



1/10 scale Ready To Race electro Buggy 2WD

# **INSTRUCTION MANUAL**

& REFERENCE GUIDE





powered by



### 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 Spyder series of cars is the best entry in the world of rc racing. Affordable and a very good basis to start your racing carreer. The Serpent Spyder RTR is based on the high-end competition version of the Spyder and shares geometry and many parts. Still its easy to use, maintain and set up. The RTR Spyder is fully upgradable to high end competition spec. 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. This manual also contains a quick-start section, a partslist and exploded views, and a FAQ 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, even if you are an experienced user. 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 and social media are available for assistance and additional information as well.

Enjoy your Serpent, the racing experience!

### **Contents**

Introduction Read this first Safety matters 3 Quickstart 4 Required equipment 5 Model specs / overview 6 **Basic Tuning** 7 Maintenance 8 Exploded views Partslist





### 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 70 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 is 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 transmisison and motorparts can become very hot. So wear protective clothing both as driver and helper and be carefull 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 advice to use good quality NimH or Lipo rechargebale 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 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 4)
- **2.** Buy and install the batteries in the transmitter (see Transmitter manual)
- Install the battery pack in the model, make sure the speedo is switched off, connect the cables (avoid reversed polarity) and securely fasten the batterypack.
- 4. Turn on the transmitter (see Transmitter manual). Always turn on the transmitter first <u>before</u> to switch on the car and only turn off the transmitter <u>after</u> you switched off the car.
- 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)





# Equipment



#### Included with your model:

- Serpent modelcar, factory assembled and set-up
- Dragon-RC DTS-2 transmitter (as shown or similar)
- Dragon-RC DESC speedcontroller
- Dragon-RC brushless motor
- Dragon-RC racing tyres, pre-mounts
- Dragon-Rc digital servo
- Serpent prepainted and pre-cut bodyshell



### Required for your model

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

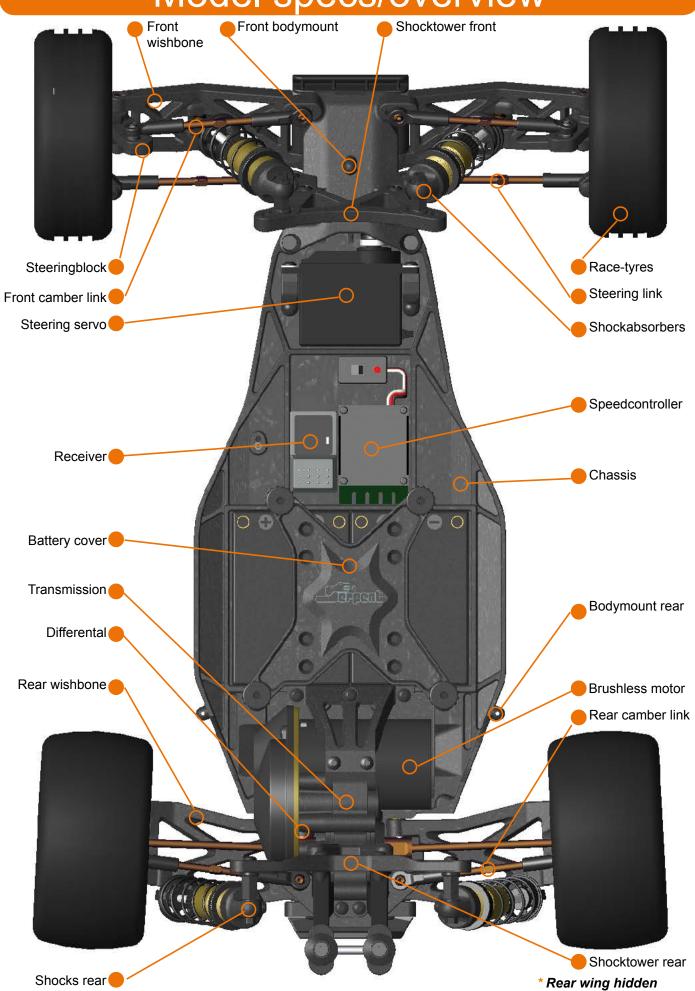
### **Recommended materials**

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





# Model specs/overview Front Strong bodymount Shocktower front



### **Basic tuning**

- 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 griplevel surface. This is more suitable on high-grip surfaces.
- 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.
- Oil: the viscosity of the shock-oil defines the dampening of the shockabsorber.
   <u>Thinner</u> oil will be softer, with slower response, <u>thicker</u> 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.
- 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 decreases rear traction on acceleration, but also more on-throttle steering
- Toe adjustment: Front: 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 stabile car, with less steering.
- Toe adjustment: Rear: adjusted with suspension blocks (optional).
   More toe-in will create more traction, more stability, but less speed.
   Less toe in will create a less stabile car, with less traction but higher speed.
- **Front camber:** using more negative camber in the front will give you more steering but also increases possible traction roll.
- Rear camber: using more negative camber in the rear will create more grip in the rear meaning also creating more understeer.
- Front caster: use optional caster blocks to change caster, more caster will
  create more steering but also increases possible traction roll. And less caster
  will create less steering but also decreases possible traction roll.
- Wheel-base length: a longer car will be more stabile and react slower, a shorter car will be more nervous and more direct.
- 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.
- 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.
- Set-up sheets

The set-up sheets for this car, default and editable, can be found here: <a href="http://serpent.com/product/500006/setups/">http://serpent.com/product/500006/setups/</a>

and set-ups from the race/kit version are here: http://serpent.com/product/500003/setups/

#### **Springs**



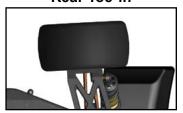
Shock angle



Front Toe-out



Rear Toe-in



Front camber



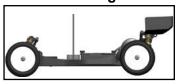
Rear camber



**Gear-ratio** 



Ride Height







### 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 pins. Clean thoroughly as needed and lubricate the touching parts with a small amount of grease or oil.

#### Differential

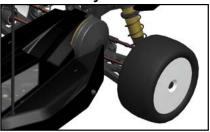
Check the differentials and gears for wear and dirt and clean as needed. Check the functionning of the diff by turning the wheels in opposite direction and feel if still smooth or 'gritty'. In case of gritty feel, the silicone oil may need replacement.

The full assembly manual of this model is available online; check on **www.serpent.com** 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.

#### **Shockabsorbers**



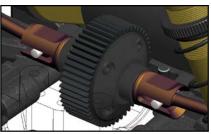
**Tyres** 



Wheel-axles and driveshafts



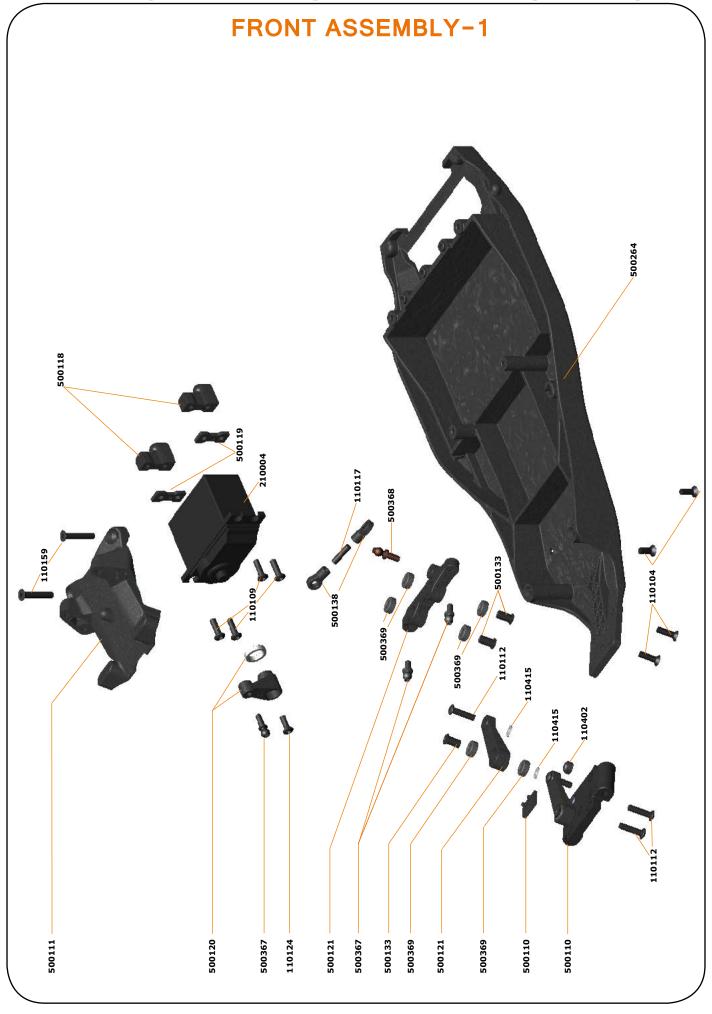
**Differentials** 



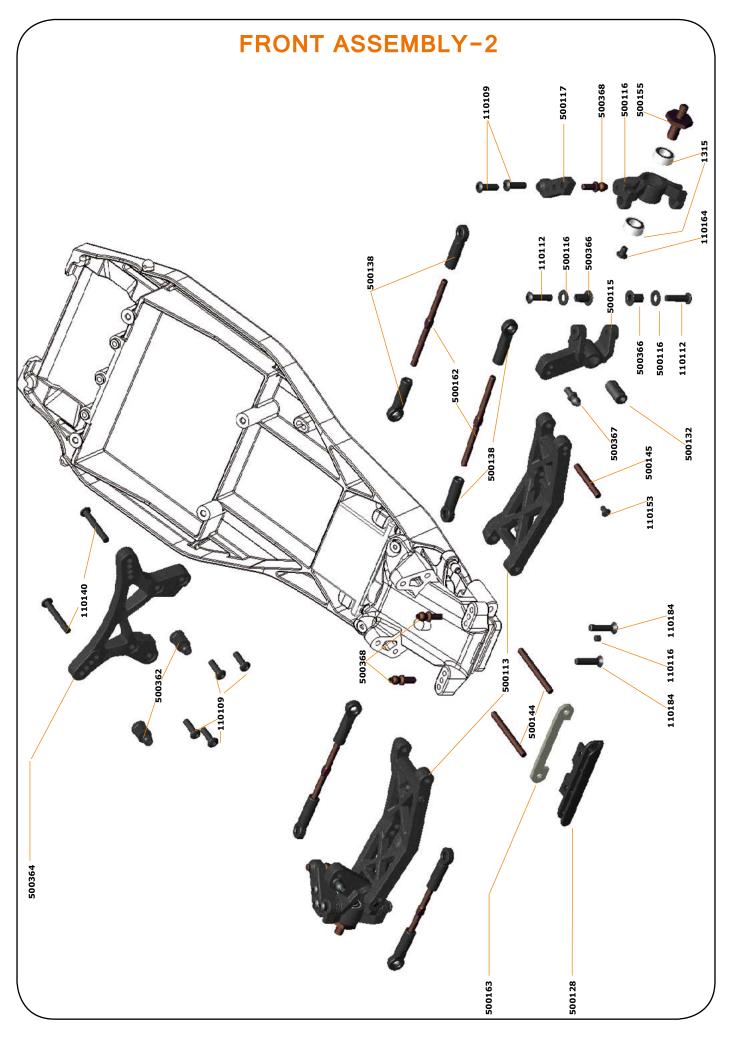




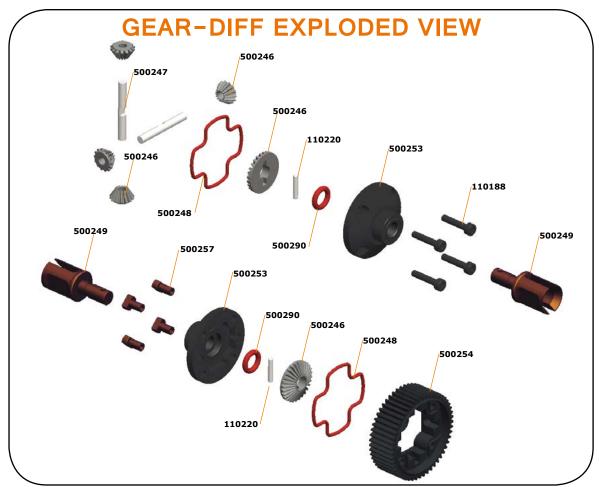
### **EXPLODED VIEWS WITH PART NUMBERS**

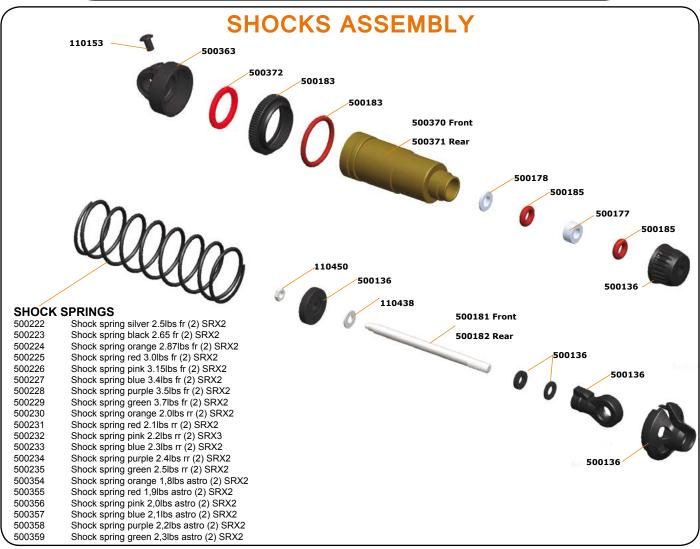




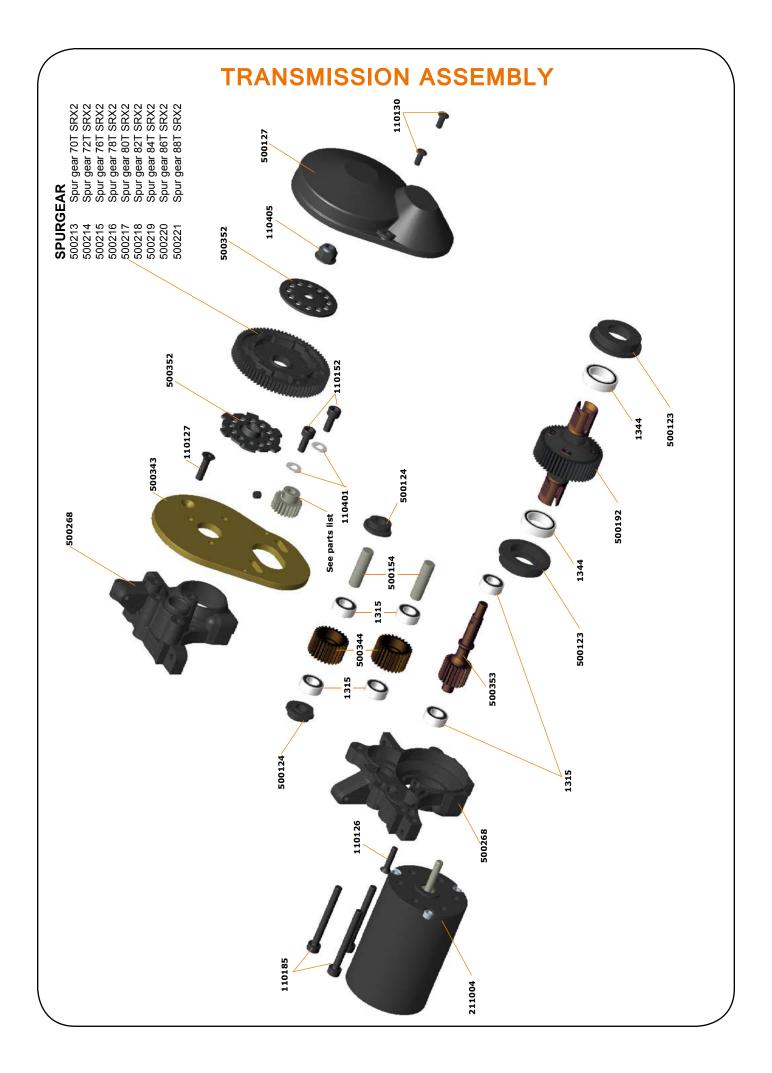




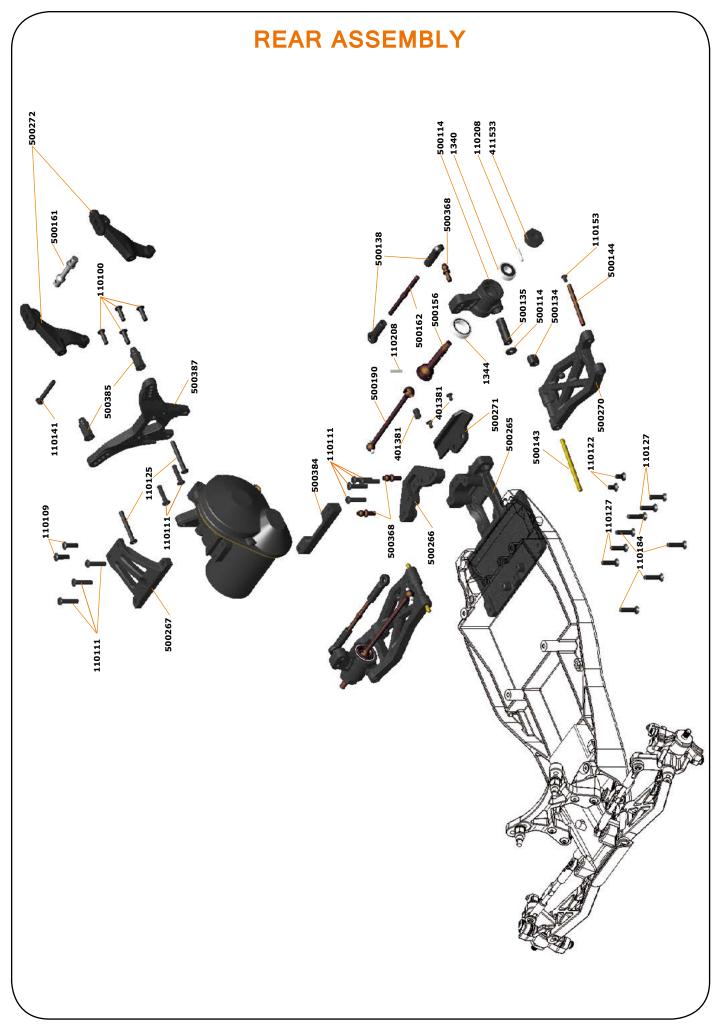




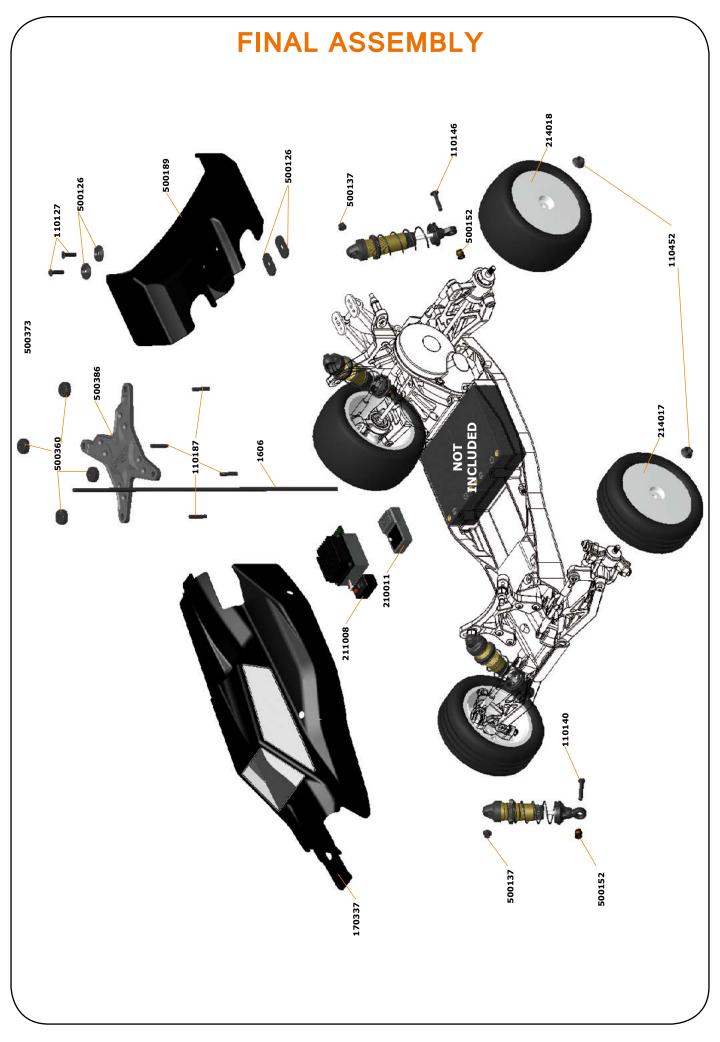












# Optionals and Merchandising

#### Description Part no

Part no	Description			
			SECTION	
	STALLATION / BATTERY	500165	Battery plate nut (4) SRX2	
500165	Battery plate nut (4) SRX2	500278	Batteryplate carbon SRX2 MM	
500278	Batteryplate carbon SRX2 MM	500279	Battery holders (4) SRX2 MM	
500279	Battery holders (4) SRX2 MM	500280	Battery plate foam SRX2 MM	
500280	Battery plate foam SRX2 MM	500284	Battery case inserts foam (3) SRX2 MM	
500284	Battery case inserts foam (3) SRX2 MM	500285	Ballast weight SRX2 MM	
050/0.0	AVED AND OTTERNIA	DE 4 D 05	TOTION	
	AVER AND STEERING	REAR SECTION		
500147	Pivotball shim conical (10) SRX2	401387	Wheelhexagon (2)	
500149	Pivotball with shaft med (5) SRX2	500147	Pivotball shim conical (10) SRX2	
500197	Servomount alu (2) SRX2	500149	Pivotball with shaft med (5) SRX2	
500236	Steeringrack alu (3) SRX2	500150	Pivotball with shaft high (4) SRX2	
500287	Steering arm nr 1 brass L+R	500274	Suspension bracket rr fr SRX2 MM	
500288	Steering arm nr 2 brass L+R	500275	Shocktower carbon rr SRX2 MM	
500289	Steering arm nr 3 brass L+R	500276	Shock mount rr (2) SRX2 MM	
500152	Pivotball shock (4) SRX2	500106	1/10 buggy rim rr yellow (2)	
500174	Shock body fr (2) SRX2	500196	Upright L+R alu SRX2	
500175	Shock body rr (2) SRX2	500198	Pivotball with shaft short (4) SRX2	
500176	Shock top (2) SRX2	500205	Antiroll bar rr 1.1 SRX2	
500179	Shock top gasket (4) SRX2	500206	Antiroll bar rr 1.3 SRX2	
500180	Shock membrame (4) SRX2	500207	Antiroll bar rr 1.5 SRX2	
500199	Shock top bushing delrin (4) SRX2	500211	Wheelhexagon +0.75mm offset (2)	
500201	Shock shaft fr TiN coated (2) SRX2	500212	Wheelhexagon -0.75mm offset (2)	
500202	Shock shaft rr TiN coated (2) SRX2	500244	Rear bulkhead weight SRX2	
500238	Shock piston conical 2 holes (4) SRX2	500255	Suspension insert rr 3deg alu (2) SRX2	
500239	Shock piston conical 3 holes (4) SRX3	500258	Antirollbar balljoints (2+2) SRX2	
500240	Shock piston conical 4 holes (4) SRX4	500262	Pivot pin fr inner / rr outer TiN coated (2) SRX2	
	1	500281	Antiroll bar set rr SRX2 MM	
SPRINGS		500282	Wingmount low SRX2 MM	
500222	Shock spring silver 2.5lbs fr (2) SRX2	500283	Suspension bracket rr fr brass SRX2 MM	
500223	Shock spring black 2.65 fr (2) SRX2	500286	Bumper rear brass SRX2 MM	
500224	Shock spring orange 2.87lbs fr (2) SRX2	000_00	24po. 104. 2.400 0.0 42	
500225	Shock spring red 3.0lbs fr (2) SRX2	TRANSM	IISSION	
500226	Shock spring pink 3.15lbs fr (2) SRX2	411069	Differential balls steel 1/8" (12)	
500227	Shock spring blue 3.4lbs fr (2) SRX2	500153	Top shaft 21T SRX2	
500228	Shock spring purple 3.5lbs fr (2) SRX2	500157	Slipper plate alu (3) SRX2	
500229	Shock spring green 3.7lbs fr (2) SRX2	500157	Slipper pad yellow (3) SRX2	
500230	Shock spring green o. ribs in (2) GRX2	500159	Slipper spring (2) SRX2	
500231	Shock spring red 2.1lbs rr (2) SRX2	500160	Slipper bolt topshaft (2) SRX2	
500231	Shock spring pink 2.2lbs rr (2) SRX3	500166	Idler gear 27T SRX2	
500232	Shock spring blue 2.3lbs rr (2) SRX2	500167	Diff pully balldiff 51T (1) SRX2	
500233	Shock spring purple 2.4lbs rr (2) SRX2	500167	Diff ring balldiff (2) SRX2	
500234	Shock spring green 2.5lbs rr (2) SRX2	500168	Balldiff outdrive male SRX2	
300233	Shock spring green 2.305 if (2) SiXX2	500109	Balldiff outdrive female SRX2	
EDONT C	ECTION	500170		
FRONT S			Balldiff spring (2) SRX2 Balldiff bolt (2) SRX2	
500133	Steeringrack bold (4) SRX2	500172	Balldiff thrustbearing SRX2	
500139	Shocktower fr SRX2 Shock mount (4) SRX2	500173 500186	3	
500146	( )		Balldiff set SRX2	
500147	Pivotball shim conical (10) SRX2	500187	Balldiff T-nut (2) SRX2	
500148	Pivotball with shaft low (4) SRX2	500277	Motor plate SRX2 MM	
500149	Pivotball with shaft med (5) SRX2	600116	O-ring tank (4)	
500150	Pivotball with shaft high (4) SRX2	411107	Diff balls. 1/8 ceramic (12)	
500151	Casterblock bushing (4) SRX2	500242	Slipper plates vented alu (3) SRX2	
500104	1/10 buggy rim fr 2wd yellow (2)	500256	Thrustbearing carbide balldiff SRX2	
500193	Front wing set SRX2	500259	Differential balls carbide 1/8" (12)	
500194	Antiroll bar set fr SRX2	500260	Idler gear 27T alu SRX2	
500198	Pivotball with shaft short (4) SRX2			
500200	Front bulkhead inserts alu (6) SRX2	BODY AN		
500203	Pivot pin brace 20 deg fr SRX2	170336	Body Spyder 2wd MM 1/10 semipainted	
500204	Pivot pin brace 30 deg fr SRX2	500241	Front wing SRX2	
500208	Antiroll bar fr 0.9 SRX2	500251	Rear wing 6.0" SRX2	
500209	Antiroll bar fr 1.0 SRX2	500252	Rear wing 7.0" SRX2	
500210	Antiroll bar fr 1.1 SRX2			
500237	C-hub L+R alu SRX2	SPURGE		
500241	Front wing SRX2	500213	Spur gear 70T SRX2	
500243	Front bulkhead alu SRX2	500214	Spur gear 72T SRX2	
500250	Front bulkhead brass SRX2	500215	Spur gear 76T SRX2	
500258	Antirollbar balljoints (2+2) SRX2	500216	Spur gear 78T SRX2	
500262	Pivot pin fr inner / rr outer TiN coated (2) SRX2	500217	Spur gear 80T SRX2	
500263	Pivot pin fr outer TiN coated (2) SRX2	500218	Spur gear 82T SRX2	
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500219	Spur gear 84T SRX2	190191	T-shirt Serpent Splash orange (XL)
500220	Spur gear 86T SRX2	190192	T-shirt Serpent Splash orange (XXL)
500221	Spur gear 88T SRX2	190193	T-shirt Serpent Splash orange (XXXL)
		190194	T-shirt Serpent Splash black (S)
PINIONS		190195	T-shirt Serpent Splash black (M)
120156	Motor-pinion alu hard 48P / 18T	190196	T-shirt Serpent Splash black (L)
120157	Motor-pinion alu hard 48P / 19T	190197	T-shirt Serpent Splash black (XL)
120158	Motor-pinion alu hard 48P / 20T	190198	T-shirt Serpent Splash black (XXL)
120159	Motor-pinion alu hard 48P / 21T	190199	T-shirt Serpent Splash black (XXXL)
120160	Motor-pinion alu hard 48P / 22T	190201	Hoody sweater Serpent black-zip (S)
120161	Motor-pinion alu hard 48P / 23T	190202	Hoody sweater Serpent black-zip (M)
120162	Motor-pinion alu hard 48P / 24T	190203	Hoody sweater Serpent black-zip (L)
120163	Motor-pinion alu hard 48P / 25T	190204	Hoody sweater Serpent black-zip (XL)
120164	Motor-pinion alu hard 48P / 26T	190205	Hoody sweater Serpent black-zip (2XL)
120165	Motor-pinion alu hard 48P / 27T	190206	Hoody sweater Serpent black-zip (3XL)
120166	Motor-pinion alu hard 48P / 28T	190207	Hoody sweater Serpent black-zip (4XL))
120167	Motor-pinion alu hard 48P / 29T	190215	T-shirt Serpent WC edition black (S)
120168	Motor-pinion alu hard 48P / 30T	190216	T-shirt Serpent WC edition black (M)
		190217	T-shirt Serpent WC edition black (L)
TOOLS		190218	T-shirt Serpent WC edition black (XL)
190501	Tool-bag	190219	T-shirt Serpent WC edition black (XXL)
190502	Carry-bag medium, 3 drawers	190220	T-shirt Serpent WC edition black (XXXL)
190508	Toolset for offroad (20pcs) with tools bag		
190507	Toolset EP (16pcs) with Tools bag		
190509	Allen wrench 1.5 x 120mm		
190510	Allen wrench 2.0 x 120mm		7 <i>86</i> 7 <i>8</i> 7
190511	Allen wrench 2.5 x 120mm		
190512	Allen wrench 3.0 x 120mm		
190513	Ball driver hex wrench 2.0 x 120mm	Transmit	ter, reciver,servo, parts
190514	Ball driver hex wrench 2.5 x 120mm	210004	Servo digital 0.14s/7,2kg
190515	Ball driver hex wrench 3.0 x 120mm	210006	Servo case for #210004
190516	Tool tip allen wrench 1.5 x 120mm	210008	Servo gear set for #210004
190517	Tool tip allen wrench 2.0 x 120mm	210009	Transmitter set DTS-2 with display 2.4 Ghz
190518	Tool tip allen wrench 2.5 x 120mm	210010	Transmitter DTS-2 with display 2.4Ghz
190519	Tool tip allen wrench 3.0 x 120mm	210011	Receiver DRS-2 on 2.4Ghz
190520	Tool tip ball driver hex wrench 2.0 x 120mm		
190521	Tool tip ball driver hex wrench 2.5 x 120mm	Speed co	ontroller, motor, parts
190522	Tool tip ball driver hex wrench 3.0 x 120mm	211004	Motor brushless DL10 9T-3600kv
190523	Turnbuckle wrench 3mm	211008	Speedo DX-10 WP 45A
190524	Turnbuckle wrench 4mm	211011	Program card DX series
190525	Turnbuckle wrench 5mm		
190526	Flat head screwdriver 3.0 x 150mm	Tyres rul	ober offroad and wheels
190527	Flat head screwdriver 4.0 x 150mm	214013	1/10 buggy rim fr 2wd white (2)
190528	Phillips screwdriver 2.0 x 45mm	214014	1/10 buggy rim fr 2wd yellow (2)
190529	Phillips screwdriver 3.5 x 120mm	214015	1/10 buggy rim rr white (2)
190530	Phillips screwdriver 5.8 x 120mm	214016	1/10 buggy rim rr yellow (2)
190539	Nut driver 4.5 x 100mm	214017	1/10 buggy Tyre mounted on white rim 2wd front (2)
190531	Nut driver 5.0 x 100mm	214018	1/10 buggy Tyre mounted on white rim 4wd (2)
190532	Nut driver 5.5 x 100mm		( )
190533	Nut driver 7.0 x 100mm	Weblink	for :
190534	Reamer with end cap for lexan body		es: www.serpent.com/500006/spares
100001	Troumor with one out for local body		nals: www.serpent.com/500006/optionals
MERCHA	NDISING		: www.serpent.com/product/tools/
1896	Cap serpent black-orange		handising: www.serpent.com/product/Merchandising/
190172	Winter jacket Serpent black-orange hooded (M)		on-rc equipment: www.dragon-rc.com
190173	Winter jacket Serpent black-orange hooded (L)	a.ag	4
190174	Winter jacket Serpent black-orange hooded (XL)	۸ dditia	ons / notes
190175	Winter jacket Serpent black-orange hooded (2XL)	Additio	DIS / HOLES
190176	Winter jacket Serpent black-orange hooded (3XL)		
190208	Winter jacket Serpent black-orange hooded (4XL)		
190156	Polo shirt Serpent black (S)		
190157	Polo shirt Serpent black (M)		
190158	Polo shirt Serpent black (L)		
190159	Polo shirt Serpent black (XL)		
190160	Polo shirt Serpent black (XXL)		
190161	Polo shirt Serpent black (XXXL)		
190182	T-shirt Serpent Splash white (S)		
190183	T-shirt Serpent Splash white (M)		
190183	T-shirt Serpent Splash white (L)		
190185	T-shirt Serpent Splash white (L)  T-shirt Serpent Splash white (XL)		
190186	T-shirt Serpent Splash white (XXL)		
190187	T-shirt Serpent Splash white (XXXL)		
190187	T-shirt Serpent Splash write (XXXL)  T-shirt Serpent Splash orange (S)		
190188	T-shirt Serpent Splash orange (M)		
190199	T-shirt Serpent Splash orange (L)	ا اساساسا ۸	recorded Darte may shange without prince the
.00100	. S.m. Corport Opicon Orango (E)	All rights	reserved. Parts may change without prior notice.





