

SERPENT
INNOVATIONS



**INSTRUCTION
MANUAL**

1/10 scale onroad

750
EVO

INTRODUCTION

Thank you very much for selecting this Serpent rc car and thus become a member of the ever growing worldwide Serpent racing family. Serpent started in 1980 and has been growing its product-line and fan-base ever since.

The Serpent Matrix 750 EVO is a state of the art gaspowered 1/10 scale onroad racing car. The assembly manual will guide you through all the steps to complete the car, so you can hit the track with a good base-set-up soonest. The Serpent design department succeeded to create a superbly performing car combined with ease of assembly and maintenance. The high quality standards of all parts and hardware will make racing your Serpent car a very rewarding activity !

Through our team, website and social media we will keep you up-to-date on all developments of the Serpent cars. We hope to meet you on the track and through our various media!
Enjoy the drive !

Team Serpent
Multiple World Champions

INSTRUCTIONS

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

PLASTIC PARTS

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

SETUP

In certain assembly steps you need to make basic adjustments, which will give you a good initial setup for your Serpent Matrix 750 EVO. Fine-tuning the initial setup is an essential part of building a high-performance racecar like your Serpent Matrix 750 EVO.

EXPLODED VIEWS AND PARTS LIST

The exploded views and parts lists for the Serpent Matrix 750 EVO 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. Part numbers in orange indicates that this part is an optional. Optionals part names and numbers are showed below.

CUSTOMER SERVICE

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

SAFETY

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

READ THIS FIRST!

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

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750
EVO

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 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 applying 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.

FRONT DIFF ASSEMBLY



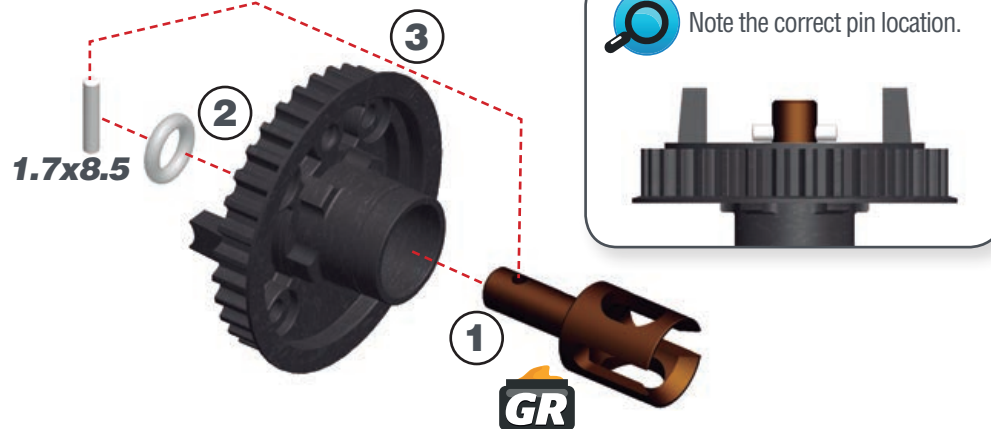
STEP 1

FRONT DIFF BAG

1.1



1.2



1.75x8.5

STEP 2

2.1

Add just enough oil to cover the large gear before assembling the small satellite gears and cross pins.

For the correct cst value please check the default setupsheet.

SO



2.2



4x10x0.2

STEP 3

3.1



Fill the differential with silicone oil 1 mm above the crosspin, do NOT overfill. For the correct cst value please check the default setupsheet.



3.2



Add the big gear.



STEP 4



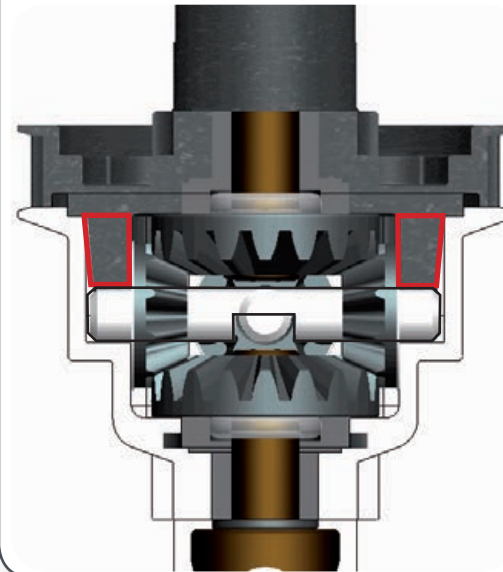
Mount the diff top-case on the lower case, make sure to follow below Detail View, and tighten the screws.

M2.5x10



HOW TO CLOSE THE FRONT DIFF

The front diff top case has two protrusions (see below picture in red) to hold the gear/diff shafts in the correct position. The two protrusions press on the upper shaft and thus secure the shafts in position.



1- Allow the excess of oil to escape through the escape hole.

2- Close the hole with the 3x3 setscrew. Tighten carefully.

3- In case the diff feels too hard remove the M3x3 set screw and let some oil escape and close again. Tighten carefully.

M3x3



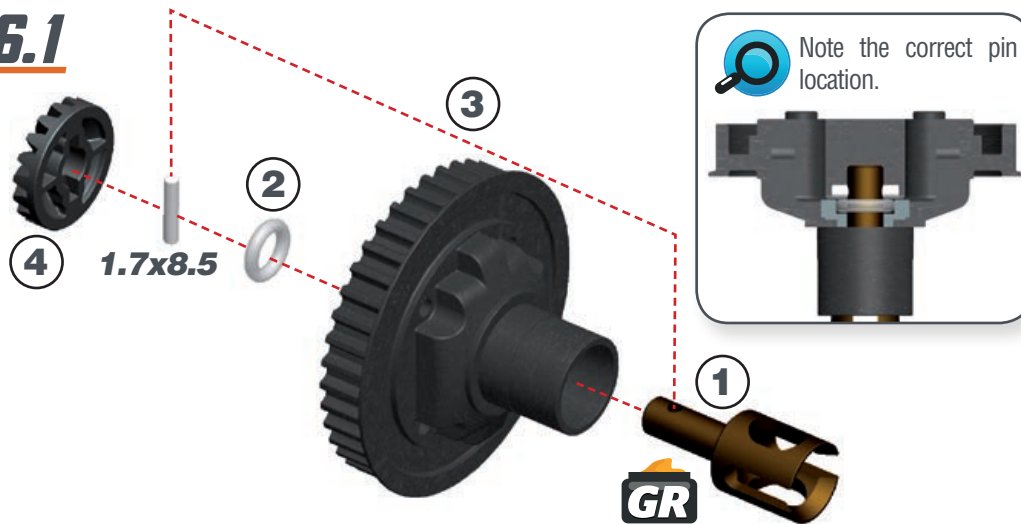
REAR DIFF ASSEMBLY



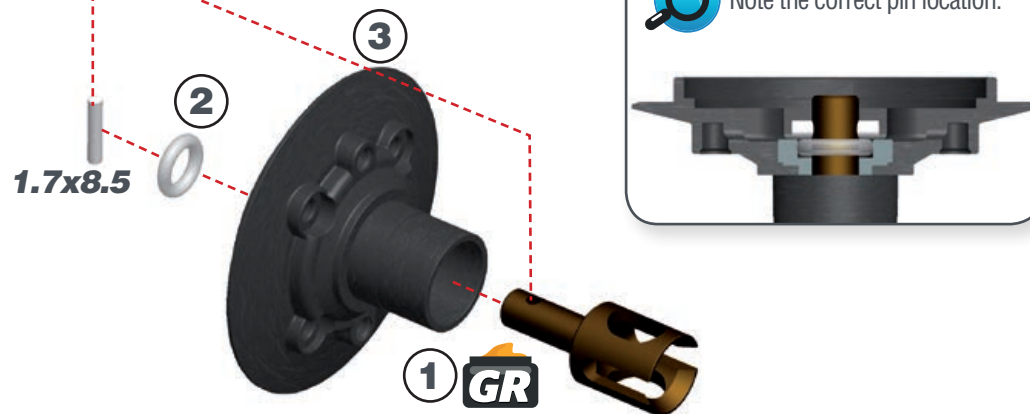
STEP 6

REAR DIFF BAG

6.1



6.2



1.75x8.5

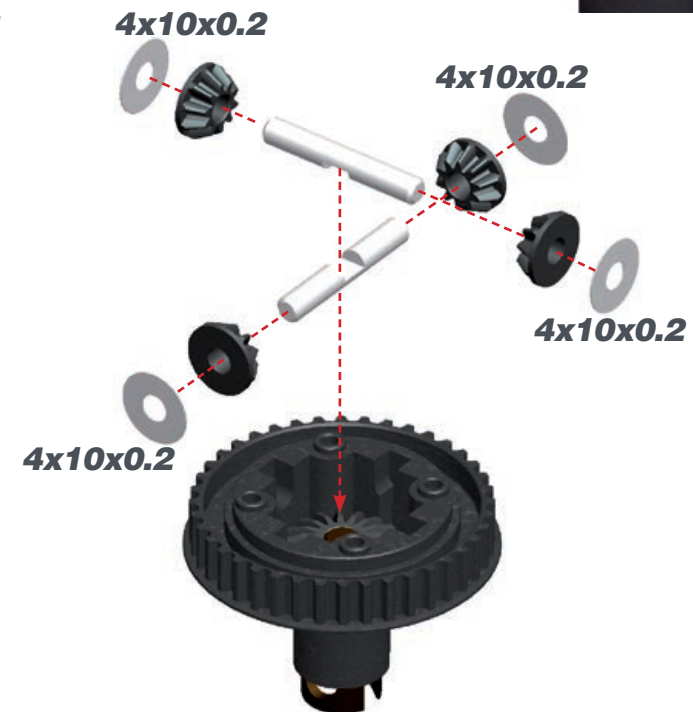
STEP 7

7.1

Add just enough oil to cover the large gear before assembling the small satellite gears and cross pins.

For the correct cst value please check the default setupsheet.

7.2



4x10x0.2

STEP 8

8.1

- ! Fill the differential with silicone oil 1 mm above the crosspin, do NOT overfill. For the correct cst value please check the default setupsheet.

SO



8.2

- ! Add the big gear.



STEP 9

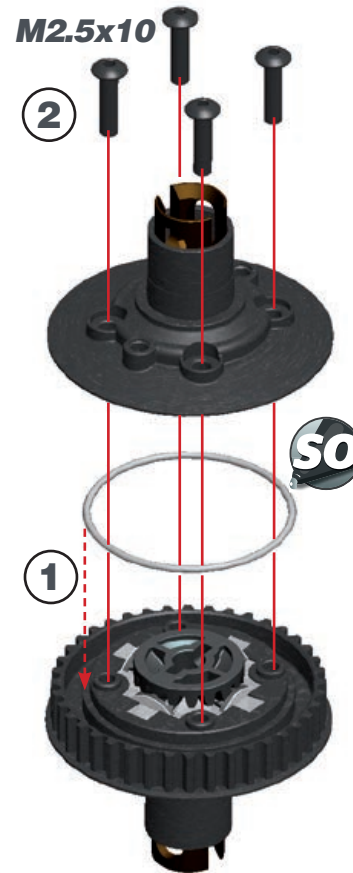


- 1- Fit the o-ring (see detail view picture in yellow) in the slot of the bottom case using some silicone oil to hold it in position.

- 2- Mount the diff top-case on the lower case, make sure to follow below Detail View, and tighten the screws.

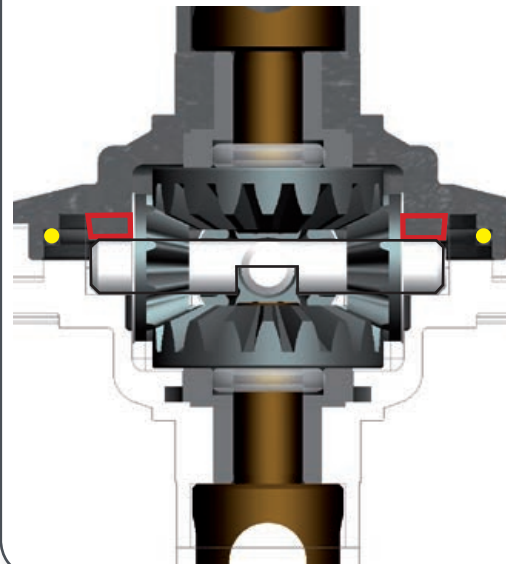
M2.5x10

2



HOW TO CLOSE THE REAR DIFF

The rear diff top case has two protrusions (see below picture in red) to hold the geardiff shafts in the correct position. The protrusion should hold the upper shaft as it will hold the bottom shaft.



M2.5x10

STEP 10

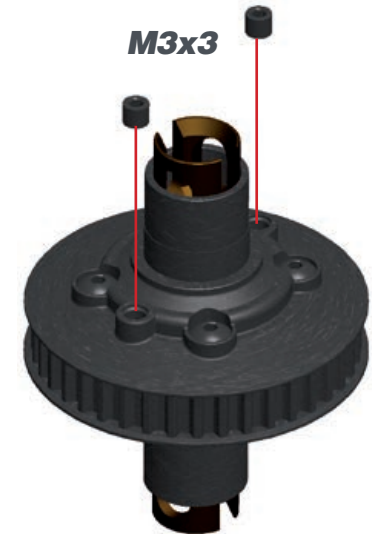


- 1- Allow the excess of oil to escape through the escape holes.

- 2- Close the holes with the 3x3 setscrews. Tighten carefully.

- 3- In case the diff feels too hard remove the M3x3 setscrews and let some oil escape and close again. Tighten carefully.

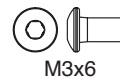
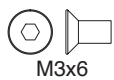
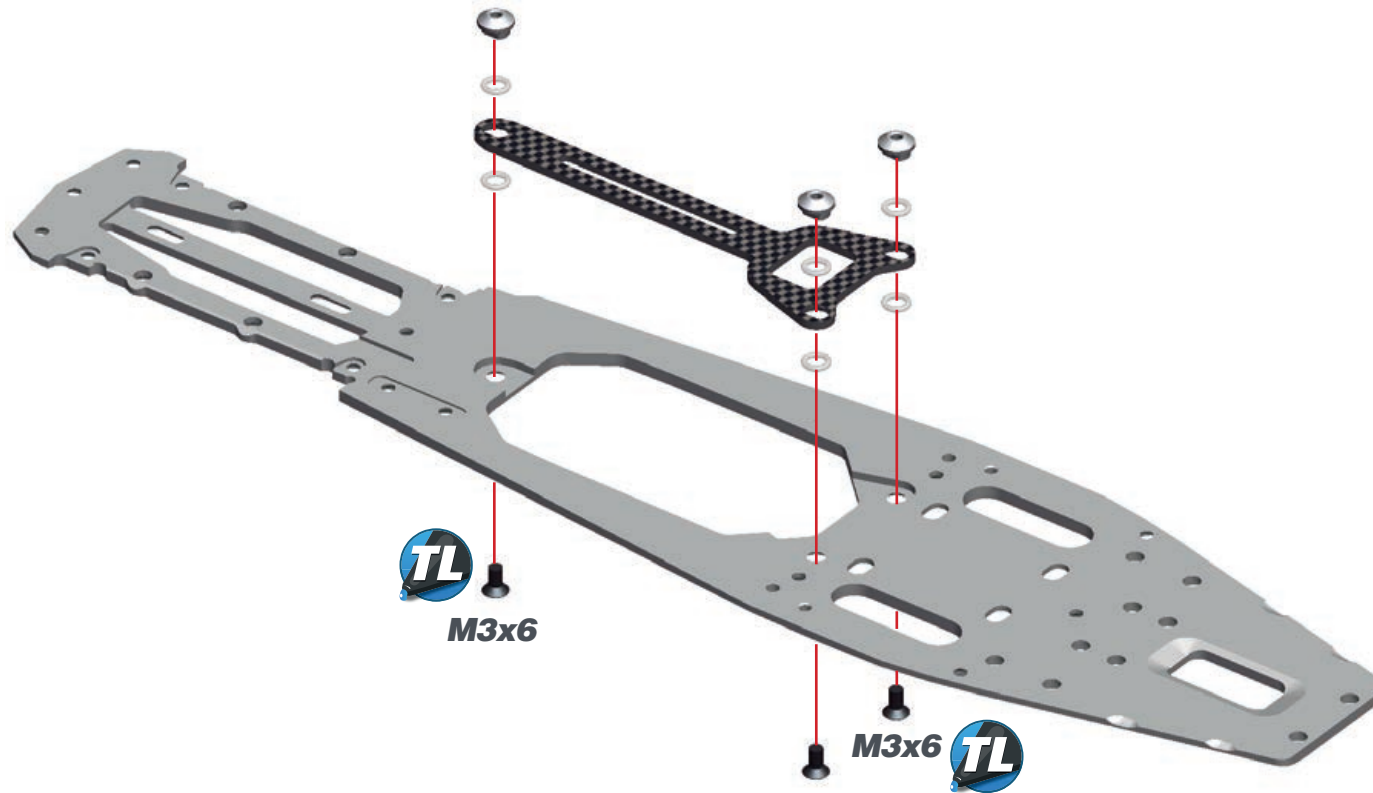
M3x3



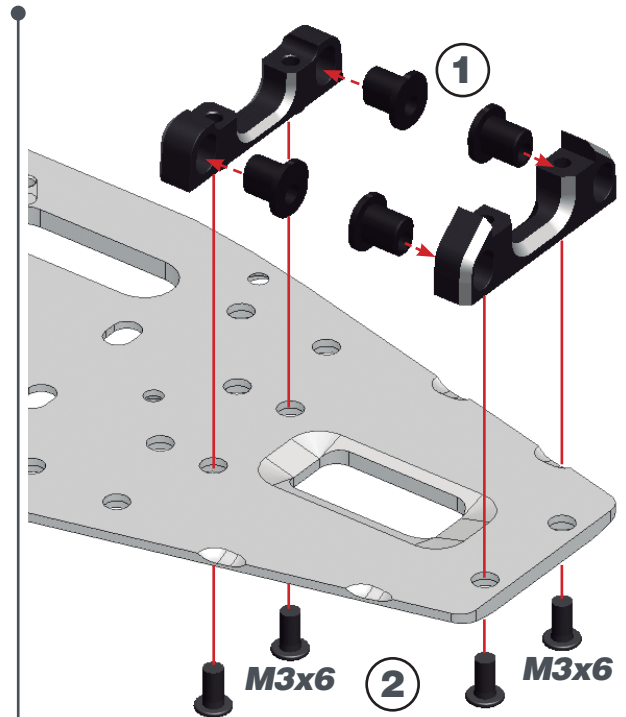
M3x3

STEP 11

BAG 1

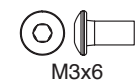


STEP 12



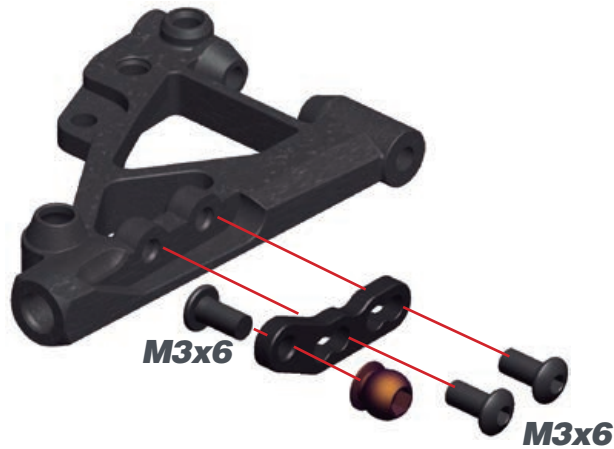
L=R REAR ROLL CENTER INSERTS CHART

REAR REAR		REAR FRONT	
DEF. SETUP		DEF. SETUP	



STEP 13

13.1 L=R



L=R

REAR LOWER SUSPENSION AND SHOCK BRACKETS

Serpent 7XX has two rear lower suspension brackets, NARROW (default) and WIDE. On the other hand the shock bracket has two different positions on the rear wishbone, INNER and OUTER. When the WIDE suspension bracket will be used the shock bracket should be used in the inner position to keep the shock's angle.

SUSPENSION BRACKET

NARROW



DEF.
SETUP

WIDE



OPT

SHOCK BRACKET

OUTER



DEF.
SETUP

INNER



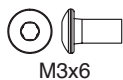
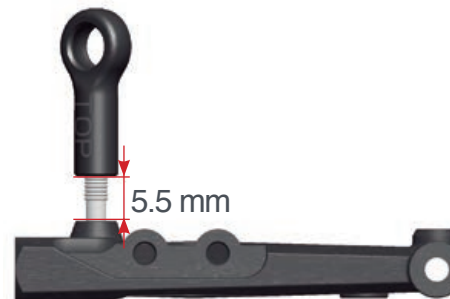
13.2



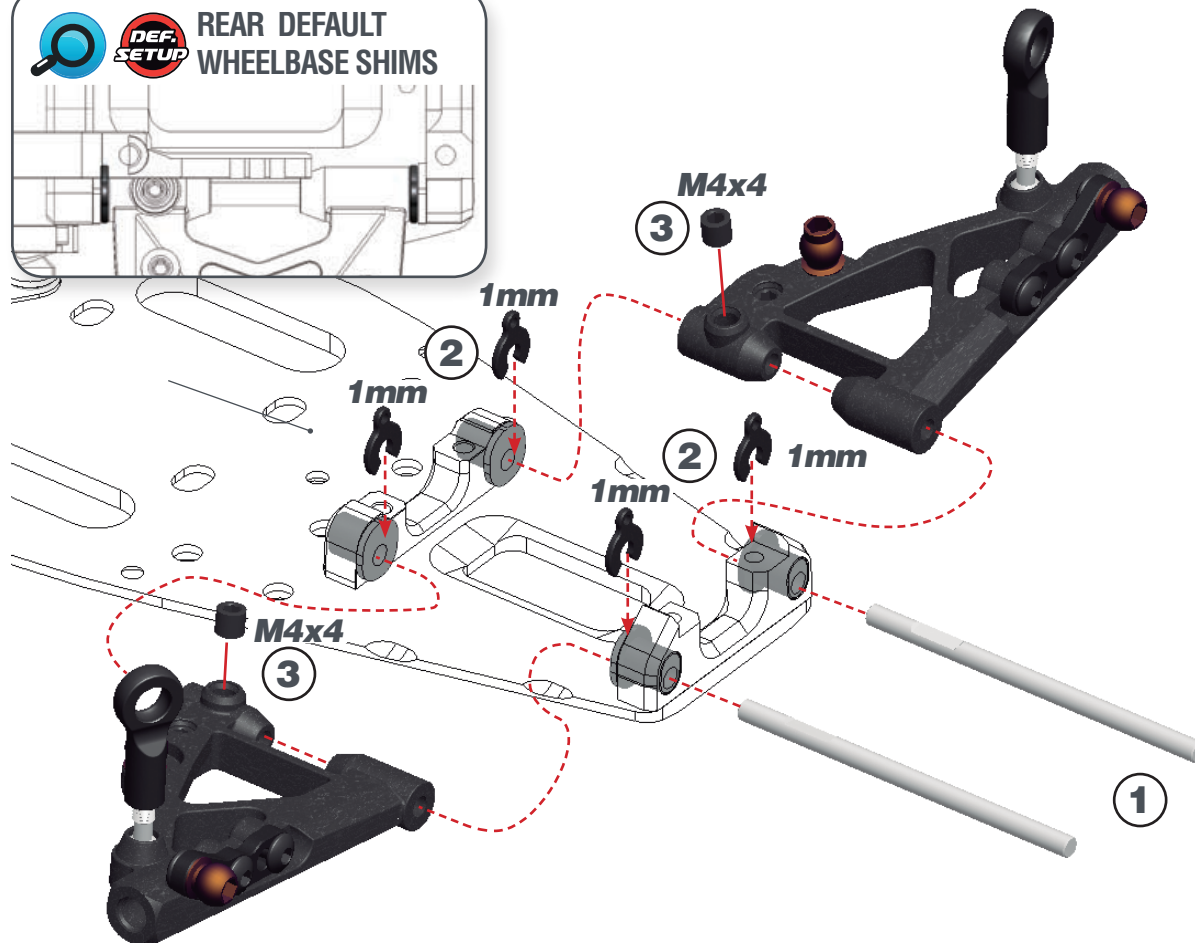
L=R

DEF.
SETUP

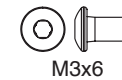
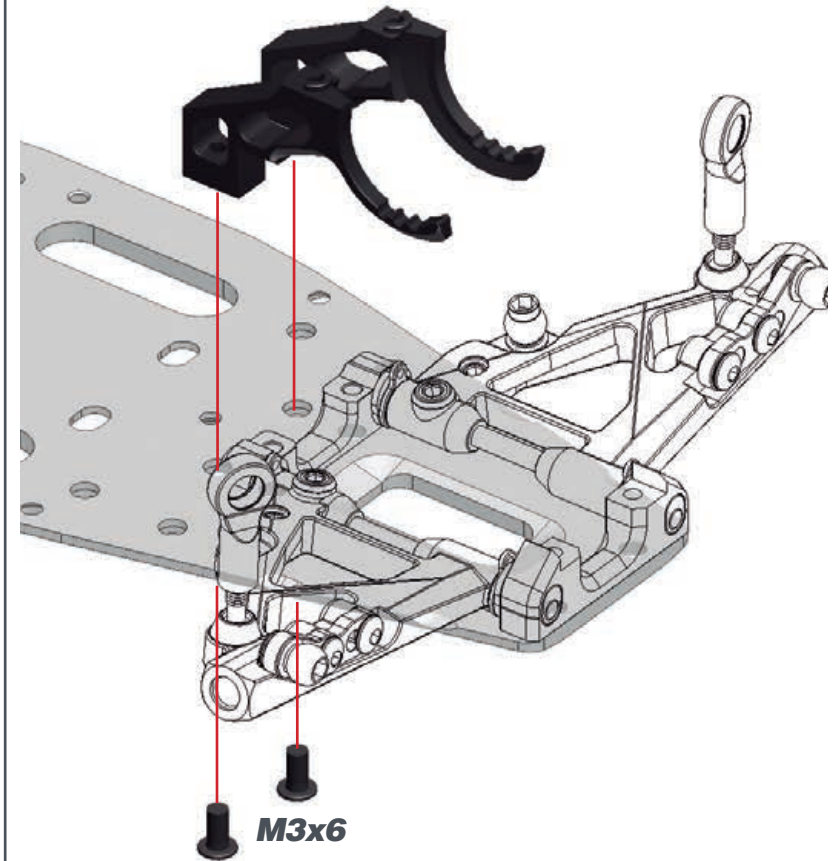
REAR ANTIROLL BAR ROD LENGTH



STEP 14



STEP 15 BAG 2

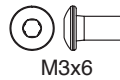
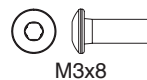
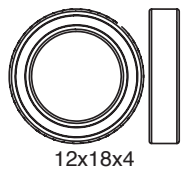
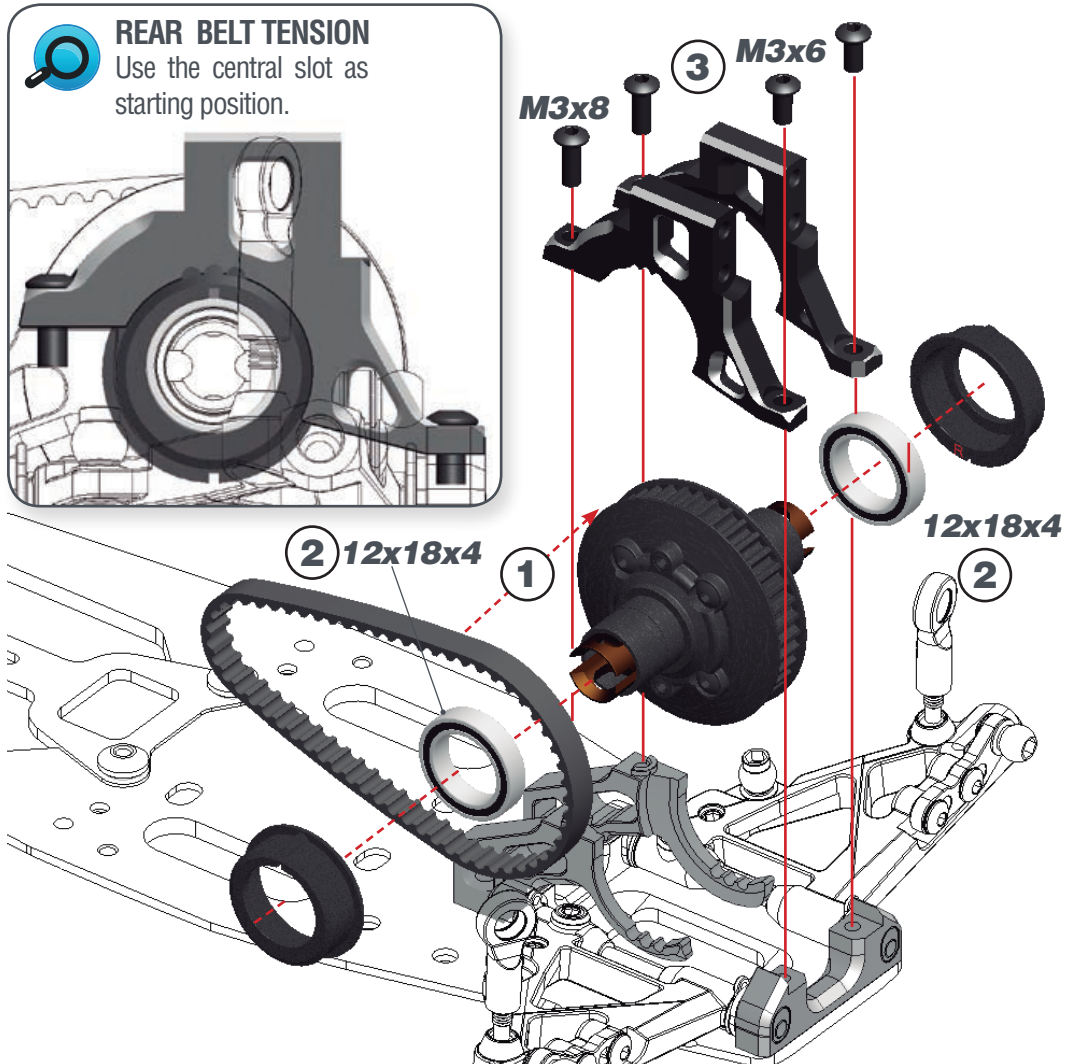


STEP 16



REAR BELT TENSION

Use the central slot as starting position.



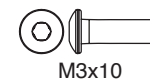
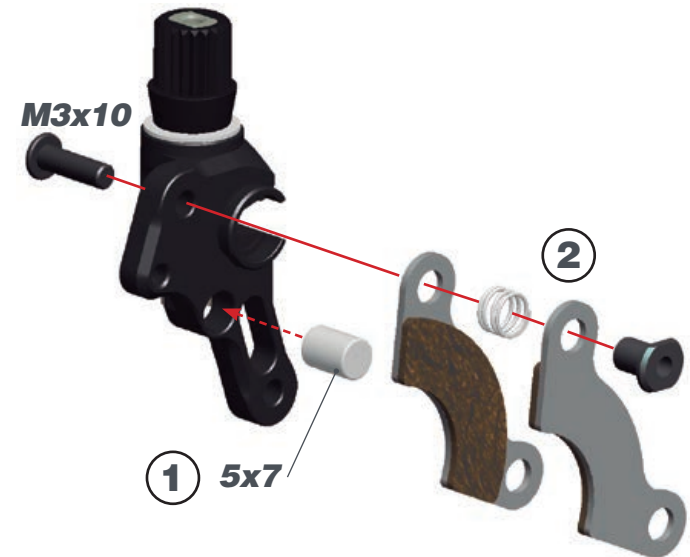
STEP 17

BAG 3

17.1



17.2



STEP 18

18.1

M3x8

③

M3x12

②

①

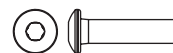
⚠ After tightening the M3x12 screw check that the brake pads slide easy over the bushings.

18.2

M3x6

M3x6

M3x6



M3x12



M3x8



M3x6

STEP 19

19.1

5X8X2.5

19.2

③ M3x3

② M3x3

①

② M3x3



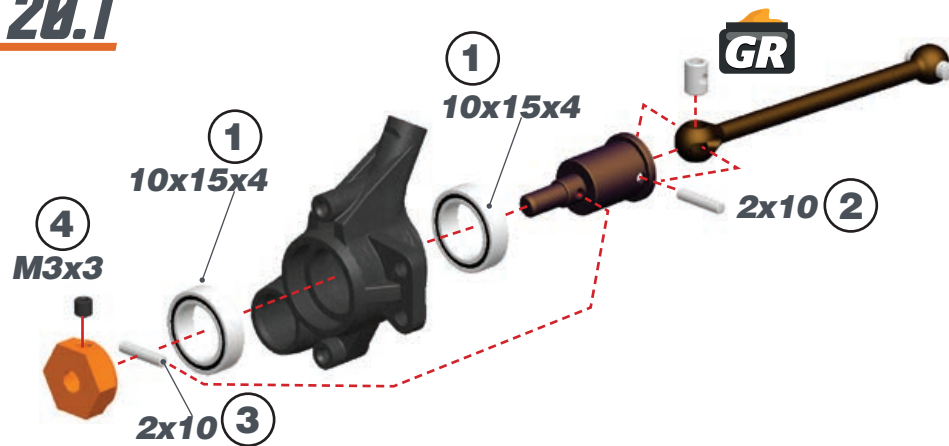
M3x3



5x8x2.5

STEP 20 BAG 4

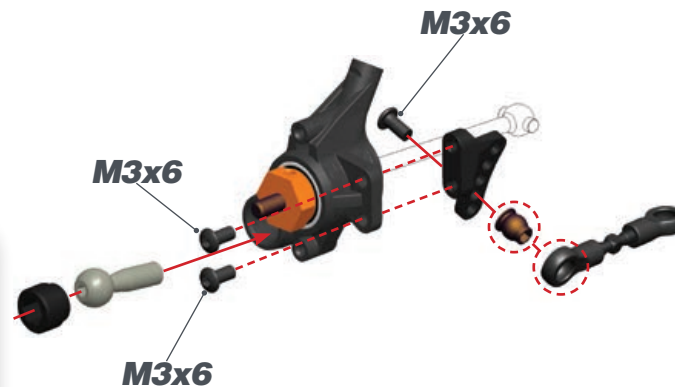
20.1



20.2

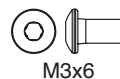
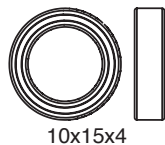
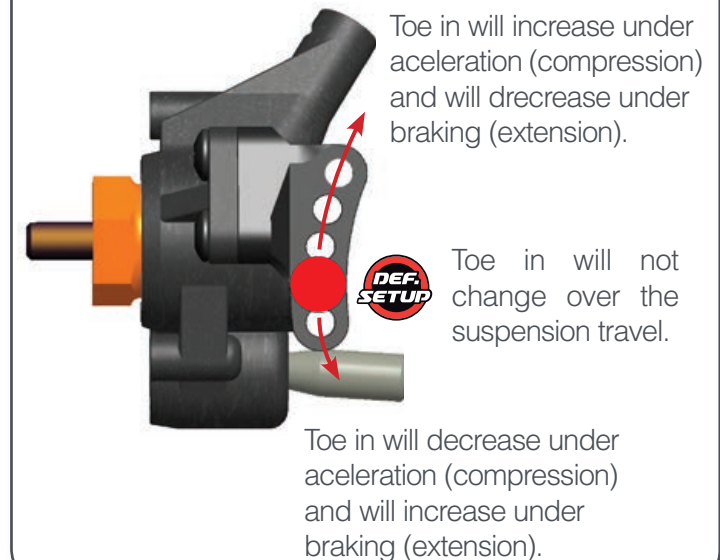


20.3

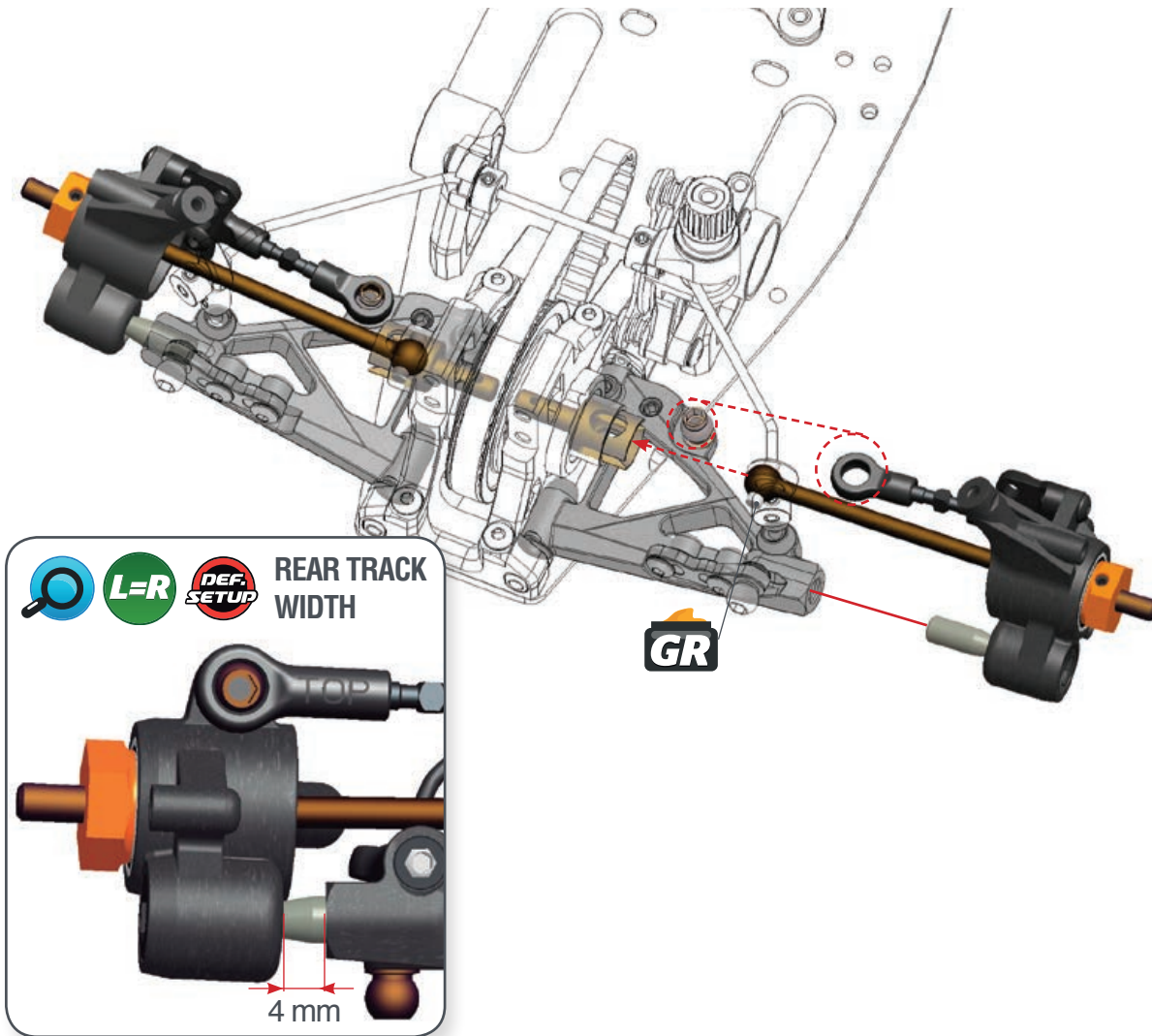


L=R REAR REACTIVE STEERING SYSTEM

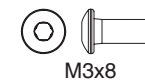
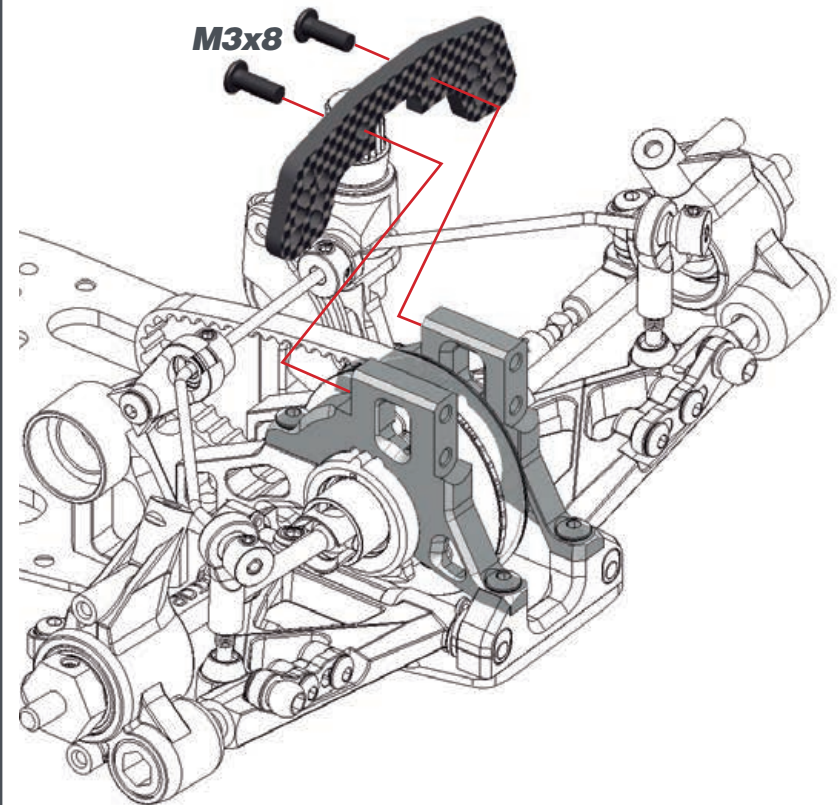
Serpent 750 EVO introduce the Active rear toe-in. It brings a new dimension to setup changing the toe-in characteristics of the rear tires under rolling effect. It allows to run less static toe-in and still have a good traction coming out of the corner. Serpent RRS System brings the possibility to fully adjust the amount of toe-change over the suspension travel even having the possibility of no toe-in change in droop and still have a toe-in raise under compression.



STEP 21



STEP 22 **BAG 5**

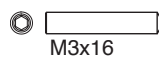
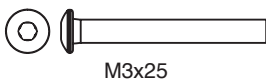
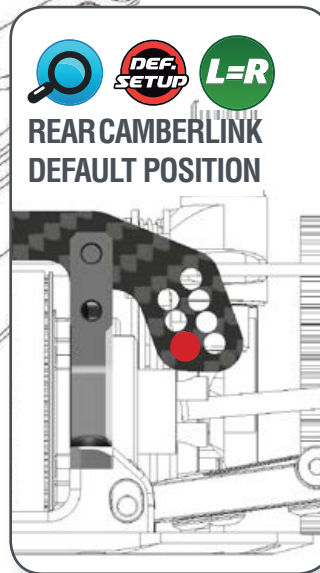
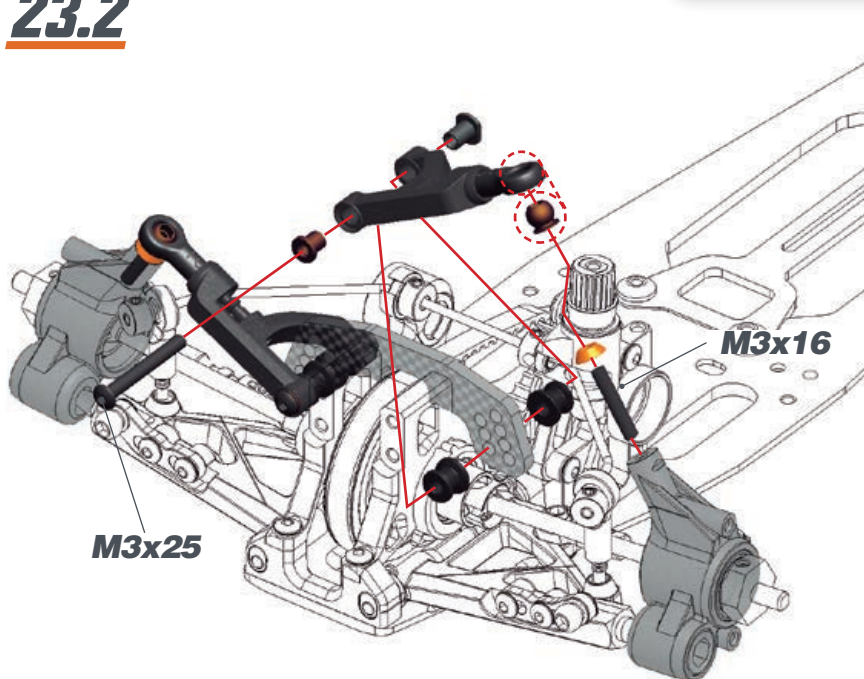


STEP 23

23.1

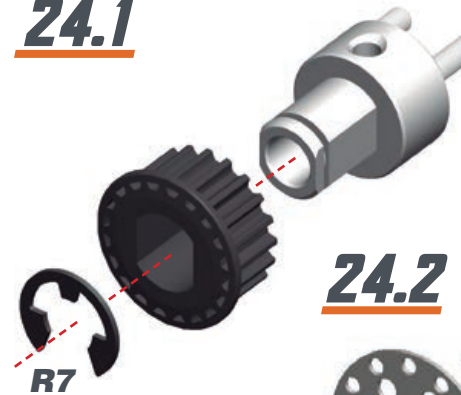


23.2

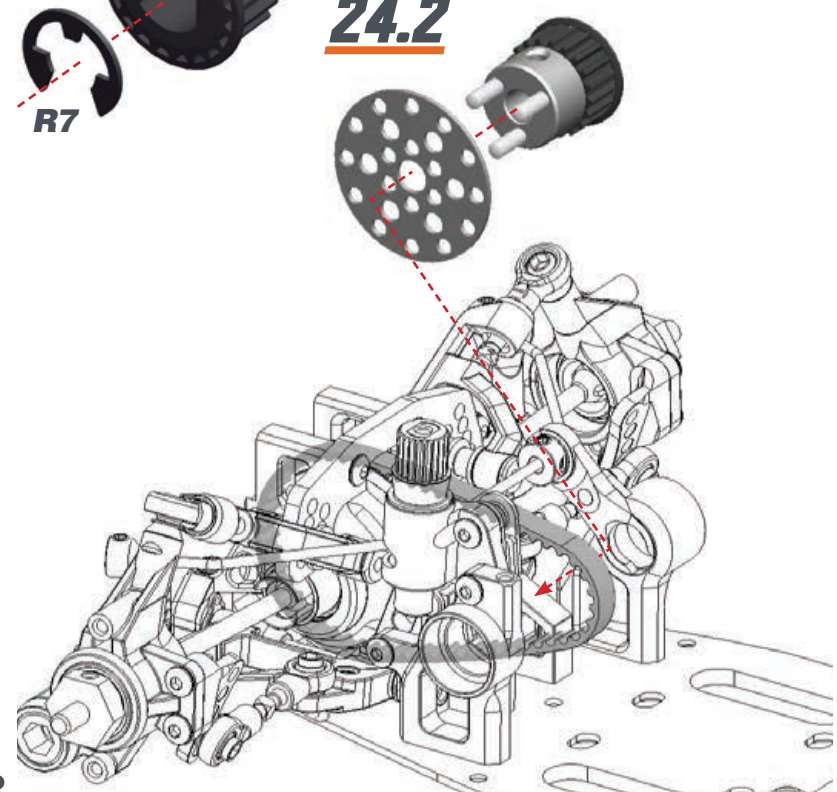


STEP 24 **BAG 6**

24.1

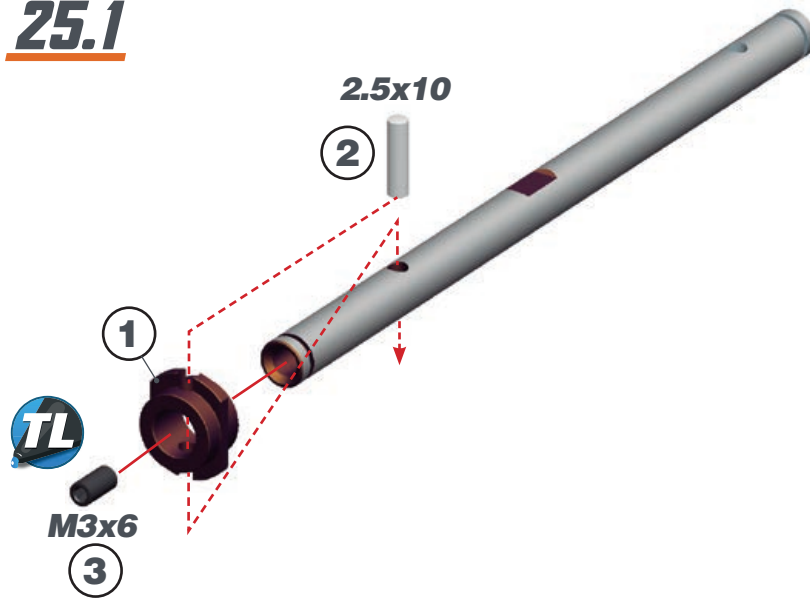


24.2

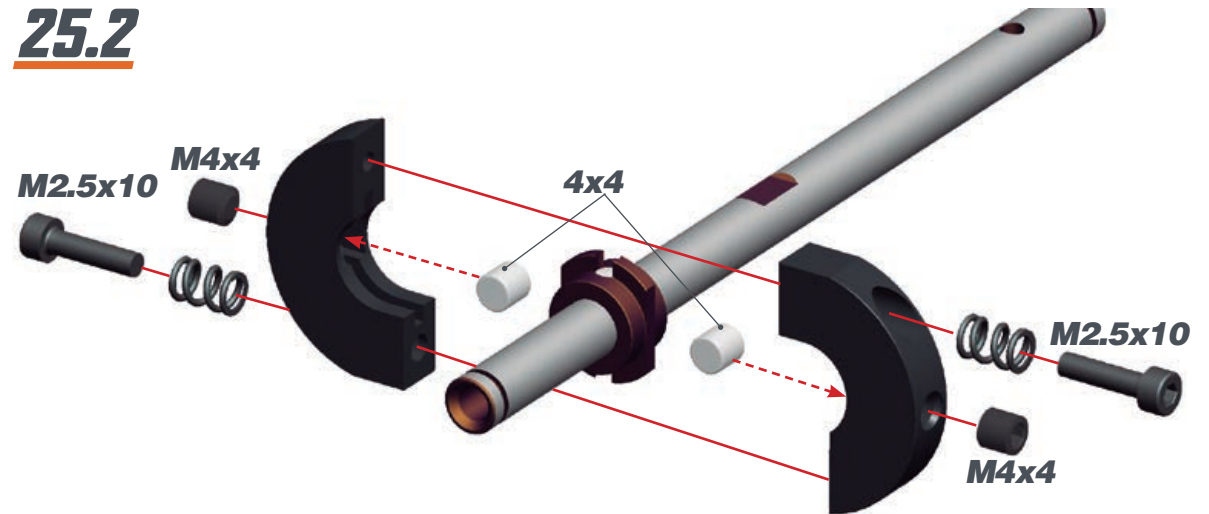


STEP 25

25.1

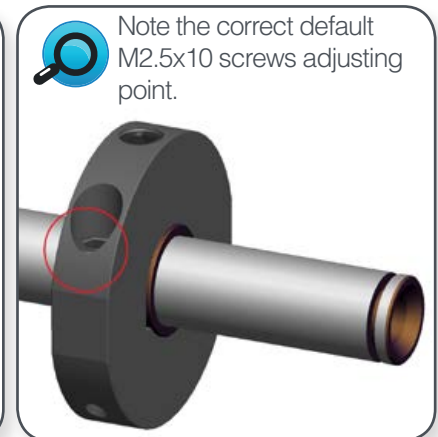
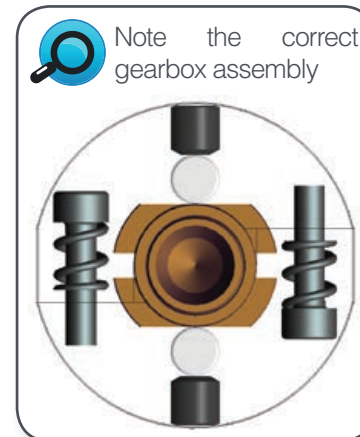


25.2

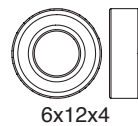
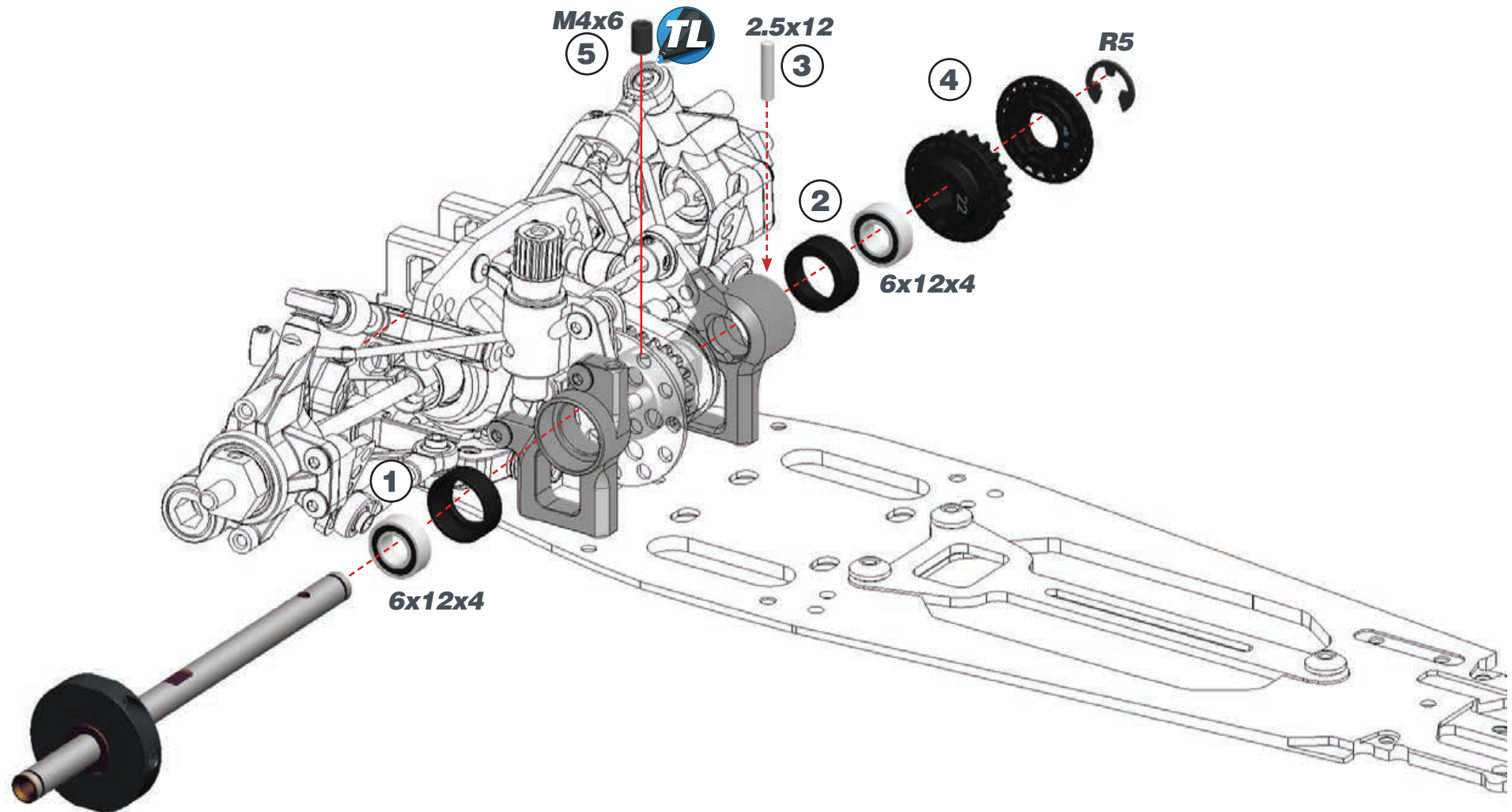


! 1- The M2.5x10 screws adjust the SHIFT POINT. As default adjustment screw them until the screws will be leveled with the hole as in the right pictures.

2- Adjust the M4x4 screw to minimise the gap between the shoes and the bell, but still spinning free without touching. Check after each run.



STEP 26

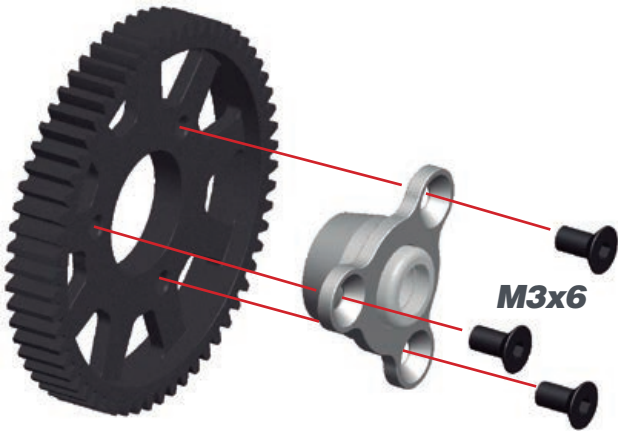


STEP 27

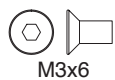
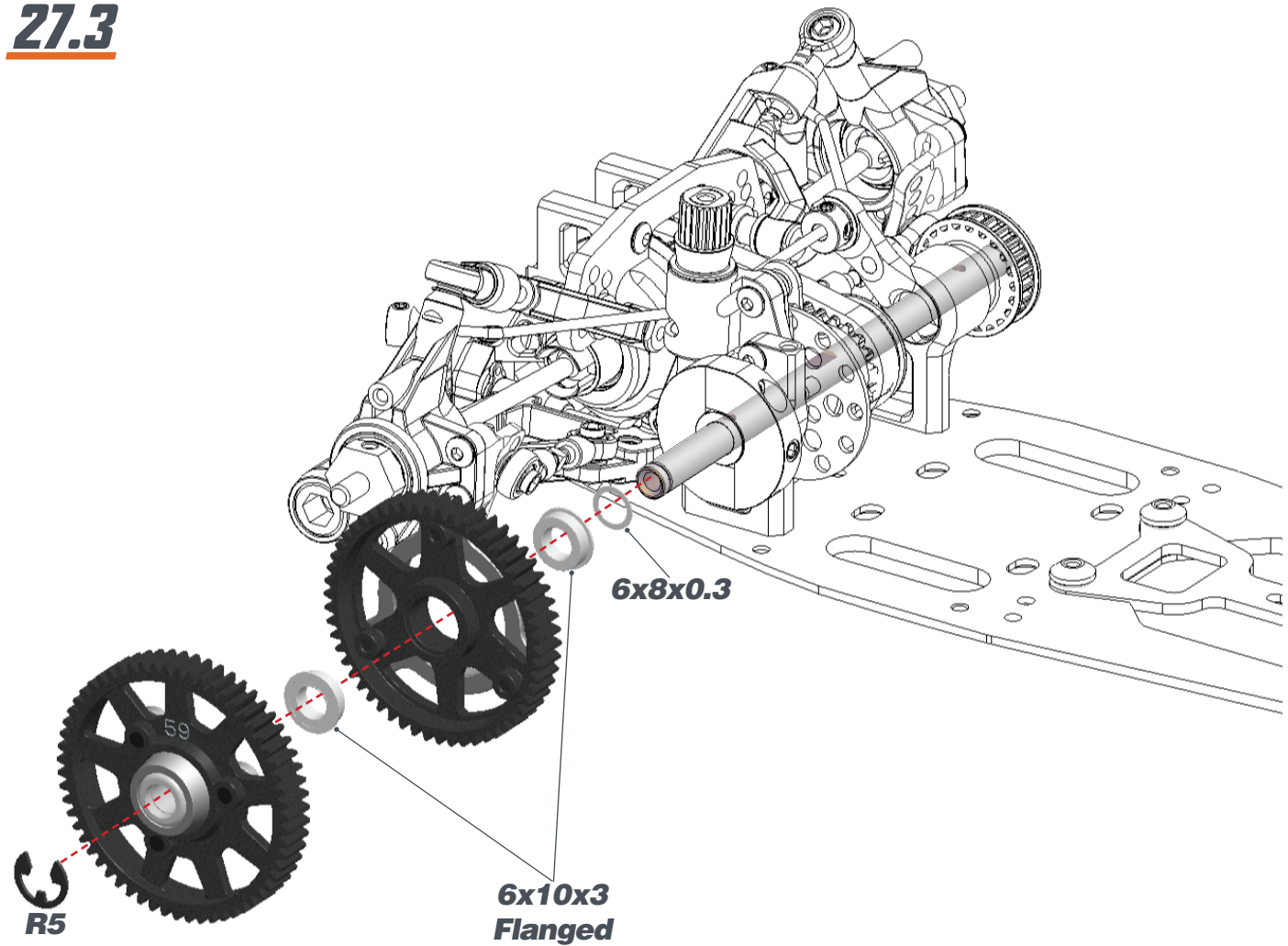
27.1



27.2



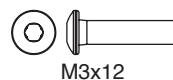
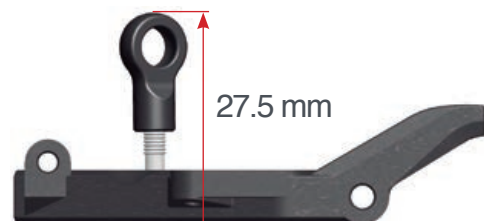
27.3



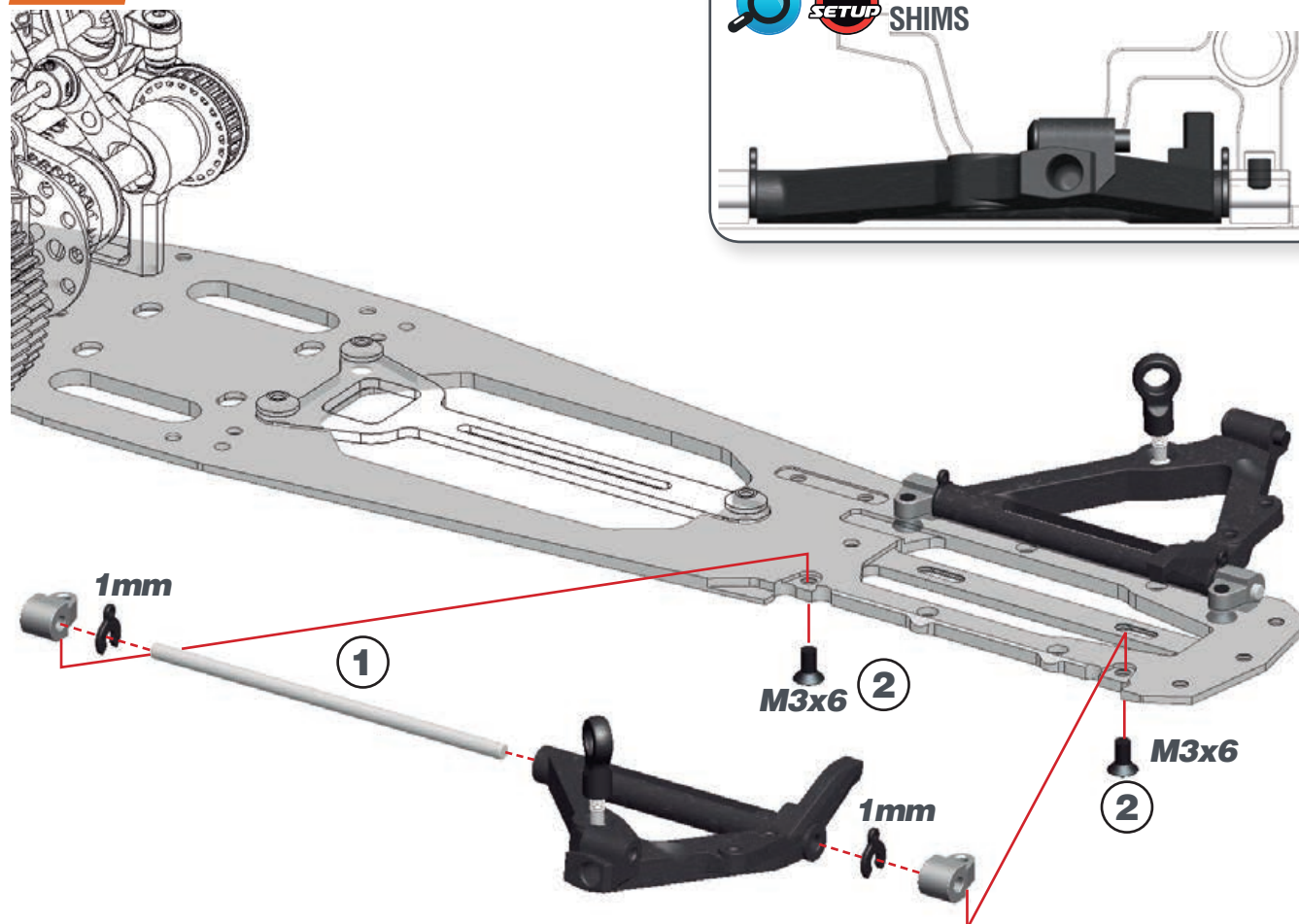
28.1 L=R



DEF. SETUP **L=R** FRONT ANTIROLL BAR ROD LENGTH



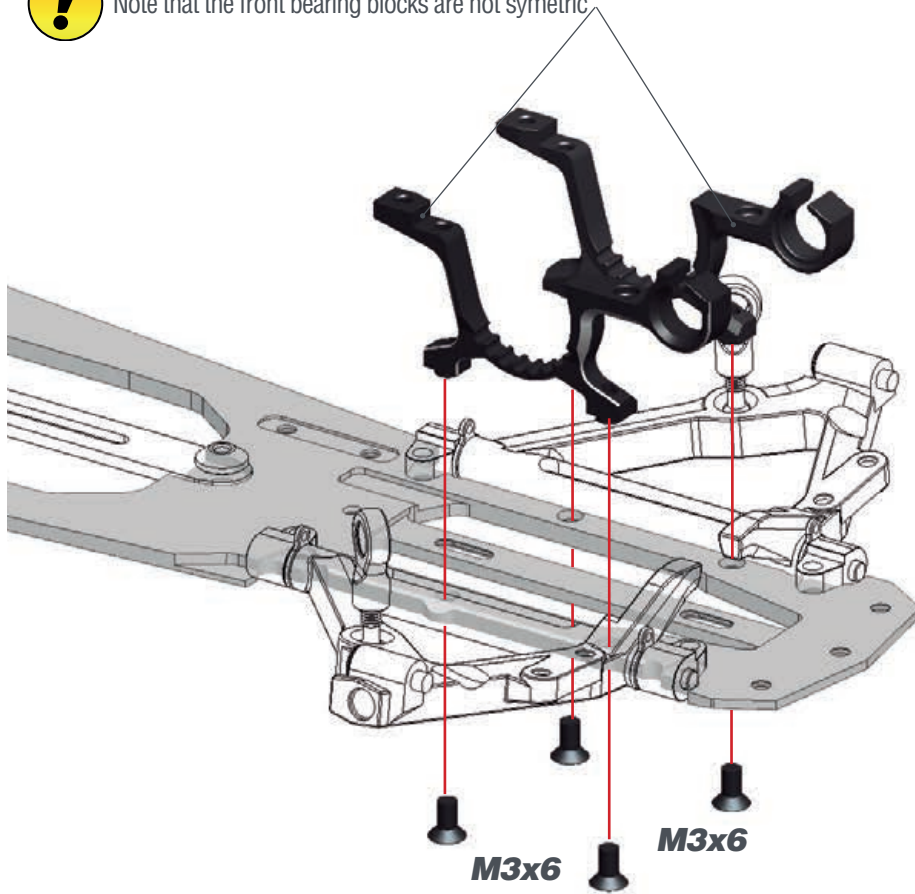
28.2



STEP 29

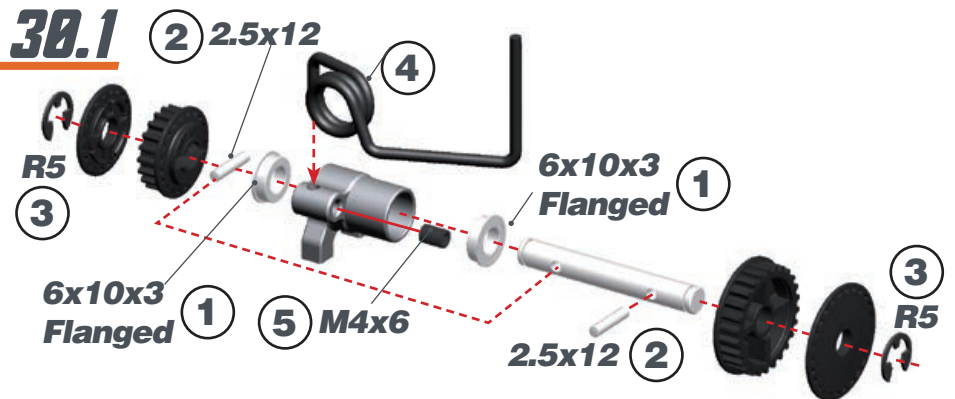


Note that the front bearing blocks are not symmetric

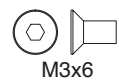
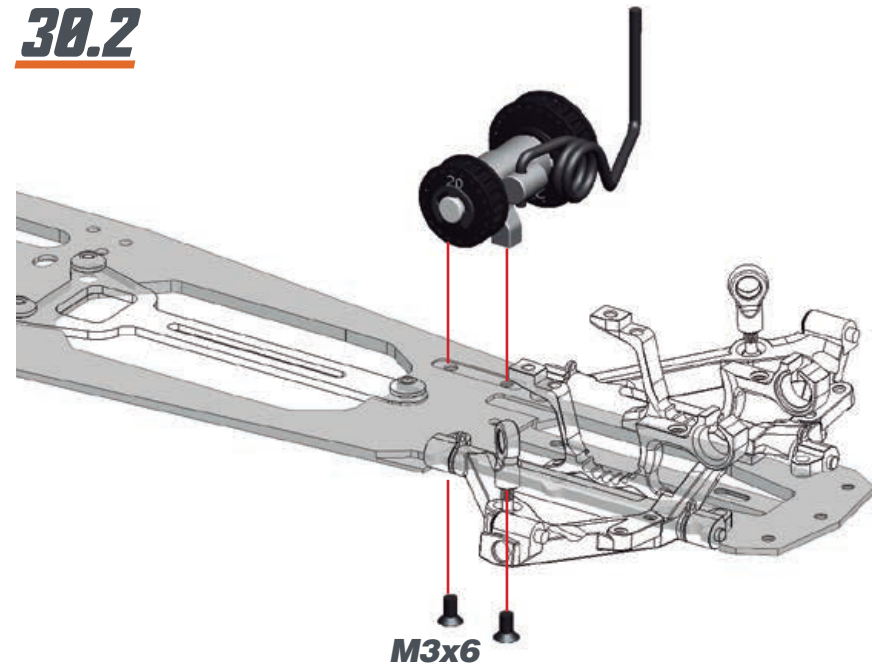


STEP 30

30.1



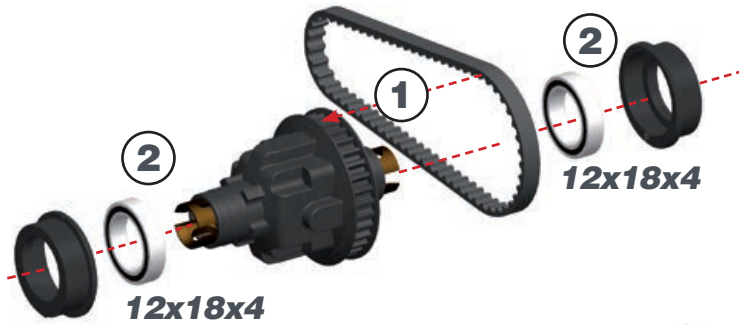
30.2



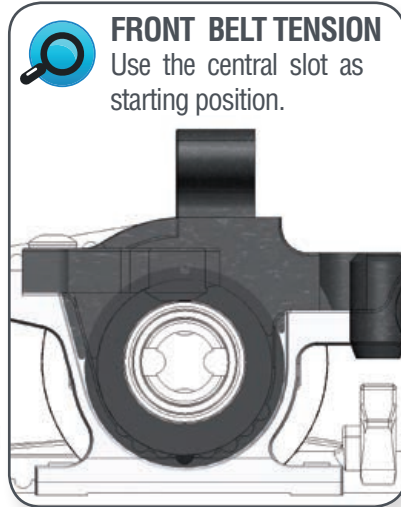
STEP 31

BAG 8

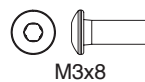
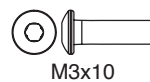
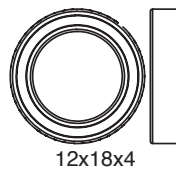
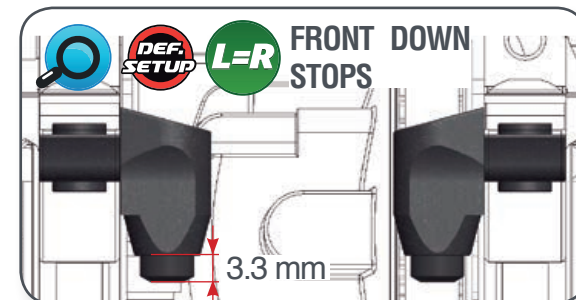
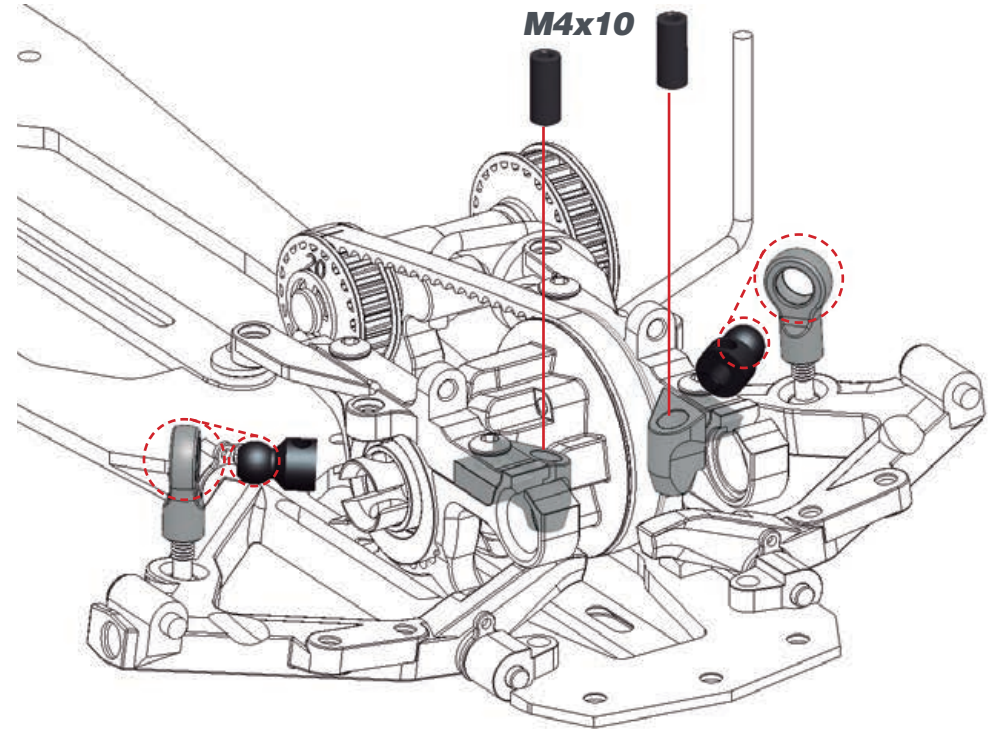
31.1



31.2



STEP 32



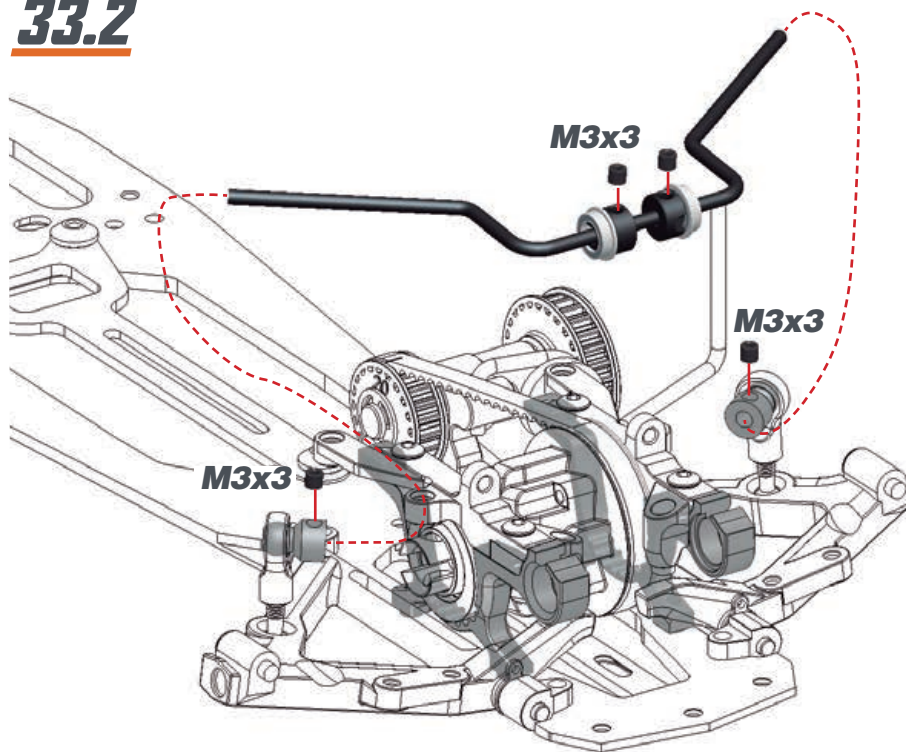
STEP 33

33.1

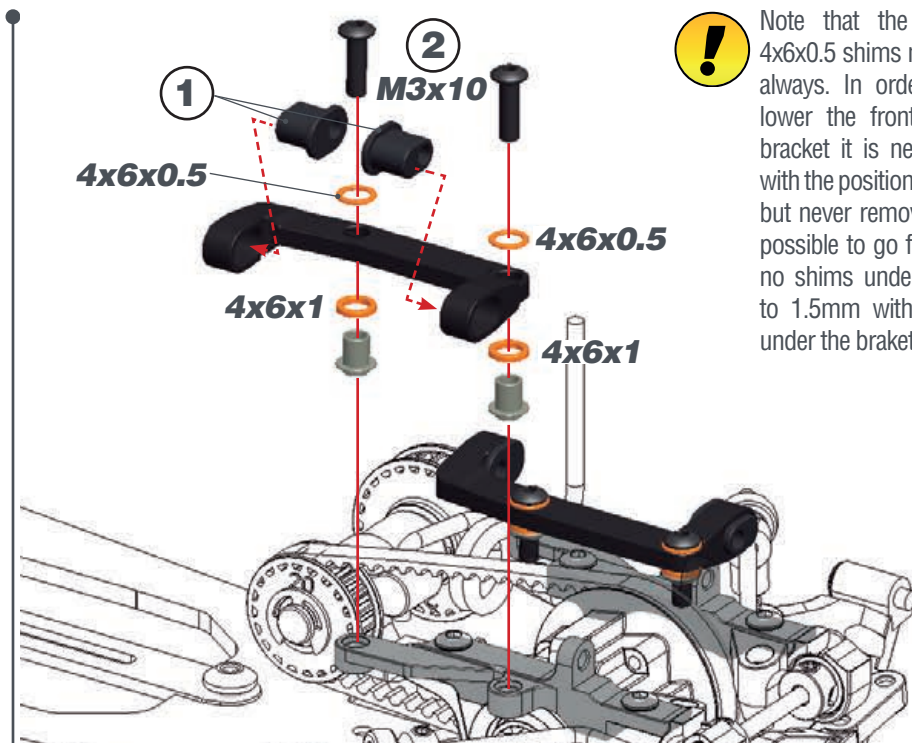
5x8x2.5 Flanged



33.2



STEP 34

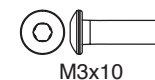


Note that the 4x6x1 and 4x6x0.5 shims must be used always. In order to rise or lower the front suspension bracket it is needed to play with the position of the shims but never remove them. Is it possible to go from "0" with no shims under the bracket to 1.5mm with both shims under the bracket.

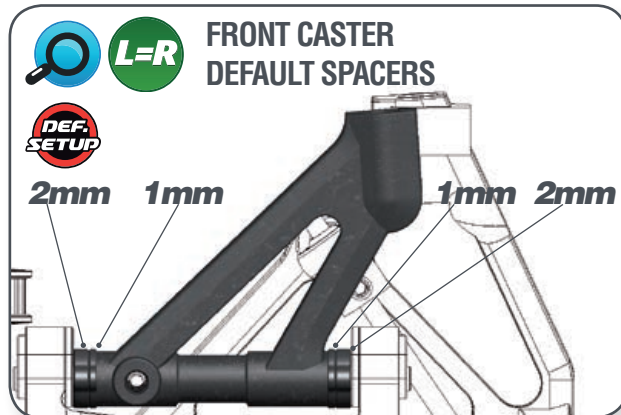
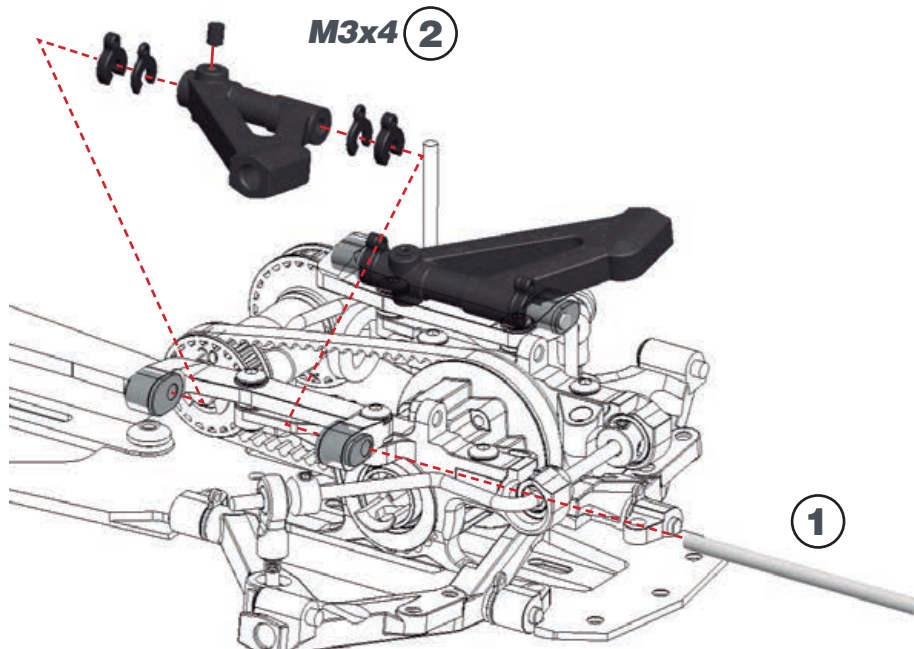
L=R FRONT SUSPENSION INSERTS CHART

INSIDE		MID		OUTSIDE	
RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT

DEF. SETUP

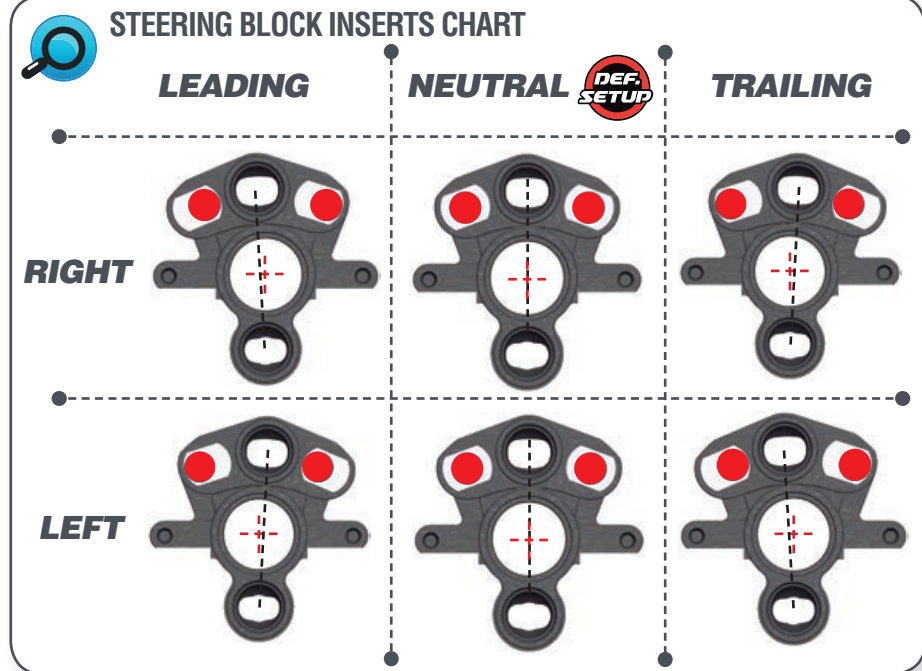
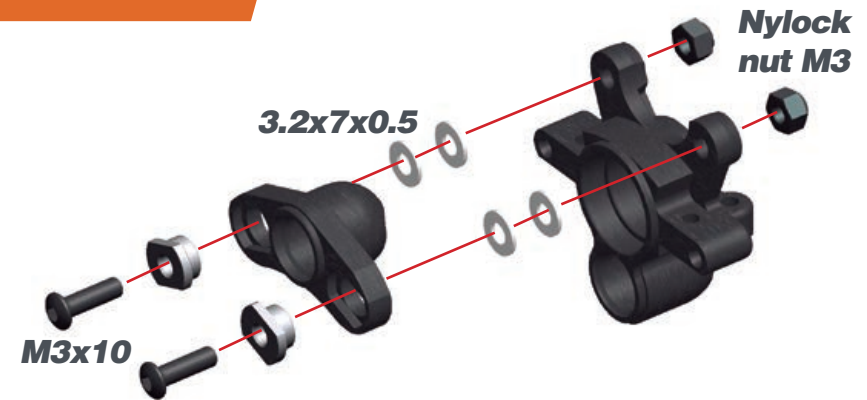


STEP 35 **BAG 9**



M3x4

STEP 36



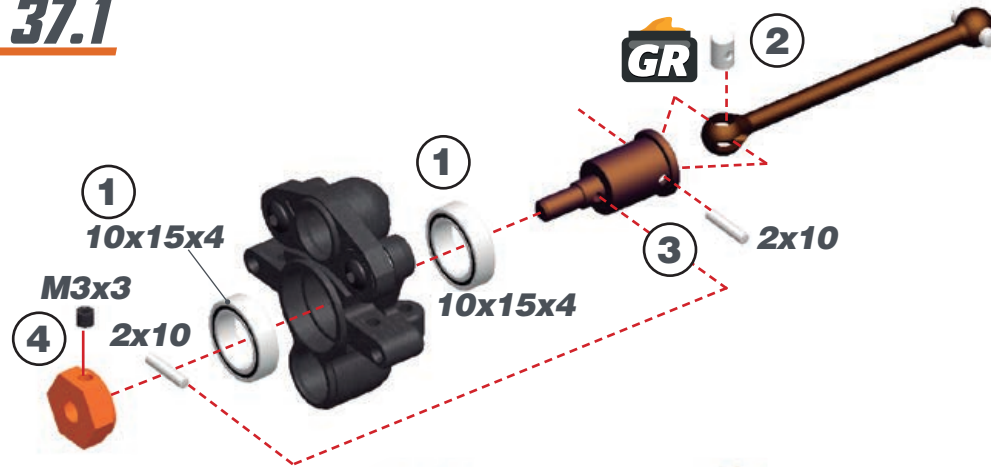
M3x10

3.2x7x0.5

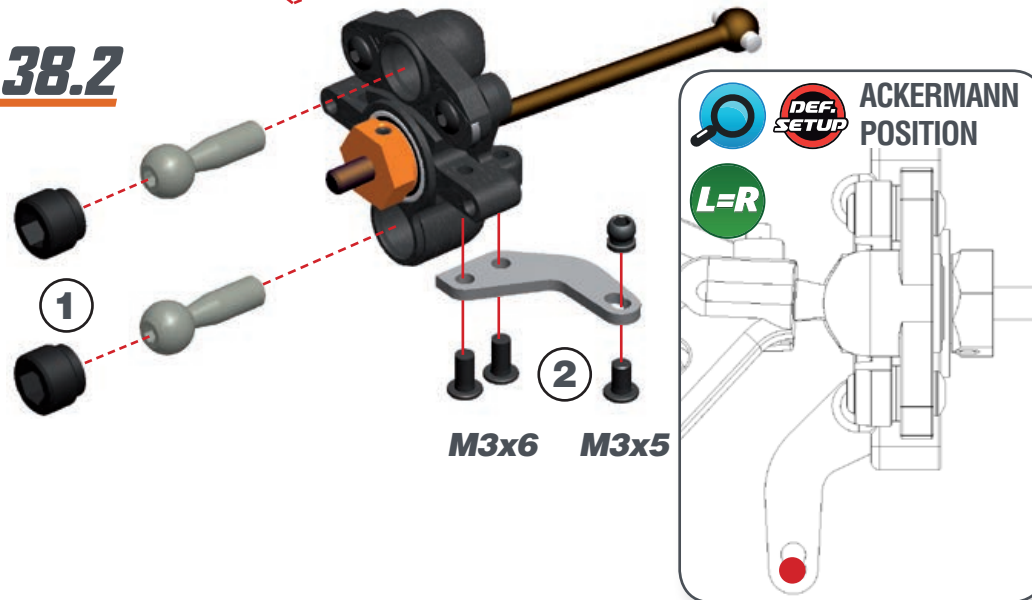
Nylock Nut M3

STEP 37

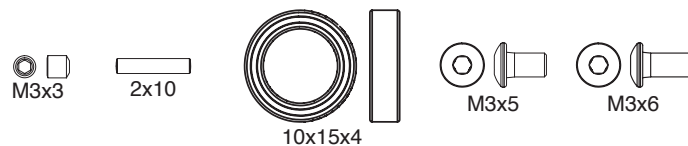
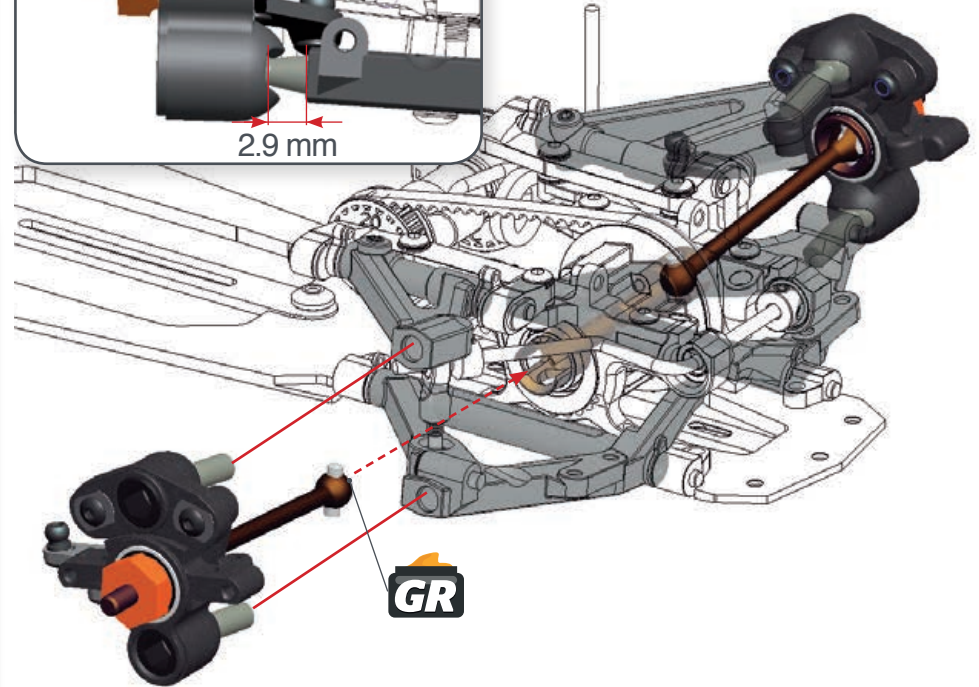
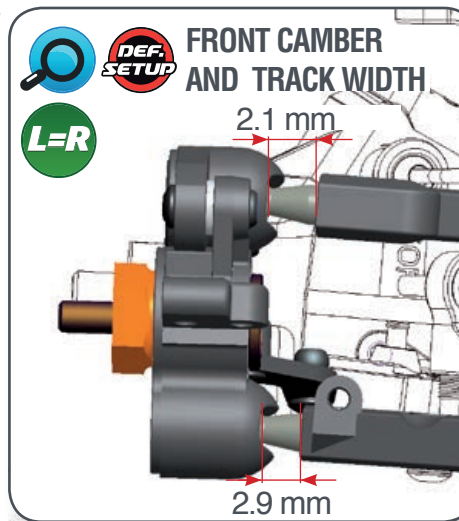
37.1



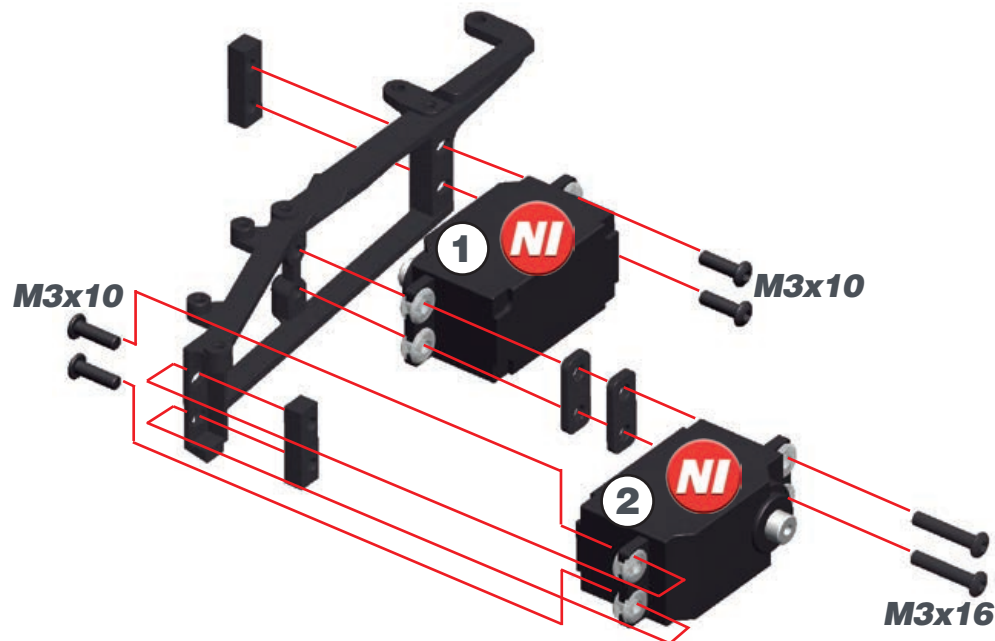
38.2



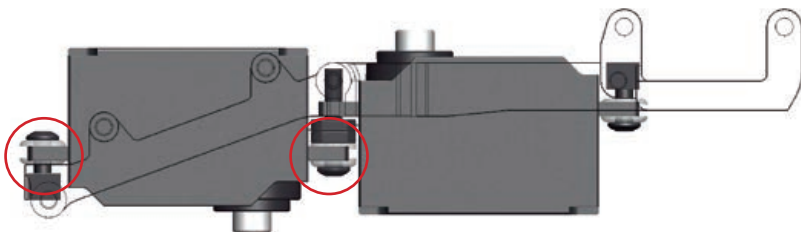
STEP 38



STEP 39 BAG 10



Note the position of the steering servo "ears". Each one is in one side of the radio box.

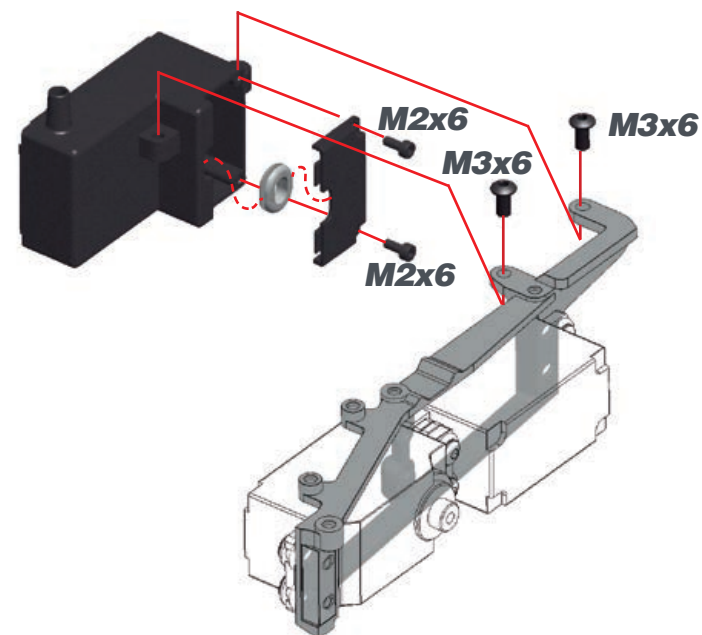


M3x10

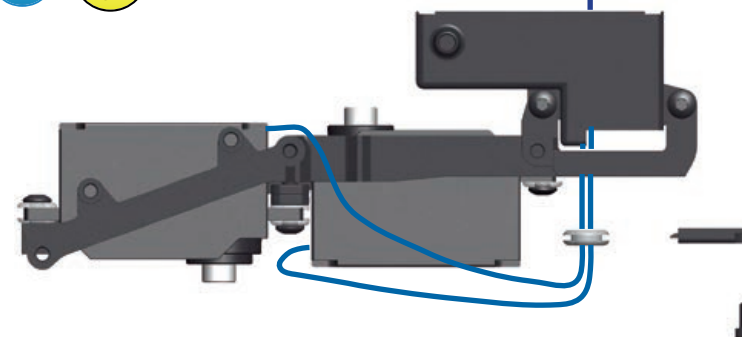


M3x16

STEP 40



SERVO'S WIRE DIAGRAM

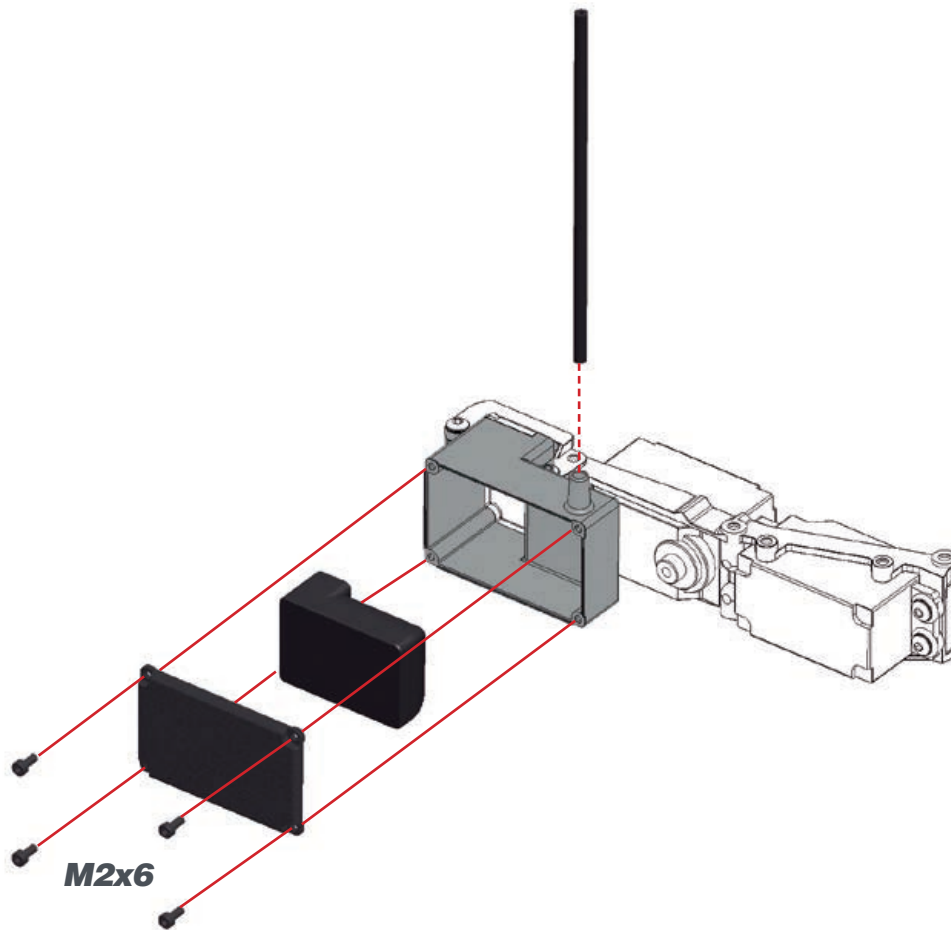


M3x6



M2x6

STEP 41



STEP 42



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



Note correct pivot ball type.



M3x6

M3x6



Note correct pivot ball type.



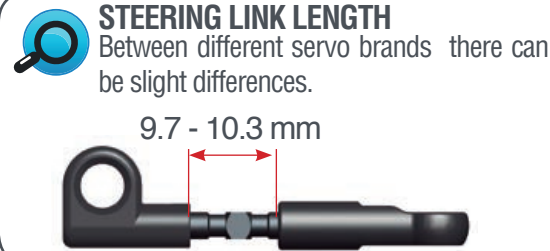
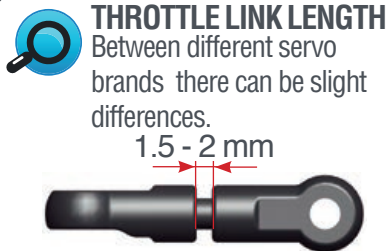
M3x5

M3x6

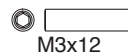
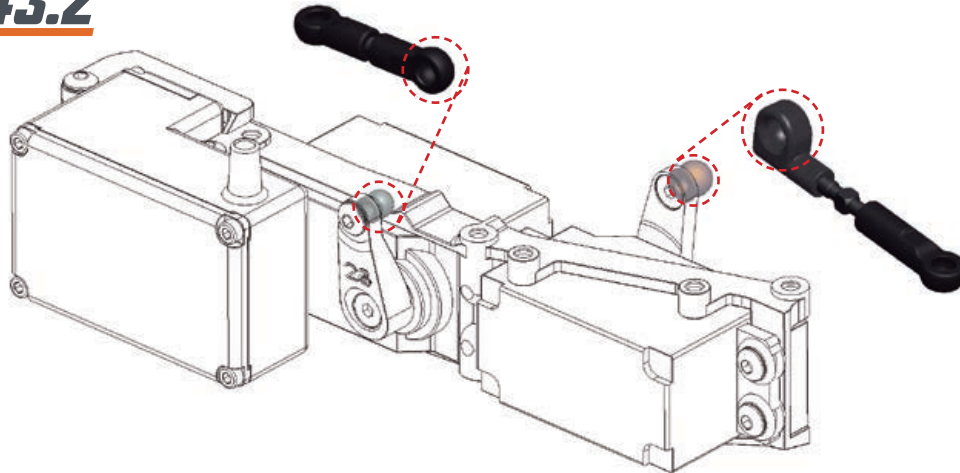


STEP 43

43.1



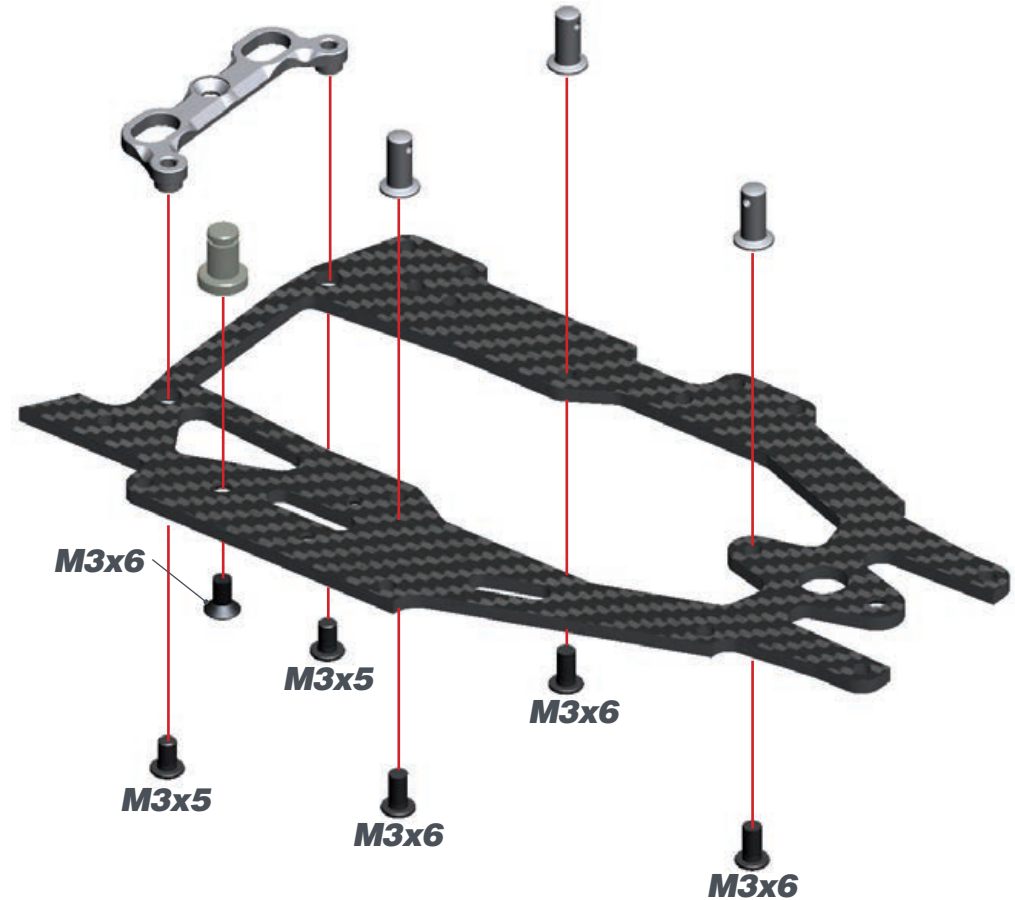
43.2



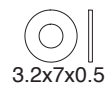
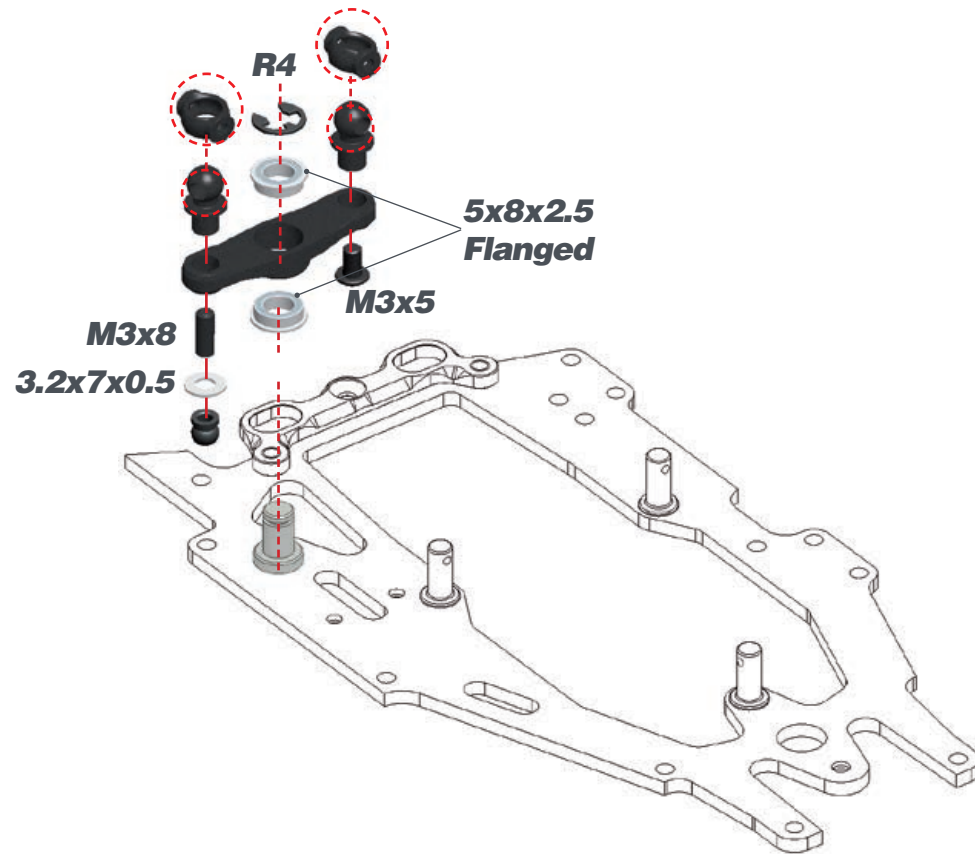
STEP 44 **BAG 11**



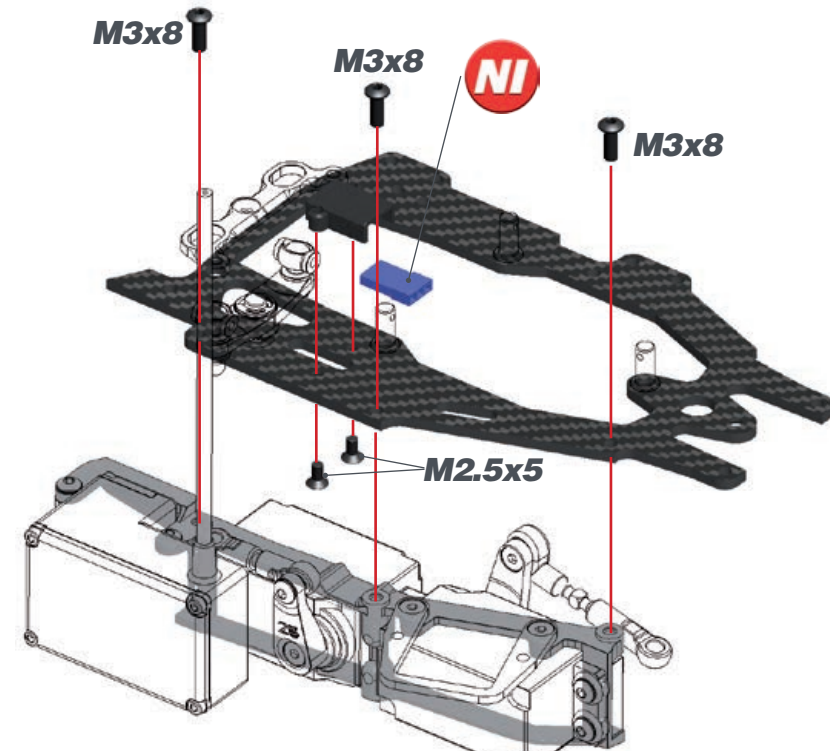
NOTE: When using Nimh or some Life receiver batteries, it is needed to raise the fuel tank 2mm adding 2mm shims between the fuel tank mountings and the radio plate.



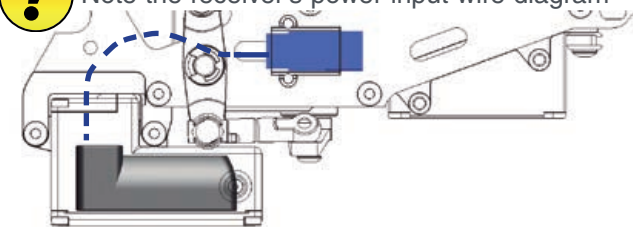
STEP 45



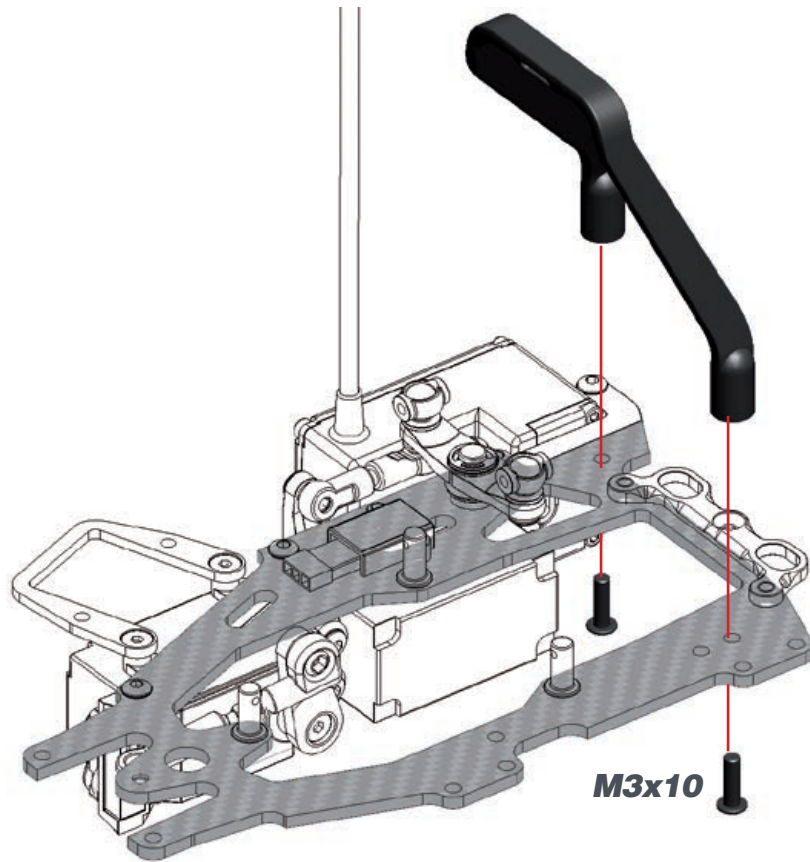
STEP 46



  Note the receiver's power input wire diagram



STEP 47

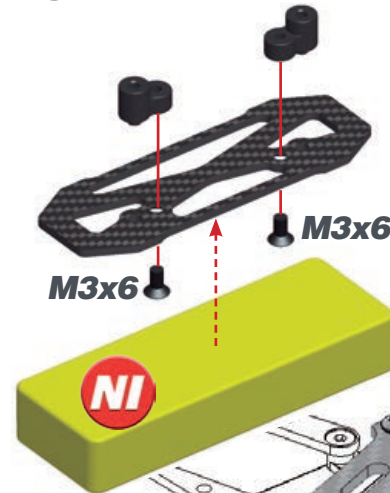


STEP 48

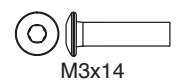
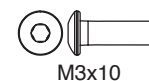
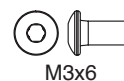
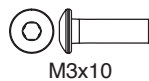
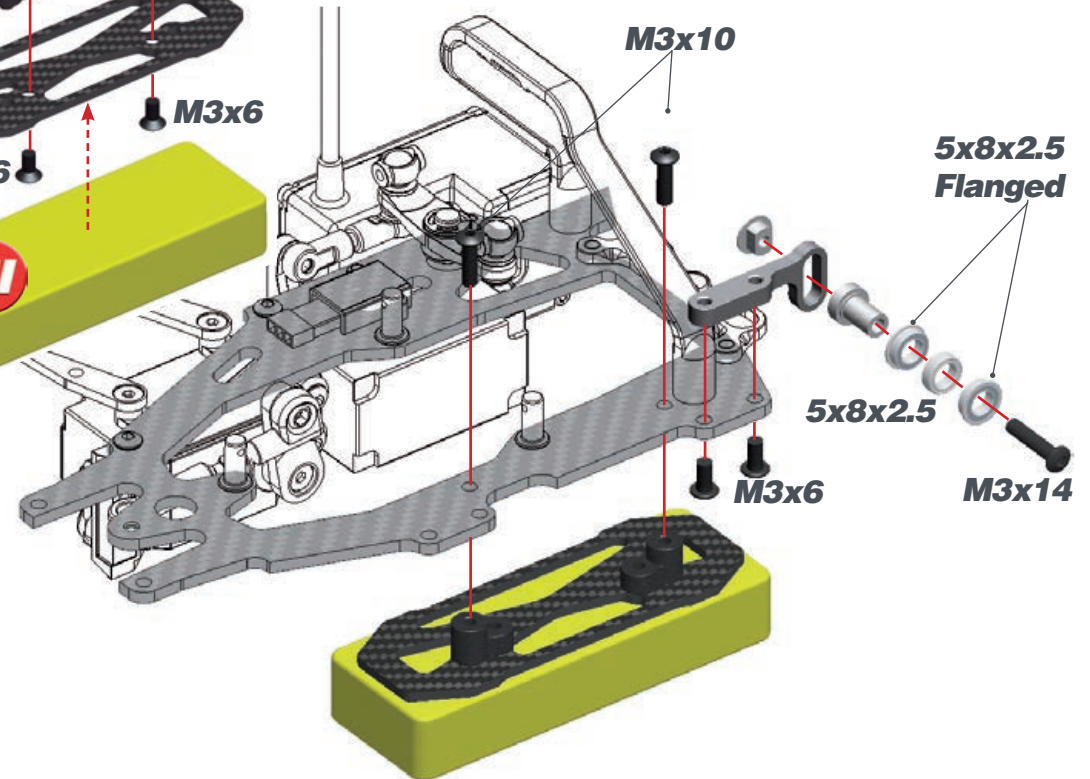
48.1



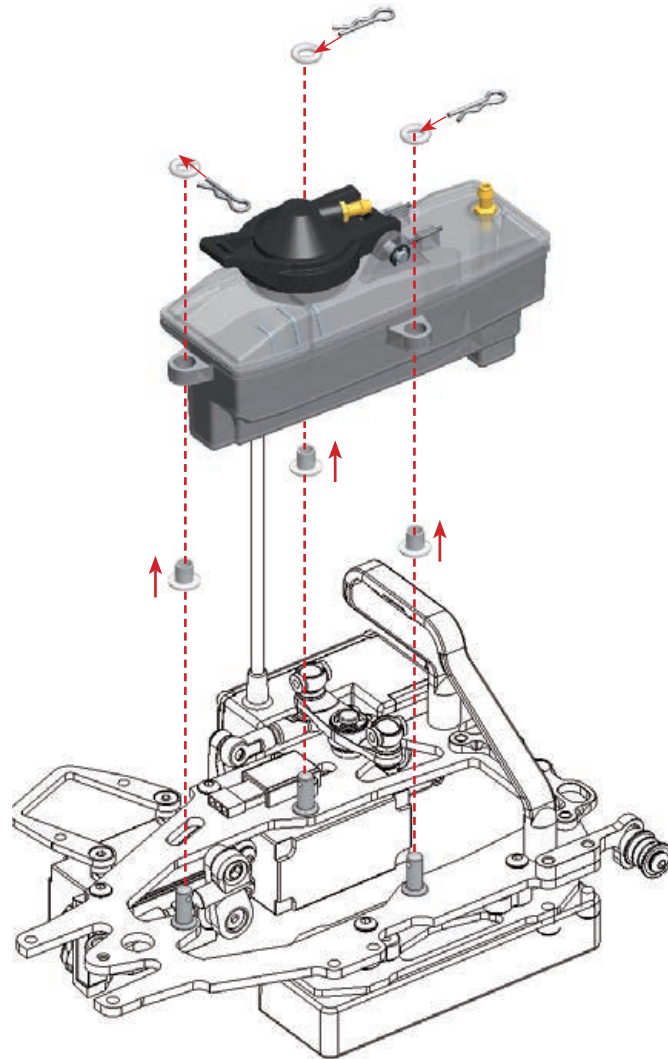
Use tape to mount the battery to the carbon support.



48.2



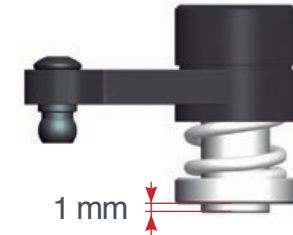
STEP 49



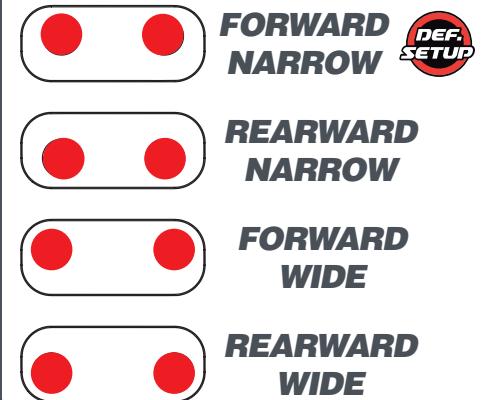
STEP 50 BAG 12



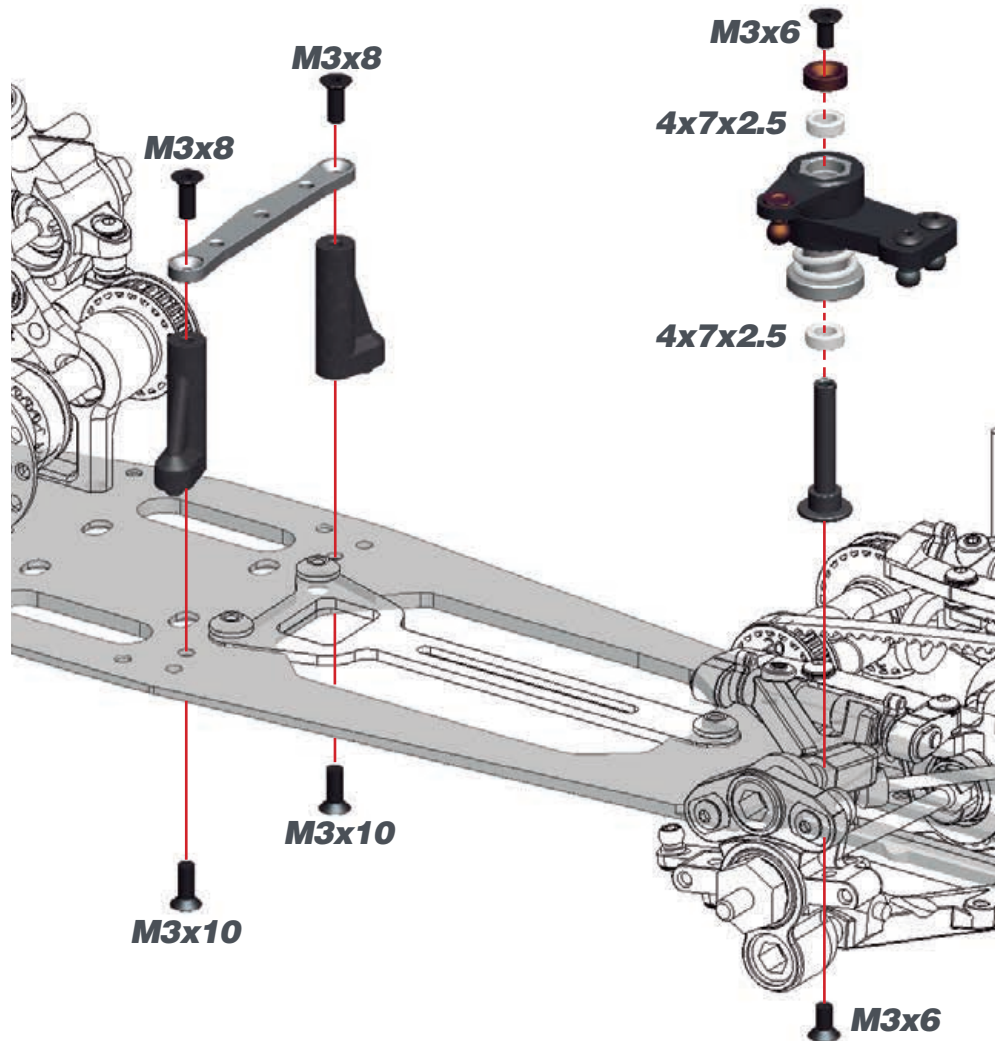
Preload the servo-saver-spring 1mm.



SERVO SAVER ACKERMANN INSERTS



STEP 51



STEP 52

52.1

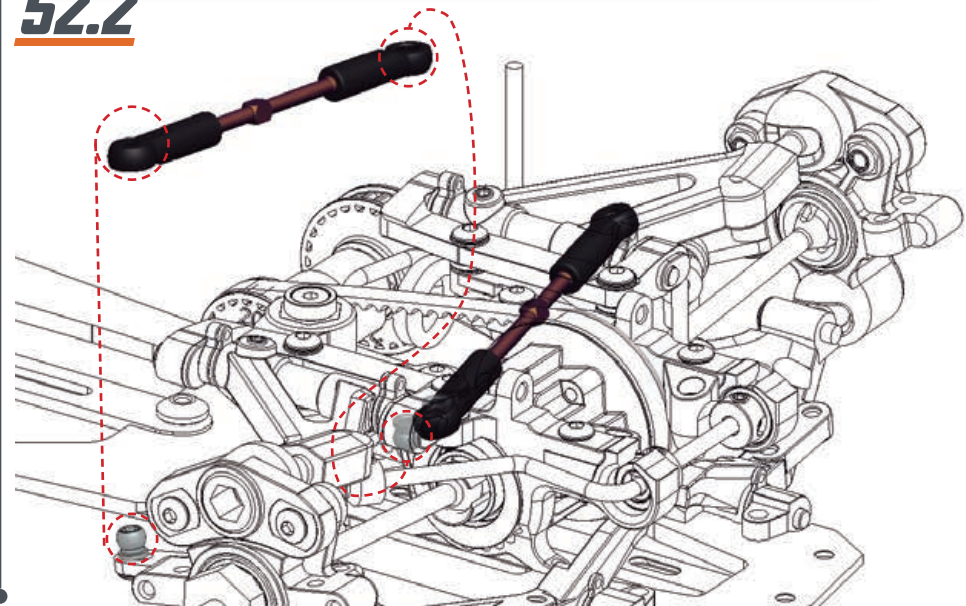


STEERING TRACKROD LENGTH

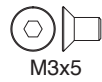
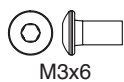
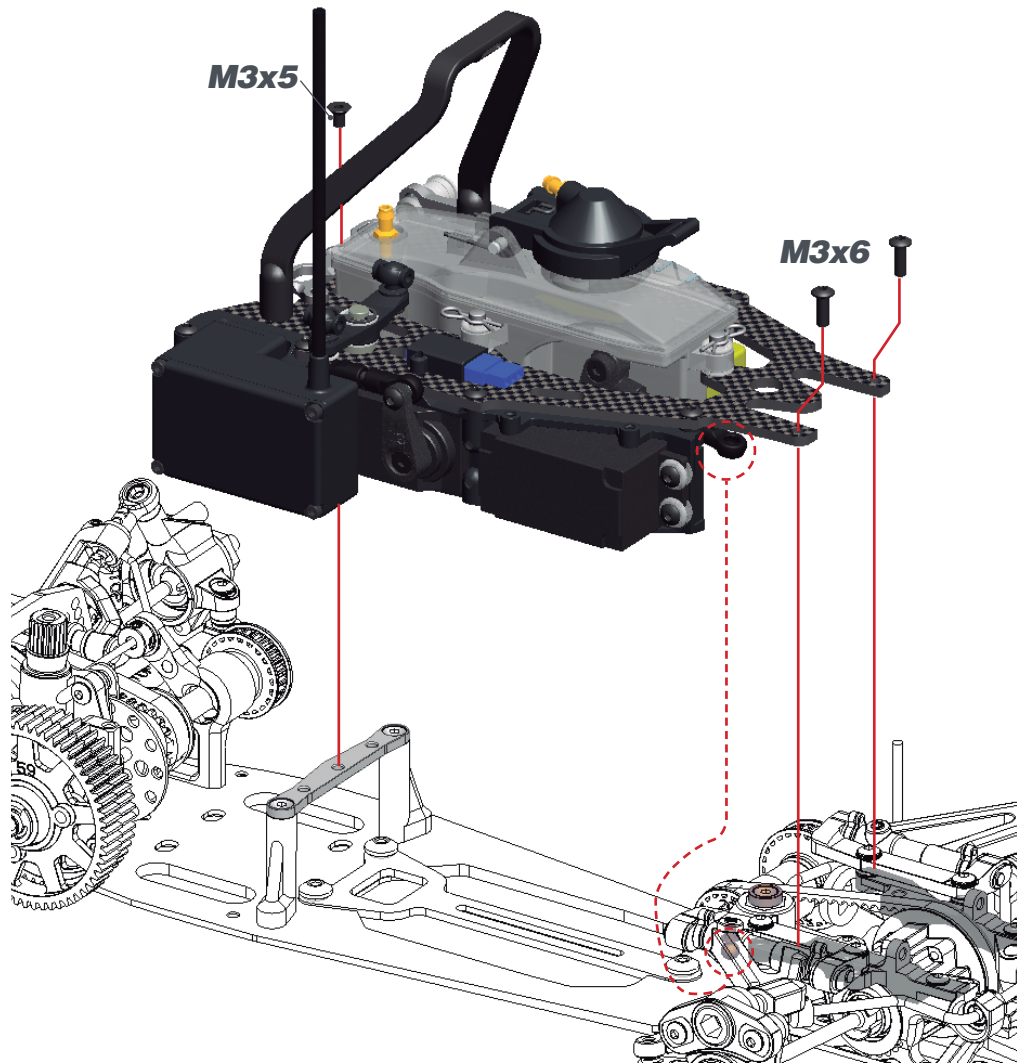
26.7 mm



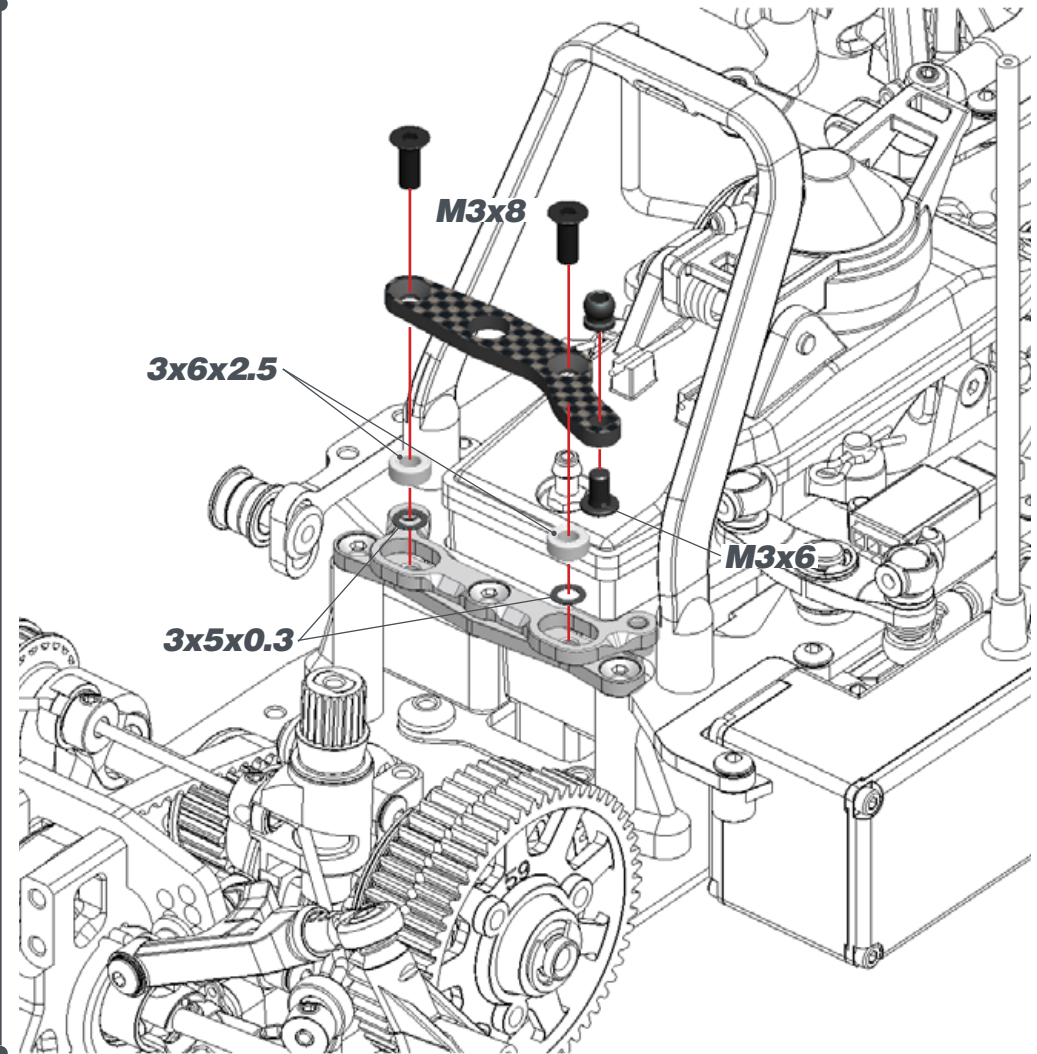
52.2



STEP 53

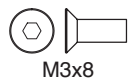
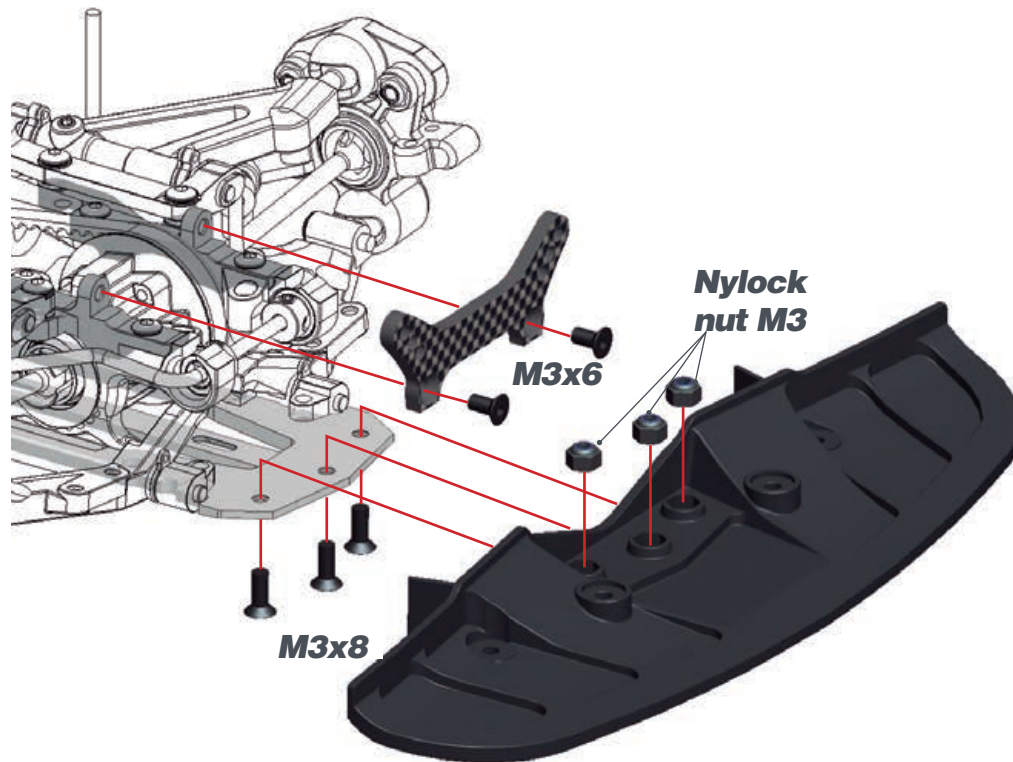


STEP 54

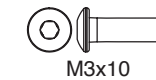
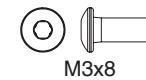
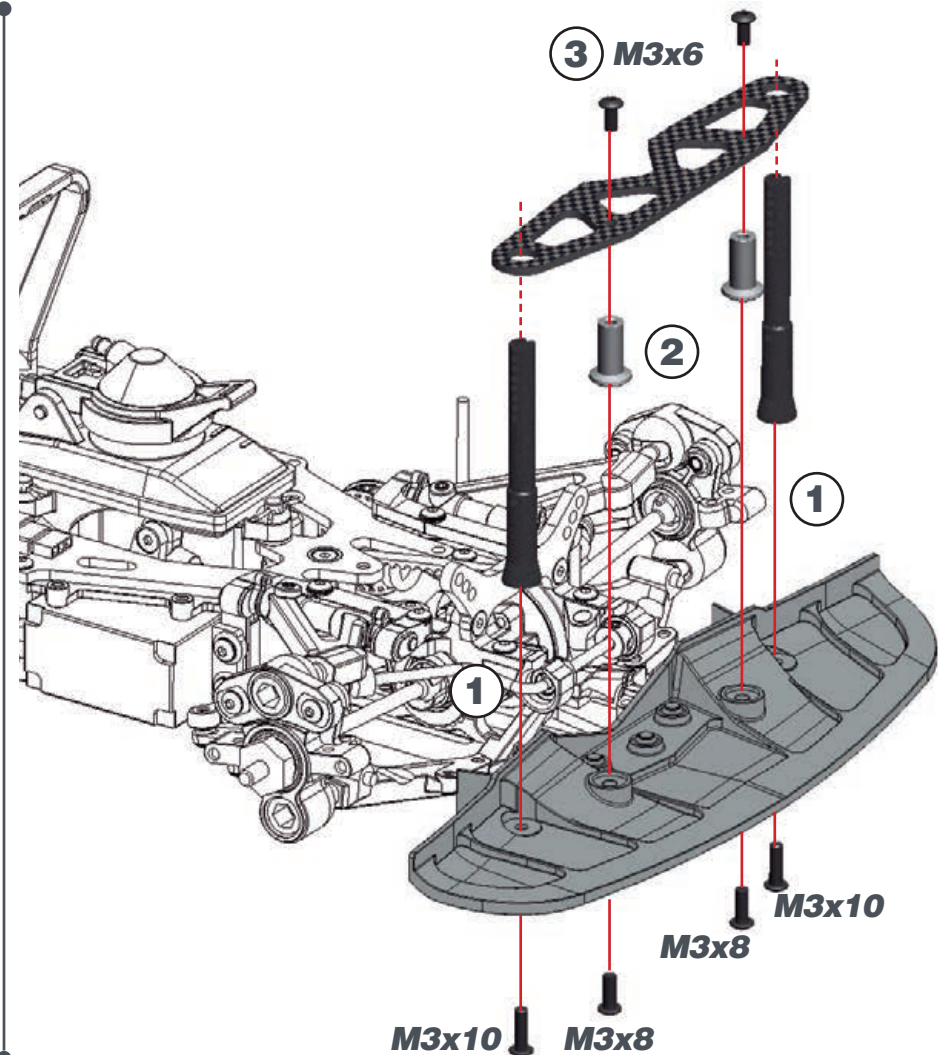


STEP 55

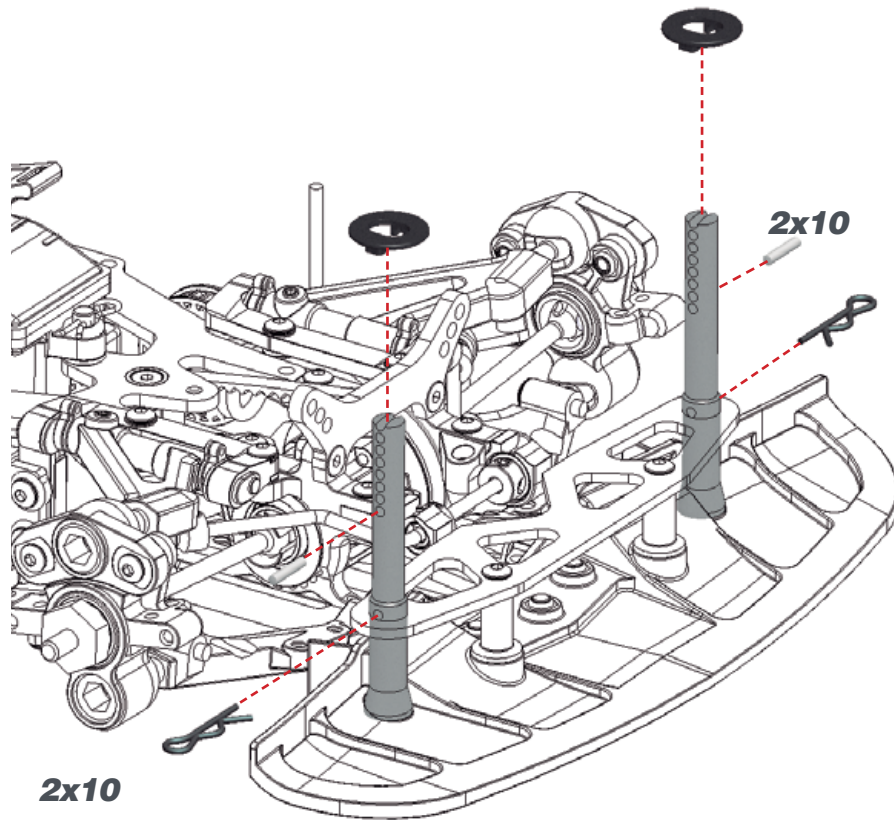
BAG 13



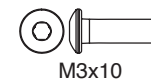
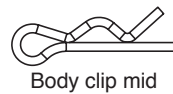
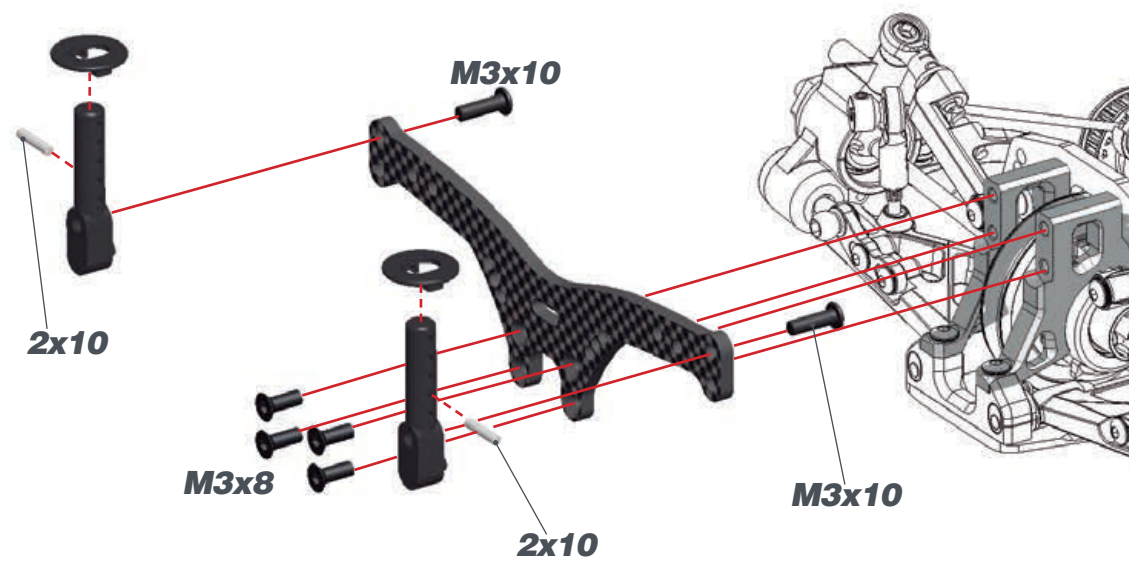
STEP 56



STEP 57

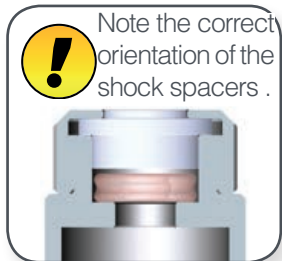
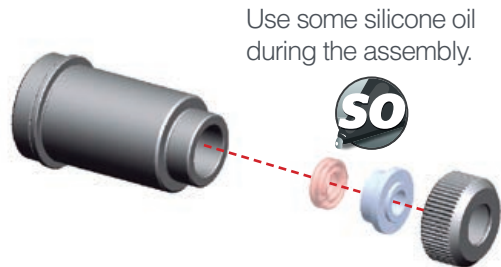


STEP 58

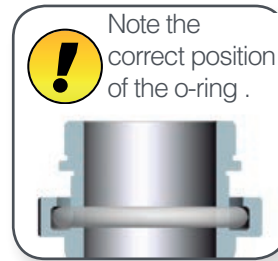
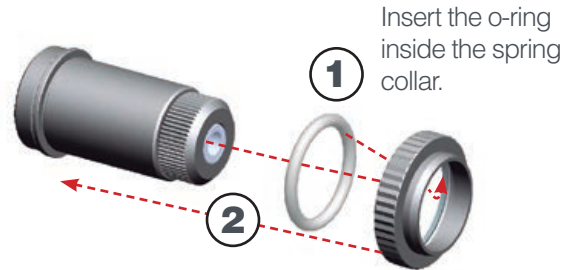


STEP 59 SHOCKS BAG

59.1



59.2



STEP 60

60.1

For the correct piston holes please check the default setupsheet.



60.2



Nut M2.5

STEP 61

61.1

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



62.2

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.



61.3

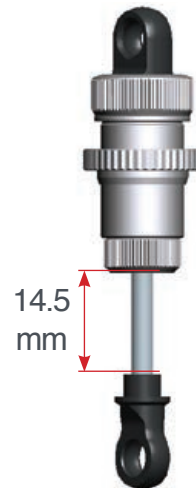
1-Bleed: push the shockrod all the way in slowly, to allow excessive oil to escape.

2- Close the shock cap completely.



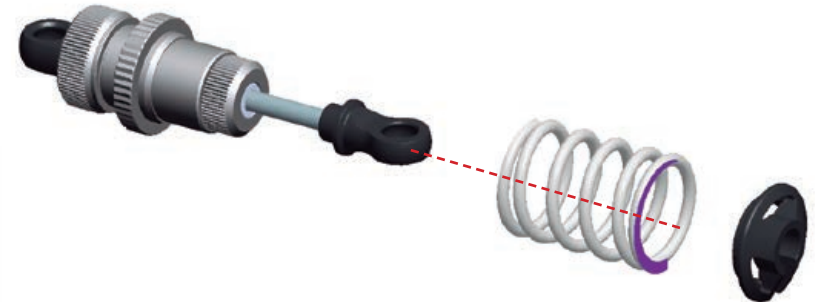
SHOCKS LENGTH:

Measure the shock length fully extended.

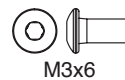
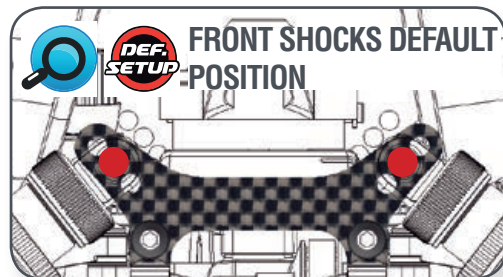
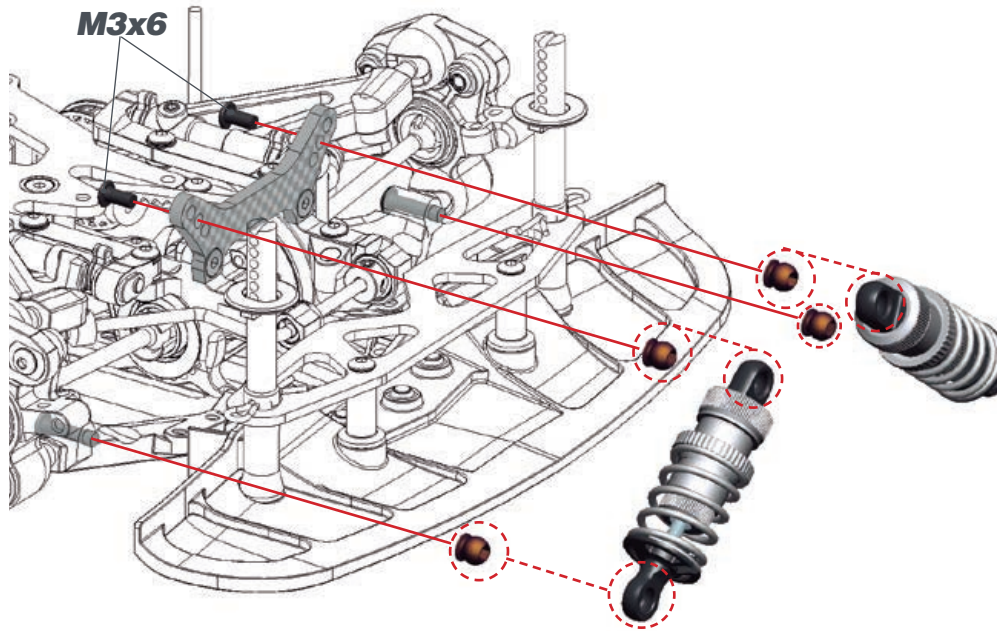


STEP 62

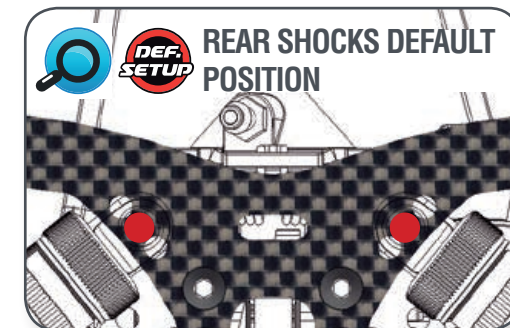
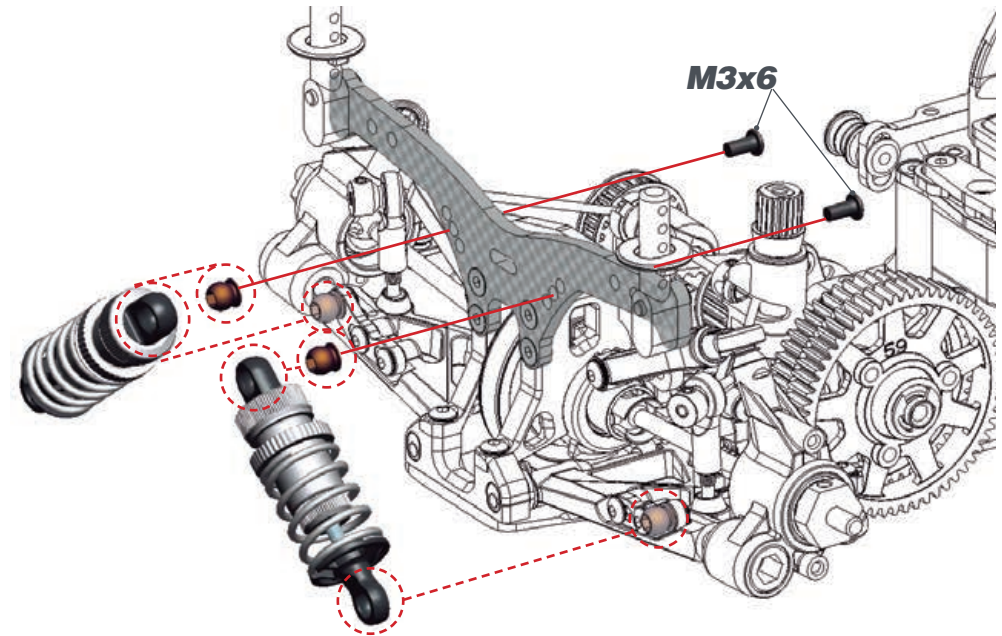
Assemble the spring and spring-cup (align correctly) to complete the shock.



STEP 63



STEP 64



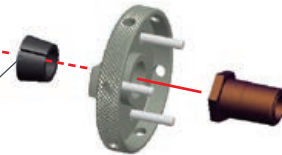
STEP 65 CLUTCH BAG

65.1

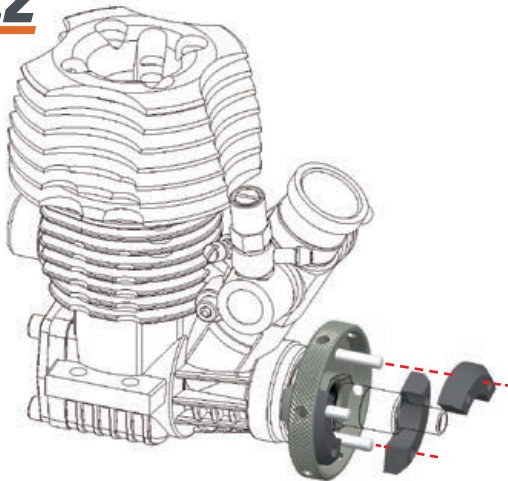


1- To align the clutchgears with the 2-speed gears, it may be needed to use shim(s) 6x8x0.5mm (for 6mm shaft) or 7x8x0.5 (for 7mm shaft) behind the cone. This you can see only after assembling the clutch.

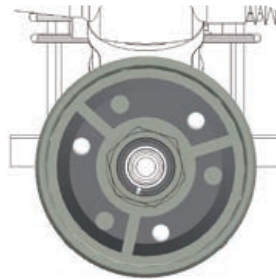
2- The holes in the side of the flywheel can be used to block the flywheel (with short allen tool) through the bottom of the chassis, when the engine/clutch is mounted in the car. It's easier to tighten or loosen the pre-load on the clutch spring that way.



65.2

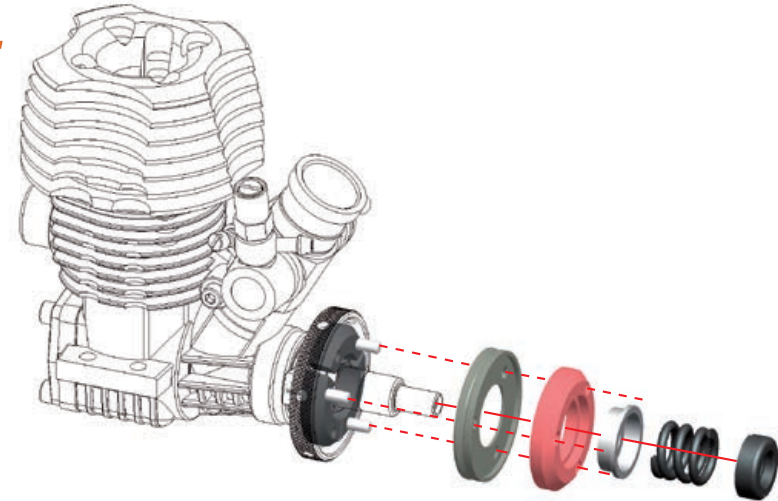


Note the orientation of the flyweights. Use the right hole for having a more aggressive clutch



STEP 66

66.1



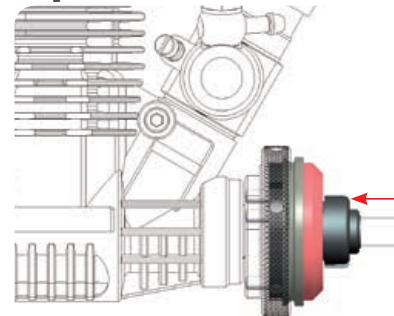
66.2



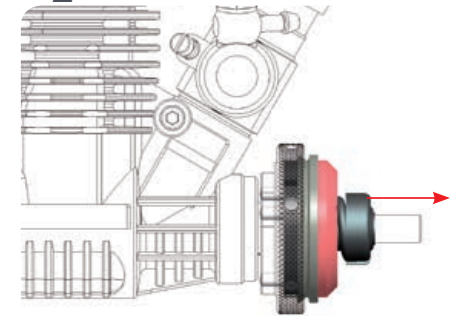
For adjusting the default clutch spring tension:

- 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.

1

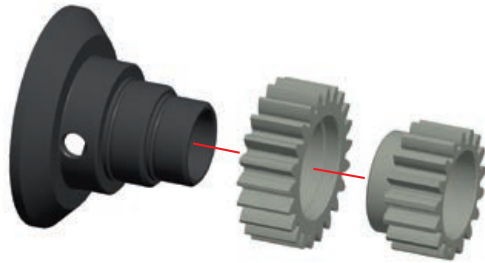


2

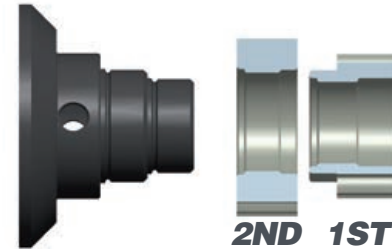


STEP 67

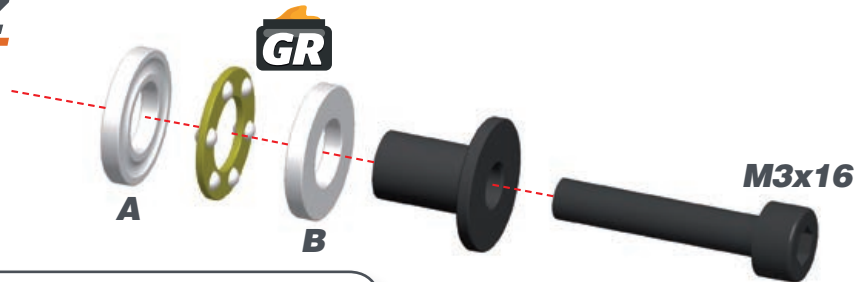
67.1



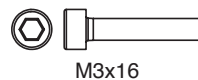
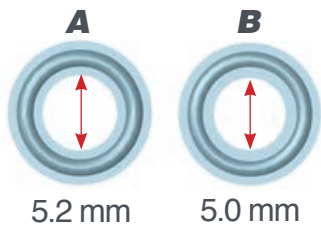
! Note the orientaion of the gears



67.2

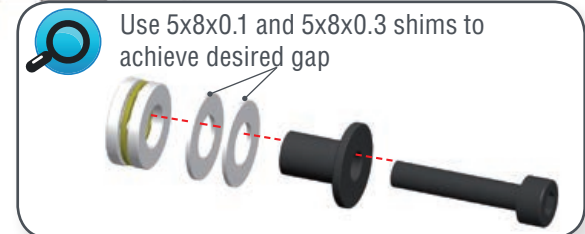
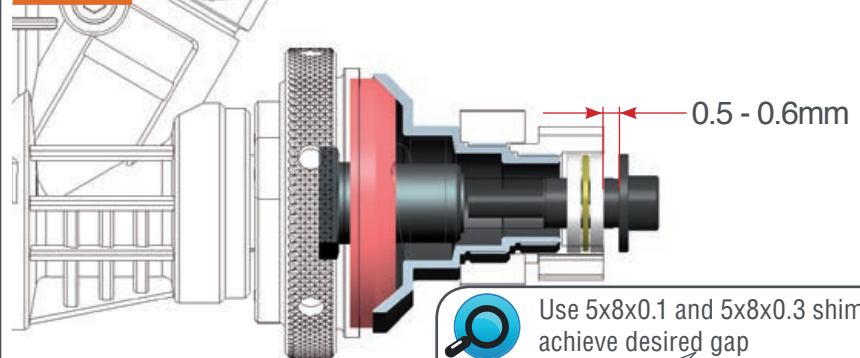


! IMPORTANT! Install thrust bearing plates as shown.

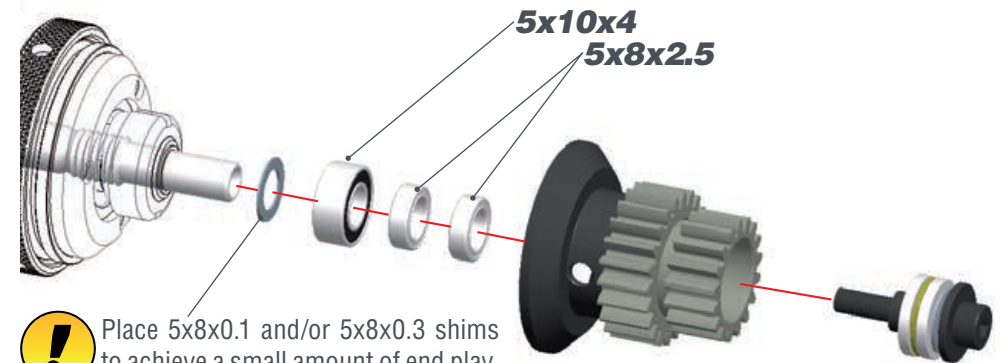


STEP 68

68.1 SETTING THE CLUTCH GAP



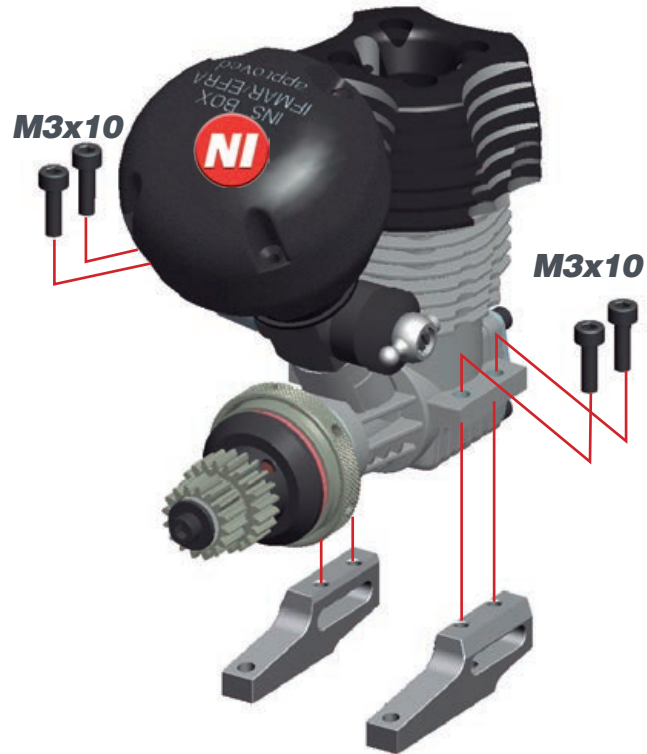
68.2 SETTING THE CLUTCH END PLAY



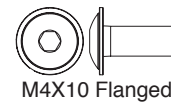
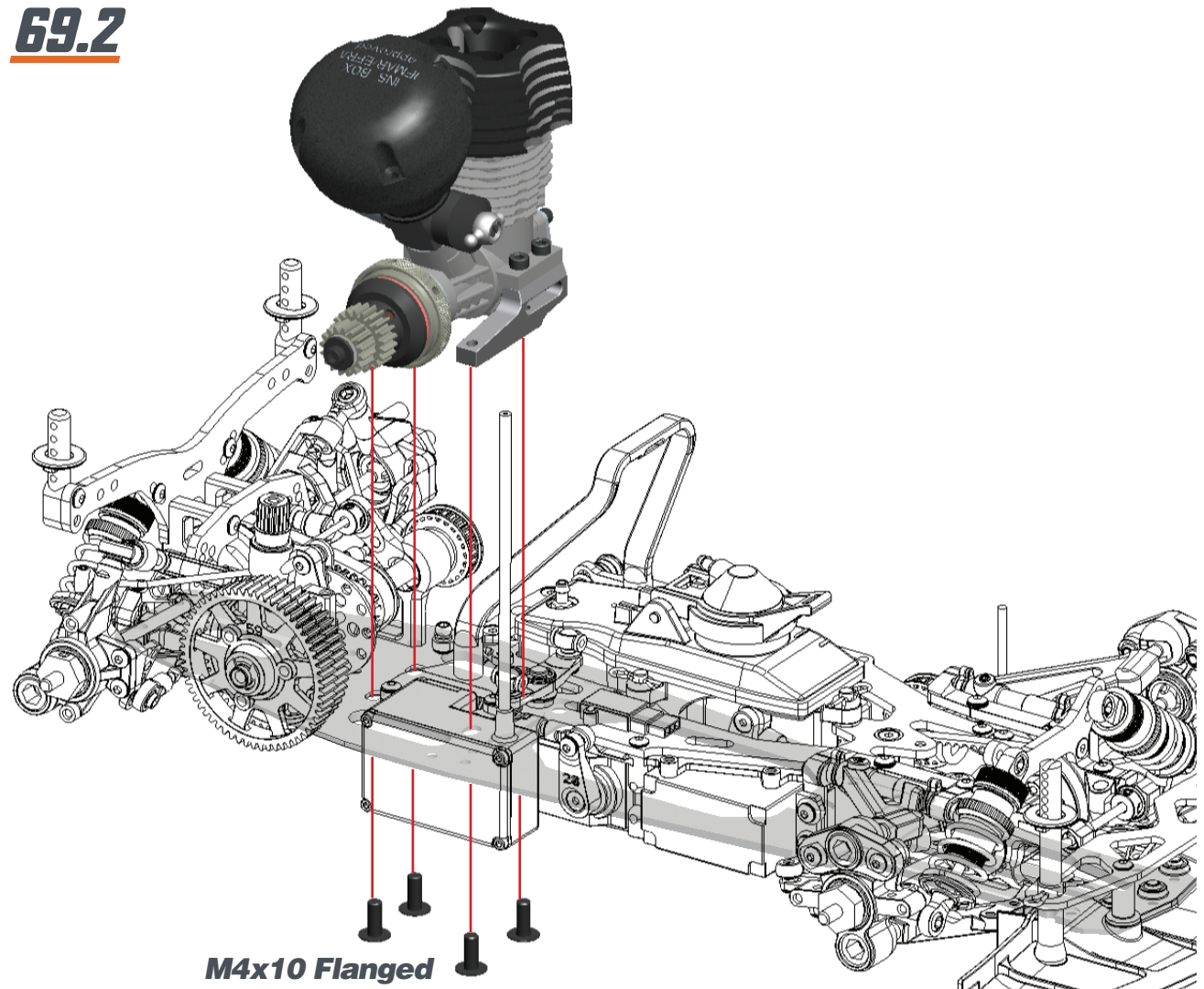
! Place 5x8x0.1 and/or 5x8x0.3 shims to achieve a small amount of end play.



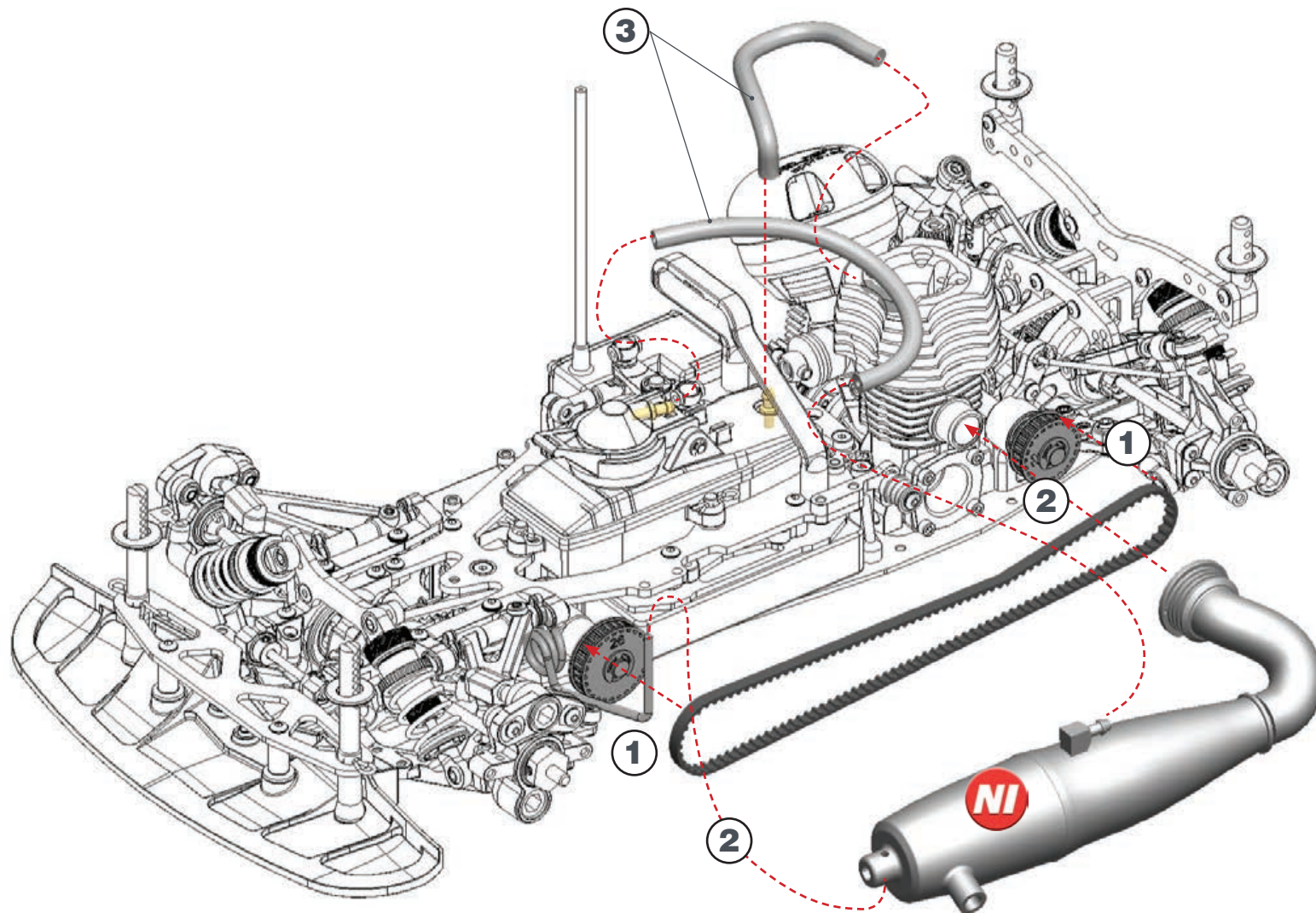
69.1



69.2



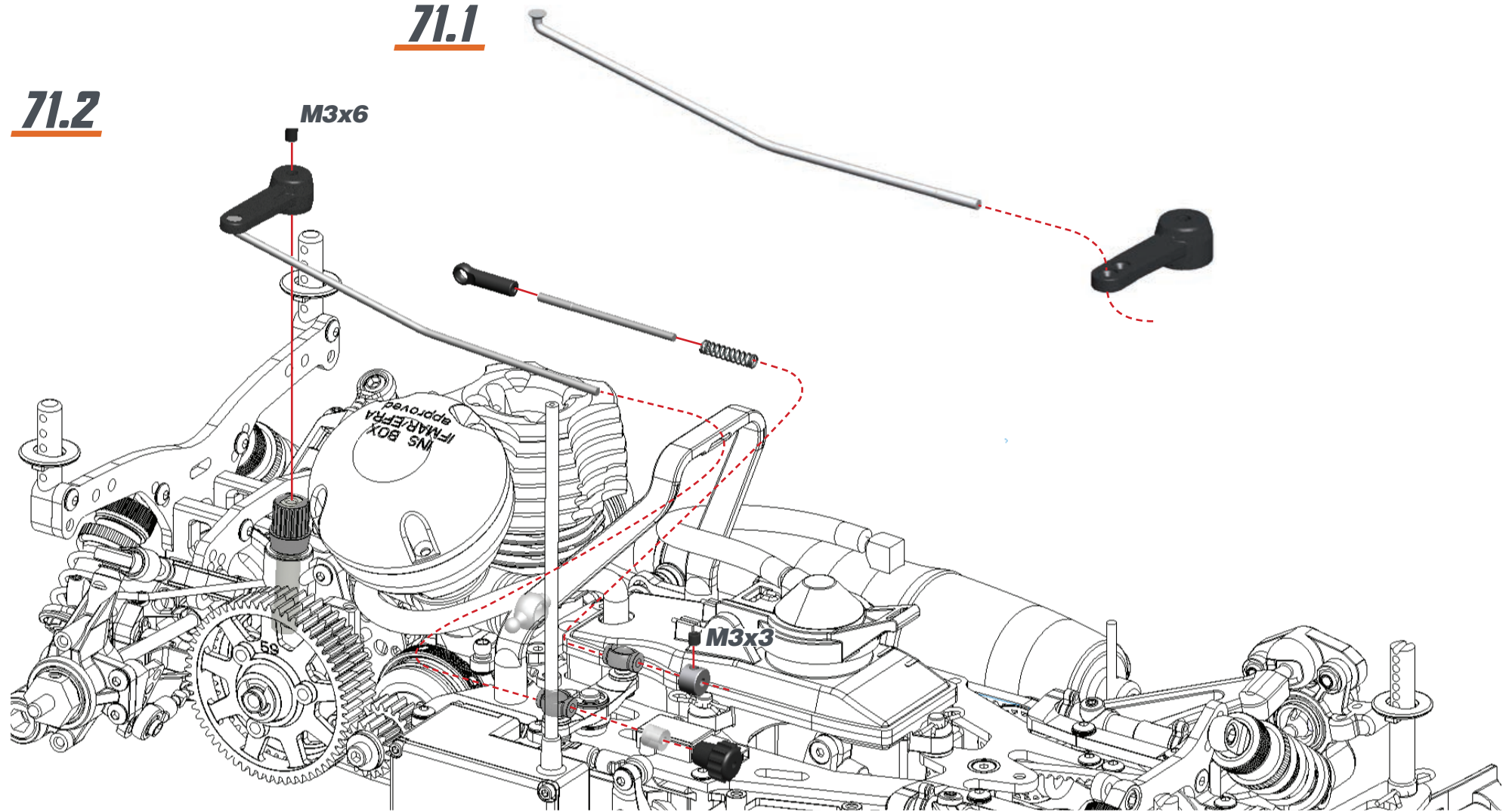
STEP 70



STEP 71

71.1

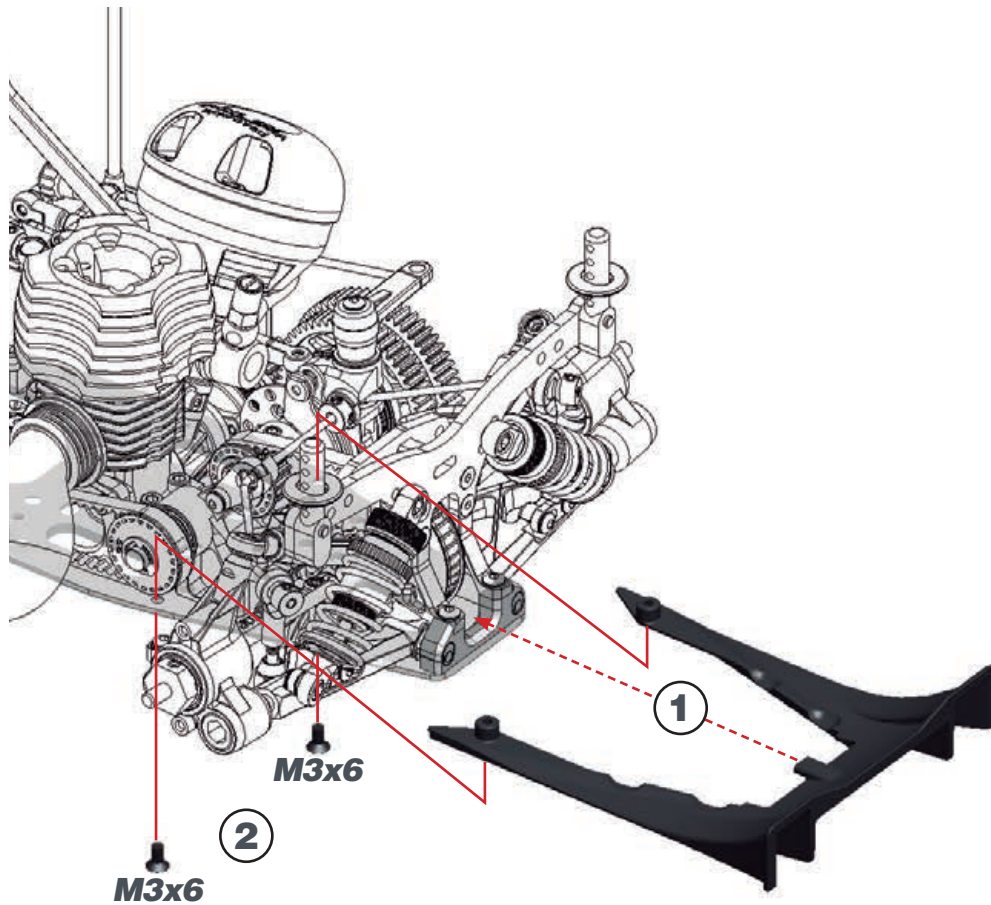
71.2



M3x3

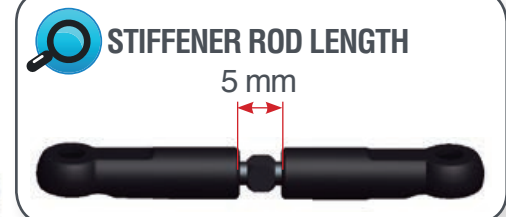
M3x6

STEP 72

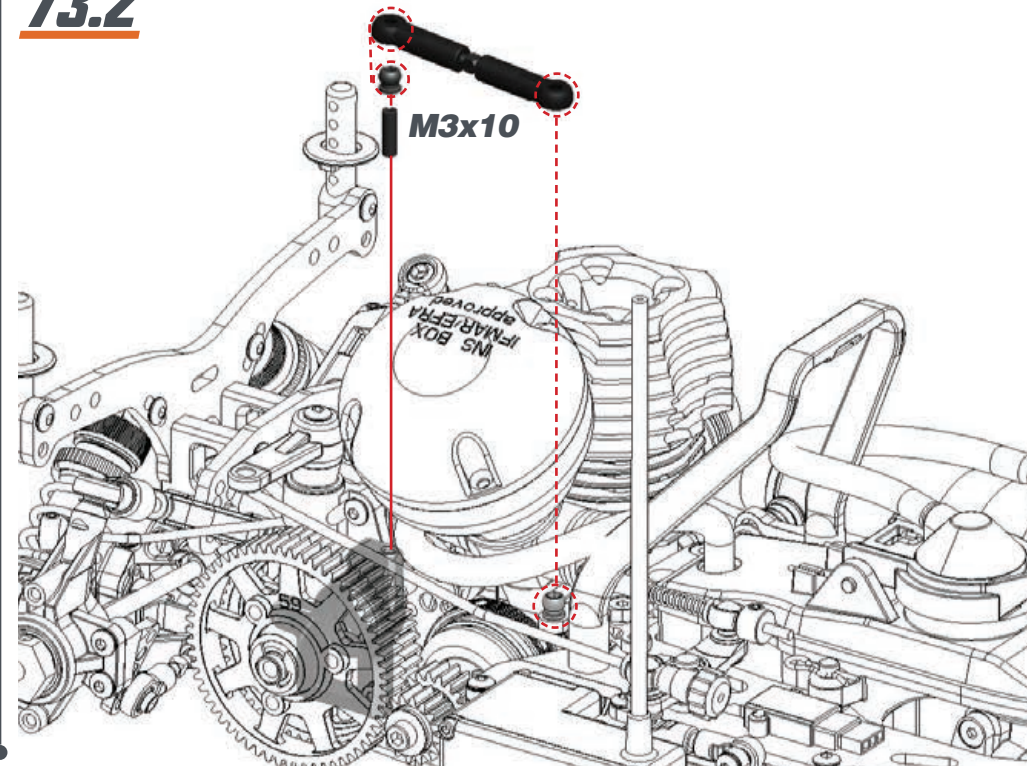


STEP 73

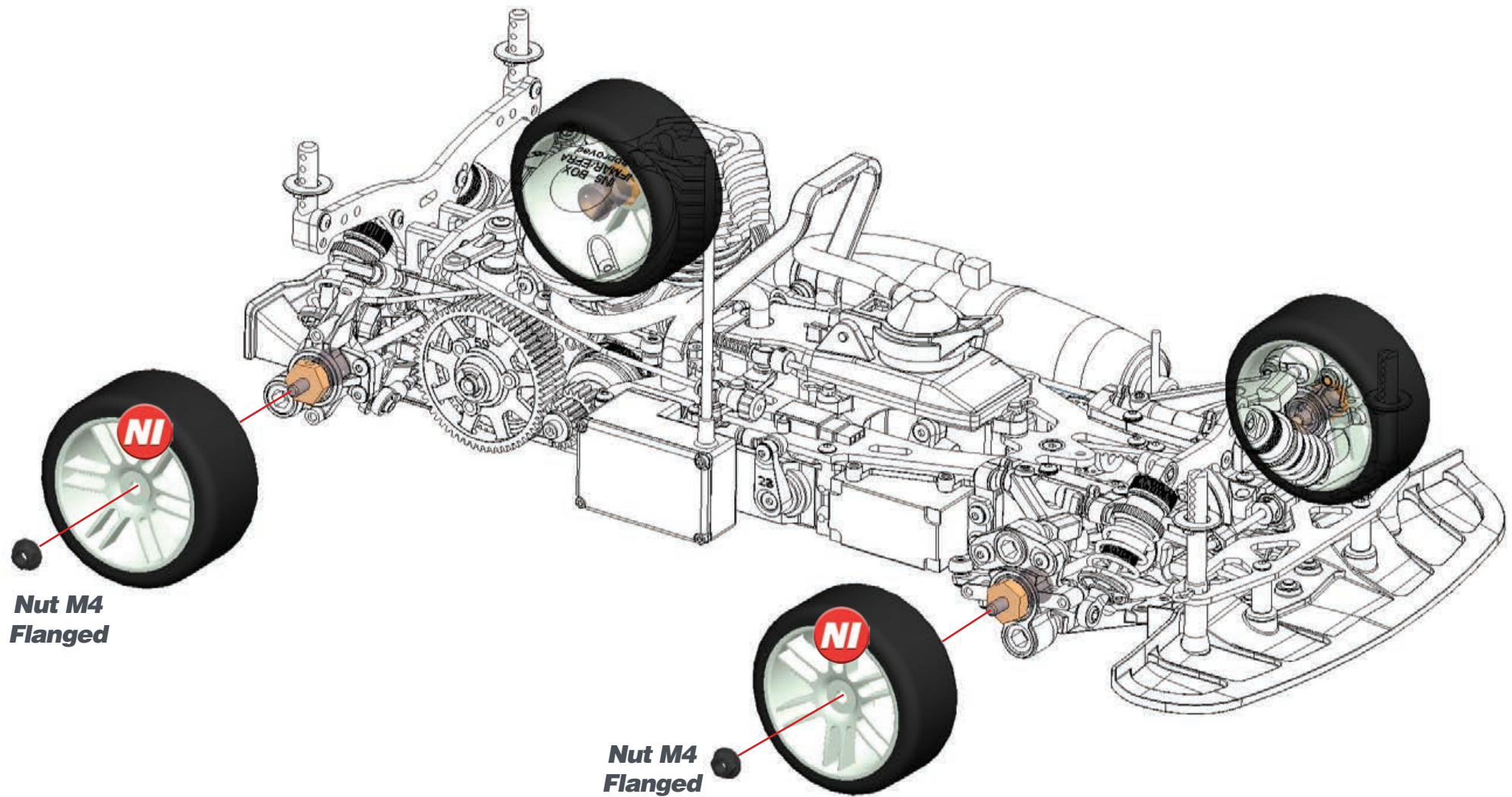
73.1



73.2



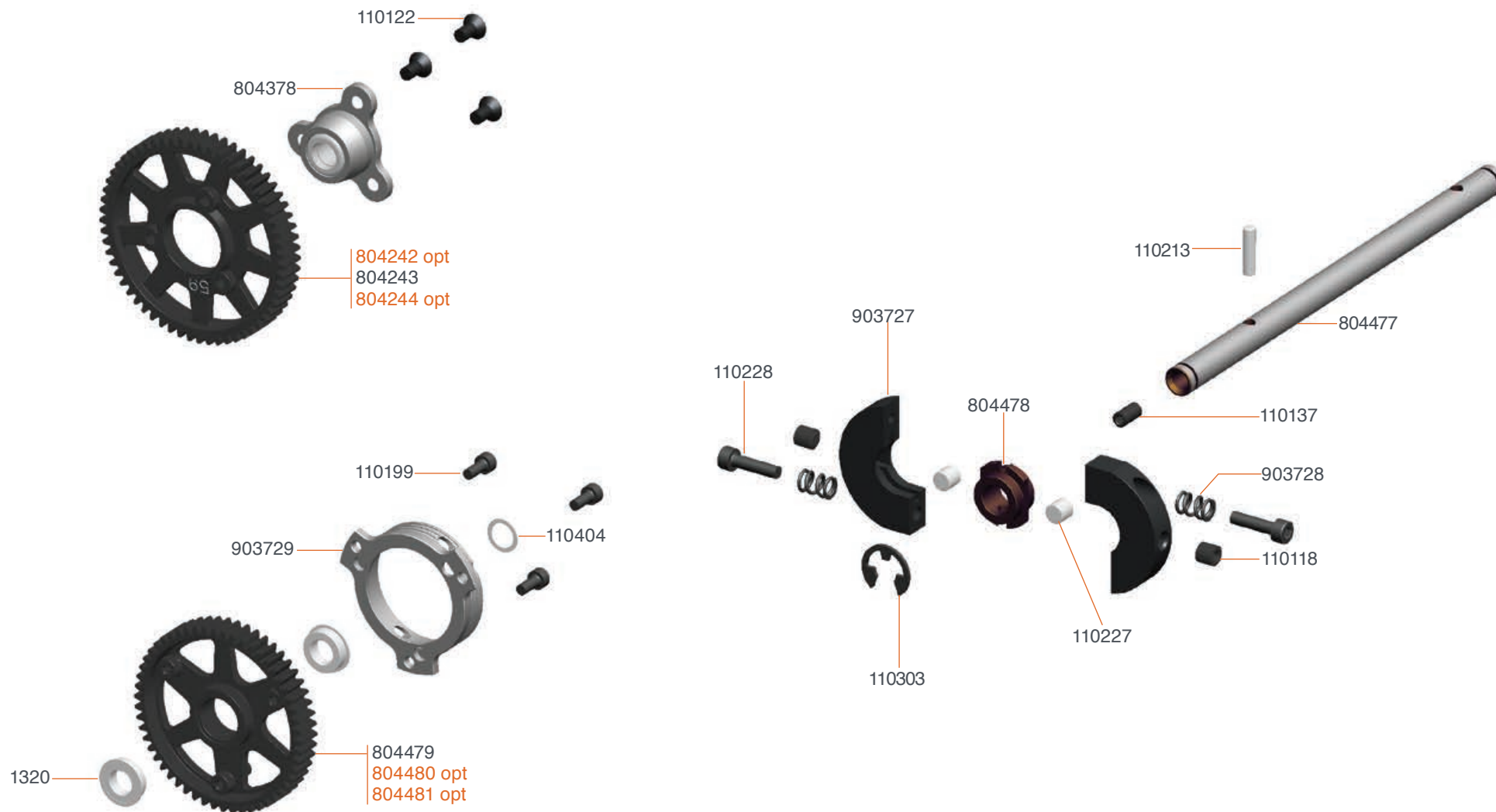
STEP 74



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- 804454 Pully 33T fr S7XX
804455 Oneway diff housing o-ring (5)
804456 Oneway diff outdrive o-ring (5)



804242 2-Speed gear 58T SL6
 804244 2-Speed gear 60T SL6
 804480 2-Speed gear 55T SL6 XLI Gen2

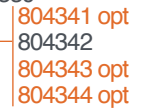
804481 2-Speed gear 53T SL6 XLI Gen2
 804482 2-speed set SL6 XLI Gen2
 804497 2-speed gear set SL6 XLI (6)



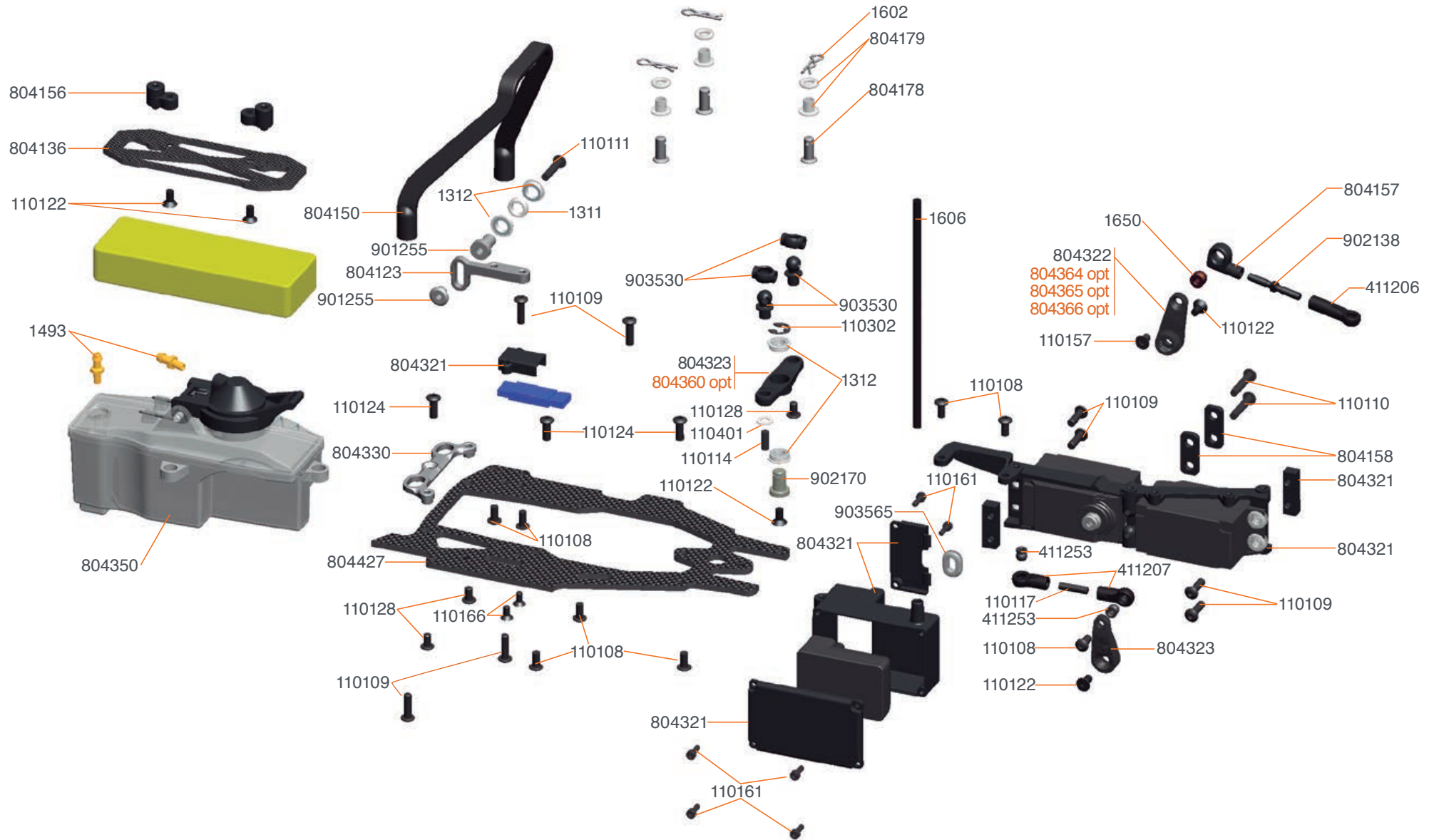
160297 Spring grey TC
160298 Spring black TC
160299 Spring green TC
160300 Spring white

160301 Spring yellow
160302 Spring orange
160304 Spring Pink
160305 Spring blue

160306 Spring purple
160310 Spring-set L23 (5x2)
160147 Shock onroad big bore bushing LF (4)

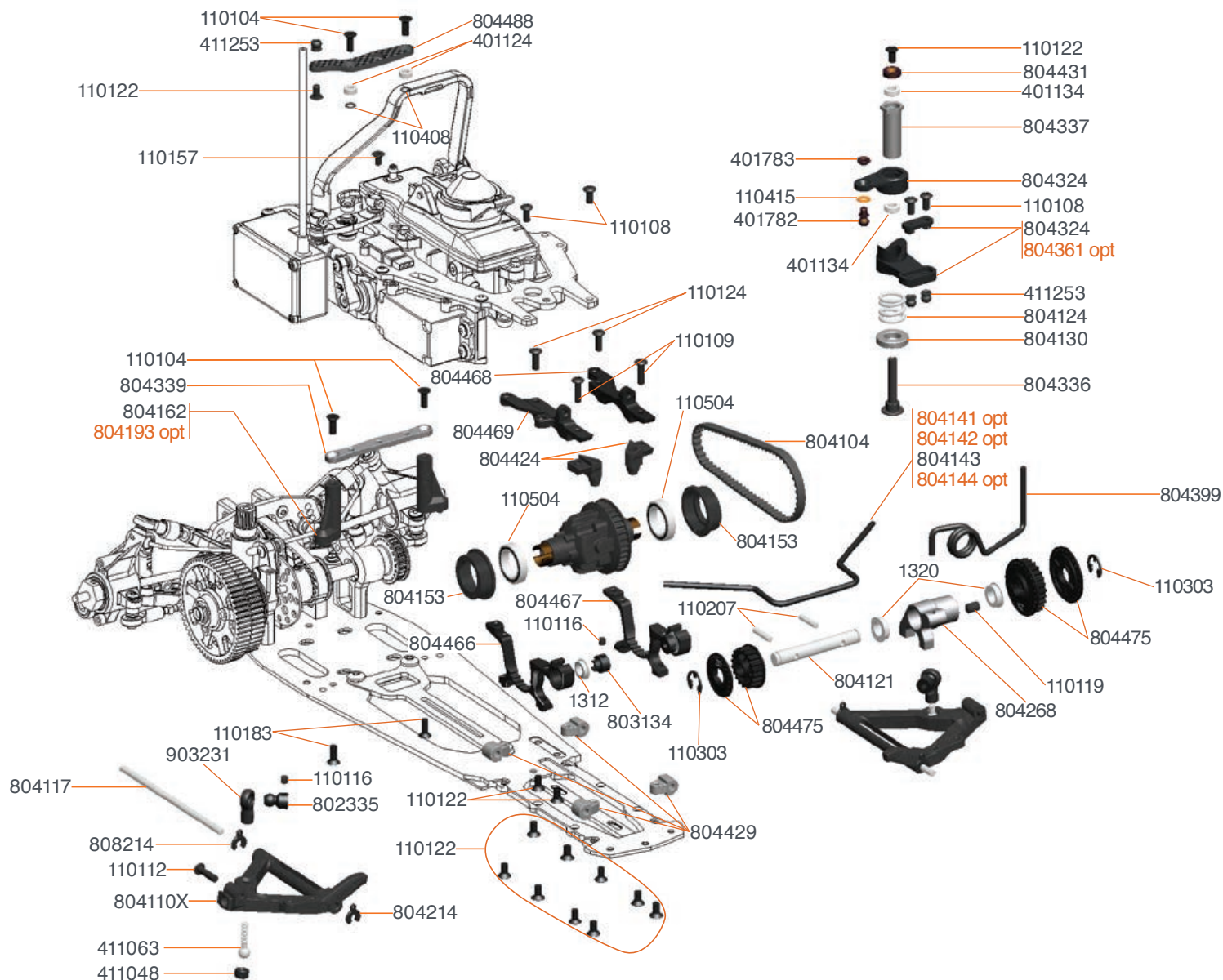


S750 EVO
804490 Rearplate alu wide S750 EVO
804492 Chassis weight 25gr S750 EVO



804360 Throttle lever alu
804364 Servo lever steering alu 23T 748
804365 Servo lever steering alu 24T 748

804366 Servo lever steering alu 25T 748
804457 Screwset titanium S750 EVO (165)



804141 Anti-rollbar FR 1.8mm
804142 Anti-rollbar FR 2.2mm
804144 Anti-rollbar FR 2.8mm
804193 Radioplate support alu
804361 Servosaver bottom alu

804374 Solid axle set front alu
804375 Solid axle front alu
804376 Solid axle outdrive (2)
804400 Suspension bracket FR brass
804450 Oneway diff fr S7XX

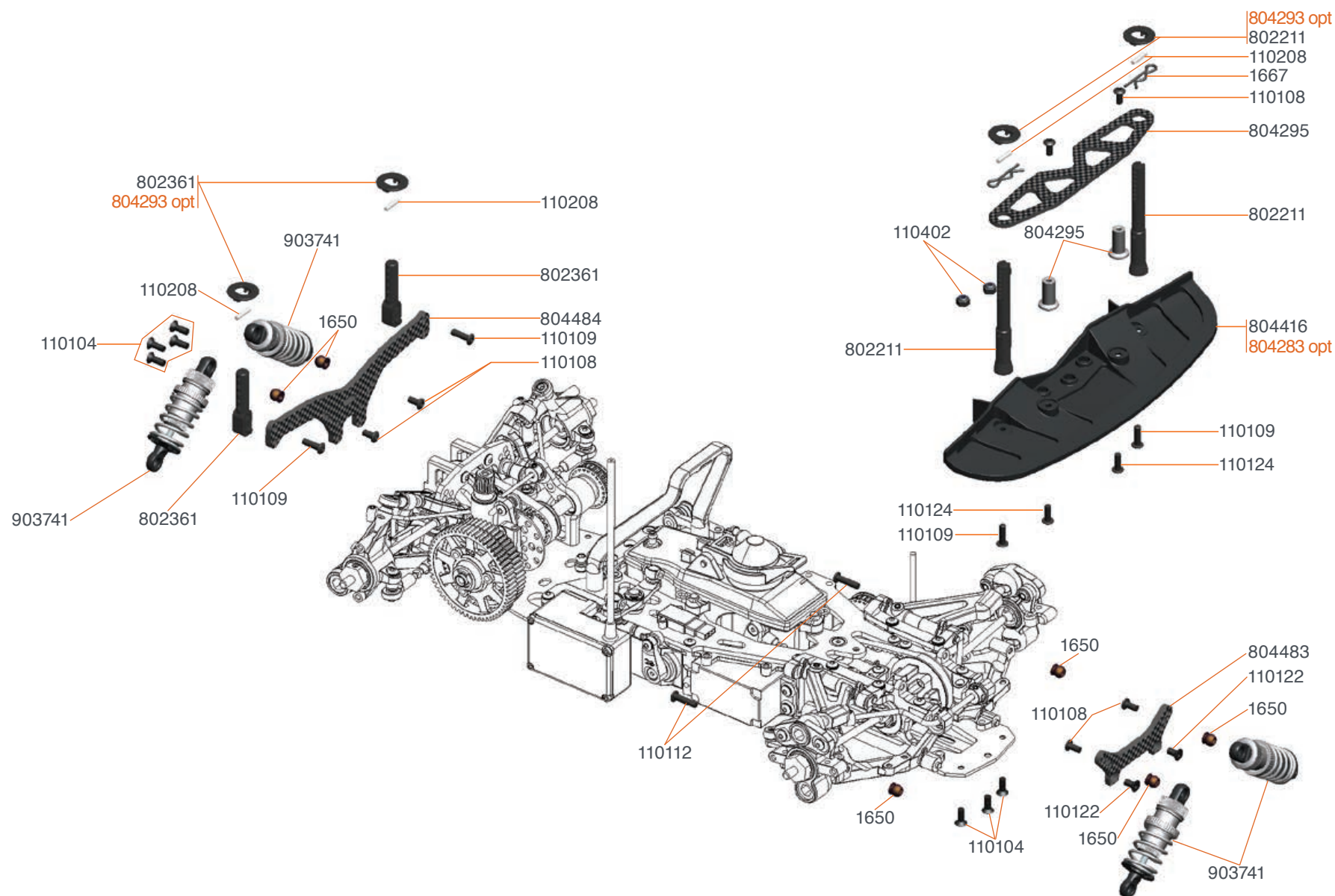
804451 Oneway diff housing fr
804452 Oneway diff outdrive (2)
804453 Oneway diff fr gear (2)
804454 Pulley 33T fr S7XX
804455 Oneway diff housing o-ring (5)

804456 Oneway diff outdrive o-ring (5)
804457 Screwset titanium S750 EVO (165)



- 804448 Wheel hexacon CVD 0mm V2 (2)
804449 Wheel hexacon CVD -1mm V2 (2)

SHOCKS MOUNTING EXPLODED VIEW

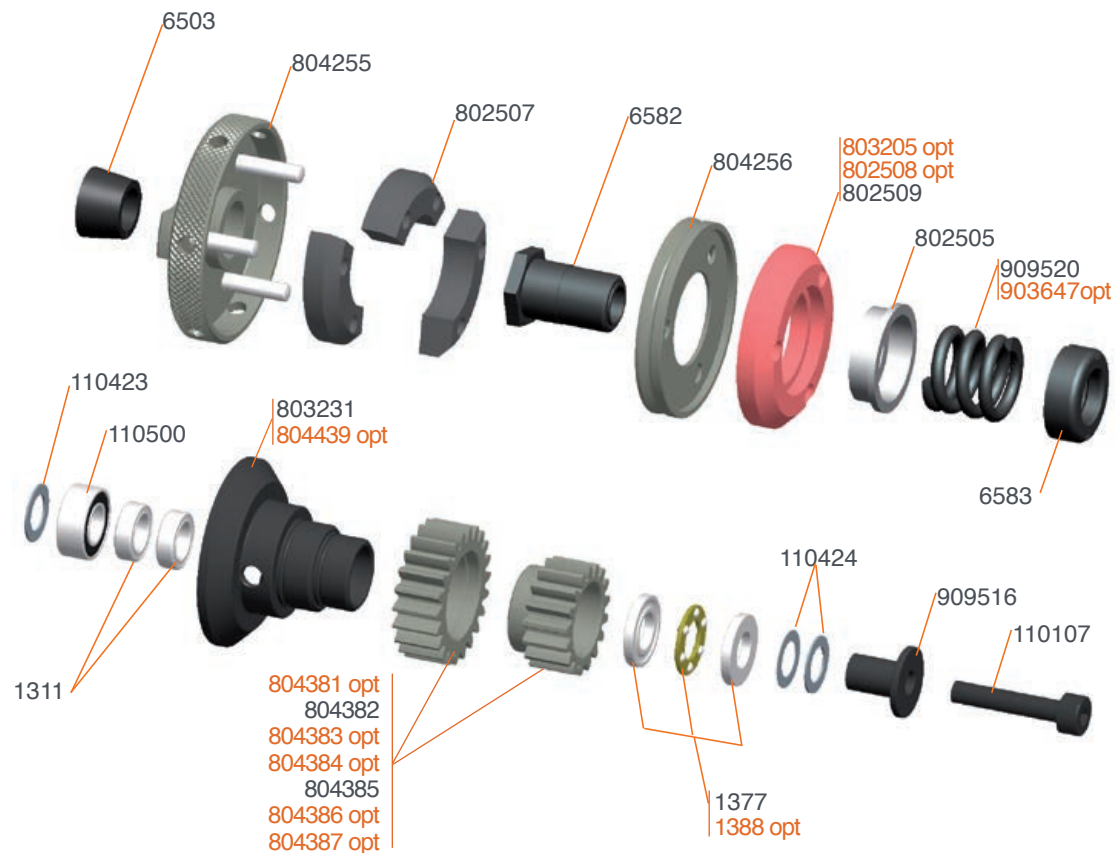


804283 Bumper 747
804293 Body support washers med + high (5+5)
804457 Screwset titanium S750 EVO (165)

804493 Heave bracket rr L+R alu S750 EVO
804494 Heave bracket fr L+R alu S750 EVO
804495 Heave demper set rear S750 EVO

804496 Heave demper set front S750 EVO

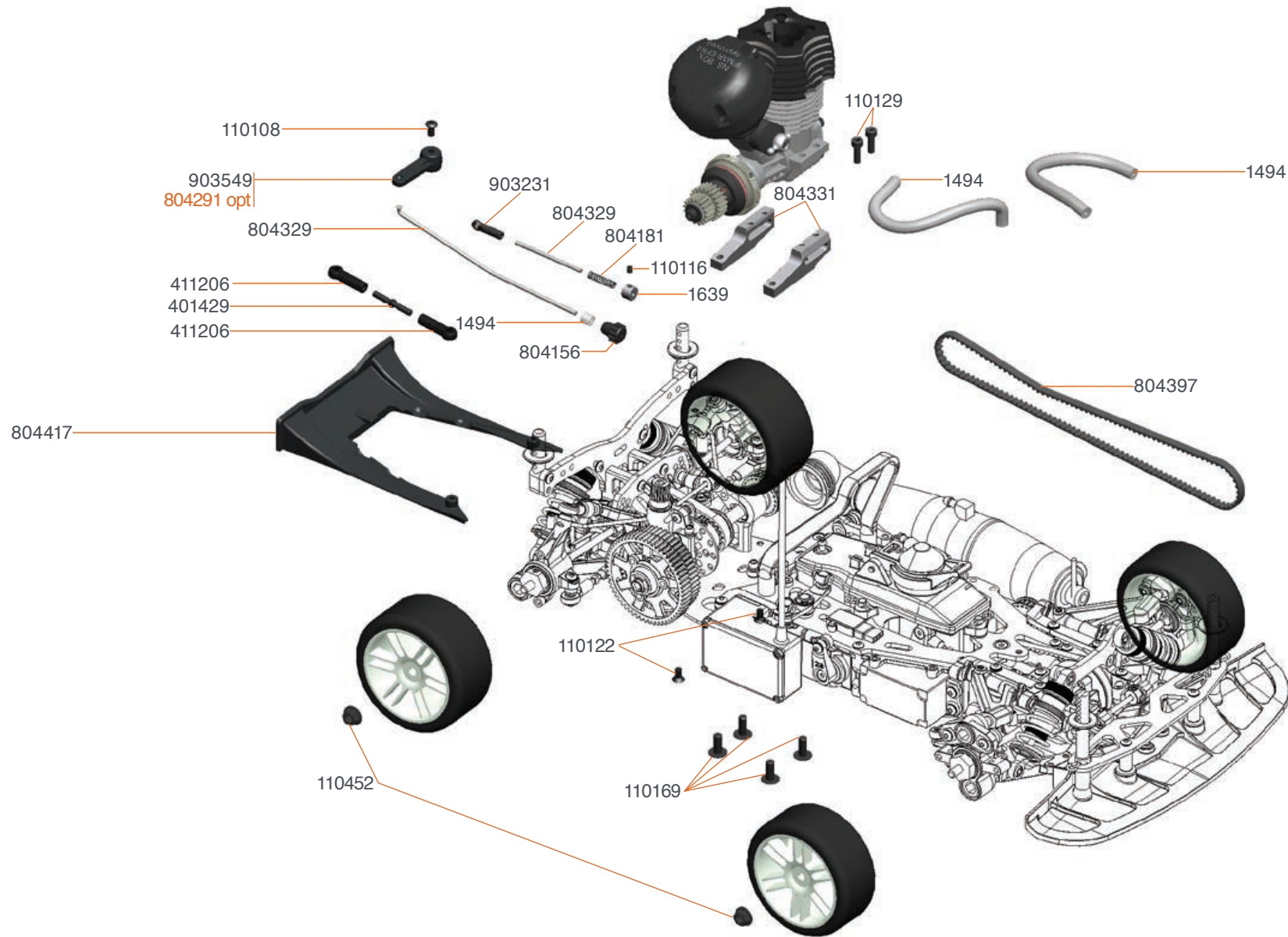
Centax True Motion clutch 1/10 #804250



1388 Thrust bearing 5x10 Ceramic
 802508 Centax - 3 clutch shoe XP
 804205 Centax-3 clutch shoe red
 804381 Centax-3 gear-pinion alu 15t wc V2

804383 Centax-3 gear-pinion alu 17t wc V2
 804384 Centax-3 gear-pinion alu 20t wc V2
 804386 Centax-3 gear-pinion alu 22t wc V2
 804387 Centax-3 gear-pinion alu set wc (6) V2

804439 Centax clutchbell 1/10 alu nickel coated V2
 903647 Centax spring x-hard



804291 Brake lever on-road alu
804457 Screwset titanium S750 EVO (165)

TEAM SERPENT NETWORK

750 EVO SPARE PARTS www.serpent.com/804012/spares/



750 EVO OPTIONALS PARTS www.serpent.com/804012/Optionals/



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



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1/10 scale onroad



Manual S750 EVO #62938-1

SERPENT
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