Instruction Manual

977 EVO2 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 accelleration 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 lateron in the assembly process.

PLASTIC PARTS

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

SETUP

In certain assembly steps you need to make basic adjustments, which will give you a good initial setup for your Serpent Viper 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 cloves.
- Only operate this car in a safe environment, like a special racing track or a closed parking lot. Avoid using this car on public roads, crowded places or near infants.
- Before operating this car, always check the mechanical status of the car. Also check that the transmitter and receiver frequencies correspond and are not used by any other racer at the same time. Check that the batteries of the transmitter and receiver- are fully charged.
- After use, always check all the mechanics of the car. We advise to clean the car immediately after use, and inspect the parts for wear or fractures. Replace when necessary. Do not use water, methanol, thinner or other solvents to clean the car.
- Empty the fuel tank (depending on model) if needed and disconnect the receiver battery.
- Store the car in a dry and heated place to avoid corrosion of metal parts.
- Avoid using this car in wet conditions as the water will cause corrosion on the metal parts and bearings and these parts will cease to function properly. If driven in the wet, ensure that all the electric equipment is waterproofed and after use, that all moving parts are dried immediately.

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LINES DESCRIPTION

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

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

Length after assembly

Assembly path of one item into another

Group of items (within lines) should be assembled first

Direction the item should be moved

Glue one item to another

Connect one item to another

Gap between two items

Press/Insert one item into another

ICONS DESCRIPTION

Each step contains a variety of symbols described below.

Carefull, read and check very well.

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

Detail view to explain assembly or order of parts better.

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

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

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

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

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

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

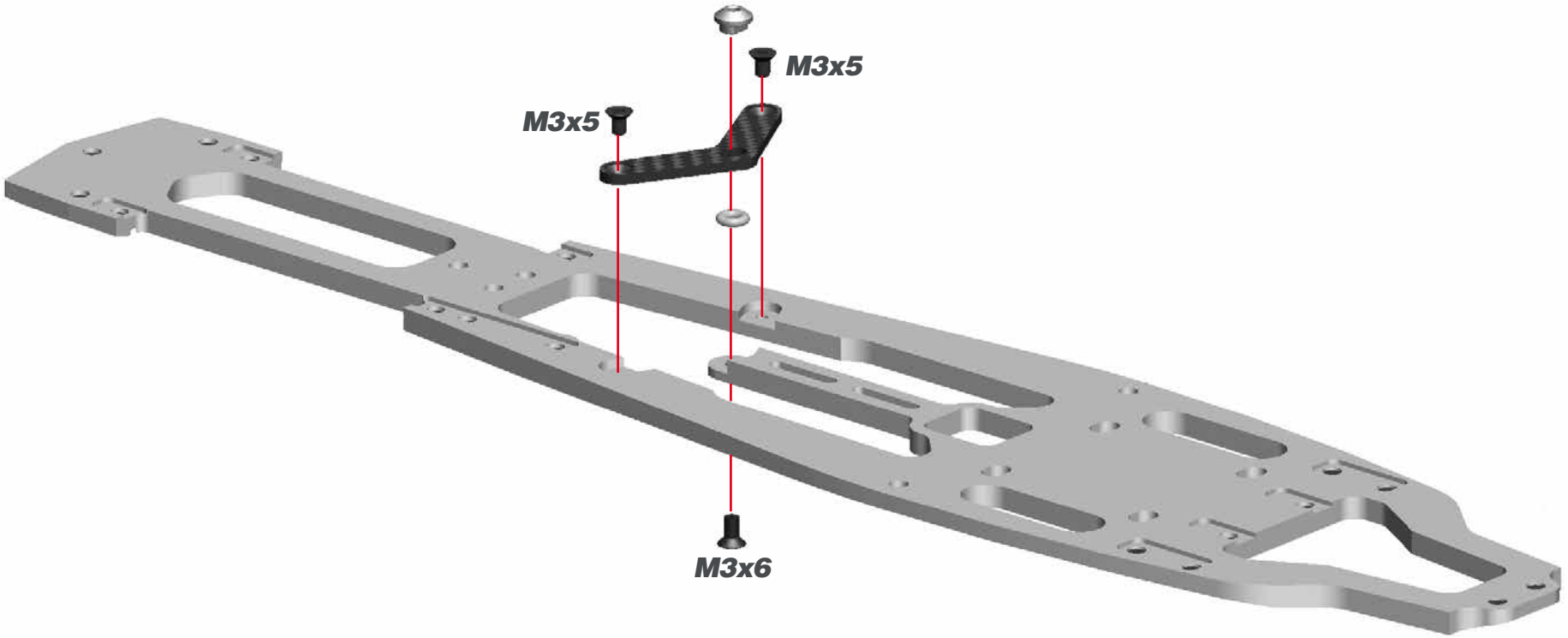
Left and right parts should be assembled in the same way.

Parts or items not included in the kit.

Optional part, not standard in the kit.

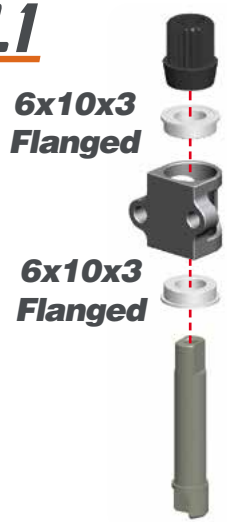
REAR ASSEMBLY

STEP 1 BAG 1



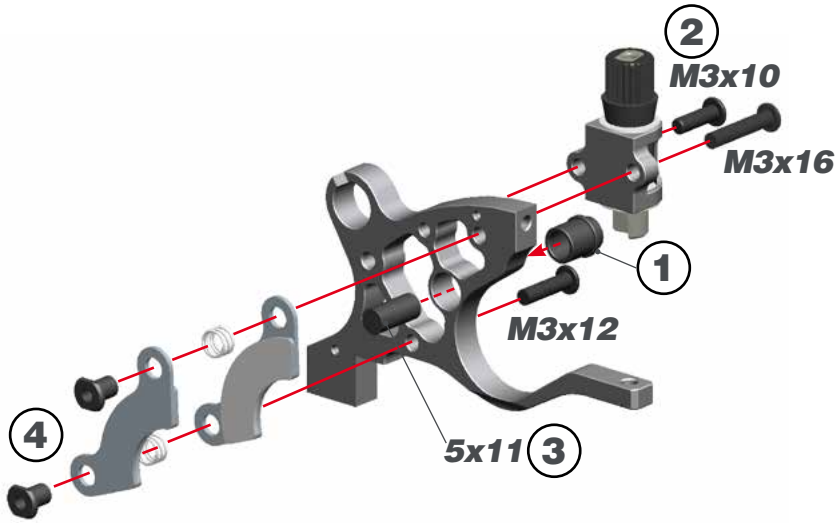
STEP 2

2.1



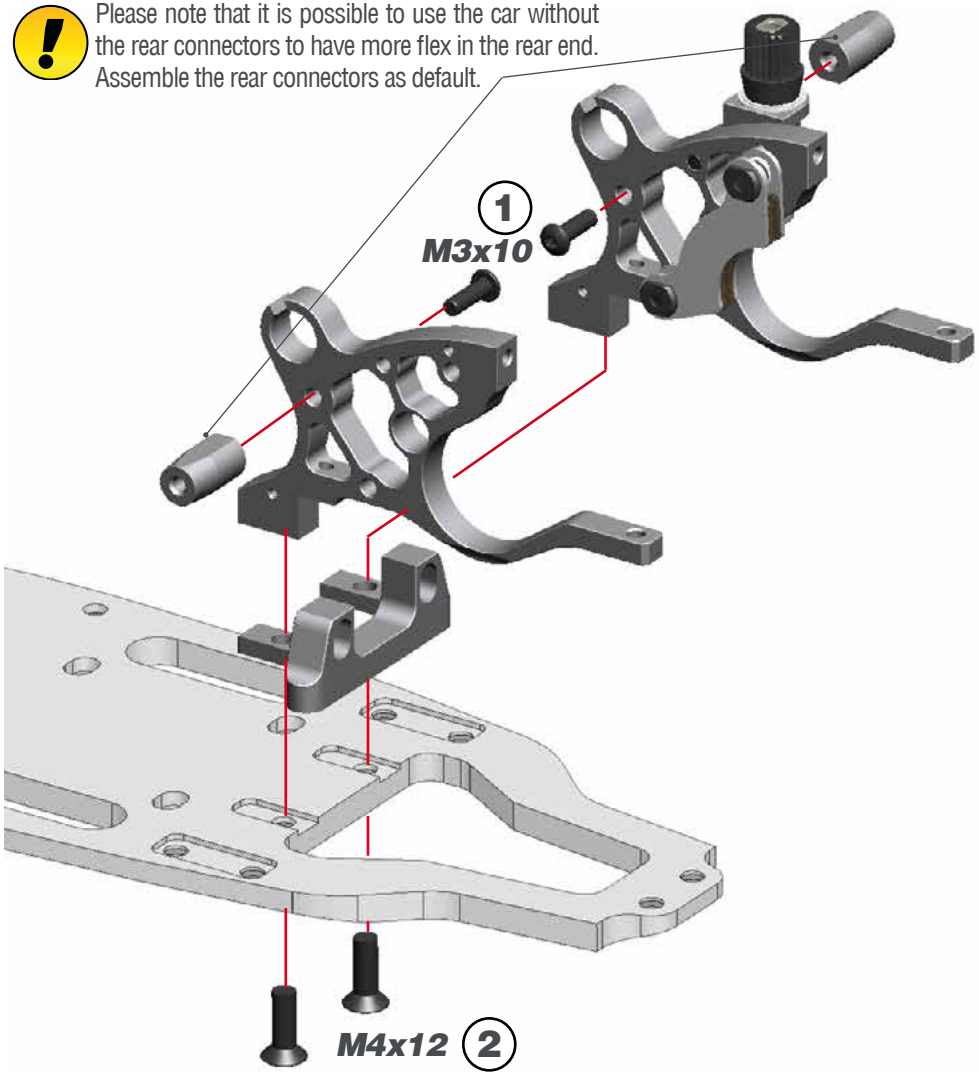
The brake holder is not symmetrical. Note the correct orienatation.

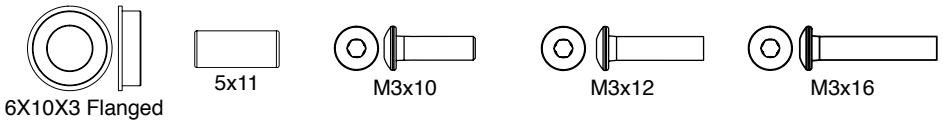
2.2

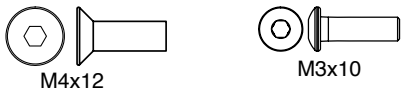


STEP 3

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.

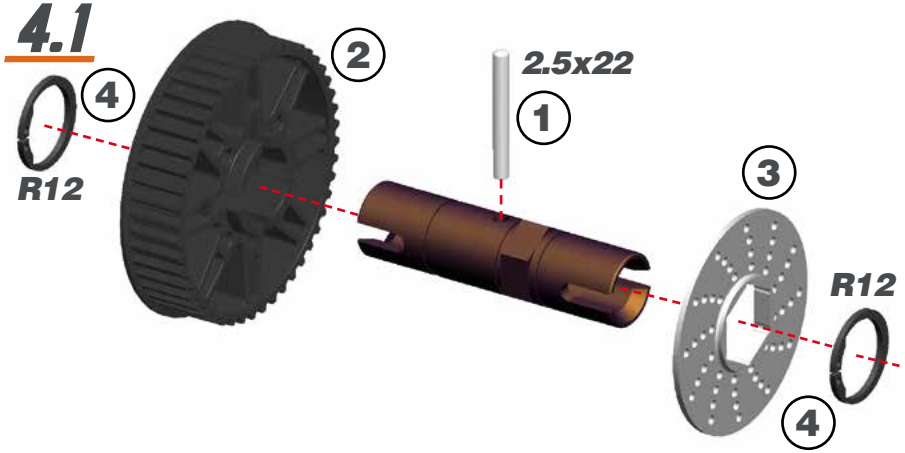






STEP 4

4.1



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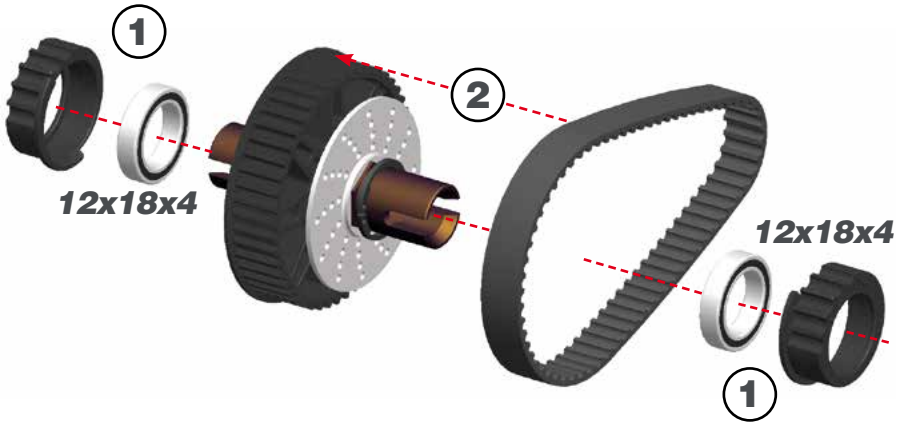
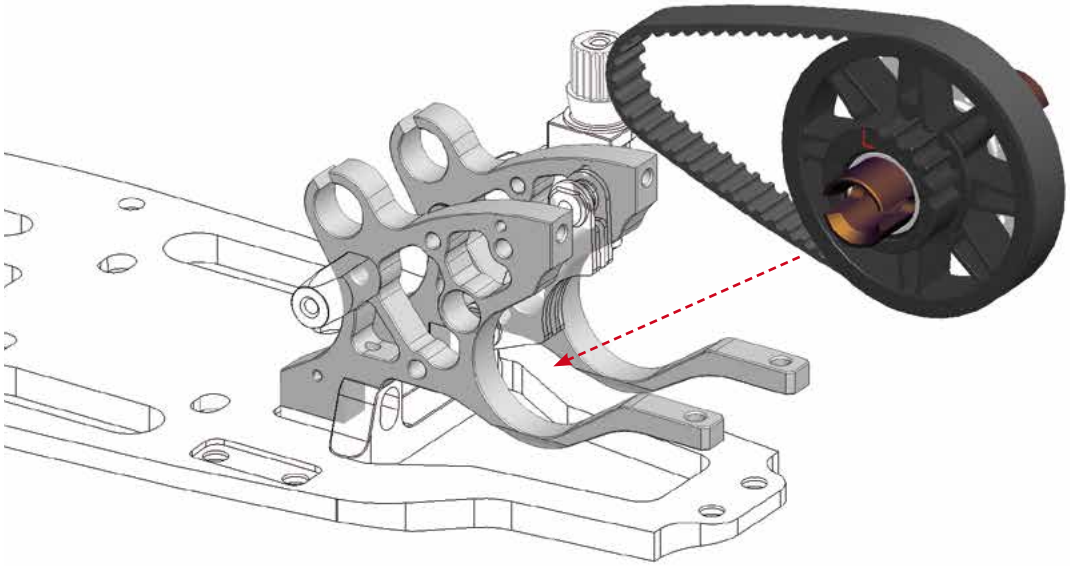
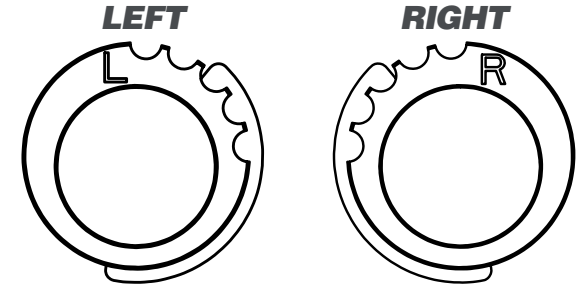


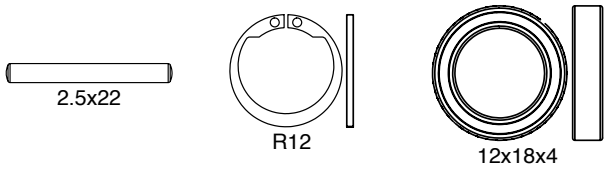
STEP 5



REAR SOLID AXLE EXCENTERS

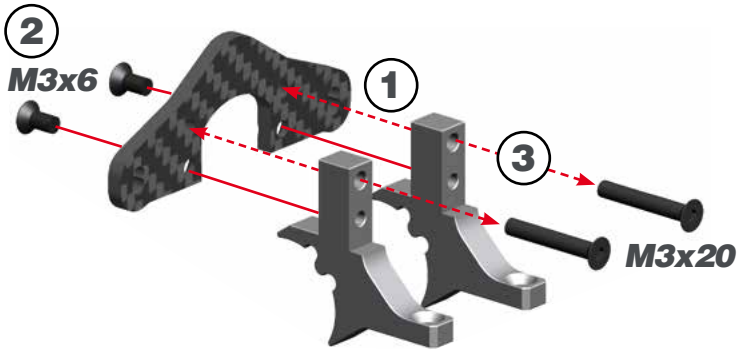
Note that the rear solid axle excenters are not symetric and are marked with and L (left) and R (right).



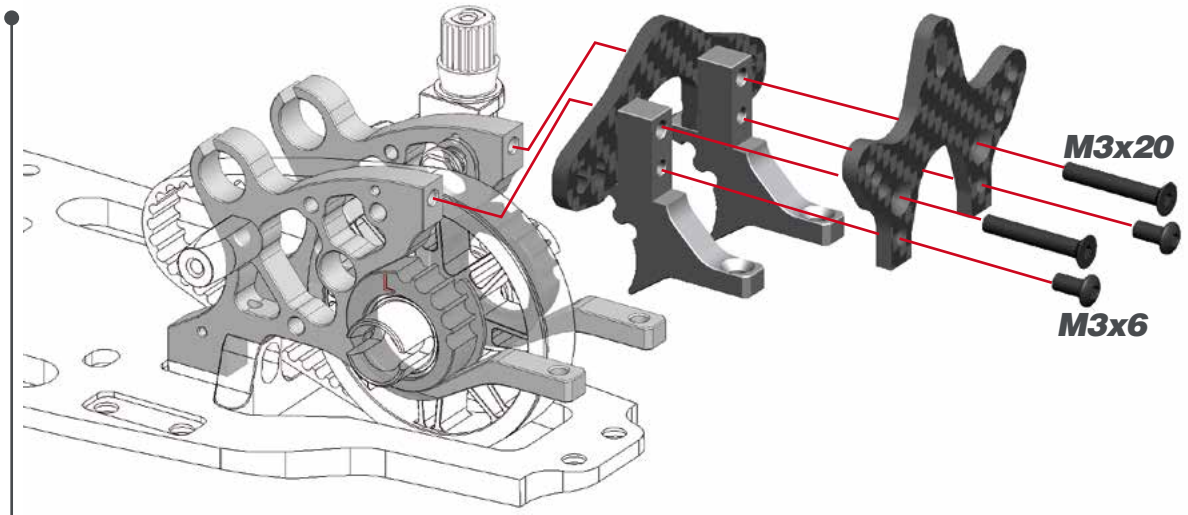


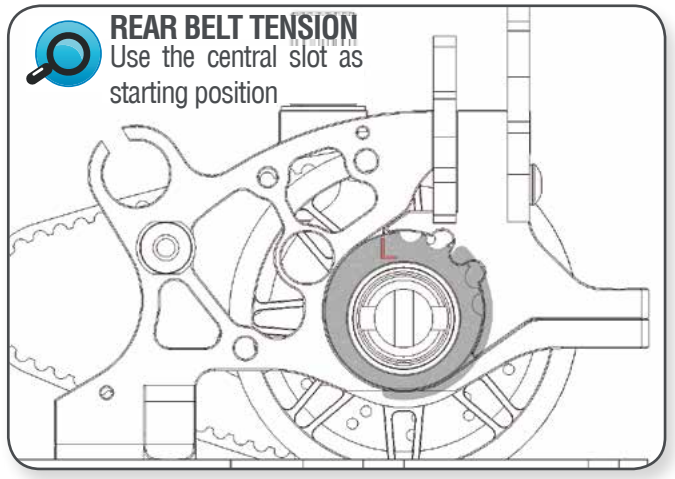
STEP 6

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

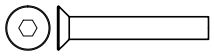


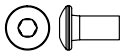
STEP 7

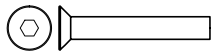




M3x6


M3x20


M3x6

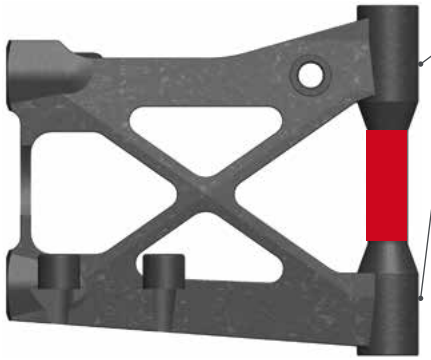

M3x20

STEP 8 BAG 2

8.1

L=R

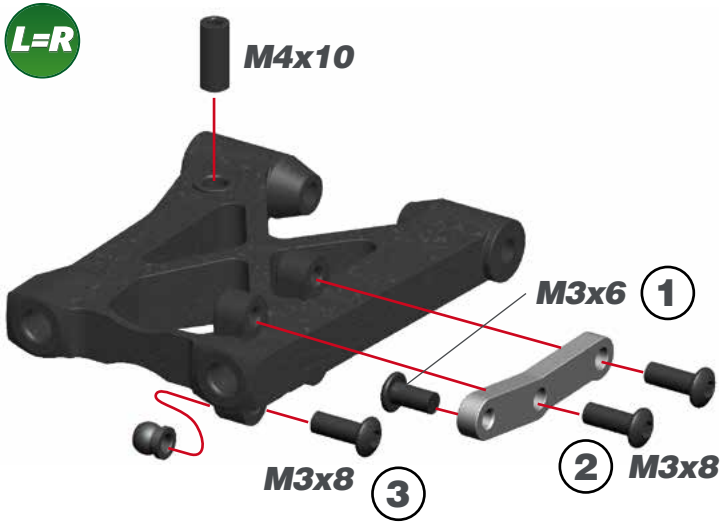
Before to assemble the rear lower arms, carefully remove the red area and smoothen the cut surface.



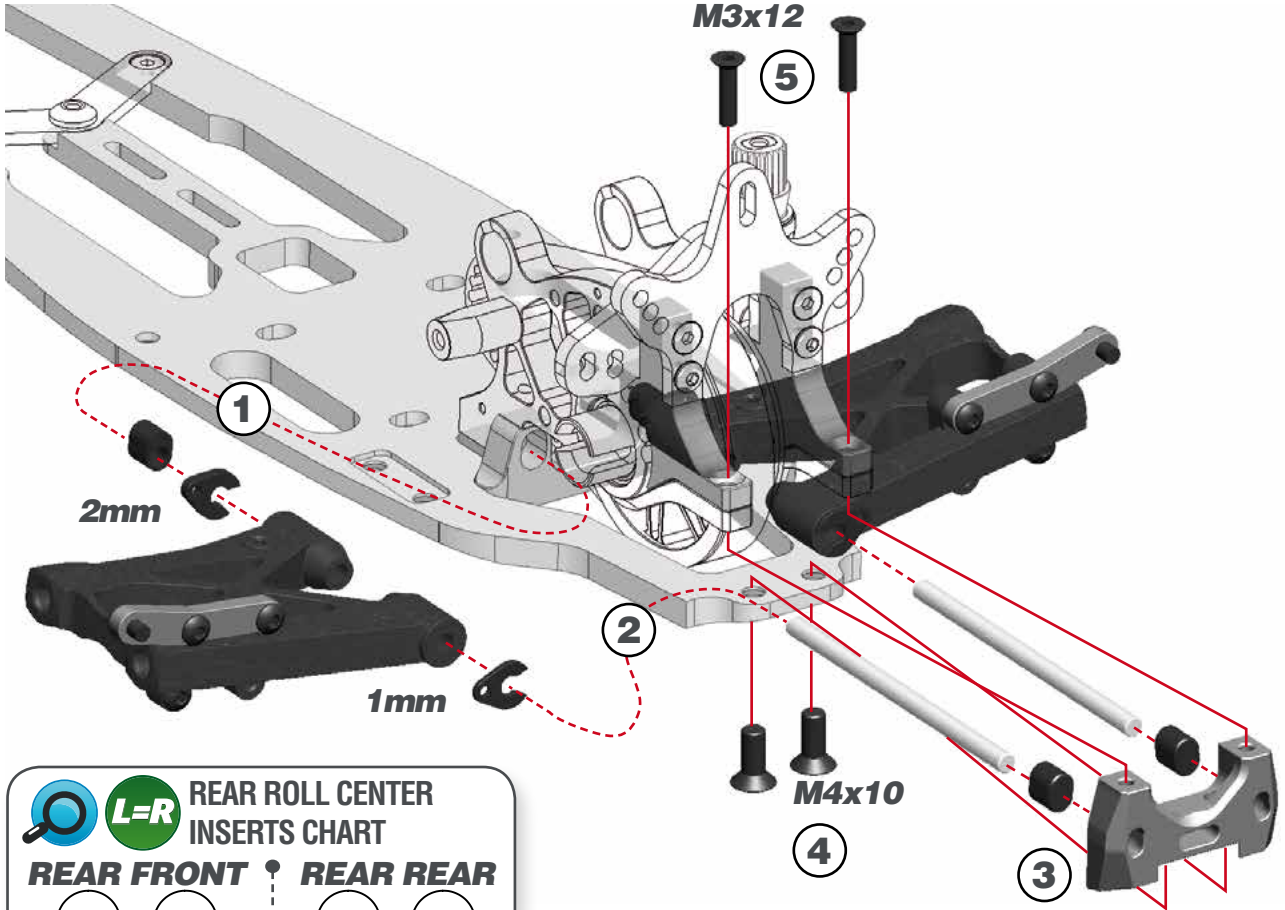
Before to assemble the rear lower arms, carefully sand the side part indicated in the left picture to remove any burr.

8.2

L=R



STEP 9

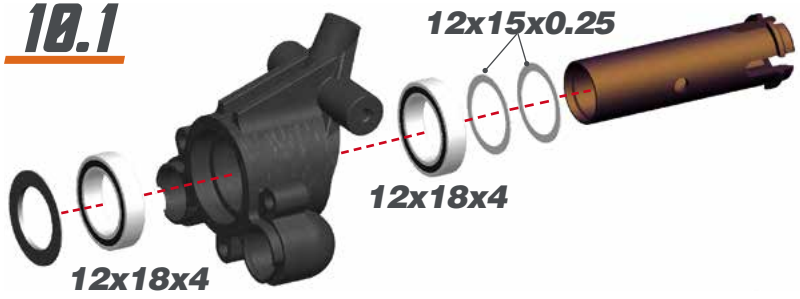


L=R REAR ROLL CENTER INSERTS CHART

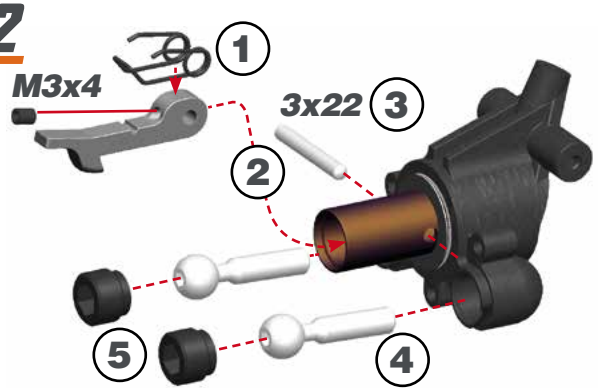
REAR FRONT		REAR REAR	
DEF. SETUP		DEF. SETUP	

STEP 10

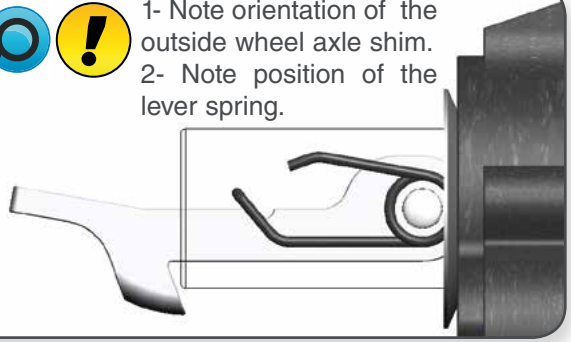
10.1



10.2

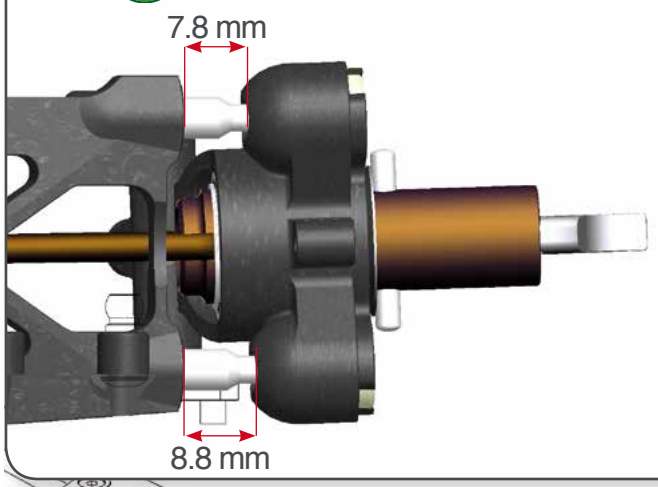


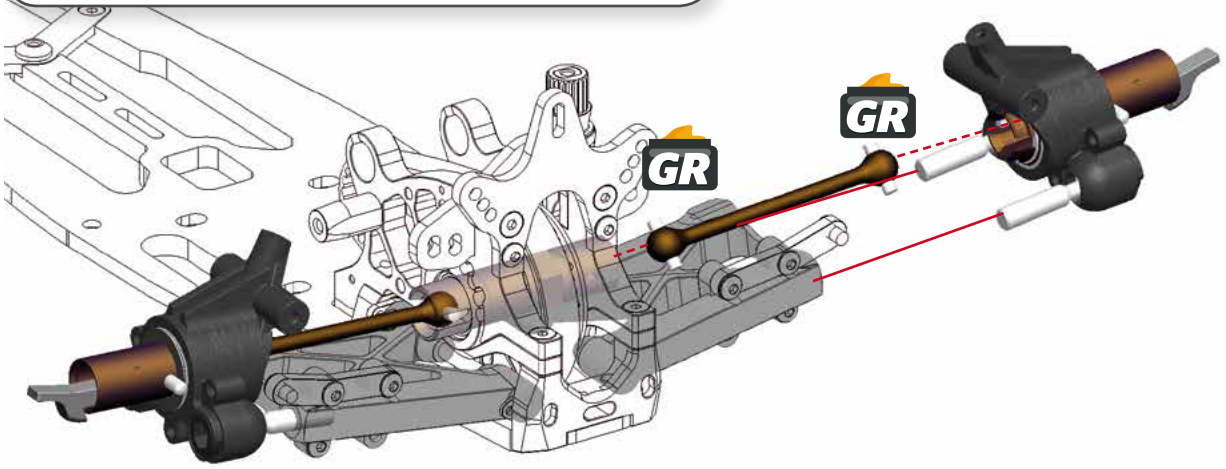
1- Note orientation of the outside wheel axle shim.
2- Note position of the lever spring.

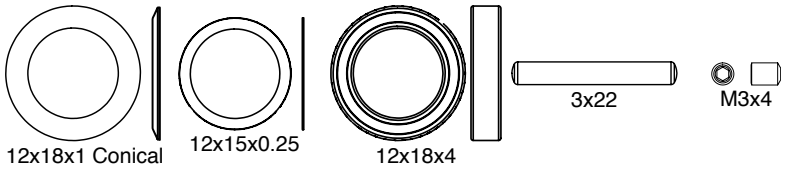


STEP 11

L=R DEF. SETUP REAR TRACK WIDTH

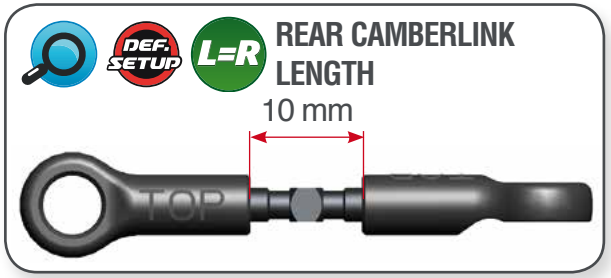


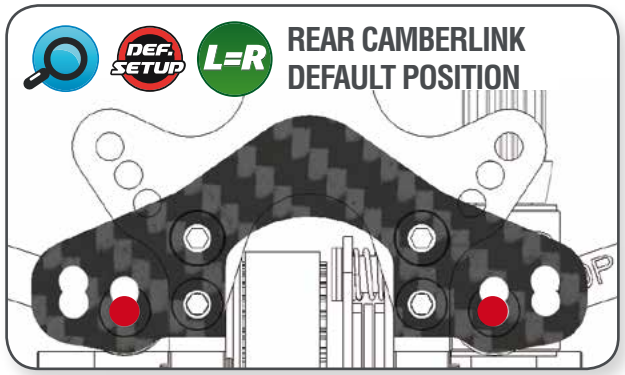




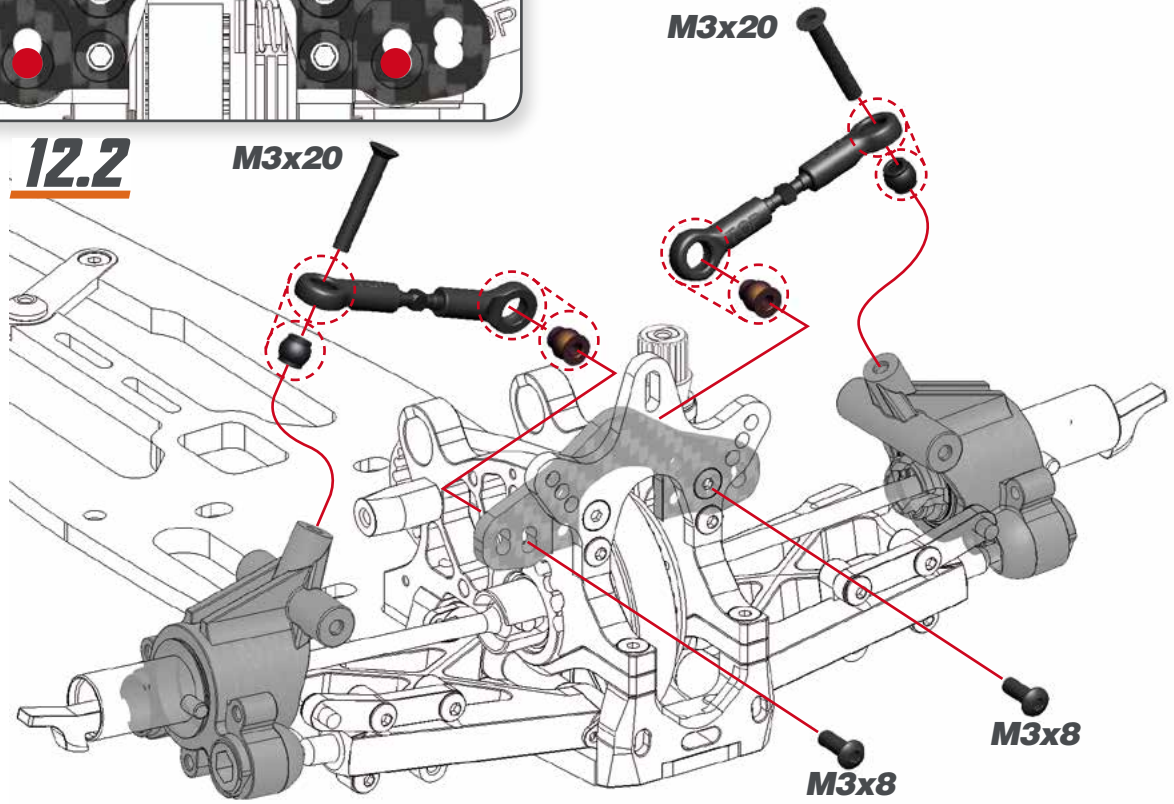
STEP 12

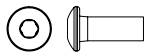
12.1

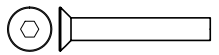




12.2

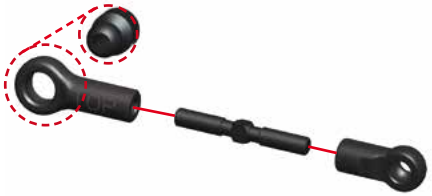


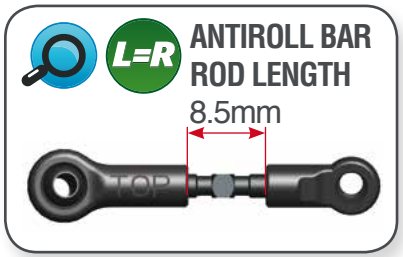

M3x8


M3x20

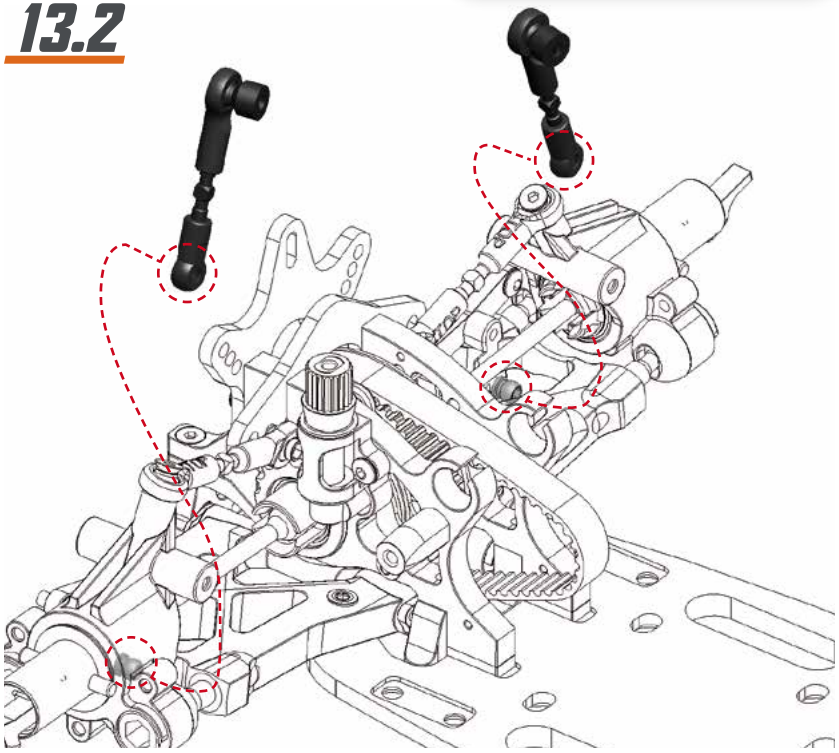
STEP 13 BAG 3

13.1



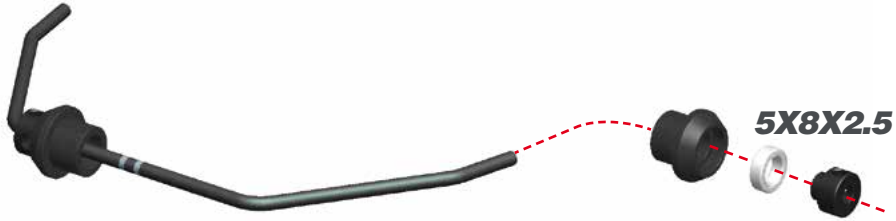


13.2



STEP 14

14.1



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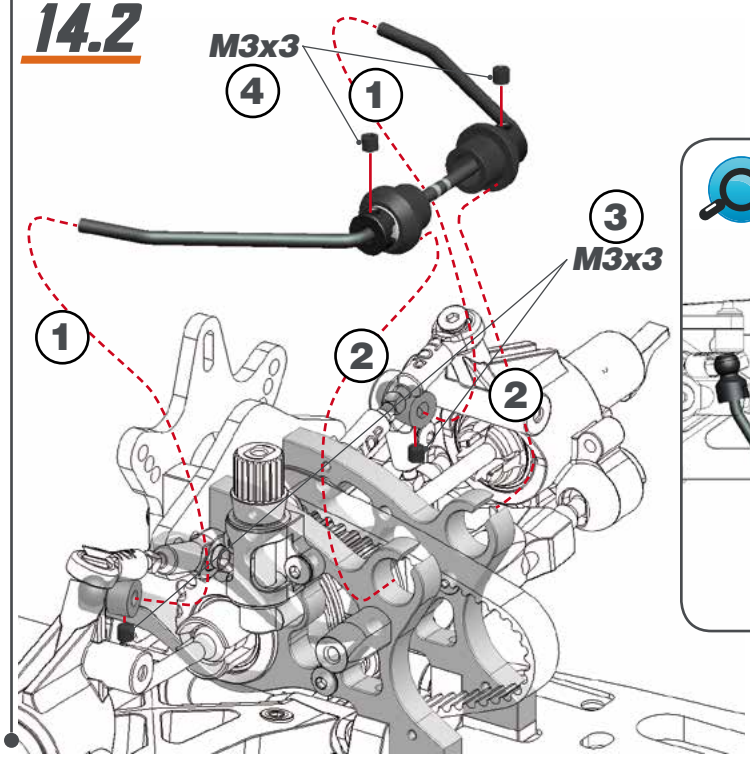
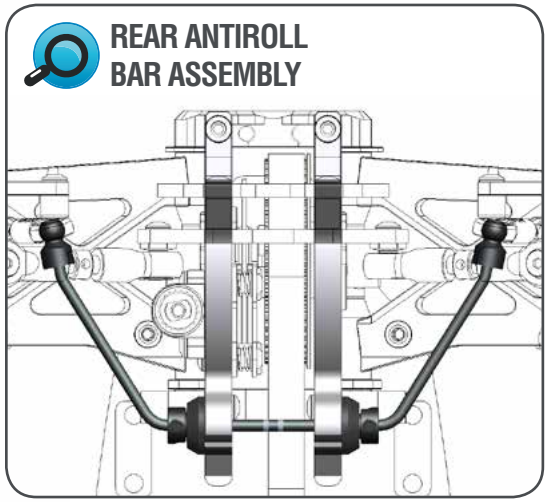
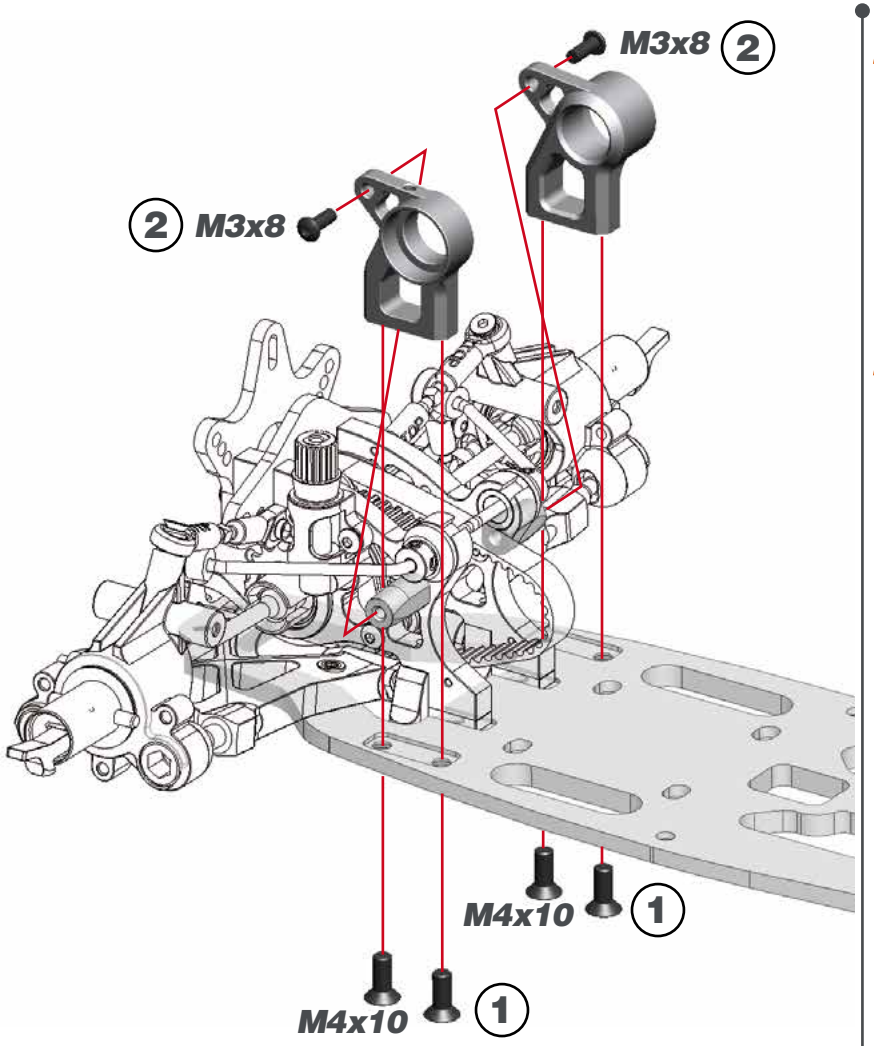


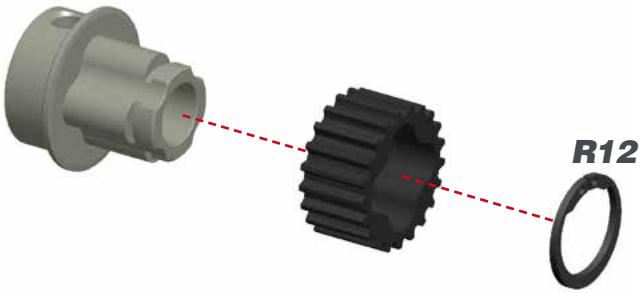


STEP 15

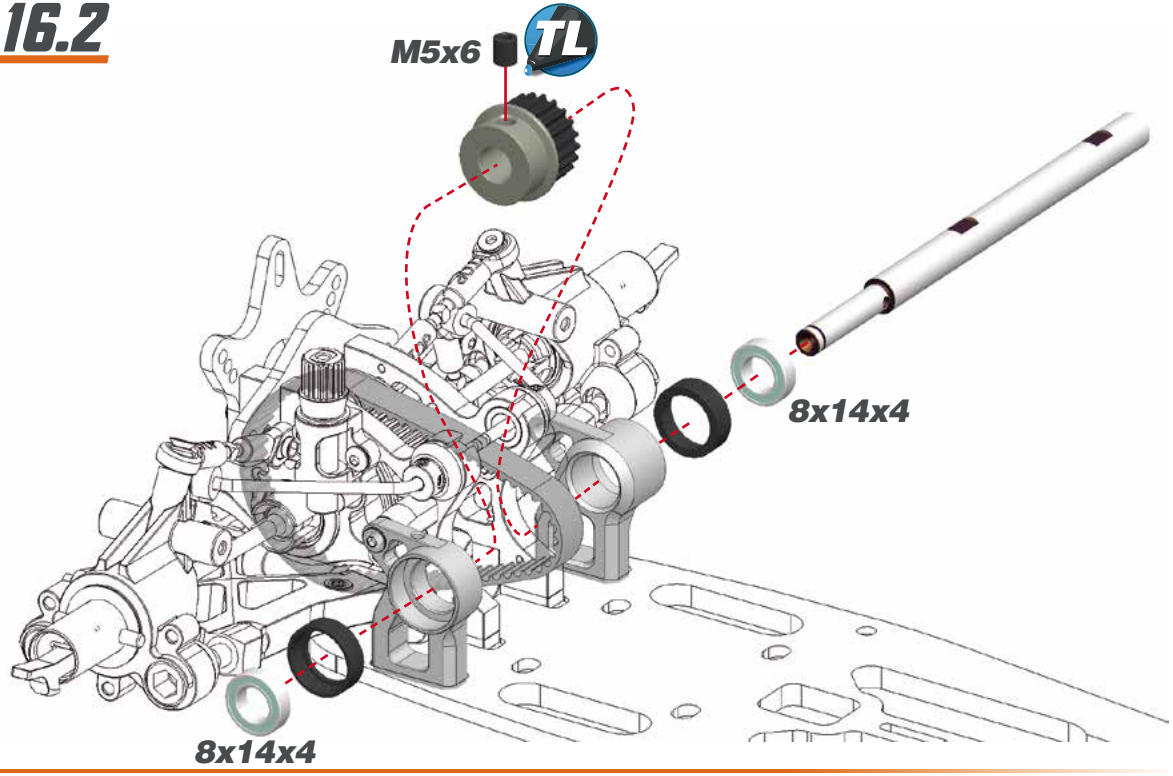


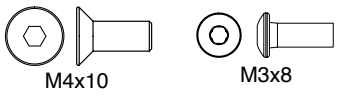
STEP 16

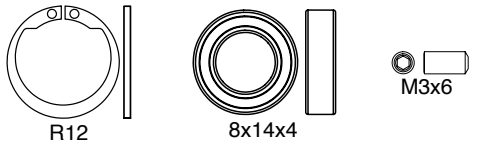
16.1



16.2





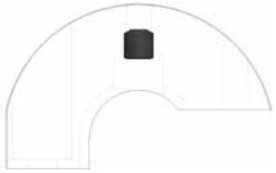


STEP 17

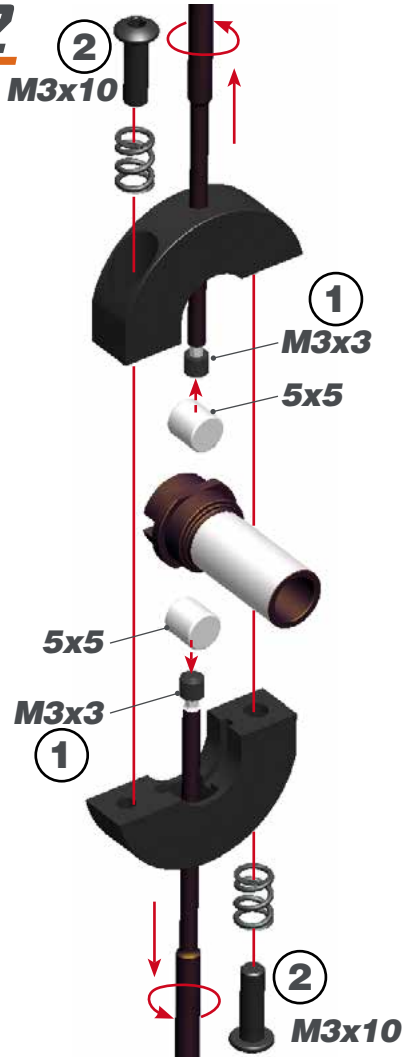
17.1

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.

Note the correct thread depth.

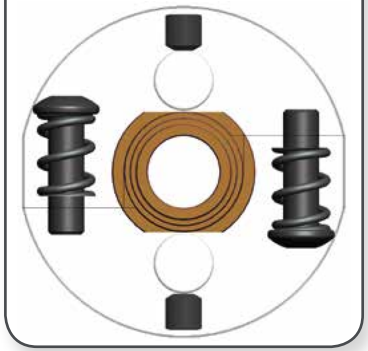


17.2

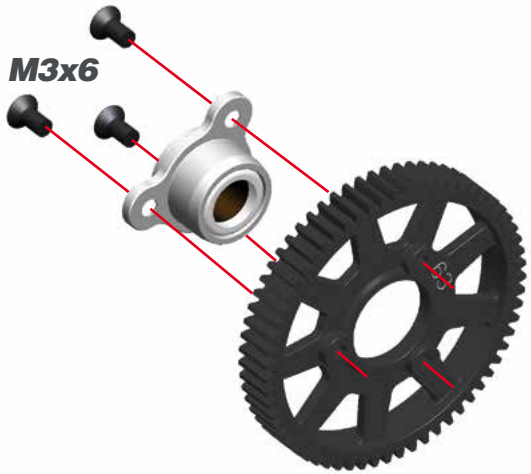


1- Assemble the M3x3 setscrew from the inside of the gearbox unscrewing it. Use the 5x5 cylider for helping the set screw going inside the hole. Do not unscrew the M3x3 screw completely.
2- The M3x10 screw adjust the SHIFT POINT. As default adjustment screw it in all the way (do not over tighten the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

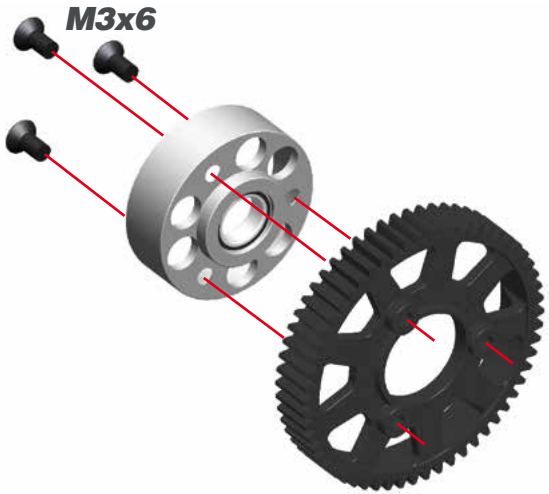
Note the correct gearbox assembly



17.3



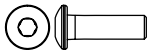
17.4



M3x3

5x5

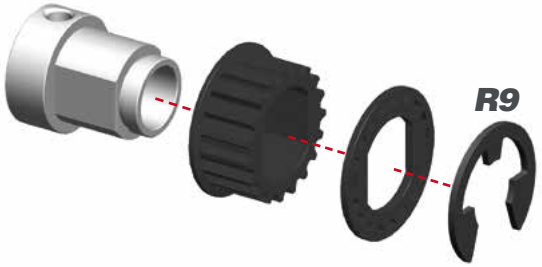
M3x3


M3x10

M3x6

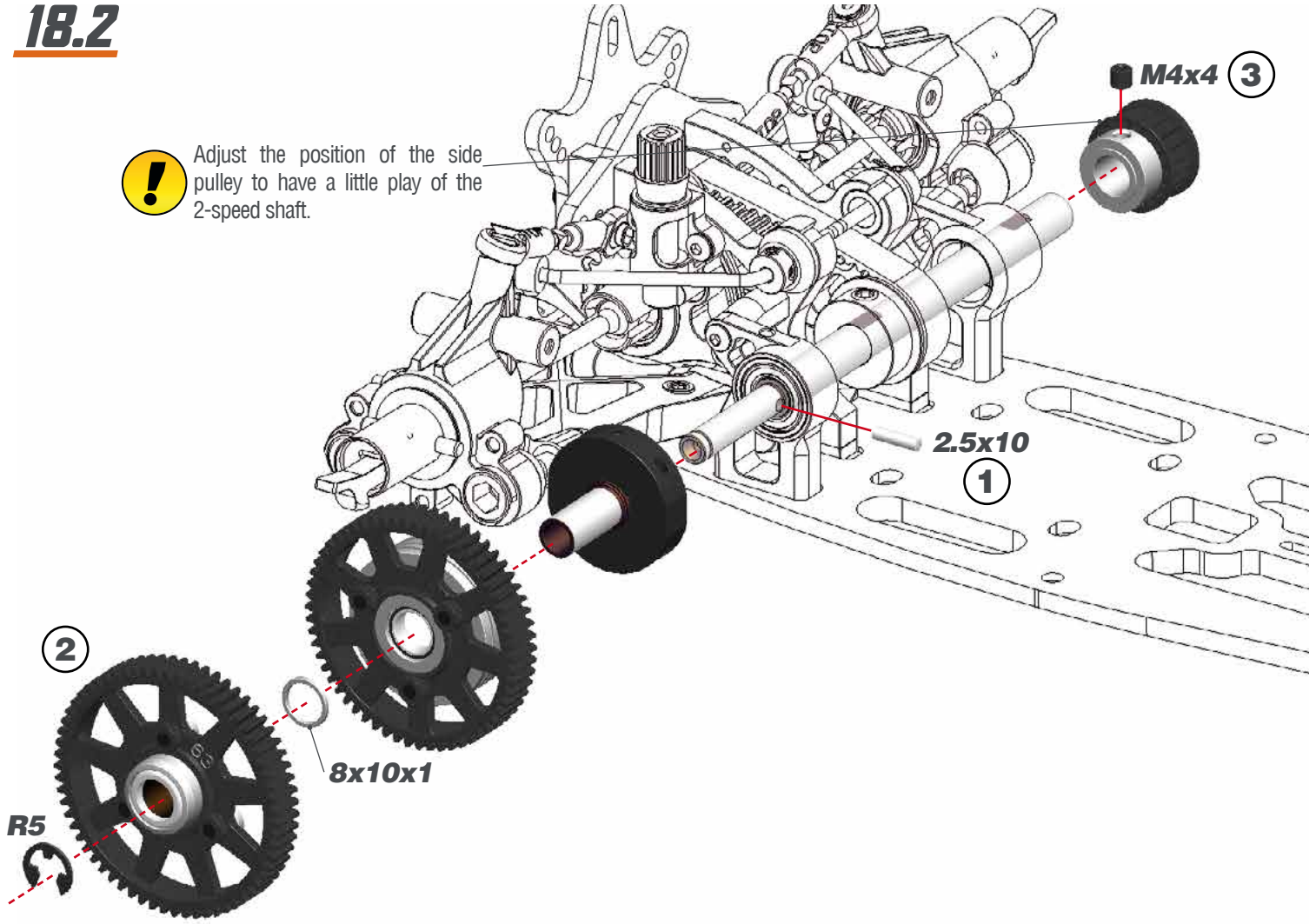
STEP 18

18.1

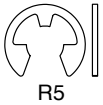


18.2

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



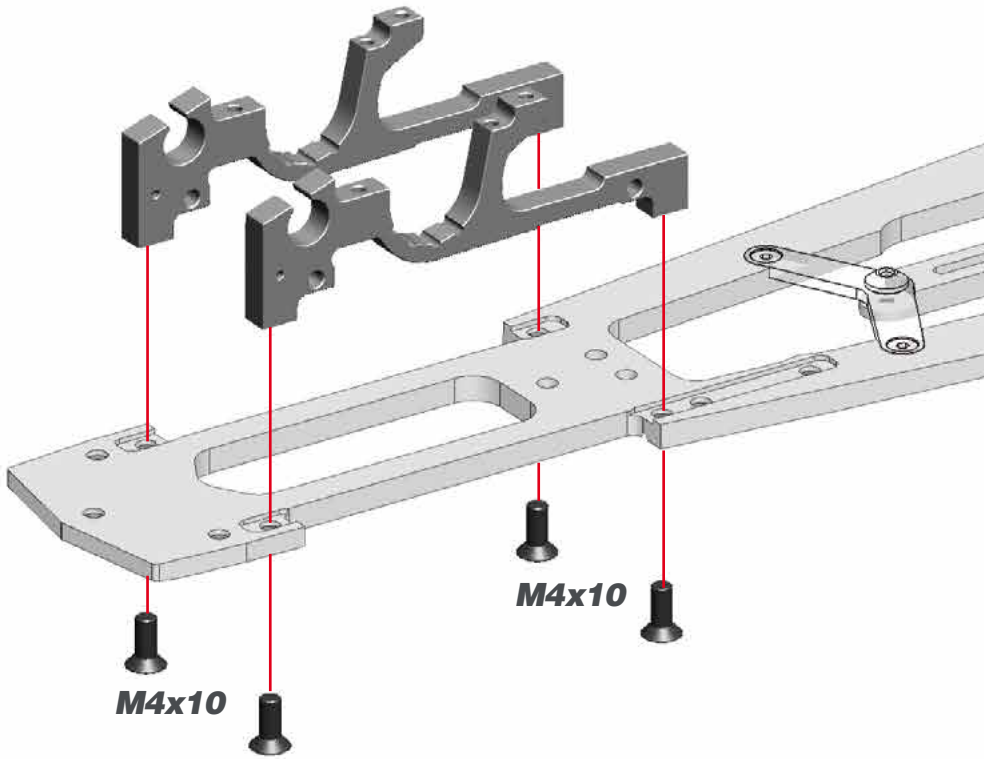
R9


R5

2.5x10

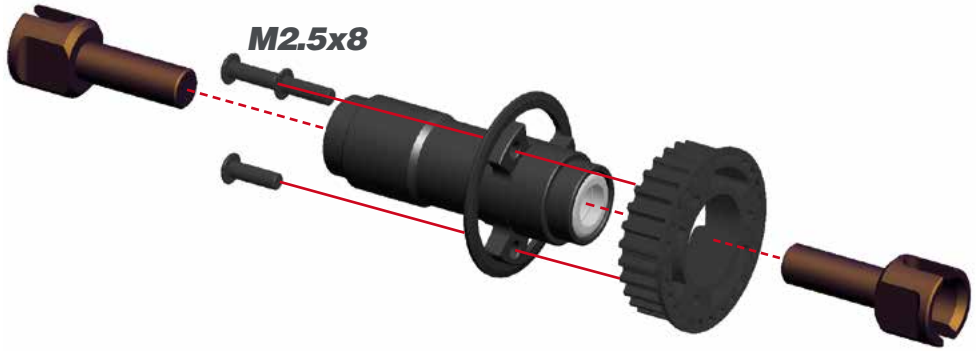
M4x4

STEP 19 BAG 4

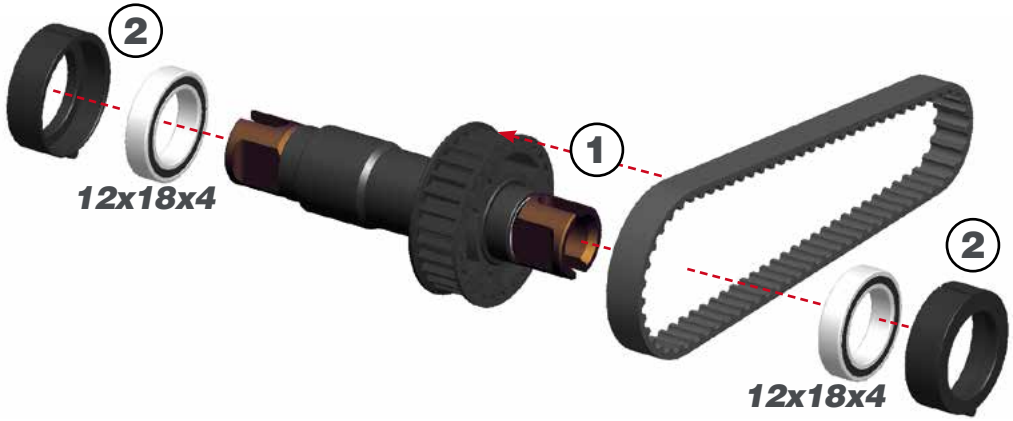


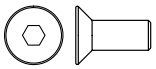
STEP 20

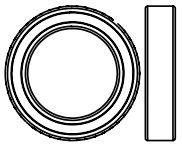
20.1



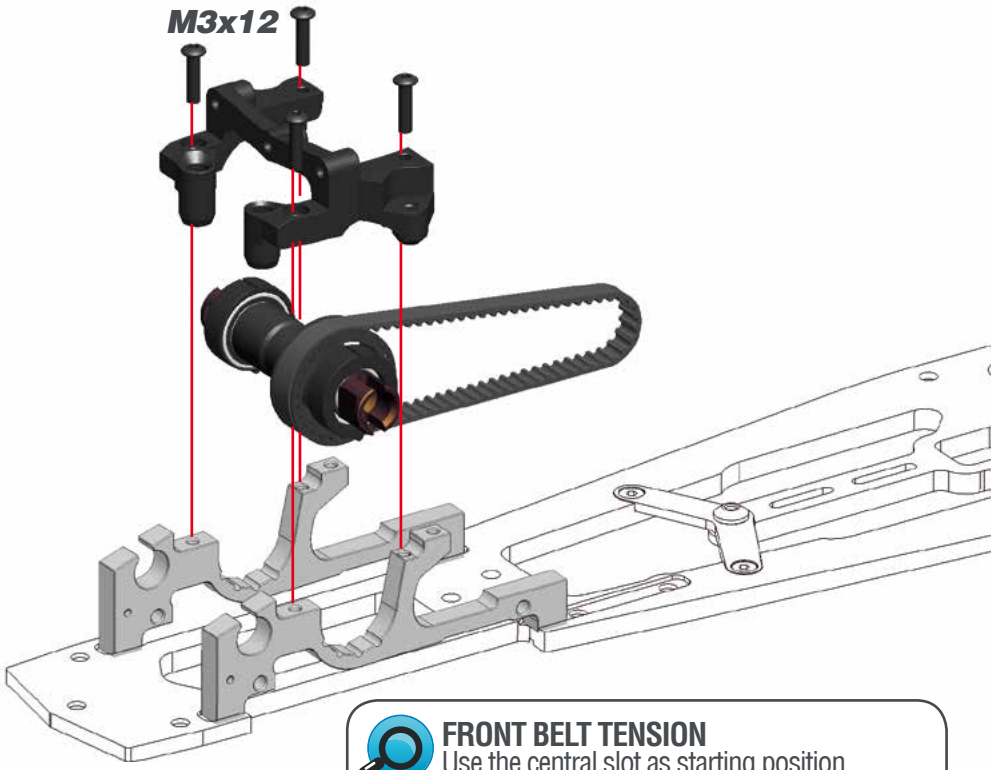
20.2



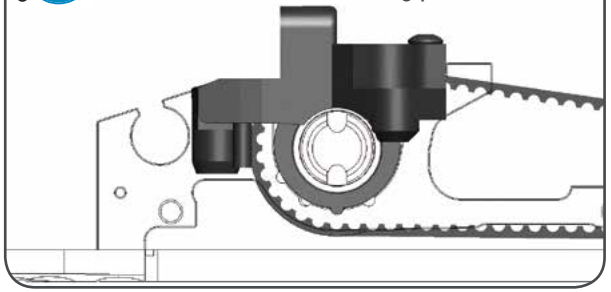




STEP 21



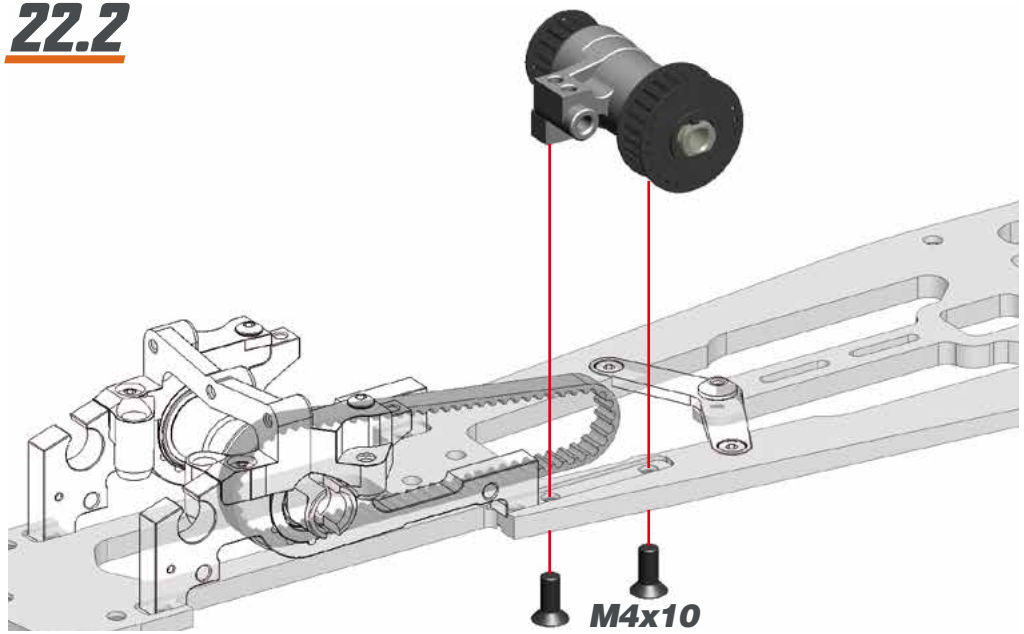
FRONT BELT TENSION
Use the central slot as starting position.

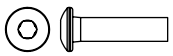


STEP 22

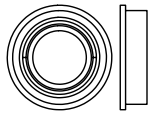
22.1

22.2

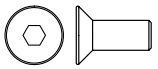



M3x12

8x11x0.2


8x14x4 Flanged

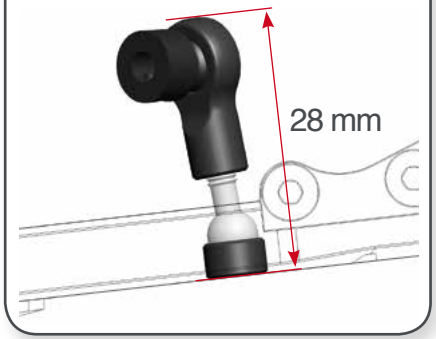
R6


M4x10

STEP 23

23.1

L=R **FRONT ANTIROLL BAR ROD LENGTH**

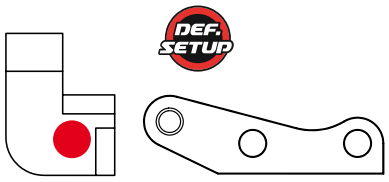


23.2

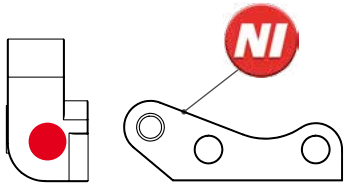
L=R **FRONT LOWER SUSPENSION AND SHOCKS BRACKETS**

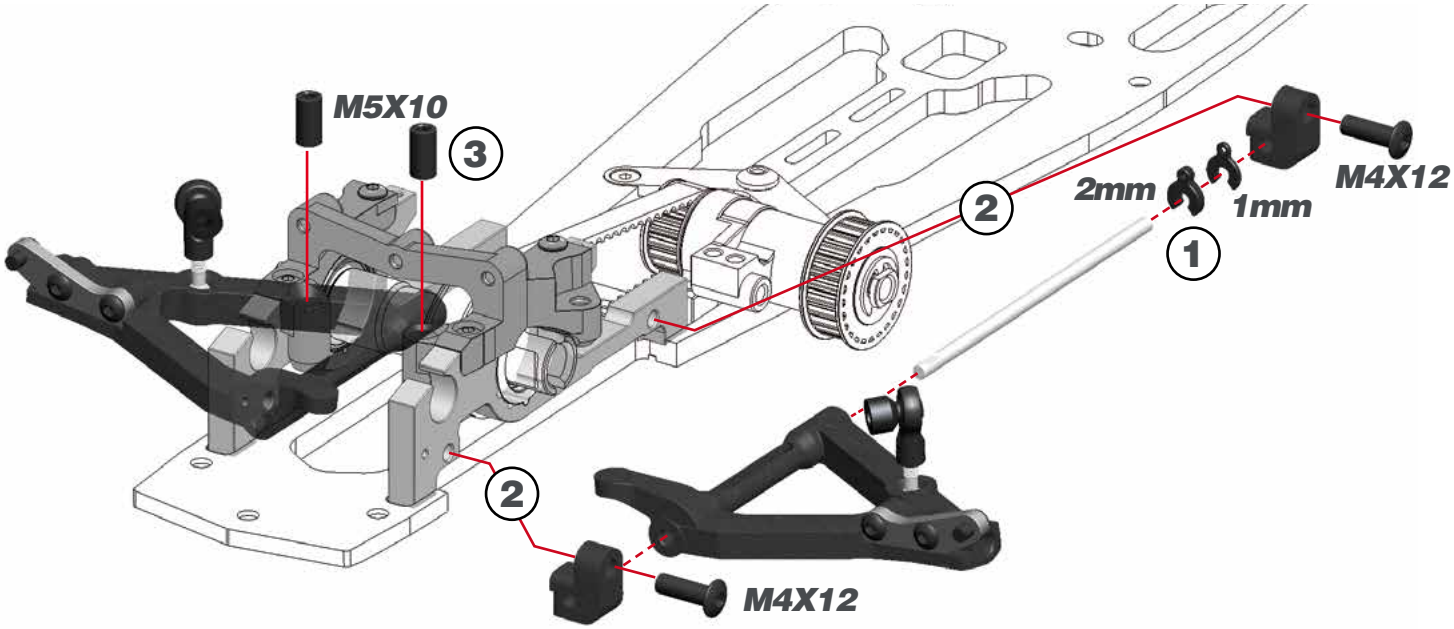
Serpent 977evo alows to move front bottom arms 3 mm in (NARROW) and out (WIDE).
For mantaing same shock angle use suspension and shock brackets as is shown below:

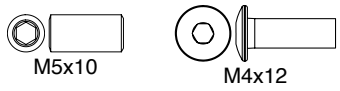
NARROW



WIDE



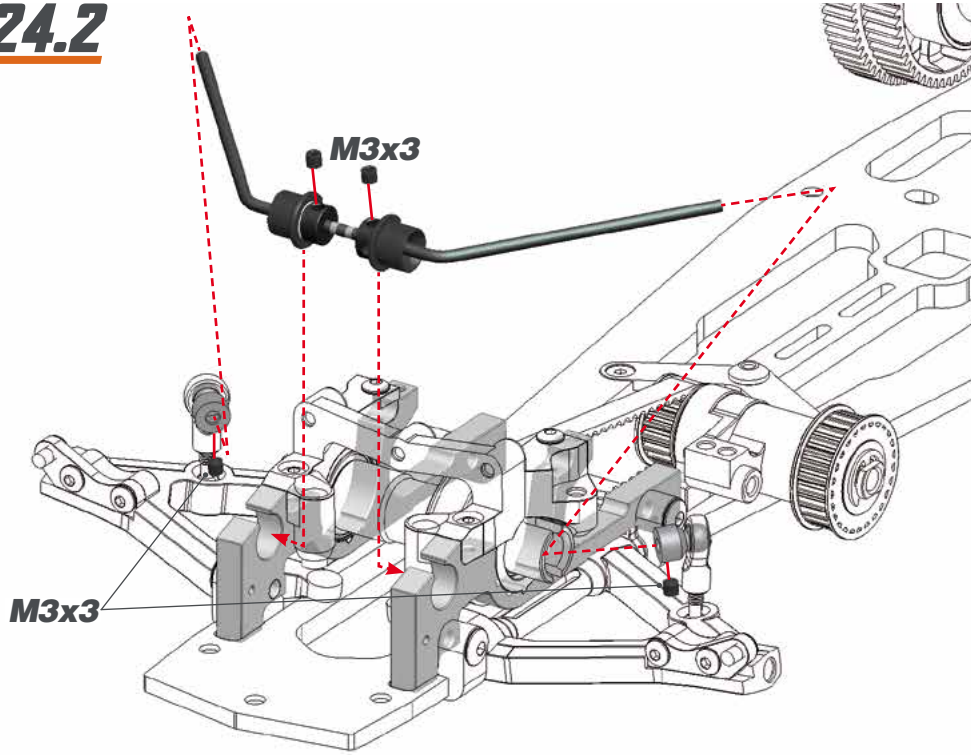


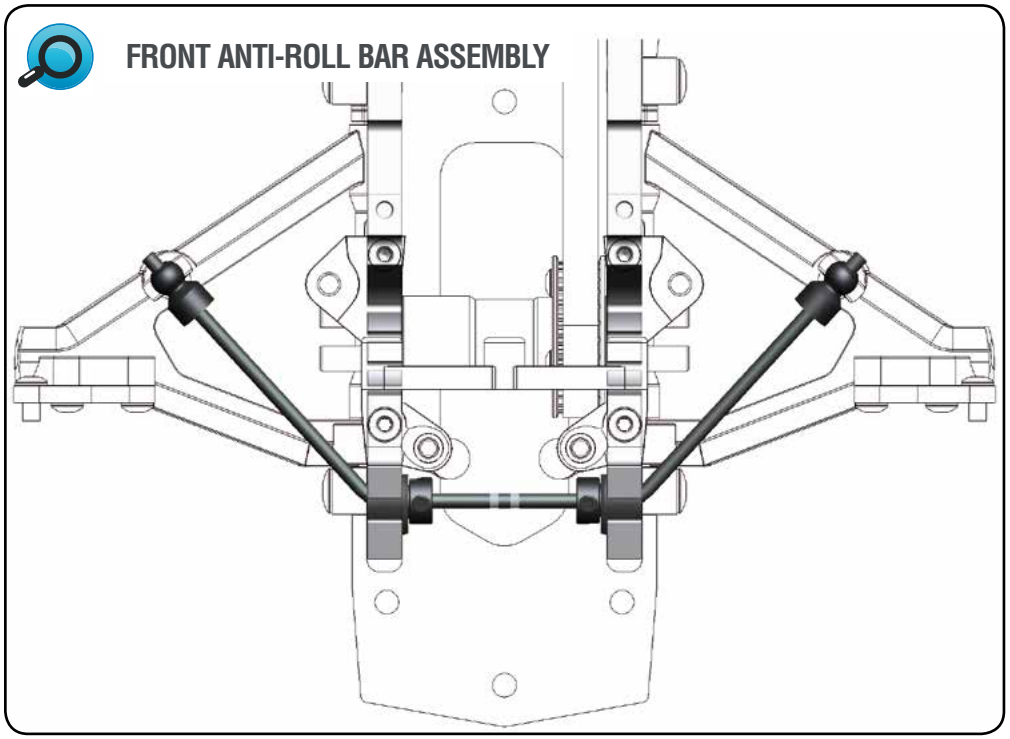


STEP 24

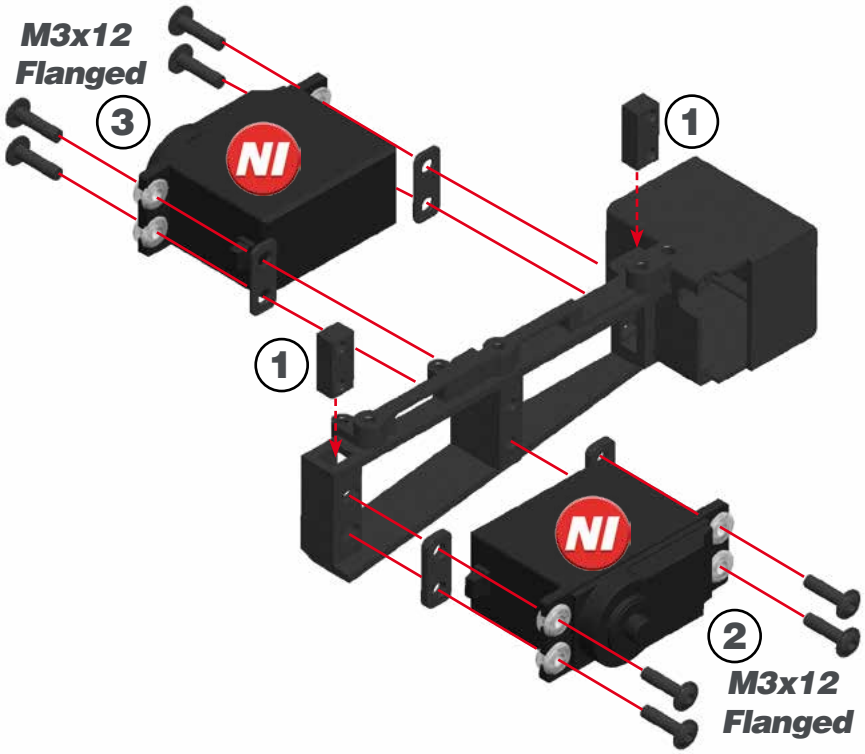
24.1

24.2

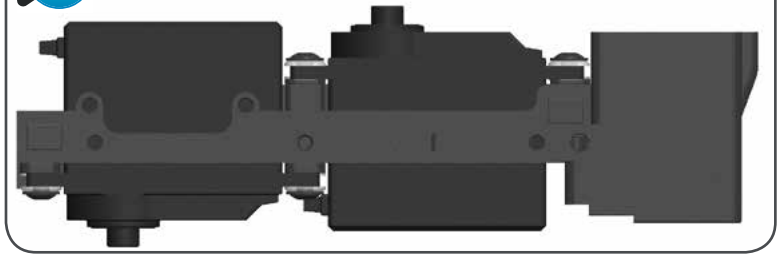




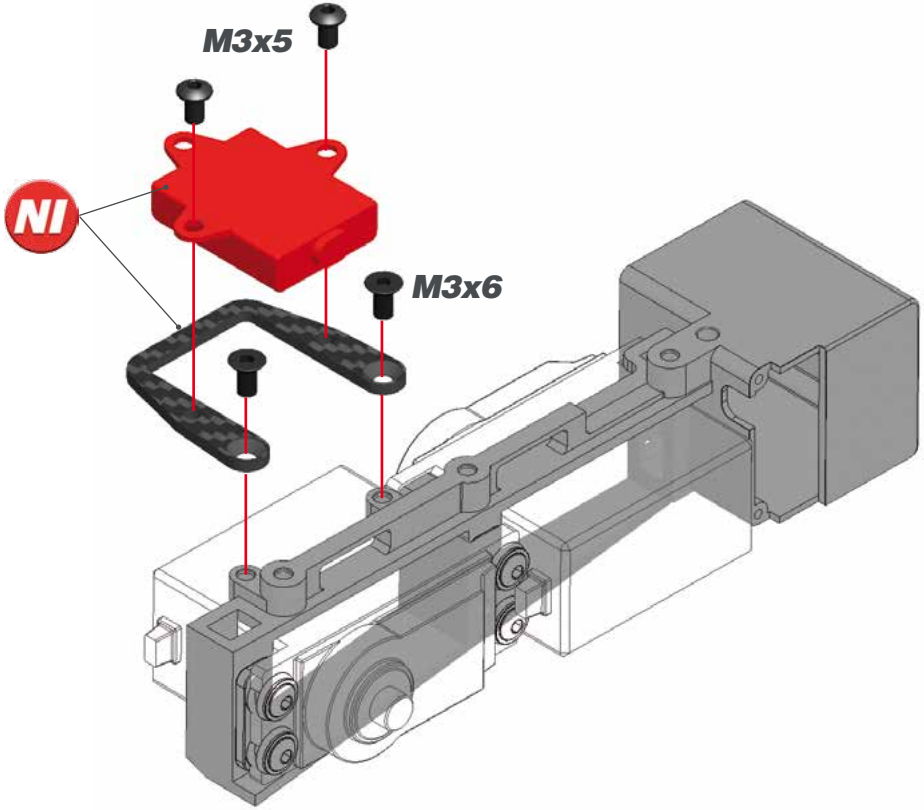
STEP 25 BAG 5

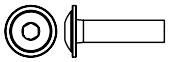


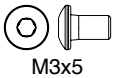
RADIO BOX ASSEMBLY

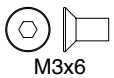


STEP 26

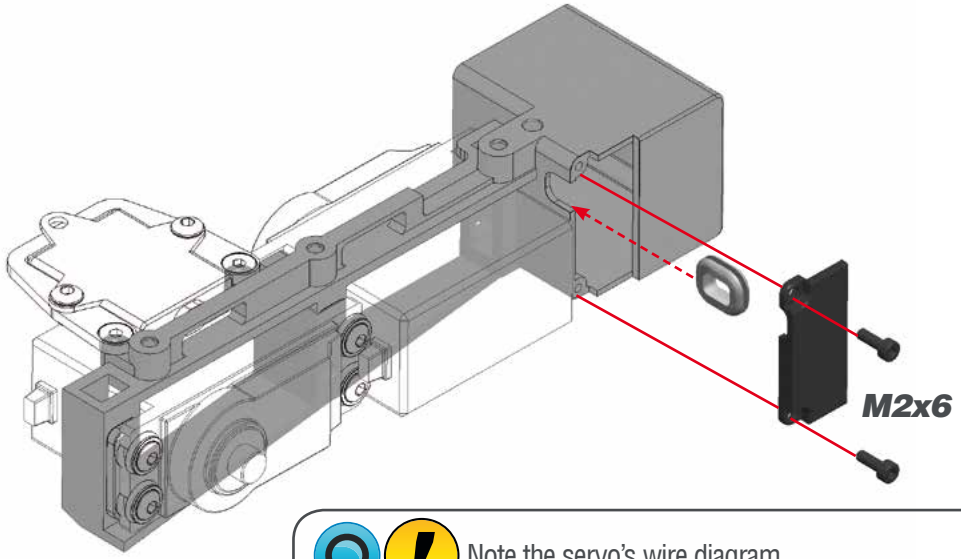



M3x12 Flanged

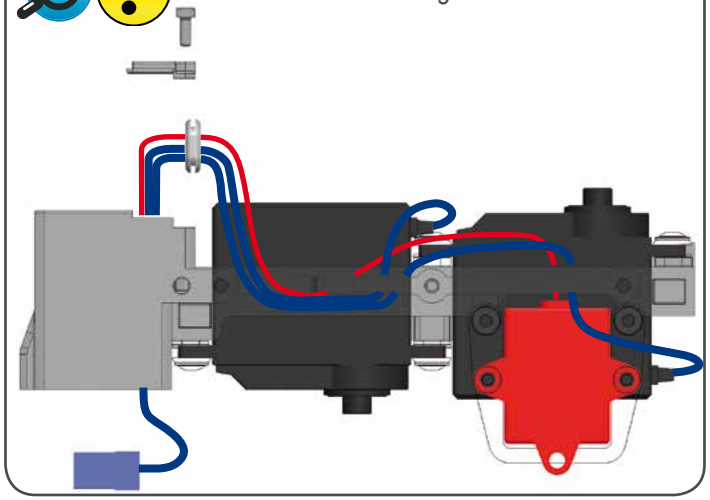

M3x5


M3x6

STEP 27

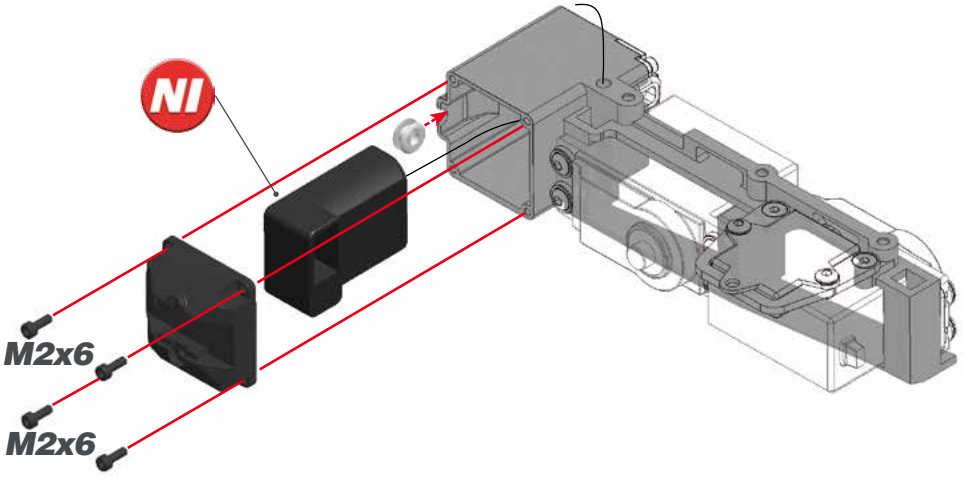


Note the servo's wire diagram

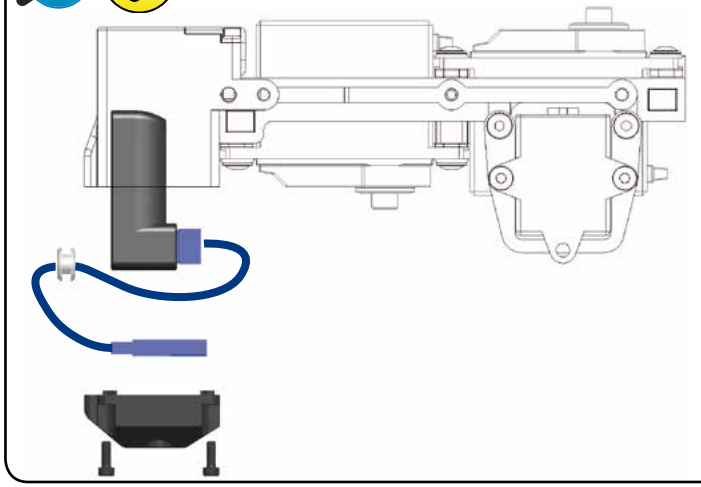


M2x6

STEP 28

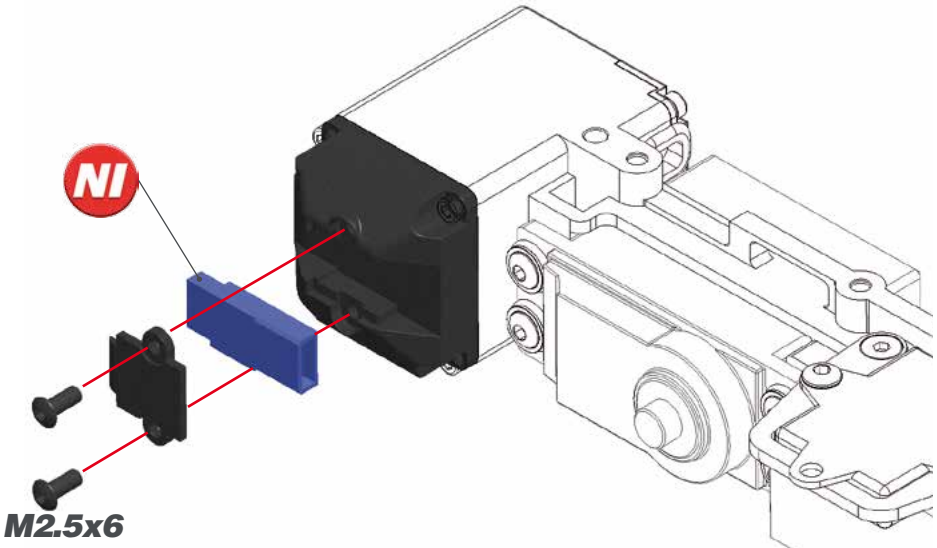


Note the receiver's power input wire diagram



M2x6

STEP 29

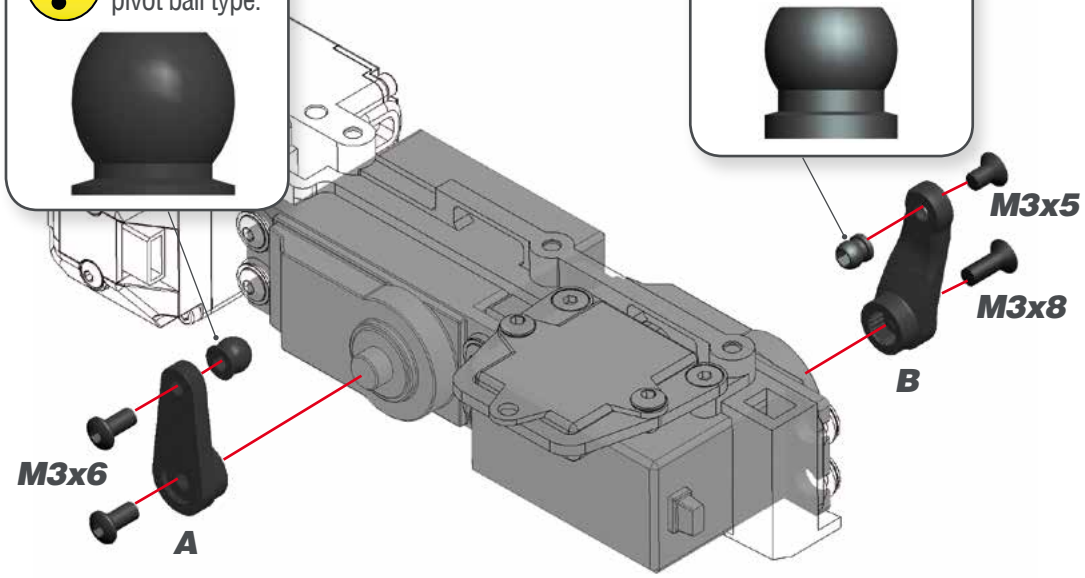


STEP 30

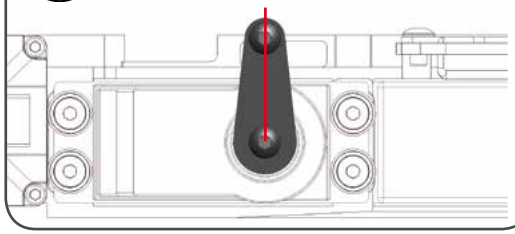
Check how many teeth your servo spline has (23, 24 or 25) and use the right levers.

Note correct pivot ball type.

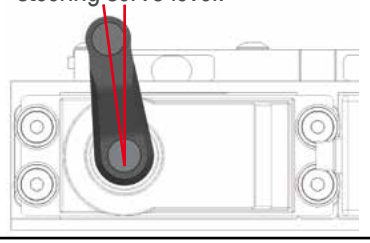
Note correct pivot ball type.



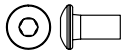
A: Note orientation of the throttle servo lever.



B: Note orientation of the steering servo lever.



M2.5x6

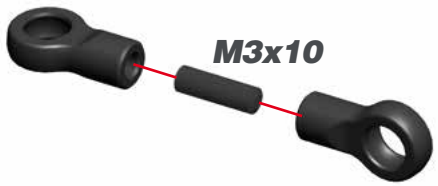

M3x6

M3x5

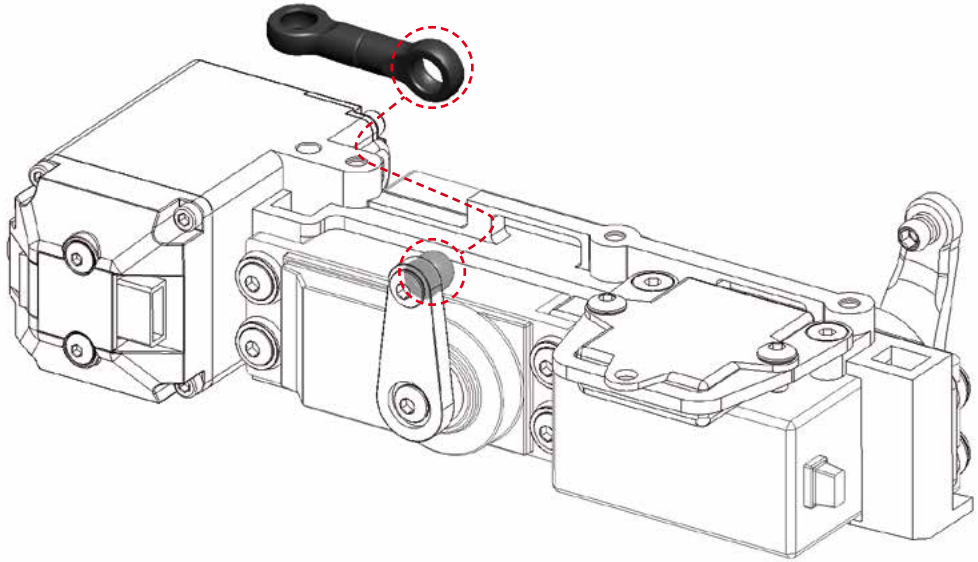
M3x8

STEP 31

31.1



31.2



STEP 32 BAG 6

M3x10

M3x6

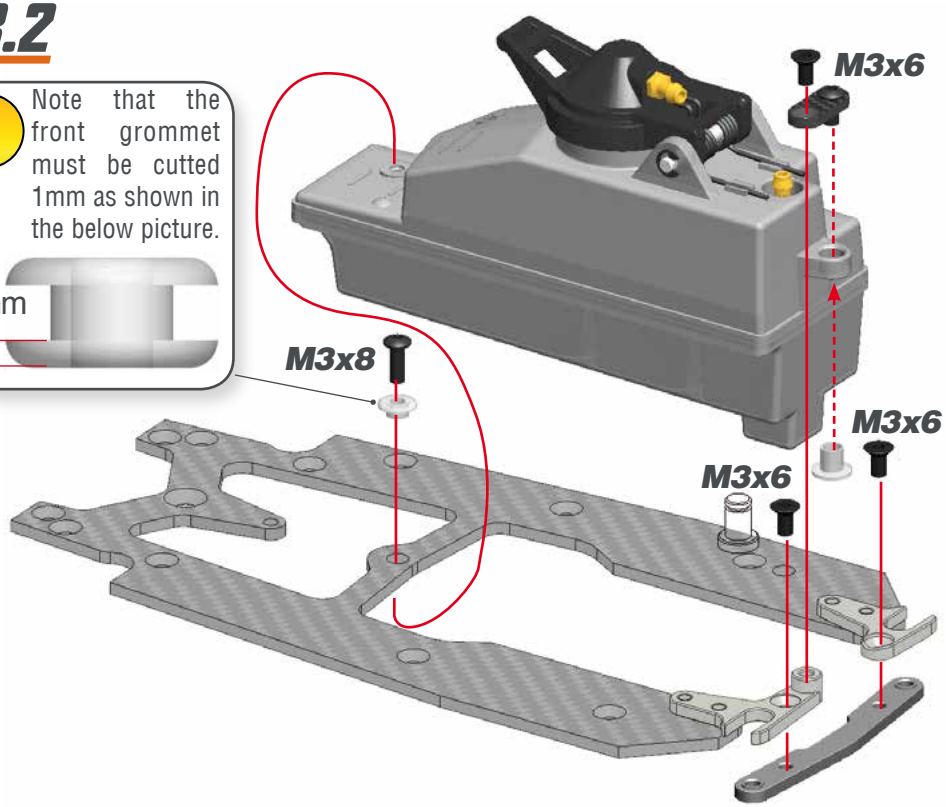
M3x5

STEP 33

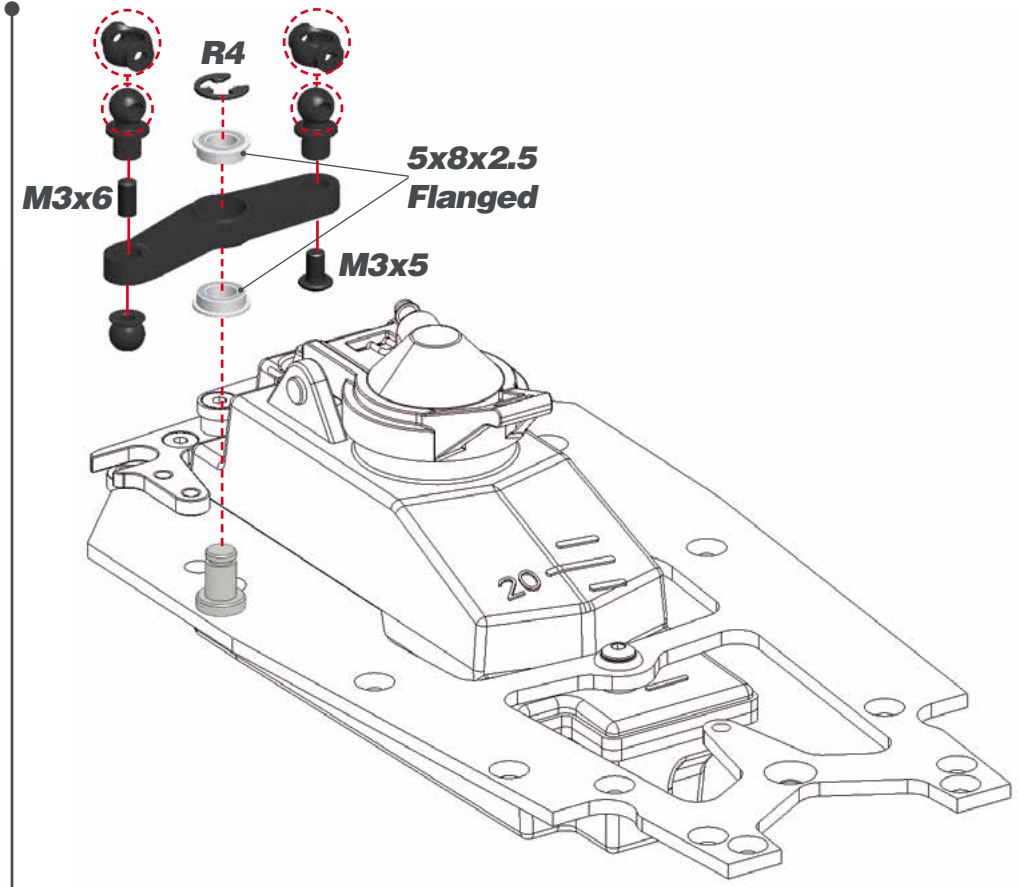
33.1

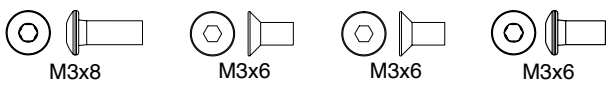
33.2

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

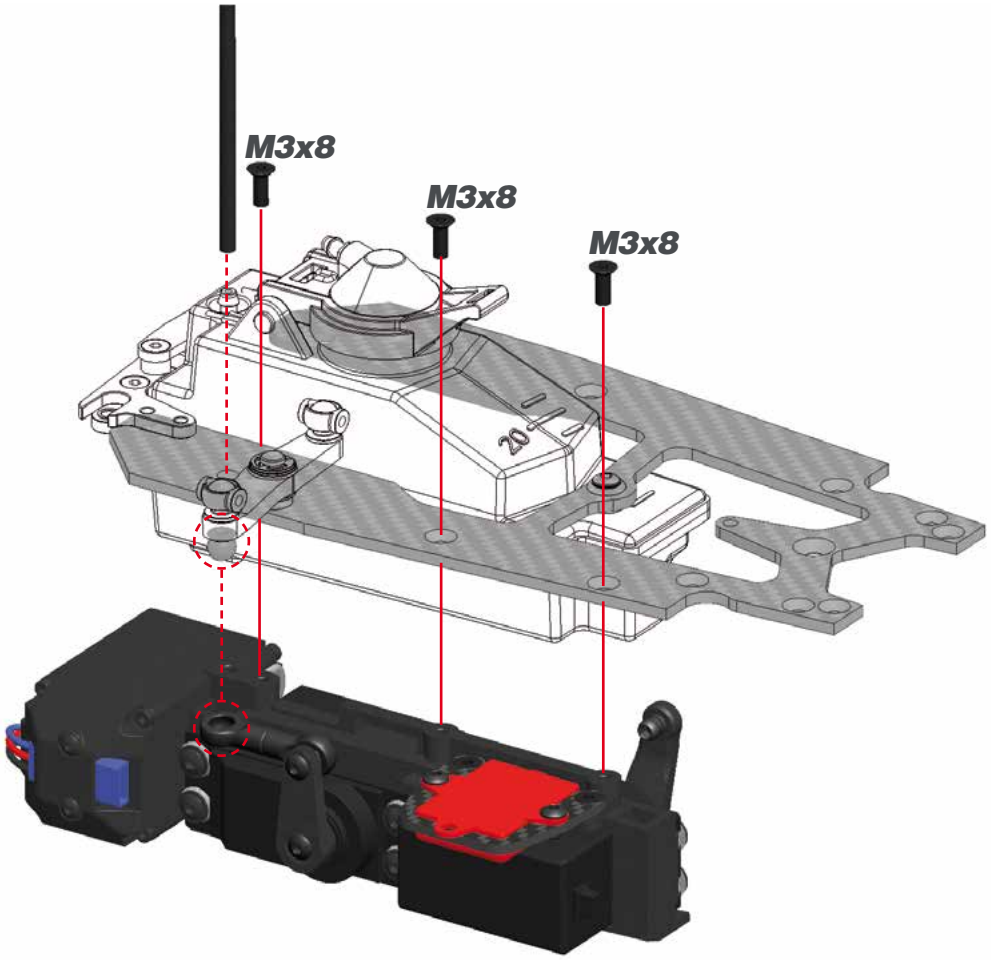


STEP 34



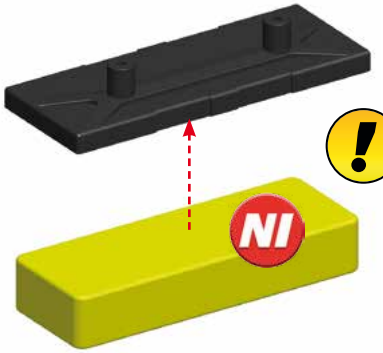


STEP 35



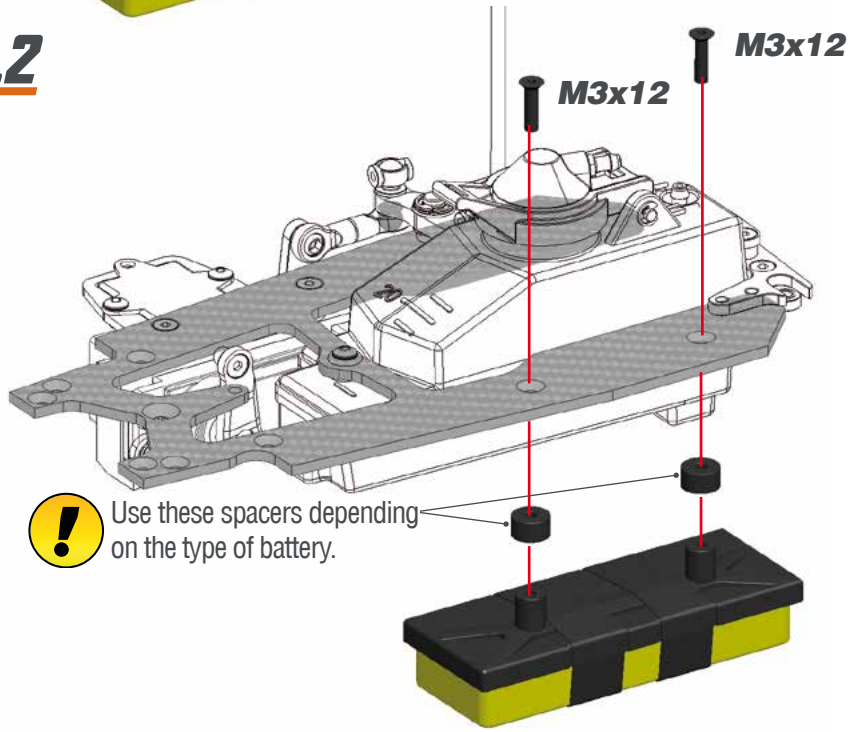
STEP 36

36.1



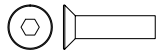
Use tape to mount the battery to the plastic support.

36.2



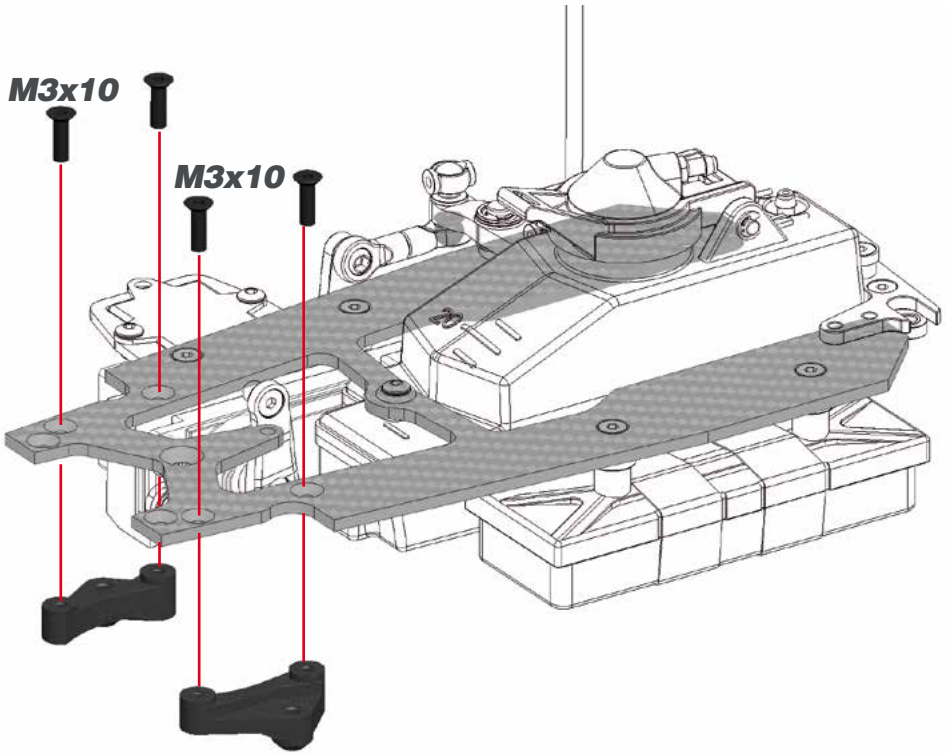
Use these spacers depending on the type of battery.

M3x8

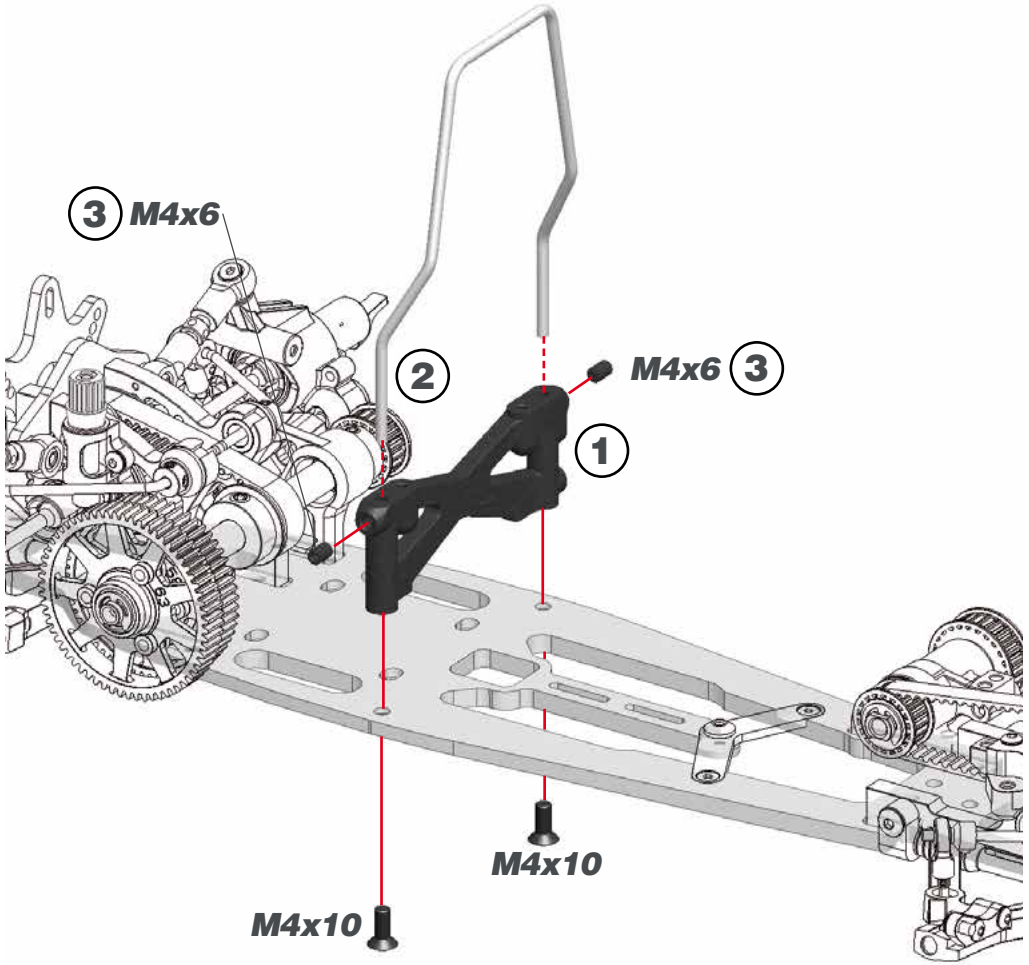


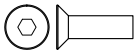
M3x12

STEP 37

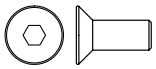


STEP 38




M3x10

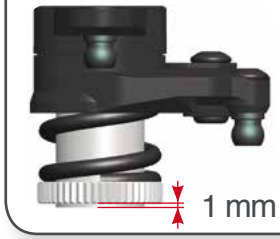
M4x6


M4x10

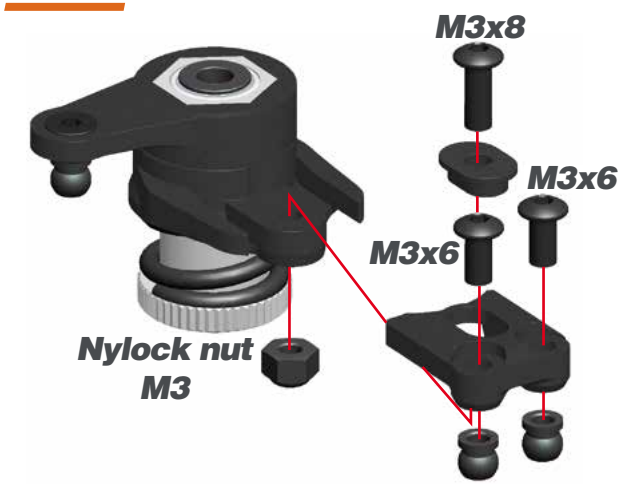
STEP 39 BAG 7

39.1

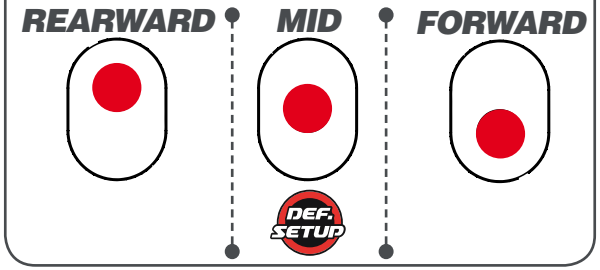
Preload the servo-saver-spring 1mm.



39.2



SERVOSAVER ACKERMANN INSERTS

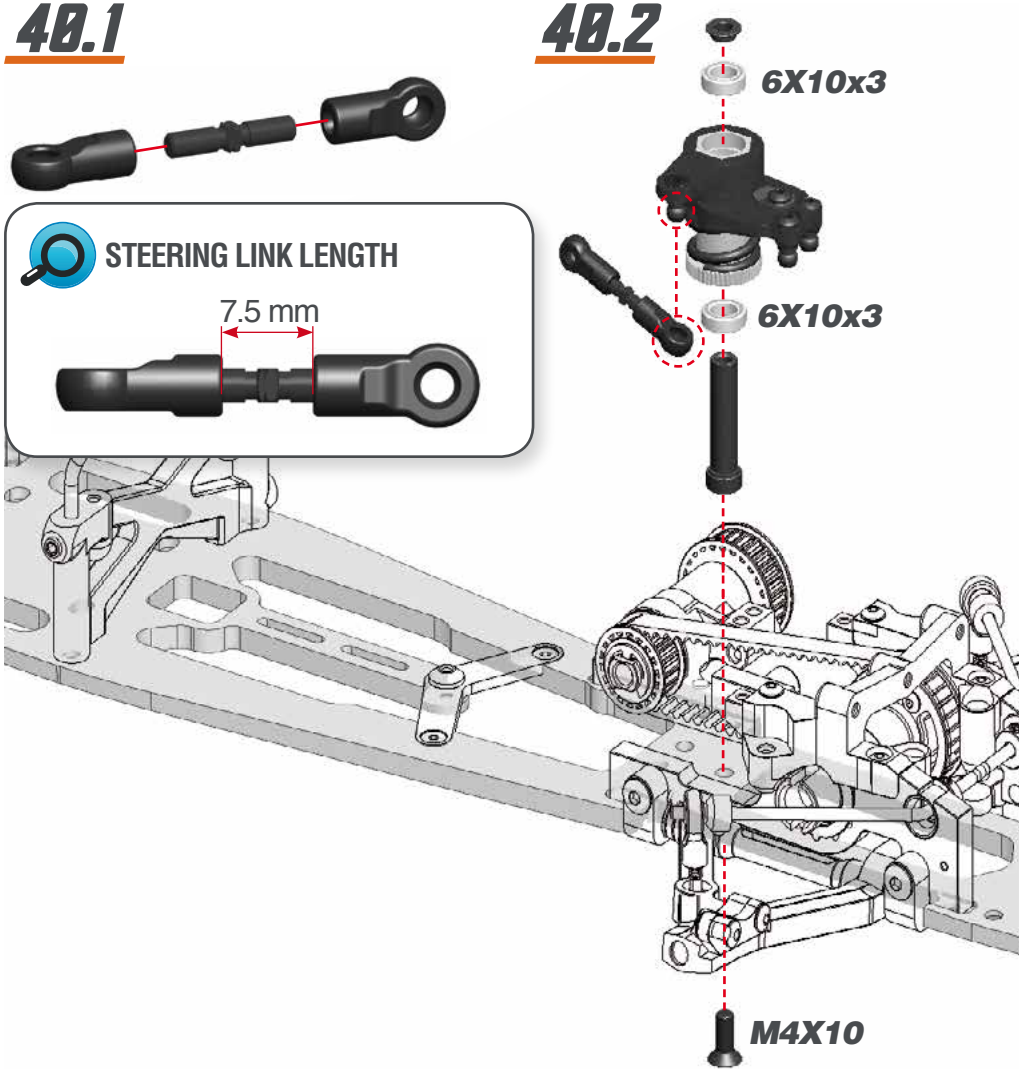


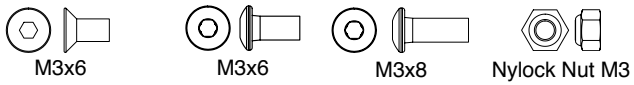
STEP 40

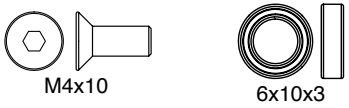
40.1

STEERING LINK LENGTH

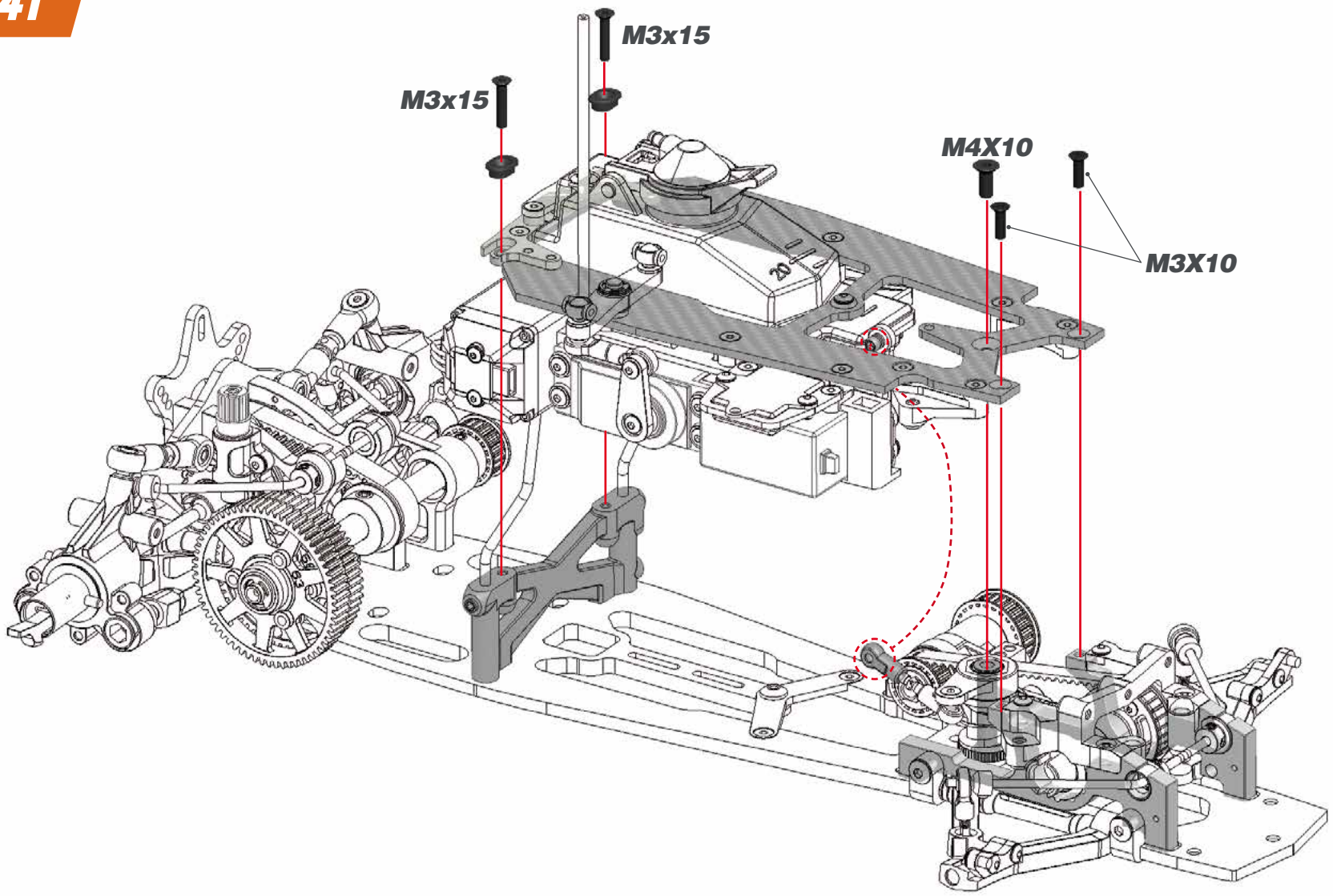
40.2



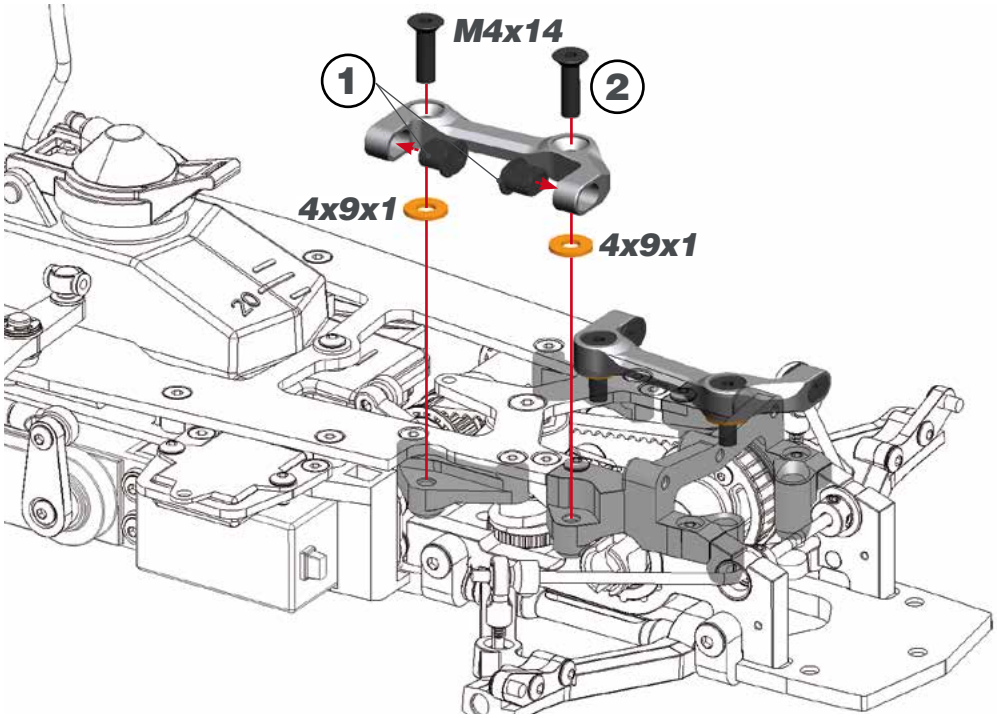




STEP 41



STEP 42

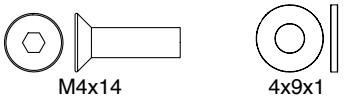


FRONT SUSPENSION INSERTS CHART

INSIDE		MID		OUTSIDE	
RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
●	●	●	●	●	●

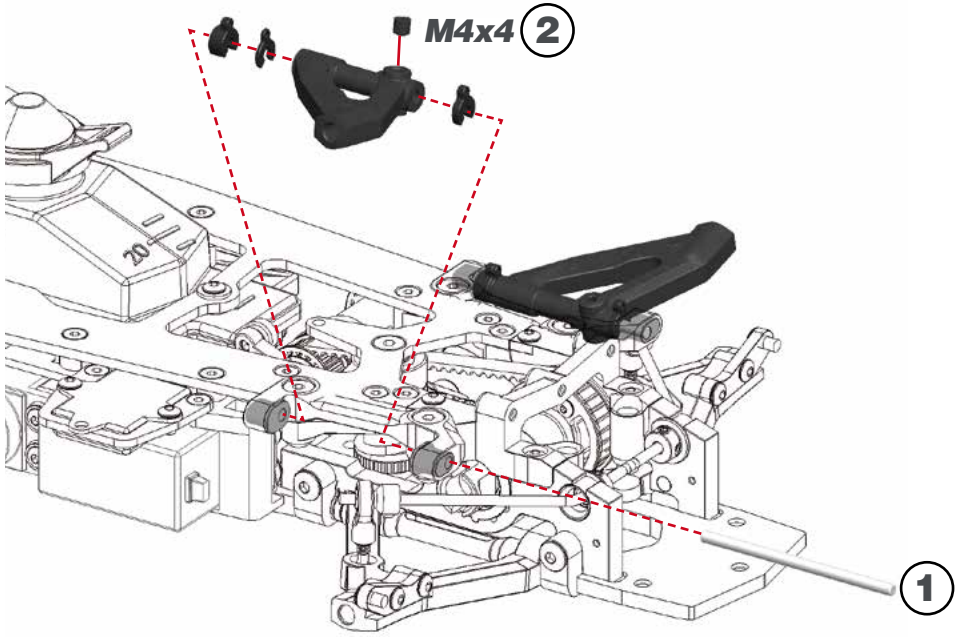
DEF. SETUP

M4x14



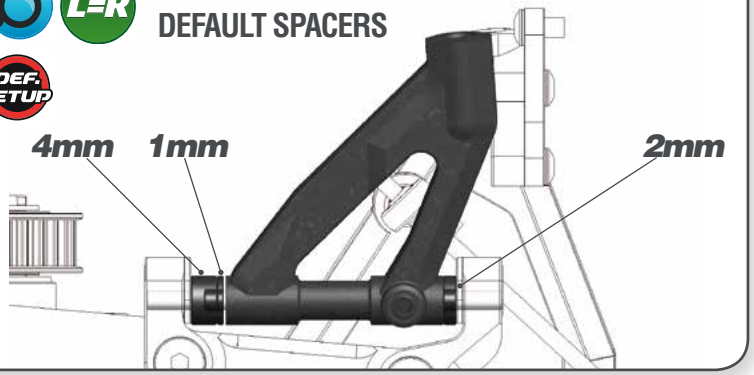
4x9x1

STEP 43



FRONT CASTER DEFAULT SPACERS

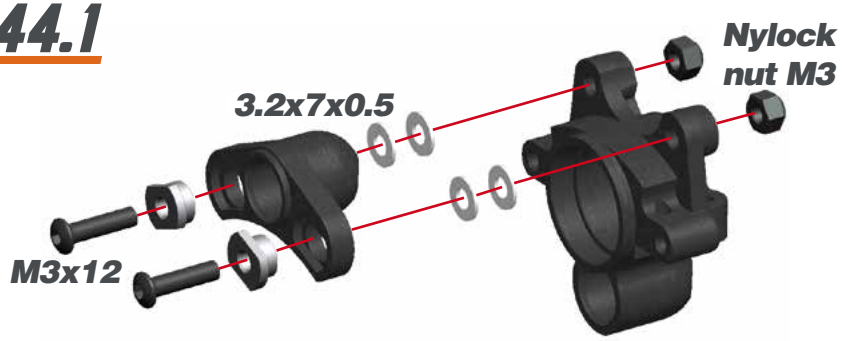
DEF. SETUP



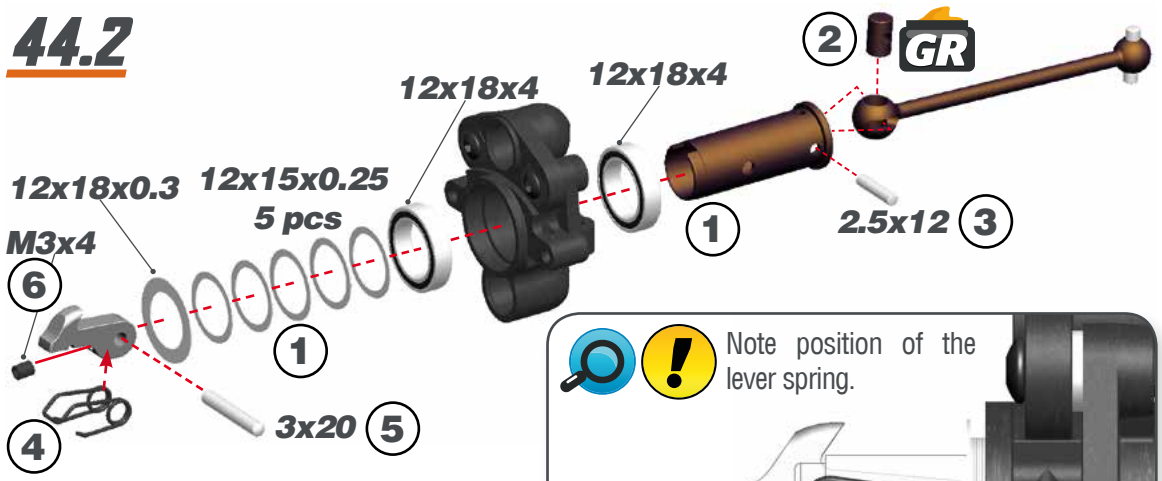
M4x4

STEP 44 BAG 8

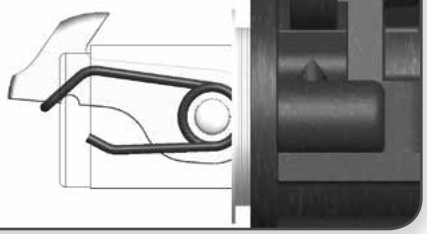
44.1



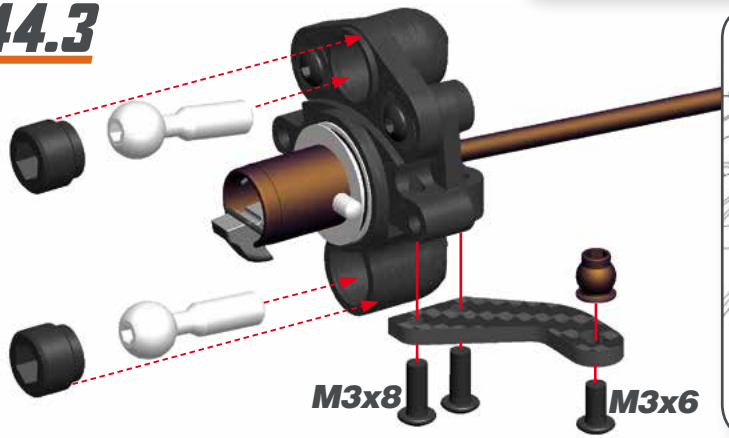
44.2



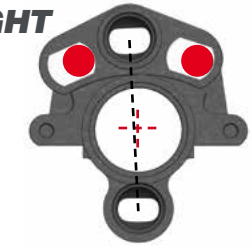
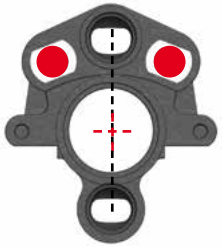
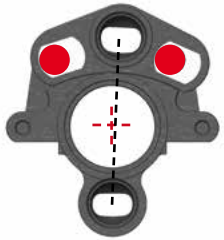
Note position of the lever spring.



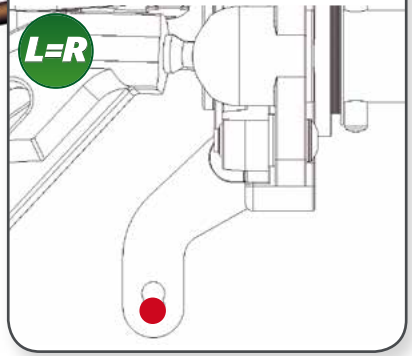
44.3

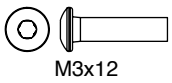


STEERING BLOCK INSERTS CHART

	LEADING	NEUTRAL (DEF. SETUP)	TRAILING
RIGHT			
LEFT			

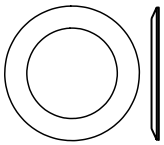
ACKERMANN POSITION

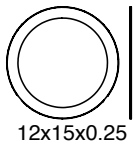


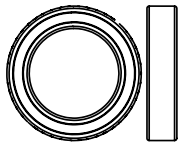

M3x12

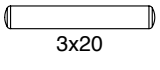
3.2x7x0.5

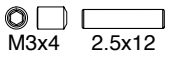
Nylock Nut M3

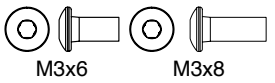

12x18x1 Conical


12x15x0.25

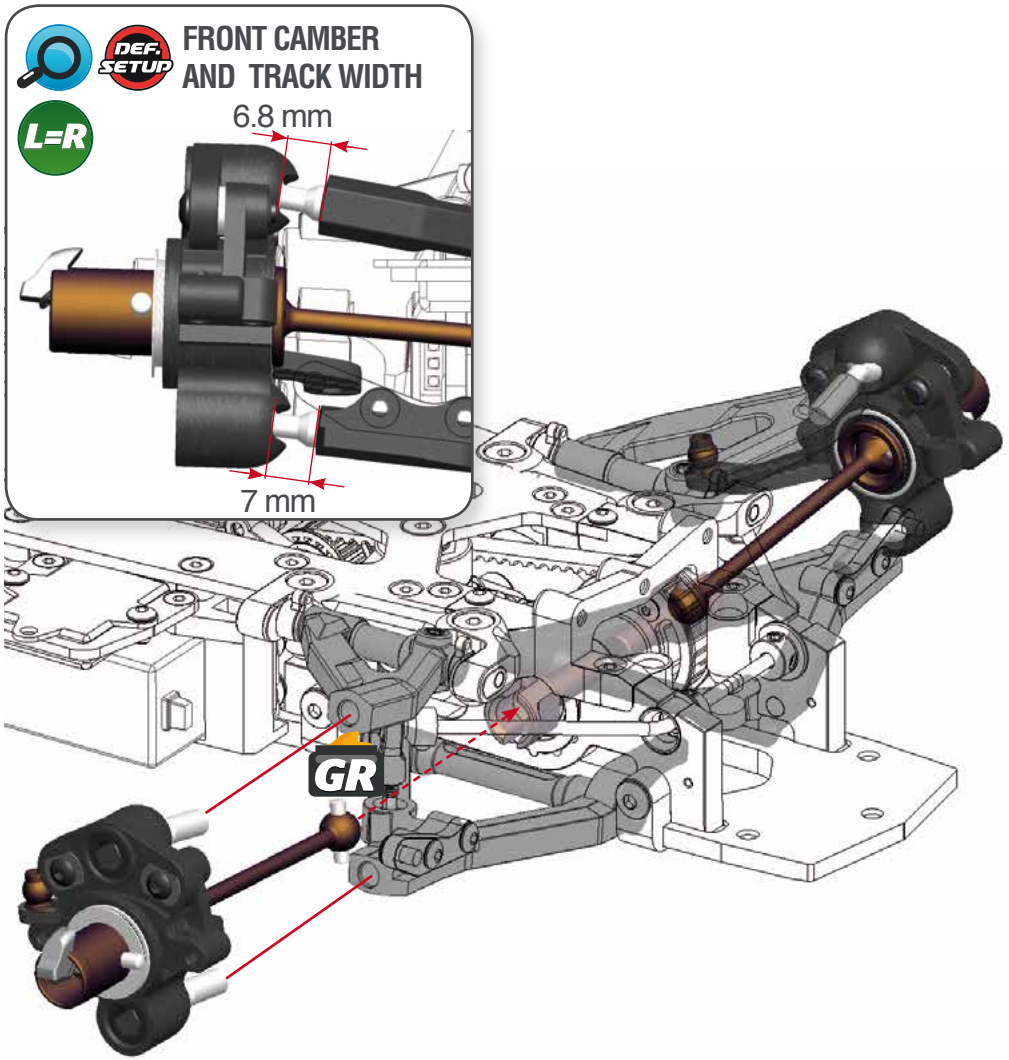

12x18x4


3x20

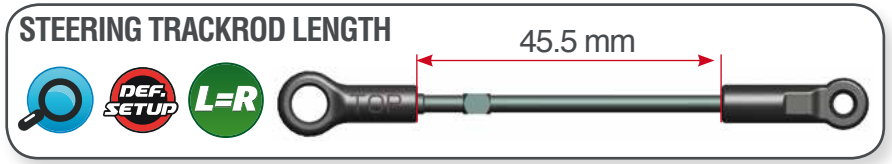

M3x4 2.5x12

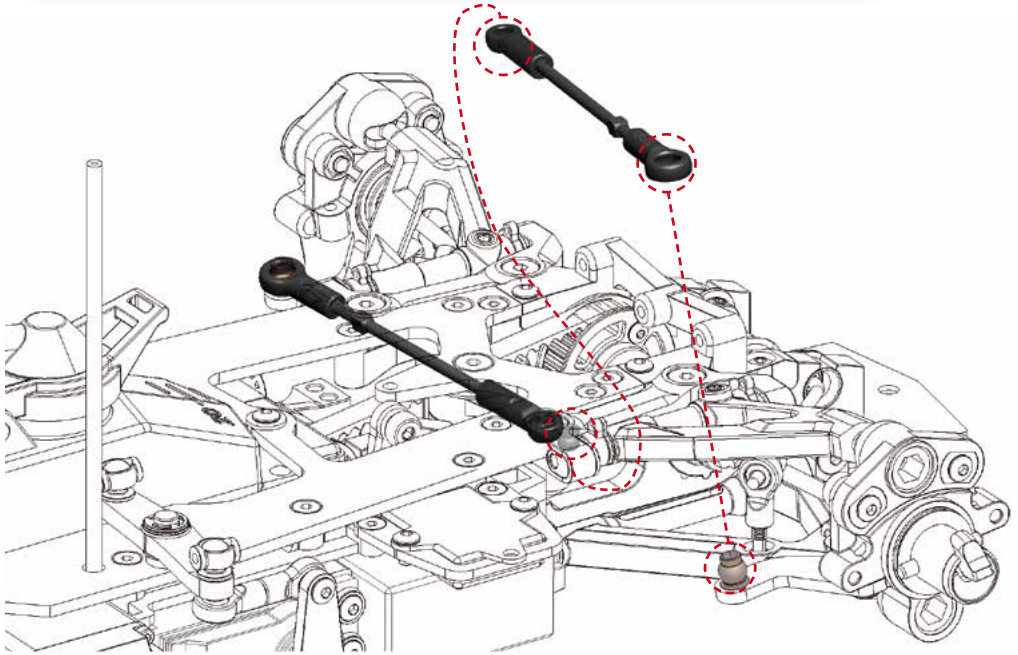

M3x6 M3x8

STEP 45



STEP 46

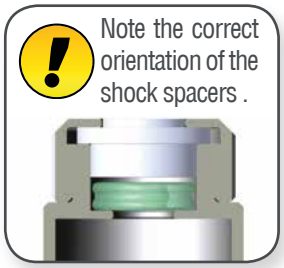




STEP 47 SHOCKS BAG

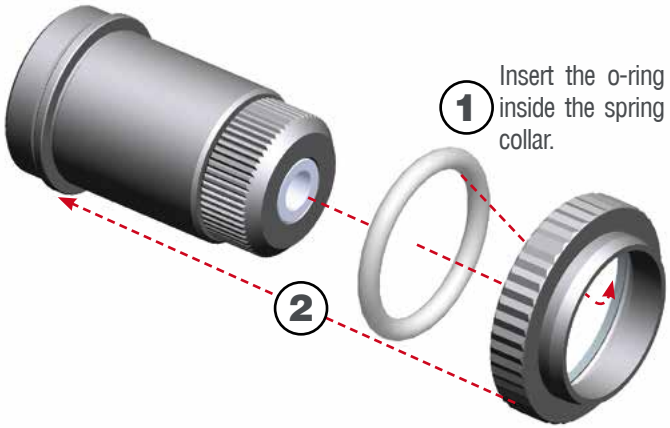
47.1

Use some silicone oil during the assembly.



Note the correct orientation of the shock spacers .

47.2



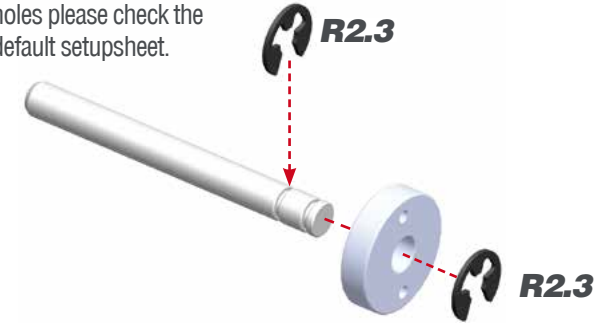
1 Insert the o-ring inside the spring collar.

Note the correct position of the o-ring .

STEP 48

48.1

For the correct piston holes please check the default setupsheet.



48.2

Use some silicone oil during the assembly.

FRONT

Use some silicone oil during the assembly.

REAR

R2.3

STEP 49

49.1

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

49.2

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

2- Extend the shockrod fully

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

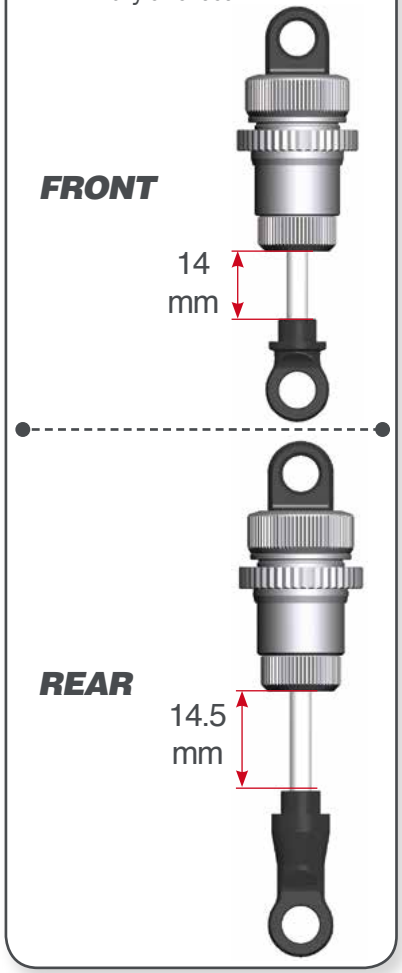
4- Close top only 3/4.

49.3

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

2- Close completely the shock cap.

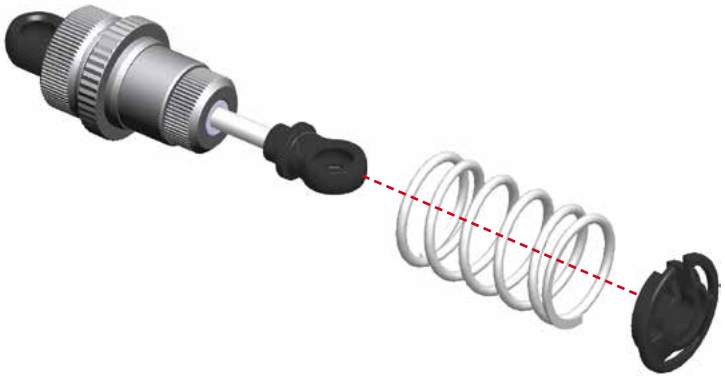
SHOCKS LENGTH:
Measure the shock length fully extended.



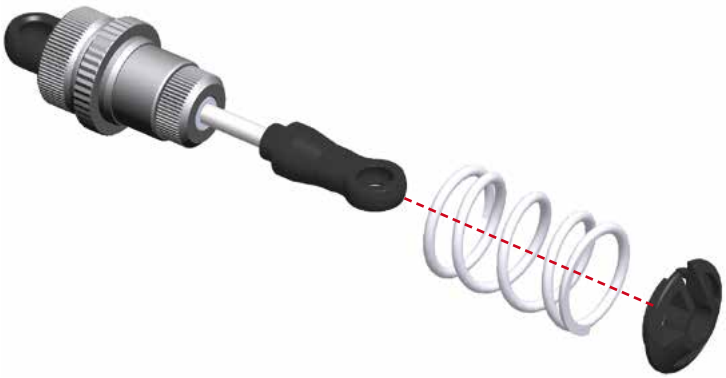
STEP 50

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

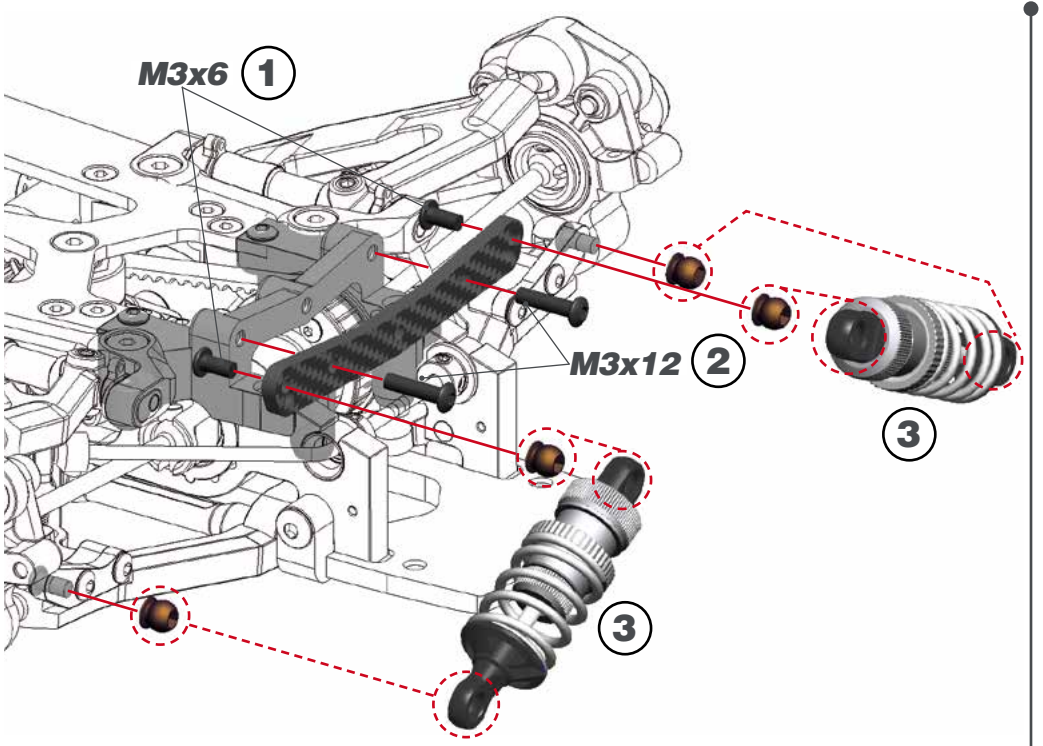
FRONT

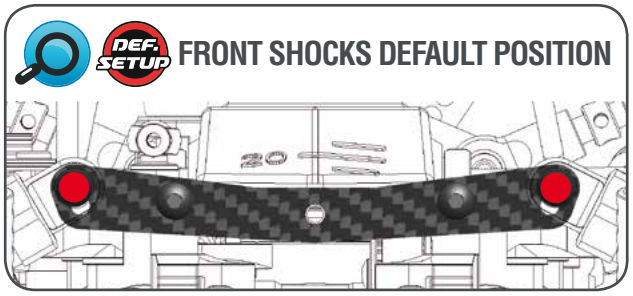


REAR

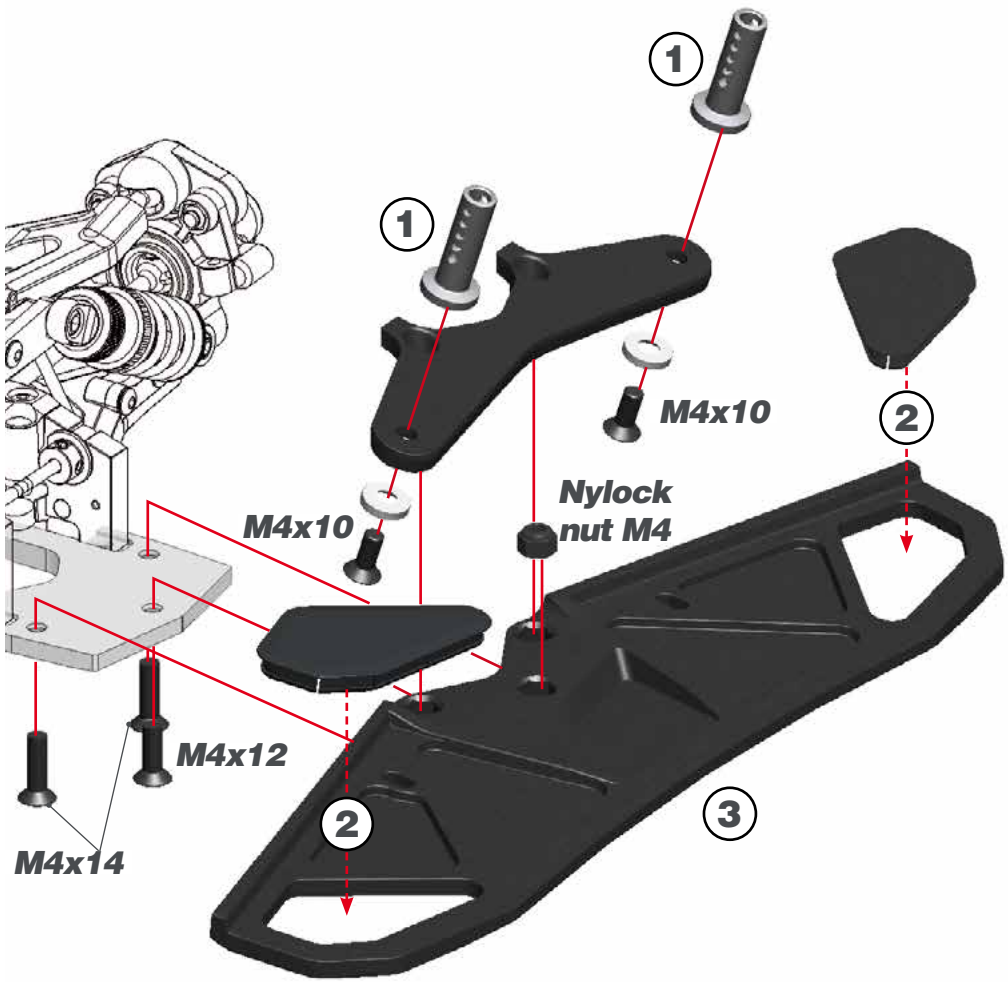


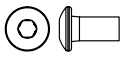
STEP 51 BAG 9

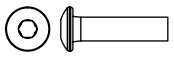


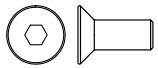


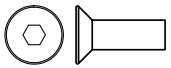
STEP 52

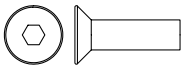



M3x6

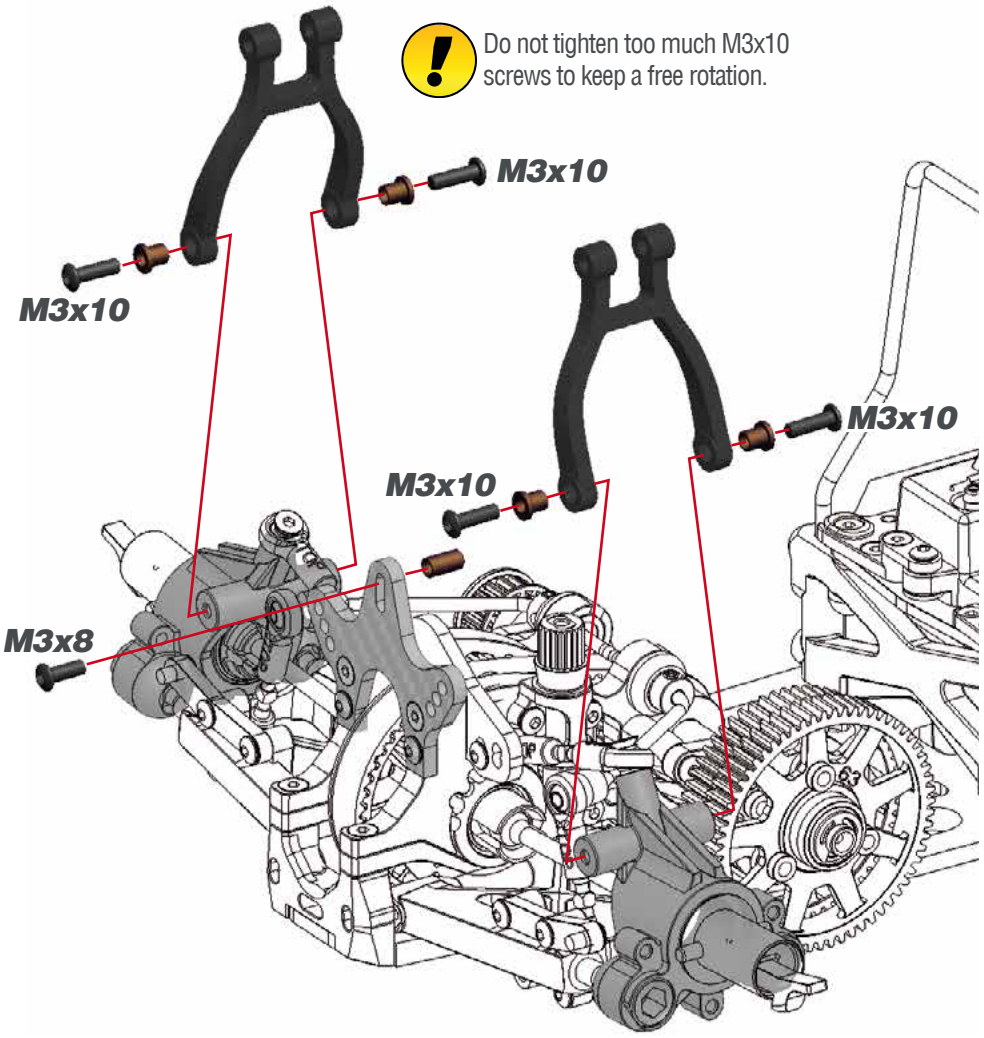

M3x12

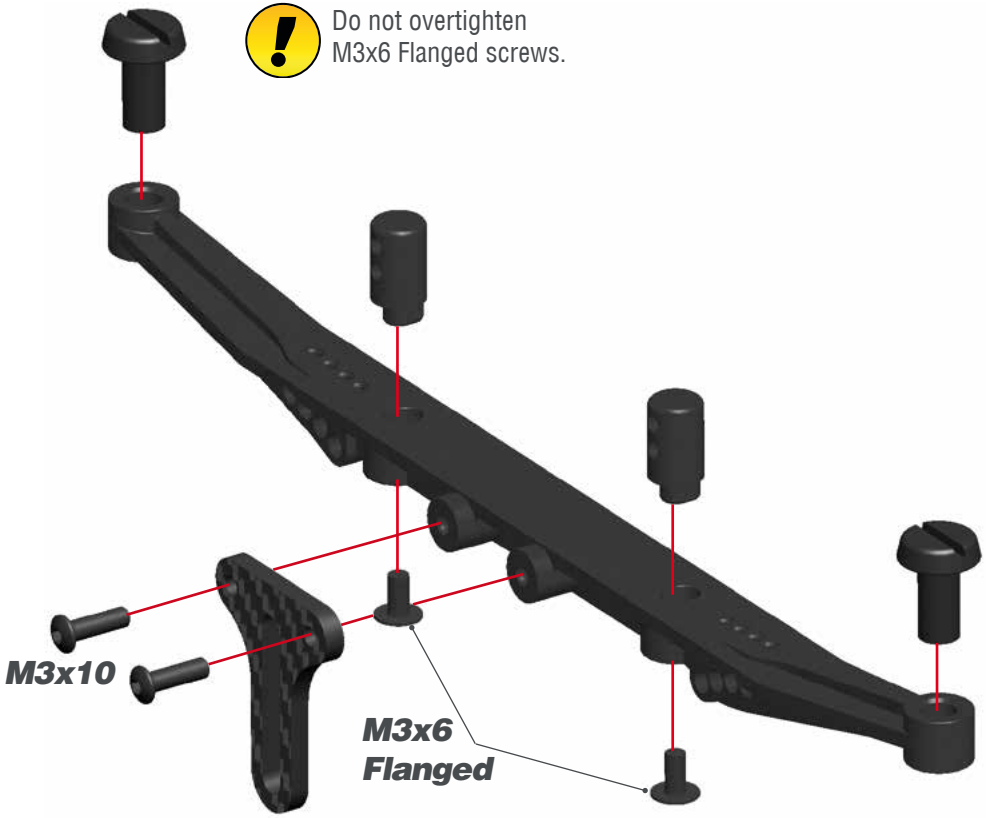

M4x10

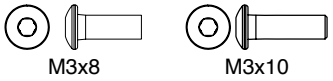

M4x12

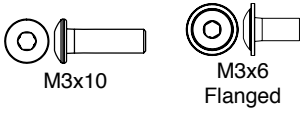

M4x14

Nylock Nut M4

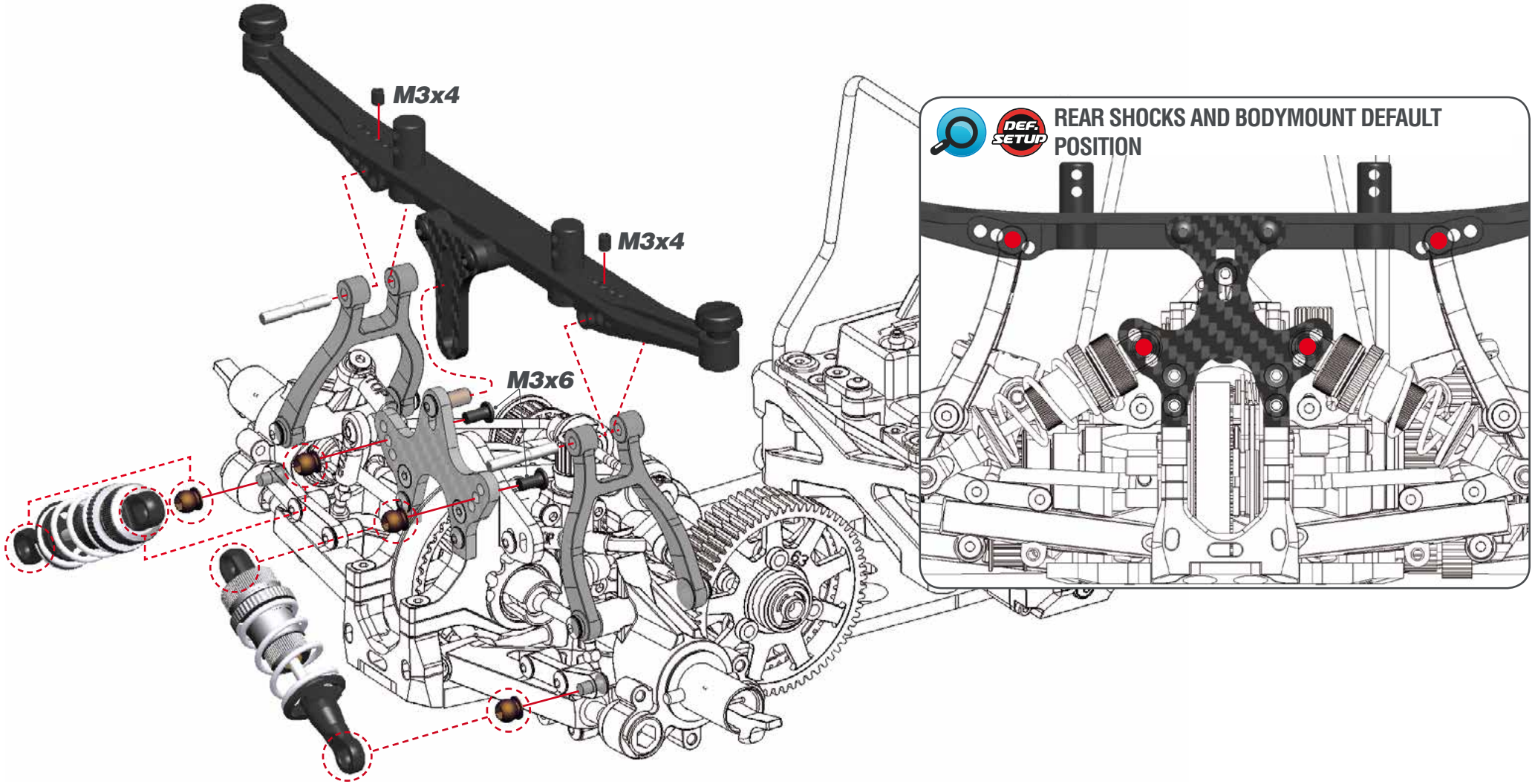

Do not tighten too much M3x10 screws to keep a free rotation.
M3x10
M3x10
M3x10
M3x10
M3x8


Do not overtighten M3x6 Flanged screws.
M3x10
M3x6
Flanged


M3x8
M3x10


M3x10
M3x6
Flanged

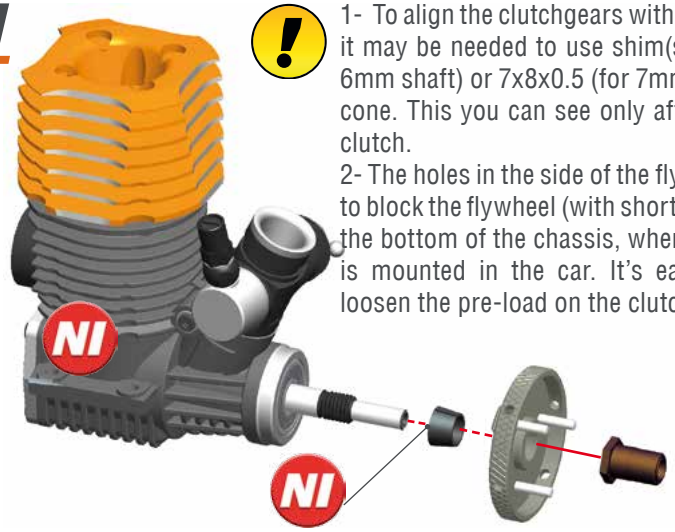
STEP 55


M3x4
M3x4
M3x6
DEF. SETUP
REAR SHOCKS AND BODYMOUNT DEFAULT POSITION

M3x4
M3x6

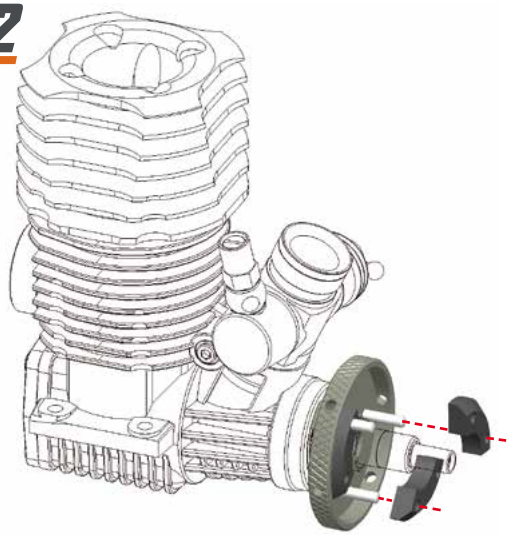
STEP 56 CLUTCH BAG

56.1

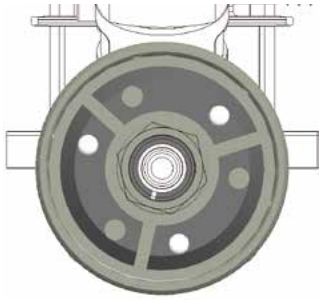


1- To align the clutchgears with the 2-speed gears, it may be needed to use shim(s) 6x8x0.5mm (for 6mm shaft) or 7x8x0.5 (for 7mm shaft) behind the cone. This you can see only after assembling the clutch.
2- The holes in the side of the flywheel can be used to block the flywheel (with short allen tool) 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

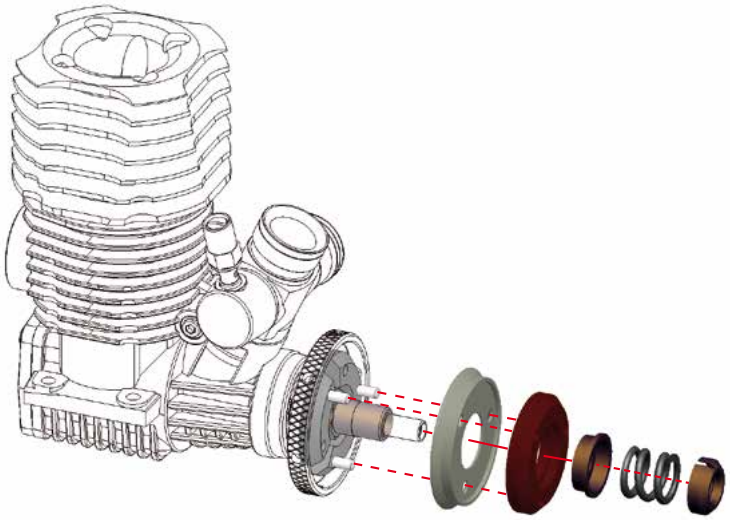


Note the orientation of the flyweights. Use the right hole for having a more aggresive clutch



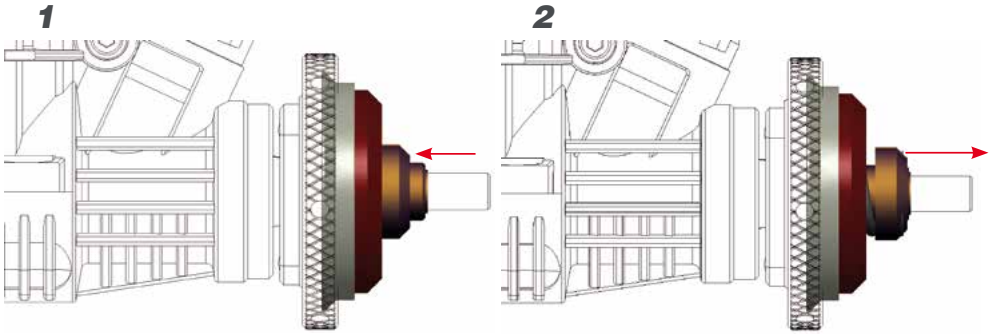
STEP 57

57.1



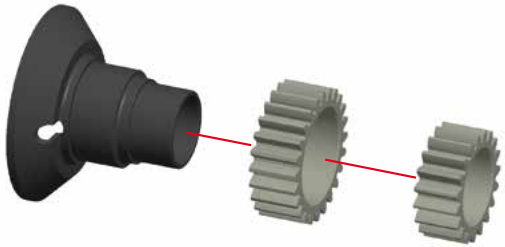
57.2

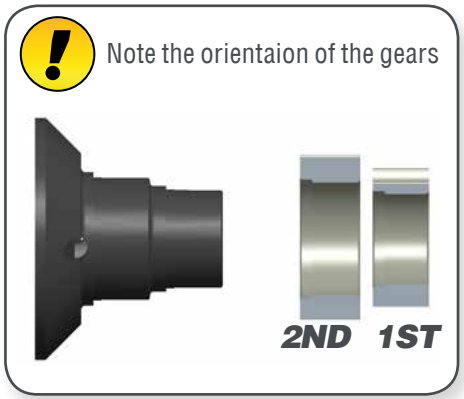
For adjusting the default clutch spring tension:
1- Screw in the adjusting nut all the way.
2- Unscrew it one and a half turns.
3- Fine tune the setup of your clutch on the track according to your driving style, track and weather conditions.



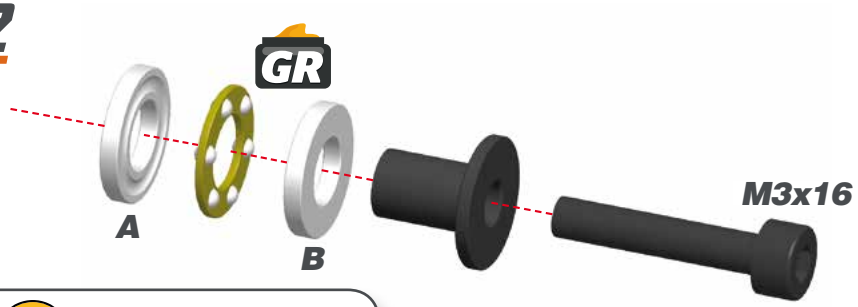
STEP 58

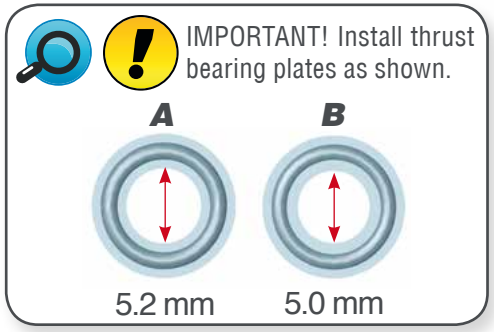
58.1





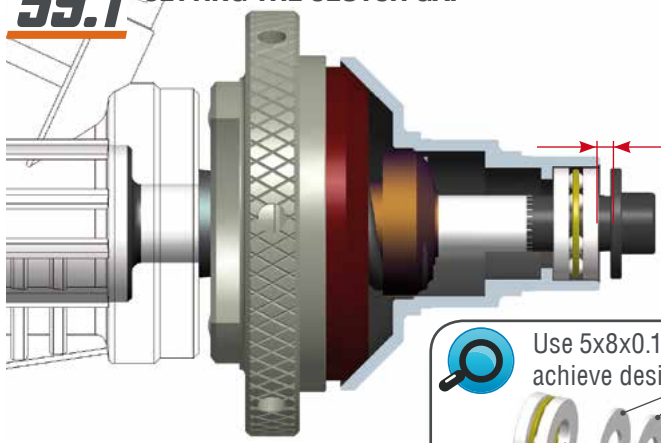
58.2

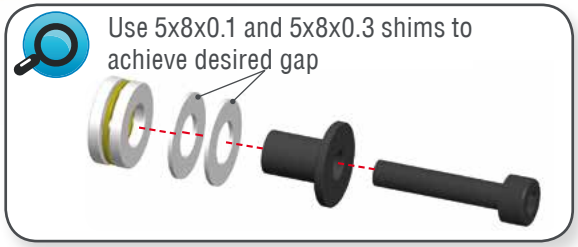




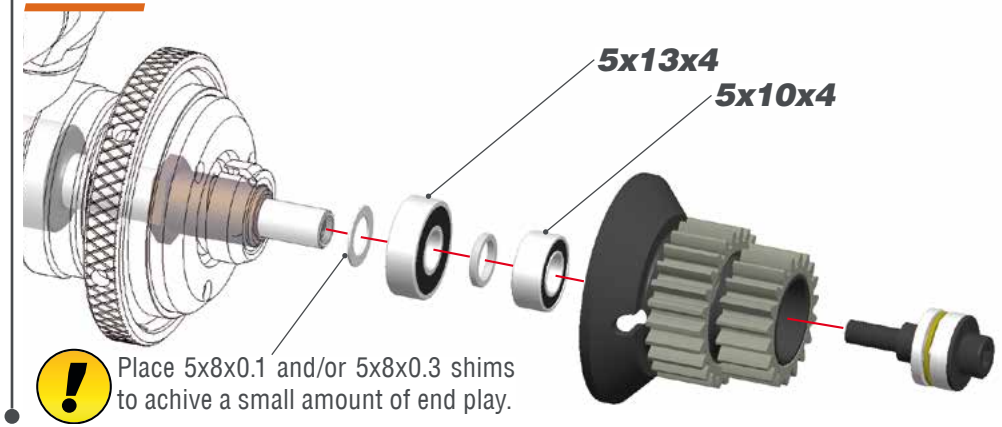
STEP 59

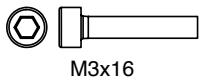
59.1 SETTING THE CLUTCH GAP

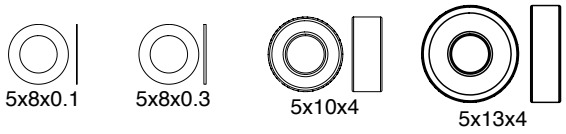




59.2 SETTING THE CLUTCH END PLAY

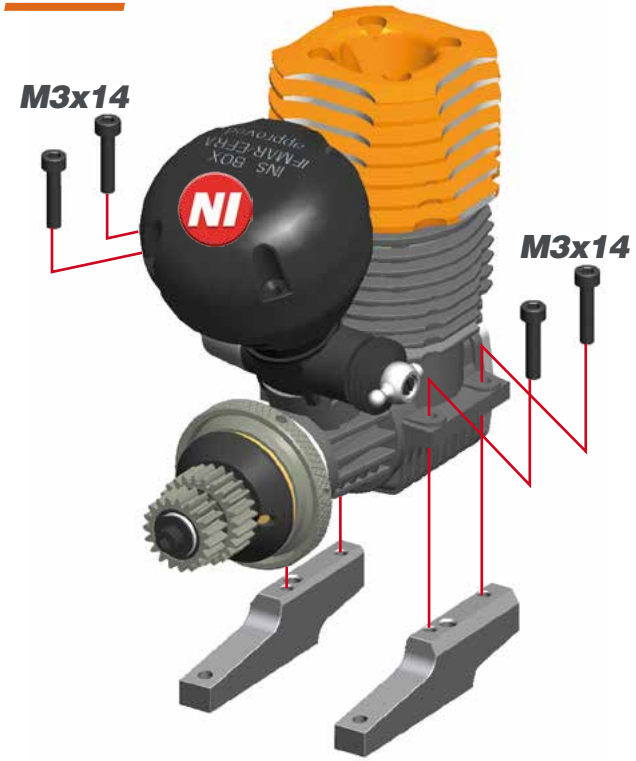




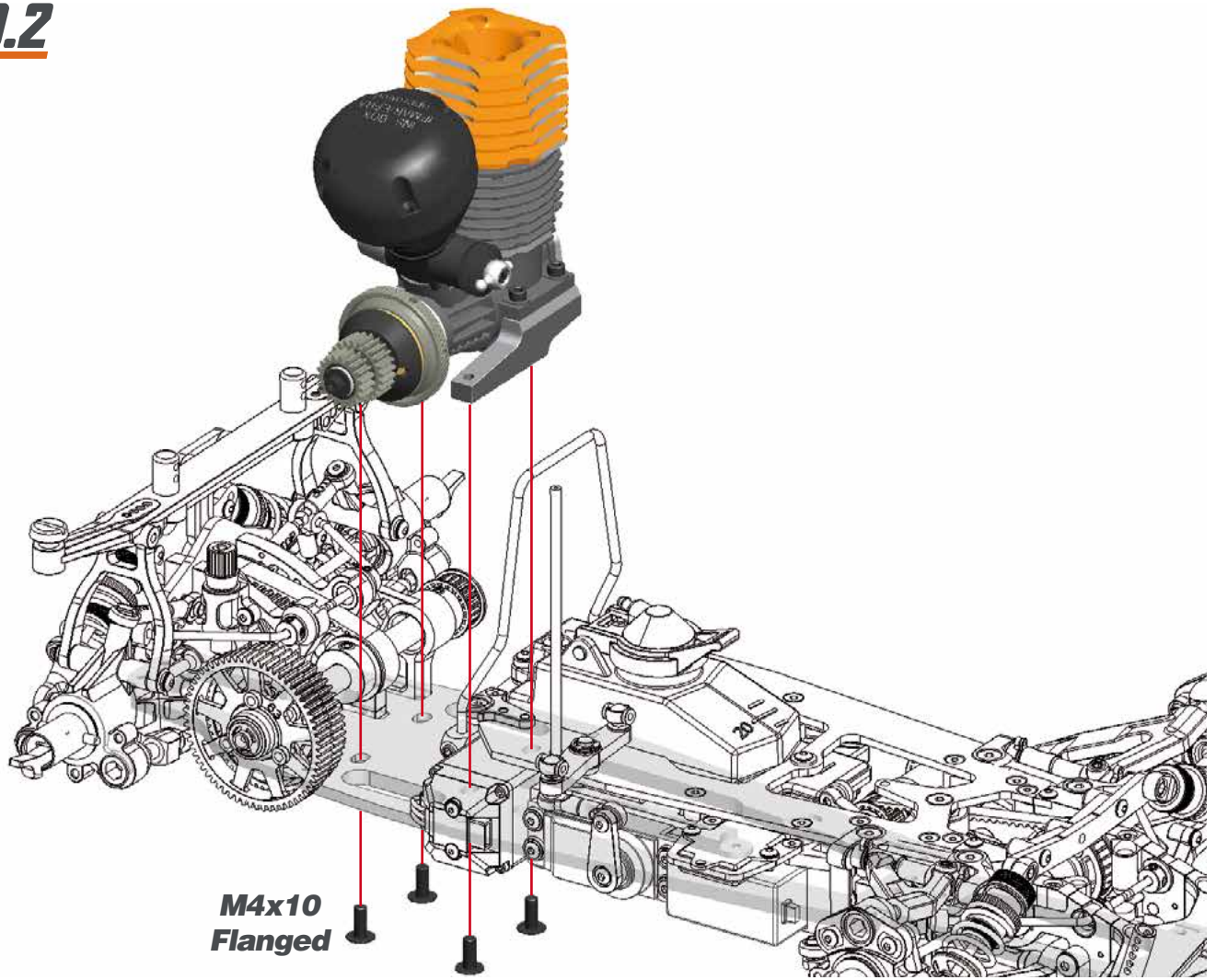


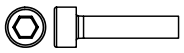
STEP 60 BAG 10

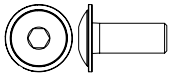
60.1



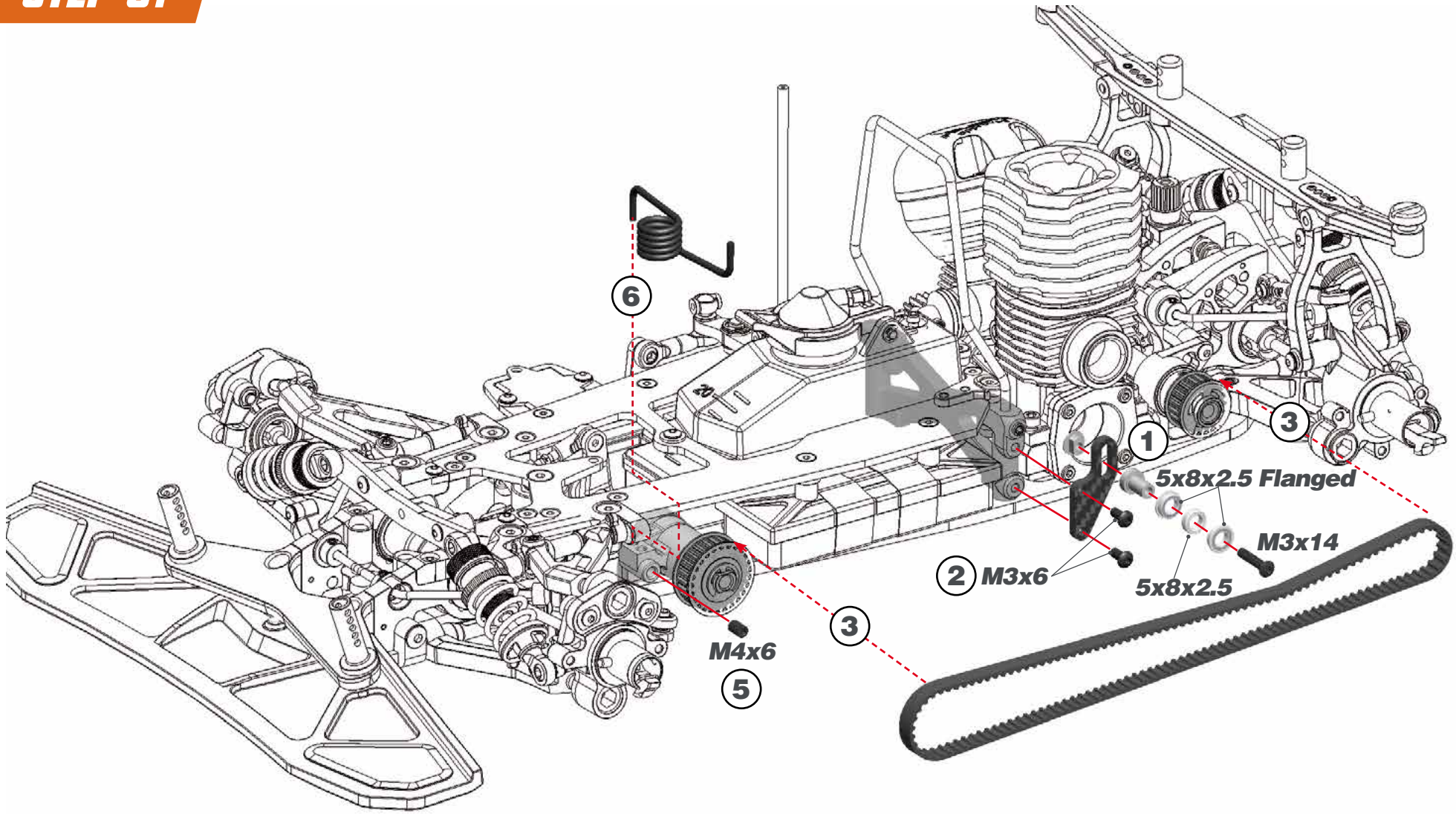
60.2




M3x14

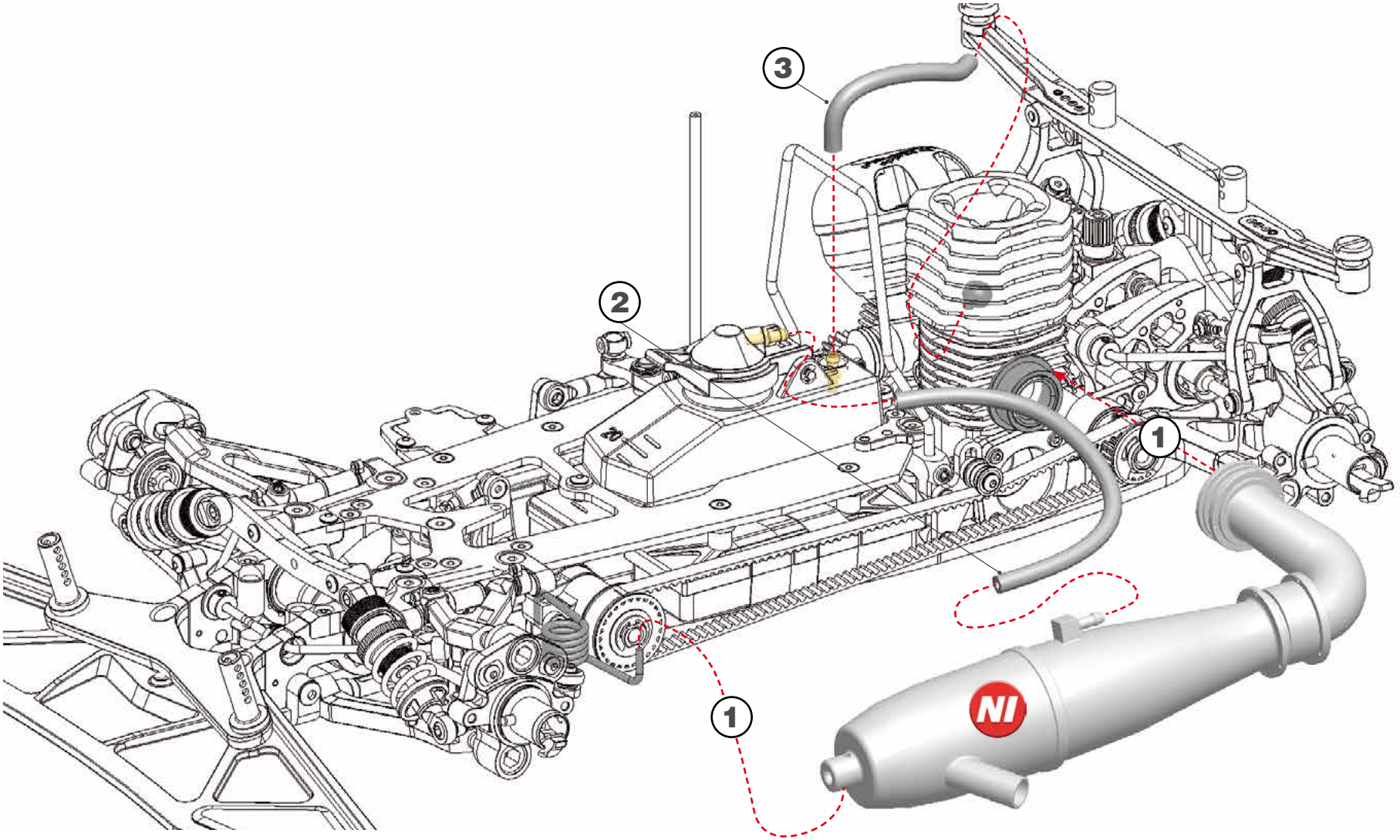

M4X10 Flanged

STEP 61


6
1
3
5x8x2.5 Flanged
M3x14
2
M3x6
5x8x2.5
3
M4x6
5

M3x6
M3x14
5X8X2.5 Flanged
5x8x2.5
M4x6

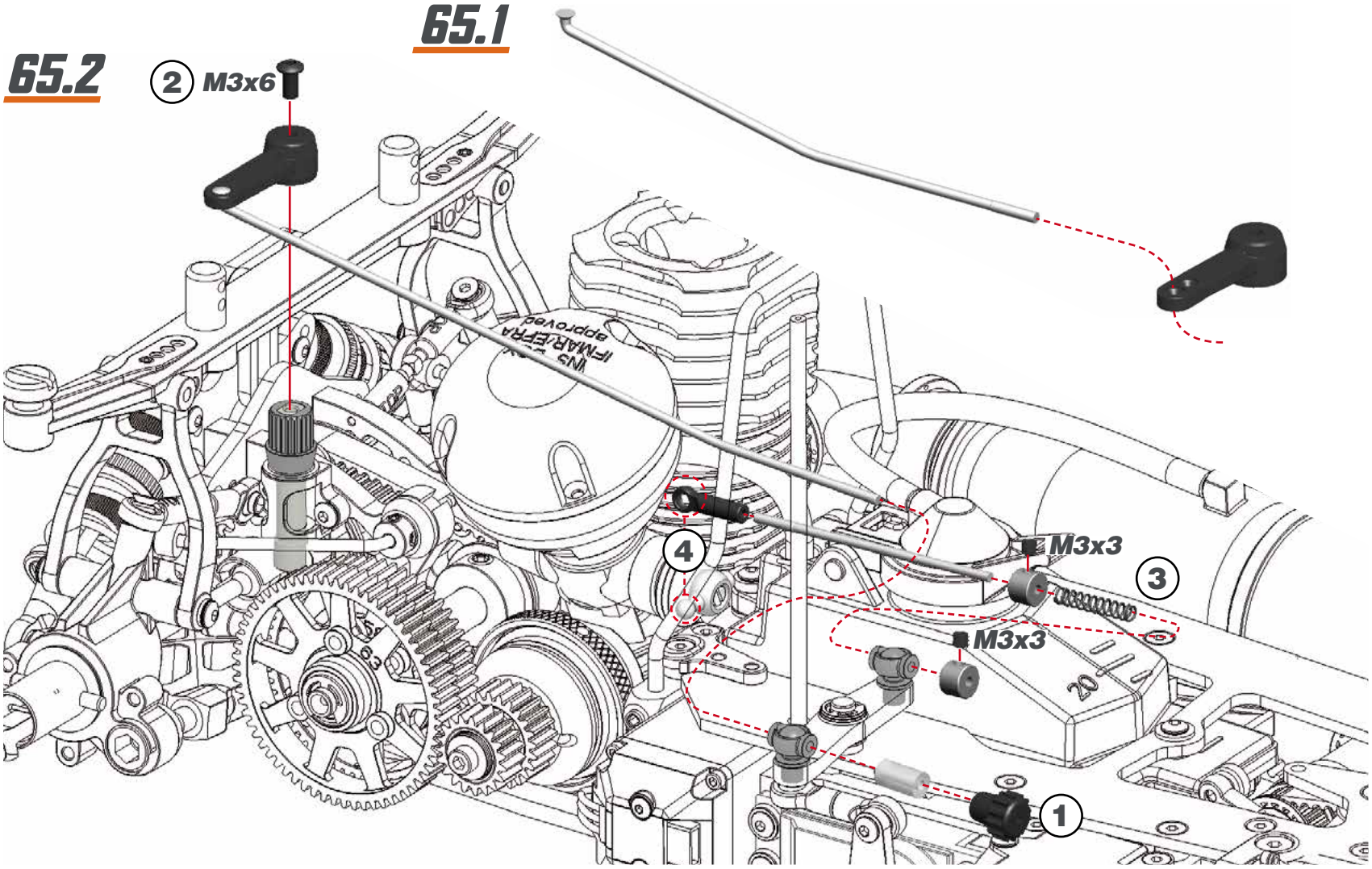
STEP 64



STEP 65

65.1

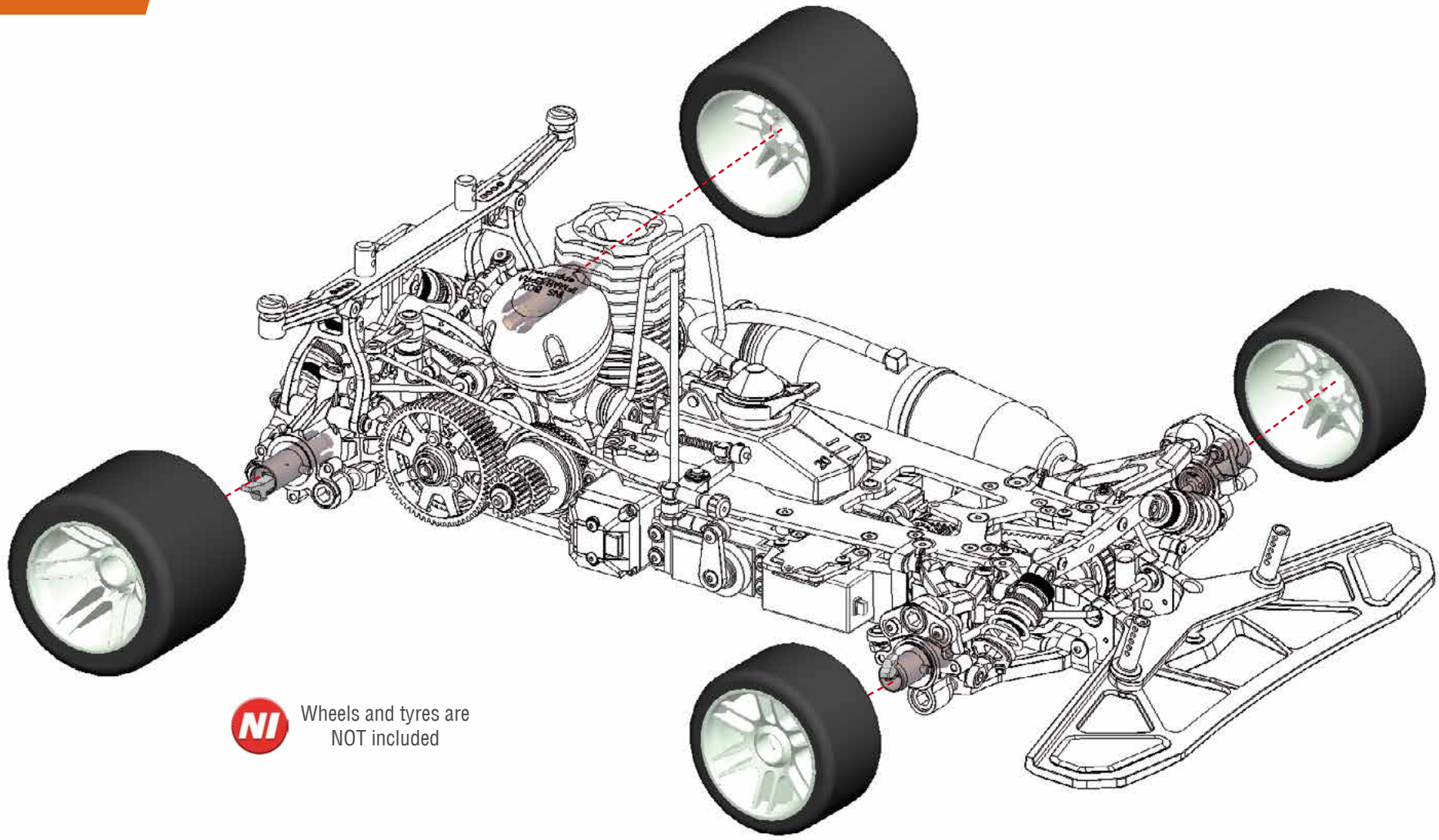
65.2



M3x3

M3x6

STEP 66



NI Wheels and tyres are NOT included

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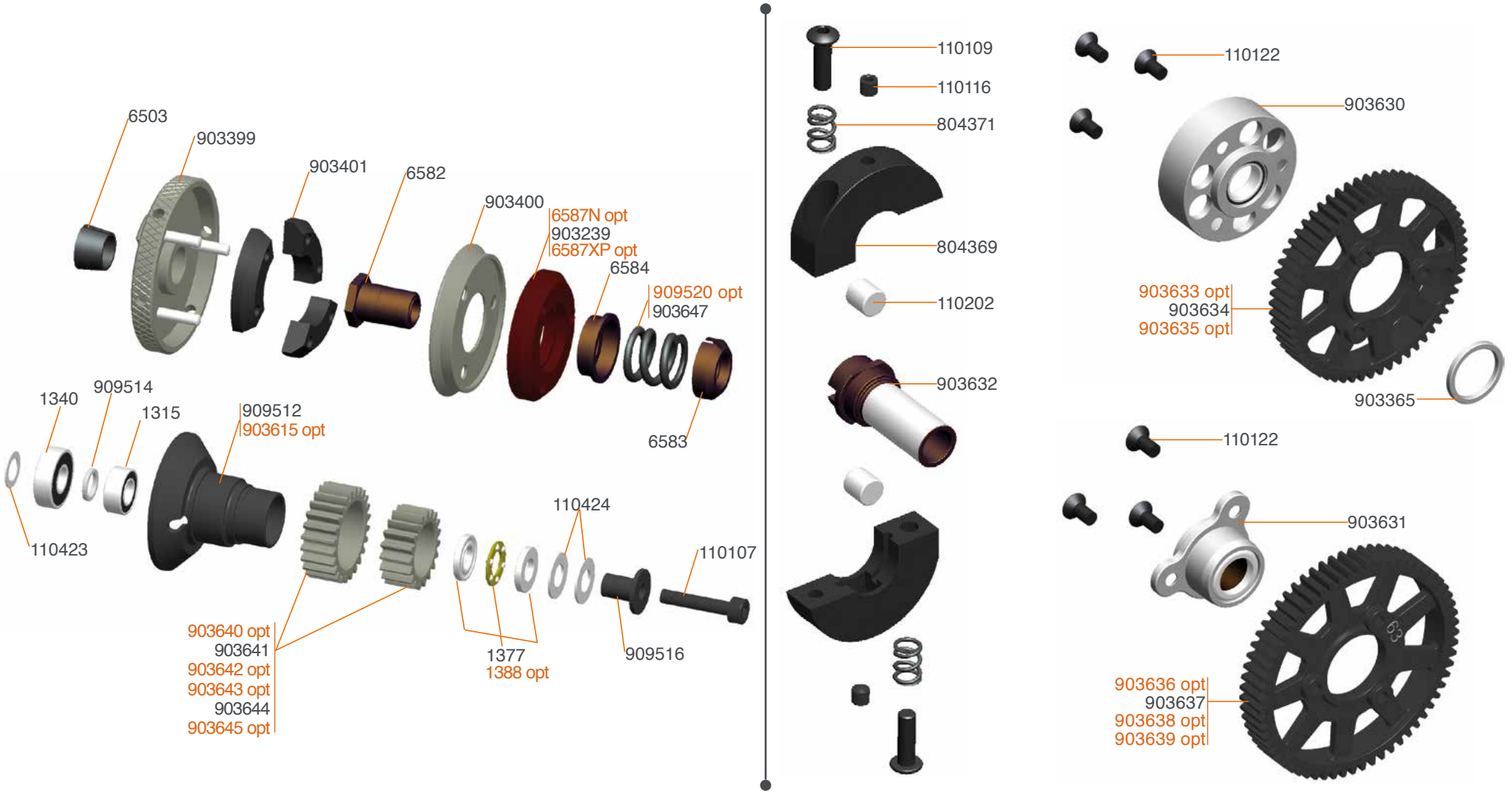
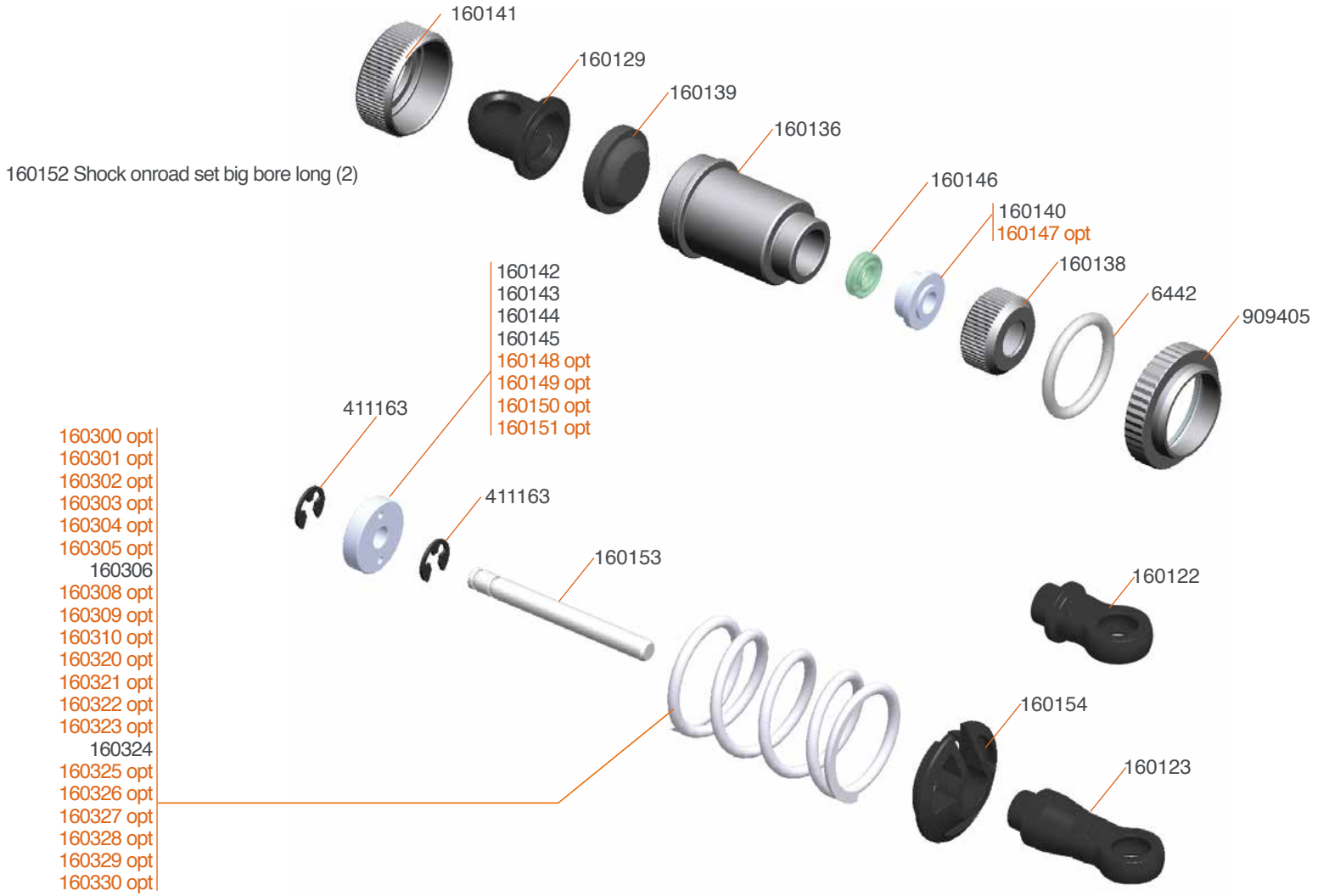
CLUTCH AND GEARBOX EXPLODED VIEW



OPT

903640	Centax gear-pinion alu 18T XLI	909512	Clutch housing centax 2 alu coated	903636	2-speed gear 61T SL8 XLI
903642	Centax gear-pinion alu 20T XLI	6587N	Centax clutch shoe brown	903638	2-speed gear 63T SL8 XLI
903643	Centax gear-pinion alu 23T XLI	6587XP	Centax clutch shoe XP	903639	2-speed gear set SL8 (6) XLI
903645	Centax gear-pinion alu 25T XLI	903633	2-speed gear 56T SL8 XLI	909520	Centax II / III spring 1.8 (10mm)
903646	Centax gear-pinion alu set XLI (6)	903635	2-speed gear 58T SL8 XLI		

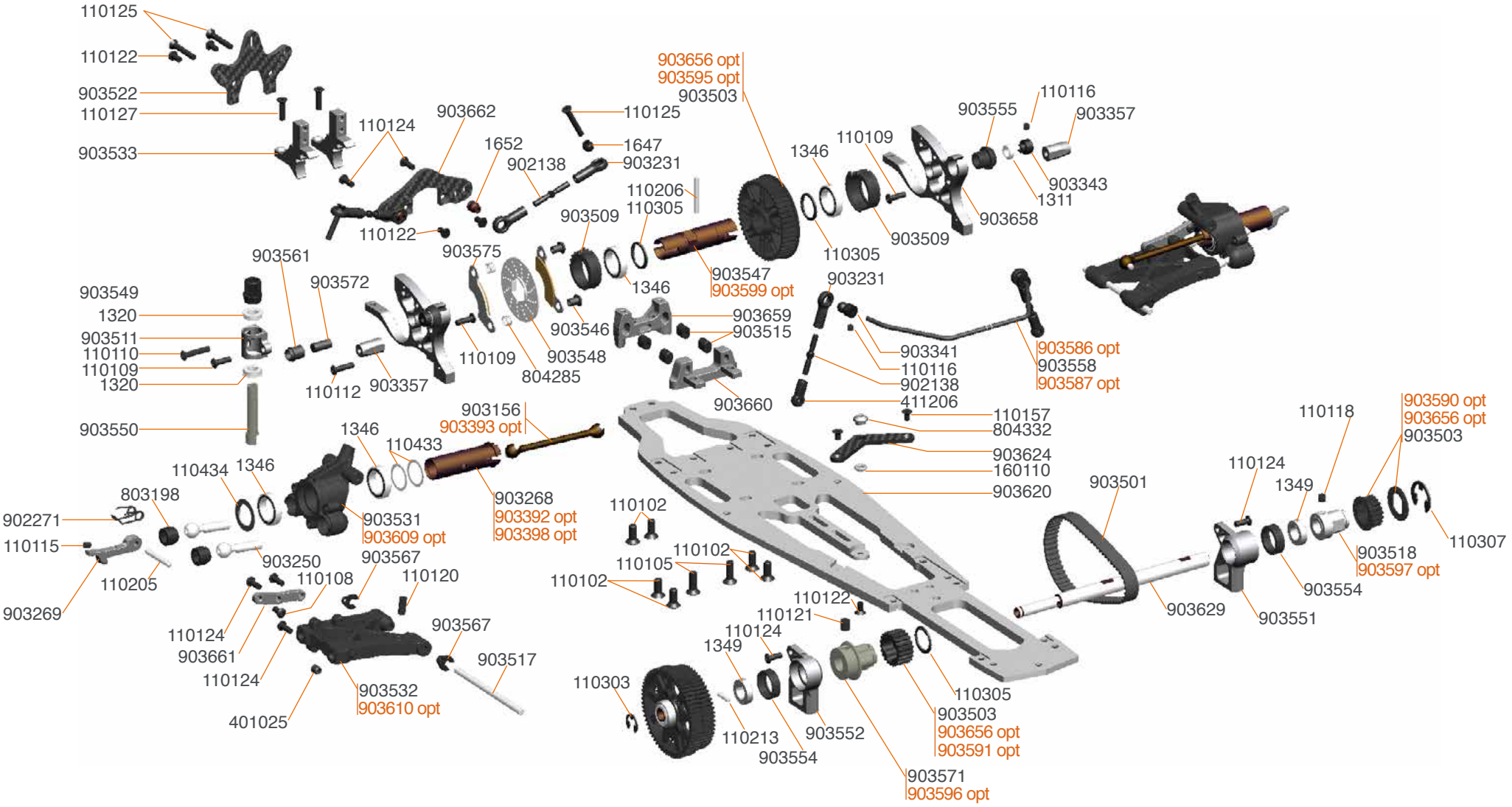
SHOCKS EXPLODED VIEW



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)

OPT

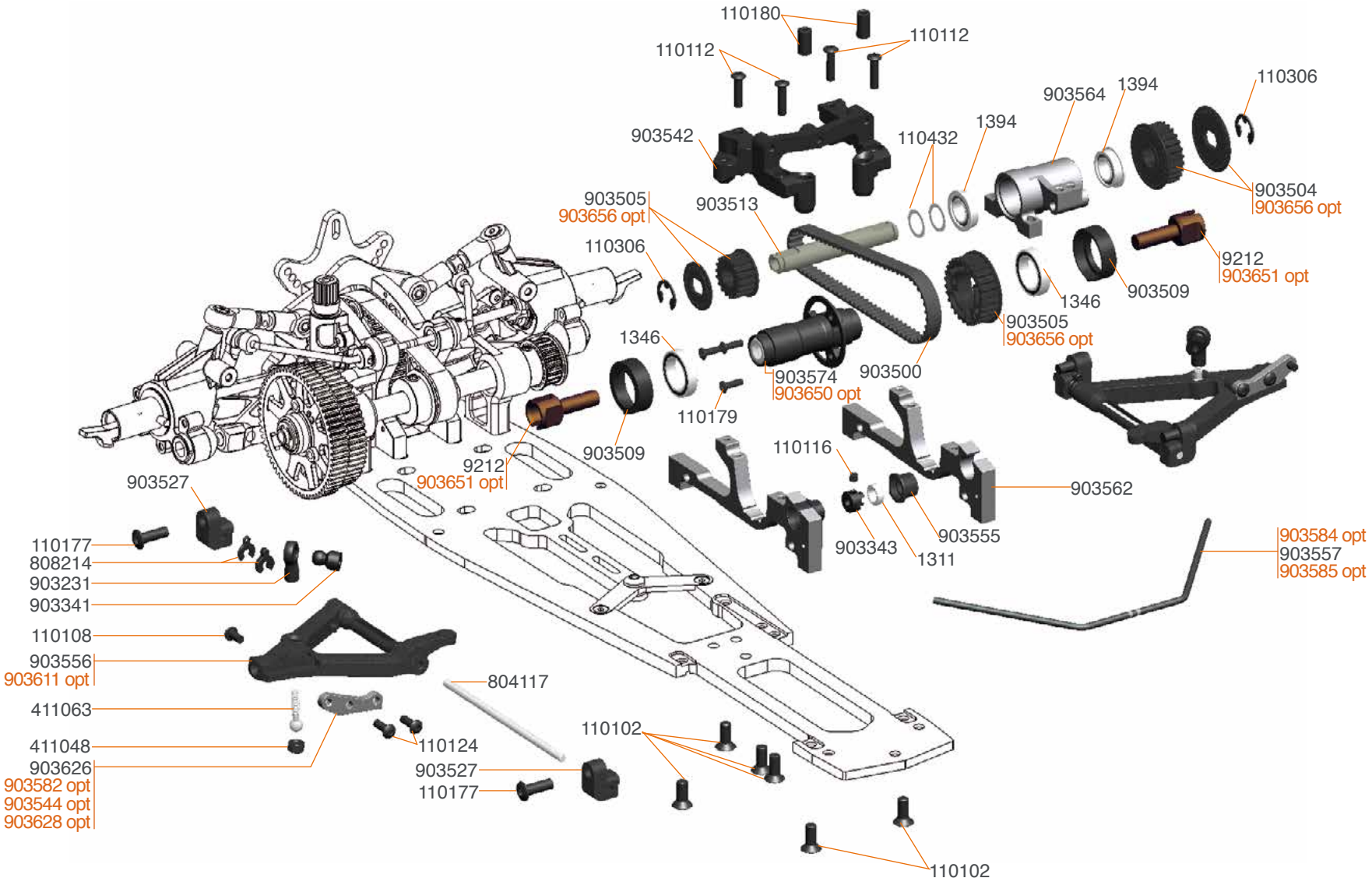
REAR EXPLODED VIEW



OPT

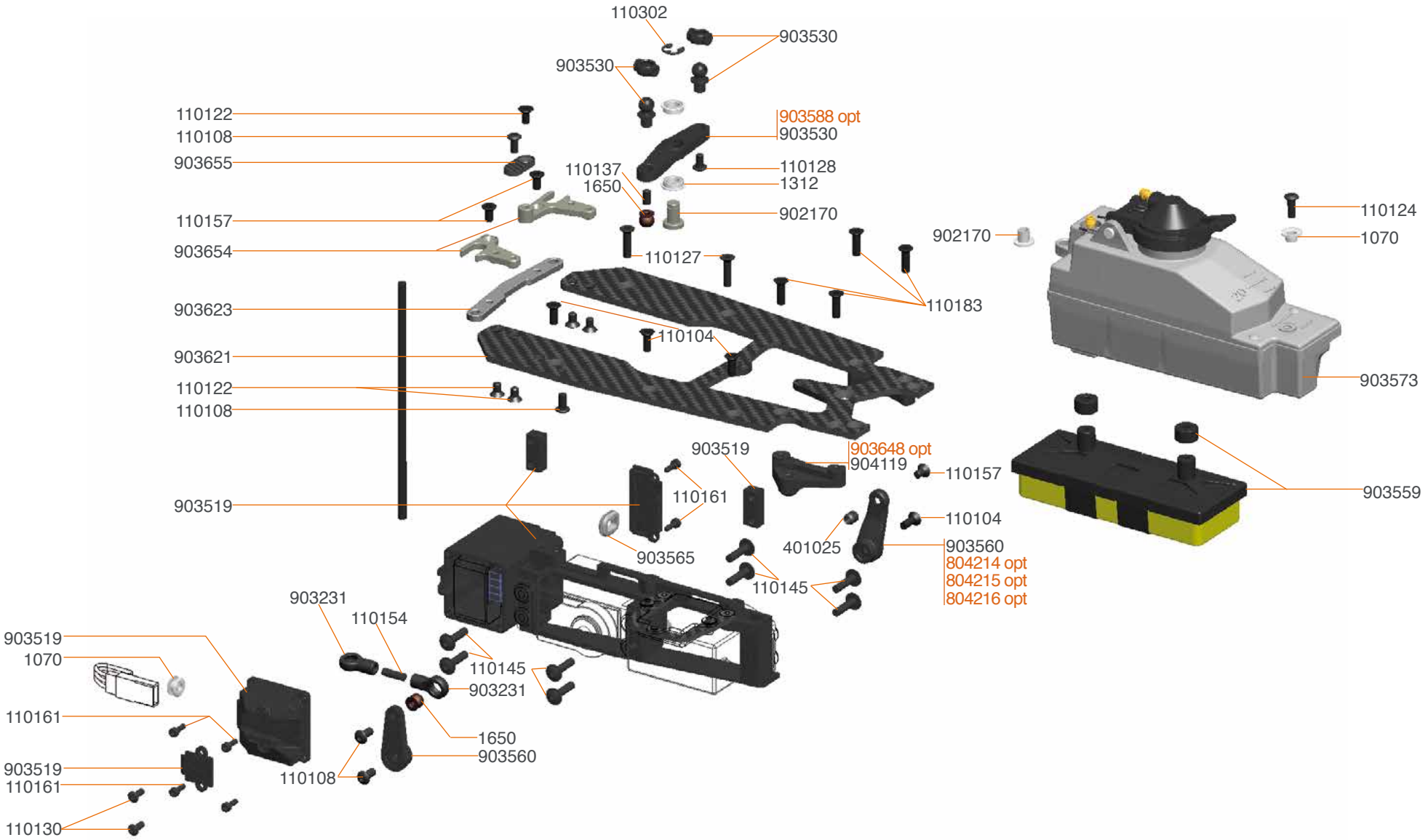
903391 Wheel-axle set CVD RR (2)
903392 Wheel-axle CVD RR (2)
903393 Rear driveshaft cvd (2)
903398 Rear wheelaxle cvd alu (2)
903586 Antiroll bar RR soft
903587 Antiroll bar RR hard
903590 Pulley 2-sp axle 19T alu
903591 Pulley 2-sp axle 21T alu
903599 Solid axle RR light
903595 Pulley rear axle 48T 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 (6)

FRONT I EXPLODED VIEW



OPT

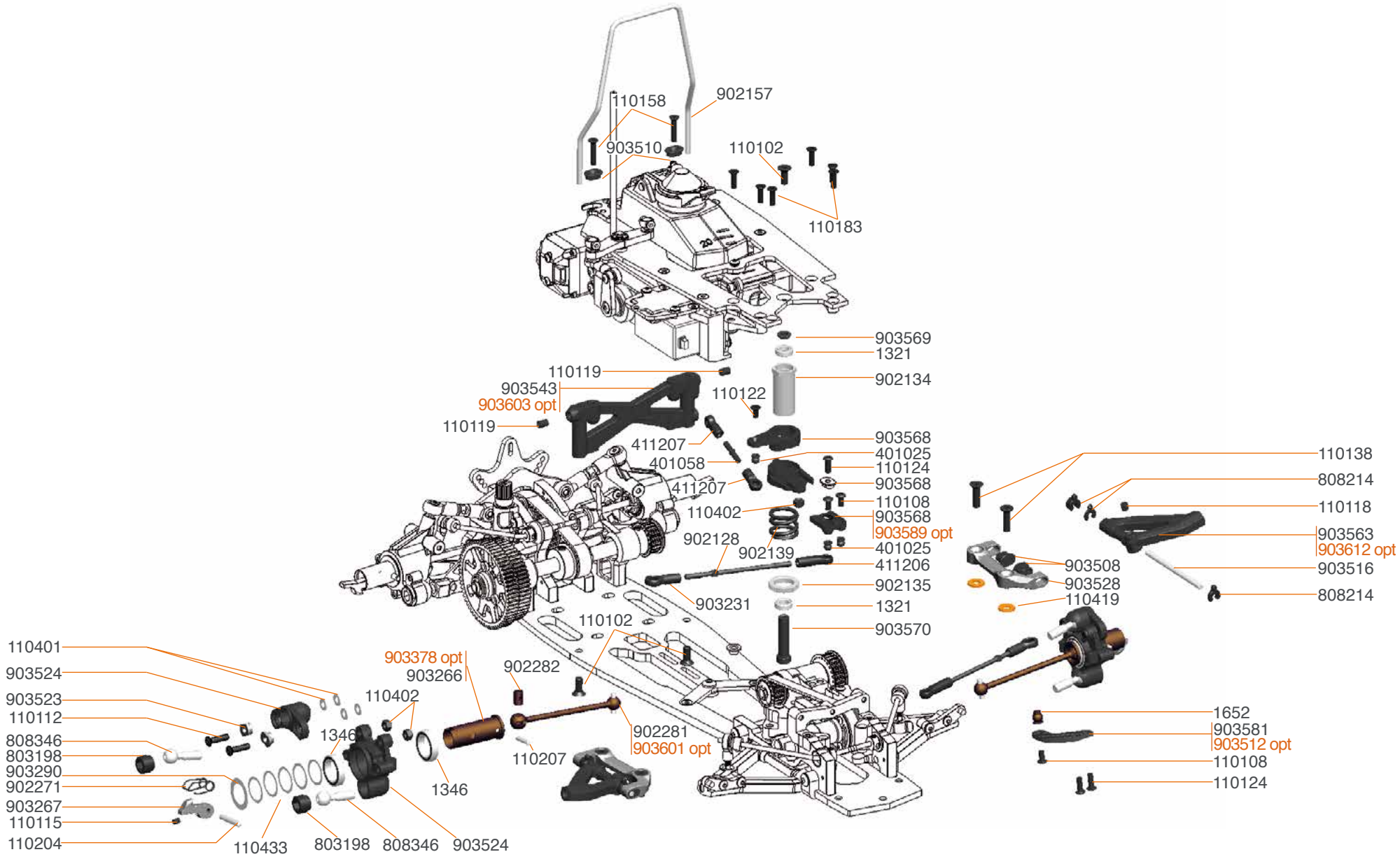
903584 Antiroll bar FR soft
903585 Antiroll bar FR hard
903628 Shock extension bracket FR wide carbon (2)
903544 Shock extension bracket FR alu (2)
903582 Shock extension bracket FR carbon (2)
903611 Wishbone FR lw L+R hard
903650 Oneway front axle Hard anodized
903651 Inner driveshaft adapter light
903656 Pulley set low friction 977 (6)



OPT

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

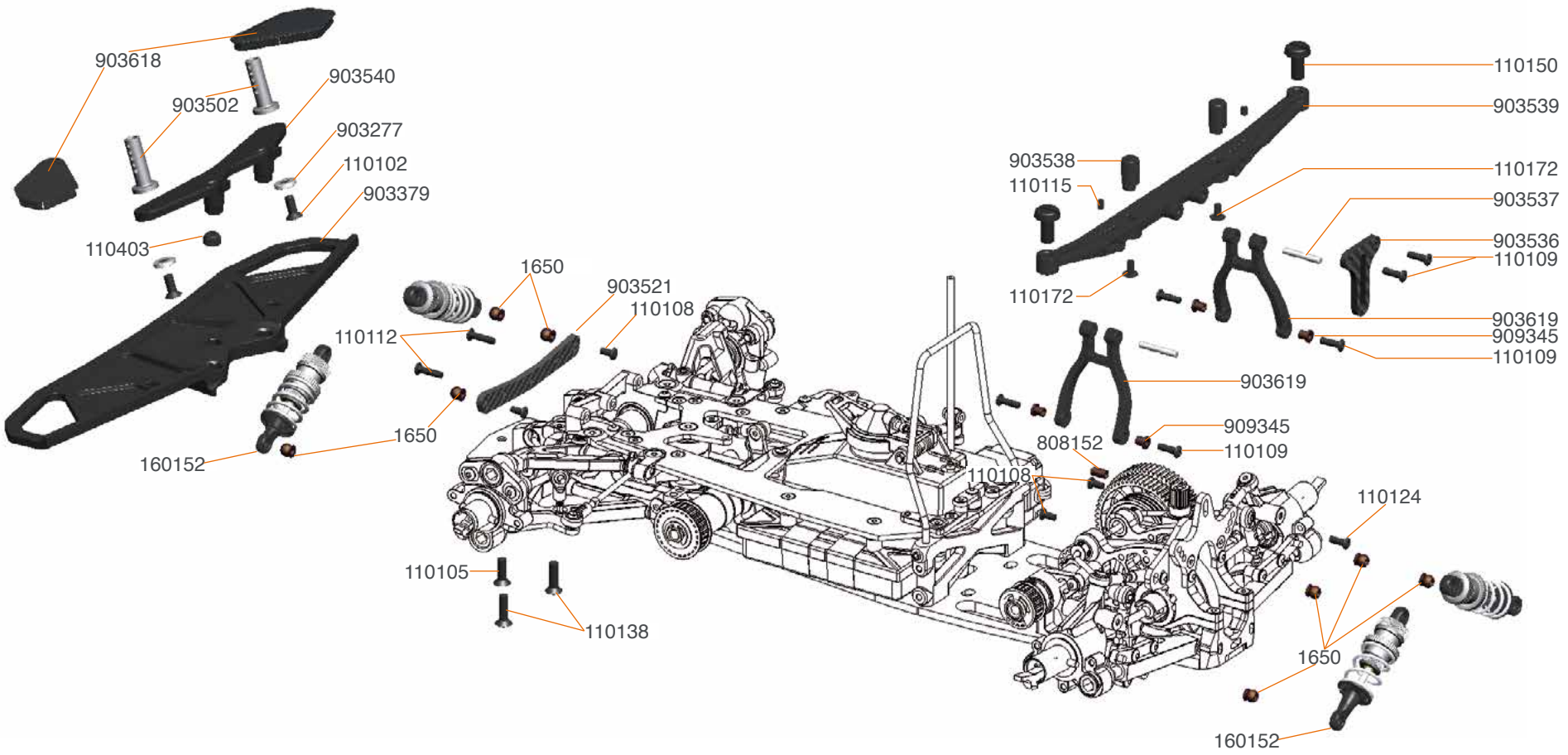
FRONT II EXPLODED VIEW



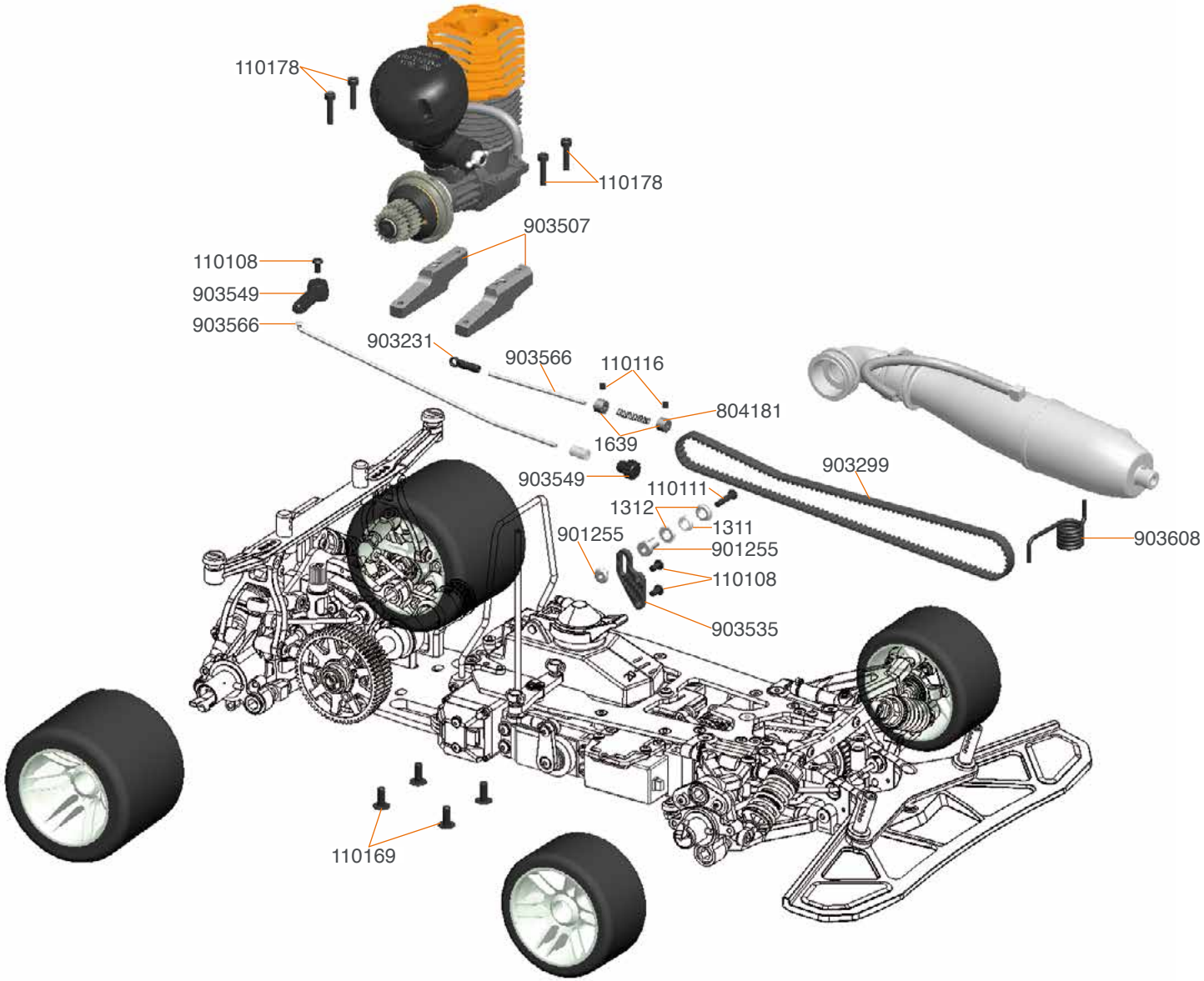
OPT

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



FINAL ASSEMBLY EXPLODED VIEW



TEAM SERPENT NETWORK

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

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

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977 EVO 2 VIPER

GP

1/8 scale

Serpent

Manual 977 EVO 2 #57288 1