

INTRODUCTION

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

EXPLODED VIEWS AND PARTS LIST

The exploded views and parts lists for the Serpent Viper 990 EVO are presented in the Reference Guide section in the back of this manual. The exploded views show all the 990 EVO 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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	GEARBOX ASSEMBLY FRONT ASSEMBLY RADIO ASSEMBLY SHOCKS ASSEMBLY CLUTCH ASSEMBLY FINAL ASSEMBLY EXPLODED VIEWS

HOW TO USE THE MANUAL

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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.

1 2 3	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	
OO	Connect one item to another	
<u> </u>	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.

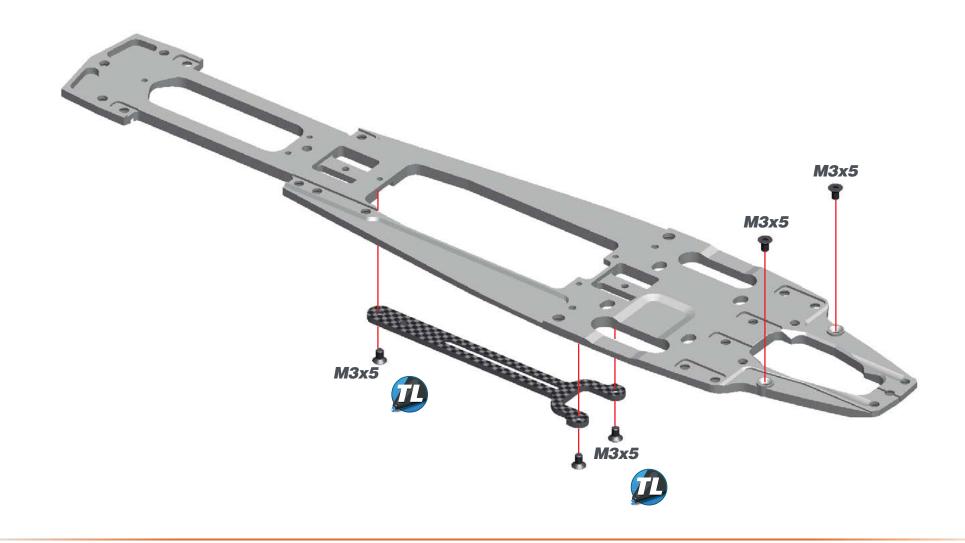


Optional part, not standard in the kit.



BAG 1

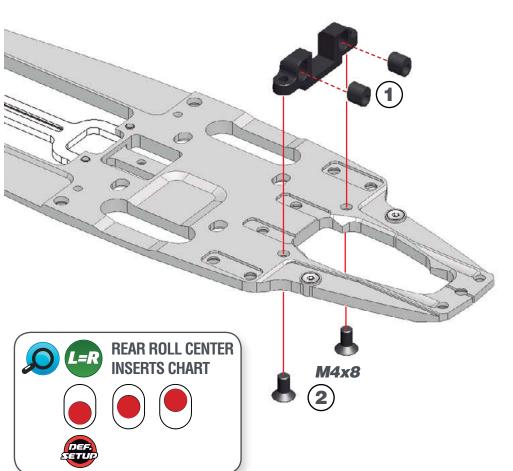














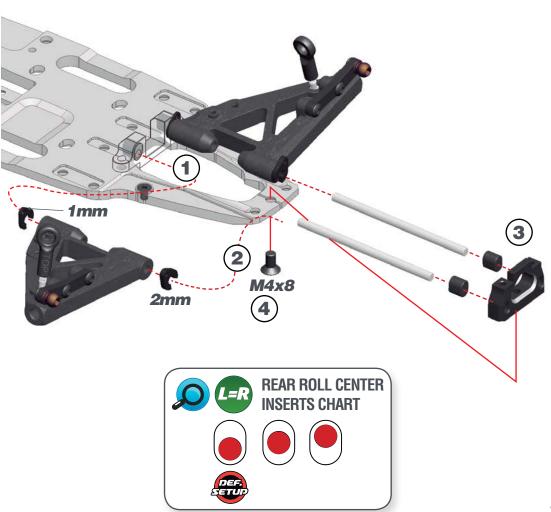


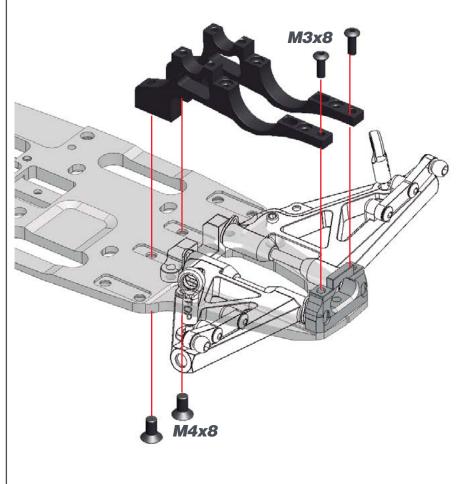






BAG 2





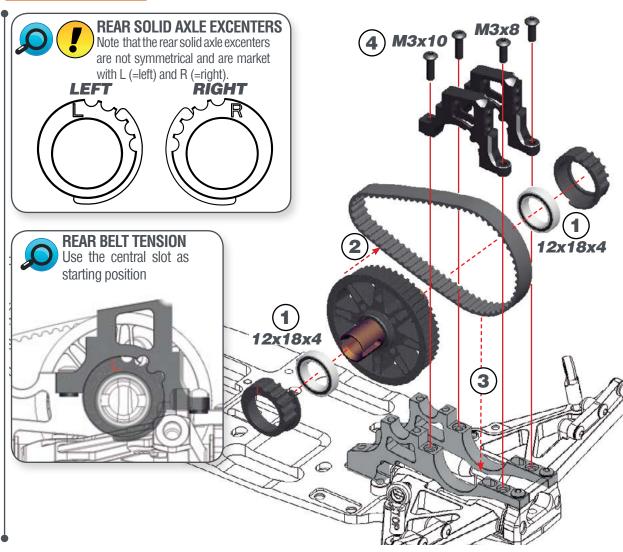


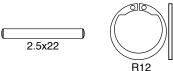










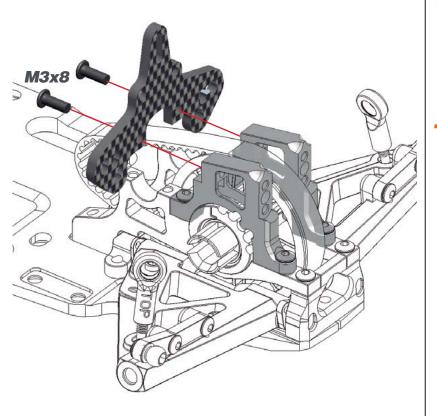


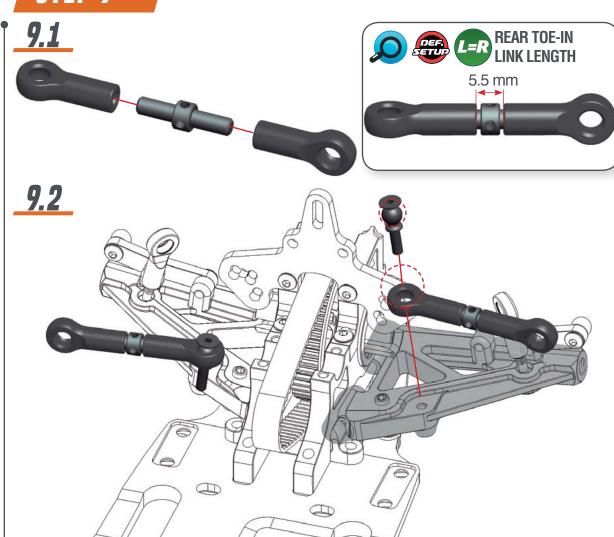












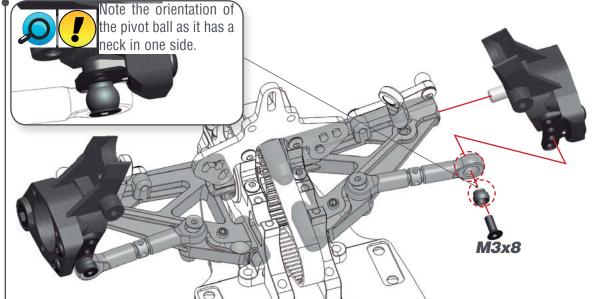




STEP 10 BAG 3

STEP 11













REAR REACTIVE STEERING SYSTEM

Serpent 990 introduce the Active rear toe-in. It brings a new dimension to setup changing the toe-in characteristics of the rear tires under rolling effect. It allows to run less static toe-in and still have a good traction coming out of the corner.

Serpent RRS System brings the possibility to adjust the amount of toe-change over the suspension travel from zero to positive or negative toe-change depending on the linking point selected as explained below:



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



Toe in will not change over the suspension travel.

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

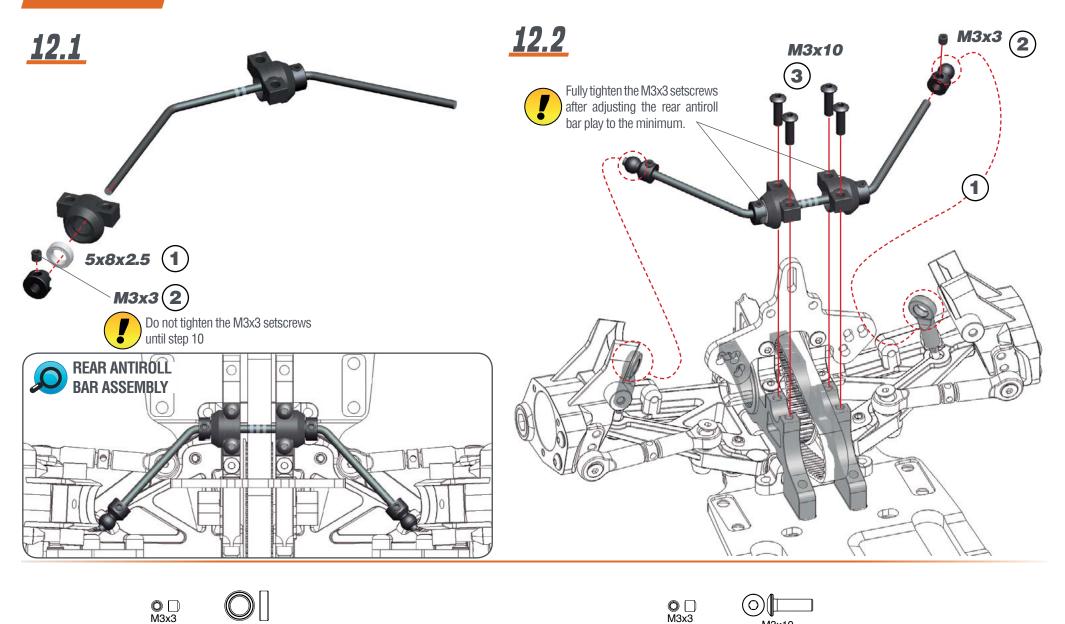


M3x6





M3x10

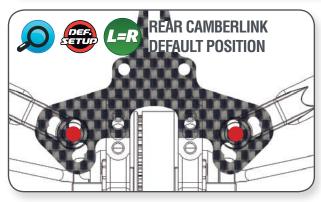




13.1







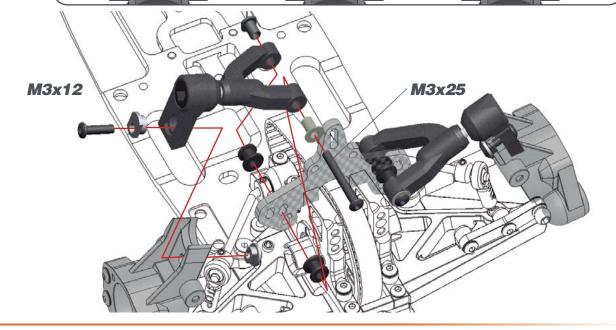




L=R REAR UPPER WHSIBONE ANGLE

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

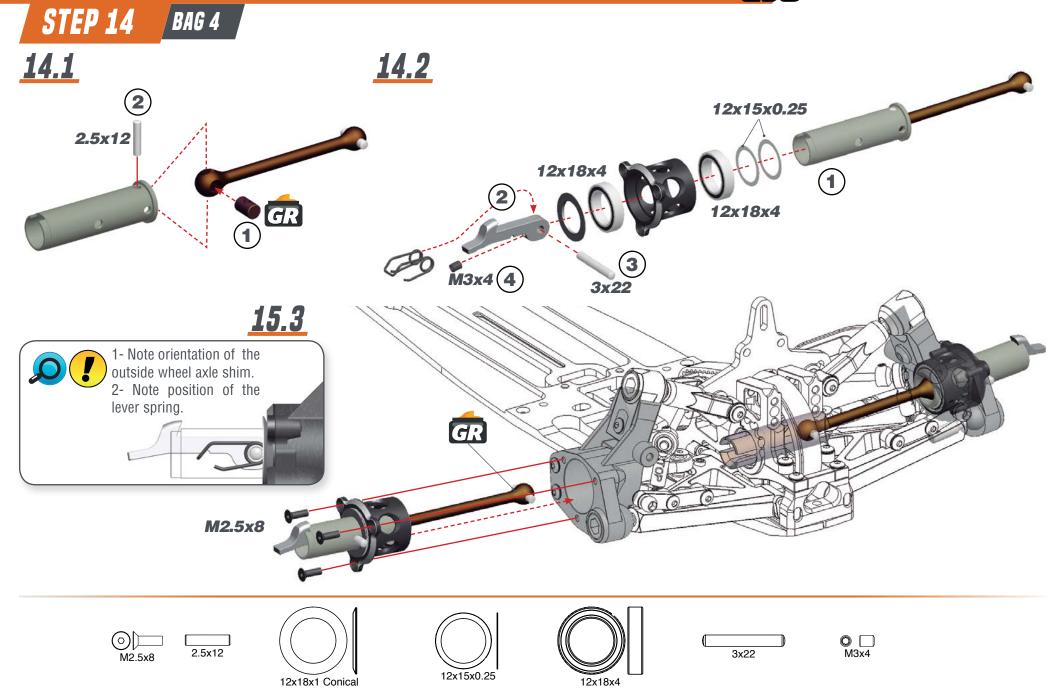




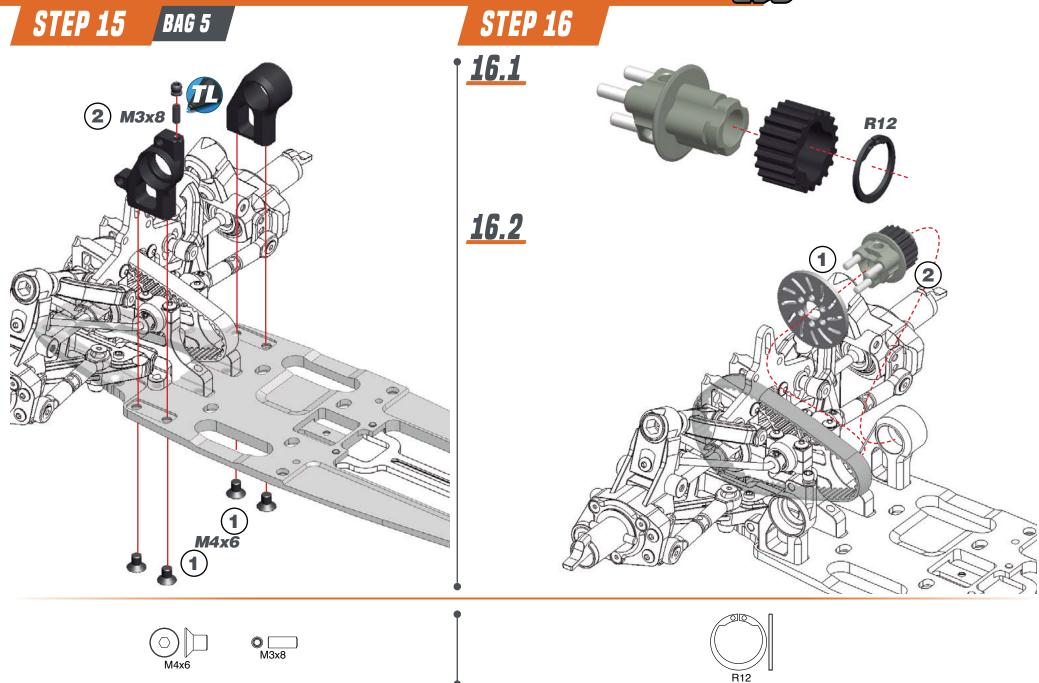




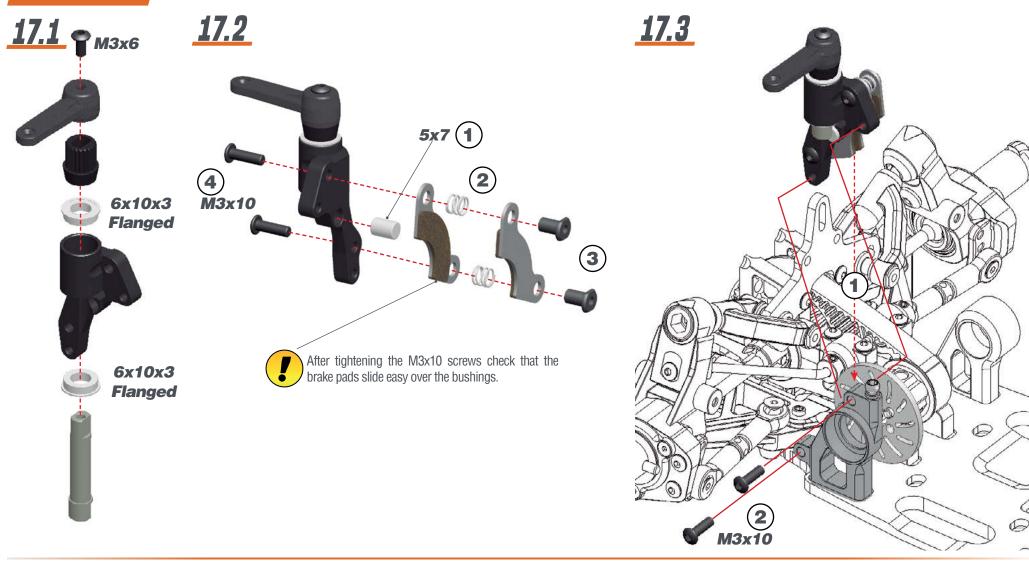


















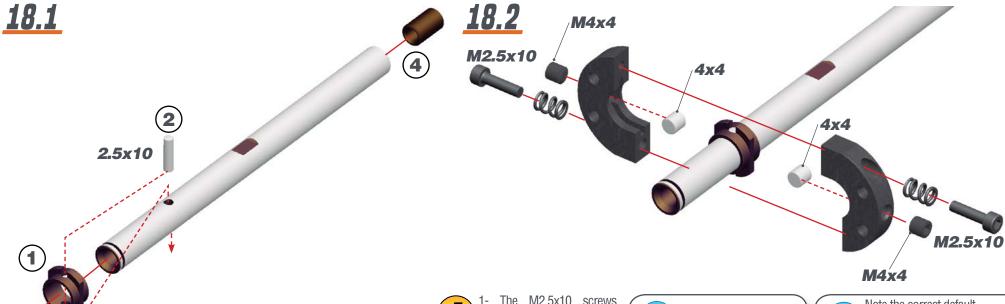


GEARBOX ASSEMBLY



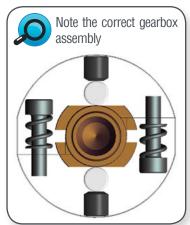


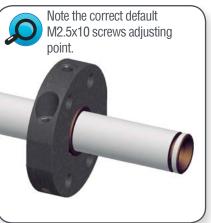




1- The M2.5x10 screws adjust the SHIFT POINT. As default adjustment screw them untill the screws will be be leveled with the hole as in the right pictures.

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.





2.5x10

M4x6

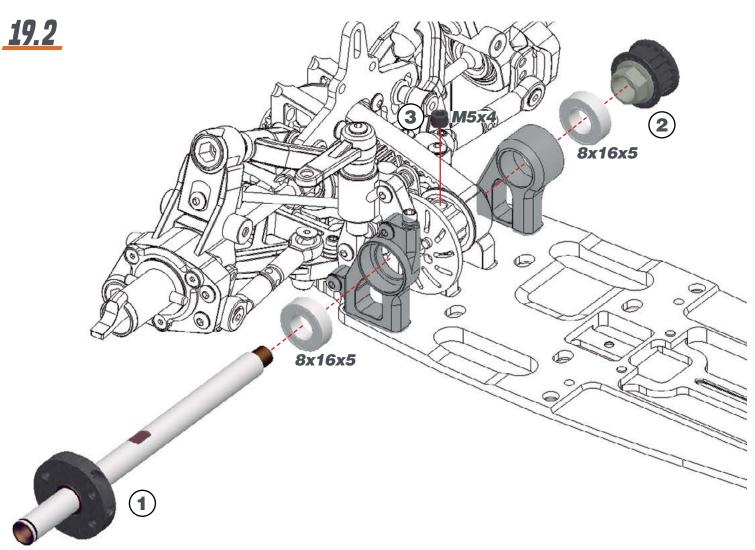
4x4

©□ M4x4 M2.5x10



19.1



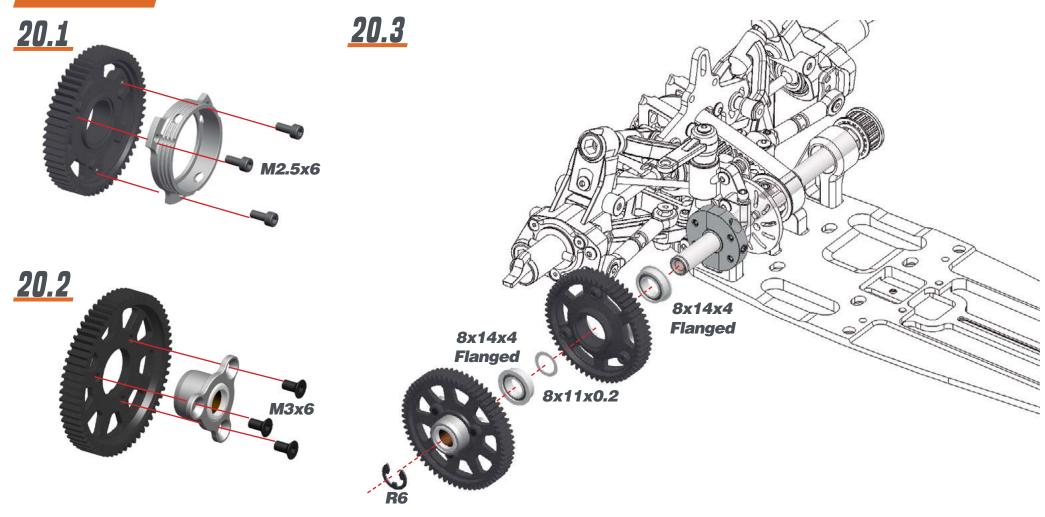




















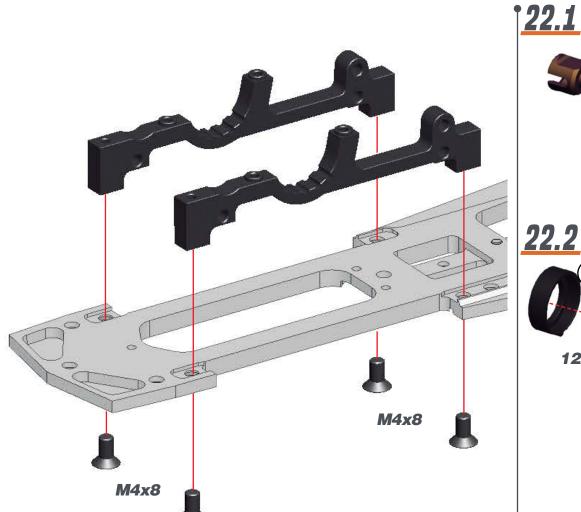






BAG 7



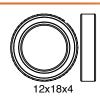






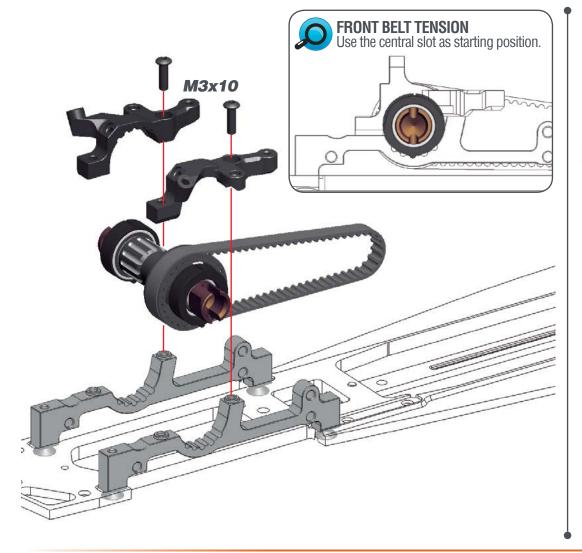


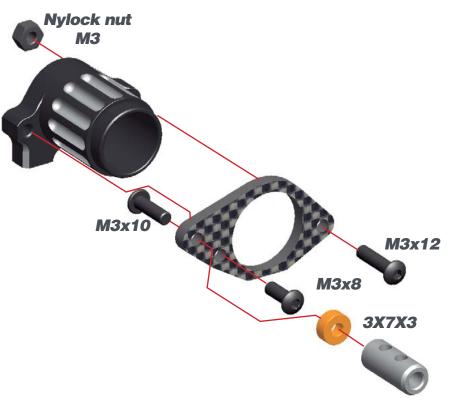




















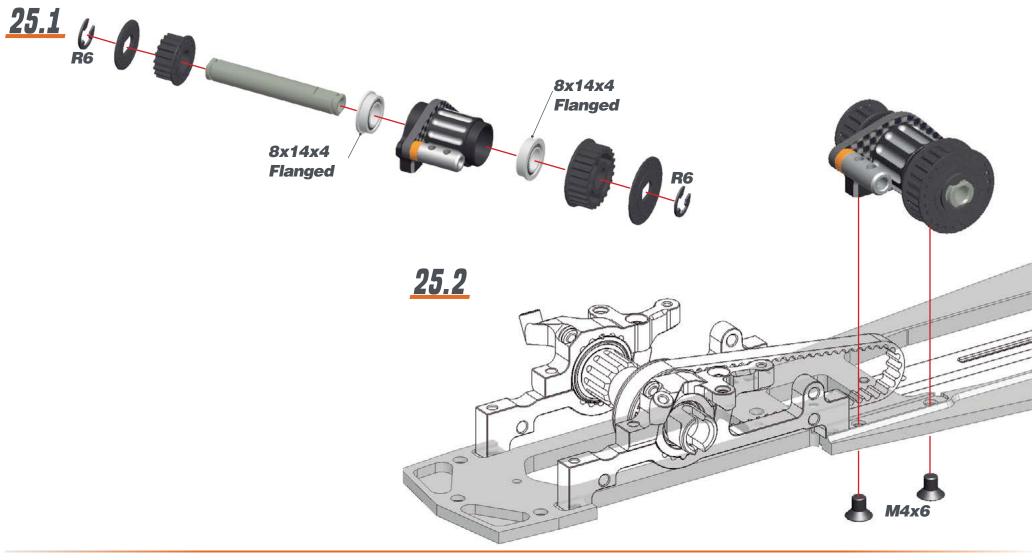






















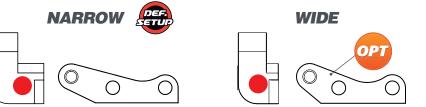


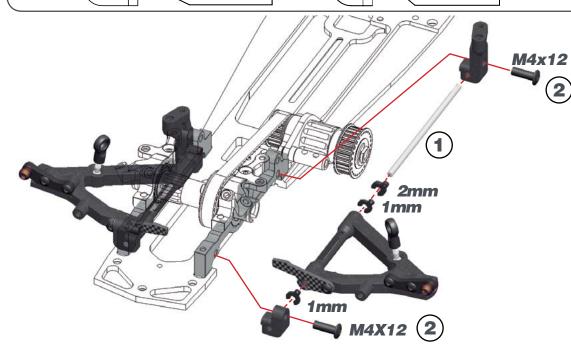




L=R FRONT LOWER SUSPENSION AND SHOCK BRACKETS

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



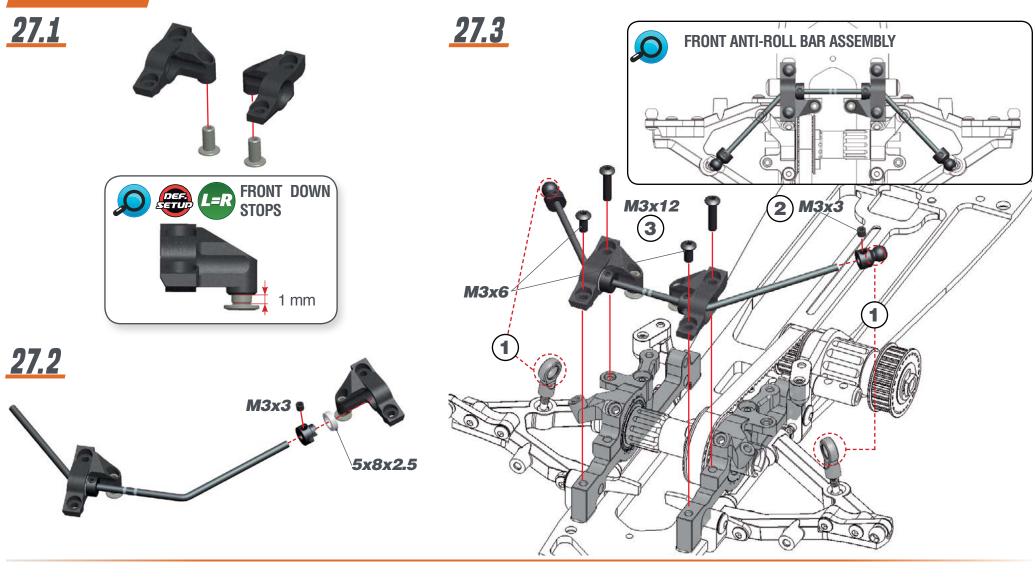


















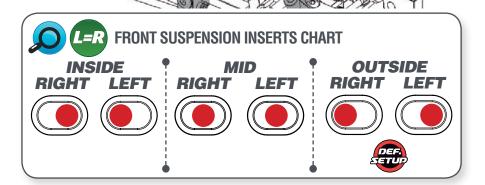




STEP 28 BAG 9

Note that the 4x6x1 and 4x6x0.5 shims must be used always. In order to rise or lower the front suspension bracket it is needed to play with the position of the shims but never remove them. Is it

possible to go from "0" with no shims under the bracket to 1.5mm with both shims under the braket.

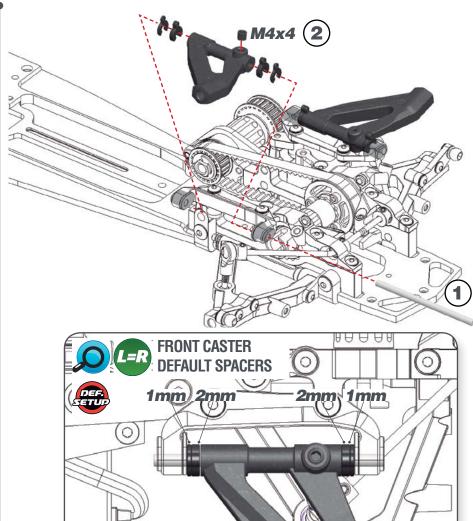


2 M3x12

M3x10

4x6x1

4x6x0.5









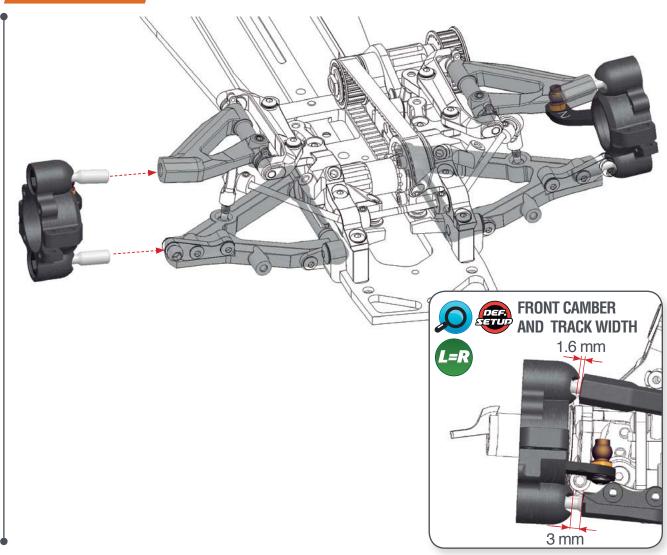


















SERFENT

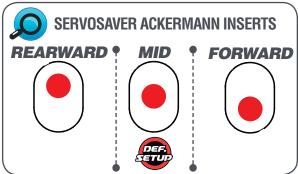


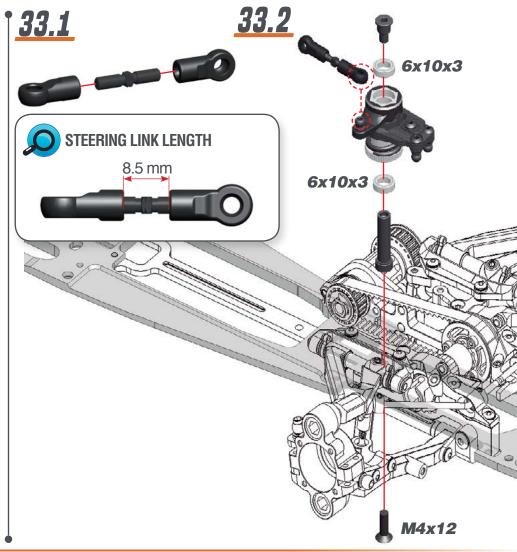




32.2











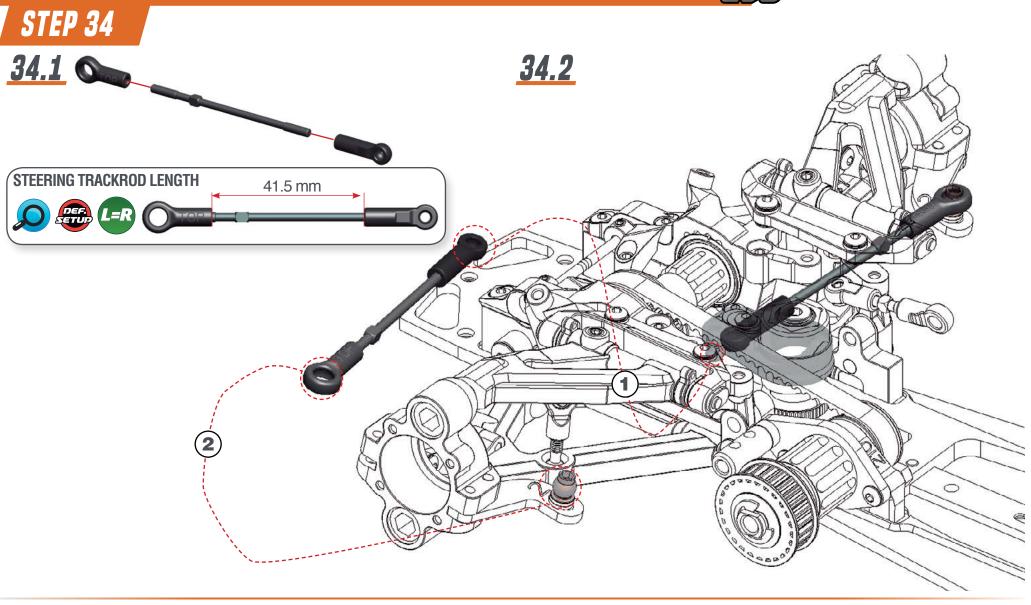




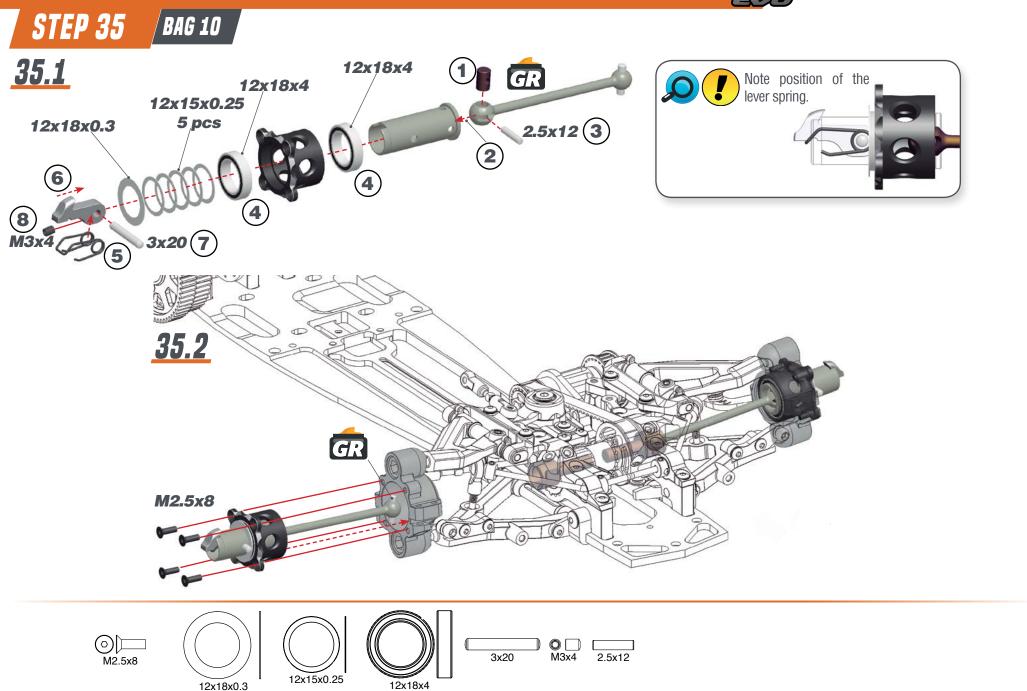






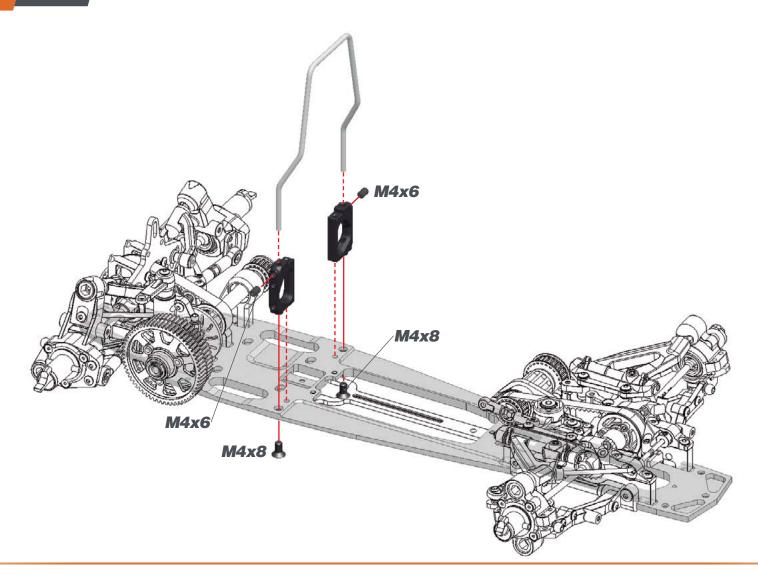








STEP 36 BAG 11

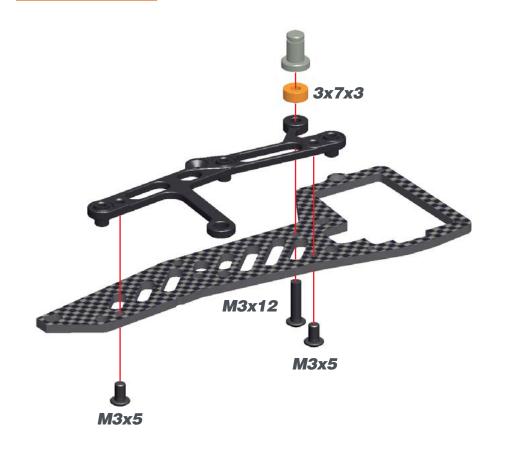


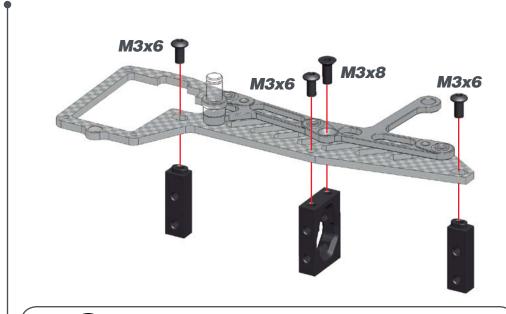


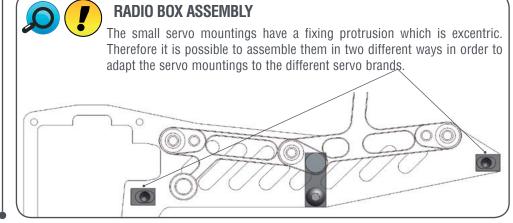


CITY SERPENT











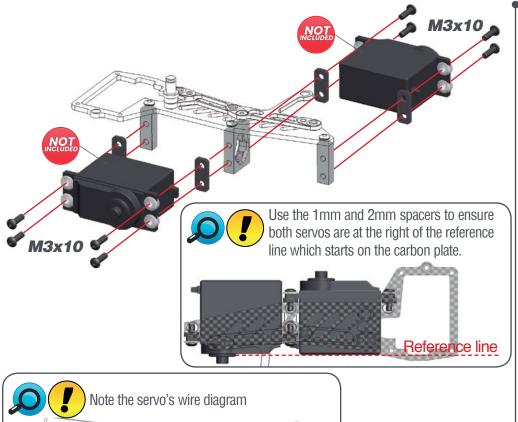


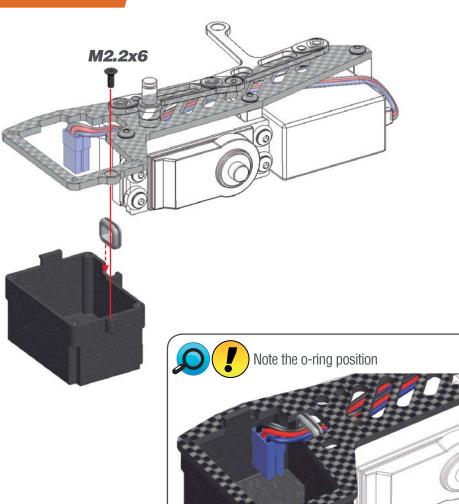


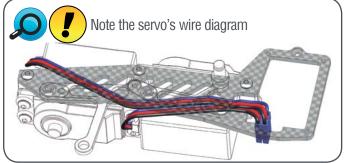










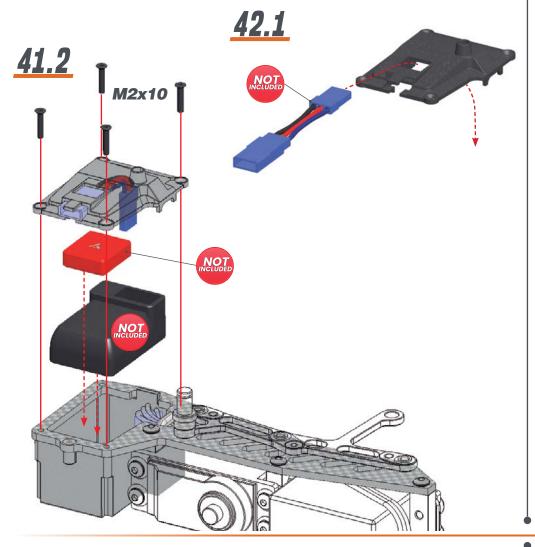


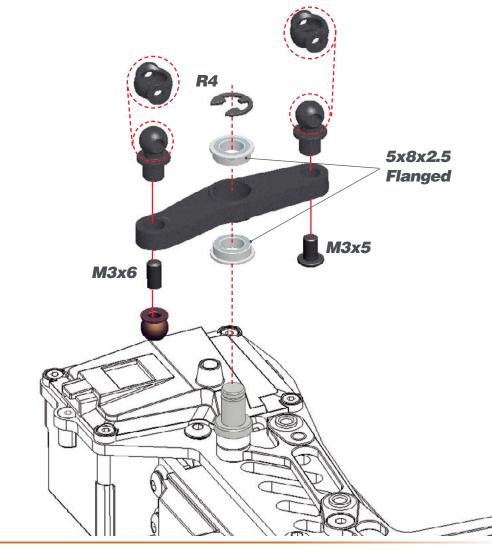


















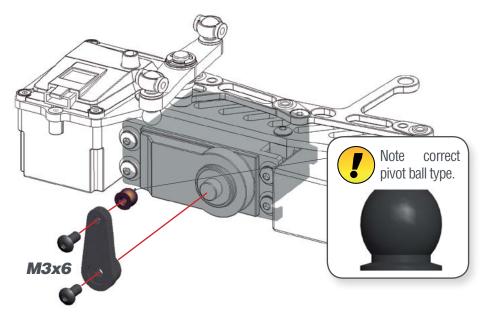


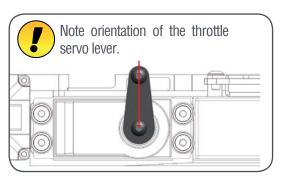






Check how many teeth your servo spline has (23, 24 or 25) and use the right lever.





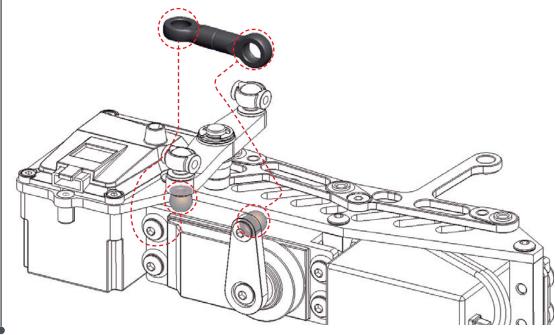
STEP 44







44.2

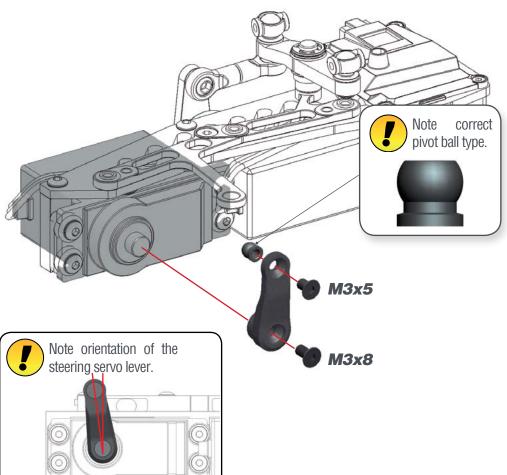




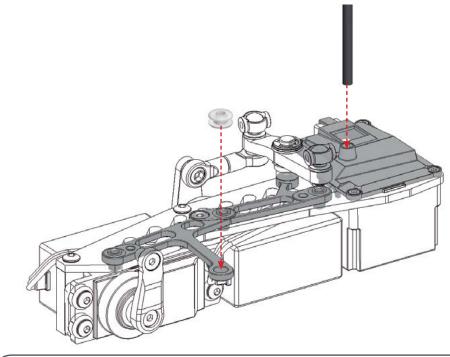


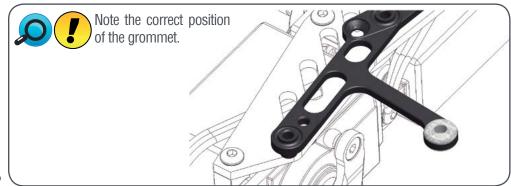


Check how many teeth your servo spline has (23, 24 or 25) and use the right lever.









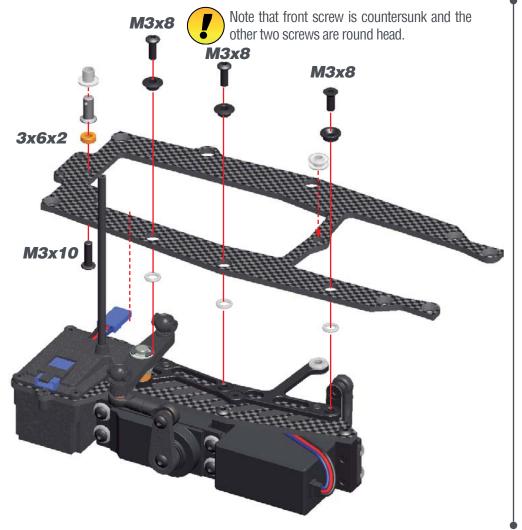


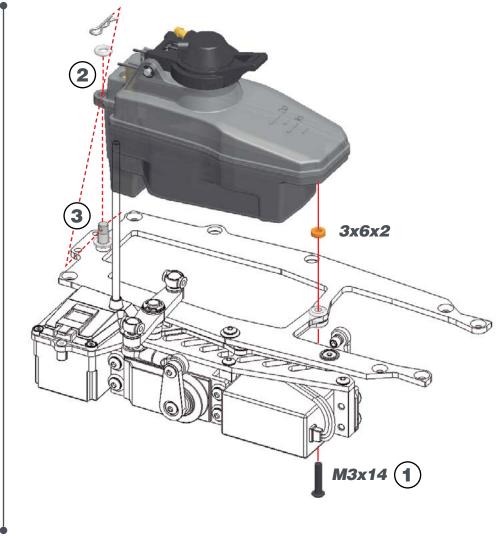






BAG 12









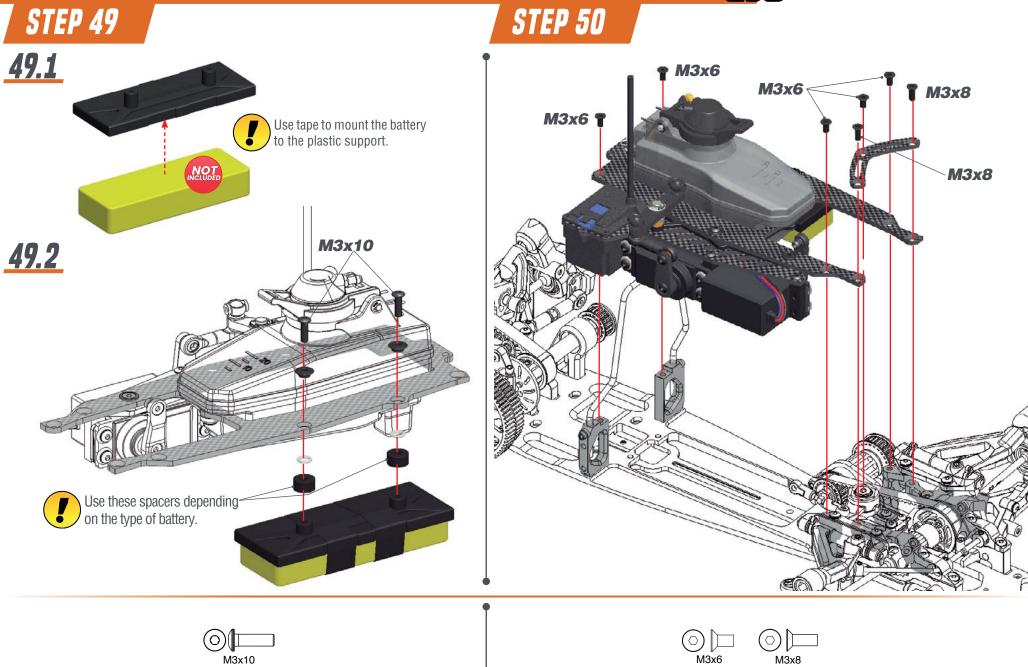














SHOCKS BAG

*5*1.1

Use some silicone oil during the assembly.





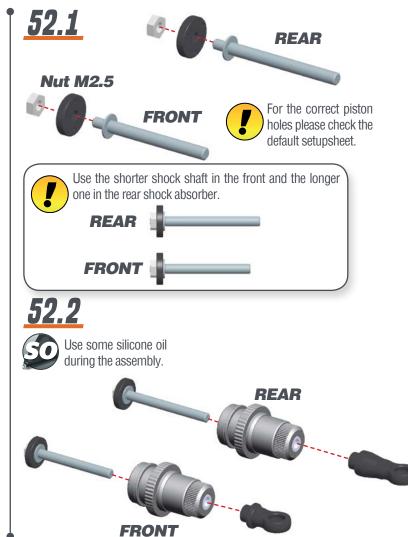


51.2

Insert the o-ring inside the spring collar.









SEXLEDU

STEP 54

STEP 53

53.1

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



53.2

- 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.

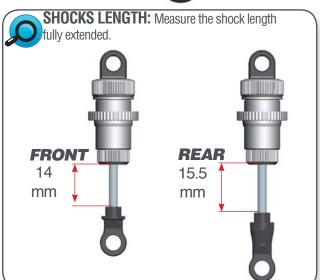


53.3

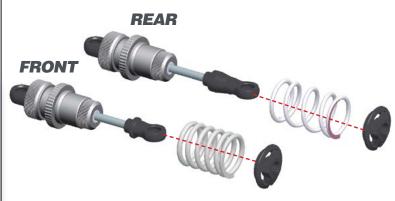
1-Bleed: push the shockrod all the way in slowly, to allow excessive oil to escape.

2- Close the shock cap completely.





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

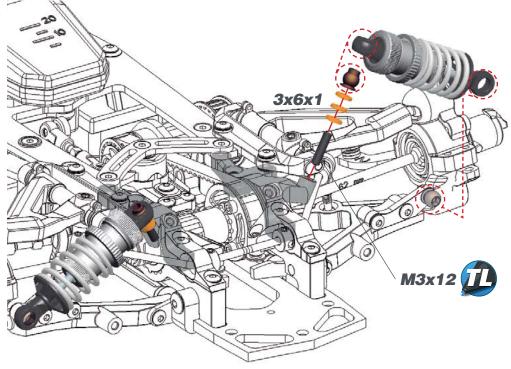


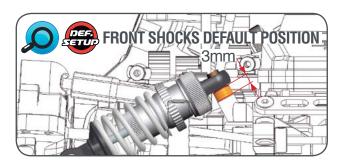




STEP 55 B

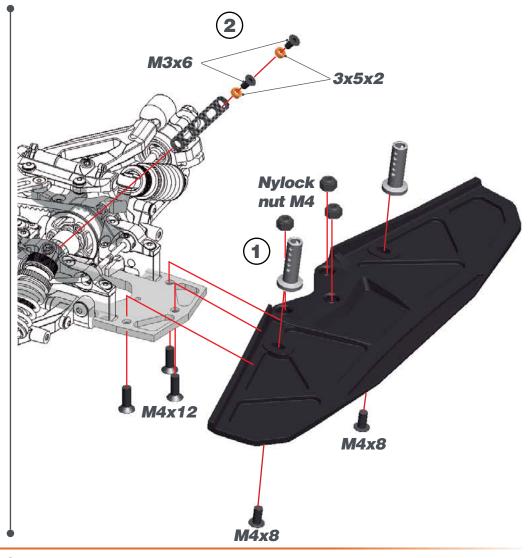
BAG 13













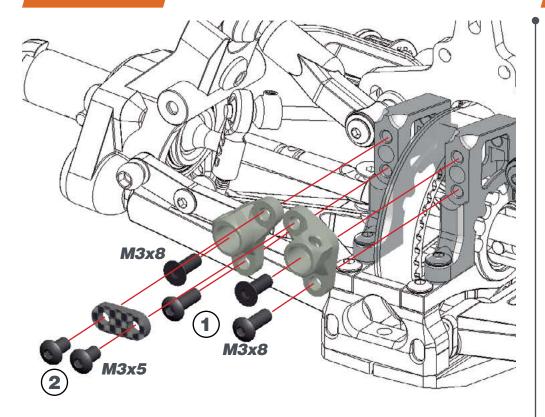


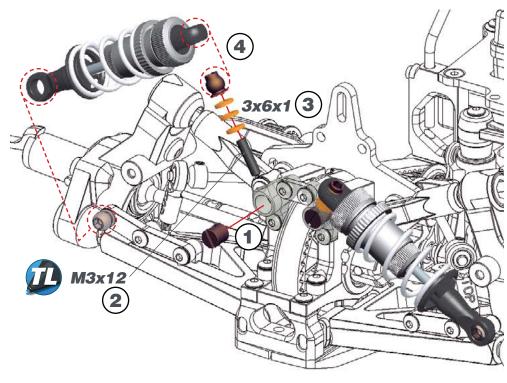


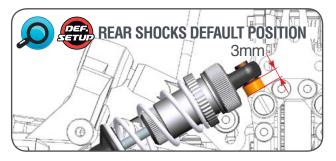
















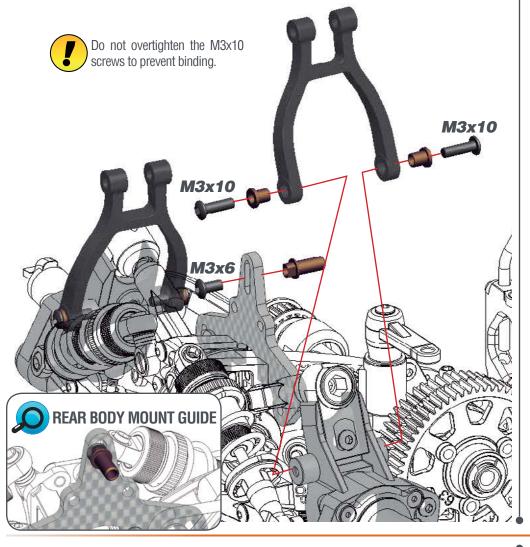


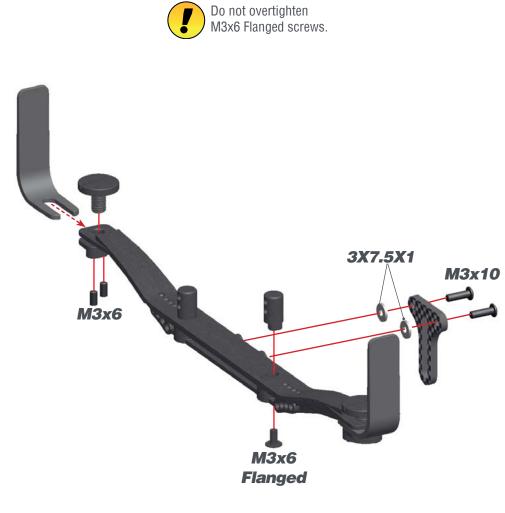






BAG 14









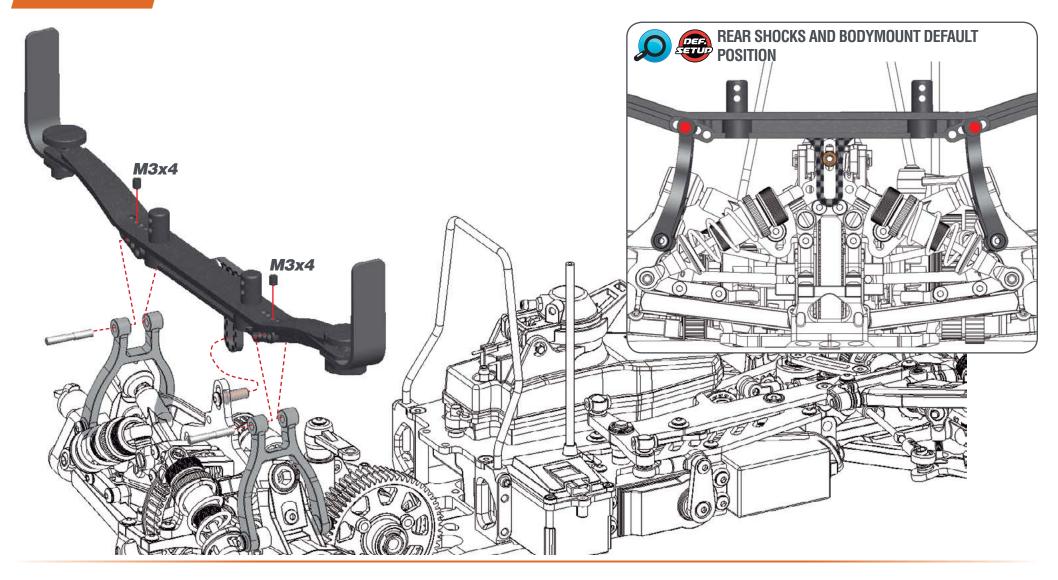
















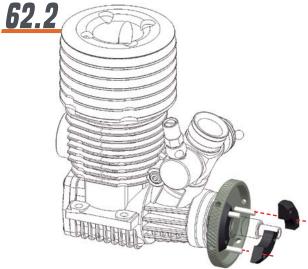
STEP 62 CLUTCH BAG

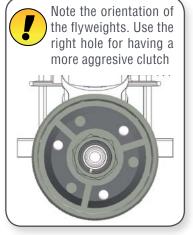


1- To align the clutchgears with the 2-speed gears, it may be needed to use shim(s) 6x8x0.5mm (for 6mm shaft) or 7x8x0.5 (for 7mm shaft) behind the cone. This you can see only after assembling the clutch.

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.

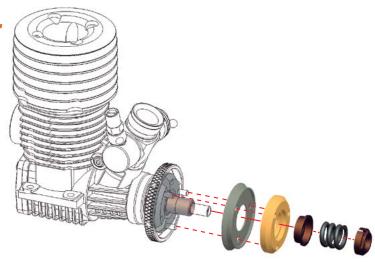
NOT





STEP 63

63.1

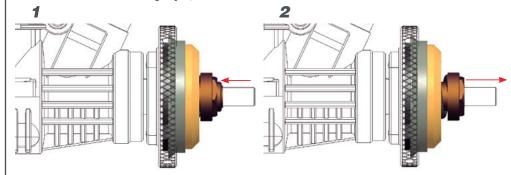


63.2



For adjusting the default clutch spring tension:

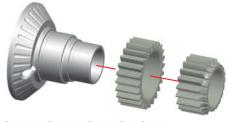
- 1- Screw in the adjusting nut all the way.
- 2- Unscrew it one and a half turns.
- 3- Fine tune the setup of your clutch on the track according to your driving style, track and weather conditions.







64.1



64 9 SETTING THE CLUTCH GAP





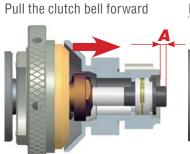
5.2 mm 5.0

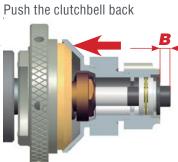
5.0 mm



M3x16

64.2 Clutch gap is calculated taking A and B measurements showed below. GAP = B - A. The advised gap is between 0.6 and 0.8mm







STEP 65

55_1 Disassemble the clucth bell.



65.2 SETTING THE CLUTCH END PLAY











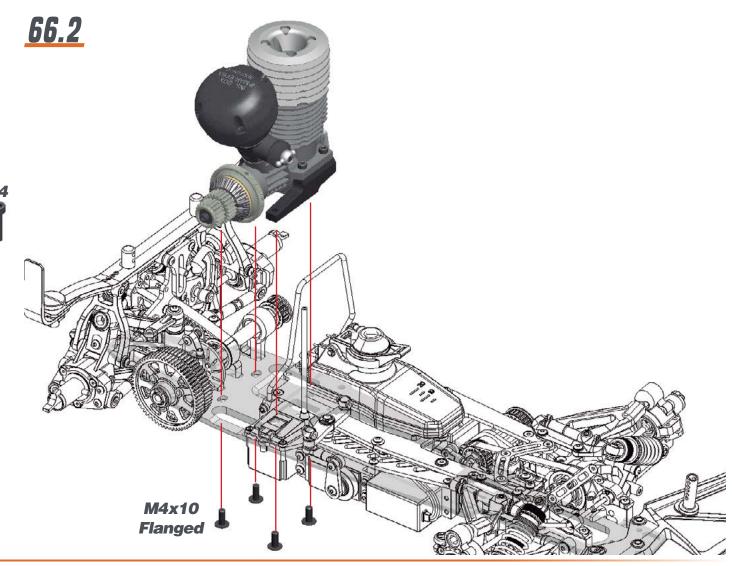




STEP 66 BAG 15

66.1

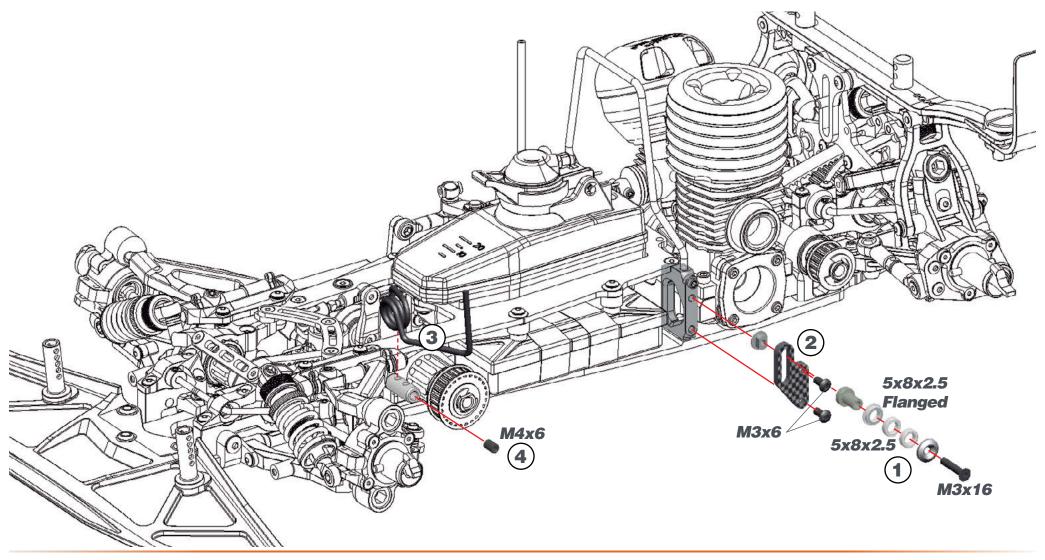














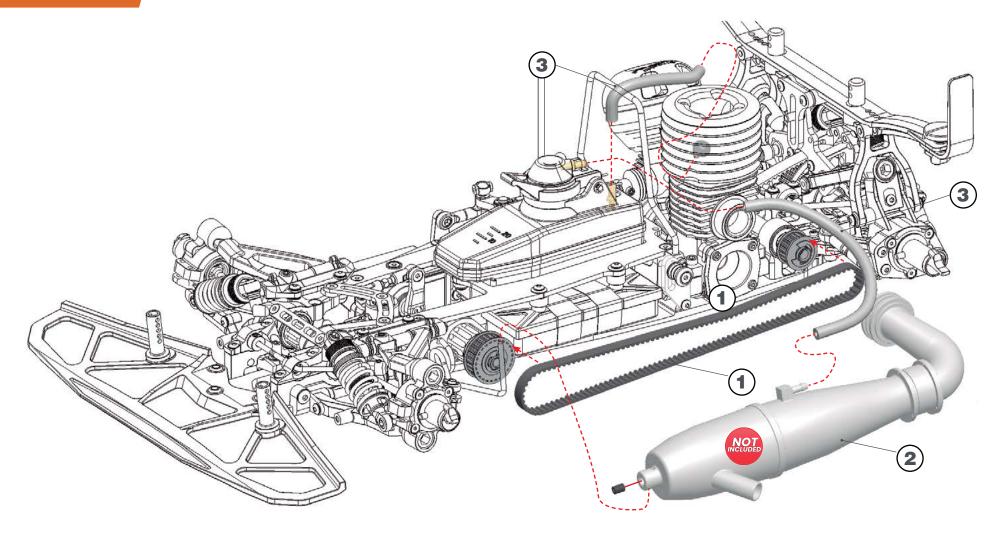










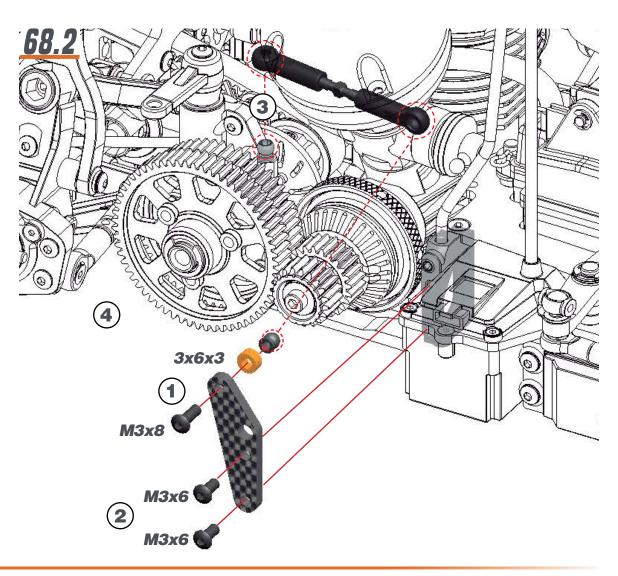




68.1





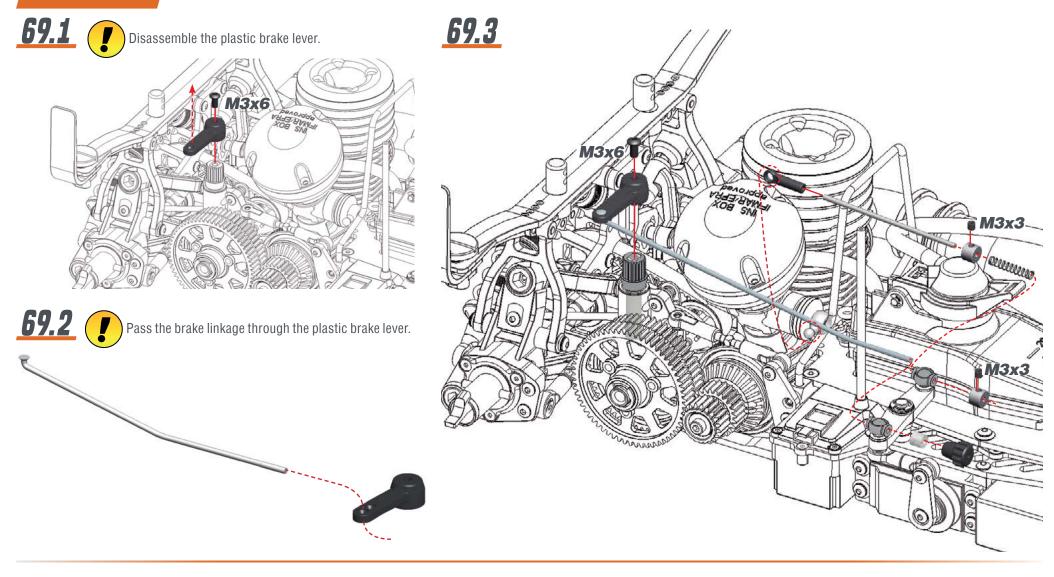




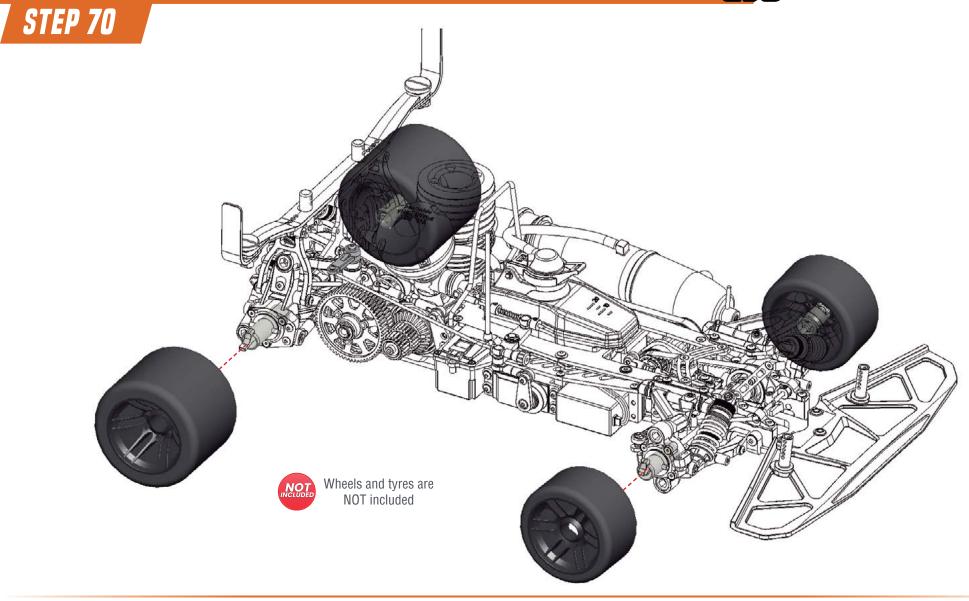
















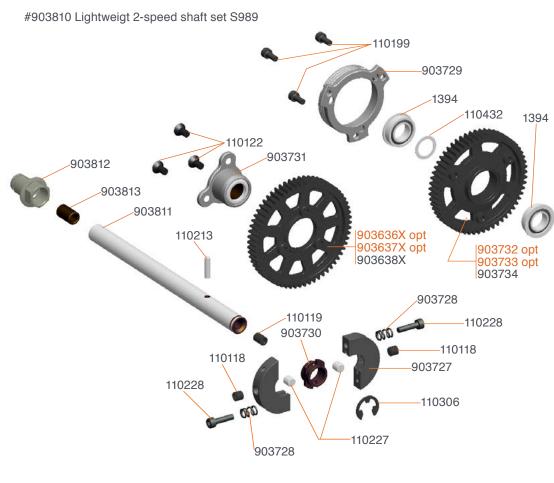
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6587XP	Centax clutch shoe XP
903239	Centax-2 clutch shoe red
903643	Centax gear-pinion alu 23T XLI
	Centax gear-pinion alu 25T XLI
903646	Centax gear-pinion alu set XLI (6)
903636X	2-speed gear 61T SL8 XLI V2
	903239 903643 903645 903646

903637X	2-speed gear 62T SL8 XLI V2
903732	2-speed gear 56T XLI Gen2
903733	2-speed gear 57T XLI Gen2
903771	2-speed gear set (6) XLI Gen2
903805	Centax gear-pinion alu set XLI Gen2 (6)
909512	Centax II clutch-housing universal

903796	Centax spring XX-hard
903799	Centax gear-pinion alu 18T XLI Gen2
903801	Centax gear-pinion alu 20T XLI Gen2
903876	Centax gear-pinion steel 17T XLI
903877	Centax gear-pinion steel 22T XLI

SHOCKS EXPLODED VIEW







160308 Spring grey L23 (9/51.5) (2)

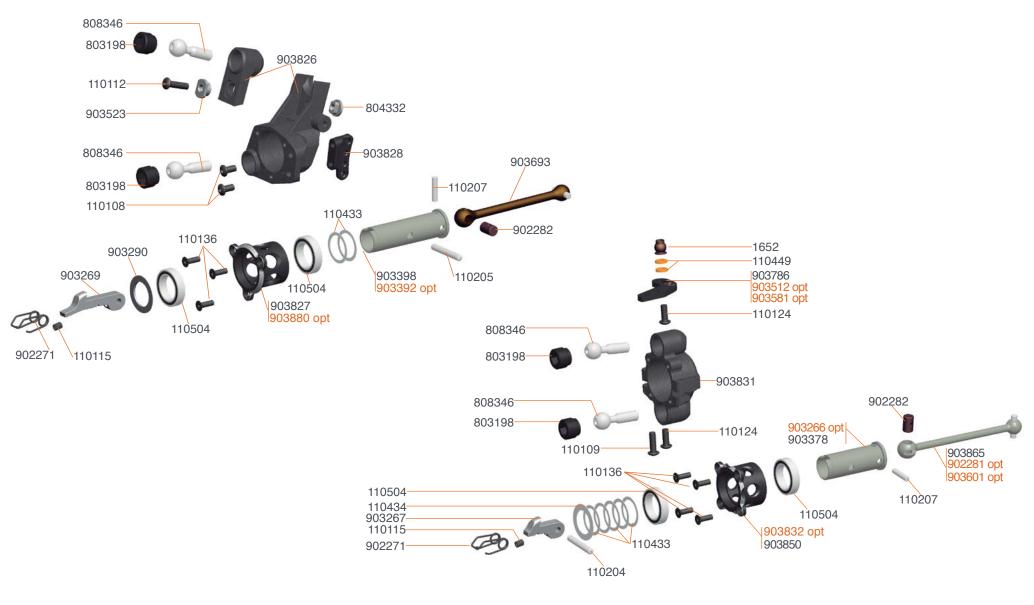
160300 Spring white L23 (2.3/13) (2) 160301 Spring yellow L23 (2.8/16) (2) 160302 Spring orange L23 (3.4/19.5) (2) 160303 Spring red L23 (4.1/23.5) (2) 160304 Spring pink L23 (4.0/28) (2) 160305 Spring blue L23 (5.8/33) (2) 160306 Spring purple L23 (6.8/39) (2) 160307 Spring green L23 (8/45.5) (2)

160309 Spring black L23 (10/57) (2) 160310 Spring-set short (5x2) 160320 Spring white L27 (2.3/13) (2) 160321 Spring yellow L27 (2.8/16) (2) 160322 Spring orange L27 (3.4/19.5) (2) 160323 Spring red L27 (4.1/23.5) (2) 160325 Spring blue L27 (5.8/33) (2) 160326 Spring purple L27 (6.8/39) (2) 160327 Spring green L27 (8/45.5) (2) 160328 Spring grey L27 (9/51.5) (2)

160329 Spring black L27 (10/57) (2) 160330 Spring-set L27 (5x2) 903777 Shock piston XLV 1 hole (4) 903778 Shock piston XLV 2 hole (4) 903779 Shock piston XLV 3 hole (4) 903780 Heave demper set rear 903781 Heave demper set front 903788 Shockbody XLV short NiCoated (2)

RR UPRIGHTS AND FR STB. EXPLODED VIEW







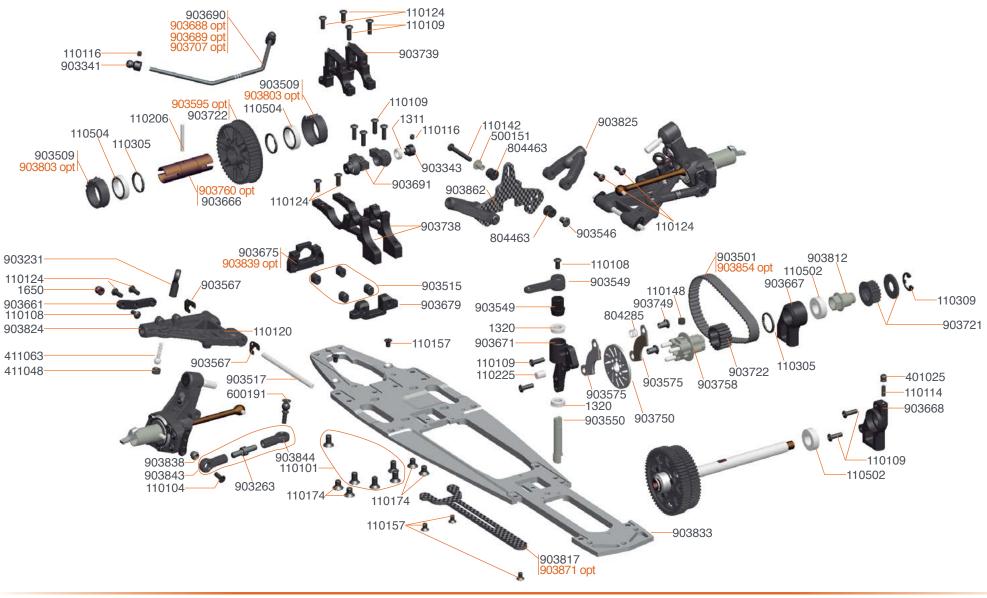
903601 Driveshaft cvd FR alu (2) 903832 Steeringblock excenter alu (2) S990 903851 Offset shim excenters 0.5mm (4) S990

903880 Upright insert excenter alu (2) S990 EVO

REAR EXPLODED VIEW





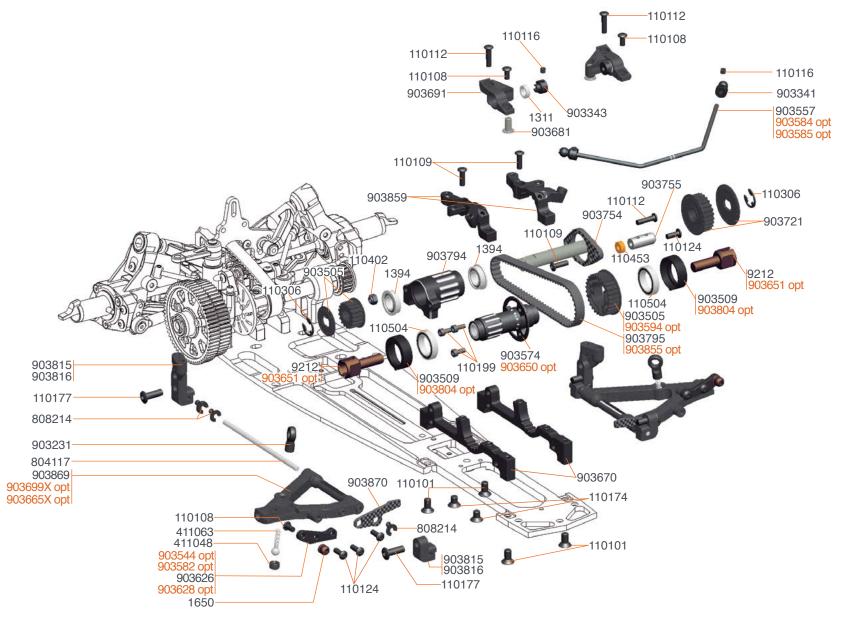




903688 Antiroll bar FR/RR soft S988 903689 Antiroll bar FR/RR medium S988 903707 Antiroll bar FR/RR X-hard S988 903759 Chassis weight 14gr brass S989 903803 Excenter set rr alu L+R S9XX 903839 Rearplate flex S990 903840 Weight bridge fr carbon S990 903841 Weight bottom brass 32gr S990 903854 Belt 90S3M201 MBL competition S9XX 903871 Battery plate carbon 990 EVO 903872 Battery plate weight 15gr (2) 990 EVO 903879 Battery plate brass 53gr 990 EVO

FRONT 1 EXPLODED VIEW







903544 Shock extension bracket FR alu (2)

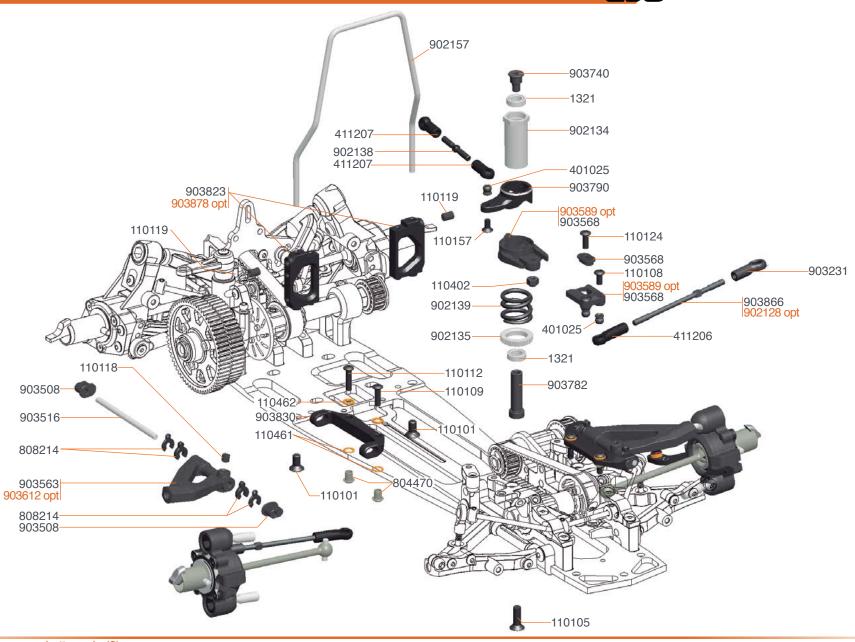
903584 Antiroll bar FR soft S989

903585 Antiroll bar FR hard S989

903582 Shock extension bracket FR carbon (2)

903628 Shock extension bracket FR wide carbon (2) 903650 Oneway front axle Hard anodized 903651 Inner driveshaft adapter light 903665X Wishbone FR lw V2 L+R S988 903695 Wishbone insert carbon FR lw (2) 903699X Wishbone FR lw V2 L+R hard S988 903855 Belt 60S3M210 MBL competition S9XX





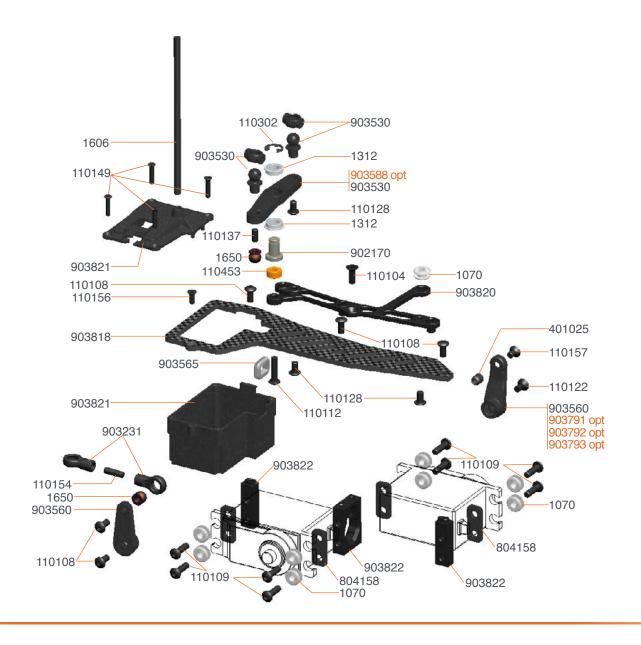


903589 Servosaver bottom alu (2) 903612 Wishbone FR up (2) hard 902128 Track-rod M3x65mm (2)

903878 Radioplate bracket brass 38gr (2) 990 EVO



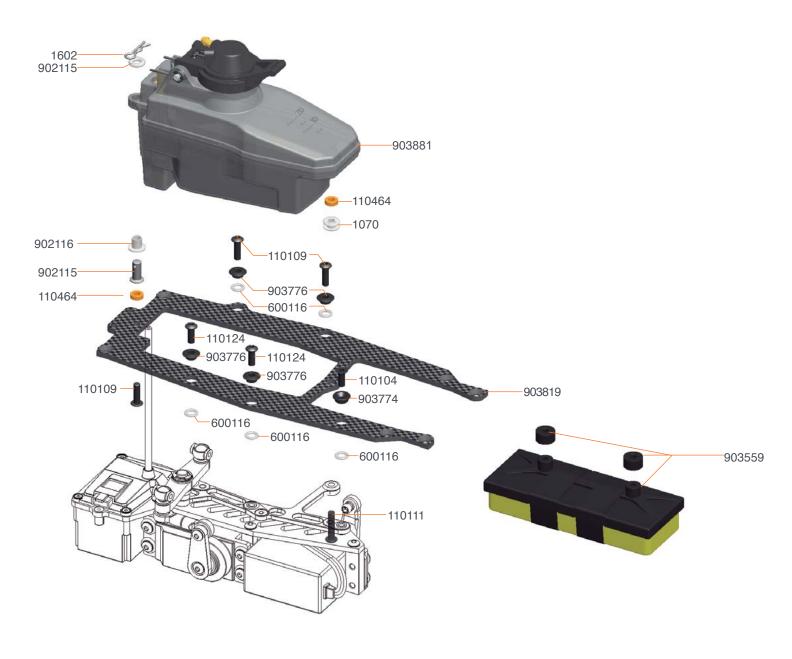






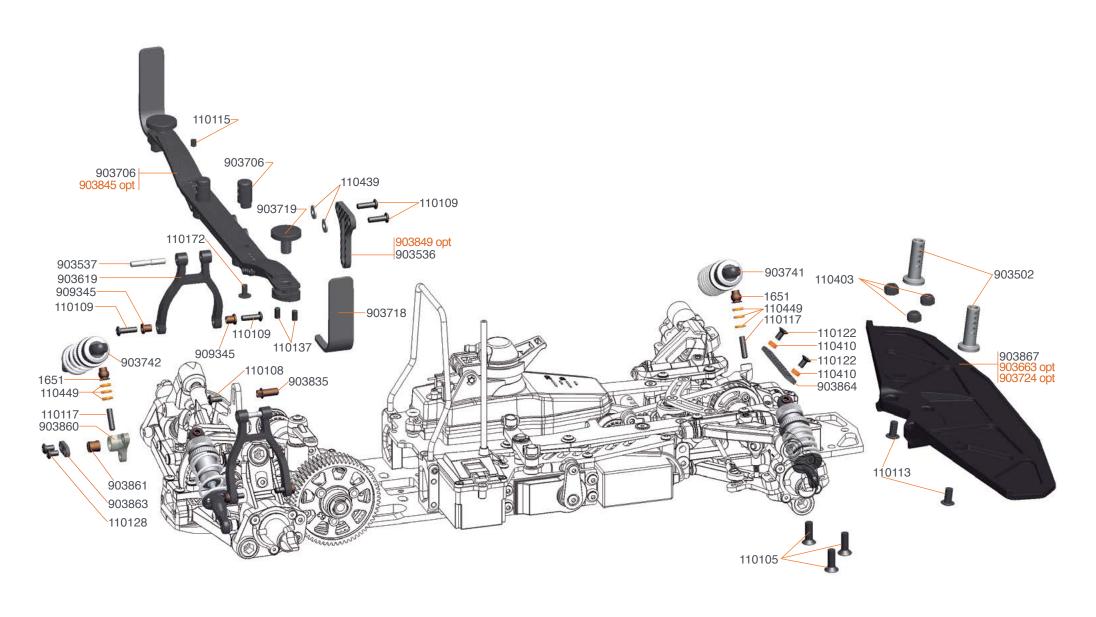




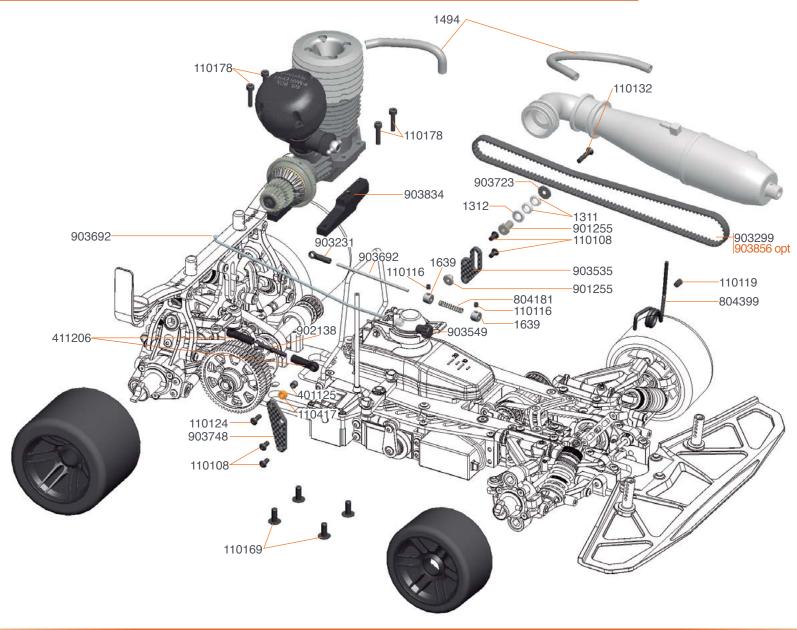


BUMPER AND BODYMOUNT EXPLODED VIEW













NOTES:			

TEAM SERPENT NETWORK

990 EVO SPARE PARTS







990 EVO OPTIONALS PARTS









SERPENT TOOLS







SERPENT MERCHANDISING







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Manual Viper 990 Evo # 57717-1

