

INSTRUCTION MANUAL

# COBBBA MT-E



1/8 scale off road

**SERPENT**  
INNOVATIONS



## INTRODUCTION

Thank you very much for buying this Serpent rc car. You are now member of a large following of Serpent fans worldwide. This Serpent car will bring you many hours and weekends of racing excitement.

Serpent started as rc racing company in 1980, and has developed many modelcars since. This wealth of experience and know how is used in our todays cars and that shows!

The Serpent Cobra offers state of the art specifications and leads the way in 1/8 scale chassis design, using all the knowledge our designers have gathered from racing cars for many years, into this design too. Continuously pushing the performance envelope.

The Serpent Cobra MT-E-Truck RTR is a very good entry in the world of rc racing. Affordable and a very good basis to start your racing carreer. The Serpent Cobra MT-E RTR, is based on the high-end competition version of the Cobra Truggy and shares geometry and many parts. Still its easy to use, maintain and set up. The RTR Cobra is fully upgradable with many nice optional parts. The details can be found in our website.

Designed, tested and raced by Billy Easton, USA. World Champion.

This manual contains a number of steps you need to follow to operate the Serpent cars in the right way. It also contains a quick-start section, a partslist and exploded views and a set-up section. A full assembly manual can be found online in the Serpent.com website. So read this manual with great attention before racing this car. For your own safety as well as for others, and to ensure you can enjoy your Serpent car a long time.

Serpent is not only about the car itself. Serpent as company, and the worldwide network or distributors and dealers are here to help you out.

The Serpent website, social media and forum are available for assistance and additional information as well.

*Enjoy your Serpent, the racing experience!*

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## 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 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 speedo during and immediately after use, as these parts may be very hot. We advise to use protective handgloves.
- 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. 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.
- 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



## SAFETY MATTERS

All instructions in this manual must be followed to ensure safe use of the car. This model is not intended for use by children under 14 years .

### Important pre-cautions

- Only run the car in designated areas or areas with very few people, so no-one can get hurt.
- The car has a lot of power and the turning parts on the car can cause damage, also some parts of the car like transmission and motorparts can become very hot. So wear protective clothing both as driver and helper and be careful when picking up the car.
- Do not operate the car under dark conditions, as both you and others may not see the car properly and can get hurt, due to lack of car control.
- Use good common sense while operating the car so you can fully enjoy your car.

### Battery and battery-charging

- The battery and battery-charger are not included with this model. We advise to use good quality NimH or Lipo rechargeable battery-packs with 4000 mA or more. Check carefully to buy batteries with the correct connector for the speedcontroller, or also purchase and mount other fitting ones.
- Use proper battery-charger specifically designed for that type batteries and follow the instructions of the battery supplier and the charger correctly.
- Keep the battery and charger always in dry places only and never leave un-attended during charging.
- When the batteries are at their end of life, dispose them at a recycling-place, check [www.call2recycle.org](http://www.call2recycle.org) for more info.

## QUICK-START

The quick-start section is not a replacement for the full instructions. To be able to use the model to its best take the time to read the full manual.

1. Read the manual and safety pre-cautions ( page 3)
2. Buy and install the batteries in the transmitter ( see Transmitter manual)
3. Install battery packs in the model, make sure the speedo is switched off, connect the cables (avoid reversed polarity) and securely fasten the battery-pack.
4. Turn on the transmitter (see Transmitter manual). Always turn on the transmitter first before to switch on the car and only turn off the transmitter after you switched off the car.
5. Check servo operation. Check that the servo works correctly and check that the car runs straight in neutral position, trim as needed Perform a range test with the radio system
6. Personalise the body of your car by applying more decals if required.
7. Drive your modelcar.
8. Maintain your modelcar (page 9)



## INCLUDED WITH YOUR MODEL

- Serpent modelcar, factory assembled and set-up



- Dragon-RC DTS-3 transmitter (as shown or similar)
- Dragon-RC DESC speedcontroller
- Dragon-RC brushless motor
- Dragon-RC racing tyres, pre-mounts
- Dragon-RC digital servo MG
- Dragon-RC repainted and pre-cut bodyshell

## REQUIRED FOR YOUR MODEL

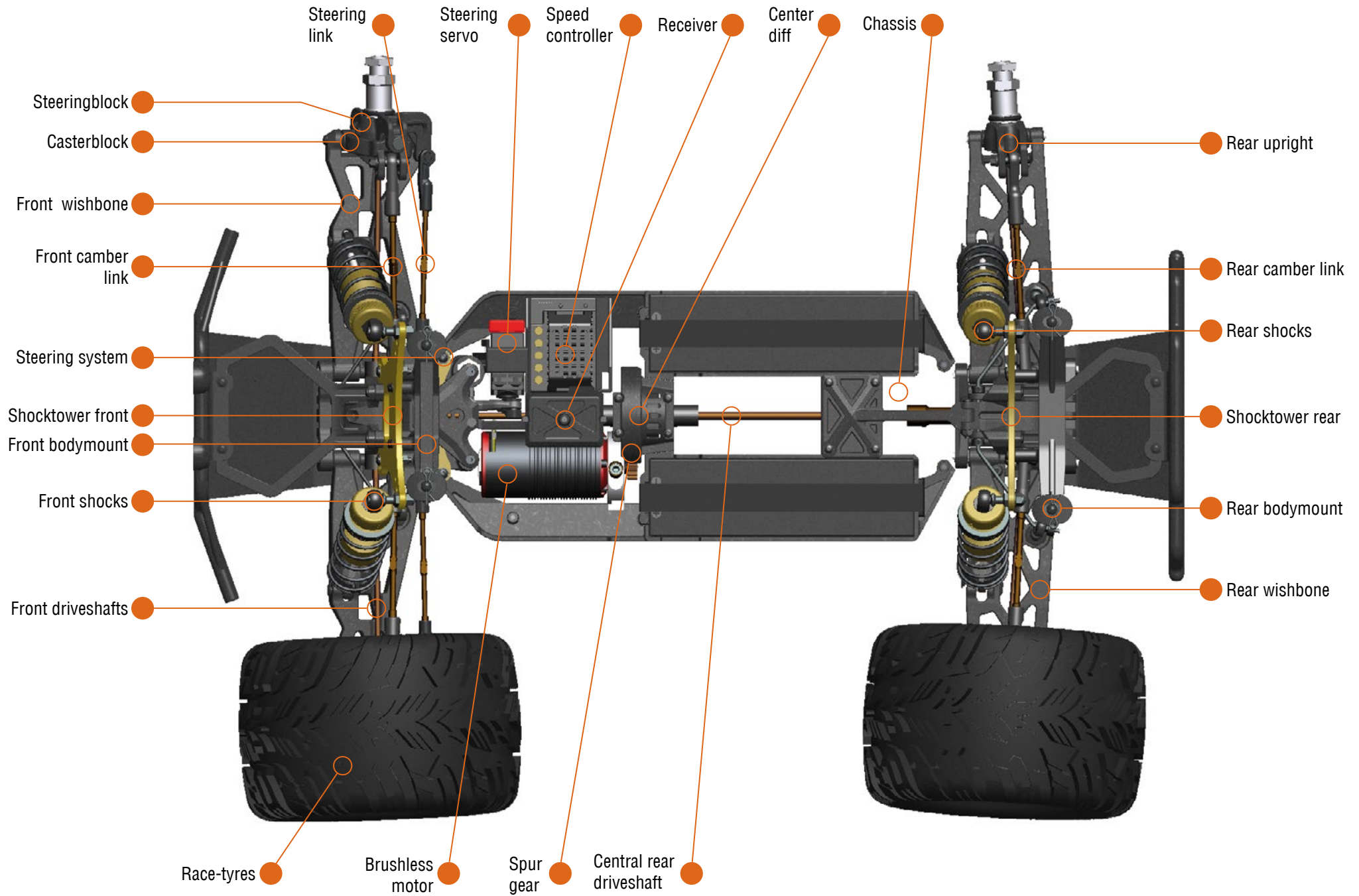
- Multi Charger; to charge transmitter battery and car battery
- Battery pack 2-S or 3-S Lipo x 2
- Battery AA x 4 to operate the transmitter
- Tools: selection of allen tools and screw- drivers
- Hobby knife
- Camber gauge

## RECOMMENDED MATERIALS

- Side cutter and nose plier
- Cleaning brush and towel
- Safety glasses and gloves
- Cleaning gum
- Thin bearing oil
- Transmission grease
- CA glue
- Degreaser







# BASIC TUNNING

## Springs:

By using a softer spring you will have more sag, more chassis roll/lean, more dive and a less responsive car this might be better on low-grip surfaces; by using a harder spring you have less sag, less body lean, less dive and a more responsive car. What to apply depends on driving style and grip-level surface. This is more suitable on high-grip surfaces.



## Differential:

You can make the gear differential harder or softer by using a different oil viscosity. Lighter oil will create a looser diff which increases rear traction on acceleration, but also more understeer, and a harder differential will decrease rear traction on acceleration, but also more on-throttle steering.



## Shock-angle:

The angle at which the shocks are mounted create a different suspension feel; the more vertical, the harder it feels, the more horizontal, the softer it feels.



## Rear toe adjustment:

Adjusted with suspension blocks (optional).

More toe-in will create more traction, more stability, but less speed.

Less toe in will create a less stable car, with less traction but higher speed.



## Oil:

The viscosity of the shock-oil defines the dampening of the shockabsorber. Thinner oil will be softer, with slower response, thicker oil will be harder dampening with faster reponse. The dampening can also be fine-tuned by fitting other pistons with more or less holes, which is an optional.



## Front toe adjustment:

Adjusted with the track-rods, make longer or shorter. More toe-in will create more steering, but less stability; toe-out will create a more stable car, with less steering.





### Front camber:

Using more negative camber in the front will give you more steering but also increases possible traction roll.



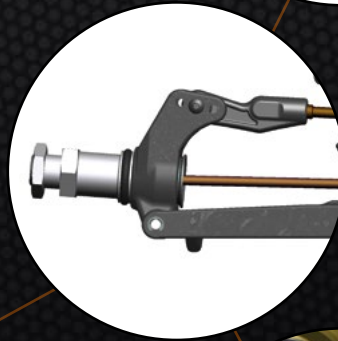
### Wheel-base length:

A longer car will be more stable and react slower, a shorter car will be more nervous and more direct.



### Rear camber:

Using more negative camber in the rear will create more grip in the rear meaning also creating more understeer.



### Ride-height:

You can change the ride-height of the car, by applying more or less pre-load on the springs, turn the pre-load adjusters to set the desired height and keep left and right the same.



### Front caster:

Use optional caster blocks to change castor roll. And less caster will create less steering but also decreases possible traction roll.



### Gear-ratio:

Spur and pinion: for correct gearmesh keep a pieces of notebook paper at hand, to put between the spur and pinion for correct mesh.



### Ackerman:

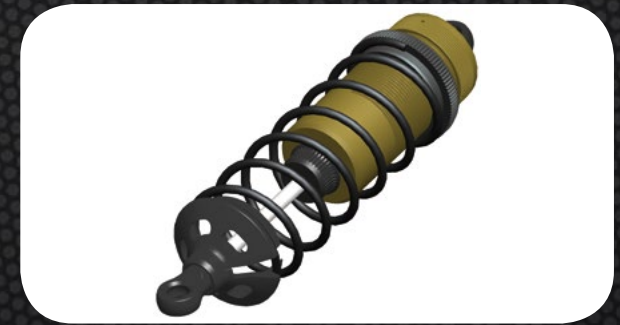
Ackermann setting is used to change steering characteristic. Less Ackermann for bigger open tracks, more Ackermann for smaller, tighter tracks. Steeringplate 1 = less Ackermann, plate 2 is midrange, plate 3 is for more Ackermann.



# MAINTENANCE

## Shockabsorbers

- Check for smooth operation of the shockabsorbers, and check for airbubbles by pushing the shock up and down fast after removal of the spring. Clean the shockabsorbers as needed and refill with fresh 100% pure silicone oil as needed.



## Tyres

- Replace tyres if case worn or damaged, and clean the surface in case dirty to obtain better grip.

## Wheel-axles and driveshafts

- Remove the wheels, and check the wheel-axles, driveshafts and adaptors for dirt, play and pins. Clean thoroughly as needed and lubricate the touching parts with a small amount of grease or oil.



## Differentials

- Check the differentials and gears for wear and dirt and clean as needed. Check the functioning of the diff by turning the wheels in opposite direction and feel if still smooth or 'gritty'. In case of gritty feel, the silicone oil may need replacement.

The full assembly manual of this model is available online; check on [www.serpent.com](http://www.serpent.com) and type your modelnumber, partnumber, or select your car from the car-page; go to the download section in the menu and download the full manual.





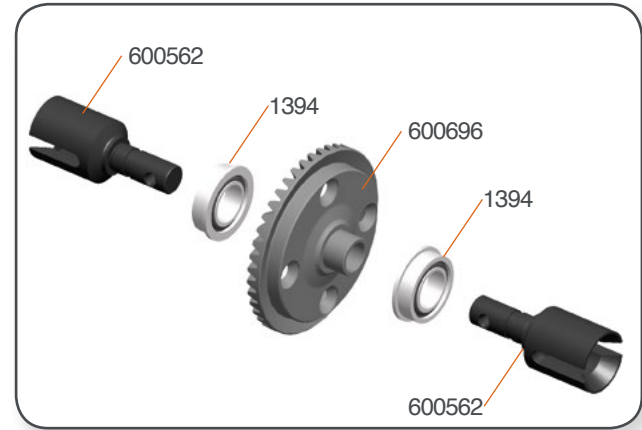
## **EXPLODED VIEWS**

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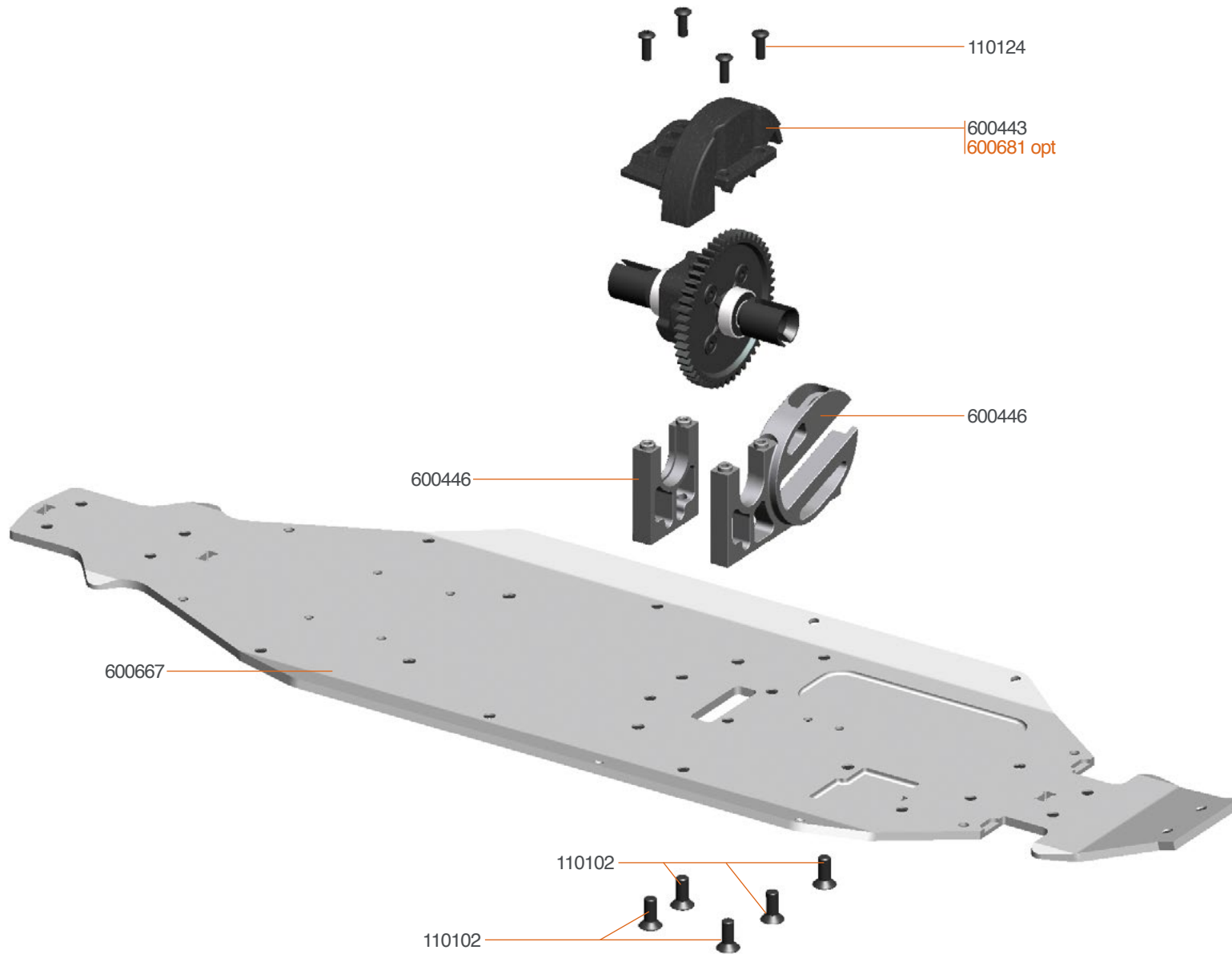


# DIFFERENTIAL EXPLODED VIEW





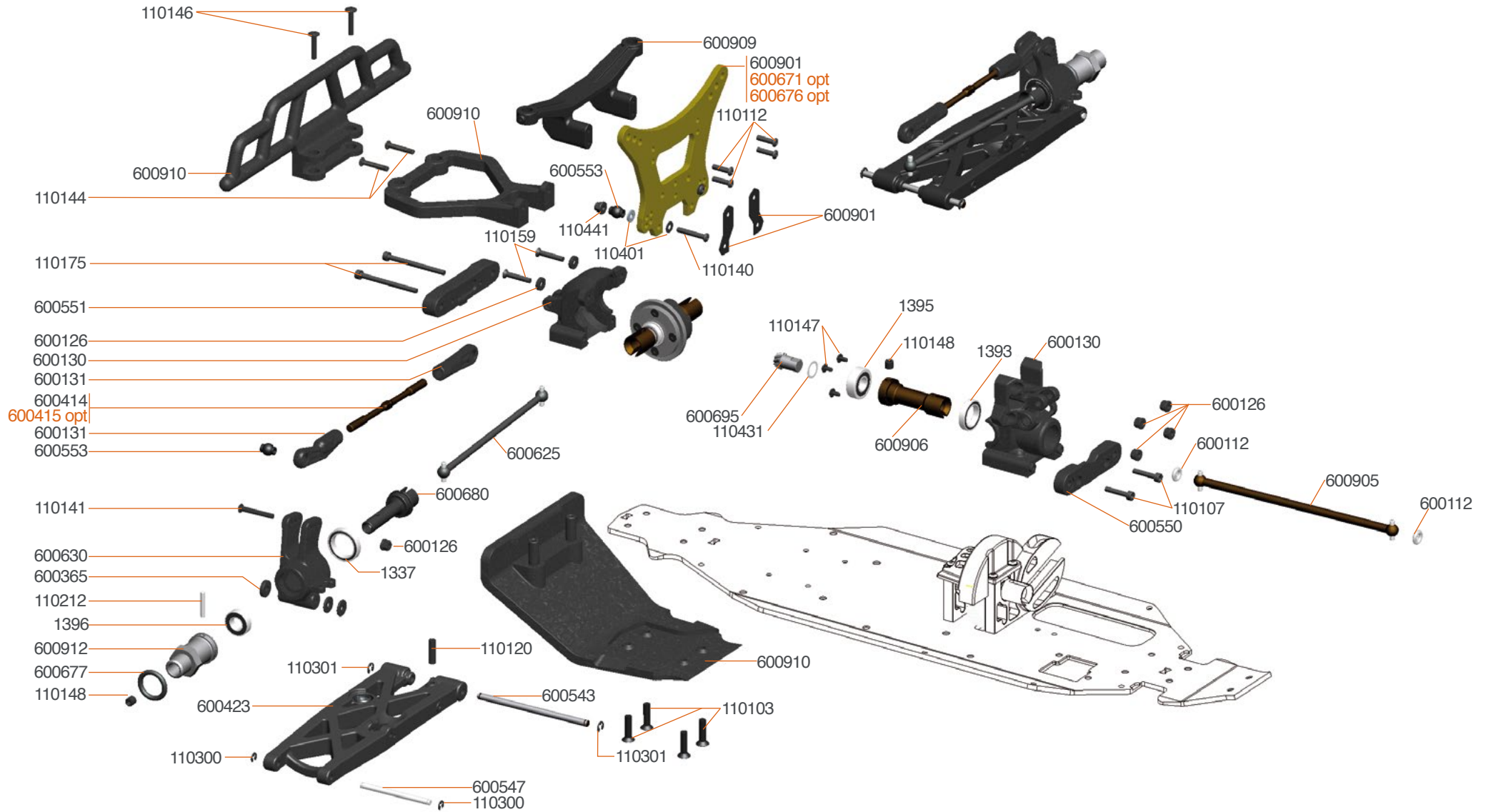
# CENTRAL EXPLODED VIEW



600681 S811E Radiotray set light alu/carbon

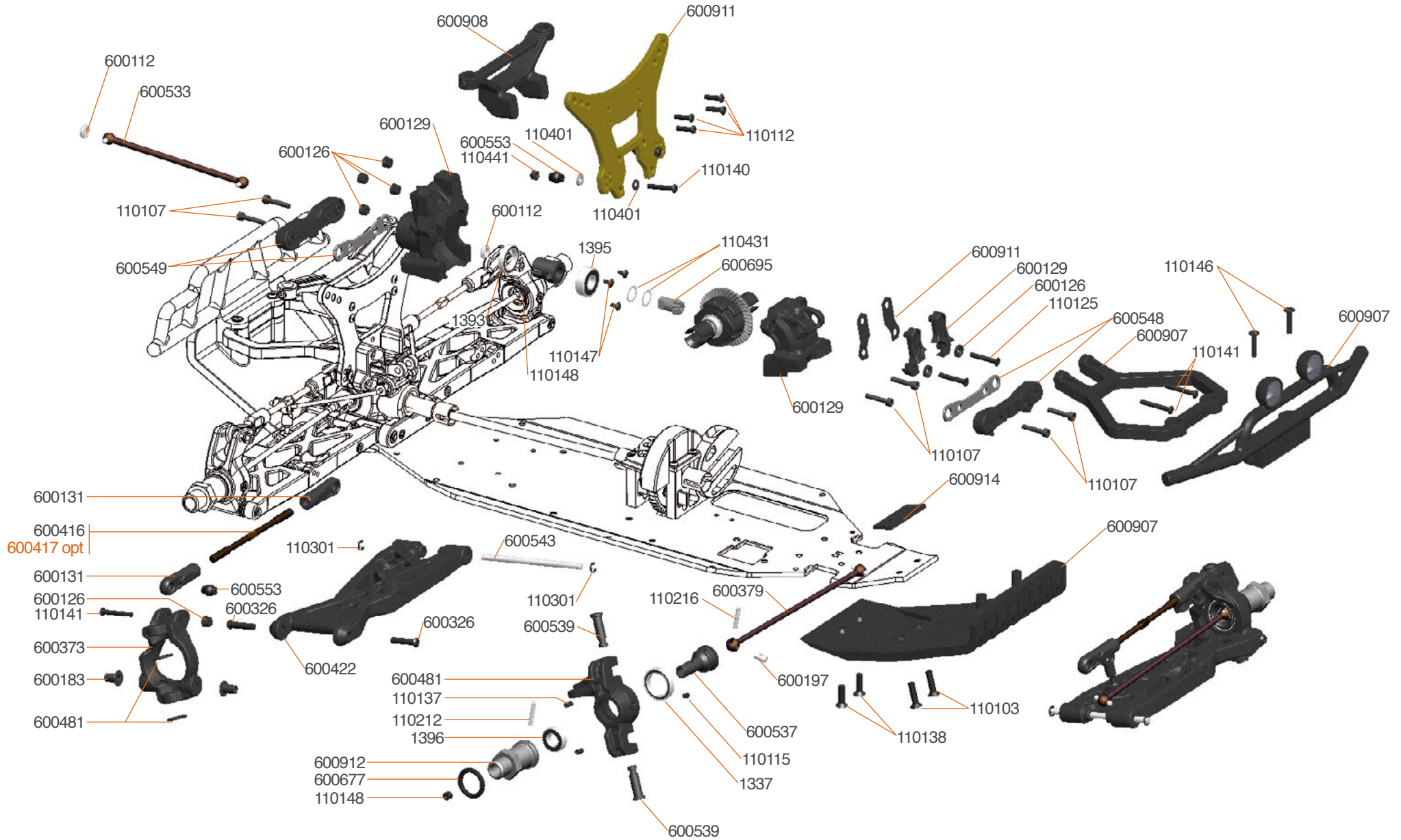


# REAR EXPLODED VIEW



- OPT** 600671 Shocktower carbon RR 811-T-e
- 600415 Track rod M5x86 titanium (2)
- 600676 Shocktower alu light RR 811-T-e

# FRONT EXPLODED VIEW

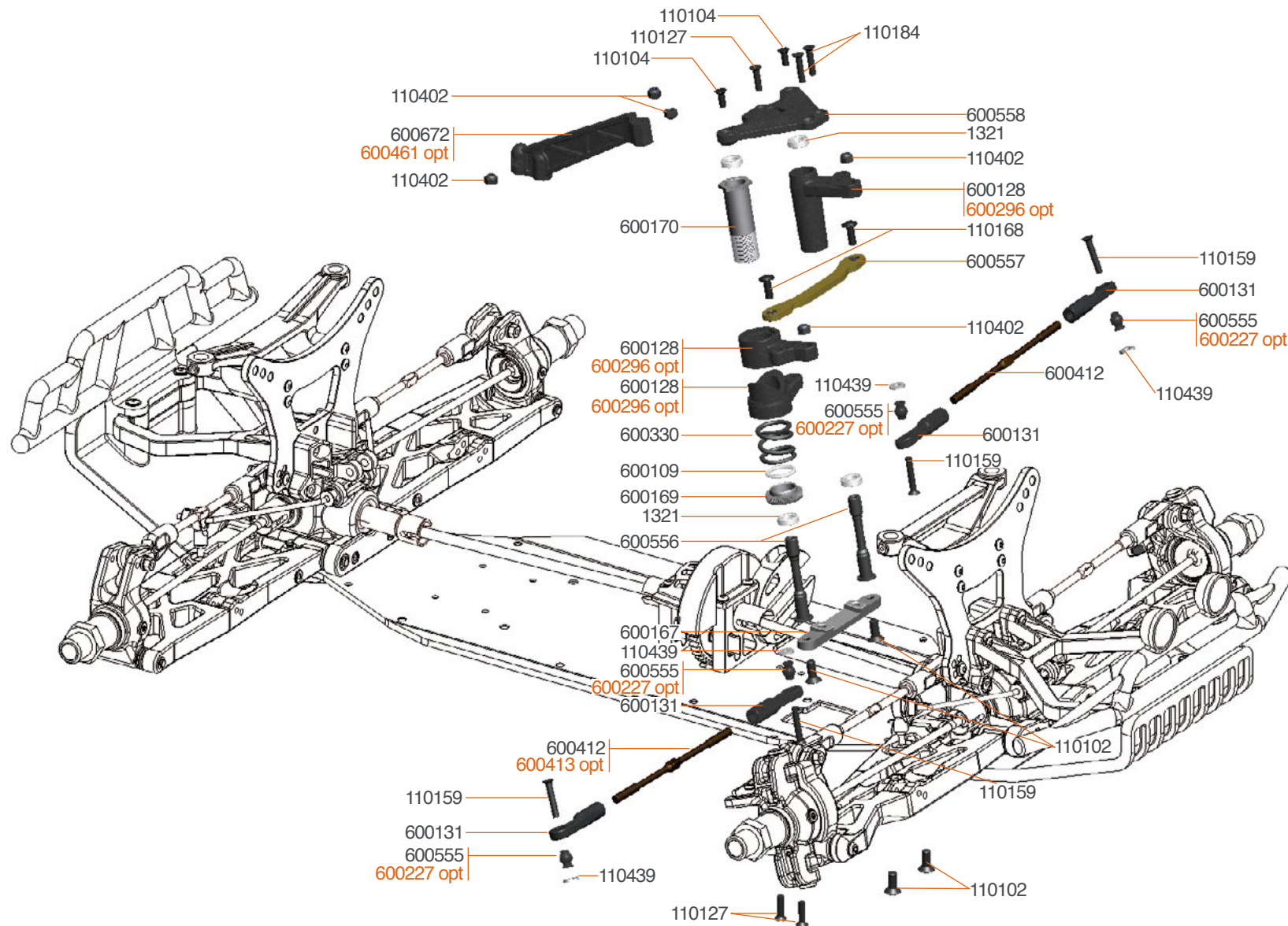


600417 Track rod M5x91 titanium (2)





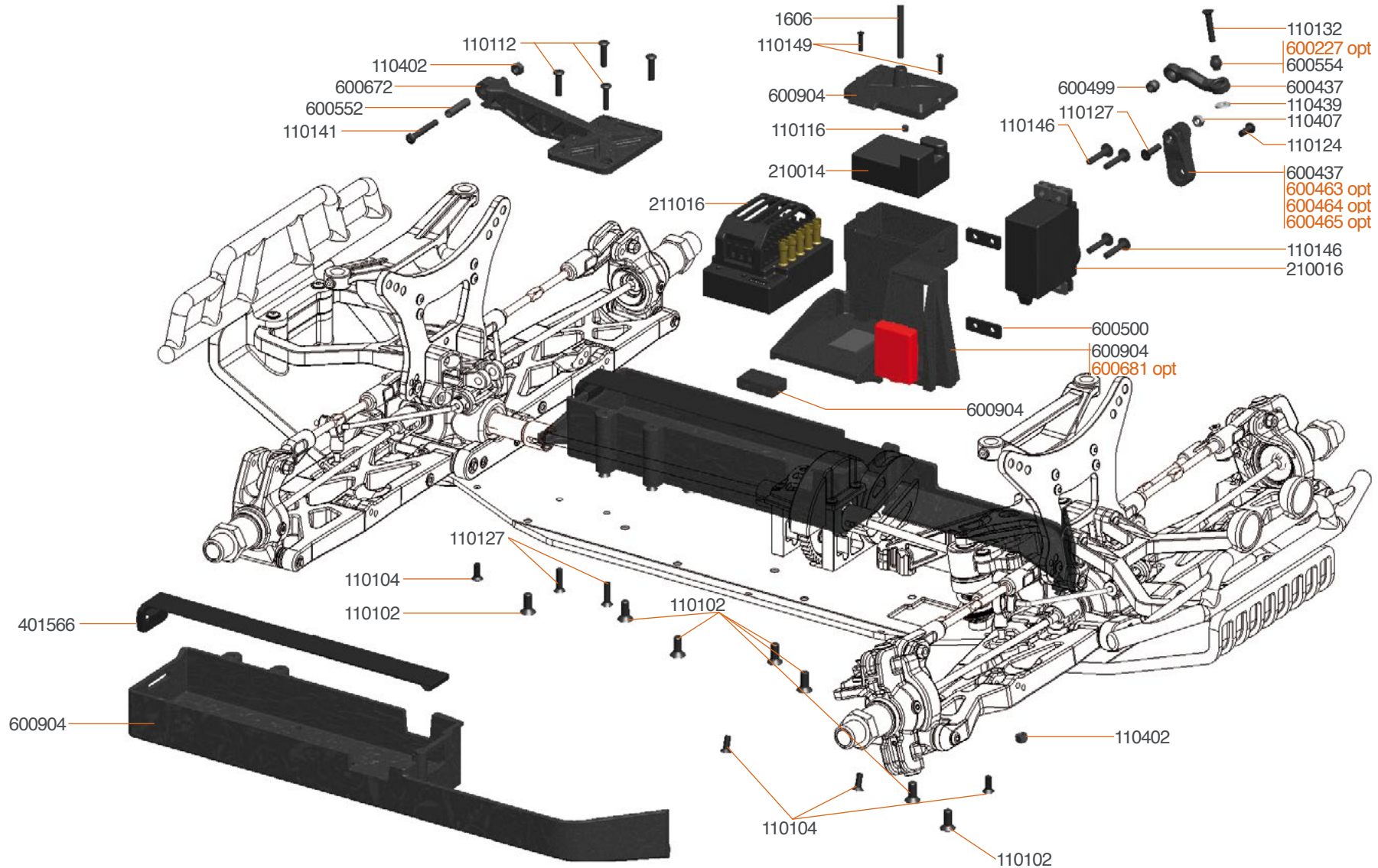
# STEERING EXPLODED VIEW



- 600227 Pivot ball steering rod (2)
- 600296 Servo saver alu coated (3)
- 600413 Track rod M4x92 titanium (2)

600461 Chassis brace front alu 811-E

# RADIO EXPLODED VIEW

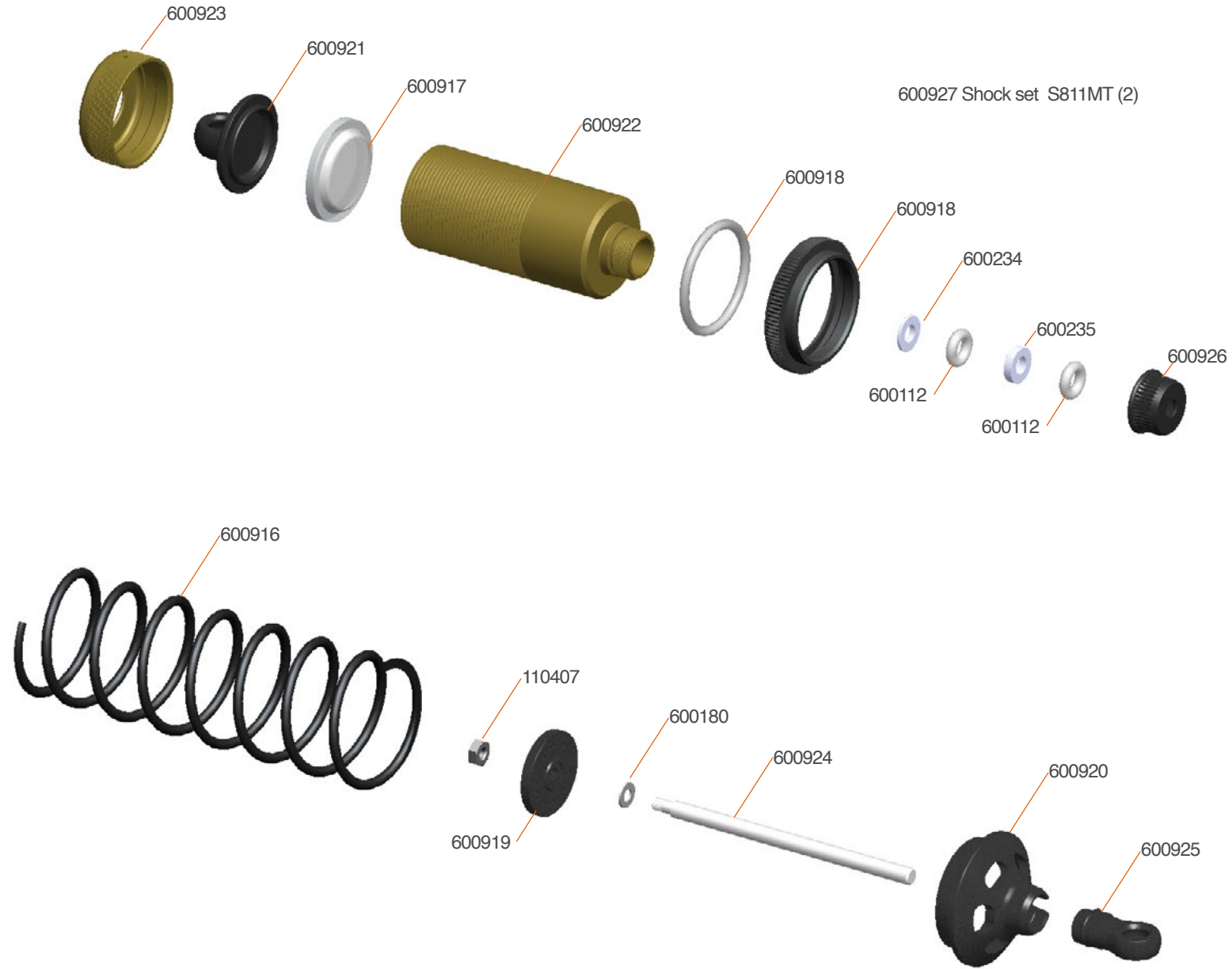


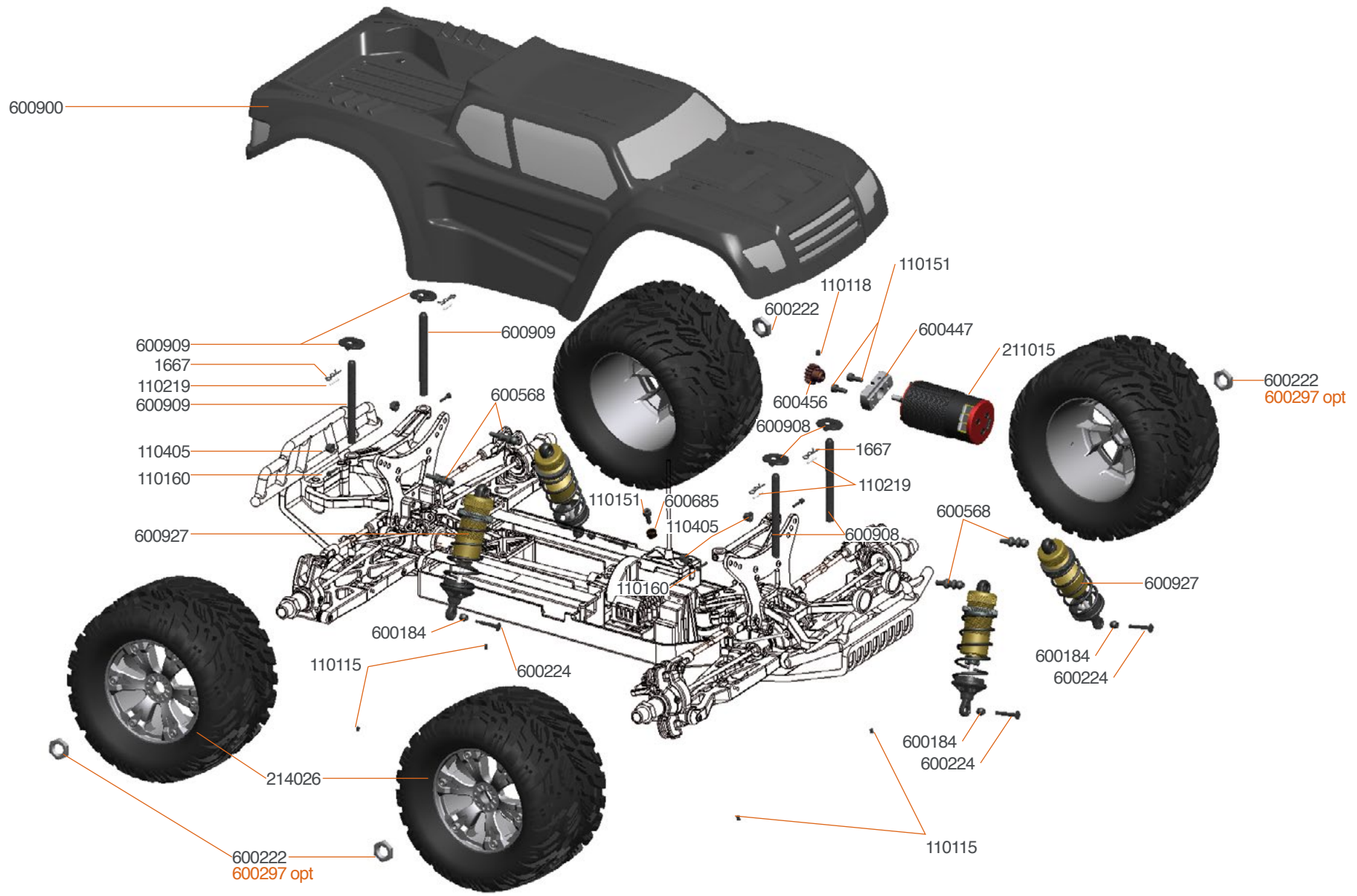
600227 Pivot ball steering rod (2)  
 600463 Servo lever 23T 811-E alu  
 600464 Servo lever 24T 811-E alu

600465 Servo lever 25T 811-E alu  
 600681 S811E Radiotray set light alu/carbon



# SHOCKS EXPLODED VIEW





600296 Wheel-nut 17mm flanged/light (4)



# TEAM SERPENT NETWORK

**Cobra MT-e RTR SPARE PARTS** [www.serpent.com/600038/spares/](http://www.serpent.com/600038/spares/)



**Cobra MT-e RTR OPTIONALS PARTS** [www.serpent.com/600038/Optionals/](http://www.serpent.com/600038/Optionals/)



**SERPENT TOOLS** [www.serpent.com/product/Tools/](http://www.serpent.com/product/Tools/)



**SERPENT MERCHANDISING** [www.serpent.com/product/Merchandising/](http://www.serpent.com/product/Merchandising/)



## SERPENT WEBSITE AND BLOG

[www.serpent.com](http://www.serpent.com)  
[www.teamserpent.com](http://www.teamserpent.com)  
[www.dragon-rc.com](http://www.dragon-rc.com)

**SERPENT PROMO PAGES** <http://promo.serpent.com>

**SERPENT FACEBOOK GROUPS** <http://promo.serpent.com/indexfb.htm>

**SERPENT ADVANCED MANUALS** <http://promo.serpent.com/sam/>

## SERPENT SOCIAL MEDIA



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[www.youtube.com/user/SerpentMRC](http://www.youtube.com/user/SerpentMRC)



[www.twitter.com/SerpentMRC](http://www.twitter.com/SerpentMRC)



[www.plus.google.com/+SerpentModelcars/posts](http://www.plus.google.com/+SerpentModelcars/posts)



[www.weibo.com/teamserpent](http://www.weibo.com/teamserpent)



# COBBLE

## MT-E



**SERPENT**  
INNOVATIONS

**Part nr Name**

1321	Ballbearing 6x10x3 (2)
1337	Ballbearing 15x21x4 (2)
1393	Ballbearing 13x19x4 SS (2)
1394	Ballbearing 8x14x4 flanged SS (2)
1395	Ballbearing 8x19x6 SS (2)
1396	Ballbearing 8x16x5 SS (2)
1606	Antenna rod black (2)
1667	Body-clip medium (10)
110102	Screw allen countersunk m4x10 (10)
110103	Screw allen countersunk m4x16 (10)
110104	Screw allen countersunk M3x8 (10)
110107	Screw allen cilinderhead m3x16 (10)
110115	Setscrew allen m3x4 (10)
110120	Setscrew allen m4x10 (10)
110124	Screw allen roundhead m3x8 (10)
110125	Screw allen countersunk m3x20 (10)
110127	Screw allen countersunk m3x12 (10)
110132	Screw allen countersunk m3x16 (10)
110137	Setscrew allen M3x6 (10)
110138	Screw allen csh M4x14 (10)
110140	Screw allen rh M3x20 (10)
110141	Screw allen rh M3x22 (10)
110146	Screw allen rh flanged M3x16 (10)
110147	Screw ph rh widethread 2.5x6 (10)
110148	Setscrew allen M5x4 (10)
110149	Screw allen countersink M2x10 (10)
110151	Screw allen cilinderhead M4x10 (10)
110159	Screw allen countersunk M3x18 (10)
110160	Screw allen cilinderhead M2.2x12 (10)
110168	Screw allen roundhead flanged M3.5x10 (10)
110172	Screw allen rh flanged M3X6 (10)
110175	Screw allen cilinderhead M3x40 (10)
110184	Screw allen countersunk M3x14 (10)
110212	Pin 2.5x17 (10)
110216	Pin 2.5x15 (10)
110219	Pin 2x14 (10)
110300	E-clip 2.3 (10)
110301	E-clip 3.2 (10)
110401	Washer 3.2x7 (10)
110402	Nut nylock M3 (10)
110405	Nut nylock M4 flanged (10)
110407	Nut M3 (10)
110431	Shim 8x11x0.1 (10)
110432	Shim 8x11x0.2 (10)
110439	Shim 3x7.5x1 (10)
110441	Nut nylock M3 flanged (10)
210013	Transmitter set DTS-3 2.4GHz
210014	Receiver DRS-3 2.4GHz
210016	Servo digital 0.14s/17kg MG
211015	Motor brushless BL-8 1940kv
211016	Speed controller DS-8 6S/150A WP
214026	1/8 MT tyre mounted on rim (2)
401566	Battery strap velcro
500188	Battery case inserts foam (6) SRX2 RM
600109	O-ring servosaver nut (4)
600112	O-ring shock bottom (10)
600126	Washer/nut nylon M3 (12+15)
600128	Servo saver set nylon (3)



600128 Servo saver set nylon (3)  
600129 Diff case front set  
600130 Diff case rear set  
600147 Diff gasket (3)  
600167 Steeringrack mount  
600169 Servosaver adjust nut  
600170 Servosaver shaft outer  
600180 Washer shock shaft (4)  
600183 Bushing suspensionarm (4)  
600184 Pivotball 6.75 double (4)  
600197 Driveshaft insert (2)  
600209 Diff pin 10T (2)  
600210 Diff pin outdrive (2)  
600222 Wheelnut 17mm (4)  
600224 Bolt shock (4)  
600234 Shock cartridge stepped (4)  
600235 Shock cartridge (4)  
600326 Special screw FR whisbone (4)  
600330 Servo saver spring hard  
600365 Spacers 1.25mm + 2.5mm wheelbase (4+2)  
600373 C-Hub truggy 12 L+R  
600379 Driveshaft truggy (2)  
600409 Spur gear 52T  
600414 Track rod M5x86 (2)  
600416 Track rod M5x91 (2)  
600421 O-ring centerdiff V2 (10)  
600422 Wishbone front L+R  
600423 Wishbone rear L+R  
600425 Diff housing V2  
600437 Steering balljoint + lever 811-E  
600443 Center diff cover 811-E  
600446 Motormount set 811-E  
600447 Motor slider 811-E  
600456 Pinion 16T  
600478 Wheelaxle FR V2 (2)  
600479 Battery foam pad (2)  
600481 Steeringblock L+R V2  
600499 Pivotball double straight (3)  
600532 Gear coupler 811-S  
600533 Driveshaft center FR 811-S  
600539 Pin steeringblock 811-S (4)  
600543 Hinge pin 811-S (2)  
600547 Hinge pin RR outer 811-S (2)  
600548 Suspension bracket FR-FR 811-S  
600549 Suspension bracket FR-RR 811-S  
600550 Suspension bracket RR-FR 811-S  
600551 Suspension bracket RR-RR 811-S  
600552 Transmission brace mount RR 811-S  
600553 Pivot ball 7.5 double 811-S (4)  
600554 Pivot ball steering short 811-S (2)  
600556 Servo saver post 811-S (2)  
600557 Steeringrack alu 811-S  
600558 Topdeck front 811-S  
600562 Diff outdrive FR-RR 811-S (2)  
600568 Shock mount 811-S (2)  
600625 Driveshaft center RR 811 E-S  
600627 Diff gear 10T + 20T (4+2) V2  
600634 Upright L+R 811 2.0  
600667 Chassisplate alu 811-T-e

600672 Chassis Brace Fr/Rr 811-T-e  
600677 O-ring Hex adapter (10)  
600680 Wheelaxle RR 811 2.0 S (2)  
600685 Motor screw washer S811E (2)  
600695 Diff pinion 10T spiral  
600696 Diff gear 43T spiral  
600751 Pivot ball steering (4) SRX8  
600764 Steering balljoints (2+2+2) SRX8  
600795 Camberlink balljoint (6+2) SRX8  
600900 Body 1/8 S811MT  
600901 Shocktower rear alu S811T-RTR  
600904 Battery / Radiobox S811T-RTR  
600905 Driveshaft center RR S811T-RTR  
600906 Gear coupler rr S811T-RTR  
600907 Bumper set front S811MT  
600908 Body mount set front S811MT  
600909 Body mount set rear S811MT  
600910 Bumper set rear S811MT  
600911 Shocktower front alu S811MT  
600912 Wheel hexagon S811MT (2)  
600913 Bodypost S811MT (4)  
600914 Bumper insert S811MT  
600916 Shock spring S811MT (4)  
600917 Shock membrane S811MT (4)  
600918 Shock adjust nut/oring S811MT (2)  
600919 Shock piston S811MT (4)  
600920 Shock spring support S811MT (4)  
600921 Shock top S811MT (4)  
600922 Shock body fr/rr S811MT (2)  
600923 Shock top nut S811MT (2)  
600924 Shock shaft fr/rr S811MT (2)  
600925 Shock balljoint S811 (4)  
600926 Shock bottom cap S811 (4)