



1/10 scale Ready To Race electro Buggy 2WD

INSTRUCTION MANUAL & REFERENCE GUIDE



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!

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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 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)
- **3.** Install the battery pack 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 <u>before</u> to switch on the car and only turn off the transmitter <u>after</u> 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)





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



Recommended materials

Side cutter and nose plier

Cleaning brush and towel

- 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 •

- Safety glasses and gloves • Cleaning gum •
- Thin bearing oil •

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- Transmission grease •
- CA glue Degreaser







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). <u>More toe-in will create more traction, more stability, but less speed.</u> <u>Less toe in will create a less stabile car, with less traction</u> 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: http://serpent.com/product/500006/setups/

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







110159























<u>S</u>

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SR

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ptionals and Merchandising

Description Part no

RADIO INSTALLATION / BATTERY

500165	Battery plate nut (4) SRX2	
500278	Batteryplate carbon SRX2 MM	
500279	Battery holders (4) SRX2 MM	
500280	Battery plate foam SRX2 MM	
500284	Battery case inserts foam (3) SRX2 MM	
SERVO SAVER AND STEERING		
500147	Pivotball shim conical (10) SRX2	
500149	Pivotball with shaft med (5) SRX2	
500197	Servomount alu (2) SRX2	
500236	Steeringrack alu (3) SRX2	

500236	Steeringrack alu (3) SRX2
500287	Steering arm nr 1 brass L+R
500288	Steering arm nr 2 brass L+R
500289	Steering arm nr 3 brass L+R
500152	Pivotball shock (4) SRX2
500174	Shock body fr (2) SRX2
500175	Shock body rr (2) SRX2
500176	Shock top (2) SRX2
500179	Shock top gasket (4) SRX2
500180	Shock membrame (4) SRX2
500199	Shock top bushing delrin (4) SRX2
500201	Shock shaft fr TiN coated (2) SRX2
500202	Shock shaft rr TiN coated (2) SRX2
500238	Shock piston conical 2 holes (4) SRX2
500239	Shock piston conical 3 holes (4) SRX3
500240	Shock piston conical 4 holes (4) SRX4

SPRINGS

500222 Shock spring silver 2.5lbs fr (2) SRX2 500223 Shock spring black 2.65 fr (2) SRX2 Shock spring orange 2.87lbs fr (2) SRX2 500224 500225 Shock spring red 3.0lbs fr (2) SRX2 500226 Shock spring pink 3.15lbs fr (2) SRX2 Shock spring blue 3.4lbs fr (2) SRX2 500227 Shock spring purple 3.5lbs fr (2) SRX2 500228 500229 Shock spring green 3.7lbs fr (2) SRX2 500230 Shock spring orange 2.0lbs rr (2) SRX2 500231 Shock spring red 2.1lbs rr (2) SRX2 500232 Shock spring pink 2.2lbs rr (2) SRX3 500233 Shock spring blue 2.3lbs rr (2) SRX2 500234 Shock spring purple 2.4lbs rr (2) SRX2 500235 Shock spring green 2.5lbs rr (2) SRX2

FRONT SECTION

Steeringrack bold (4) SRX2 500133 500139 Shocktower fr SRX2 500146 Shock mount (4) SRX2 500147 Pivotball shim conical (10) SRX2 500148 Pivotball with shaft low (4) SRX2 500149 Pivotball with shaft med (5) SRX2 500150 Pivotball with shaft high (4) SRX2 500151 Casterblock bushing (4) SRX2 500104 1/10 buggy rim fr 2wd yellow (2) 500193 Front wing set SRX2 500194 Antiroll bar set fr SRX2 500198 Pivotball with shaft short (4) SRX2 500200 Front bulkhead inserts alu (6) SRX2 500203 Pivot pin brace 20 deg fr SRX2 500204 Pivot pin brace 30 deg fr SRX2 500208 Antiroll bar fr 0.9 SRX2 500209 Antiroll bar fr 1.0 SRX2 500210 Antiroll bar fr 1.1 SRX2 500237 C-hub L+R alu SRX2 500241 Front wing SRX2 Front bulkhead alu SRX2 500243 500250 Front bulkhead brass SRX2 500258 Antirollbar balljoints (2+2) SRX2 500262 Pivot pin fr inner / rr outer TiN coated (2) SRX2 500263 Pivot pin fr outer TiN coated (2) SRX2

MIDDLE SECTION		
500165	Battery plate nut (4) SRX2	
500278	Batteryplate carbon SRX2 MM	
500279	Battery holders (4) SRX2 MM	
500280	Battery plate foam SRX2 MM	
500284	Battery case inserts foam (3) SRX2 MM	
500285	Ballast weight SRX2 MM	
REAR SE	CTION	
401387	Wheelhexagon (2)	
500147	Pivotball shim conical (10) SRX2	
500149	Pivotball with shaft med (5) SRX2	
500150	Pivotball with shaft high (4) SRX2	
500274	Suspension bracket rr fr SRX2 MM	
500275	Shocktower carbon rr SRX2 MM	
500276	Shock mount rr (2) SRX2 MM	
500106	1/10 buggy rim rr yellow (2)	
500196	Upright L+R alu SRX2	
500198	Pivotball with shaft short (4) SRX2	
500205	Antiroll bar rr 1.1 SRX2	
500206	Antiroll bar rr 1.3 SRX2	
500207	Antiroll bar rr 1.5 SRX2	
500211	Wheelhexagon +0.75mm offset (2)	
500212	Wheelhexagon -0.75mm offset (2)	
500244	Rear bulkhead weight SRX2	
500255	Suspension insert rr 3deg alu (2) SRX2	
500258	Antirollbar balljoints (2+2) SRX2 Pivot pin fr inner / rr outer TiN coated (2) SRX2	
500262 500281	Antiroll bar set rr SRX2 MM	
500281	Wingmount low SRX2 MM	
500282	Suspension bracket rr fr brass SRX2 MM	
500286	Bumper rear brass SRX2 MM	
TRANSM	ISSION	
411069	Differential balls steel 1/8" (12)	
500153	Top shaft 21T SRX2	
500157	Slipper plate alu (3) SRX2	
500158	Slipper pad yellow (3) SRX2	
500159	Slipper spring (2) SRX2	
500160	Slipper bolt topshaft (2) SRX2	
500166	Idler gear 27T SRX2	
500167	Diff pully balldiff 51T (1) SRX2	
500168	Diff ring balldiff (2) SRX2	
500169	Balldiff outdrive male SRX2	
500170	Balldiff outdrive female SRX2	
500171	Balldiff spring (2) SRX2	
500172	Balldiff bolt (2) SRX2	
500173	Balldiff thrustbearing SRX2	
500186	Balldiff set SRX2	
500187	Balldiff T-nut (2) SRX2	
500277	Motor plate SRX2 MM	
600116	O-ring tank (4)	
411107	Diff balls. 1/8 ceramic (12)	
500242	Slipper plates vented alu (3) SRX2	
500256	Thrustbearing carbide balldiff SRX2	
500259 500260	Differential balls carbide 1/8" (12) Idler gear 27T alu SRX2	
JUU200		

BODY AND WING

170336	Body Spyder 2wd MM 1/10 semipainted
500241	Front wing SRX2

500251	Rear wing 6.0" SRX2
500252	Rear wing 7.0" SRX2

SPURGEAR

500213	Spur gear 70T SRX2
500214	Spur gear 72T SRX2
500215	Spur gear 76T SRX2
500216	Spur gear 78T SRX2
500217	Spur gear 80T SRX2
500218	Spur gear 82T SRX2





- 500219
 Spur gear 84T SRX2

 500220
 Spur gear 86T SRX2

 500221
 Spur gear 88T SRX2
- PINIONS

120156	Motor-pinion alu hard	48P / 18T
120157	Motor-pinion alu hard	48P / 19T
120158	Motor-pinion alu hard	48P / 20T
120159	Motor-pinion alu hard	48P / 21T
120160	Motor-pinion alu hard	48P / 22T
120161	Motor-pinion alu hard	48P / 23T
120162	Motor-pinion alu hard	48P / 24T
120163	Motor-pinion alu hard	48P / 25T
120164	Motor-pinion alu hard	48P / 26T
120165	Motor-pinion alu hard	48P / 27T
120166	Motor-pinion alu hard	48P / 28T
120167	Motor-pinion alu hard	48P / 29T
120168	Motor-pinion alu hard	48P / 30T

TOOLS

- 190501 Tool-bag 190502 Carry-bag medium, 3 drawers 190508 Toolset for offroad (20pcs) with tools bag Toolset EP (16pcs) with Tools bag 190507 190509 Allen wrench 1.5 x 120mm 190510 Allen wrench 2.0 x 120mm 190511 Allen wrench 2.5 x 120mm 190512 Allen wrench 3.0 x 120mm 190513 Ball driver hex wrench 2.0 x 120mm 190514 Ball driver hex wrench 2.5 x 120mm 190515 Ball driver hex wrench 3.0 x 120mm 190516 Tool tip allen wrench 1.5 x 120mm 190517 Tool tip allen wrench 2.0 x 120mm 190518 Tool tip allen wrench 2.5 x 120mm 190519 Tool tip allen wrench 3.0 x 120mm 190520 Tool tip ball driver hex wrench 2.0 x 120mm 190521 Tool tip ball driver hex wrench 2.5 x 120mm 190522 Tool tip ball driver hex wrench 3.0 x 120mm 190523 Turnbuckle wrench 3mm 190524 Turnbuckle wrench 4mm 190525 Turnbuckle wrench 5mm 190526 Flat head screwdriver 3.0 x 150mm 190527 Flat head screwdriver 4.0 x 150mm 190528 Phillips screwdriver 2.0 x 45mm 190529 Phillips screwdriver 3.5 x 120mm 190530 Phillips screwdriver 5.8 x 120mm 190539 Nut driver 4.5 x 100mm 190531 Nut driver 5.0 x 100mm 190532 Nut driver 5.5 x 100mm 190533 Nut driver 7.0 x 100mm
- 190534 Reamer with end cap for lexan body

MERCHANDISING

1896 Cap serpent black-orange 190172 Winter jacket Serpent black-orange hooded (M) 190173 Winter jacket Serpent black-orange hooded (L) 190174 Winter jacket Serpent black-orange hooded (XL) 190175 Winter jacket Serpent black-orange hooded (2XL) 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) 190184 T-shirt Serpent Splash white (L) 190185 T-shirt Serpent Splash white (XL) 190186 T-shirt Serpent Splash white (XXL) T-shirt Serpent Splash white (XXXL) 190187 190188 T-shirt Serpent Splash orange (S) 190189 T-shirt Serpent Splash orange (M) 190190 T-shirt Serpent Splash orange (L)

190191	T-shirt Serpent Splash orange (XL)
190192	T-shirt Serpent Splash orange (XXL)
190193	T-shirt Serpent Splash orange (XXXL)
190194	T-shirt Serpent Splash black (S)
190195	T-shirt Serpent Splash black (M)
190196	T-shirt Serpent Splash black (L)
190197	T-shirt Serpent Splash black (XL)
190198	T-shirt Serpent Splash black (XXL)
190199	T-shirt Serpent Splash black (XXXL)
190201	Hoody sweater Serpent black-zip (S)
190202	Hoody sweater Serpent black-zip (M)
190203	Hoody sweater Serpent black-zip (L)
190204	Hoody sweater Serpent black-zip (XL)
190205	Hoody sweater Serpent black-zip (2XL)
190206	Hoody sweater Serpent black-zip (3XL)
190207	Hoody sweater Serpent black-zip (4XL))
190215	T-shirt Serpent WC edition black (S)
190216	T-shirt Serpent WC edition black (M)
190217	T-shirt Serpent WC edition black (L)
190218	T-shirt Serpent WC edition black (XL)
190219	T-shirt Serpent WC edition black (XXL)
190220	T-shirt Serpent WC edition black (XXXL)



Transmitter, reciver, servo, parts

210004 Servo digital 0.14s/7,2kg
210006 Servo case for #210004
210008 Servo gear set for #210004
210009 Transmitter set DTS-2 with display 2.4 Ghz
210010 Transmitter DTS-2 with display 2.4Ghz
210011 Receiver DRS-2 on 2.4Ghz

Speed controller, motor, parts

- 211004 Motor brushless DL10 9T-3600kv
- 211008 Speedo DX-10 WP 45A
- 211011 Program card DX series

Tyres rubber offroad and wheels

- 214013 1/10 buggy rim fr 2wd white (2)
- 214014 1/10 buggy rim fr 2wd yellow (2)
- 214015 1/10 buggy rim rr white (2)
- 214016 1/10 buggy rim rr yellow (2)
- 214017 1/10 buggy Tyre mounted on white rim 2wd front (2)
- 214018 1/10 buggy Tyre mounted on white rim 4wd (2)

Weblink for :

- all spares: www.serpent.com/500006/spares
- all optionals: www.serpent.com/500006/optionals
- all tools: www.serpent.com/product/tools/
- all merchandising: www.serpent.com/product/Merchandising/
- all dragon-rc equipment: www.dragon-rc.com

Additions / notes

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