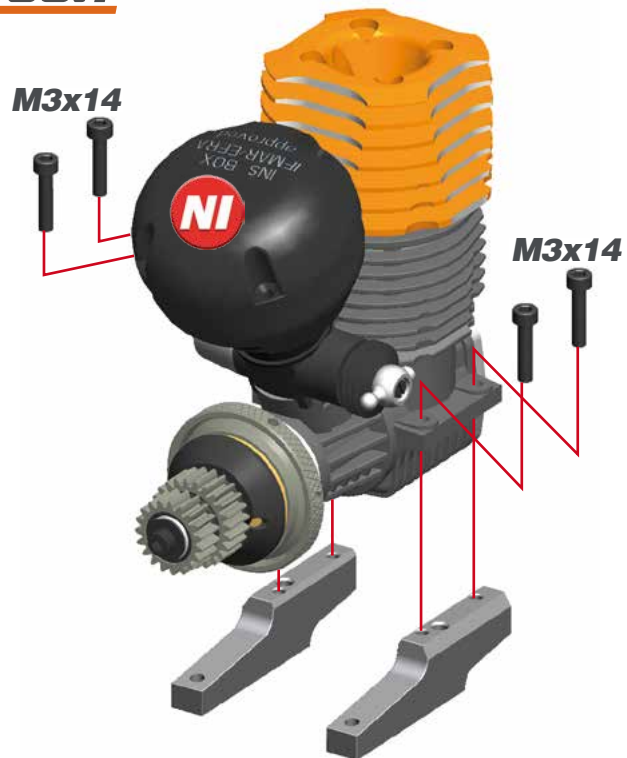
Use 5x8x0.1 and 5x8x0.3 shims to achieve desired gap

59.2 SETTING THE CLUTCH END PLAY

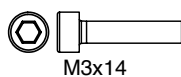
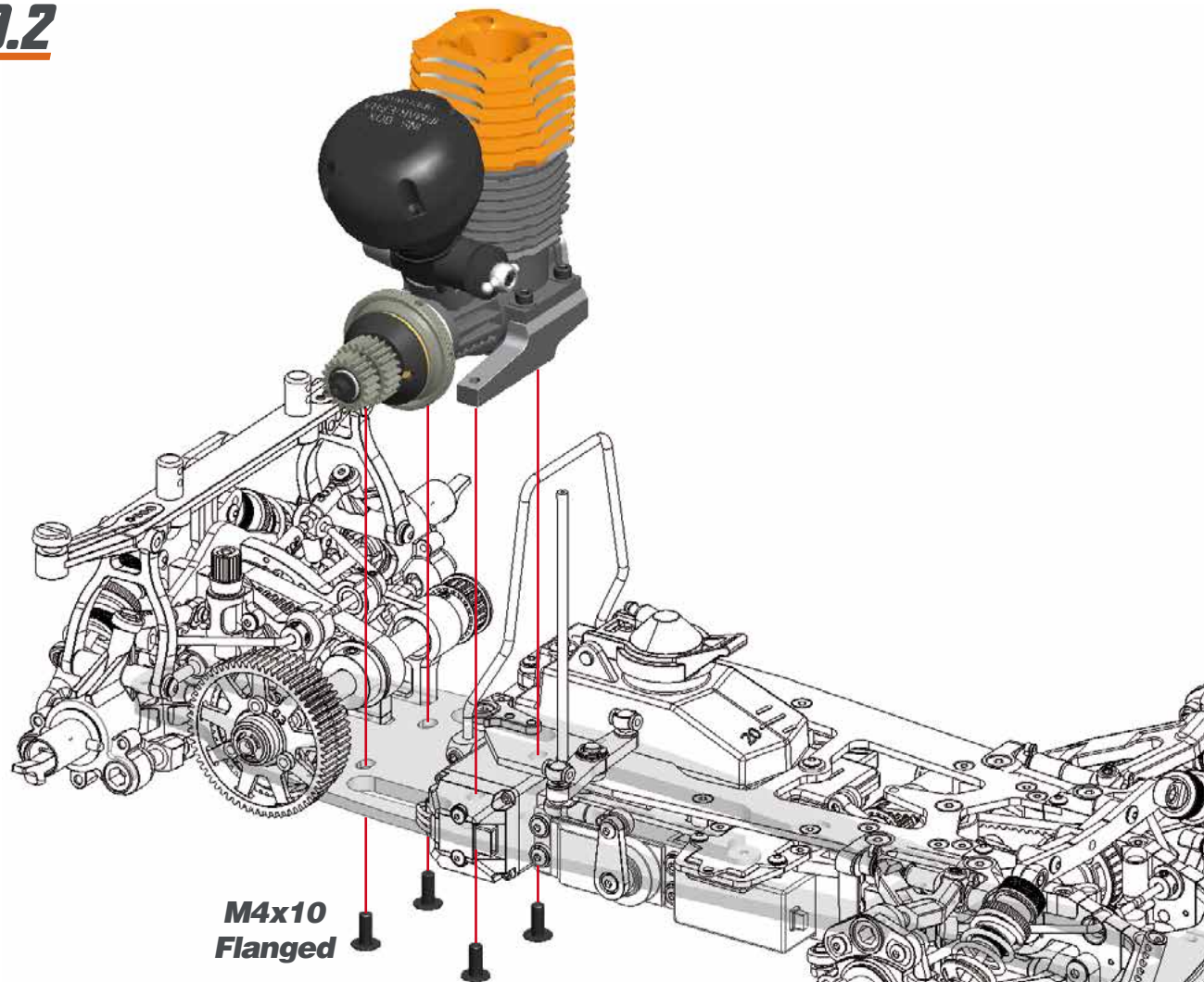


STEP 60 BAG 10

60.1



60.2

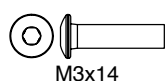
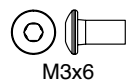
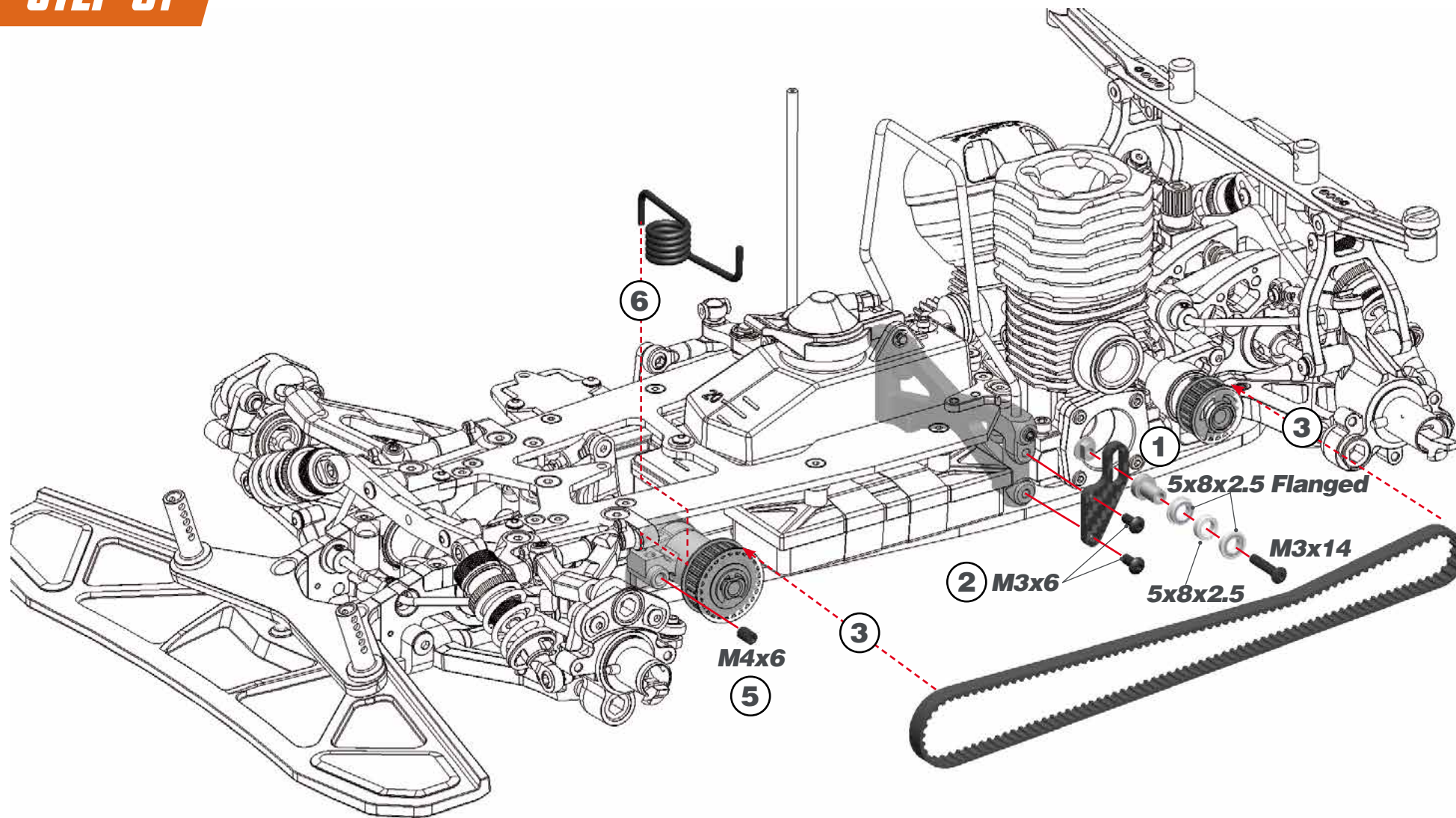


M3x14

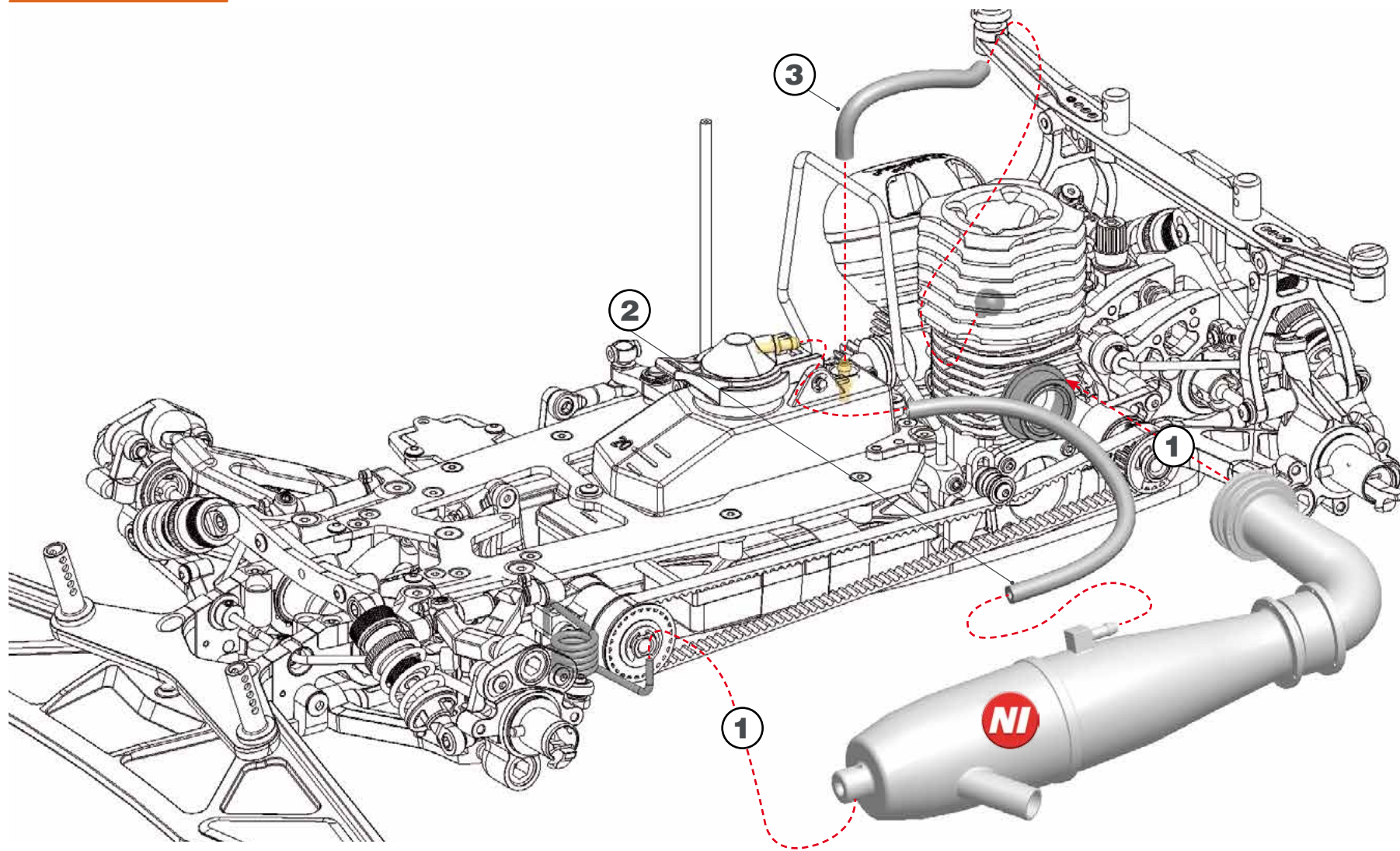


M4X10 Flanged

STEP 61



STEP 64

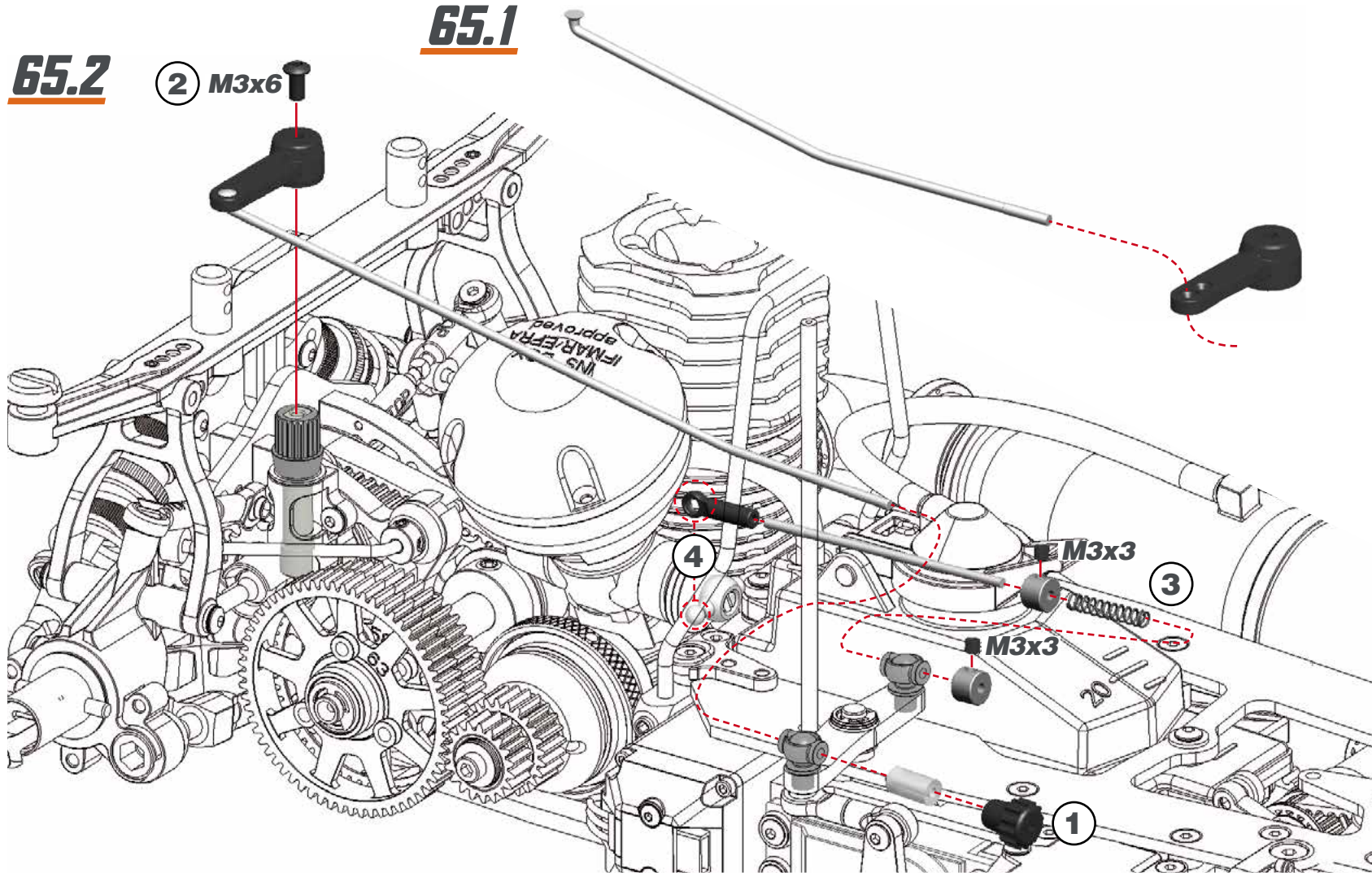


STEP 65

65.1

65.2

② M3x6

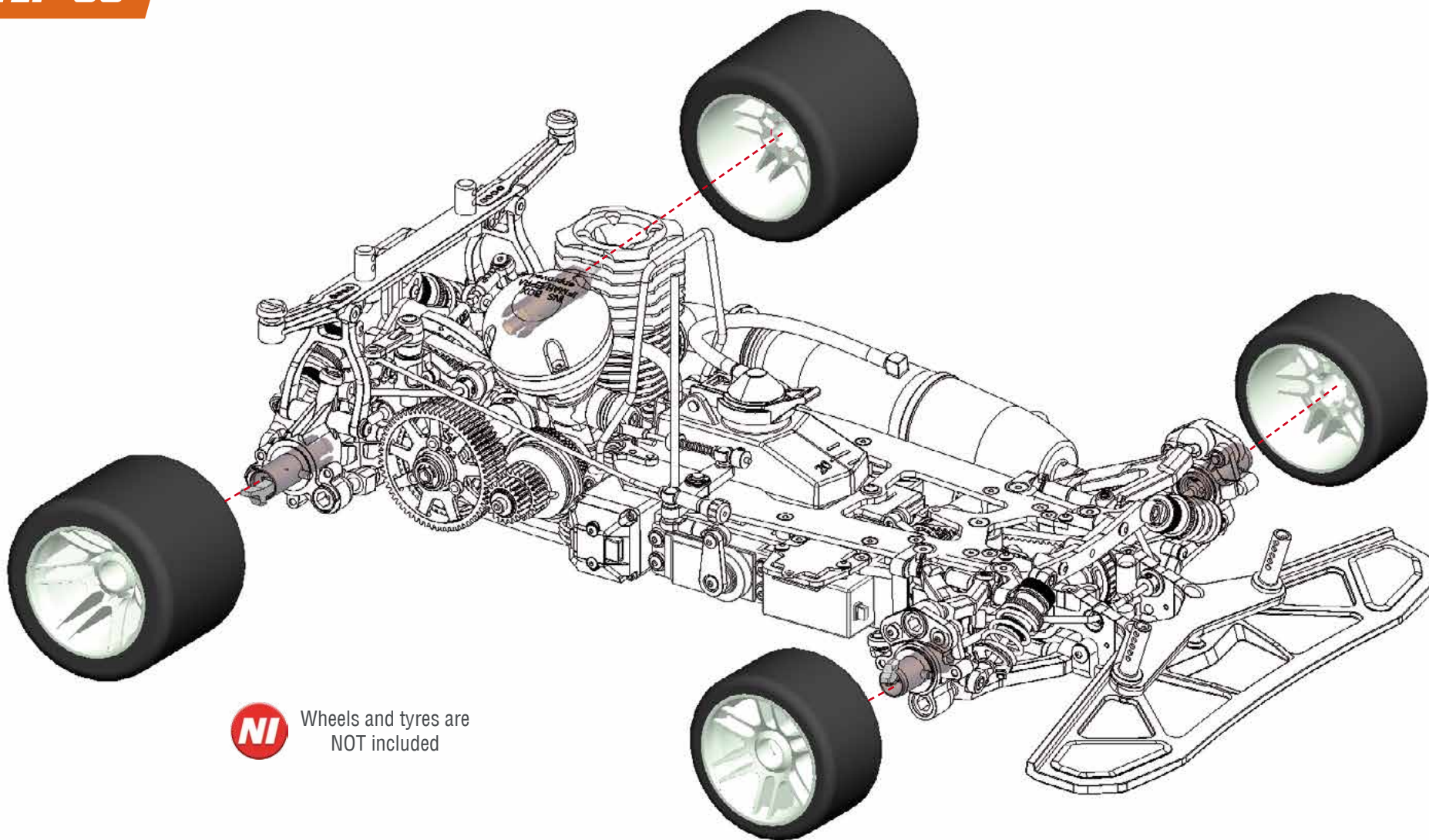


M3x3



M3x6

STEP 66



Wheels and tyres are
NOT included

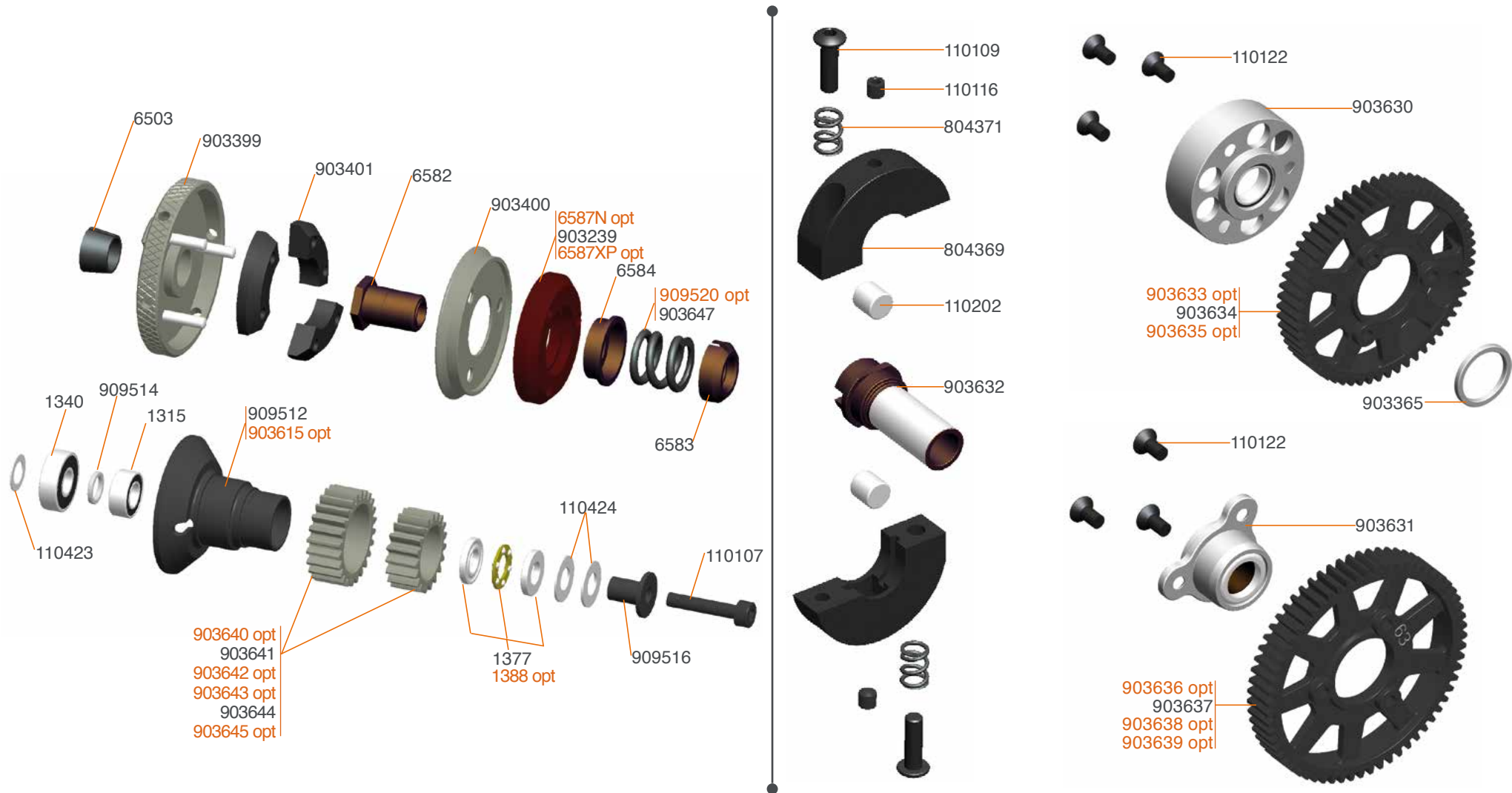
INDEX

CLUTCH AND GEARBOX EXPLODED VIEW	44
SHOCKS EXPLODED VIEW	45
REAR EXPLODED VIEW	46
FRONT I EXPLODED VIEW	47
RADIO EXPLODED VIEW	48
FRONT II EXPLODED VIEW	49
SHOCKS MOUNTING EXPLODED VIEW	50
FINAL EXPLODED VIEW	51
TEAM SERPENT NETWORK	52

CLUTCH AND GEARBOX EXPLODED VIEW

977
60
Viper

Serpent

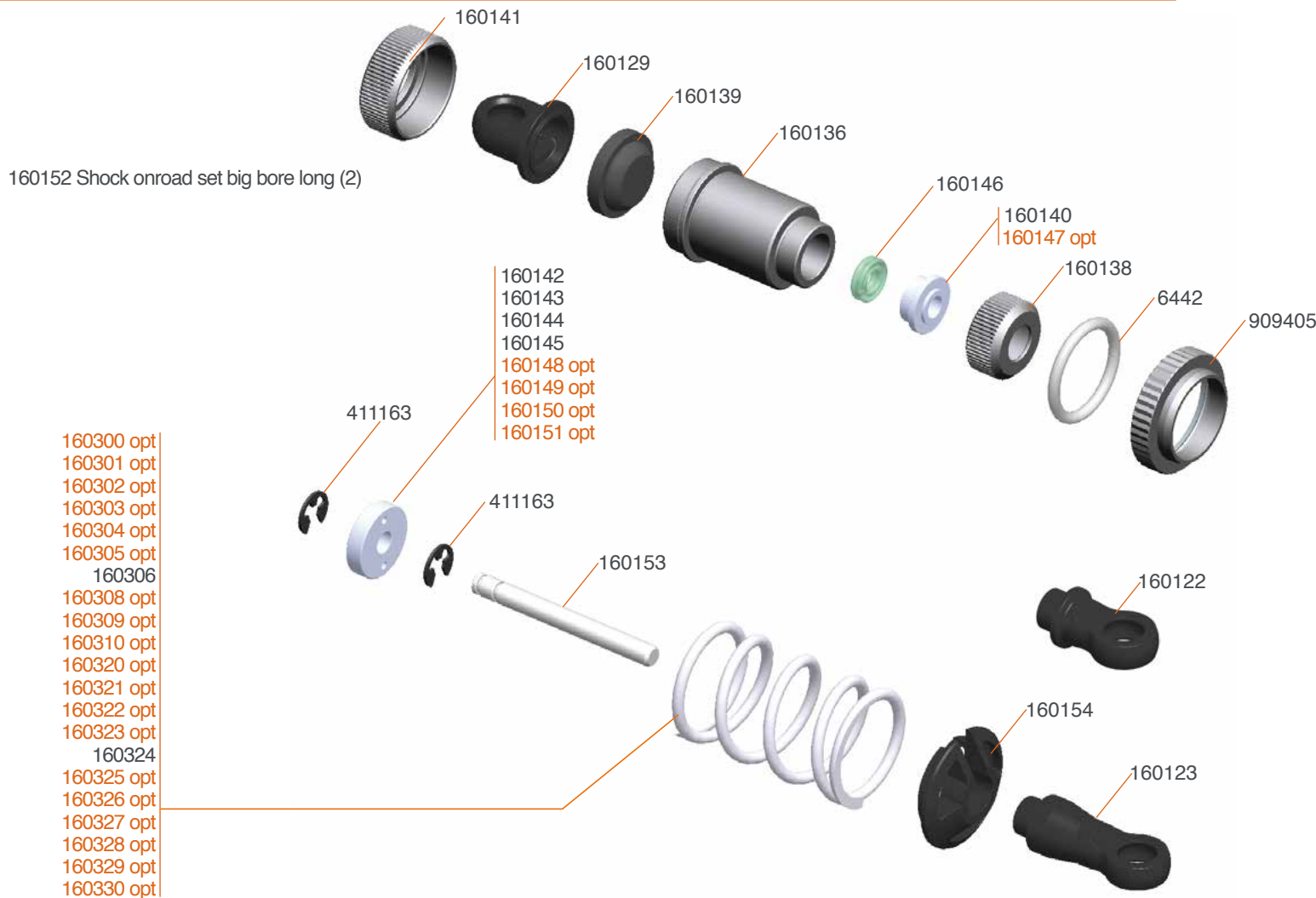


903640 Centax gear-pinion alu 18T XLI
 903642 Centax gear-pinion alu 20T XLI
 903643 Centax gear-pinion alu 23T XLI
 903645 Centax gear-pinion alu 25T XLI
 903646 Centax gear-pinion alu set XLI (6)

909512 Clutch housing centax 2 alu coated
 6587N Centax clutch shoe brown
 6587XP Centax clutch shoe XP
 903633 2-speed gear 56T SL8 XLI
 903635 2-speed gear 58T SL8 XLI

903636 2-speed gear 61T SL8 XLI
 903638 2-speed gear 63T SL8 XLI
 903639 2-speed gear set SL8 (6) XLI
 909520 Centax II / III spring 1.8 (10mm)

OPT

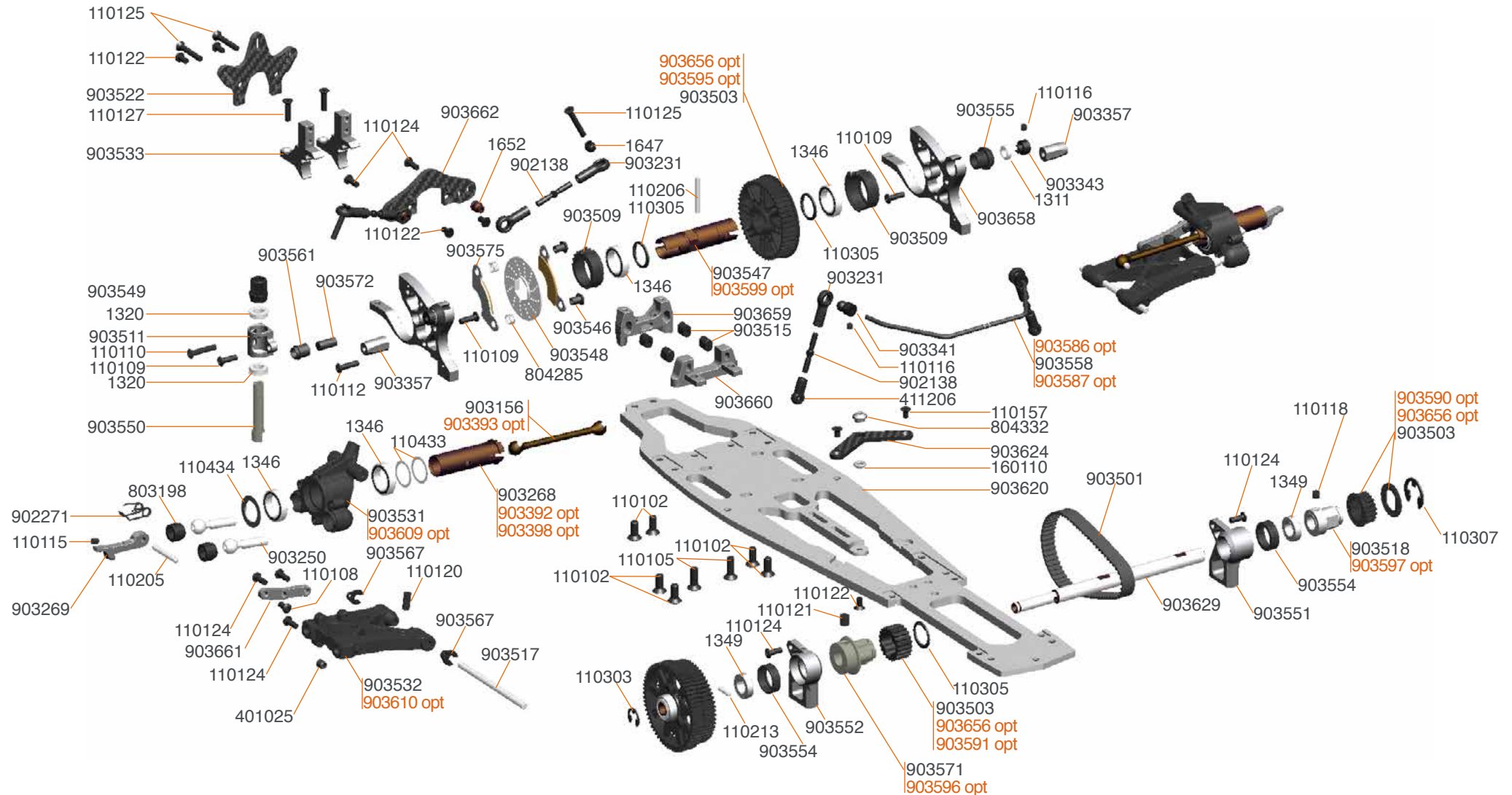


- 160148 Shock onroad big bore piston 1 hole LF (2)
- 160149 Shock onroad big bore piston 2 hole LF (2)
- 160150 Shock onroad big bore piston 3 hole LF (2)
- 160151 Shock onroad big bore piston 4 hole LF (2)
- 160147 Shock onroad big bore bushing LF (4)
- 160300 Spring white L23 (2.3/13) (2)
- 160301 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)
- 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)



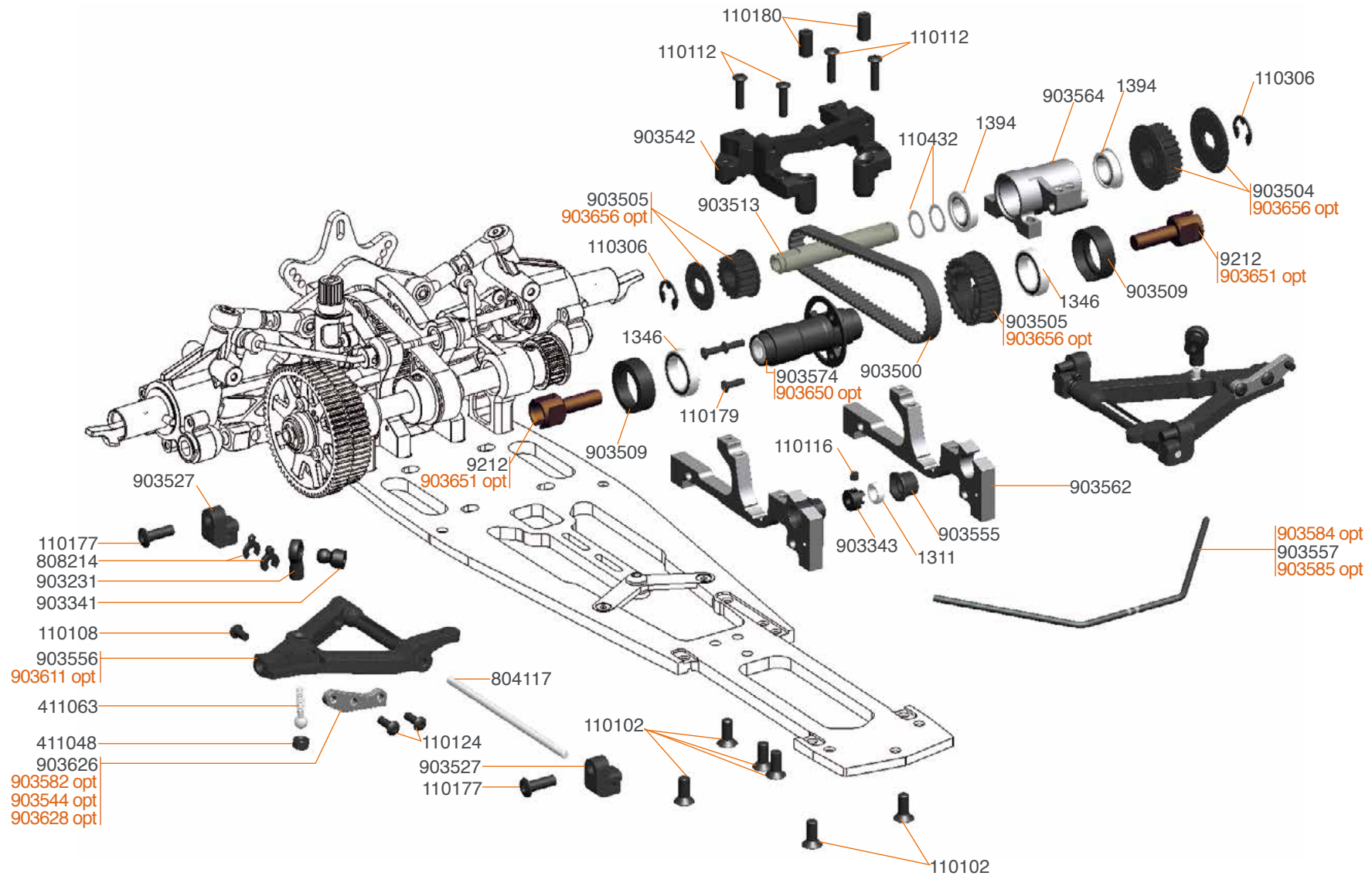


903391 Wheel-axle set CVD RR (2)
 903392 Wheel-axle CVD RR (2)
 903393 Rear driveshaft cvd (2)
 903398 Rear wheelaxle cvd alu (2)
 903586 Antiroll bar RR soft

903587 Antiroll bar RR hard
 903590 Pulley 2-sp axle 19T alu
 903591 Pulley 2-sp axle 21T alu
 903599 Solid axle RR light
 903595 Pulley rear axle 48T alu

903596 Pulley adaptor 21T light
 903597 Pulley adaptor 19T light
 903609 Upright (2) hard
 903610 Wishbone RR lw (2) hard
 903656 Pulley set low friction 977 (8)

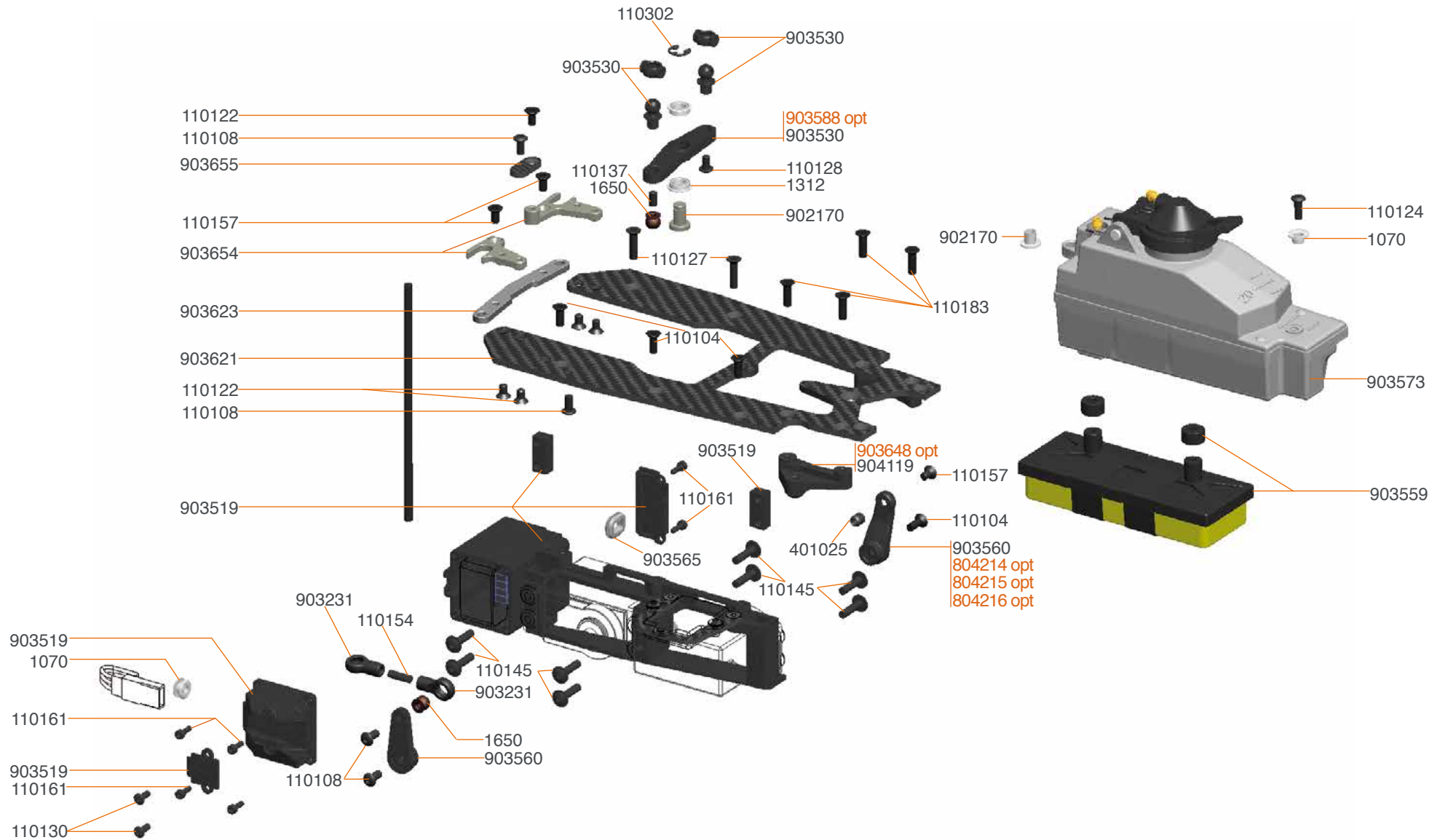




903584 Antirroll bar FR soft
903585 Antirroll bar FR hard
903628 Shock extension bracket FR wide carbon (2)

903544 Shock extension bracket FR alu (2)
903582 Shock extension bracket FR carbon (2)
903611 Wishbone FR lw L+R hard

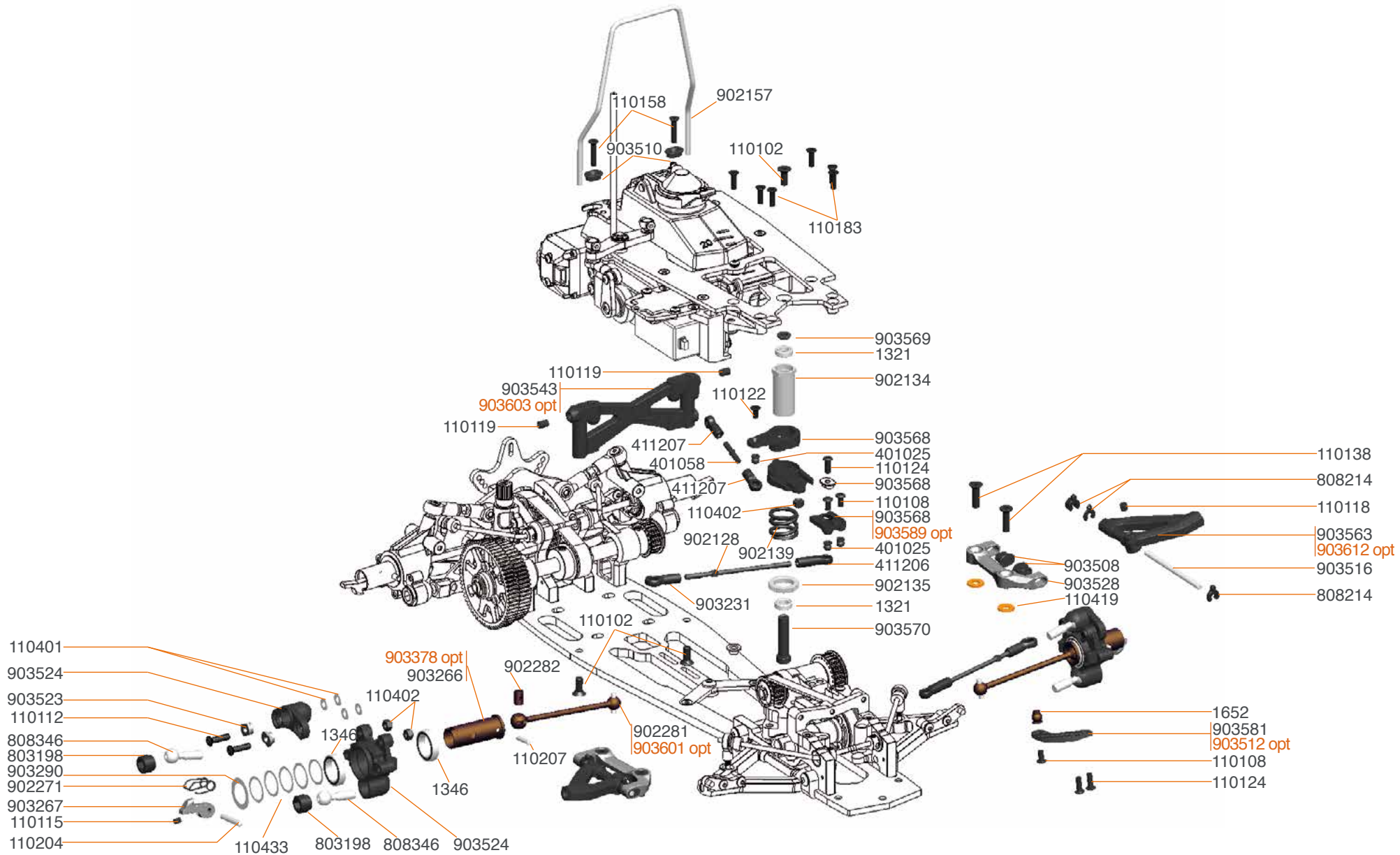
903650 Oneway front axle Hard anodized
903651 Inner driveshaft adapter light
903656 Pulley set low friction 977 (8)



903588 Throttle lever alu
804214 Steering lever 23T alu
804215 Steering lever 24T alu

804216 Steering lever 25T alu
903648 Topdeck bracket fr L+R 977E Alu

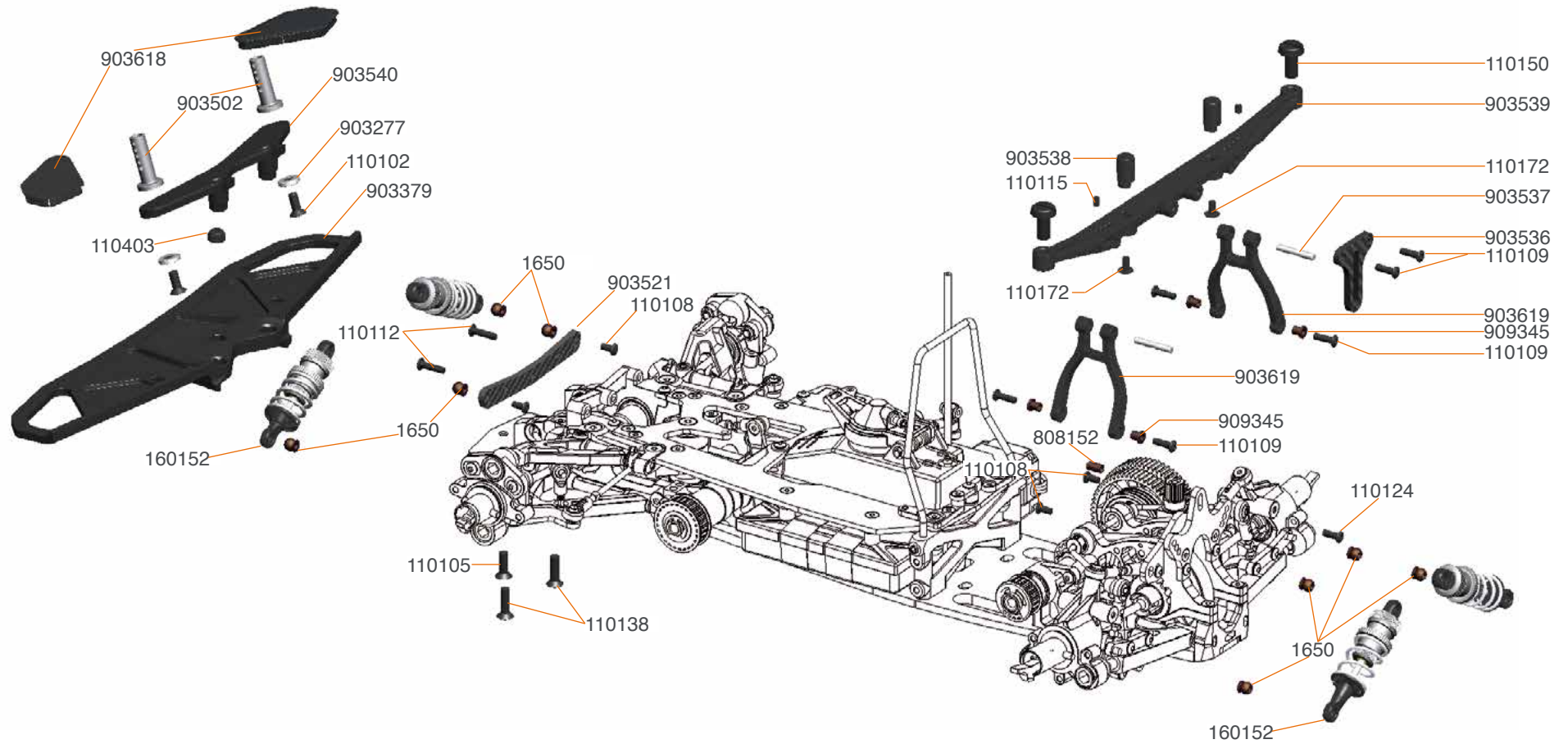
FRONT II EXPLODED VIEW

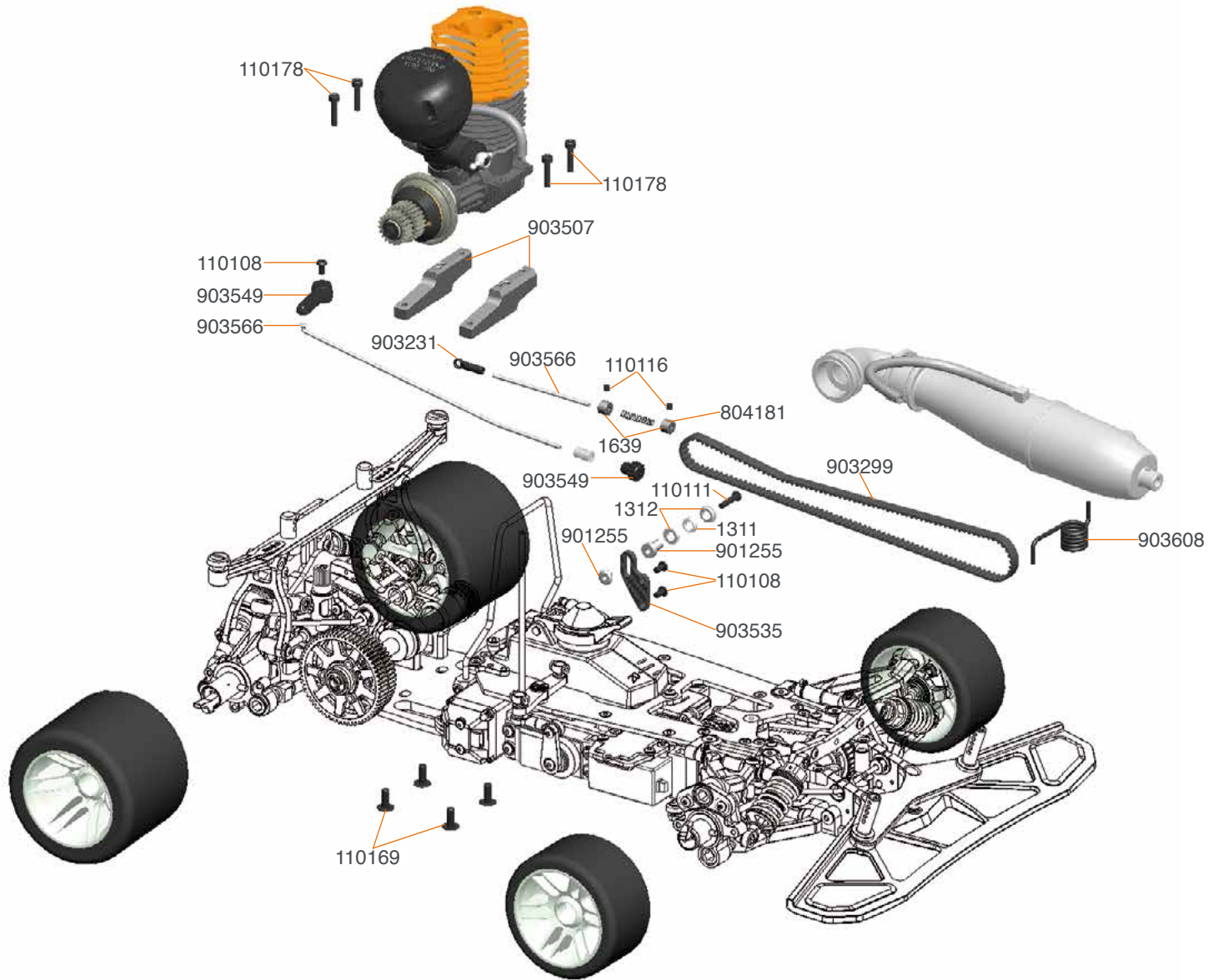


903378 Wheelaxle front OS2 Alu (2)
903512 Steeringblock lever alu (2)
903589 Servosaver bottom alu (2)

903601 Driveshaft cvd FR alu (2)
903603 Radioplate bracket alu
903612 Wishbone FR up (2) hard

SHOCKS MOUNTING EXPLODED VIEW





TEAM SERPENT NETWORK

977 EVO 2 SPARE PARTS www.serpent.com/903016/spares/



977 EVO 2 OPTIONAL PARTS www.serpent.com/903016/Optionals/



SERPENT TOOLS www.serpent.com/product/Tools/



SERPENT MERCHANDISING www.serpent.com/product/Merchandising/



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977 EVO 2 VIPER

GP

1/8 scale



Manual 977 EVO 2 #57288 1