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!

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, 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 50 mph. 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 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 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.
Included with your model

- Serpent model car, factory assembled and set-up
- Dragon-RC DTS-1 transmitter
- Dragon-RC DESC-1 speed controller
- Dragon-RC brushless motor
- Dragon-RC racing tyres, pre-mounts
- Dragon-Rc digital servo
- Dragon-RC prepainted and pre-cut bodyshell

Required for your model

- Multi Charger; to charge transmitter battery and car battery
- Battery pack NimH 6-cell or 2S Lipo
- Battery AA x 4 to operate the transmitter
- Tools: selection of allen tools and screw-drivers

Recommended materials

- Hobby knife
- Camber gauge
- Safety glasses and gloves
- Side cutter and nose plier
- Cleaning brush and towel
- Cleaning gum
- Thin bearing oil
- Transmission grease
- CA glue
- Degreaser
Model specs/overview

- Shocktower front
- Front bodymount
- Front wishbone
- Steering servo
- Top-deck
- Spool
- Receiver
- Speedcontroller
- Brushless motor
- Camber link
- Rear wishbone
- Rear bodymount
- Shockabsorbers
- Race-tyres
- Steeringblock
- Chassis
- Steering system
- Front belt
- Battery strap
- Motor pinion
- Spur gear
- Center pulley and shaft
- Rear belt
- Differential
- Shocktower rear

A WEAPON FOR THE SERIOUS RACER
Transmitter system

The car comes complete with the Digital Proportional Dragon-RC DTS-1 2.4 gHz transmitter (#210000).

The Dragon DTS-1 transmitter is an advanced 2.4 gHz radio-system with LCD screen, and clear settings which are easy to tune through the menu and screen.

The transmitter is pre-tested, checked for proper functioning, and pre-set with default, to operate the car. In case you want to change any setting then follow the manual as per below.

Read very carefully before making changes. Its always possible to restore default settings if needed.

LCD Transmitter operation

The transmitter is powered by 4 cells AA 1.5V. As soon as you turn on the power switch, it starts to run. ST controls the steering. TH controls throttle. After turning on the transmitter, the LCD display shows Battery Voltage and the model number which you have selected last time. SEL +/- are used for setting model parameters and operation steps.

1. Pres +/- to operate model number, value range from 01-15, model name and number will be shown on the display.
2. Press SET to set the parameters, such as REV, EPA, ABS, EXP, MODEL NAME.
   A. Set REV, press CH key then enter ST/TH/3C and press +/- then enter ON/OFF.
   B. Set EPA: press CH then enter ST/TH, steering control L/R, throttle control F/B, LFU/RBU in LCD select choice, +/- set the number value, range 0-120%.
   C. Set ABS: press CH then enter ST/TH, press +/- then enter ON/OFF.
   D. Set EXP: press CH then enter ST/FORWARD/BACK, press +/- to set value range -100% -- +100%.
   E. Set MODEL NAME: press CH to move the setting characters position, press +/- to set value range 0-9, A-Z.
3. Press SEL key to exit setting state, parameters are auto saved.
4. Set TRIM-ST: press TRIM-ST+, TRIM-ST- to change TRIM-ST value, range 0-100%R, 0-100%L.
5. Set D/R-ST: press D/R-ST+, D/R-ST- to change D/R-ST value, range 0-100%L, 0-100%R.
6. Set D/R-TH: press D/R-TH- to change D/R-TH value range 0-100%F, 0-100%B.
7. Press SET key to exit the setting of TRIM, D/R, without operation after one minute it will save.

Receiver functions

Switch
Fail
Safe
Set

Connectors
1: Steering servo CH1
2: Throttle servo CH2
3: CH3 servo CH3
4: CH4 servo CH4
B/C: Power connector

ABS = anti lock breaking system
F/S = fail safe
CH = channel
REV = reverse
D/R = dual rate
ST = steering
EPA = end point adjustment
TH = throttle
more info: check
EXP = exponential
www.easyrc.com

Receiver functions

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1: Steering servo CH1
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ST = steering
EPA = end point adjustment
more info: check
EXP = exponential
www.easyrc.com
LCD Display Function Map

**MODEL SELECT:**
- 6.0 V 000.01
- 6.0 V 000.02
- 6.0 V 000.03
- 6.0 V 000.04
- 6.0 V 000.15

**REV:**
- OFF REV-ST.
- OFF REV-TH.
- OFF REV-3C.

**EPA:**
- 100% EPA-ST.
- 100% EPA-TH.

**ABS:**
- OFF ABS-TH.

**EXP:**
- +00% EXP-ST.
- +00% EXP-FW.
- +00% EXP-BK.

**MODEL NAME:**
- 000.01
- 000.01
- 000.01
- 000.01

- means press “↑” key or “↓” key.
- means press “SEL” key.
- means press “CH” key.
1. Set the TH, ST switches to the normal position.
2. Turn on the transmitter and receiver.
3. Press the F/S SET button, the LED on the receiver should start flashing rapidly.
4. Put the throttle trigger at the brake position, press the F/S SET button, the LED should become solid.
5. For electric model, put the throttle trigger at the stop position when you are making the setting.

If your system fails to operate or you experience a short range problem or else, check the table below for possible causes. If after you have followed the listed suggestions, the problem has not been corrected, return the system to your re-seller for inspection and/or repair.

1. TRANSMITTER
   Battery: Dead battery- Change the battery or charge the battery.
   Battery inserted incorrectly- reload the battery according the polarity markings.
   Faulty contact: Check if the contacts are bent and not making good contact.
   Dirty contacts - clean the contacts and check for corrosion.

2. RECEIVER
   Battery: Dead battery- Replace the battery or recharge. Wrong polarity- check connections.
   Antenna: Near other wiring- move away from wiring.
   If antenna was cut, please request repair.
   If antenna is bundled or coiled- keep antenna as straight as possible.

3. CONNECTOR CONNECTIONS
   Wiring incorrect- insert all connectors firmly.

4. LINKAGE
   Binding or loose- adjust the linkage in the model.

5. MOTOR
   Noise problem- install capacitors on motor.

NOTE: Keep the transmitter and receiver 40cm apart when operating
      Do not operate the radio system when the battery power is low

**Binding the transmitter and receiver**

1. Turn on the receiver power. Press the Bind switch. The receiver’s LED should start flashing.
2. Turn on the transmitter.
3. When the LED on the receiver becomes solid, the binding process is completed.
4. Press the SEL button to conclude the settings. The newly entered values are saved automatically.

**Fail Safe function setting**

1. Set the TH, ST switches to the normal position.
2. Turn on the transmitter and receiver.
3. Press the F/S SET button, the LED on the receiver should start flashing rapidly.
4. Put the throttle trigger at the brake position, press the F/S SET button, the LED should become solid.
5. For electric model, put the throttle trigger at the stop position when you are making the setting.

**Trouble shooting**

If your system fails to operate or you experience a short range problem or else, check the table below for possible causes. If after you have followed the listed suggestions, the problem has not been corrected, return the system to your re-seller for inspection and/or repair.

1. TRANSMITTER
   Battery: Dead battery- Change the battery or charge the battery.
   Battery inserted incorrectly- reload the battery according the polarity markings.
   Faulty contact: Check if the contacts are bent and not making good contact.
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   Battery: Dead battery- Replace the battery or recharge. Wrong polarity- check connections.
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   If antenna was cut, please request repair.
   If antenna is bundled or coiled- keep antenna as straight as possible.

3. CONNECTOR CONNECTIONS
   Wiring incorrect- insert all connectors firmly.

4. LINKAGE
   Binding or loose- adjust the linkage in the model.

5. MOTOR
   Noise problem- install capacitors on motor.
The car comes pre-assembled with the Dragon-RC electronic speed-controller.

The Dragon-RC DESC-1 is a very stable and reliable 35A type electronics speedcontroller, that works very well with proper 6 cell NiMH or better 2-S Lipo packs. The speedo is pre-tested, checked for proper functioning and pre-set with safe default values to operate the car. In case you want to change any setting then follow the manual as per below.

Read very carefully before making changes. Its always possible to restore default settings if needed.

**FEATURES**

1. Specially designed for RC car RTR (Ready to Run) application.
2. Excellent start-up, acceleration and linearity features.
3. Compatible with sensorless brushless motor.
4. Running modes: Forward mode (single direction) and Forward/Backward mode (dual directions)
5. Proportional ABS brake function, with 4 steps of maximum brake force adjustment, 8 steps of drag-brake force adjustment.
6. Different options of start modes (Also called ‘Punch’) from ‘soft’ to ‘aggressive’.
7. Multiple protection features: Low voltage cut-off protection for lithium or nickel battery / Over-heat protection / Throttle signal loss protection / Motor blocked protection.
8. Splash proof and dustproof.

**SPECIFICATIONS**

Suitable car: 1/10 On-Road (#400007)

Battery: 6 cells NiMH or 2 S Lipo

Suitable Brushless Motor:

2S Lipo On-road: ≥9T 3650 size motor (#211004)

**BEGIN TO USE THE NEW ESC**

1. Connect the ESC, motor, receiver, battery and servo according to the following diagrams

   +’ and ‘-’ wires of the ESC are connected with the battery pack, and #A, #B and #C are connected with the motor wires. The control cable of the ESC (trio wires with black, red and white color) is connected with the throttle channel of the receiver (Usually CH2). The #A, #B, #C wires of the ESC can be connected with the motor wires freely (without any order).

   If the motor runs in the opposite direction, please swap any two wire connections.

   The ‘SET’ button is used for programming the ESC.
2. Throttle Range Setting (Throttle Range Calibration)

In order to make the ESC fit the throttle range of your transmitter, you must calibrate it for the following cases; otherwise the ESC cannot work properly.

1. Begin to use a new ESC;
2. Begin to use a new transmitter;
3. Change the settings of neutral position of the throttle stick, ATV or EPA parameters, etc.

There are 3 points need to be set, they are the end point of ‘forward’, the end point of ‘backward’ and the neutral point. The following pictures show how to set the throttle range.

A. Switch off the ESC, turn on the transmitter, 
set the direction of throttle channel to ‘REV’, set the ‘EPA/ATV’ value of throttle channel to ‘100%’, and disable the ABS function of your trans

B. Hold the ‘SET’ key (Note1 ) and then switch on the ESC, and release the ‘SET’ key as soon as the red LED begins to flash. (Note2 )

Note 1: The ‘SET’ key of S18 is beside the main switch of the controller.

Note 2: If you don’t release the ‘SET’ key as soon as the red LED begins to flash, the ESC will enter the program mode, in such a case, please switch off the ESC and re-calibrate the throttle range again from step A to step D.

C. Set the 3 points according to the steps shown in the pictures on the right side.

1) The neutral point
Move the throttle stick at the neutral point, and then click the SET key, the green LED flashes 1 time.

2) The end point of forward direction
Move the throttle stick at the end point of forward direction, and then click the SET key, the green LED flashes 2 times.

3) The end point of backward direction
Move the throttle stick at the end point of backward direction, and then click the SET key, the green LED flashes 3 times.

D) Throttle range is calibrated; motor can be started after 3 seconds.

3. Throttle Range Explanation
LED STATUS IN NORMAL RUNNING
1. In normal use, if the throttle stick is in the neutral range, neither the red LED nor the green LED lights.
2. The red LED lights when the car is running forward or backward and it will flash quickly when the car is braking.
3. The green LED lights when the throttle stick is moved to the top point of the forward zone.

ALERT TONES
1. Input voltage abnormal alert tone: The ESC begins to check the input voltage when power on, if it is out of
   the normal range, such an alert tone will be emitted: 'beep-beep-, beep-beep-, beep-beep-' (There is 1 second time interval between every 'beep-beep-' tone).
2. Throttle signal abnormal alert tone: When the ESC can’t detect the normal throttle signal, such an alert tone
   will be emitted: 'beep-, beep-, beep-' (There is 2 seconds time interval between every 'beep-' tone).

PROTECTION FUNCTION
1. Low voltage cut-off protection:
   A: Lipo. If the voltage of a lithium battery pack is lower than the threshold for 2 seconds, the ESC will cut off
   the output power. Please note that the ESC cannot be restarted if the voltage of each lithium cell is lower than 3.5V.
   B: For NiMH battery packs, if the voltage of the whole NiMH battery pack is higher than 9.0V but lower than 12V, it
   will be considered as a 3S lithium battery pack; If it is lower than 9.0V, it will be considered as a 2S lithium battery pack.
   For example, if the NiMH battery pack is 8.0V, and the threshold is set to 2.6V/Cell, so it will be considered as a
   2S lithium battery pack, and the low-voltage cut-off threshold for this NiMH battery pack is 2.6x2=5.2V.
2. Over-heat protection: When the temperature of the ESC is over a factory preset threshold for 5 seconds, the ESC
   will cut off the output power. When the over-heat protection happens, the Green LED will flash in such a style: ‘••’
   (Double flash).
3. Throttle signal loss protection: The ESC will cut off the output power if the throttle signal is lost for 0.2 second.

PROGRAM THE ESC
1. Programmable Items List (The white texts in the form are the default settings)

<table>
<thead>
<tr>
<th>Programmable Items For S411 RTR ESC</th>
<th>Programmable Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Running Mode</td>
<td>Forward</td>
</tr>
<tr>
<td>2. Drag Brake Force</td>
<td>0%</td>
</tr>
<tr>
<td>3. Low Voltage Cut-Off Threshold</td>
<td>2.6V/Cell</td>
</tr>
<tr>
<td>4. Start Mode (Punch)</td>
<td>Level1</td>
</tr>
<tr>
<td>5. Maximum Brake Force</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

2. Explanation For Each Programmable Item.

2.1. Running Mode: With ‘Forward with Brake’ mode, the car can go forward and brake, but cannot go backward, this
   mode is suitable for competition; ‘Forward/Reverse with Brake’ mode provides backward function, which is suitable
   for daily training.
   Note: ‘Forward/Reverse with Brake’ mode uses ‘Double-click’ method to make the car go backward. When you move
   the throttle stick from forward zone to backward zone for the 1st time (The 1st ‘click’), the ESC begins to brake the
   motor, the motor speeds down but it is still running, not completely stopped, so the backward action is NOT applied
   immediately. When the throttle stick is moved to the backward zone for the 2nd time (The 2nd ‘click’), if the motor
   speed is slowed down to zero (i.e. stopped), the backward action applied. The ‘Double Click’ method prevents mistaken
   reversing action when the brake function is frequently used in steering.
   By the way, in the process of brake or reverse, if the throttle stick is moved to forward zone, the motor will run forward
   at once.

   ‘Forward/Reverse’ mode uses ‘Single-click’ method to make the car go backward. When you move the throttle
   stick from forward zone to backward zone, the car will go backward immediately.

   2.2. Drag Brake Force: Set the amount of drag brake applied at neutral throttle to simulate the slight braking
effect of a neutral brushed motor while coasting.

   2.3. Low Voltage Cut-Off: The function prevents the lithium battery pack from over discharging.
   The ESC detects the battery’s voltage at any time, if the voltage is lower than the threshold for 2 seconds,
   the output power will be reduced 70%, 10 seconds later the output will be completely stopped, and the red LED
   flashes in such a style: ‘••••’ (Single flash).

   2.4. Start Mode (Also called ‘Punch’):
   Select from ‘Level1’ to ‘Level4’. Higher number means more aggressive start effect.
2.5. **Maximum Brake Force:** The ESC provides proportional brake function. The brake force is related to the position of the throttle stick. Maximum brake force refers to the force when the throttle stick is located at the end point of the backward zone. A very large brake force can shorten the brake time, but it may damage the gears.

3. **Program The ESC With SET Button**
   Please check the instructions below.

4. **Reset All Items To Default Values**
   At any time when the throttle is located in neutral zone (except in the throttle calibration process or ESC program mode), hold the ‘SET’ key for over 3 seconds, the red LED and green LED will flash at the same time, which means each programmable item has been reset to its default value.

**PROGRAM THE ESC WITH SET BUTTON**

The following is a flow chart sample for programming the ESC.

![Flow chart: Program the ESC with the SET key](image)

**Note:**
- In the program process, the motor will emit ‘Beep’ tone at the same time when the LED is flashing.
- If the ‘N’ is bigger than the number ‘5’, we use a long time flash and long ‘Beep---’ tone to represent ‘5’, so it is easy to identify the items of the big number.

For example, if the LED flashes as the following:
- ‘A long time flash + a short time flash’ (Motor sounds ‘Beep---Beep’) = the No. 6 item
- ‘A long time flash + 2 short time flash’ (Motor sounds ‘Beep---BeepBeep’) = the No. 7 item
- ‘A long time flash + 3 short time flash’ (Motor sounds ‘Beep---BeepBeepBeep’) = the No. 8 item
And so on.
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 charge the battery packs: read both battery manual and charger manual carefull before!
3. Buy and install the batteries in the transmitter (page 6)
4. Install battery pack in the model, make sure the speedo is switched off, connect the cables (avoid reversed polarity) and securely fasten the battery-pack.
5. Turn on the transmitter (page 6).
   Always turn on the transmitter first before to switch on the car and only turn off the transmitter after you switched off the car.
6. Check servo operation.
   Check that the servo works correctly and check that the car runs straight in neutral position, trim as needed.
7. Perform a range test with the radio system
8. Personalise the body of your car by applying more decals if required.
9. Drive your modelcar.
10. Maintain your modelcar (page 18)
## Questions and Answers

<table>
<thead>
<tr>
<th>Question/Issue</th>
<th>Possible Reason</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>After power on, motor doesn’t work, and the cooling fan doesn’t work</td>
<td>The connections between battery pack and ESC are not correct</td>
<td>Check the power connections. Replace the connectors.</td>
</tr>
<tr>
<td>After power on, motor can’t work, but emits ‘beep-beep-, beep-beep’ alert tone. (Every group of ‘beep-beep’ has a time interval of 1 second)</td>
<td>Input voltage is abnormal, too high or too low</td>
<td>Check the voltage of the battery pack.</td>
</tr>
<tr>
<td>After power on, red LED always lights, the motor doesn’t work</td>
<td>Throttle signal is abnormal</td>
<td>Plug the control wire into the throttle channel of the receiver correctly.</td>
</tr>
<tr>
<td>The motor runs in the opposite direction when it is accelerated</td>
<td>The wire connections between ESC and the motor are not correct</td>
<td>Swap any two wire connections between the ESC and the motor.</td>
</tr>
<tr>
<td>The motor suddenly stops running</td>
<td>The throttle signal is lost</td>
<td>Check the transmitter and the receiver. Check the signal wire from the throttle channel of your receiver.</td>
</tr>
<tr>
<td></td>
<td>The ESC has entered the Low Voltage Protection Mode or Over-heat</td>
<td>Red LED flashing means Low voltage protection. Please replace battery pack or recharge.</td>
</tr>
<tr>
<td>When accelerating quickly, the motor stops or trembles</td>
<td>1. The battery has a bad discharge performance</td>
<td>1. Use a better battery</td>
</tr>
<tr>
<td></td>
<td>2. The gear rate is too small</td>
<td>2. Use lower KV motor or change the gear rate, choose smaller pinion.</td>
</tr>
<tr>
<td></td>
<td>3. The ‘Start Mode (Punch)’ of the ESC is too aggressive</td>
<td>3. Select a softer option for the ‘Start Mode (Punch)’</td>
</tr>
<tr>
<td>The rear of the car breaks out when entering a corner</td>
<td></td>
<td>Harder rear diff. Softer front spring, softer front anti-roll bar (optional). More rear toe-in.</td>
</tr>
<tr>
<td>The front of the car pushes to the outside of the corner</td>
<td></td>
<td>Softer rear diff. harder front spring, harder front anti-roll bar (optional). Less rear toe-in.</td>
</tr>
<tr>
<td>The rear of the car spins out under acceleration</td>
<td></td>
<td>Softer rear diff. Softer rear spring, softer rear anti-roll bar (optional). More rear toe-in.</td>
</tr>
<tr>
<td>The car lacks topspeed</td>
<td></td>
<td>Gear ratio too short. Speedo adjustment</td>
</tr>
<tr>
<td>The car lacks bottom speed</td>
<td></td>
<td>Gear ratio too long. Speedo adjustment</td>
</tr>
</tbody>
</table>

## For more help:
- Ask fellow drivers
- Ask your rc dealer
- Refer to the [www.serpent.com](http://www.serpent.com) website
- Refer to online Serpent forums or other forums
- Use social media to connect to fellow drivers
- Refer to [www.easyrc.com](http://www.easyrc.com)
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 grip-level 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. Thinner oil will be softer, with slower response, thicker oil will be harder dampening with faster response. 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

- **Front anti-roll bar (optional)**: by using a softer anti-roll bar you will have more sag, more chassis roll/lean, more dive and a less responsive car. But you will have more steering once you have entered the corner

- **Rear anti-roll bar (optional)**: by using a softer anti-roll bar you will have more sag, more chassis roll/lean, more dive and a less responsive car. But you will have more rear traction and a more stable car

- **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 stable car, with less steering.

- **Toe adjustment: Rear**: adjusted with suspension blocks. 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.

- **Ackermann**: use the inner holes on the steering blocks for more ackermann, will create less direct steering response, or use outer ackermann holes for more direct steering response.

- **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 stable 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 the regular ride-height should be at 5-6mm.
Maintenance

**Belt and pulleys**
- Check the belts after every run, for wear and if all teeth are still in place, replace the belt in case teeth are missing. Check the pullies for wear, dirt and clean as needed.

**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 driveshaft front**
- 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.

**Differential**
- Check the differential pulley 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 maybe needs 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.
<table>
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<th>Part no</th>
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<td>Serpent S411 1/10 RTR</td>
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**MANUAL, DECALS**
- 401435 Decalsheet S411 black-white (2)
- 401456 Decalsheet S411 chrome (2)

**RADIO INSTALLATION**
- 1652 Steel balls 5.8mm long (4)
- 401372 Servo-lever (4)
- 401548 Servomount 411-S
- 401554 Bushing set 411-S (13)
- 401555 Servo holder L+R 411-S

**SERVO SAVER AND STEERING**
- 1652 Steel balls 5.8mm long (4)
- 401400 Steering shaft (2)
- 401536 Trackrod M3x38 411-S (2)
- 401540 Steeringshaft 411-S (2)
- 401541 Bushing steeringrack 411-S (2)
- 401542 Steeringrack 411-S
- 401556 Steering lever 411-S (2)
- 401565 Bushing Steeringrack V2 (2)
- 411206 Balljoint 4.5 (4)

**SHOCK ABSORBERS**
- 6442 O-ring adj.nut (10)
- 160102 Shock RCM shaft short (2)
- 160105 Shock RCM bottom (2)
- 160106 Shock RCM top nut (2)
- 160107 Shock RCM membrane (4)
- 160108 Shock RCM bushings (8)
- 160110 Shock RCM bottom O-ring (8)
- 160111 Shock RCM parts frame nylon short (14)
- 160113 Shock RCM body plastic (2)
- 160114 Shockset RCM on-road plastic short (2)
- 909405 Shock adj nut alu +o-ring (4)

**SHOCK SPRINGS**
- 160297 Spring grey short (2.6/14.8) TC (2)
- 160298 Spring black short (2.9/16.5) TC (2)
- 160299 Spring green short (3.5/19.9) TC (2)
- 160300 Spring white L23 (2.3/13.1) (2)
- 160301 Spring yellow L23 (2.8/16) (2)
- 160302 Spring orange L23 (3.4/18.5) (2)
- 160303 Spring red L23 (4.1/23.5) (2)

**CHASSIS**
- 401547 Chassis 411-S
- 401549 Topplate 411-S
- 401552 Battery mount 411-S (2)
- 401354 Chassis carbon 2.5mm
- 401374 Topdeck carbon 2mm
- 401431 Topdeck carbon 2.5mm
- 401432 Chassis carbon 2mm
- 401444 Chassis carbon 2.25mm
- 401464 Battery mount carbon F/R
- 401495 Topdeck carbon 411.2mm flex
- 401563 Topdeck carbon 1.75mm

**BODYMOUNTS FR and RR**
- 802211 Bodymount adjustable front (3)
- 802361 Bodymount adjustable rear (2)

**FRONT SECTION**
- 1652 Steel balls 5.8mm long (4)
- 401024 Ball 5mm (10)
- 401025 Pivotball uni 4.5mm (20)
- 401351 Belt Kevlar 30S35010 low friction
- 401357 Foam bumper
- 401359 Pulley solid axle 38T
- 401361 Bumper upper/ lower
- 401362 C-hub 4 L+R
- 401363 Steeringblock L+R
- 401381 CVD insert (2)
- 401386 Pivot pin front inner (2)
- 401392 Bearing excenter (4)
- 401410 Bushing steeringblock (4)
- 401533 Spool nylon 1/10 EP
- 401534 Driveshaft cvd 411-S (2)
- 401537 Trackrod M3x26 411-S (2)
- 401538 Bearingblock fr/rr 411-S (2)
- 401543 Cvd wheelaxle 411-S (2)
- 401546 Pivotball with shaft 411-S (2)
- 401550 Shocktower fr 411-S
- 401553 Wheel hex 411-S (2)
- 401554 Bushing set 411-S (13)
- 401557 Antiroll bar mount fr/rr (2)
- 401559 Suspension bracket 1 411-S
- 401560 Suspension bracket 2 411-S
- 401562 Shocktower mount L+R 411-S
- 411206 Balljoint 4.5 (4)

**ADDITIONAL PIECES**
- 401350 Belt Kevlar 30S35010
- 401366 Camber link M3x26mm
- 401358 Stabi collar (2)
- 401365 Bearingblock alu
- 401373 CVD axle set steel (2)
- 401375 Suspension bracket alu 0
- 401376 Suspension bracket alu 1
- 401377 Suspension bracket alu 2
- 401378 Suspension bracket alu 3
- 401379 Antirollbar 1.4mm
- 401380 Solid axle/spool
- 401382 Shocktower mount alu L+R
- 401387 Wheelhexagon 1mm offset (2)
- 401388 Shocktower mount 3x5x1.1 (10)
- 401389 Bushing alu 3x5x2 (10)
- 401390 Bushing alu 3x5x4 (2)
- 401391 Antirollbar ball (2)
- 401394 CVD driveshaft (2)
- 401397 Wishbone front lower (2)
- 401402 Antirollbar mount alu
- 401404 Suspension spacer 1mm (2)
- 401406 CVD wheelaxle (2)
- 401411 Antirollbar bushing (16)
- 401415 Antirollbar 1.2mm
401416 Antirollbar 1.6mm
401417 Antirollbar 1.8mm
401418 Suspension bracket alu 1.5
401419 Suspension bracket alu 2.5
401420 Suspension bracket alu 3.5
401422 Steeringblock alu L+R
401423 C-hub 2 alu L+R
401424 C-hub 4 alu L+R
401425 C-hub 6 alu L+R
401426 Spacer suspension 0.5mm (2)
401428 Driveshaft adaptor delrin (2)
401430 Camberlink alu (2)
401433 Weight set brass 5gr - 12gr - 20gr (2+1+1)
401434 Bushing smaller bearing (4)
401445 Driveshaft double cardan joint DCJ (2)
401446 Driveshaft DCJ (2)
401447 Wheelaxle DCJ (2)
401448 Coupler DCJ (2)
401449 Insert DCJ (4)
401450 Pin revision set DCJ (4)
401452 Wishbone Fr Lw hard (2)
401455 C-hub 4 L+R hard
401462 C-hub 4 L+R medium
401467 Pivot pin front inner TiNi (2)
401558 Suspension bracket rr-fr 0
401561 Suspension bracket 3 411-S
411063 Pivot ball threaded upper arm (2)
411187 Pivotball with shaft (2)
411207 Balljoint 4.5 short (2)

**MIDDLE SECTION**

1606 Antenna rod black (2)
401360 Pully middle 19T + spacer (3)
401366 Middle shaftalu
401413 Battery mount (4)
401539 Bracket motormount 411-S
401547 Chassis 411-S
401549 Topplate 411-S
401552 Battery mount 411-S (2)

**Options**

401354 Chassis carbon 2.5mm
401367 Motormount bracket alu
401368 Motormount alu
401374 Topdeck carbon 2mm
401398 Bracket middle shaftalu
401399 Bearingmount middle shaftalu
401427 Pully 19T alu
401431 Topdeck carbon 2.5mm
401432 Chassis carbon 2mm
401433 Weight set brass 5gr - 12gr - 20gr (2+1+1)
401451 Motormount set V2
401463 Belt tensioner set
401464 Battery mount carbon F/R

**REAR SECTION**

1651 Steel balls 5.8mm long (20)
401024 Ball 5mm (10)
401353 Belt Kevlar 30S3M186 low friction
401392 Bearing excenter (4)
401403 Pivot pin rear-inner (2)
401407 Pivot pin rear-out (2)
401460 Wishbone Rr Lw medium (2)
401461 Upright medium (2)
401526 Geardiff revision set V2
401532 Geardiff uni 1/10 EP
401535 Driveshaft 411-S (2)
401537 Trackrod M3x26 411-S (2)
401538 Bearingblock fr/r 411-S (2)
401544 Wheelaxle 411-S
401546 Pivotball with shaft 411-S (2)
401551 Shocktower rr 411-S
401553 Wheel hex 411-S (2)
401554 Bushing set 411-S (13)
401557 Antiroll bar mount frrr (2)
401558 Suspension bracket rr-fr 0
401561 Suspension bracket 3 411-S
401562 Shocktower mount L+R 411-S
411206 Balljoint 4.5 (4)
802361 Bodymount adjustable rear (2)
903333 X-ring RCCX shock (10)

**Options**

401352 Belt Kevlar 30S3M186
401353 Belt Kevlar 30S3M186 low friction
401356 Camber link M3x26mm (2)
401358 Stabi collarier (2)
401365 Bearingblock alu
401373 CVD axle set steel (2)
401375 Suspension bracket alu 0
401376 Suspension bracket alu 1
401377 Suspension bracket alu 2
401378 Suspension bracket alu 3
401381 CVD insert (2)
401382 Shocktower mount alu L+R
401385 Shocktower carbon rear
401387 Wheelhexagon 1mm offset (2)
401388 Bushing alu 3x5x1 (10)
401389 Bushing alu 3x5x2 (10)
401391 Antirollbar ball (2)
401393 Wishbone rear lower (2)
401394 CVD driveshaft (2)
401396 Upright (2)
401402 Antirollbar mount alu
401404 Suspension spacer 1mm (2)
401406 CVD wheelaxle (2)
401409 Blade (16)
401411 Antirollbar bushing (16)
401415 Antirollbar 1.2mm
401416 Antirollbar 1.6mm
401417 Antirollbar 1.8mm
401421 Upright alu (2)
401426 Spacer suspension 0.5mm (2)
401430 Camberlink alu (2)
401433 Weight set brass 5gr - 12gr - 20gr (2+1+1)
401434 Bushing smaller bearing (4)
401436 Balldiff set
401445 Driveshaft double cardan joint DCJ (2)
401446 Driveshaft DCJ (2)
401447 Wheelaxle DCJ (2)
401448 Coupler DCJ (2)
401449 Insert DCJ (4)
401450 Pin revision set DCJ (4)
401453 Wishbone Rr Lw hard (2)
401454 Upright hard (2)
401468 Pivot pin rear inner TiNi (2)
401497 Antirollbar 1.4mm rear
401534 Driveshaft cvd 411-S (2)
401543 Cvd wheelaxle 411-S (2)
401559 Suspension bracket 1 411-S
401560 Suspension bracket 2 411-S
411063 Pivot ball threaded upper arm (2)
411187 Pivotball with shaft (2)
411207 Balljoint 4.5 short (2)

**Trans**

401351 Belt Kevlar 30S3M10 low friction
401353 Belt Kevlar 30S3M186 low friction
401359 Pully solid axle 38T
401360 Pully middle 19T + spacer (3)
401380 Solid axle/spool
401408 Driveshaft solidaxle (2)
401412 Geardiff housing
401526 Geardiff revision set V2
20

**SPUR GEARS**

120015 Spur gear 48P / 69T
120016 Spur gear 48P / 72T
120017 Spur gear 48P / 75T
120018 Spur gear 48P / 78T
120019 Spur gear 48P / 81T
120020 Spur gear 48P / 84T
120021 Spur gear 48P / 87T
120022 Spur gear 48P / 86T

**PINIONS**

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

**BALL-BEARINGS**

1314 Ballbearing 6x12 (2)
1315 Ballbearing 5x10x4 (2)
1344 Ballbearing 10x15x4 (2)
140313 Ballbearing 5x10x3 (2)

**HARDWARE**

110104 Screw allen countersunk M3x8 (10)
110108 Screw allen roundhead m3x6 (10)
110109 Screw allen roundhead m3x10 (10)
110112 Screw allen roundhead m3x12 (10)
110114 Setscrew allen m3x8 (10)
110116 Setscrew allen m3x10 (10)
110117 Setscrew allen m3x12 (10)
110122 Screw allen countersunk m3x6 (10)
110124 Screw allen roundhead m3x8 (10)
110127 Screw allen countersunk m3x12 (10)
110128 Screw allen roundhead m3x5 (10)
110133 Screw philsiphead countersunk 2.5x8 wide (10)
110136 Screw allen countersunk M2.5x8 (10)
110147 Screw ph roundhead widesp]>readhead 2.5x5 (10)
110152 Screw allen cylinderhead M3x8 (10)
110153 Screw allen roundhead M2.3x6 (10)
110158 Screw allen countersunk M3x15 (10)
110162 Setscrew allen M3x2.5 (10)
110164 Screw allen roundhead M3x4 (10)
110172 Screw allen roundhead flanged M3x6 (10)
110206 Pin 2.5x22 (10)
110208 Pin nra 2x9.8 (4)
110215 Pin 2x12 (10)
110302 E-clip 4.0 (10)
110402 Nut nylon M3 (10)
110405 Nut nylon M4 flanged (10)
110422 Shim 4x10x0.3 (10)
110427 Shim 5x15x0.3 (10)
110442 Shim 4x8x0.6 (10)

**BODIES**

401578 Body Lex-IS Orange S411 pre cut EFRA 4030
401579 Body Lex-IS Red S411 pre cut EFRA 4030
401580 Body Lex-IS Blue S411 pre cut EFRA 4030
401581 Body Lex-IS Green S411 pre cut EFRA 4030

**MERCHANDISING / DECALS**

401435 Decalsheet S411 black-white (2)
401456 Decalsheet S411 chrome (2)
1886 Decal Serpent black/white 1/10 (2)
1887 Decal Serpent black/white 1/8 (2)
1888 Decal Serpent chrome 1/10 (2)
1896 Cap Serpent orange-black
1897 Towel Serpent large 120x64cm
1898 Lanyard Serpent orange
1899 Towel Serpent orange/yellow large
190501 Tool-bag
190110 Sweater hooded serpent black (s)
190111 Sweater hooded serpent black (m)
190112 Sweater hooded serpent black (l)
190113 Sweater hooded serpent black (xl)
190114 Sweater hooded serpent black (xxl)
190121 T-shirt Serpent LTS white (S)
190122 T-shirt Serpent LTS white (M)
190123 T-shirt Serpent LTS white (L)
190124 T-shirt Serpent LTS white (XL)
190125 T-shirt Serpent LTS white (xxL)
190127 T-shirt Serpent DTR orange (S)
190128 T-shirt Serpent DTR orange (M)
190129 T-shirt Serpent DTR orange (L)
190130 T-shirt Serpent DTR orange (xl)
190131 T-shirt Serpent DTR orange (xxL)
190132 T-shirt Serpent DTR black (S)
190133 T-shirt Serpent DTR black (M)
190134 T-shirt Serpent DTR black (L)
190135 T-shirt Serpent DTR black (xl)
190136 T-shirt Serpent DTR black (xxL)
190137 T-shirt Serpent LTS orange (s)
190178 T-shirt Serpent LTS orange (M)
190179 T-shirt Serpent LTS orange (L)
190180 T-shirt Serpent LTS orange (xl)
190181 T-shirt Serpent LTS orange (xxL)
190167 T-shirt Serpent LTS black (S)
190168 T-shirt Serpent LTS black (M)
190169 T-shirt Serpent LTS black (L)
190170 T-shirt Serpent LTS black (XL)
190171 T-shirt Serpent LTS black (xxL)
190165 Polo shirt Serpent black-orange (S)
190157 Polo shirt Serpent black-orange (M)
190138 Polo shirt Serpent black-orange (L)
190159 Polo shirt Serpent black-orange (XL)
190160 Polo shirt Serpent black-orange (xxL)
190161 Polo shirt Serpent black-orange (XXL)
190172 Winter jacket Serpent (S)
190173 Winter jacket Serpent (M)
190174 Winter jacket Serpent (L)
190175 Winter jacket Serpent (XL)
190176 Winter jacket Serpent (xxL)
## TRANSMITTER, SERVO AND PARTS
- **210000** Transmitter set DTS-1 with display 2.4 Ghz
- **210001** Transmitter DTS-1 with display 2.4Ghz
- **210002** Receiver DRS-1 on 2.4Ghz
- **210004** Servo digital 0.13s/6.5kg
- **210006** Servo case for #210004
- **210008** Servo gear set for #210004

## SPEED AND PARTS
- **211000** Speed controller DS-10
- **211002** Set speed controller DS-10 - BL 9T 3650 motor
- **211004** Motor brushless DL10 9T 3650

## BODIES AND PARTS
- **213000** Body 1/10 Lex-is 190mm clear
- **213001** Body 1/10 Lex-is 190mm clear light
- **213002** Body 1/10 Lex-is 190mm semi painted
- **213003** Body 1/10 Lex-is 190mm painted white-orange
- **213004** Body 1/10 Lex-is 190mm painted white-red
- **213005** Body 1/10 Lex-is 190mm painted white-blue
- **213006** Body 1/10 Lex-is 190mm painted white-green

## ONROAD TYRES AND WHEELS
- **215000** Tyre EP 1/10 24R premounts white rim (4)
- **215001** Tyre EP 1/10 28R premounts white rim (4)
- **215002** Tyre EP 1/10 32R premounts white rim (4)
- **215003** Tyre EP 1/10 36R premounts white rim (4)
- **215004** Insert EP 1/10 moulded type-A (4)
- **215005** Insert EP 1/10 moulded type-B (4)
- **215006** Insert EP 1/10 moulded type-C (4)
- **215007** Insert EP 1/10 moulded type-D (4)
- **215008** Tyre rubber 1/10 EP 24R (4)
- **215009** Tyre rubber 1/10 EP 28R (4)
- **215010** Tyre rubber 1/10 EP 32R (4)
- **215011** Tyre rubber 1/10 EP 36R (4)
- **215012** Rim EP 1/10 white (4)
- **215013** Rim EP 1/10 black (4)
- **215014** Rim EP 1/10 orange (4)
- **215015** Rim EP 1/10 yellow (4)

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