# SERPENT

# 710

1:10 SCALE 200mm 4WD GAS ON-ROAD

# Instruction Manual

# SERPENT 710

## Introduction

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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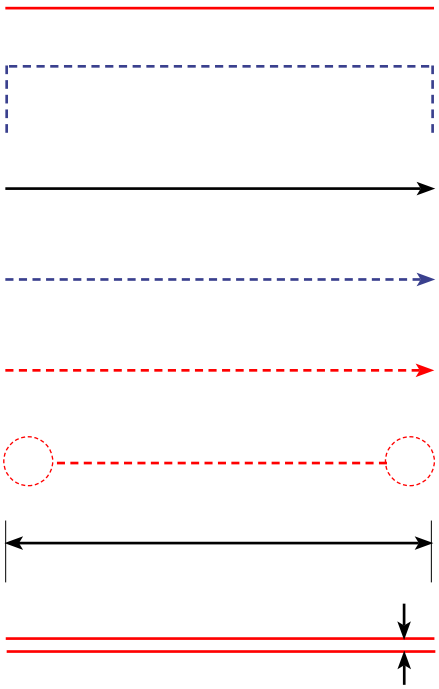
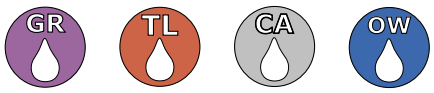
**PERFORMANCE THROUGH EVOLUTION**

# 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.

| Line/Symbol | Description |
|---|---|
|  | Assembly path of one item into another.<br>Group of items (within lines) should be assembled first.<br>Direction the item should be moved.<br>Glue one item to another.<br>Press/Insert one item into another.<br>Connect one item to another.<br>Length after assembly.<br>Gap between two items. |
|   | Apply graphite grease (GR), threadlock (TL), CA glue (CA) or Serpent's One-way Lube (OW). (items not included). |

# 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.

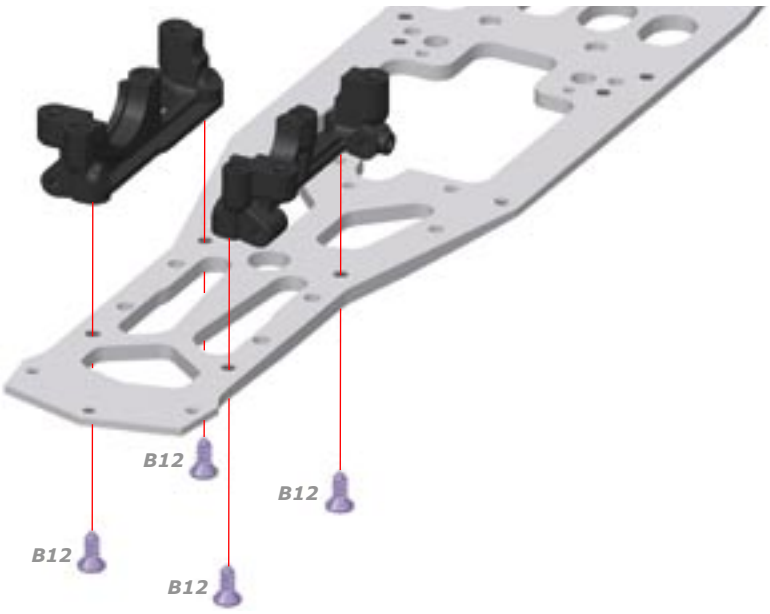
***www.myTSN.com/Serpent710***

# 1.0 Front Assembly

## Step 1.1

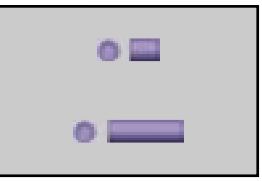
Bag 06, 16, B12

**B12**
3.5x9.5mm




## Step 1.2

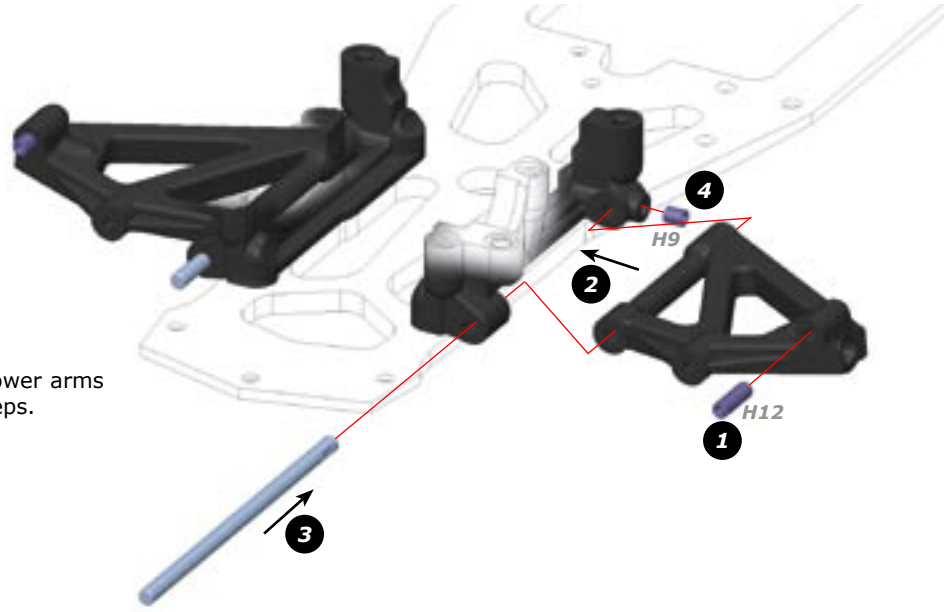
Bag 02, 15



**H9**
3x4mm

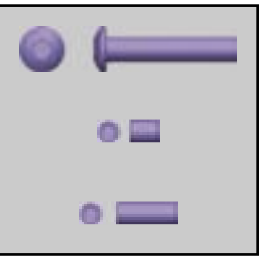
**H12**
3x10mm

Assemble both front lower arms using the indicated steps.




## Step 1.3

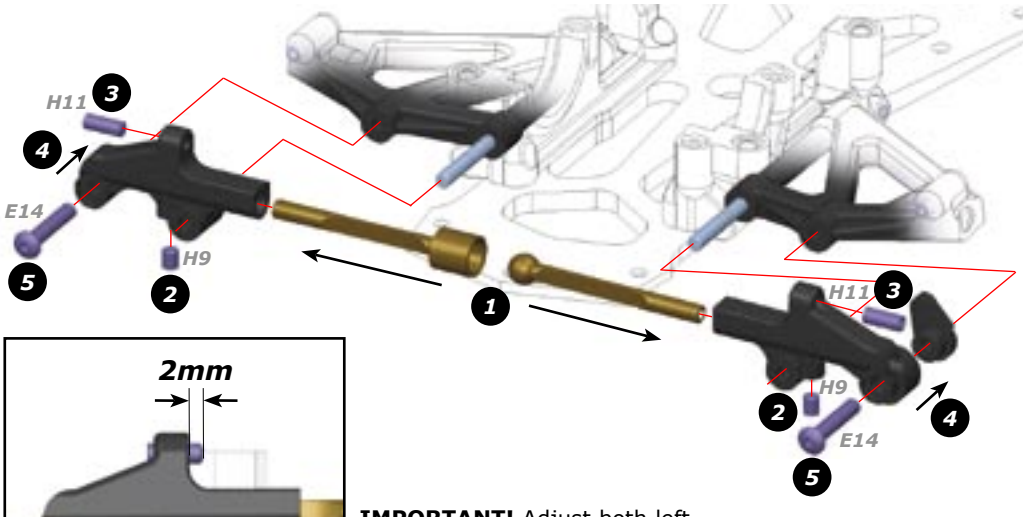
Bag 04



**E14**
3x16mm

**H9**
3x4mm

**H11**
3x8mm

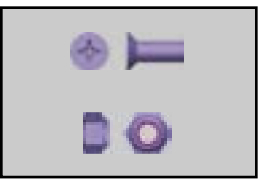






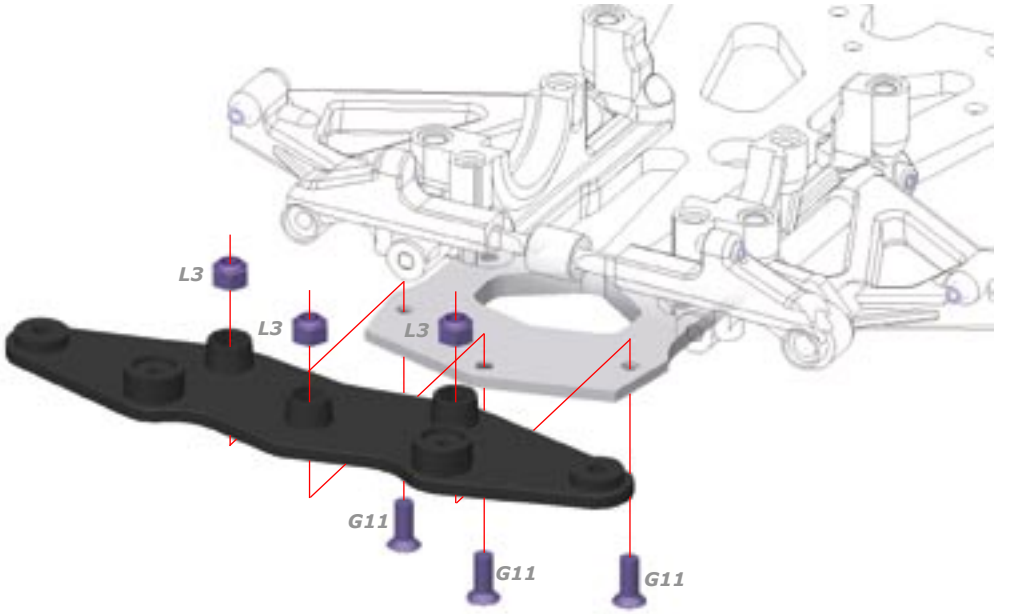
**IMPORTANT!** Adjust both left and right upstop setscrews equally, otherwise the car may become tweaked under braking.

## Step 1.4



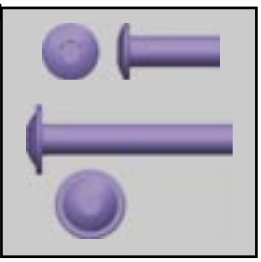
**G11**
3x8mm

**L3**
M3




## Step 1.5

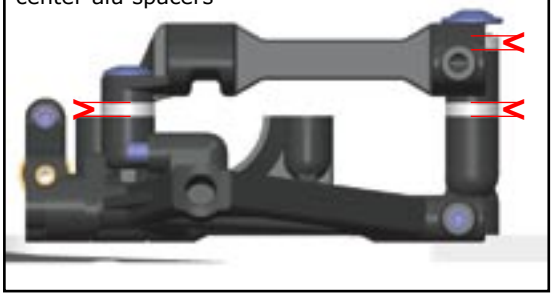
**Bag 06, 17**



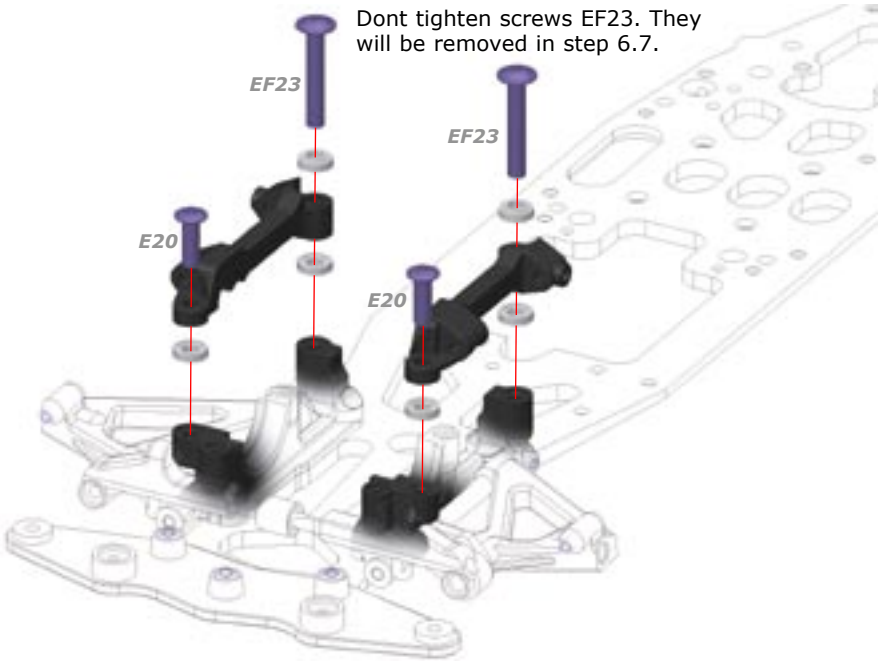
**E20**
4x12mm

**EF23**
4x25

Default placement of front roll center alu spacers



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

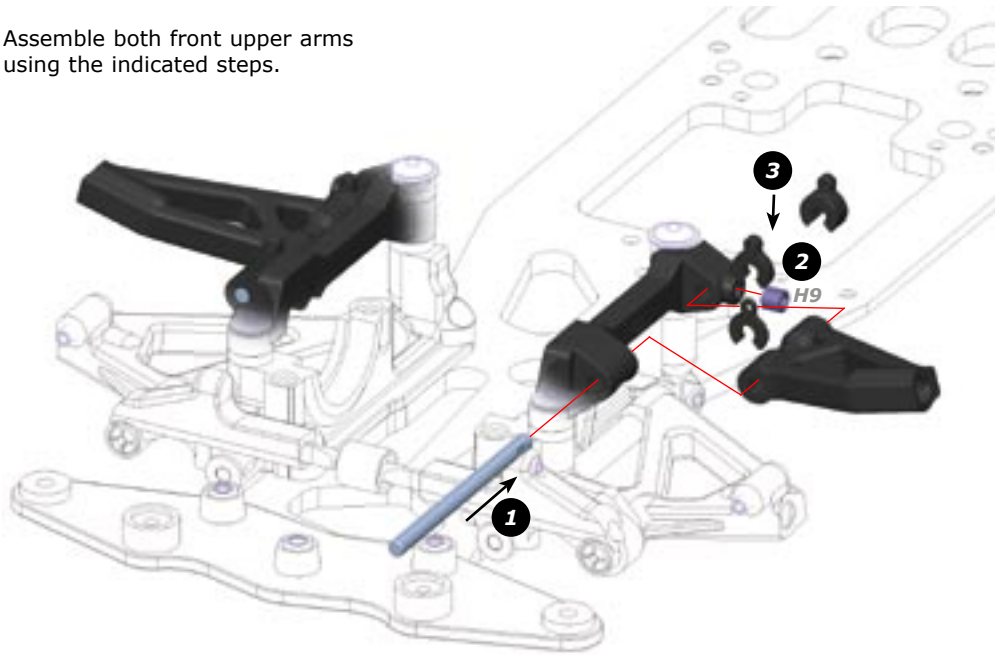



## Step 1.6

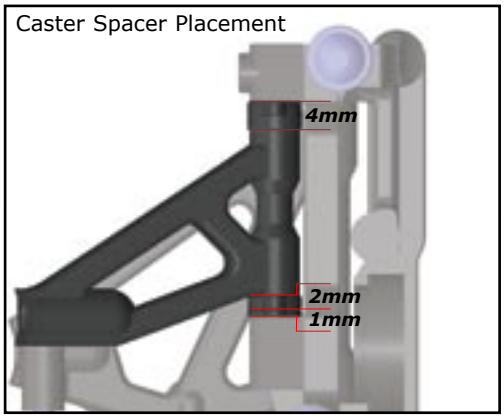
**Bag 02, 15**

**H9**
3x4mm

Assemble both front upper arms using the indicated steps.

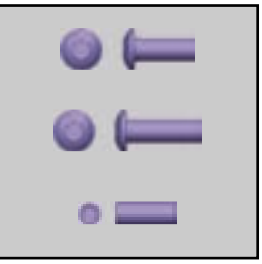



Caster Spacer Placement



## Step 1.7

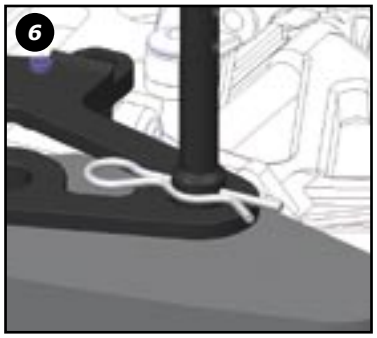
**Bag E11, E12**

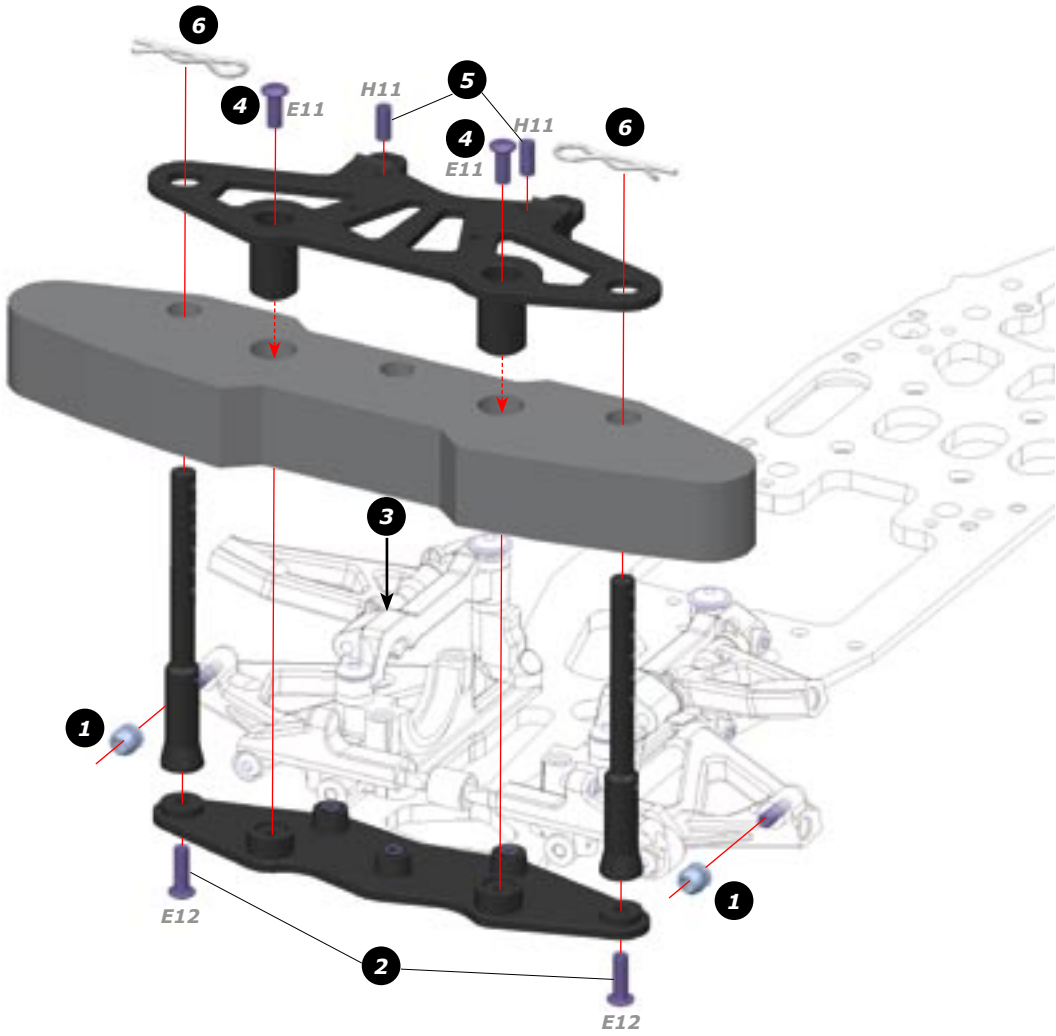


**E11**
3x8mm

**E12**
3x10mm

**H11**
3x8mm

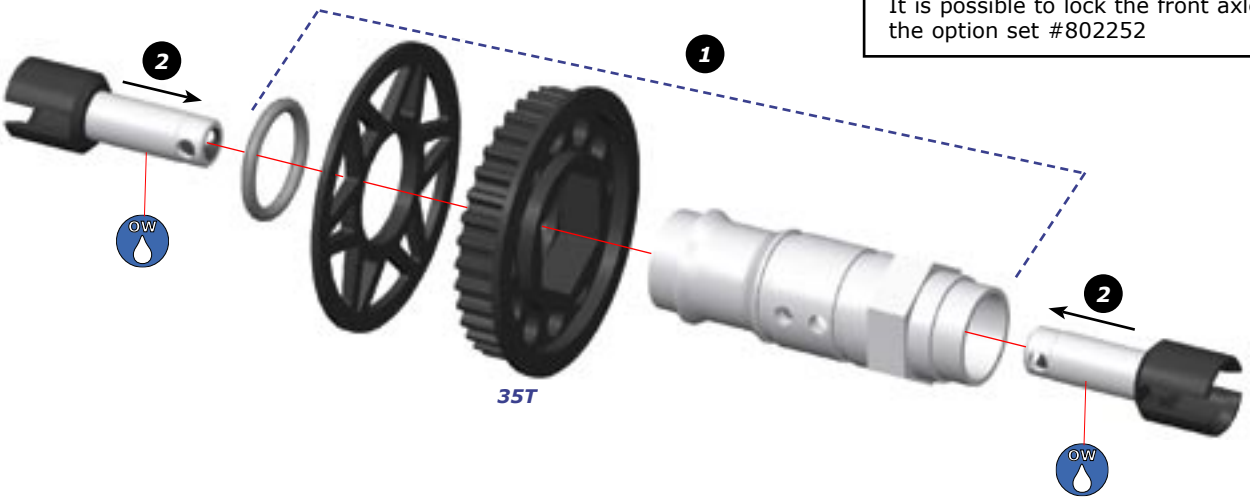



## Step 1.8

**Bag 11, 18**

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

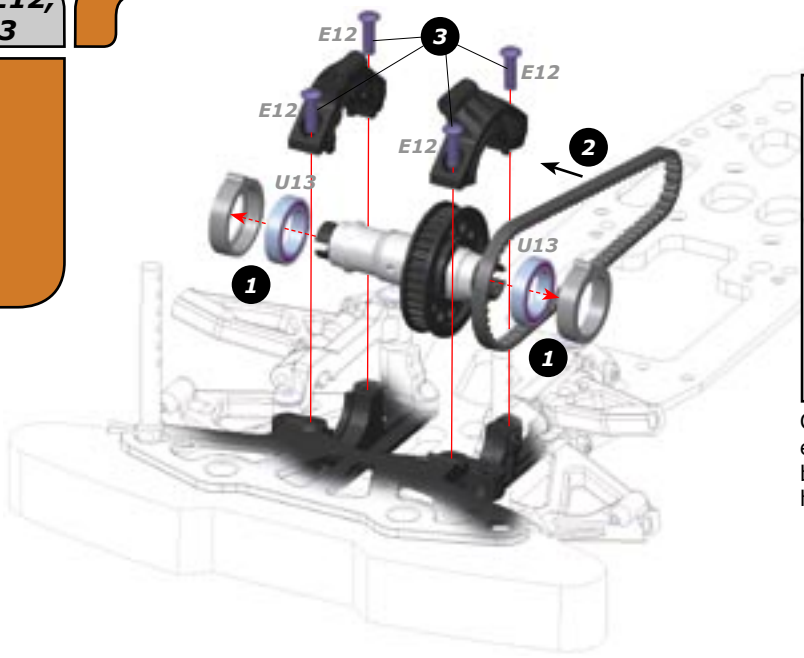


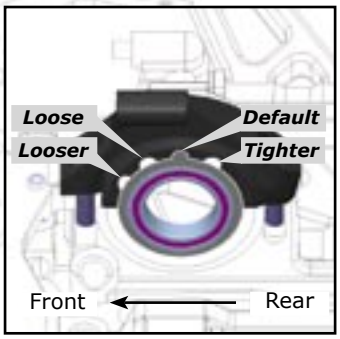
## Step 1.9

**Bag U, E12, 07, 13**

**E12**
3x10mm

**U13**
12x18mm

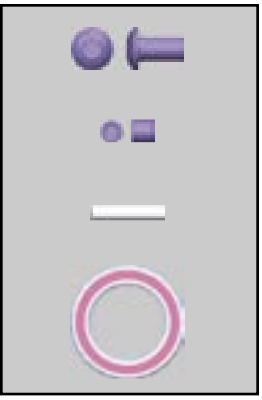



Change the position of BOTH eccentric hubs to adjust front belt tension. Both hubs should have the same position.

## Step 1.10

**Bag E10, U, 19**



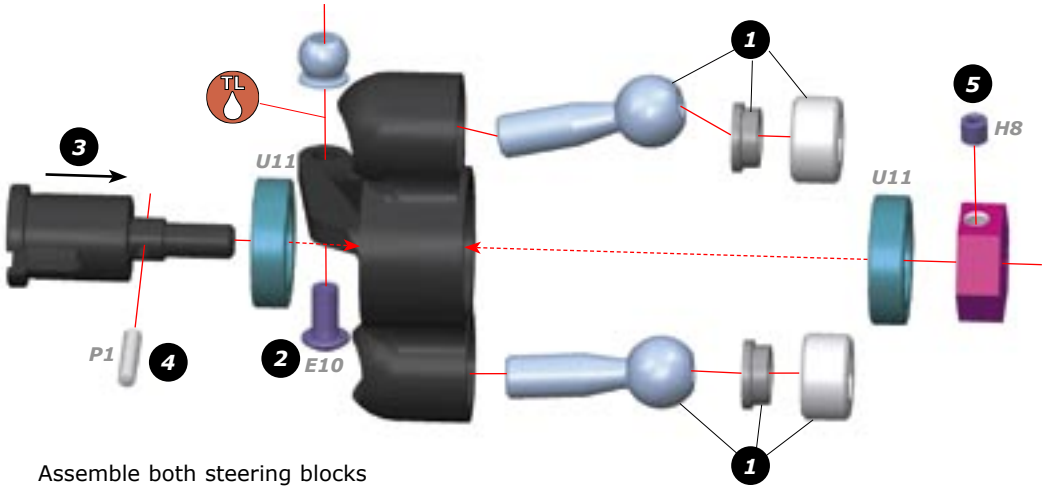
**E10**
3x6mm

**H8**
3x3mm

**P1**
2x10mm

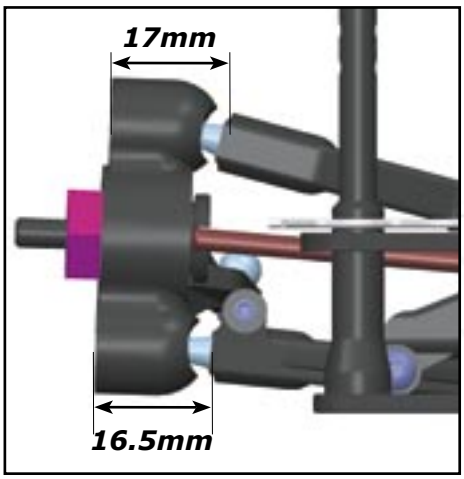
**U11**
10x15mm

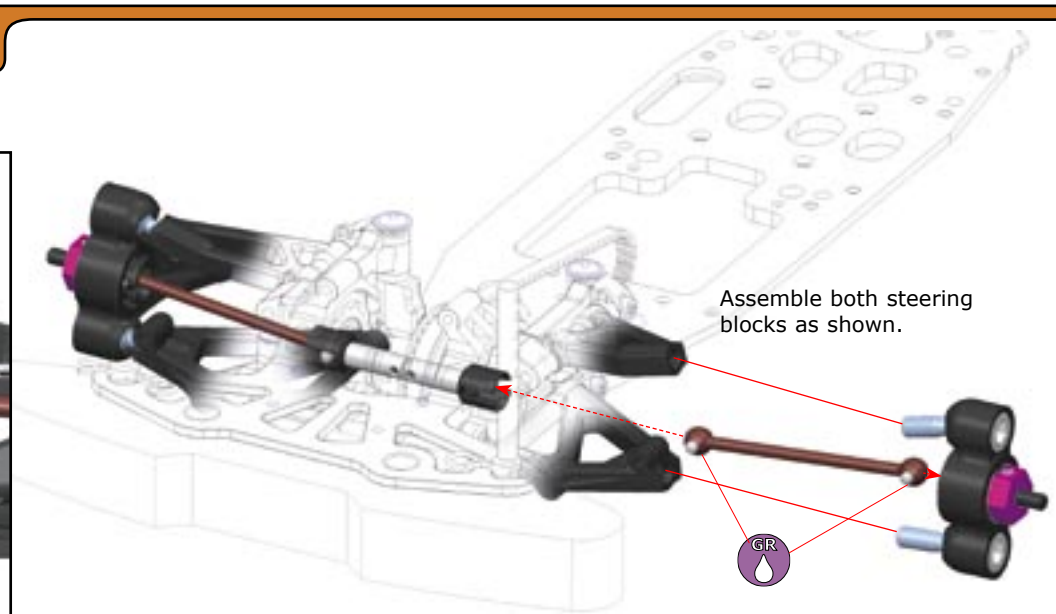
Do not overtighten alu plugs. Pivotballs should move freely without binding or excessive play.




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

## Step 1.11




Assemble both steering blocks as shown.

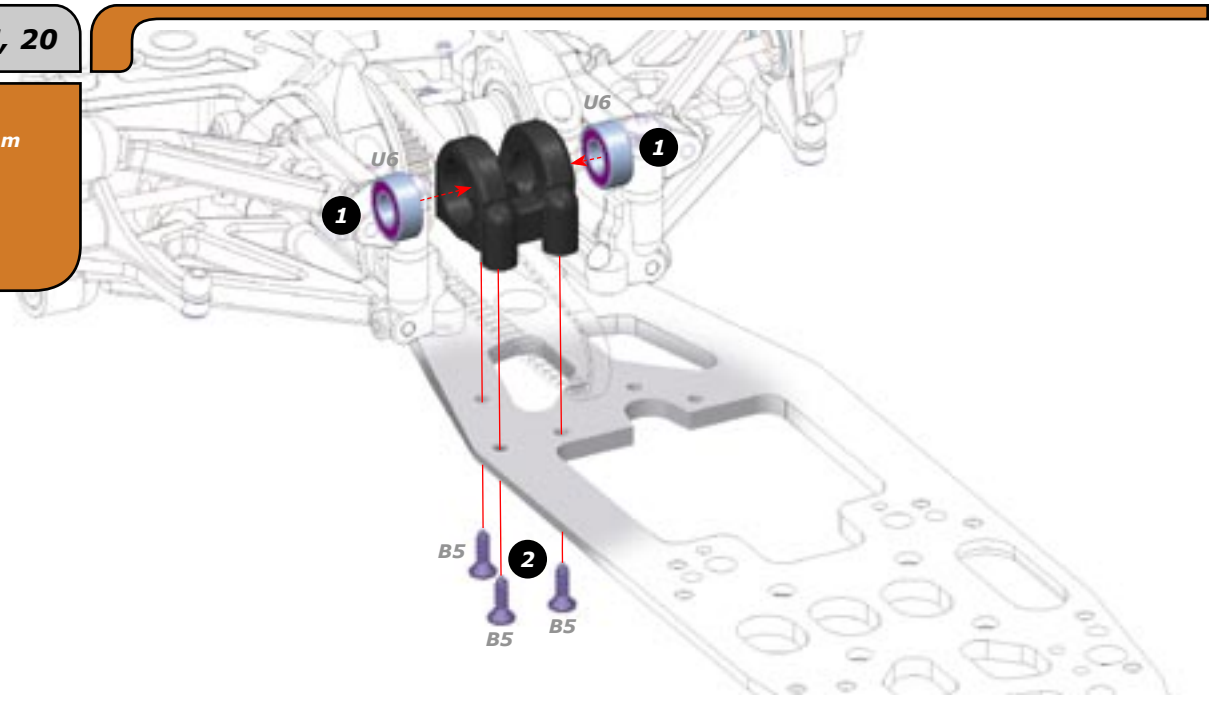
**IMPORTANT!** Ensure the front suspension moves up and down freely without binding.

## Step 1.12

**Bag U, 20**

**B5**
2.9x9.5mm

**U6**
6x13mm

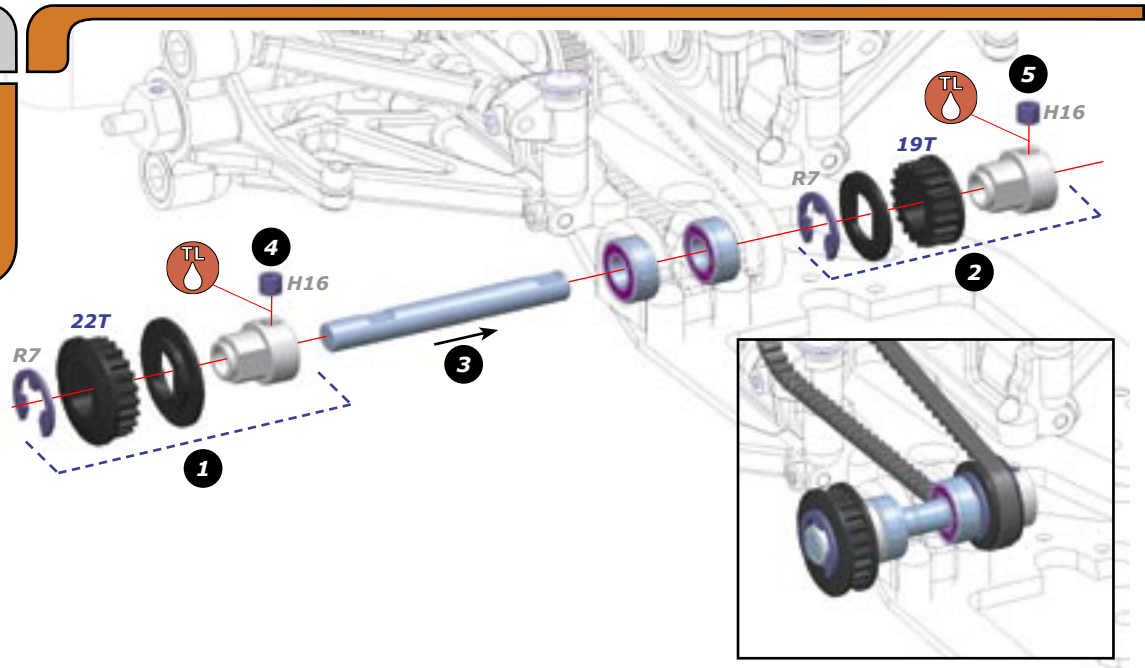



## Step 1.13

**Bag 12**

**H16**
4x4mm

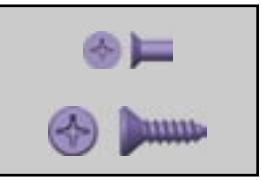
**R7**
7mm





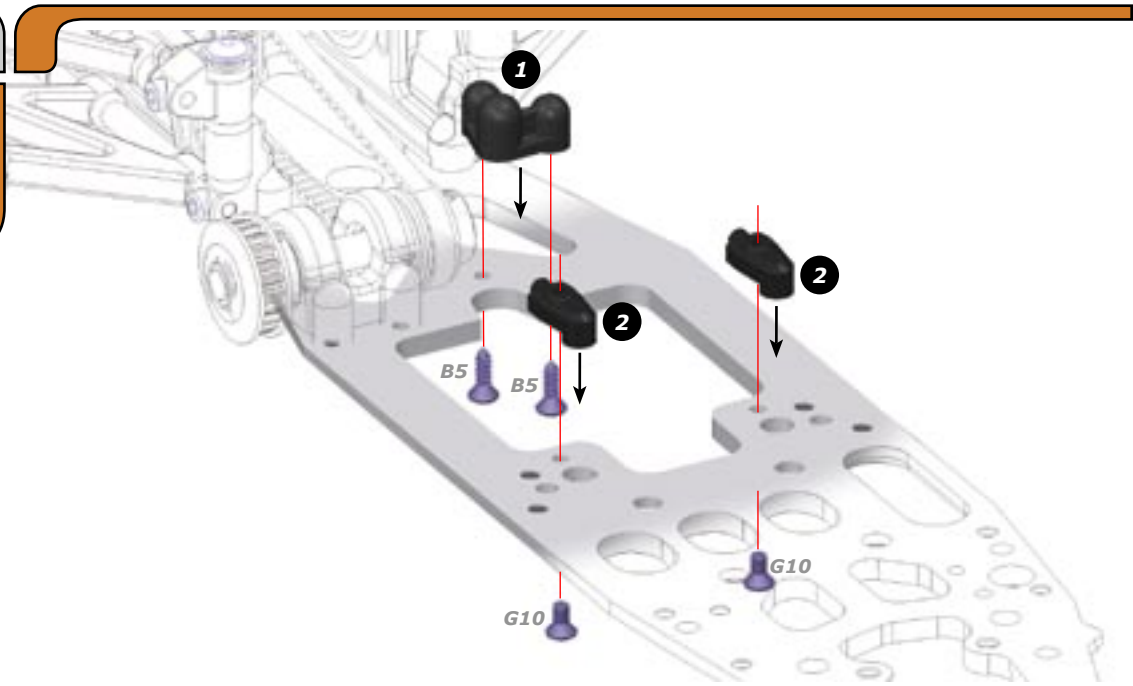

## Step 1.14

**Bag 10**



**G10**
3x6mm

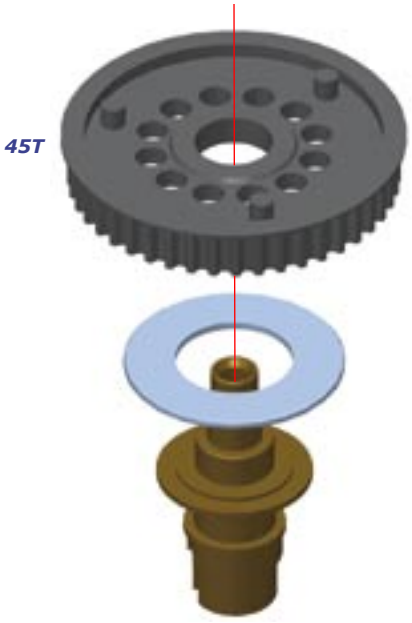
**B5**
2.9x9.5mm



# 2.0 Differential Assembly

## Step 2.1

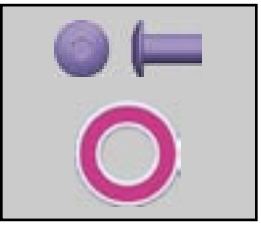
**Bag 11, 21**




## Step 2.2

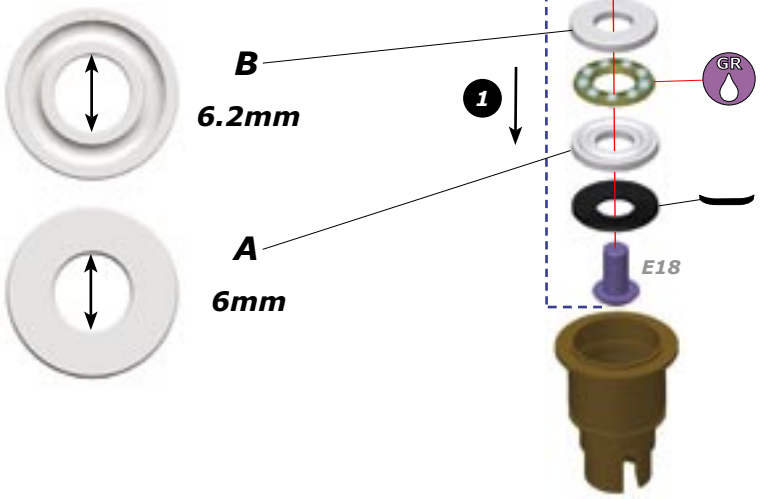
## Step 2.3

**Bag U**



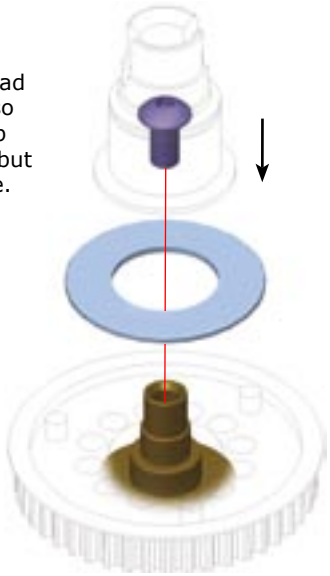
**E18**
4x8mm

**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.

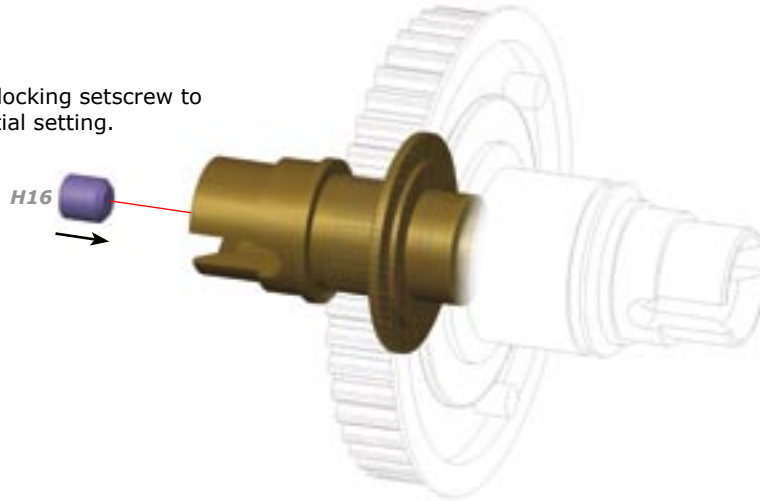


## Step 2.5

**Bag 22**

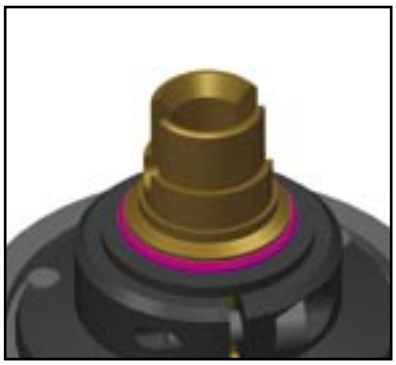
**H16**
4x4mm

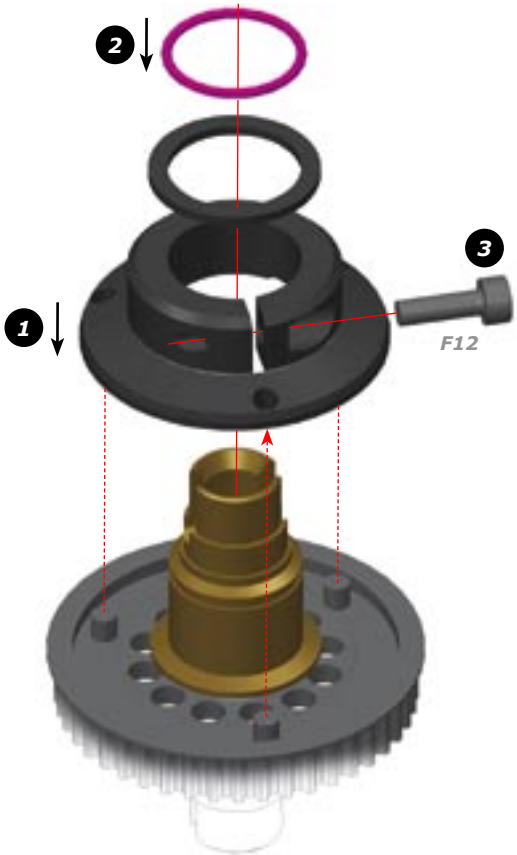
Tighten this locking setscrew to lock your initial setting.




## Step 2.6

**F12**
3x10mm



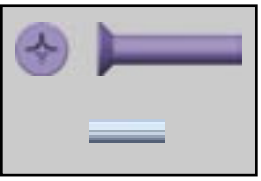



**Differential Adjustment**
Adjust the diff friction collar to adjust the differential action. Tighten the adjustment screw to increase the spin-resistance of the differential; loosen the adjustment screw to reduce the spin-resistance of the differential. The tighter the diff collar, the more the differential 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

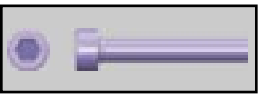
**Q11**
3x10mm

Press pins into chassis so they are flush with bottom.




## Step 3.2

**Bag 23**

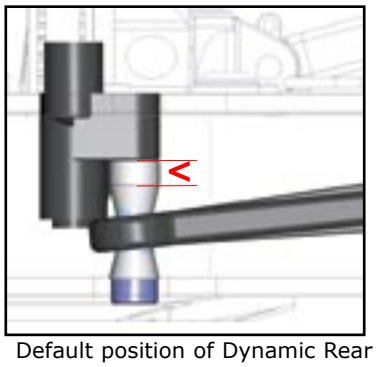


**F15**
3x20mm

Assemble both lower arms using the indicated steps.




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



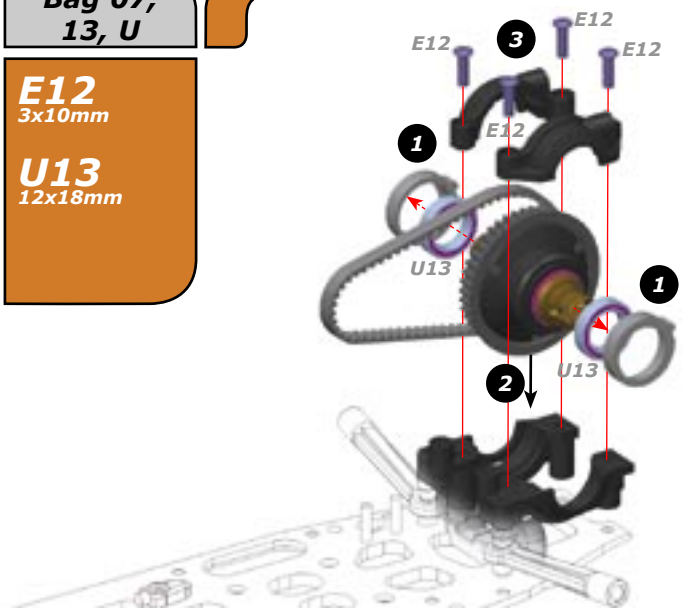
Default position of Dynamic Rear Steering (DRS) spacer.

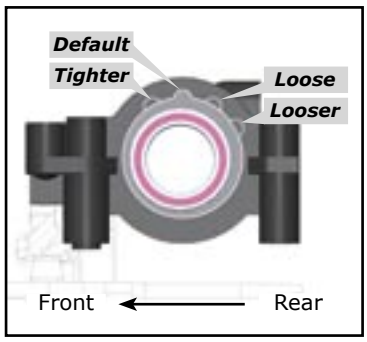
## Step 3.3

**Bag 07, 13, U**

**E12**
3x10mm

**U13**
12x18mm




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**

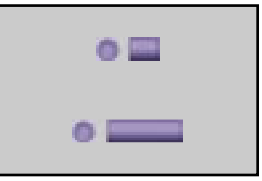
**B8**
2.9x19mm

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

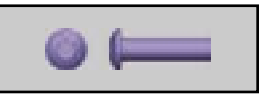
Note the orientation of the inserts.




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

**Bag 09, 15**

**H9**
3x4mm

Assemble both rear upper arms using the indicated steps.




## Step 3.8

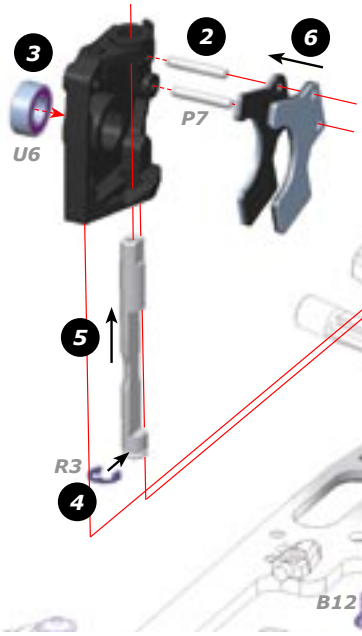
**Bag 03, U, B12**

**B12**
3.5x9.5mm

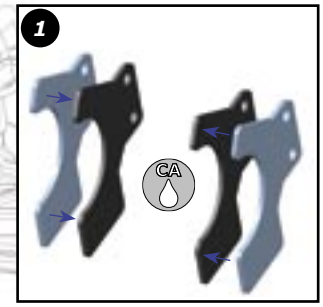
**P7**
2.5x16mm

**R3**
3mm

**U6**
6x13mm




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

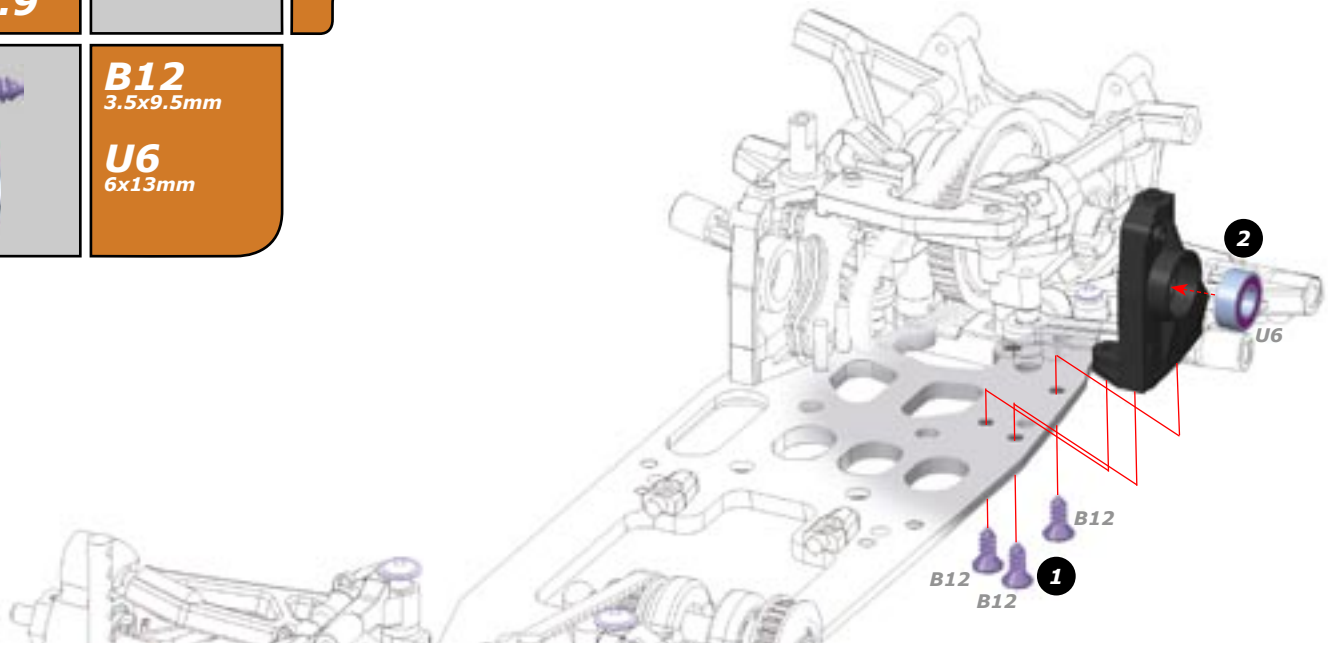



Roughen metal plates with sandpaper before gluing.

## Step 3.9

**B12**
3.5x9.5mm

**U6**
6x13mm



## Step 3.10

**Bag 12, 25**

**H16**
4x4mm

**H17**
4x6mm

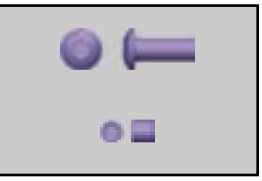
**R7**
7mm





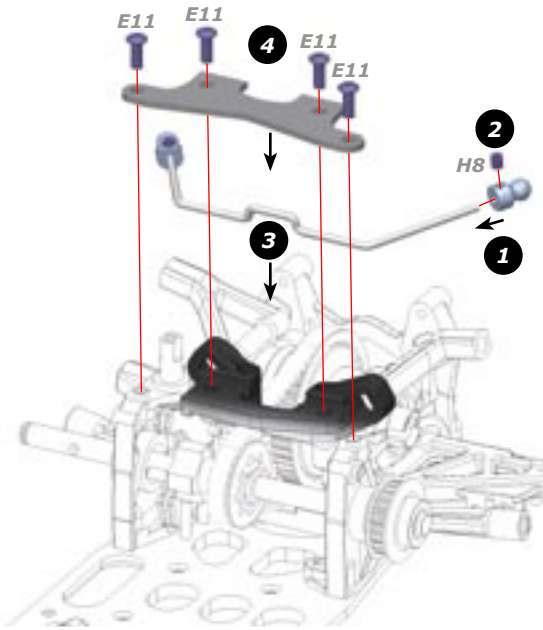

## Step 3.11

**Bag 14, 26**



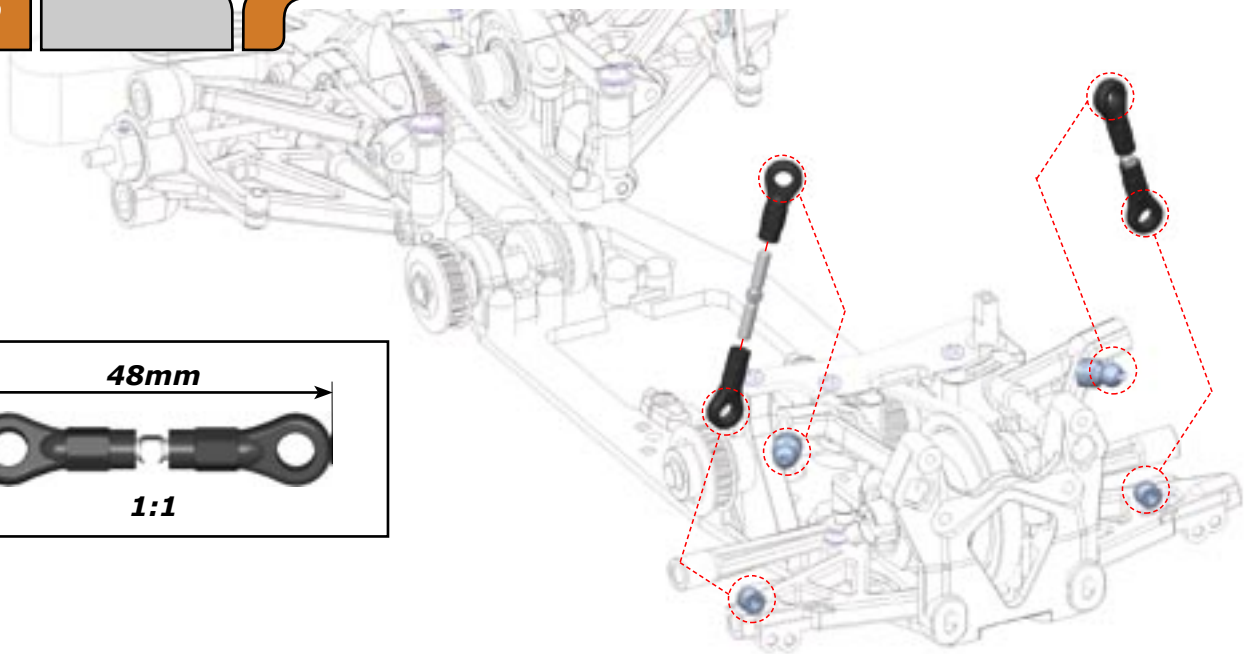
**E11**
3x8mm

**H8**
3x3mm



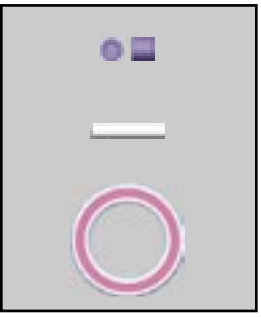

Adjust ball end until it is flush with end of swaybar.

## Step 3.12



## Step 3.13

Bag 01, 27, U



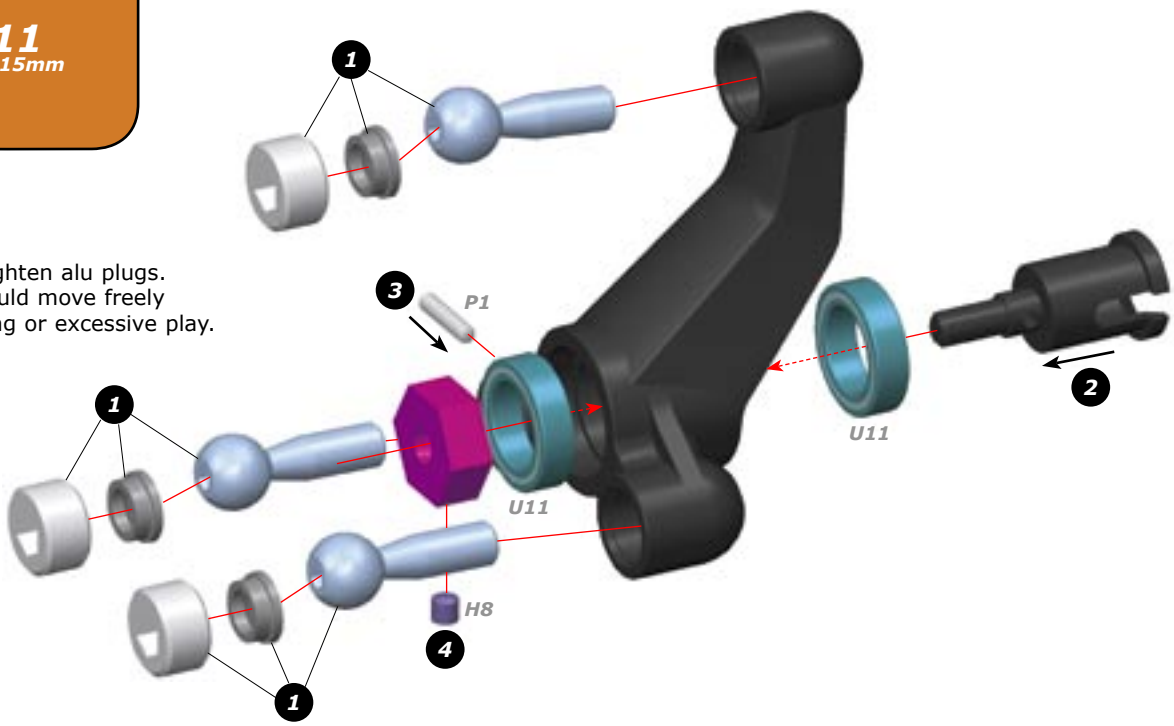
**H8**
3x3mm

**P1**
2x10mm

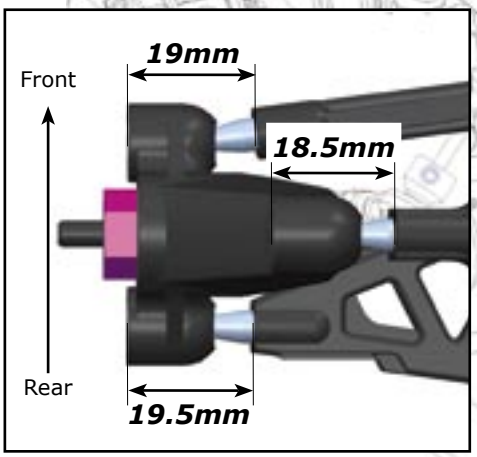
**U11**
10x15mm

Assemble both rear hubs using the indicated steps.

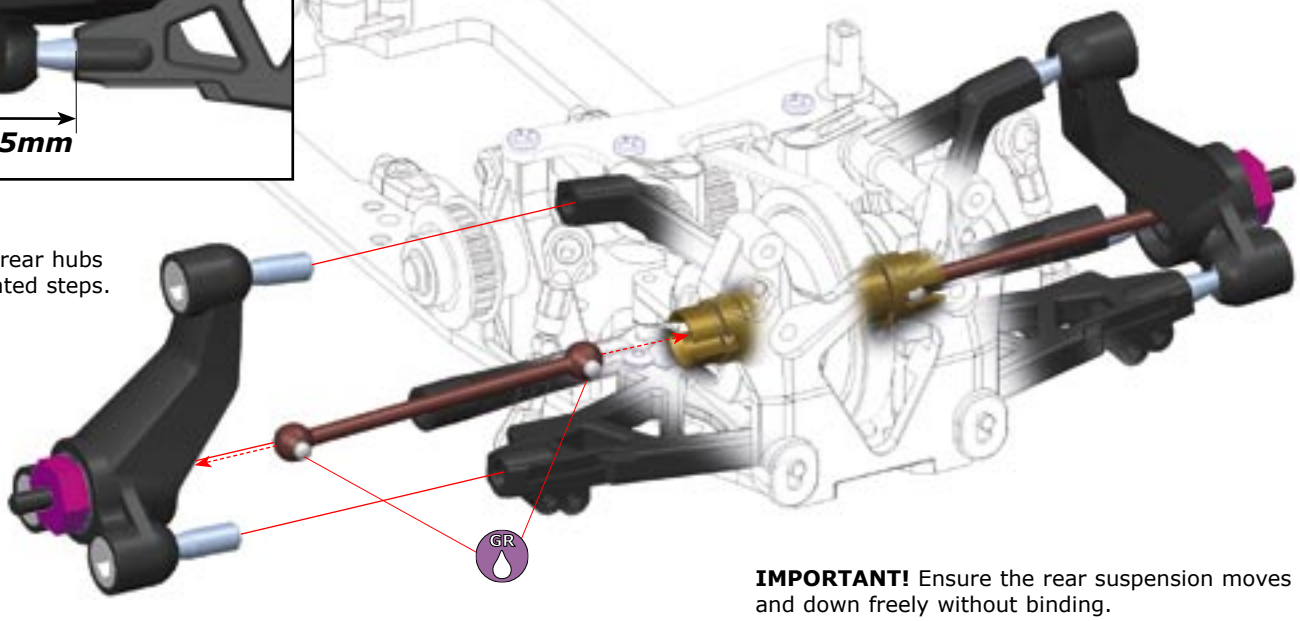
Do not overtighten alu plugs. Pivotballs should move freely without binding or excessive play.




## Step 3.14




Assemble both rear hubs using the indicated steps.

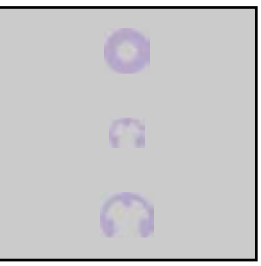



**IMPORTANT!** Ensure the rear suspension moves up and down freely without binding.

# 4.0 Shock Assembly

## Step 4.1

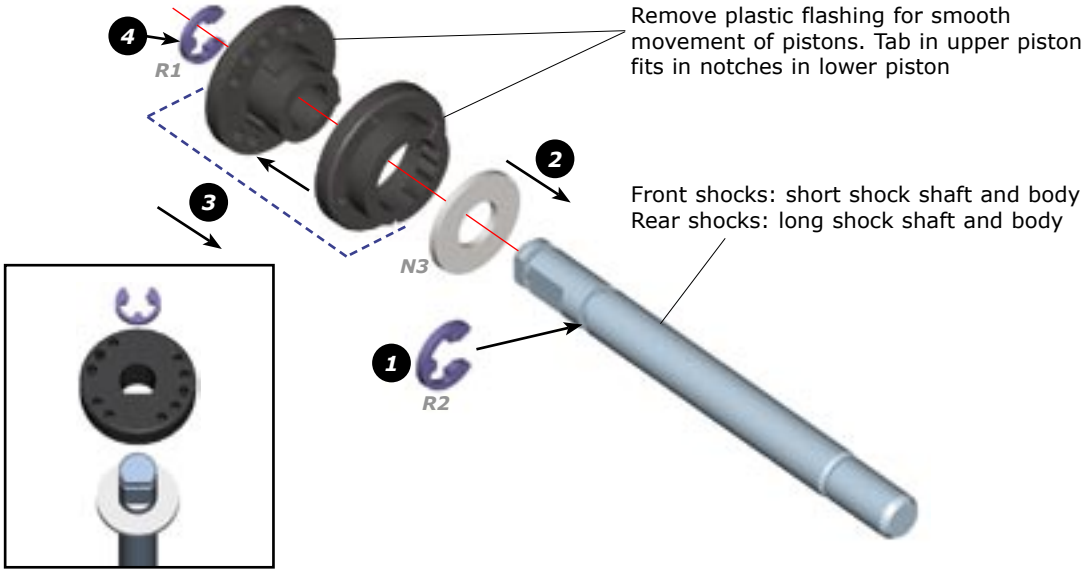
Bag 28



**N3**
3x6mm

**R1**
1.9mm

**R2**
2.3mm

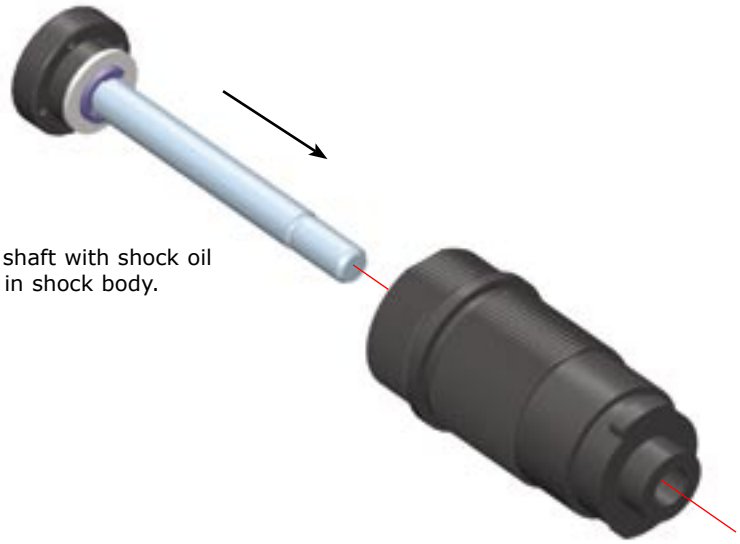



Remove plastic flashing for smooth movement of pistons. Tab in upper piston fits in notches in lower piston

Front shocks: short shock shaft and body
Rear shocks: long shock shaft and body



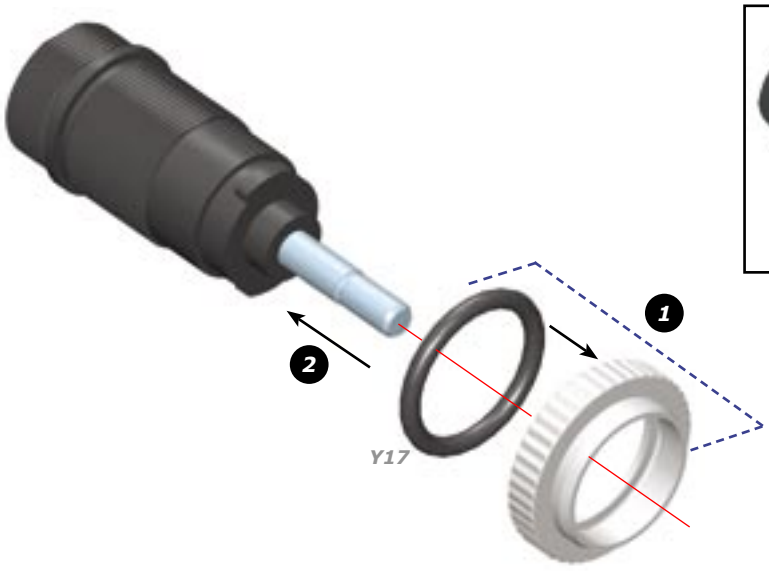
## Step 4.2



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

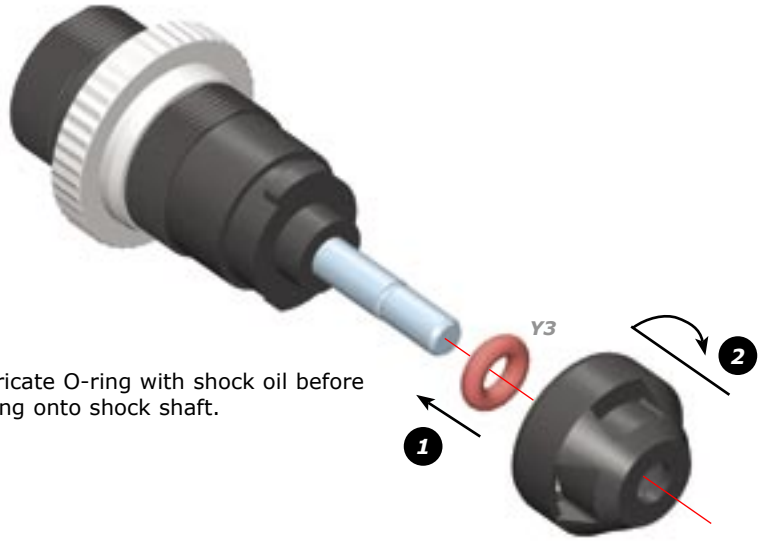
## Step 4.3

**Y17**
12.1x1.6mm



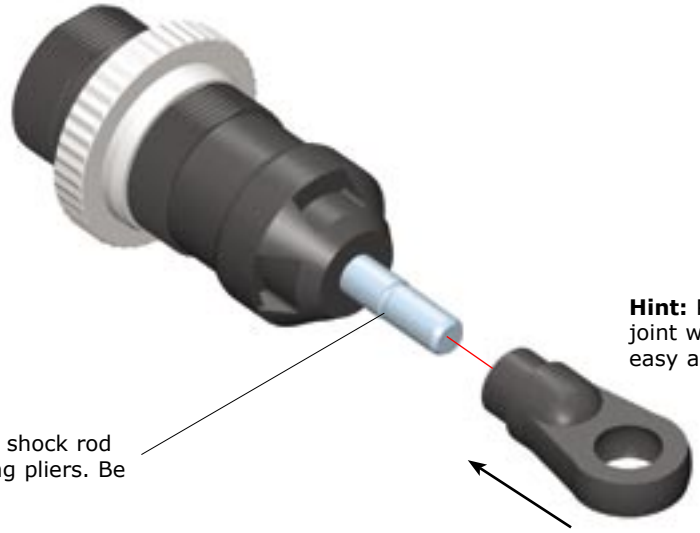

## Step 4.4

**Y3**
3x1.5mm




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

## Step 4.5



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

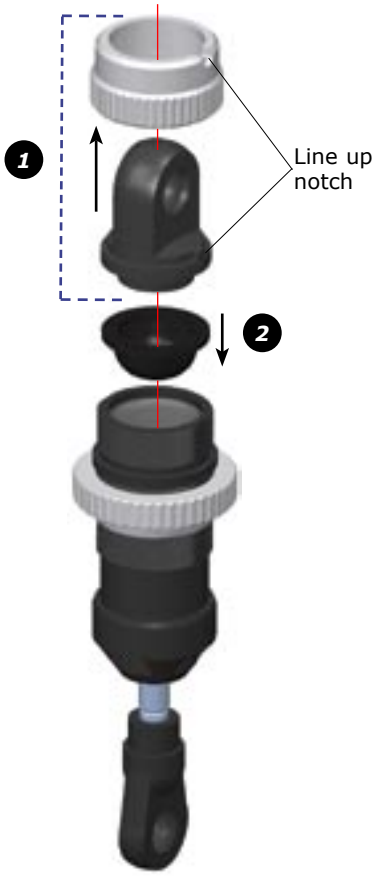
Use a shock rod gripping tool, or grip the shock rod at top of exposed threads with side cutting pliers. Be sure not to damage the shock rod.

## 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



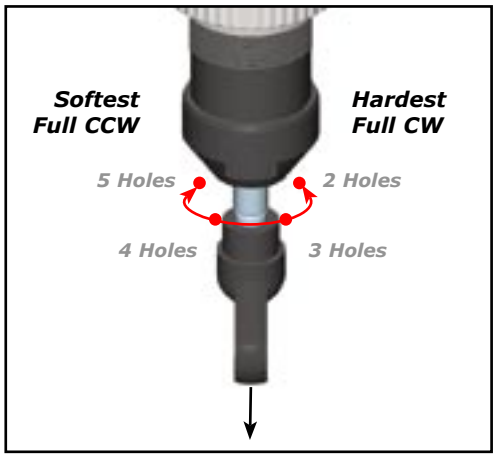

***Shock length adjustment***
Check the length of the shocks in the extended, fully locked position.

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.

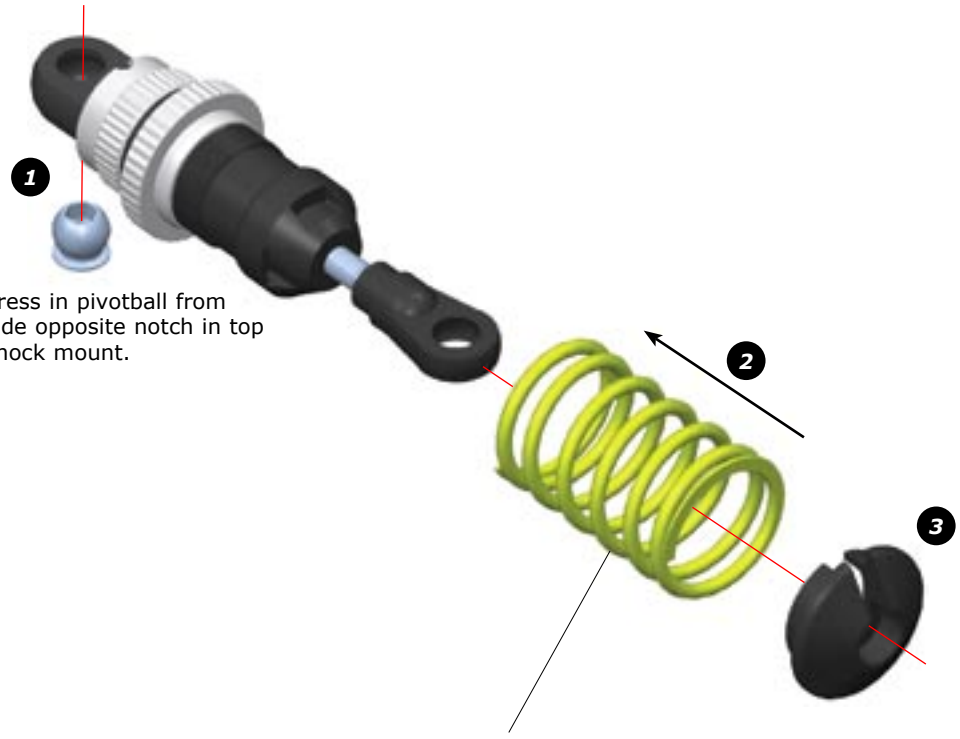
## Step 4.8




***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.



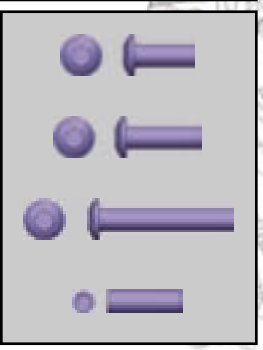

Press in pivotball from side opposite notch in top shock mount.

Front Shocks: short shocks and springs
Rear Shocks: long shocks and springs

# 5.0 Bodymount Assembly

## Step 5.1

Bag 14, 29, E11

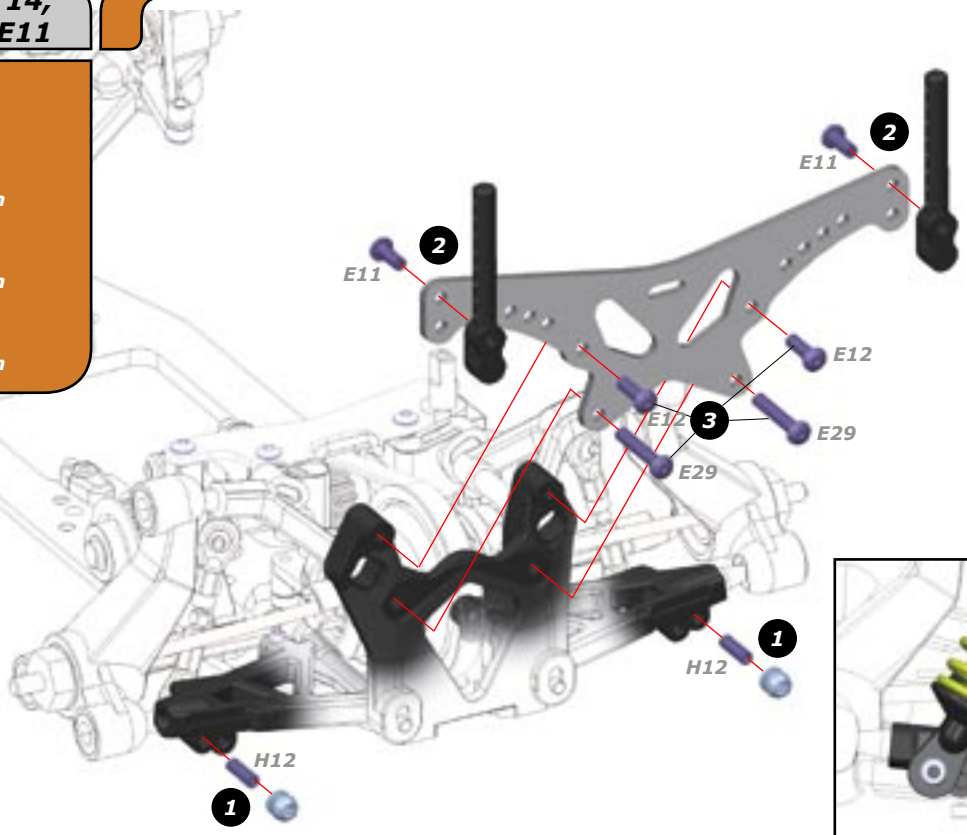


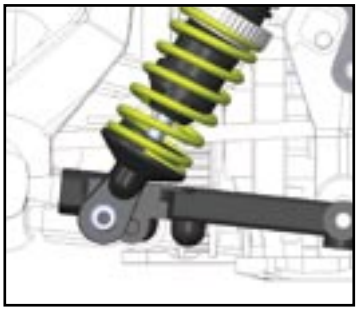
**E11**
3x8mm

**E12**
3x10mm

**E29**
3x18mm

**H12**
3x10mm

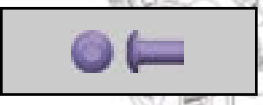


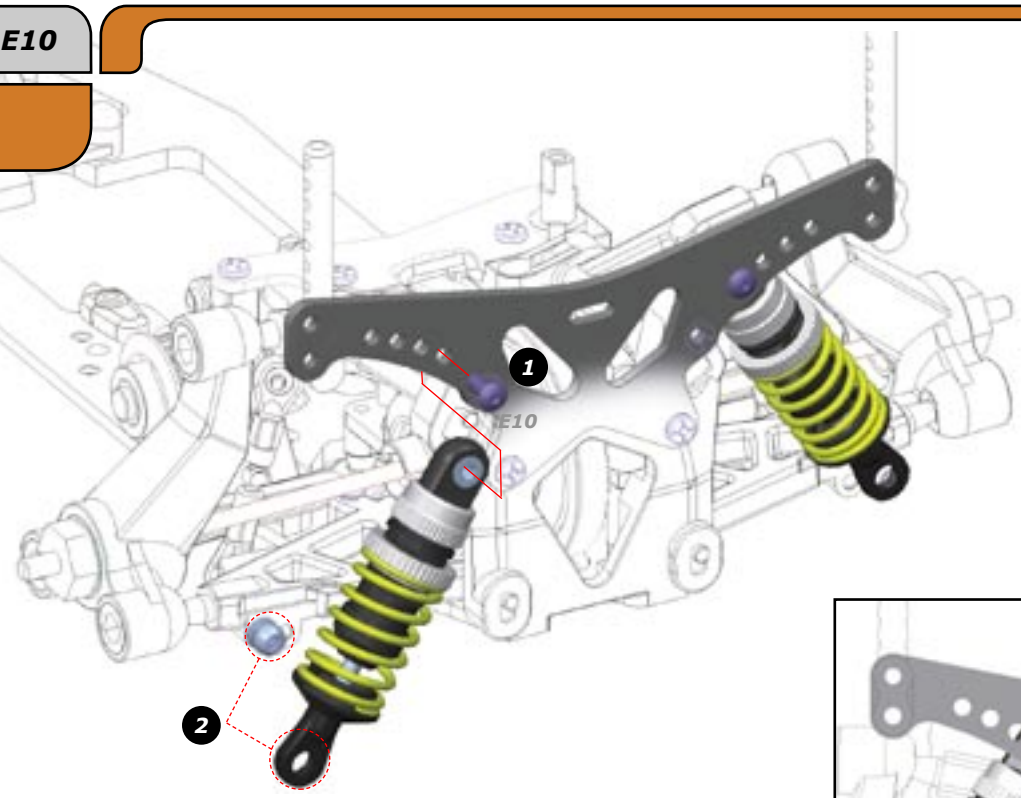
Lower shock default mounting position

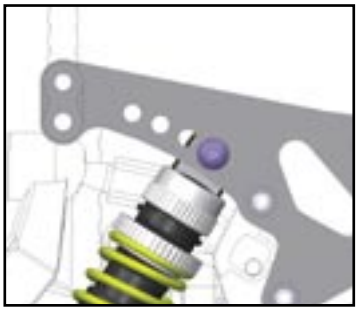
## Step 5.2

Bag E10



**E10**
3x6mm

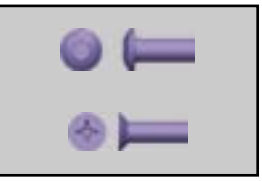


Upper shock default mounting position

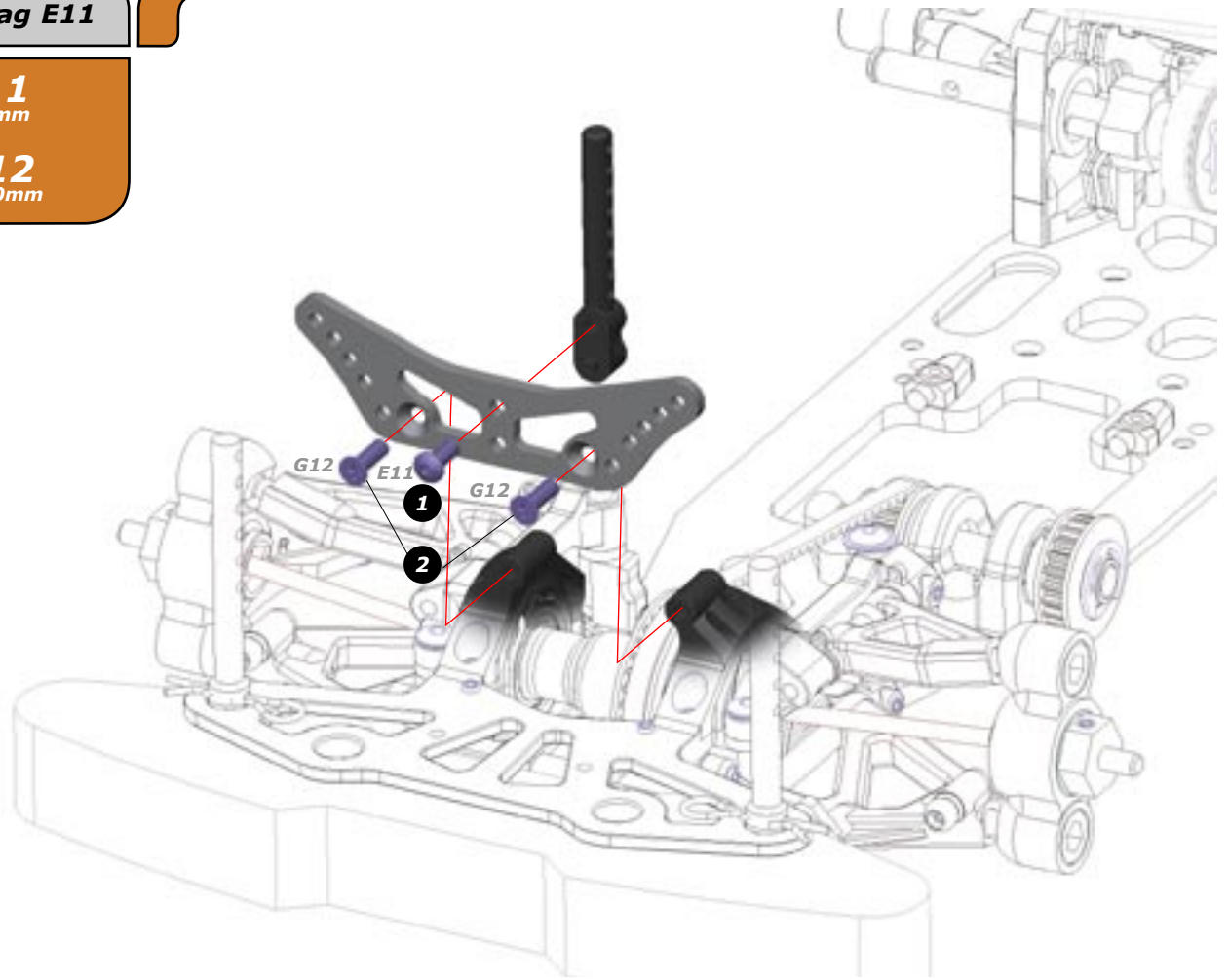
## Step 5.3

**Bag E11**



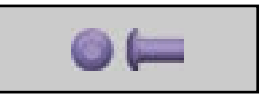
**E11**
3x8mm

**G12**
3x10mm

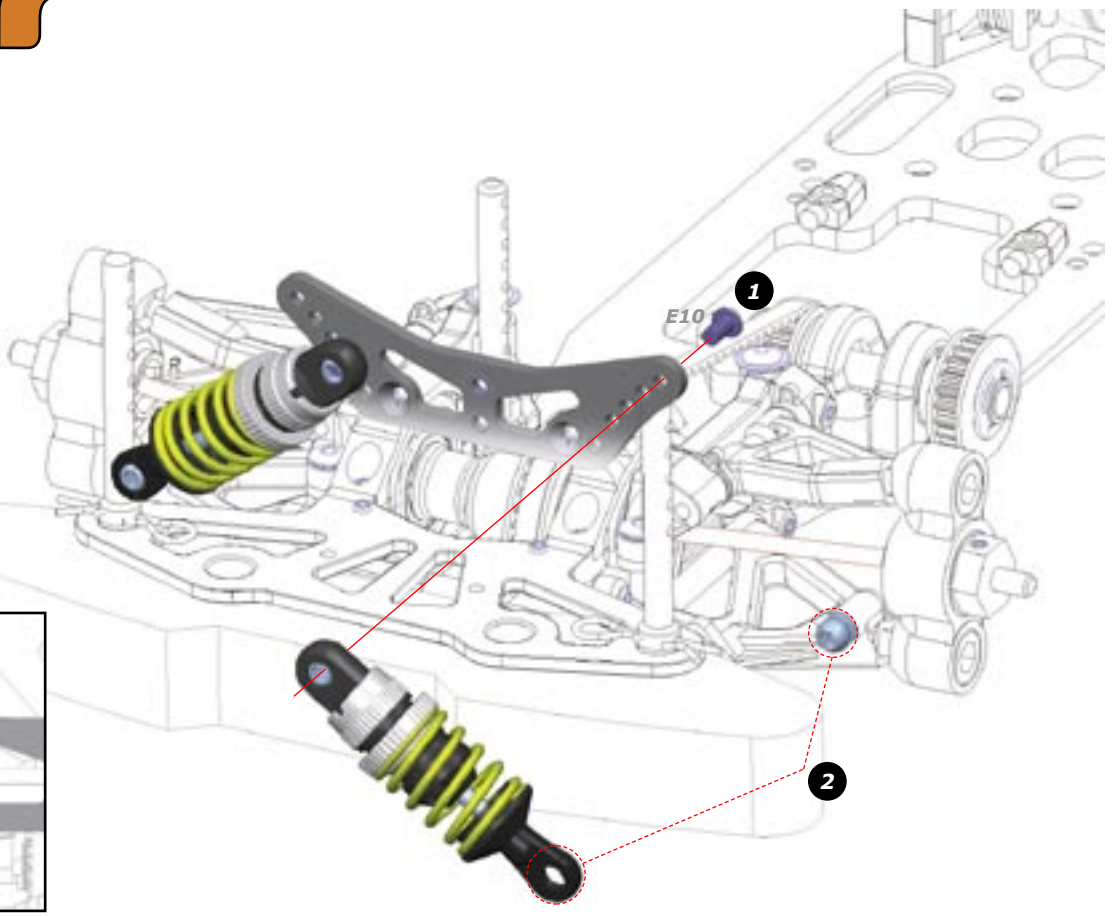



## Step 5.4

**Bag E10**



**E10**
3x6mm

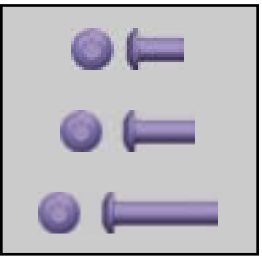



Upper shock default mounting position

# 6.0 Radio Plate Assembly

## Step 6.1

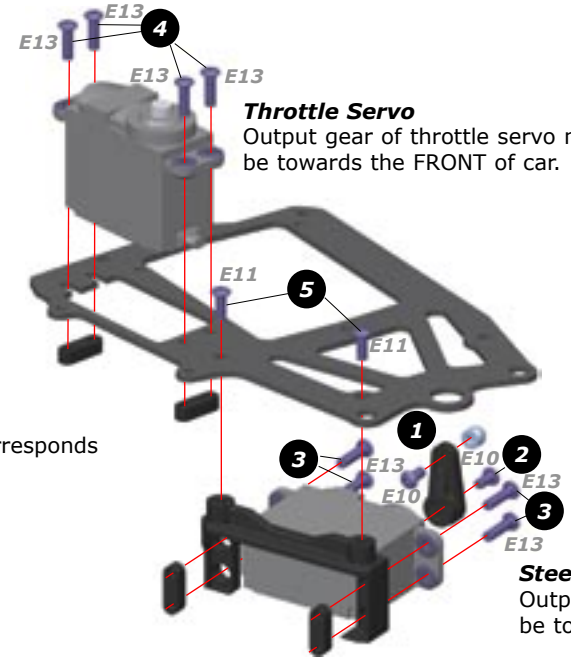
Bag 10, 14, 30,E10, E11



**E10**
3x6mm

**E11**
3x8mm

**E13**
3x12mm

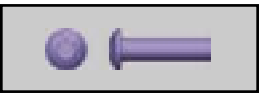



***Throttle Servo***
Output gear of throttle servo must be towards the FRONT of car.

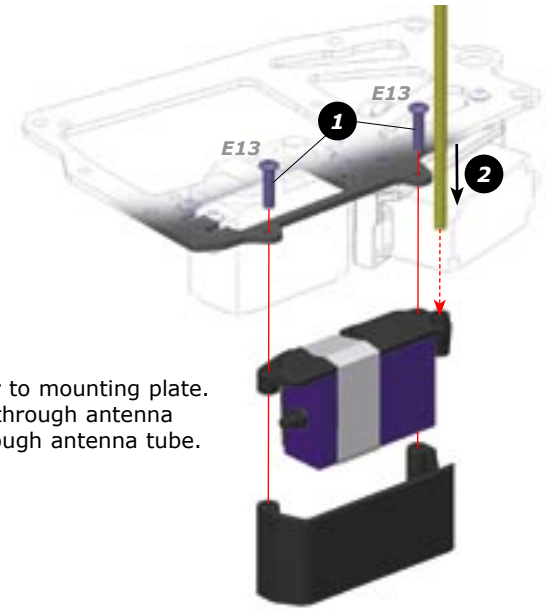
The number on the servo arm corresponds to the number of teeth.
23 - Sanwa / KO / JR
24 - Hitec
25 - Futaba

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

## Step 6.2



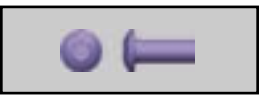
**E13**
3x12mm



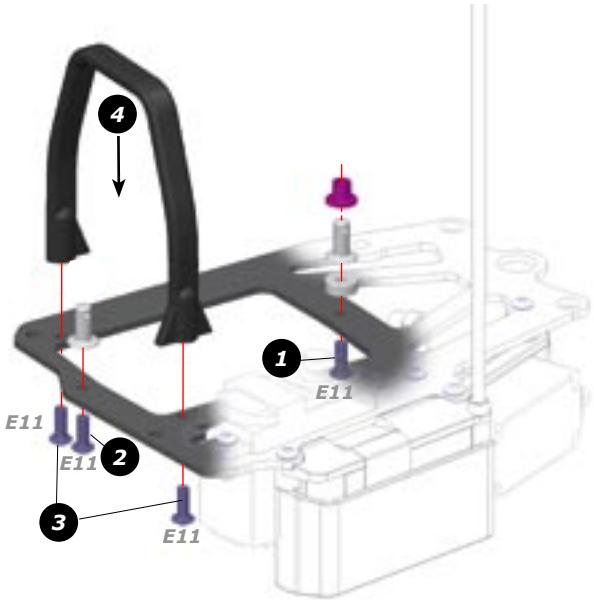

Securely attach receiver to mounting plate. Route antenna wire up through antenna mounting hole, and through antenna tube.

## Step 6.3

Bag E11

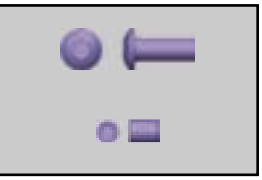


**E11**
M3x8mm



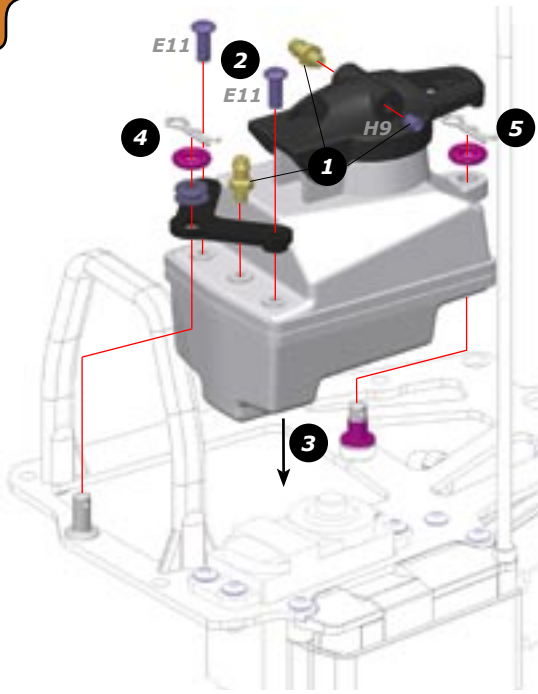
## Step 6.4

**Bag 31, E11**



**E11**
3x8mm

**H9**
3x4mm




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 grubscrew 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

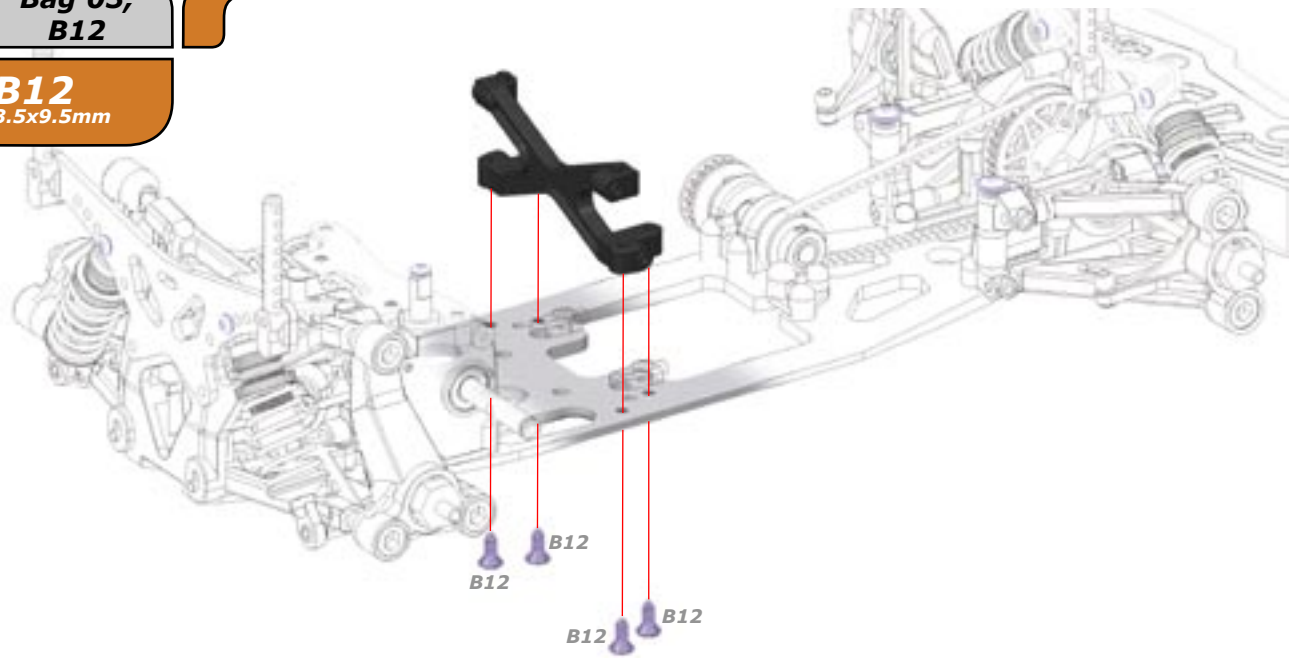
Note: The fuel tank is equipped with a mounting point where shims can be mounted in the tank to make the volume exactly 75cc.

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

## Step 6.5

**Bag 03, B12**

**B12**
3.5x9.5mm




## Step 6.6

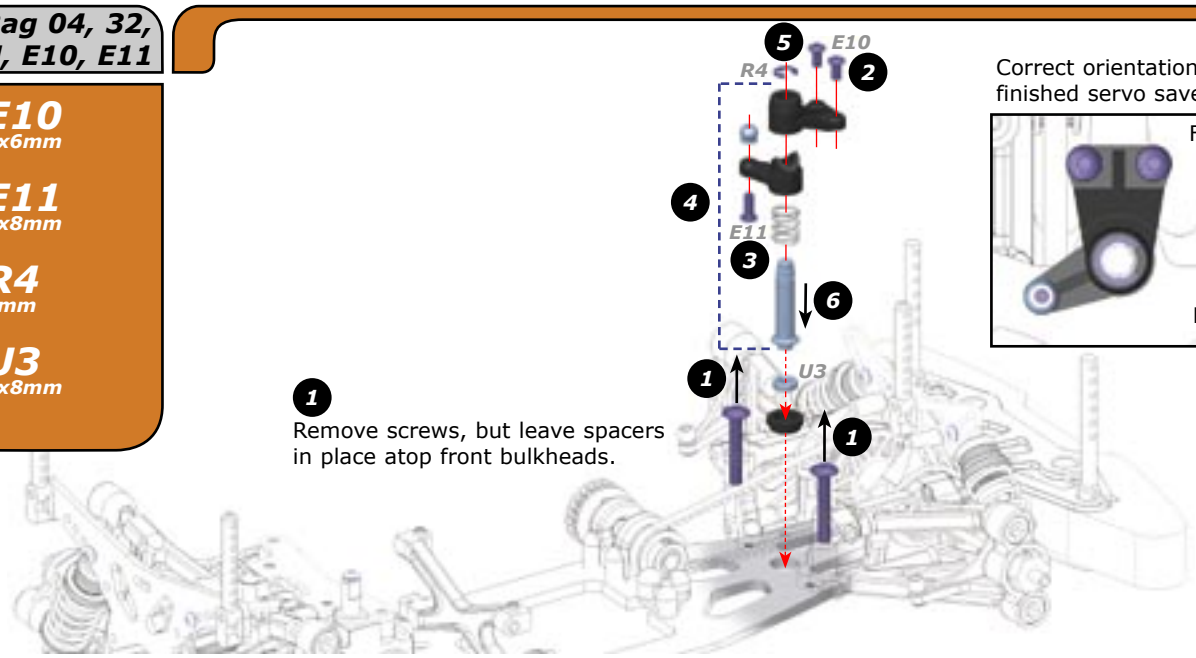
**Bag 04, 32, U, E10, E11**

**E10**
3x6mm

**E11**
3x8mm

**R4**
4mm

**U3**
5x8mm

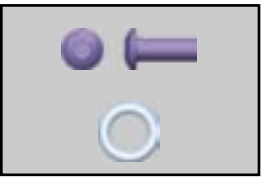



1 Remove screws, but leave spacers in place atop front bulkheads.

Correct orientation of finished servo saver

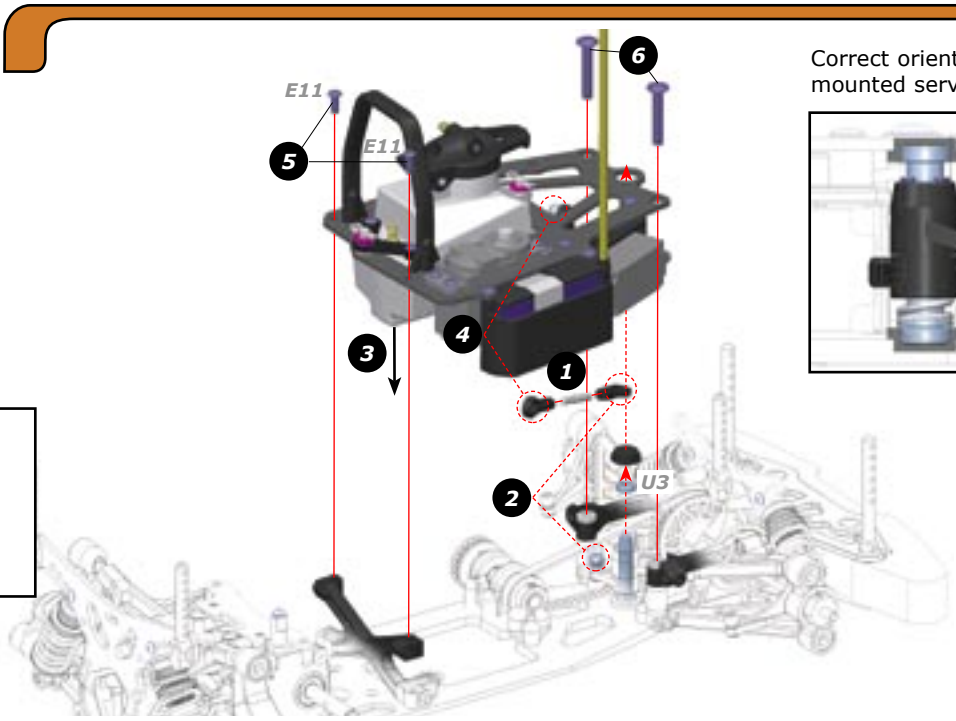
## Step 6.7

**Bag E11**



**E11**
3x8mm

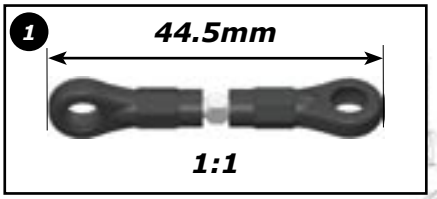
**U3**
5x8mm



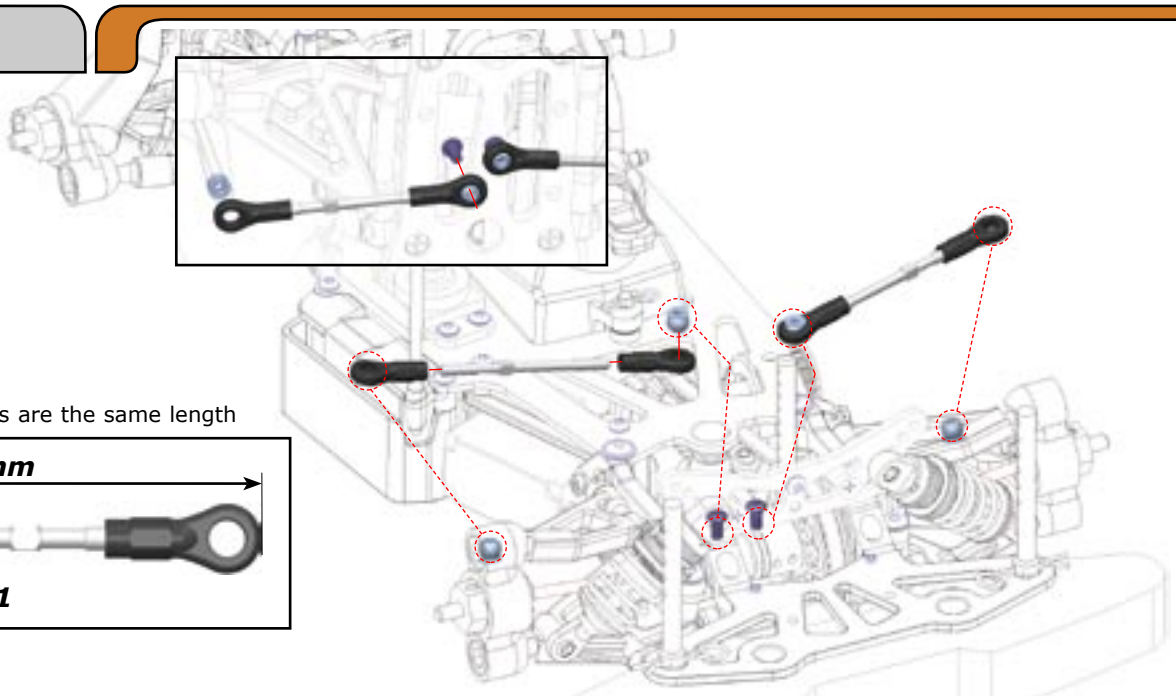

Correct orientation of mounted servo saver



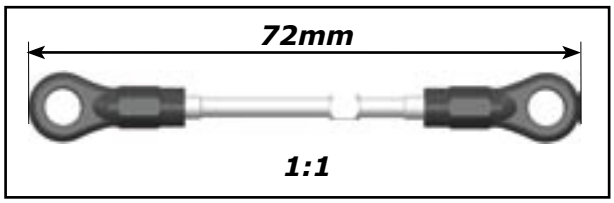
Steering rod length



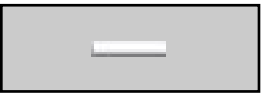

## Step 6.8



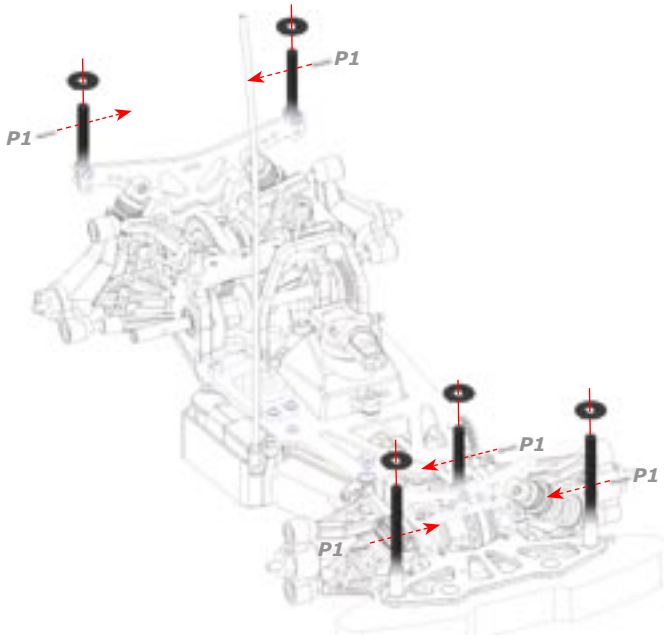
Left and right track rods are the same length

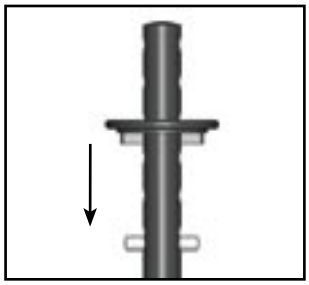



## Step 6.9



**P1**
2x10mm



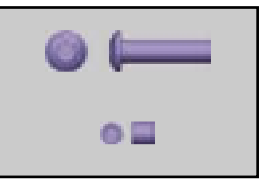



Position the metal pin at the desired body mounting height and then press the plastic collar down until it clips into place.

# 7.0 Gearbox Assembly

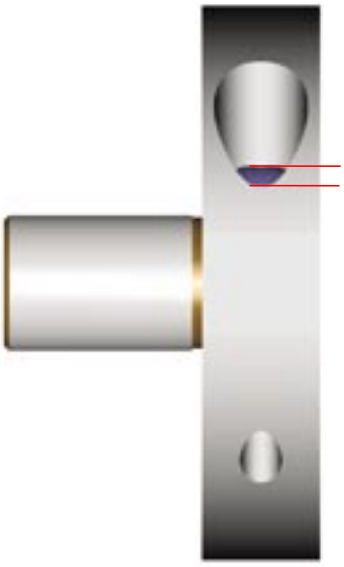
## Step 7.1

**Bag 33**

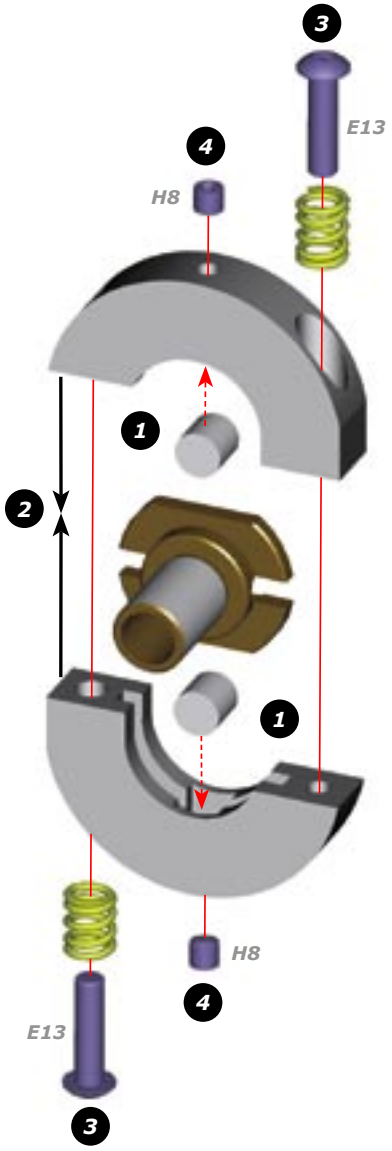


**E13**
3x12mm

**H8**
3x3mm



***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.



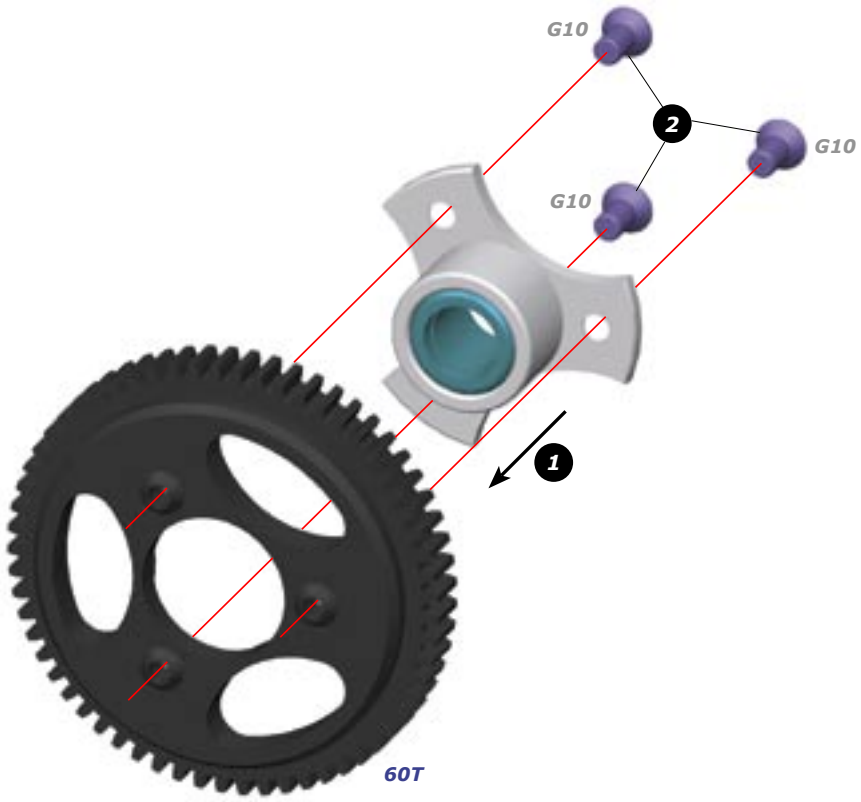

**3** Screw IN both adjusting screws to shift LATER.

Screw OUT both adjusting screws to shift EARLIER.

## Step 7.2

Bag 34

**G10**
3x6mm



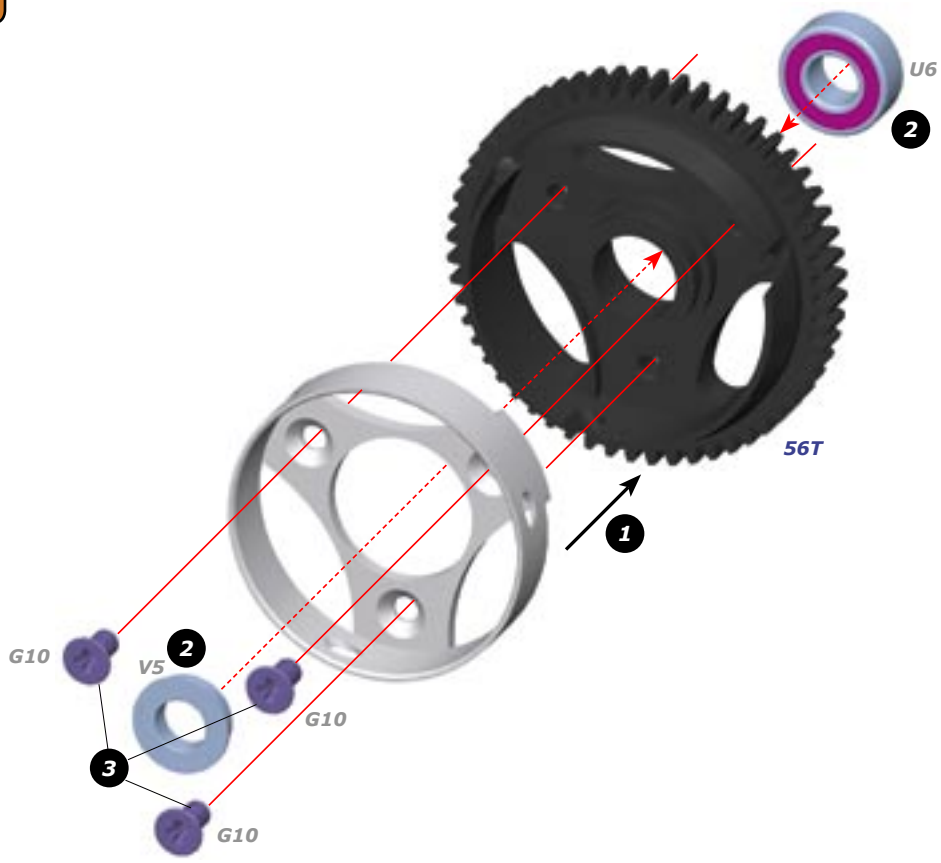

## Step 7.3

Bag U

**G10**
3x6mm

**U6**
6x13mm

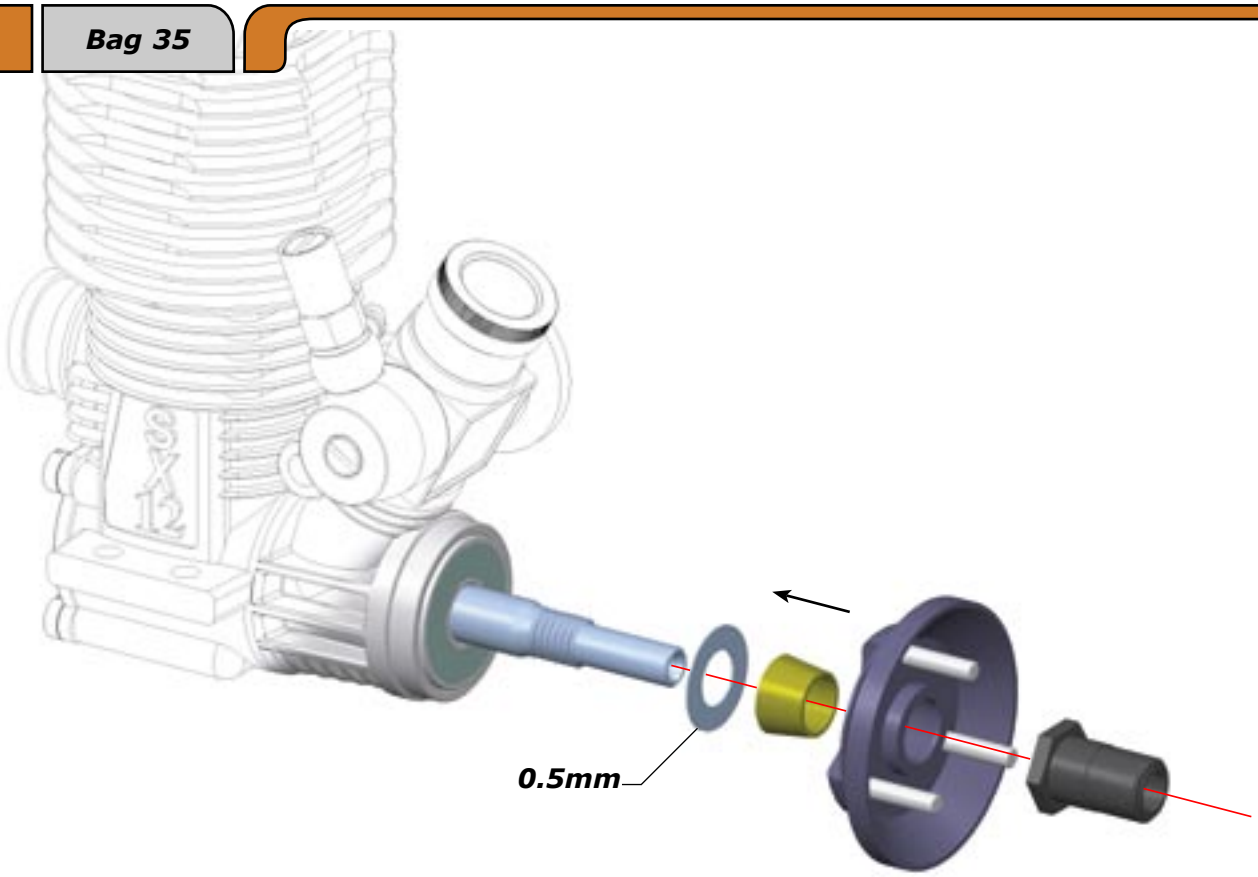
**V5**
6x10mm



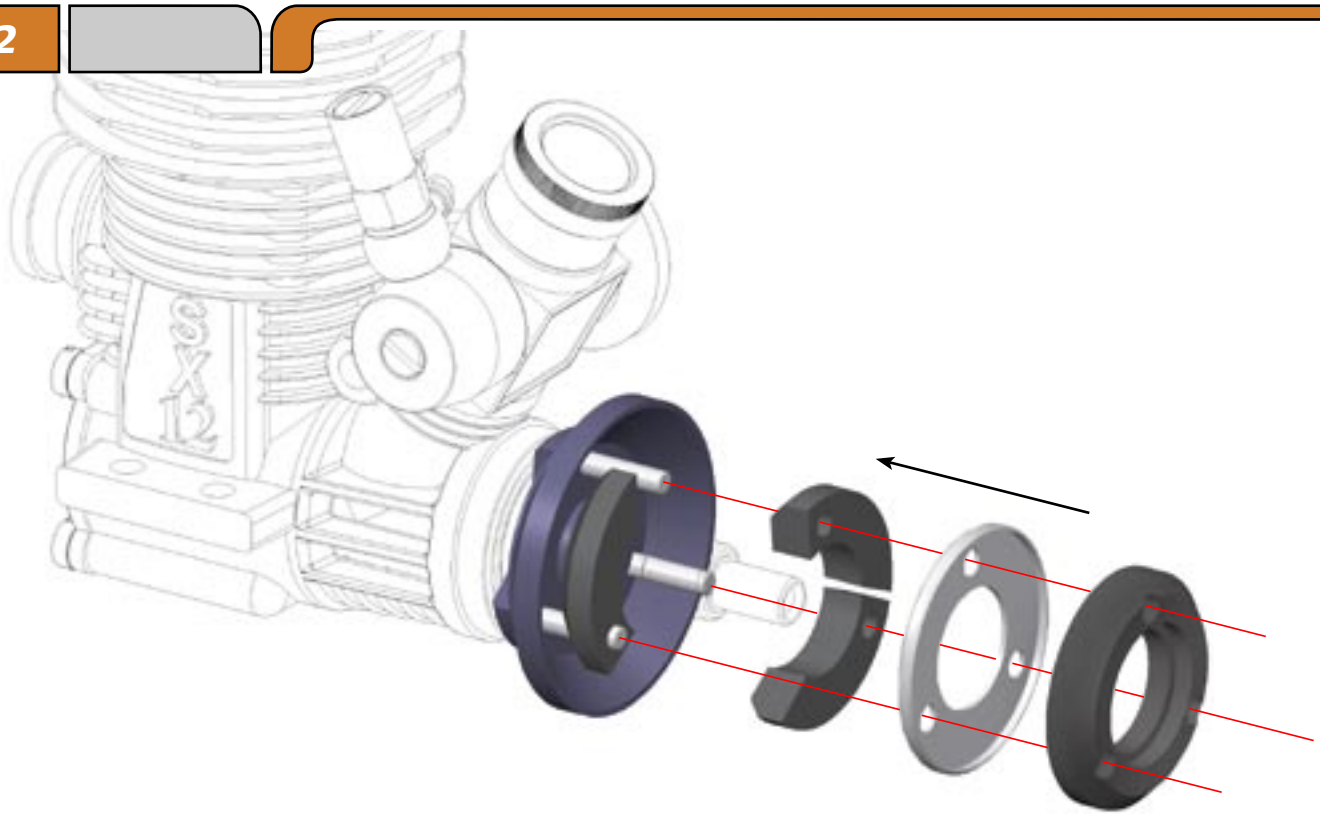
# 8.0 Centax Assembly

## Step 8.1

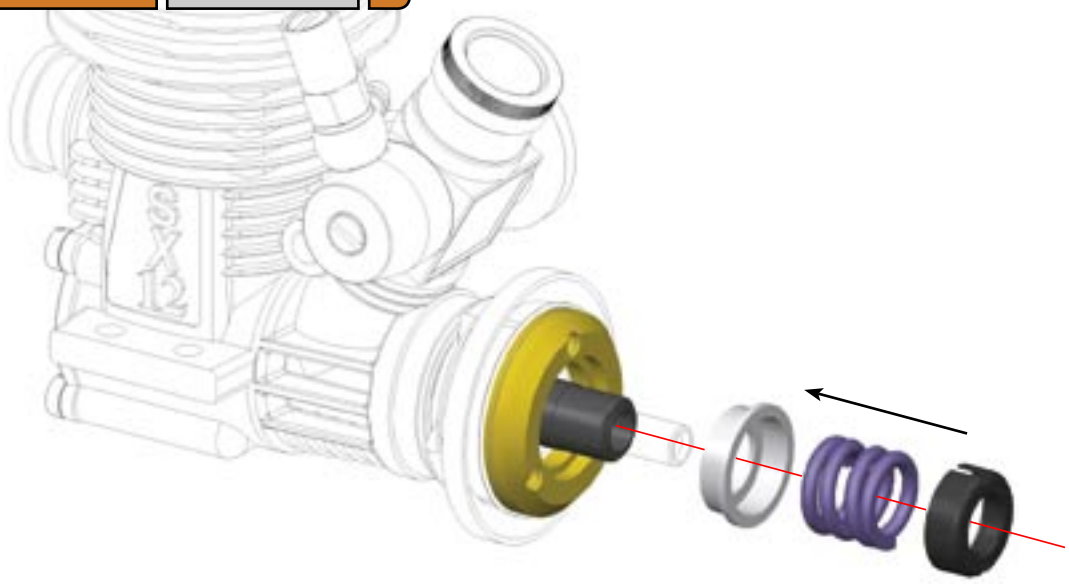
Bag 35

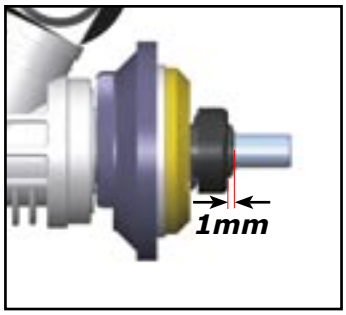



## Step 8.2



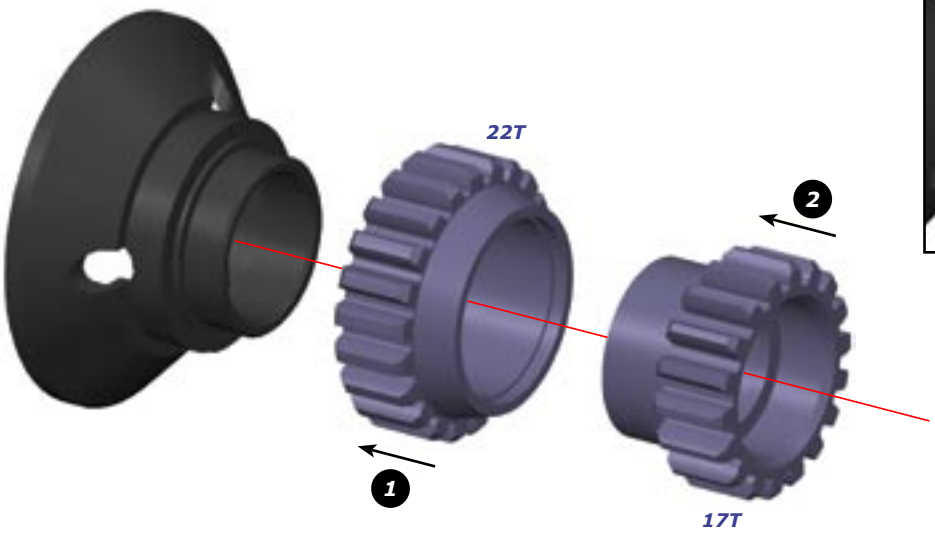
## Step 8.3

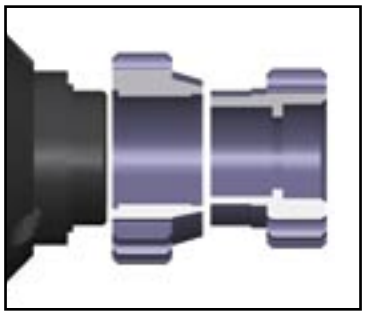




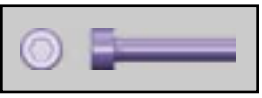

## Step 8.4

Bag 36

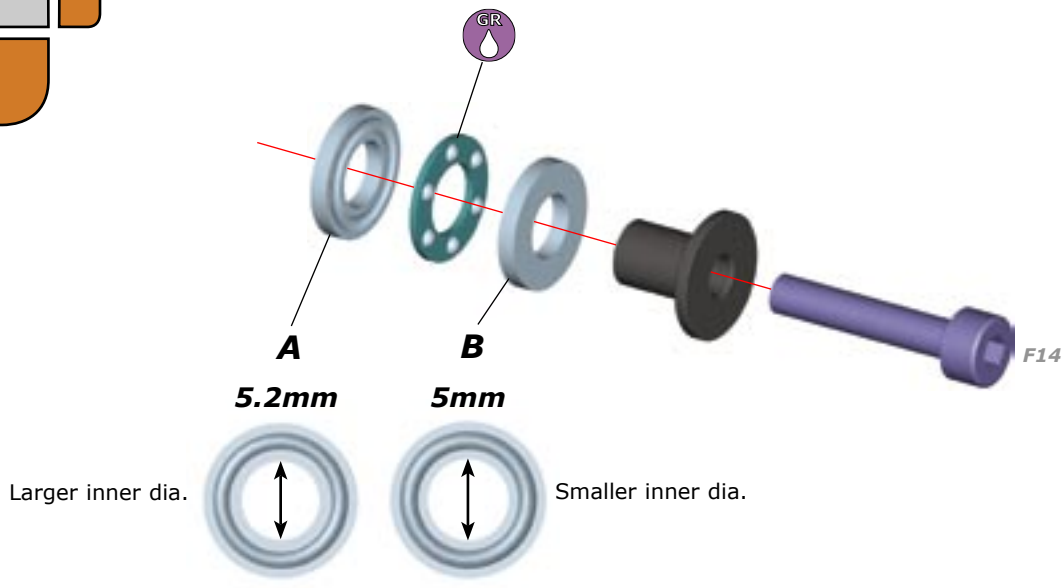


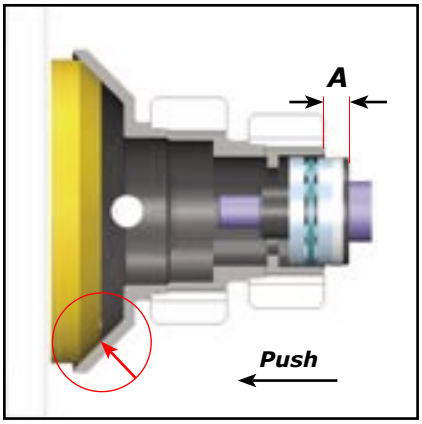
## Step 8.5



F14
3x16mm

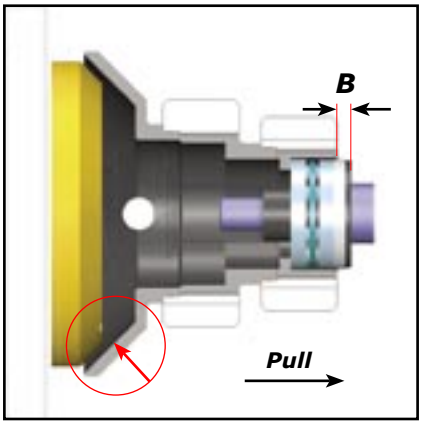


## Step 8.6




***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.

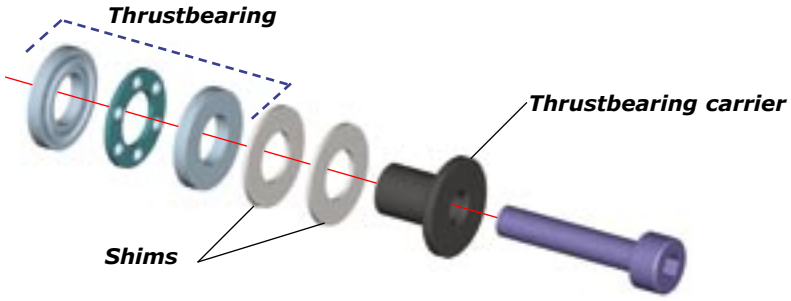



Pull the clutchbell away from the clutch shoe, and then measure the distance **B** as indicated.

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

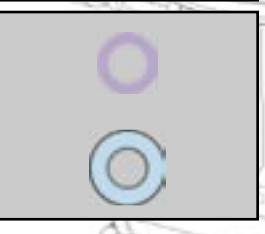
For example, using the values A=1.3mm, B=0.3mm
Shim thickness = 1.3 – 0.3 – 0.7 = 0.3mm

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




## Step 8.7

**Bag U**



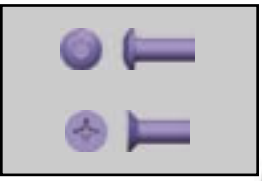
***M11***
*5x8x0.1mm*
*5x8x0.3mm*

***U4***
*5x10mm*

# 9.0 Final Assembly

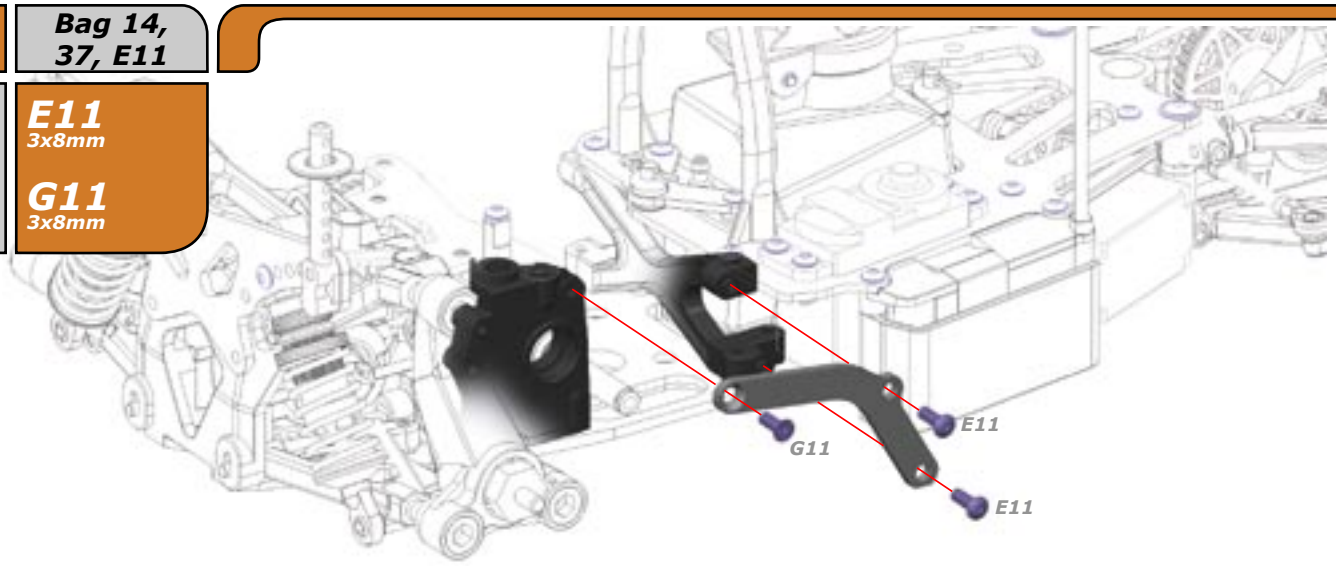
## Step 9.1

Bag 14, 37, E11

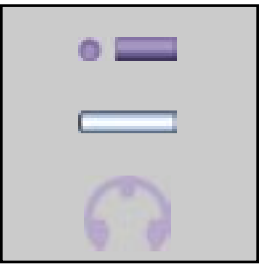


**E11**
3x8mm

**G11**
3x8mm



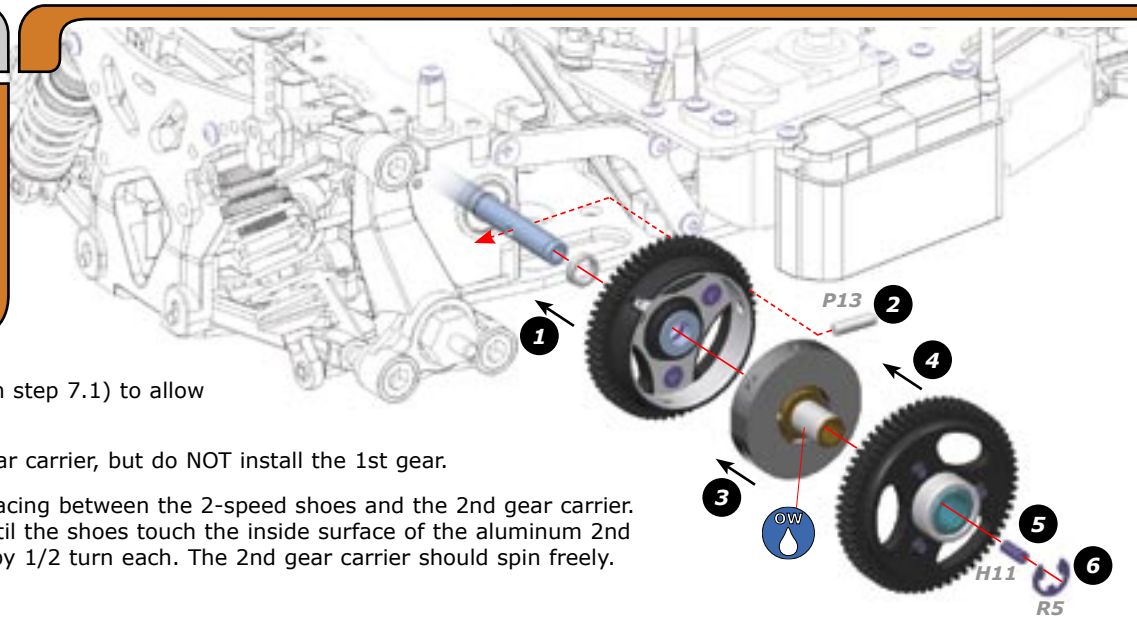

## Step 9.2



**H11**
3x8mm

**P13**
3x14mm

**R5**
5mm



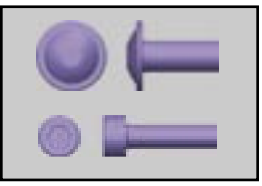

**Adjusting the 2-speed shoe gap**
Loosen the gap-setting setscrews (H8 in step 7.1) to allow the shoes to rest on the drive adaptor.

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.

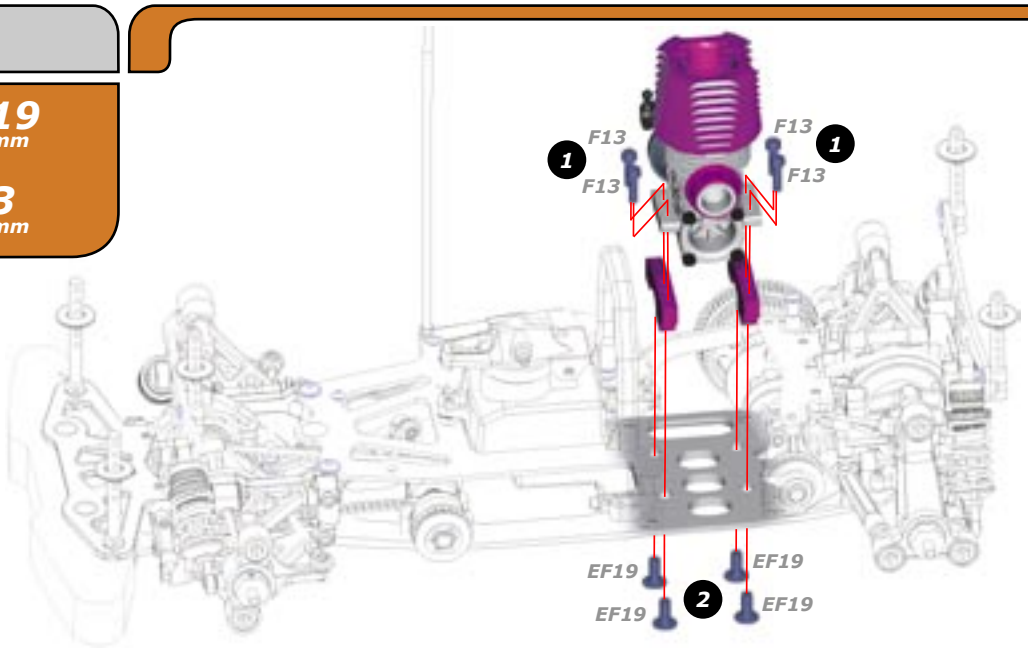
Install the 1st gear.

## Step 9.3



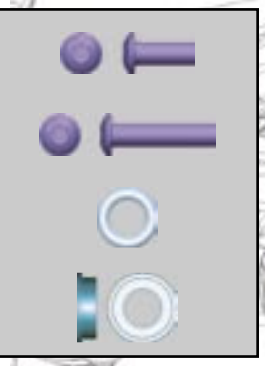
**EF19**
4x10mm

**F13**
3x12mm



## Step 9.4

**Bag 14, 38**
**E11, U**

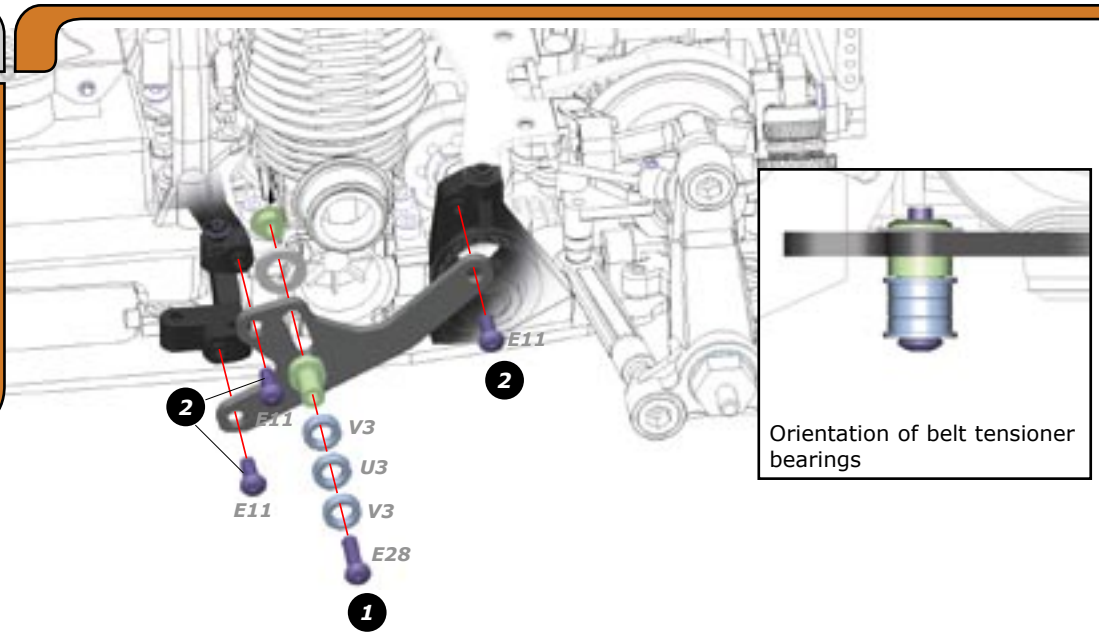


**E11**
3x8mm

**E28**
3x14mm

**U3**
5x8mm

**V3**
5x8mm

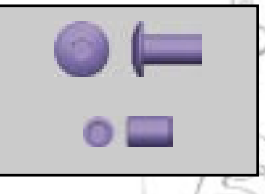





Orientation of belt tensioner bearings

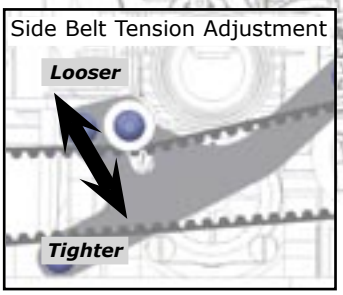
## Step 9.5

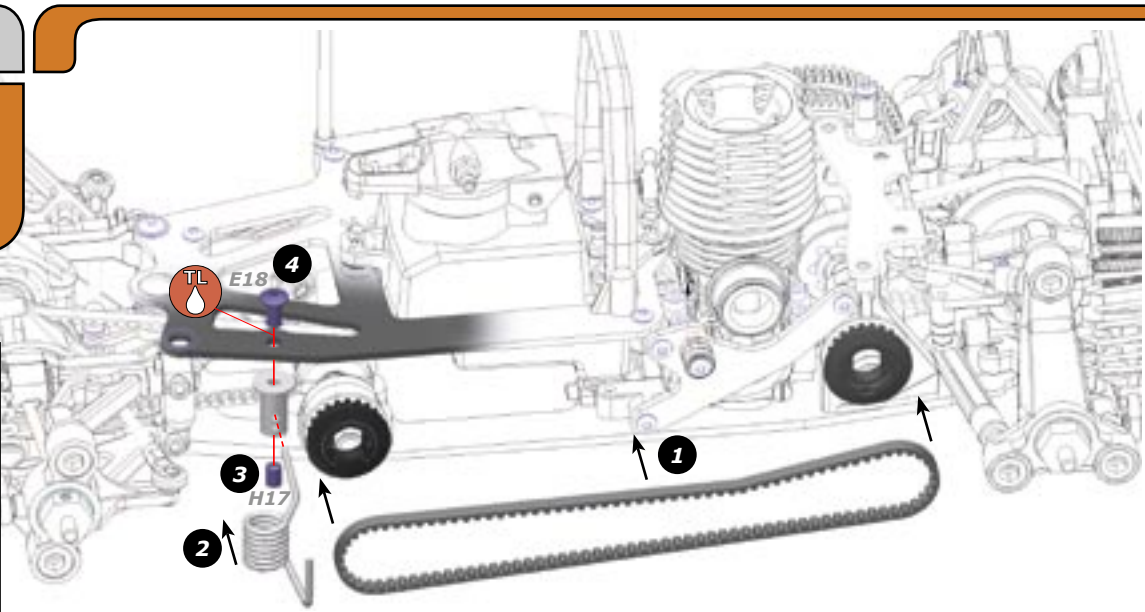
**Bag 39**



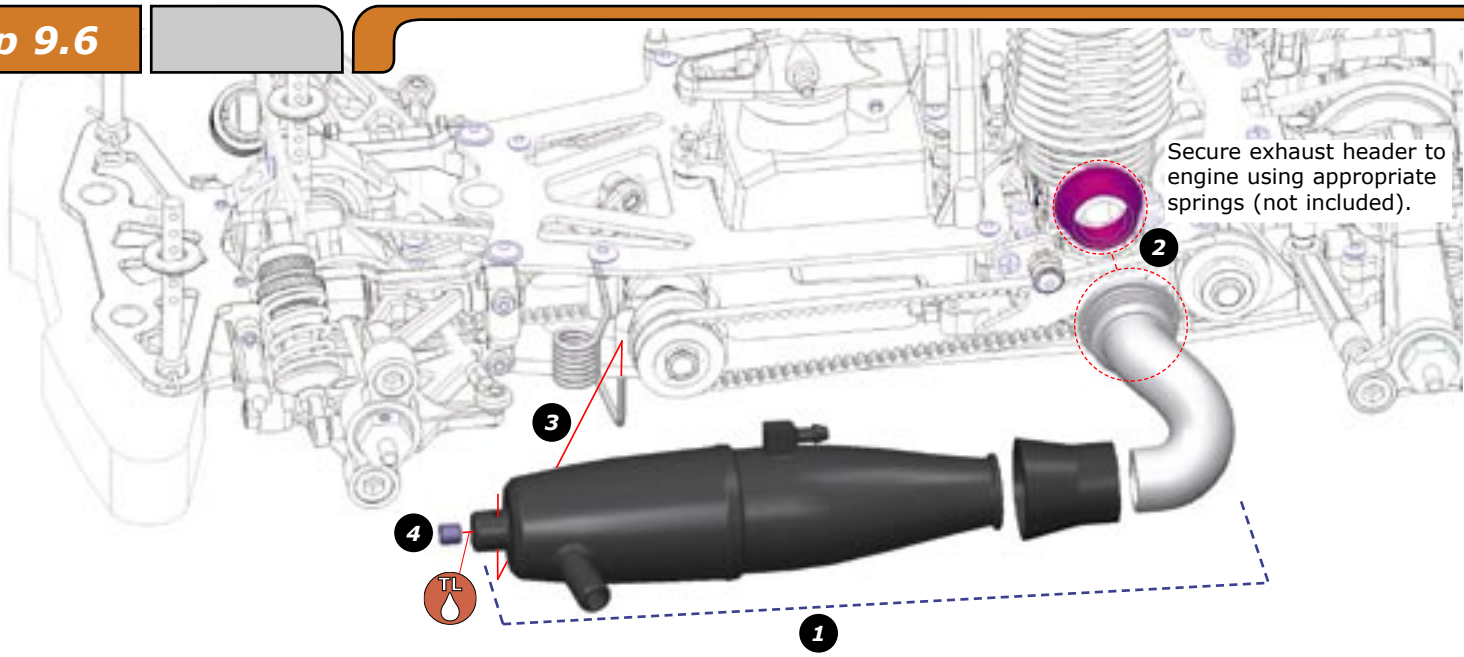
**E18**
4x8mm

**H17**
4x6mm



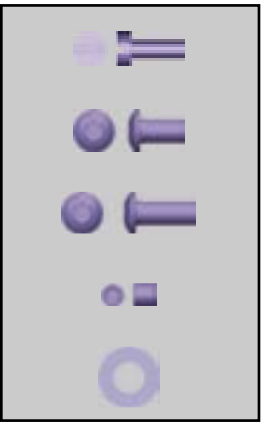

## Step 9.6




Assemble pipe to the correct length.

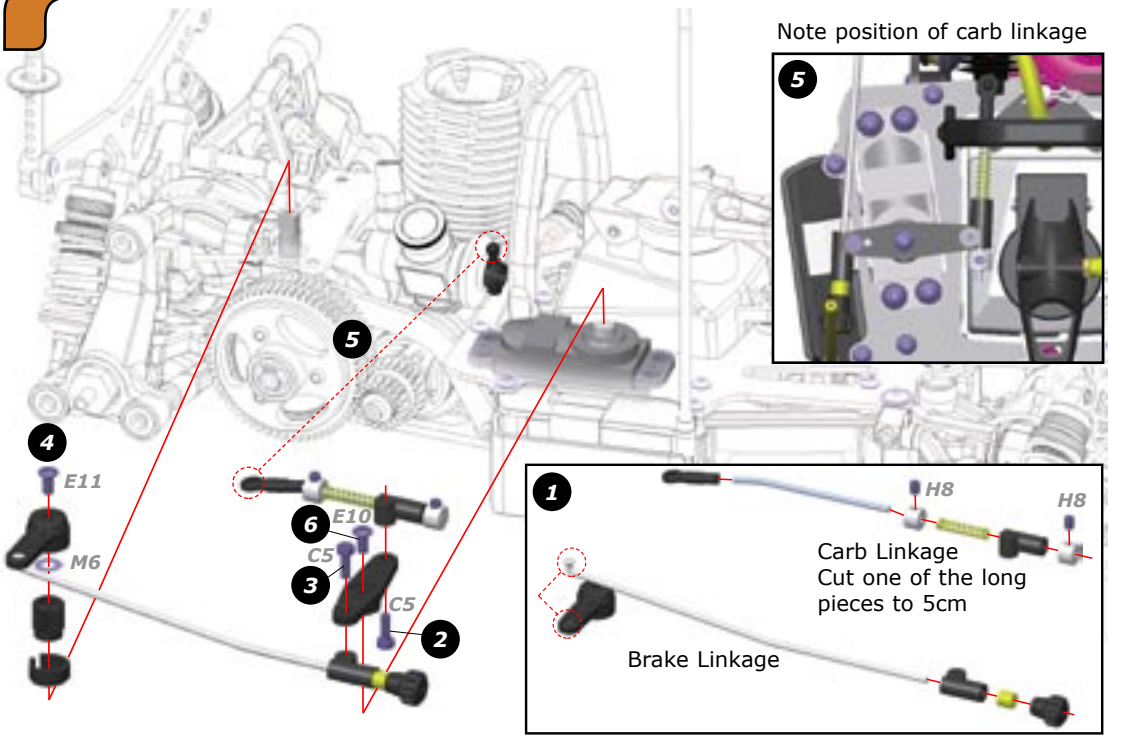
## Step 9.7

**Bag 40, 41**
**E10, E11**



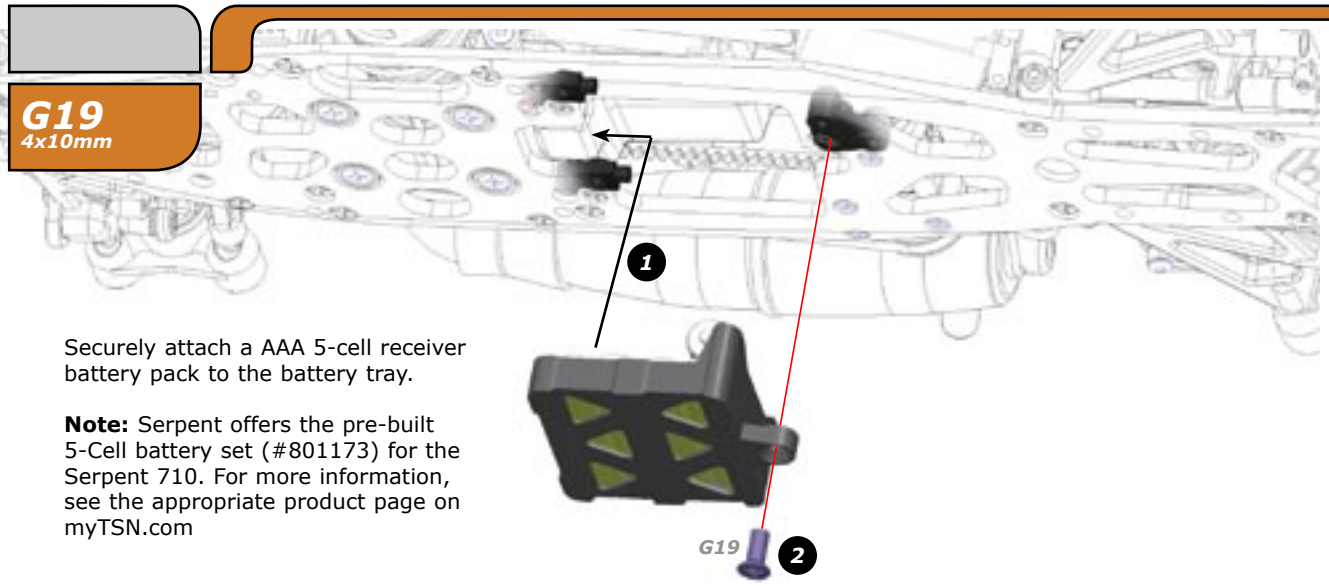
- **C5** 2.5x8mm
- **E10** 3x6mm
- **E11** 3x8mm
- **H8** 3x3mm
- **M6** 4x8mm

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




## Step 9.8

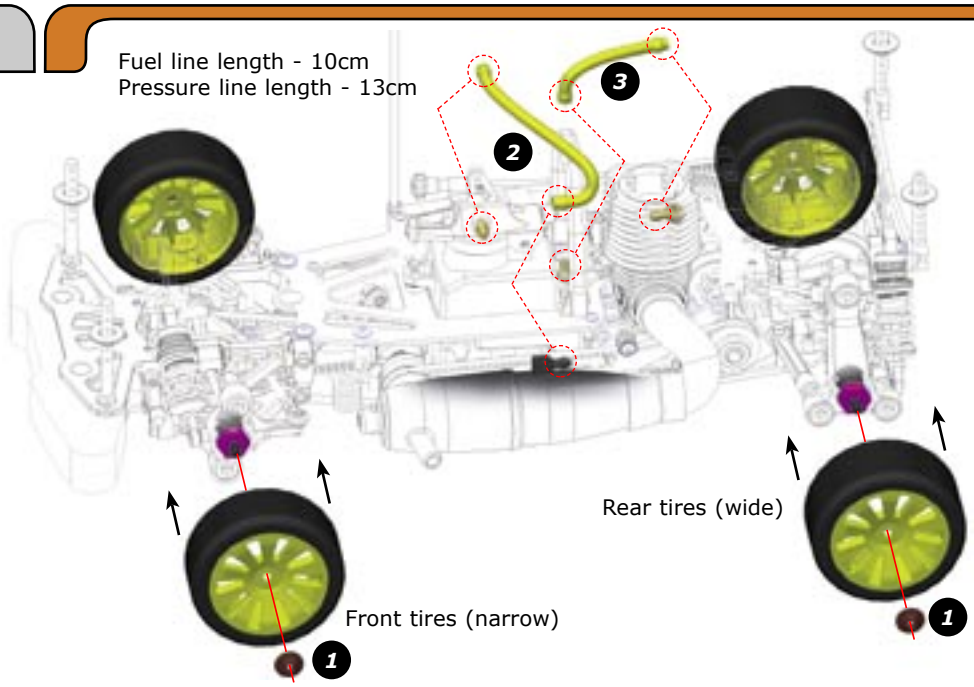
- **G19** 4x10mm




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 9.9




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

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www.myTSN.com/Serpent710

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PERFORMANCE THROUGH EVOLUTION

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