Congratulations on your newly acquired Serpent 710. You have chosen the highest quality, ultimate-performance 200mm racecar that is easy to use, assemble, and set up. As part of the worldwide team of Serpent drivers, you will also get superior technical support. Serpent has a tradition of excellence with instruction manuals, and with the new Serpent 710 manual we have yet again gone a step further. The new layout has easy to follow step-by-step assembly instructions and building tips, richly illustrated with 3D rendered full-color images. Following the instructions will result in a well-built, high-performance racecar that will soon be able to unleash its full potential at the racetrack.

Instructions
This instruction manual has nine sections that will lead you through the assembly process of your Serpent 710. Follow the assembly steps in the order presented to ensure that no problems occur during assembly. Each step indicates all the fasteners and small parts used. Bag numbers are also shown to identify the kit bag that contains the appropriate parts for the step. When building your 710, do not empty the parts bags as you will need to refer to the parts by bag number several times during the various assembly stages.

Set-up
In certain assembly steps you need to make basic adjustments, which will give you a good initial setup for your Serpent 710. Note that fine-tuning the initial setup is an essential part of building a high-performance racecar like your Serpent 710. The Set-Up Book included in your Serpent 710 kit will help you to adjust your car. It contains detailed information on making basic settings, as well as in-depth information about the effect of changing the settings. Be sure to follow the procedures and be accurate with your adjustments not only now, but every time you prepare the car for practicing or racing. This is how the best drivers in the world do it - simple, straight forward, and accurate!

Exploded views and parts list
The exploded views and parts lists for the Serpent 710 are contained in a separate Reference Guide. The exploded views show all the parts of a particular assembly step, together with the Serpent part number. The parts lists at the end of the Reference Guide indicate the part number and name of each part for easy reference when re-ordering.

Safety precautions
Included with your Serpent 710 kit is a document entitled “Read This First” that covers safety precautions for the assembly and use of this product. We strongly recommend that you thoroughly read and understand that document, and follow all the precautions.

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Using the manual

Each step contains a variety of numbers, lines, and symbols. The numbers represent the order in which the parts should be assembled. The lines and symbols are described below.

<table>
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<td>Group of items (within lines) should be assembled first.</td>
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<td>Length after assembly.</td>
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<td>Gap between two items.</td>
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<tr>
<td>Apply graphite grease (GR), threadlock (TL), CA glue (CA) or Serpent's One-way Lube (OW). (items not included).</td>
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myTSN.com

The printed instruction manual included with your Serpent 710 kit is very complete, though due to continuous product development, more up-to-date information is provided at our myTSN.com web portal. This state-of-the-art R/C technology portal is where Serpent racers from all over the world meet and exchange their ideas, and share useful information and experiences about their Serpent cars.

All information about the Serpent 710 is accessible from the Serpent 710 product page on myTSN.com. You can access this page by going to the Products section, then search for the ‘Serpent 710’ product name.

From the Serpent 710 product page you will find the very latest information about your Serpent 710: reports by team drivers and other experts, tips and tricks, FAQ, forums, setups, image gallery, downloadable files, and even streaming video of the Serpent 710 on how to further improve the car. The latest version of the instruction manual (including team and racer tips, and part lists and option lists) will be made available as downloadable PDF-files and online viewable pages under ‘i-Manual’.

So be sure to visit myTSN.com and the Serpent 710 page. There is a world of up-to-date information about your Serpent 710 waiting for you, and it is just a few mouse clicks away! If you are not yet a member of myTSN, we strongly recommend that you sign up immediately so you can experience and enjoy an even wider range of services from Serpent and other myTSN partners.

www.myTSN.com/Serpent710
**Step 1.1**

Bag 06, 16, B12

- B12 3.5x9.5mm

**Step 1.2**

Bag 02, 15

- H9 3x4mm
- H12 3x10mm

Assemble both front lower arms using the indicated steps.

**Step 1.3**

Bag 04

- E14 3x16mm
- H9 3x4mm
- H11 3x8mm

**IMPORTANT!** Adjust both left and right upstop setscrews equally, otherwise the car may become tweaked under braking.
Step 1.4

Assemble both front upper arms using the indicated steps.

Dont tighten screws EF23. They will be removed in step 6.7.

Step 1.5

Bag 06, 17

E20 4x12mm

EF23 4x25

Default placement of front roll center alu spacers

Step 1.6

Bag 02, 15

H9 3x4mm

Assemble both front upper arms using the indicated steps.

Caster Spacer Placement

H9 3x4mm

EF23 4x25

E20 4x12mm
**Step 1.7**

Bag E11, E12

- **E11** 3x8mm
- **E12** 3x10mm
- **H11** 3x8mm

It is possible to lock the front axle using the option set #802252.

---

**Step 1.8**

Bag 11, 18

It is possible to lock the front axle using the option set #802252.
Step 1.9

Bag U, E12, 07, 13

E12 3x10mm

U13 12x18mm

Change the position of BOTH eccentric hubs to adjust front belt tension. Both hubs should have the same position.

Step 1.10

Bag E10, U, 19

E10 3x6mm

H8 3x3mm

P1 2x10mm

U11 10x15mm

Assemble both steering blocks using the indicated steps. Left steering block shown.

Assemble both steering blocks as shown.

Step 1.11

17mm

16.5mm

IMPORTANT! Ensure the front suspension moves up and down freely without binding.
Step 1.12

Bag U, 20

B5 2.9x9.5mm

U6 6x13mm

Step 1.13

Bag 12

H16 4x4mm

R7 7mm

Step 1.14

Bag 10

G10 3x6mm

B5 2.9x9.5mm
2.0 Differential Assembly

Step 2.1  Bag 11, 21

Step 2.2

Step 2.3  Bag U

E18 4x8mm

U7 7x14mm
**Step 2.4**

Use this screw to apply pre-load to the differential. Tighten it so that the diff pulley doesn’t slip while holding both diff shafts but still turns as freely as possible.

**Step 2.5**

Tighten this locking setscrew to lock your initial setting.

**Step 2.6**

**Differential Adjustment**

Adjust the diff friction collar to adjust the differential action. Tighten the adjustment screw to increase the spin-resistance of the differential; loosen the adjustment screw to reduce the spin-resistance of the differential. The tighter the diff collar, the more the differential resists the difference in speed between the inner and outer wheel. As a rule of thumb, the more grip a track has, the tighter the diff collar should be.
3.0 Rear Assembly

**Step 3.1**
- **Bag 05, 08**
  - **G22** 4x20mm
  - **Q11** 3x10mm

Press pins into chassis so they are flush with bottom.

**Step 3.2**
- **Bag 23**
  - **F15** 3x20mm

Assemble both lower arms using the indicated steps.

**Step 3.3**
- **Bag 07, 13, U**
  - **E12** 3x10mm
  - **U13** 12x18mm

Press ball into end of arm until it snaps into place.

Change the position of BOTH eccentric hubs to adjust rear belt tension. Both hubs should have the same position.
Step 3.4

**Bag 08, 13**

**B8**
2.9x19mm

Note the orientation of the inserts. Ensure that all four inserts are the same.

Step 3.5

**Bag 09, 15, 24**

**H9**
3x4mm

**H12**
3x10mm

Note the orientation of the inserts.

Use the outer position.

Step 3.6

**Bag 05**

**E13**
3x12mm

Note the orientation of the two inserts. Ensure that both inserts are the same, and are oriented the same as the matching inserts.
Step 3.7

Assemble both rear upper arms using the indicated steps.

Step 3.8

Press pins into bulkhead until ends are flush with outer edge.

Roughen metal plates with sandpaper before gluing.

Step 3.9
**Step 3.10**

Bag 12, 25

- **H16** 4x4mm
- **H17** 4x6mm
- **R7** 7mm

Adjust ball end until it is flush with end of swaybar.

**Step 3.11**

Bag 14, 26

- **E11** 3x8mm
- **H8** 3x3mm

Adjust ball end until it is flush with end of swaybar.

**Step 3.12**

- **Bag 14, 26**
- **R7** 7mm
- **H16** 4x4mm
- **H17** 4x6mm
- **3x8mm**
- **3x3mm**
- **22T**
- **24T**

Distance: 48mm

1:1
Step 3.13

Assemble both rear hubs using the indicated steps.

Do not overtighten alu plugs. Pivotballs should move freely without binding or excessive play.

Step 3.14

Assemble both rear hubs using the indicated steps.

IMPORTANT! Ensure the rear suspension moves up and down freely without binding.
### 4.0 Shock Assembly

#### Step 4.1

Bag 28

- **N3** 3x6mm
- **R1** 1.9mm
- **R2** 2.3mm

Remove plastic flashing for smooth movement of pistons. Tab in upper piston fits in notches in lower piston.

Front shocks: short shock shaft and body

Rear shocks: long shock shaft and body

#### Step 4.2

Lubricate shock shaft with shock oil before inserting in shock body.

#### Step 4.3

- **Y17** 12.1x1.6mm

Lubricate shock shaft with shock oil before inserting in shock body.
Step 4.4

Lubricate O-ring with shock oil before sliding onto shock shaft.

Step 4.5

Use a shock rod gripping tool, or grip the shock rod at top of exposed threads with side cutting pliers. Be sure not to damage the shock rod.

Hint: Pre-thread ball-joint with M3 screw for easy assembly

Step 4.6

Fill the shock body with shock oil, with the piston at the bottom.

Bleeding
Let the oil settle and allow the air to escape. Slowly move the piston up and down to release any trapped air bubbles. Repeat as necessary until no bubbles appear.
### Step 4.7

**Damping adjustment**
Pull the shock shaft all the way out, turn slightly to lock it in the shock body.

Adjust the shock damping by rotating shock shaft CW or CCW to one of the four positions. Each position can be felt by a slight “click.”

**IMPORTANT!** Each pair of front and rear shocks must have the same damping setting.

**Shock length adjustment**
Check the length of the shocks in the extended, fully locked position.

- Front shocks: 67.5mm
- Rear shocks: 76.5mm

Adjust shock length with the ball-joint.

**IMPORTANT!** Each pair of front and rear shocks must be the same length.

---

### Step 4.8

**Damping adjustment**
Pull the shock shaft all the way out, turn slightly to lock it in the shock body.

Adjust the shock damping by rotating shock shaft CW or CCW to one of the four positions. Each position can be felt by a slight “click.”

**IMPORTANT!** Each pair of front and rear shocks must have the same damping setting.

**Softest Full CCW**
- 5 Holes
- 4 Holes
- 3 Holes
- 2 Holes

**Hardest Full CW**

Press in pivotball from side opposite notch in top shock mount.

Front Shocks: short shocks and springs
Rear Shocks: long shocks and springs
5.0 Bodymount Assembly

**Step 5.1**
Bag 14, 29, E11

- **E11**
  - 3x8mm
- **E12**
  - 3x10mm
- **E29**
  - 3x18mm
- **H12**
  - 3x10mm

**Step 5.2**
Bag E10

- **E10**
  - 3x6mm

---

Lower shock default mounting position

Upper shock default mounting position
Step 5.3

Bag E11

E11 3x8mm

G12 3x10mm

Step 5.4

Bag E10

E10 3x6mm

Upper shock default mounting position
**6.0 Radio Plate Assembly**

### Step 6.1

Bag 10, 14, 30, E10, E11

- **E10**
  - 3x6mm
- **E11**
  - 3x8mm
- **E13**
  - 3x12mm

The number on the servo arm corresponds to the number of teeth.
- 23 - Sanwa / KO / JR
- 24 - Hitec
- 25 - Futaba

---

**Throttle Servo**

Output gear of throttle servo must be towards the FRONT of car.

---

**Steering Servo**

Output gear of steering servo must be towards the FRONT of car.

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### Step 6.2

- **E13**
  - 3x12mm

Securely attach receiver to mounting plate. Route antenna wire up through antenna mounting hole, and through antenna tube.

### Step 6.3

Bag E11

- **E11**
  - M3x8mm

---

The number on the servo arm corresponds to the number of teeth.

- 23 - Sanwa / KO / JR
- 24 - Hitec
- 25 - Futaba

---

The steering servo is used to turn the steering mechanism.

---

The throttle servo is used to control the throttle.

---

The receiver is used to receive signals from the transmitter and control the servos.

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The mounting plate serves to hold the receiver and servos in place.

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The antenna wire is used to transmit signals to the transmitter.
For clockwise circuits with mostly right hand corners the fuel tank lid nipple should be placed on the right side of the lid and the grub screw on the opposite side. The opposite is true for anti clockwise tracks with mostly left hand corners.

**Important!** Check that the fuel line and pressure line are free from debris and not blocked.

Note: The fuel tank is equipped with a mounting point where shims can be mounted in the tank to make the volume exactly 75cc.

For important races always have the volume of your fuel tank checked.

Step 6.5

Bag 03, B12

- **B12**
  - 3.5x9.5mm

Remove screws, but leave spacers in place atop front bulkheads.

Correct orientation of finished servo saver

Front

Rear

Step 6.6

Bag 04, 32, U, E10, E11

- **E10**
  - 3x6mm
- **E11**
  - 3x8mm
- **R4**
  - 4mm
- **U3**
  - 5x8mm

Remove screws, but leave spacers in place atop front bulkheads.
**Step 6.7**

Bag E11

- **E11 3x8mm**
- **U3 5x8mm**

Steering rod length

1. Position the metal pin at the desired body mounting height and then press the plastic collar down until it clips into place.

**Step 6.8**

Left and right track rods are the same length

- **72mm 1:1**

**Step 6.9**

P1 2x10mm

Position the metal pin at the desired body mounting height and then press the plastic collar down until it clips into place.
**Note:** A good starting point is to have the screw head flush with the bottom edge of the hole. Make sure both screws are set equally.

**Step 7.1**

3. Screw IN both adjusting screws to shift LATER.

4. Screw OUT both adjusting screws to shift EARLIER.
Step 7.2
Bag 34

G10
3x6mm

Step 7.3
Bag U

G10
3x6mm
U6
6x13mm
V5
6x10mm
8.0 Centax Assembly

Step 8.1

Bag 35

0.5mm

Step 8.2
Step 8.3

Step 8.4 Bag 36

Step 8.5

F14 3x16mm

Larger inner dia.

Smaller inner dia.
**Adjusting the clutch gap**

Install only the clutchbell and the thrustbearing assembly on the engine crankshaft. Push the clutchbell onto the clutch shoe, and then measure the distance **A** as indicated.

Pull the clutchbell away from the clutch shoe, and then measure the distance **B** as indicated.

The clutch gap is **A** – **B**; the correct gap is 0.7mm. If the clutch gap is greater than 0.7mm, you can easily calculate the thickness of shims required to set the correct gap:

Thickness of shims required (in mm) = **A** – **B** – 0.7

For example, using the values **A**=1.3mm, **B**=0.3mm

Shim thickness = 1.3 – 0.3 – 0.7 = 0.3mm

Place shims between the outer thrustbearing plate and the rim of the thrustbearing carrier as shown.

---

**Bag U**

- **M11**: 5x8x0.1mm, 5x8x0.3mm
- **U4**: 5x10mm

Add small shims to allow only small amount of endplay.
9.0 Final Assembly

Step 9.1
Bag 14, 37, E11

Adjusting the 2-speed shoe gap
Loosen the gap-setting setscrews (H11 in step 7.1) to allow the shoes to rest on the drive adaptor.

Step 9.2
H11 3x8mm
P13 3x14mm
R5 5mm

Install the 2-speed shoes in the 2nd gear carrier, but do NOT install the 1st gear.
There should be equal but minimum spacing between the 2-speed shoes and the 2nd gear carrier.
Tighten BOTH gap-setting setscrews until the shoes touch the inside surface of the aluminum 2nd gear carrier, then loosen BOTH screws by 1/2 turn each. The 2nd gear carrier should spin freely.

Step 9.3
EF19 4x10mm
F13 3x12mm
**Step 9.4**

Bag 14, 38

- **E11** 3x8mm
- **E28** 3x14mm
- **U3** 5x8mm
- **V3** 5x8mm

Orientation of belt tensioner bearings

**Step 9.5**

Bag 39

- **E18** 4x8mm
- **H17** 4x6mm

Side Belt Tension Adjustment

Looser

Tighter

**Step 9.6**

Secure exhaust header to engine using appropriate springs (not included).

Assemble pipe to the correct length.
Step 9.7

Securely attach a AAA 5-cell receiver battery pack to the battery tray.

Note: Serpent offers the pre-built 5-Cell battery set (#801173) for the Serpent 710. For more information, see the appropriate product page on myTSN.com

Step 9.8

Fuel line length - 10cm
Pressure line length - 13cm

Step 9.9

Wheels supplied with this kit may vary from those shown in the image.