



Thank you for purchasing a genuine **carbon fibre Bonesteer** SYMSTEER by **bonehead-RC**.

Bonesteer has been designed to improve steering performance and add a new level of braking to your HPI baja.

Bonesteer's push/pull symmetrical design uses a push/pull force to improve steering performance by a large degree. The push/pull servo saver is not a new concept, it has been used incredibly successfully by large-scale cars in Europe for many years but the way it has been incorporated into **bonesteer's** uniquely accessible, plug-in design using carbon fibre is a first.

The 'race-oriented' design is a complete steering and braking system of its type for hpi Baja that a general user can install with minimal expertise and no chassis modification.

It is designed to be used with or without front brakes. Rear brakes are now controlled by the opposite side servo than the throttle servo.

The main components are made from **100% genuine carbon fibre**, this adds rigidity where it's needed most.

No more flex in the steering or braking gives maximum Servo power, a big flaw in the stock steering/brake set up is due to flex.

It doesn't matter if you upgrade your stock steering with alloy components, flex is in the stock design and these alloy upgrades degrade and need regular maintenance.

The stock Servo setup been off set means you don't get a 50/50 split like the **bonesteer**, another downside to weak steering.

Parts checklist

- **9** piece carbon kit consist of Y plate, bottom plate, Servo plate, new brake mount, thin washer and 4 Servo clamps.
- **FG** Servo saver (**needs Assembly see attached picture**)
- **2 (Titanium)** turnbuckles
- **1** steel brake cable
- **1** Outa brake cable guide
- **2** metal end caps
- **1** alloy cable end cap
- **2** gyro tabs
- **1** antena tube
- **1** antena cap
- **4** M6x12 button head bolts (**chassis bolts**)
- **4** M5x12 button head (**y plate**)
- **3** M4x10 button head (**Servo plate**)
- **1** M4x16 countersink fits gyro to Servo plate

- **6 M4x12 countersinks (chassis plate bolts) gyro bolts 2 off fitted (1 with Servo plate)**
- 1 M4 nylon nut
- 4 M3x20 steering Servo bolts
- 8 M3x12 brake and throttle Servo bolts
- 12 M3 washers
- 12 M3 nylon nuts
- 4 alloy standoffs
- **1 double grub shaft collar (locks onto brake cable)**
- **1 drill (drilling out brake Servo horn)**
- **1 connector rod for (brake Servo horn)**
- 2 reusable tie wraps
- 1 RX box
- 1 sachet of grease
- 4 M6 hank nuts (**installed into chassis plate**)
- 2 M5 hank nuts (**installed into Y plate**)
- 4 M5 broaching nuts (**fits into stock chassis for battery tray**)
- 1 Battery tray (**fits upto a killer lipo 7000Mah**)
- 1 steering Servo horn
- 1 4/40 quick release ball
- 1 4/40 linkage
- **1 extended (Titanium) brake cam**



Fitting instructions

Please read through all the instructions before fitting.

Assemble the Servo saver as pictured below, the alloy nut on top needs to be tightened all the way down.





I now include a 1mm spacer to fit on top of the plastic saver see pics.





The washer is included to add more preload to the spring.

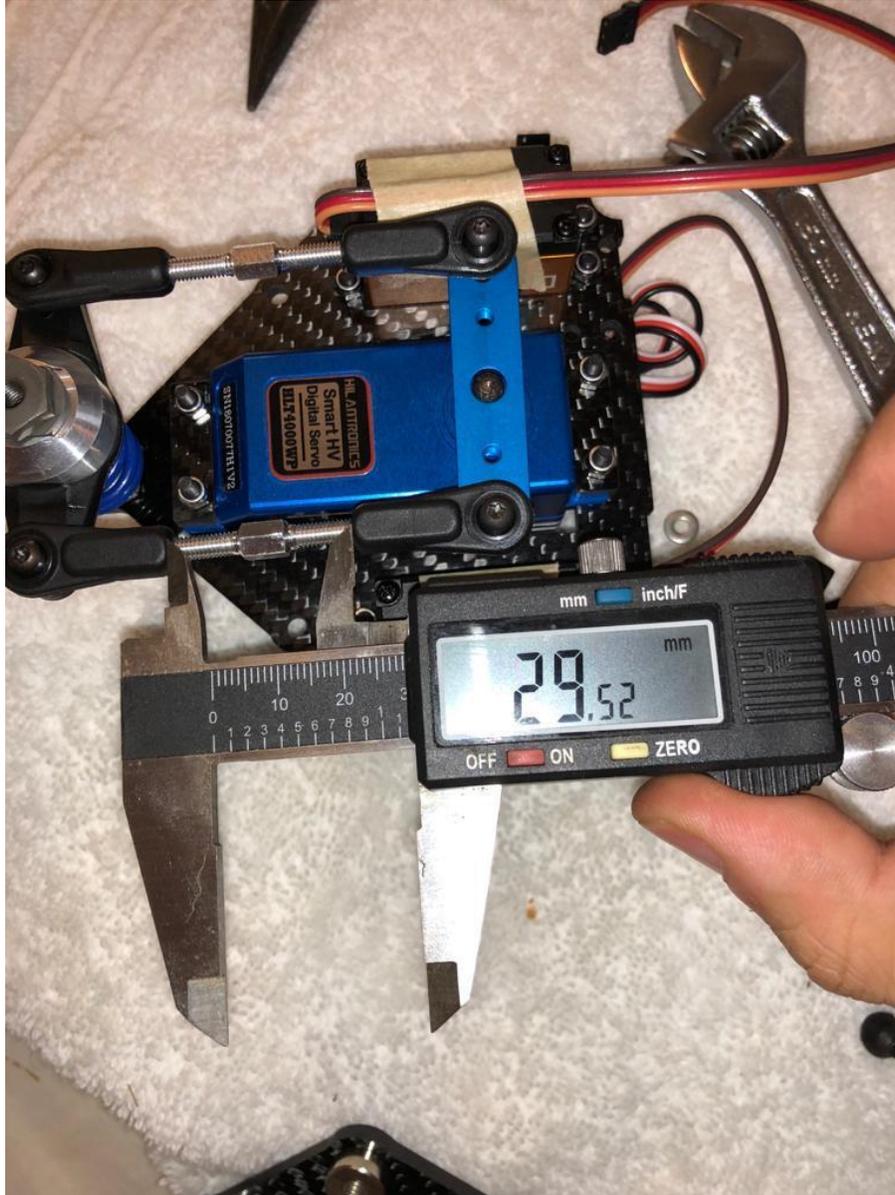
Do not fit any washers on the steel pivot, (alloy nut) this will cause binding on the top plate.

The alloy nut needs to be tightened down till it bottoms out you should have a small amount of play up and down if done correctly.

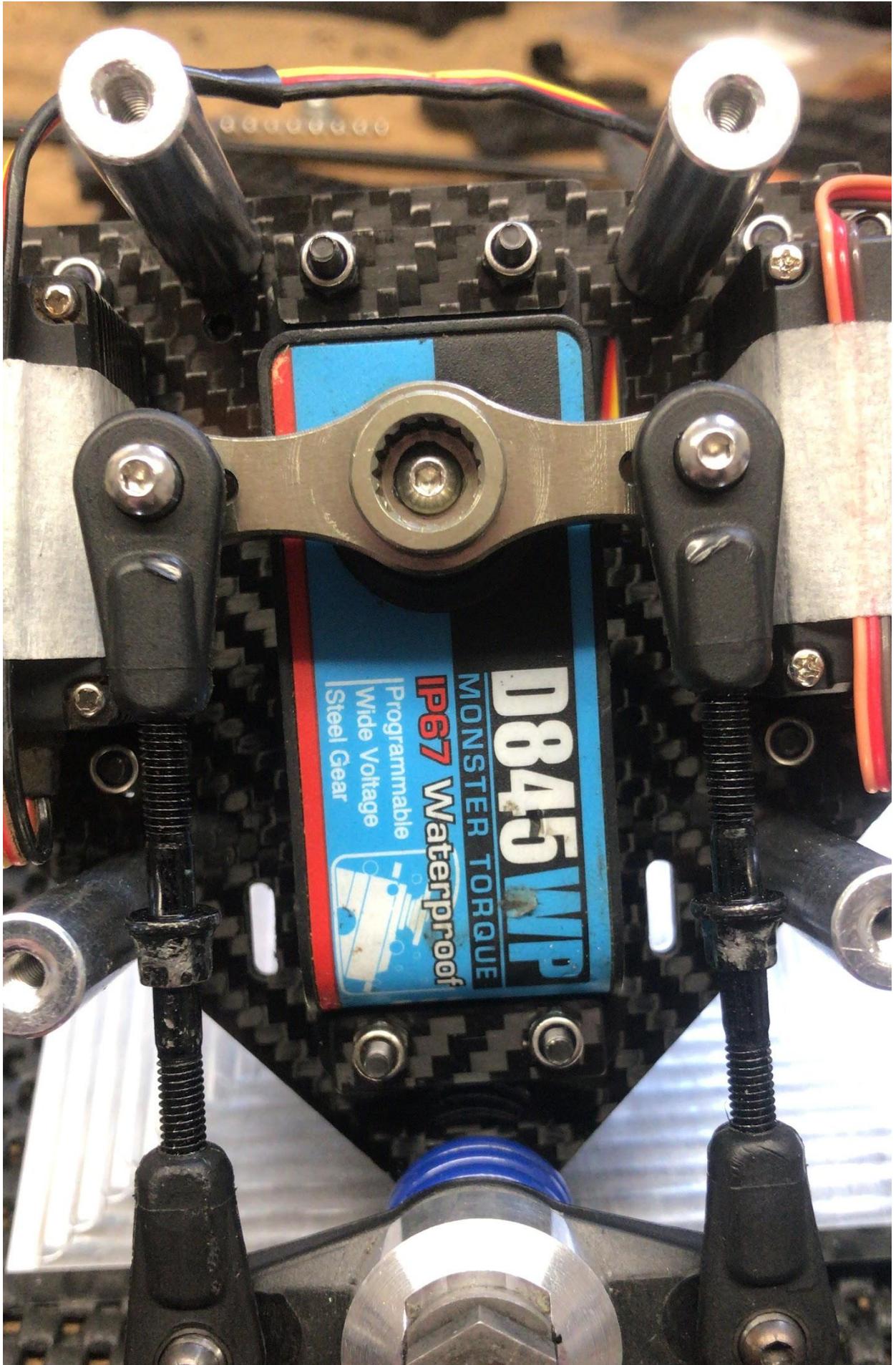
Make the links 29.5mm this can vary quite a bit so is a guide only but make sure both rod ends are screwed on Equally, fine adjustments maybe be needed later once fitted.

FG like changing parts in the Servo saver bag the new latest design as been consistent for the last 6 months from (01-01-2021)

Make sure once fitted the turn buckles rotate without binding.

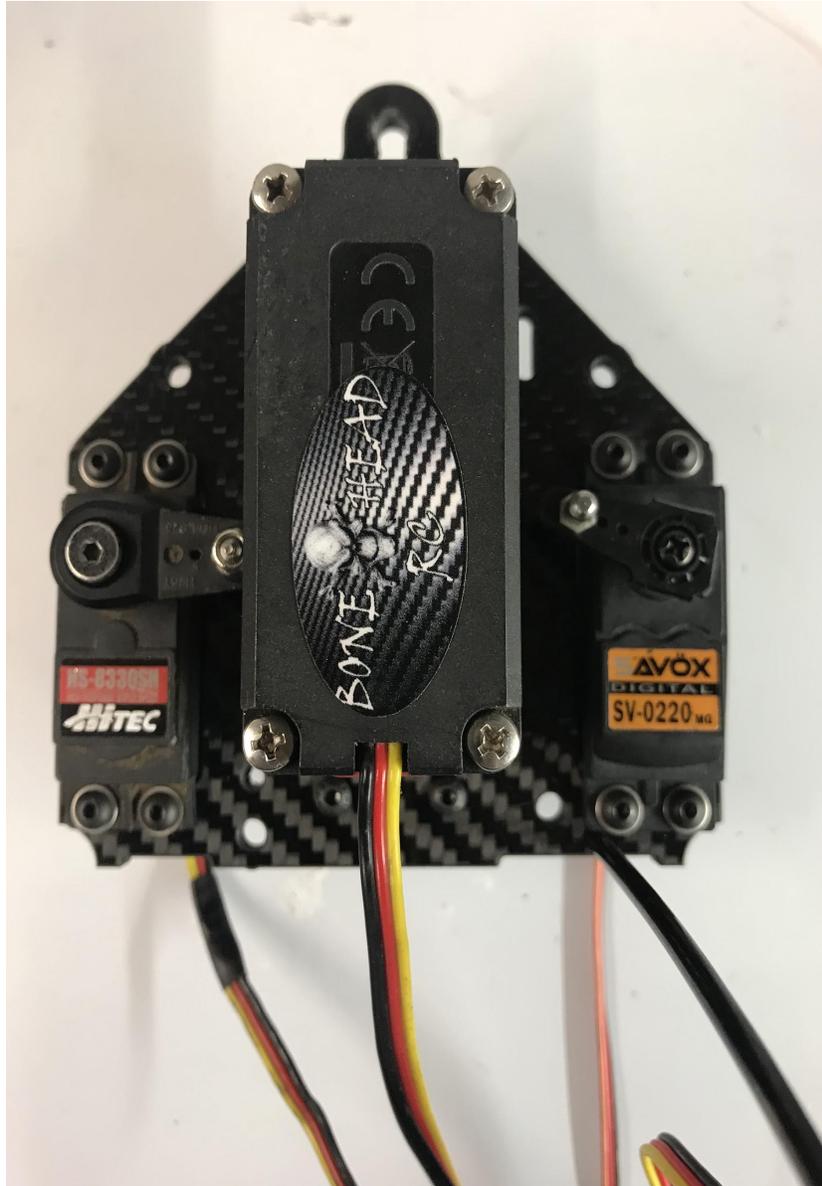


Fit the 4 alloy standoffs using M4 countersink bolts, a little blue is optional.





Fit your steering Servo brake and throttle servos to the Servo plate.



Remove the horn from the brake Servo and drill a hole 3.5mm with the drill bit provided, see what hole best suits the horn below is a hitech horn.



Test fit the push connector and make sure it's a nice smooth fit, then fit this to your horn followed by the O ring, washer and nylon nut.



Make sure the horn doesn't bind with the steering Servo you may need to dremel this to suit.

The connector needs to be fitted **upside down**.



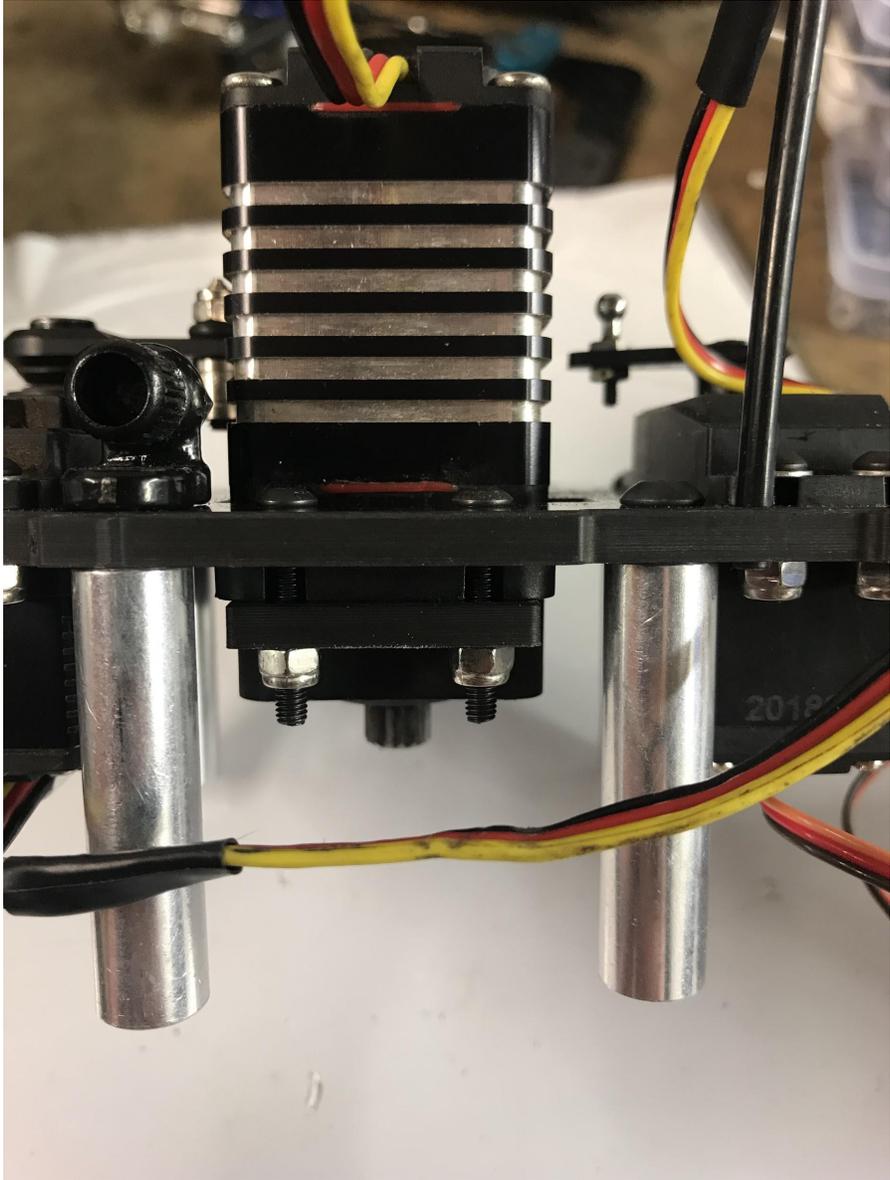
You have 4 Servo mounts in the kit I chose to use only 2, if you use 4 top and bottom of the Servo the 2 counterbored mounts go on top of the Servo.

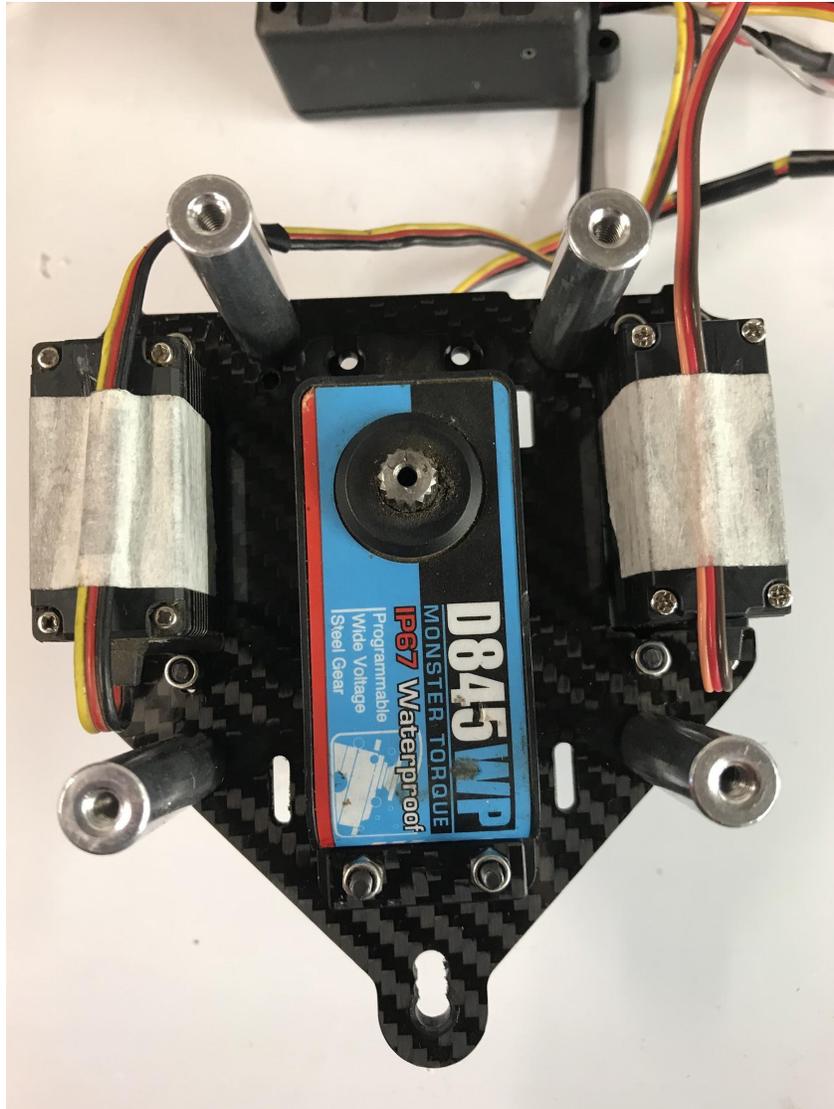


I don't use the rubber bushings for the servos, never have and never had any issues.

If you fit bushings you may need to get longer screws for the Servo.

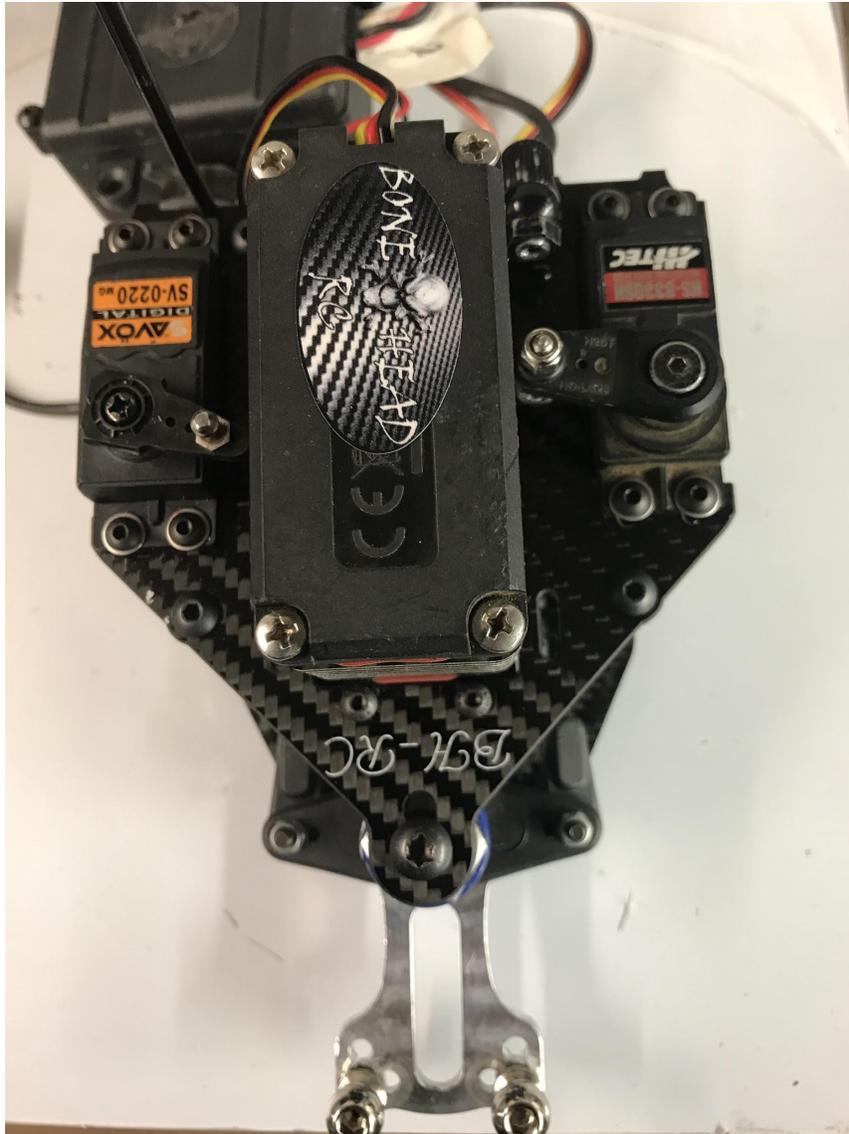






You will need to tape the Servo wires as pictured above, or use hot glue this will keep the wires away from the Servo horn.
Now fit the gyro tab, use the M4x16 countersunk bolt and torque this bolt to 3nm, and fit the Servo plate to the bottom plate using the M4 button heads.





At this point it would be best setting up your steering Servo end points, don't fit your Servo horn until the RX has been powered up to make sure it centres.

You may need to change the steering links at this point if the horn is a tight fit, once fitted make sure you can wiggle the links without binding they need to be nice and smooth.

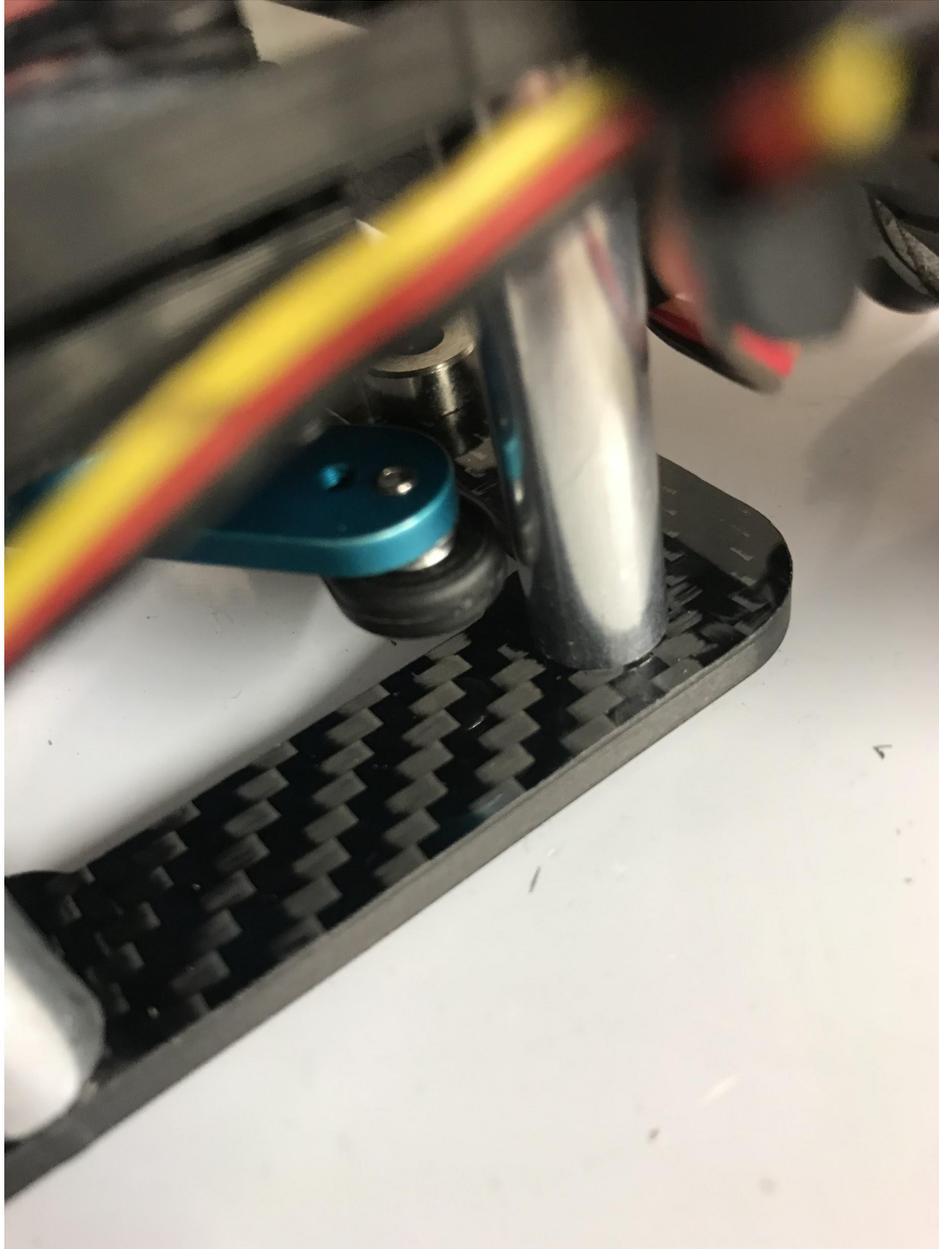
If these are tight Loosen the links until they rotate without binding.

Now fit the horn and set your end points around 30% and bring it up each way until the black plastic ball links miss the Servo saver.



They don't want to hit as this will cause stress and could give your Servo a limited life.

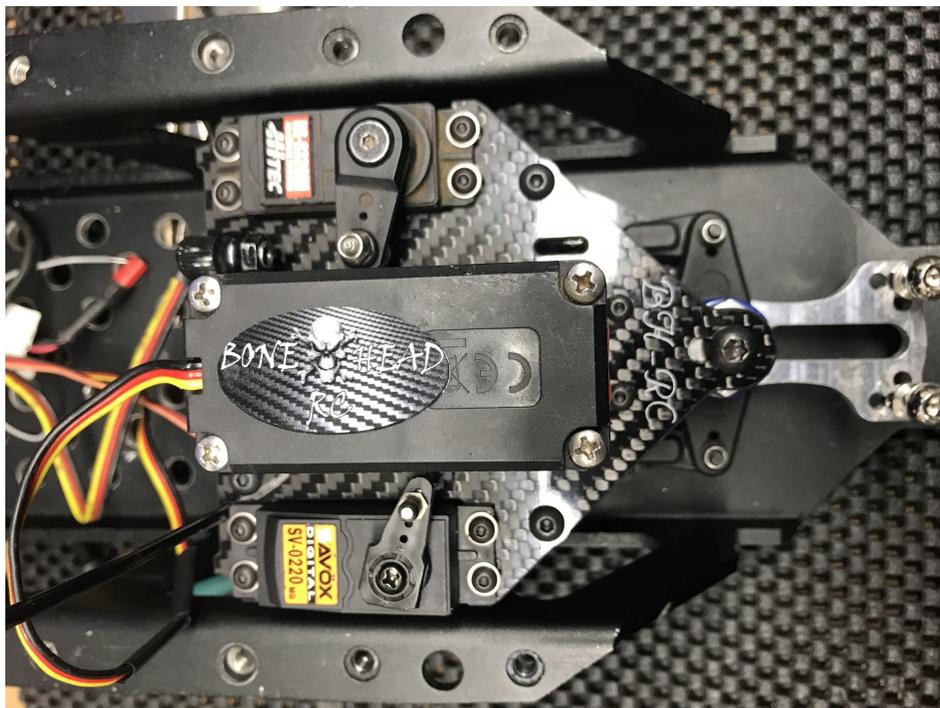
Also make sure the Servo horn and plastic links miss the standoffs, they should clear if you use the steering horn provided in the kit.



Once this is set you can continue to fit the **Bonesteer** to the chassis, remembering you have now set your endpoints pretty much to their max.

Now fit the **Bonesteer** to the chassis using the 4 M6 bolts, the chassis already has the holes so no drilling is required.
Fit all bolts loose and make sure the **Bonesteer** is centered on the chassis before torquing up the bolts.

Tighten these up to 5nm a little blue loctite may be used.

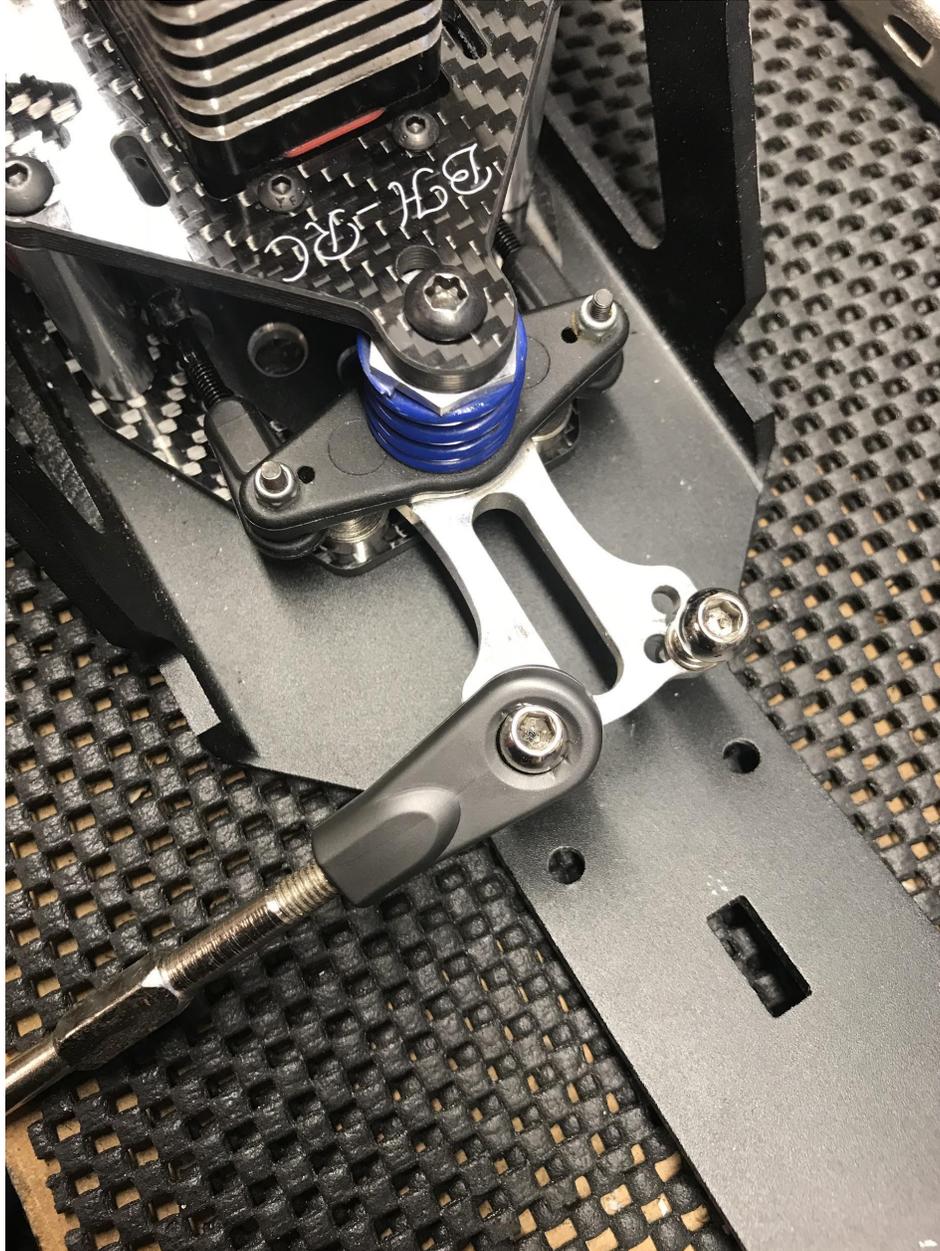


Now we are almost done set the turnbuckles to 71mm as pictured, minor tweaks may be required after running.



These turnbuckles are for the stock A Arms not extended, using your existing stock Baja joints

If you are using another brand these settings may not be the same.

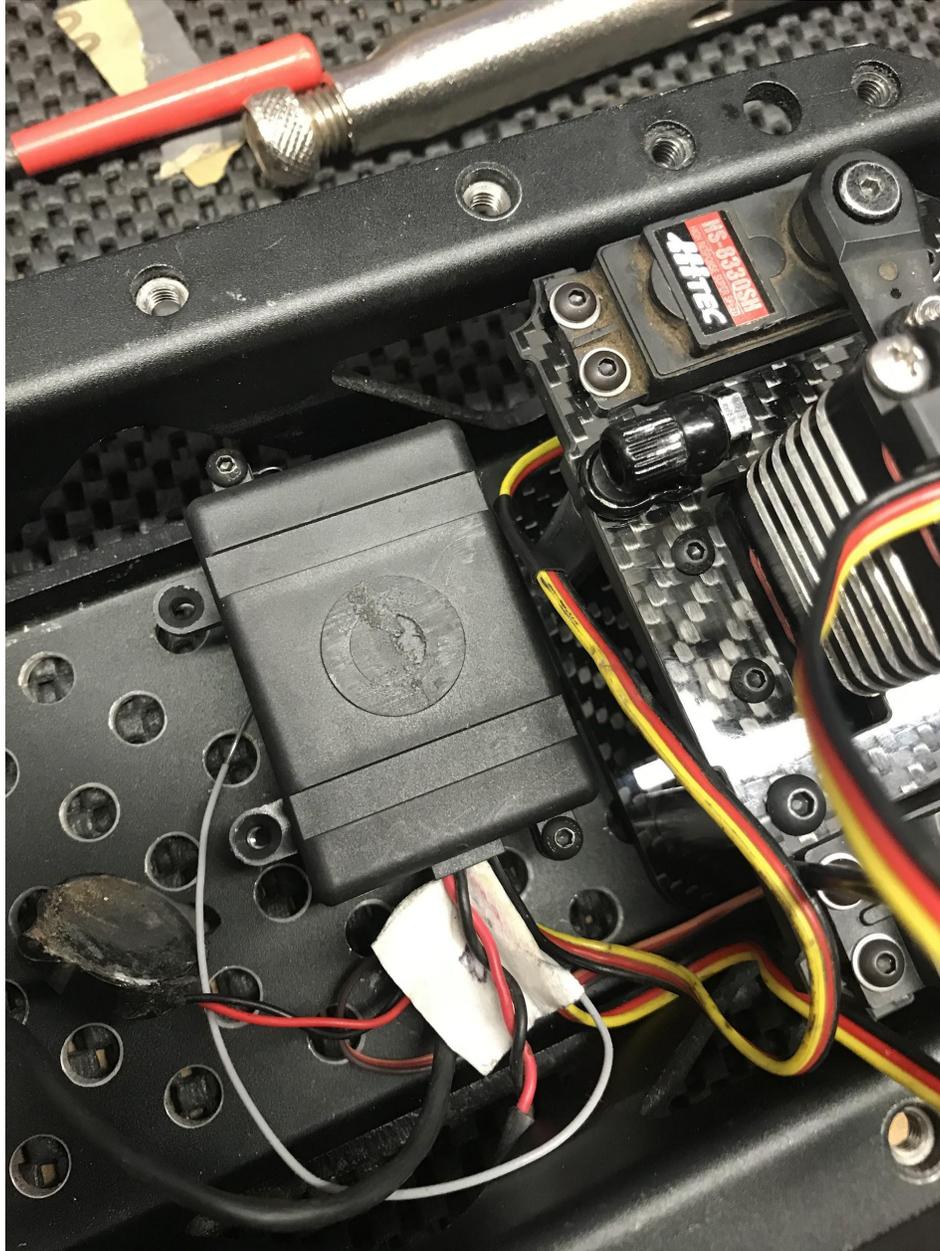


Now fit your turnbuckles

You can now fit the Y plate if you left this last, make sure the **Bonesteer** is centred and equal spacing either side of the Servo plate and Y plate.

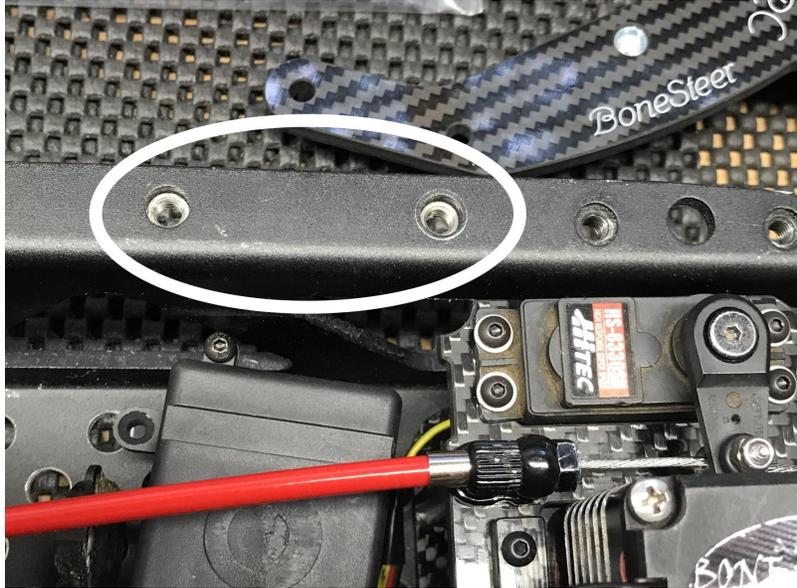


Now fit your RX, kill switch into the RX box.



The RX box doesn't need fixing down the battery tray holds this down, now use the hank nuts and fix these into the chassis 2 if 5b 4 if you don't run the stock roll cage.

This will allow 4 bolts to fasten down the battery tray.



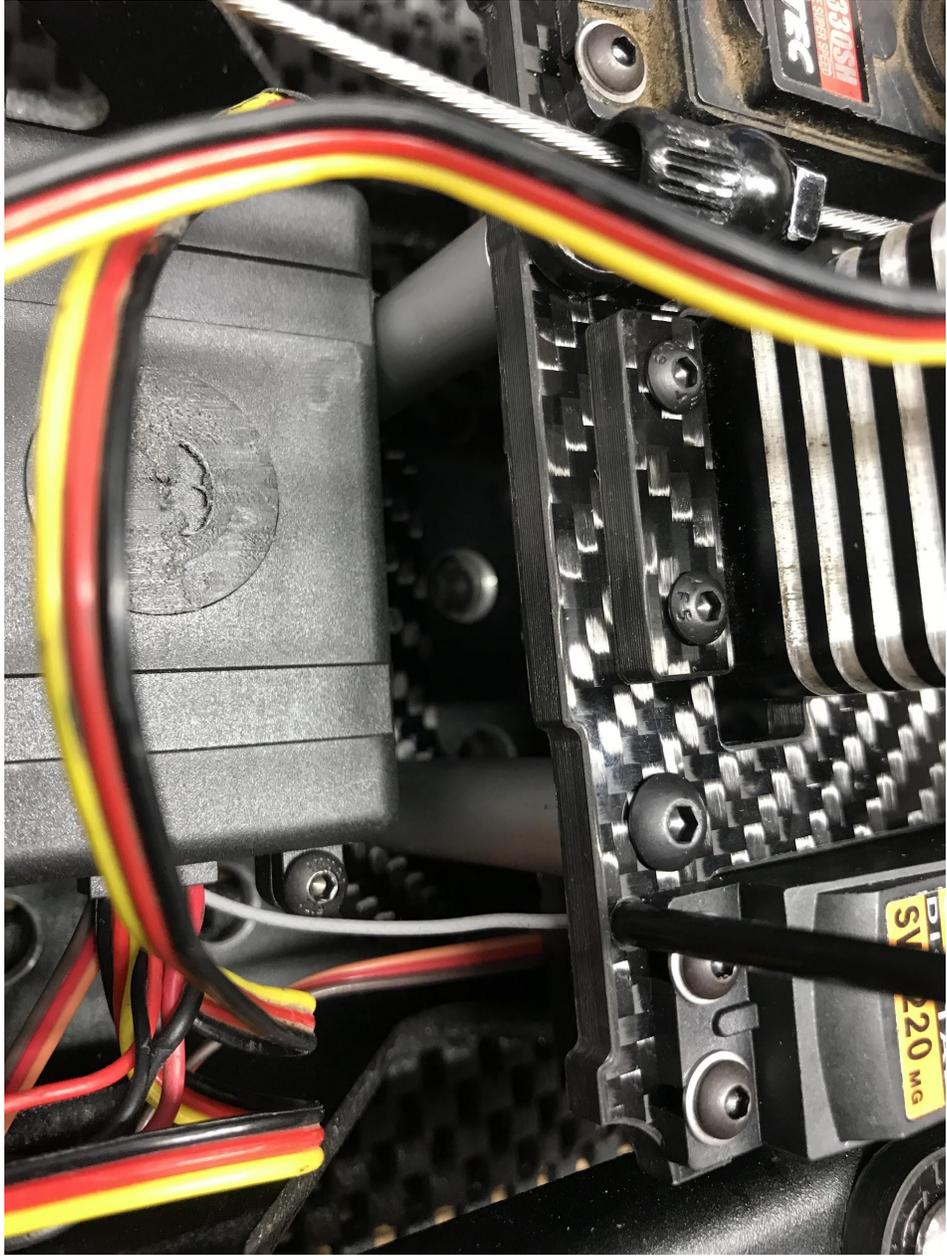
Use the M5 button heads to install the hank nuts outlined within the white oval, you only need to install 2 if you run the stock roll cage.

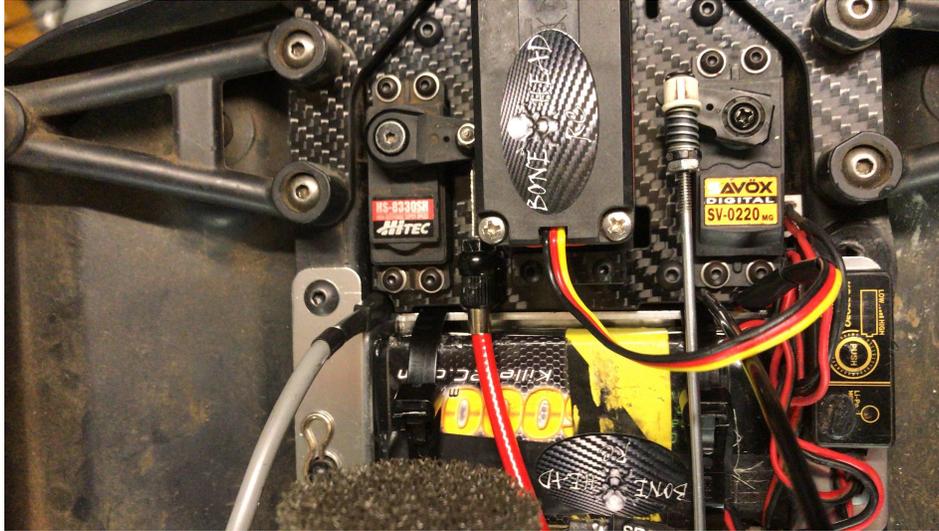
Put the battery tray inside the chassis, put the bolt through the battery tray and chassis then screw on the hank nut so the splines are facing the chassis.

Then Just screw till it's tight and the hank nut will be pressed into the chassis, once done release the bolt and tighten to 4nm.

There is 2 little holes in the servo plate for the RX tube see picture, depending what way round you have the RX box.

This is a tight fit to keep it from falling out, the 5mm hole centre of the plate is for an led, this was an update later on so no picture.





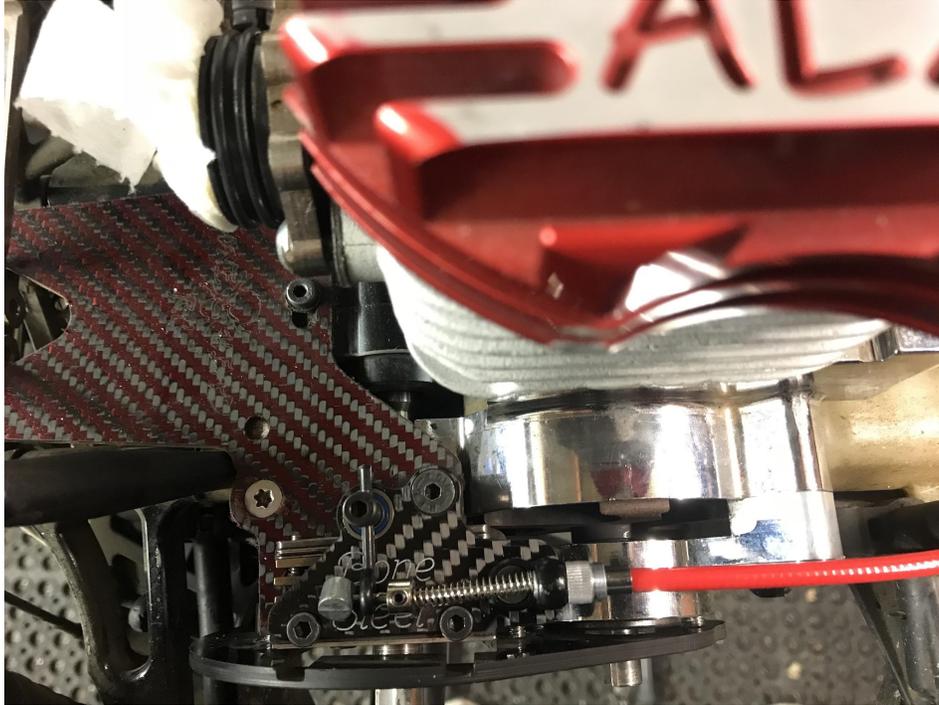
Now it's time to fit the brake mount



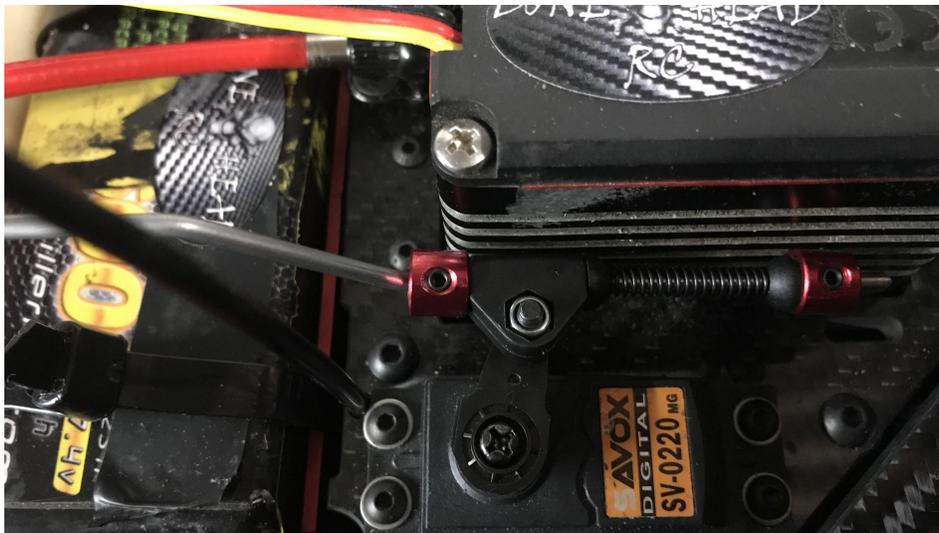
Use the gyro tabe and metal cap like the picture above, thread the cable through the brake can with the spring and collar don't nip the collar up at this point.

The above picture is optional I no longer use this method as it's not really needed.

Fit the brake mount and the black outta cable **(red in picture)**



See throttle arrangement below



The brake horn will need removing thread the cable through the push pull connector, make sure the horn is centred.

Mark on the cable to aid getting the distance set right, you want a little slop in the cable at the brake cam end.

Once this is set fit the end cap on the end of the cable to stop the cable fraying and tighten up the grub screw

Refit the horn and check your settings tweak the cable length as required and repeat till you have 2mm of slop in the brake cam.

Use the spare collar to help setting the brake Servo, put the Servo horn on 90deg and thread the brake wire through the collar on the Servo.

The above is no longer needed a double collar is now included.

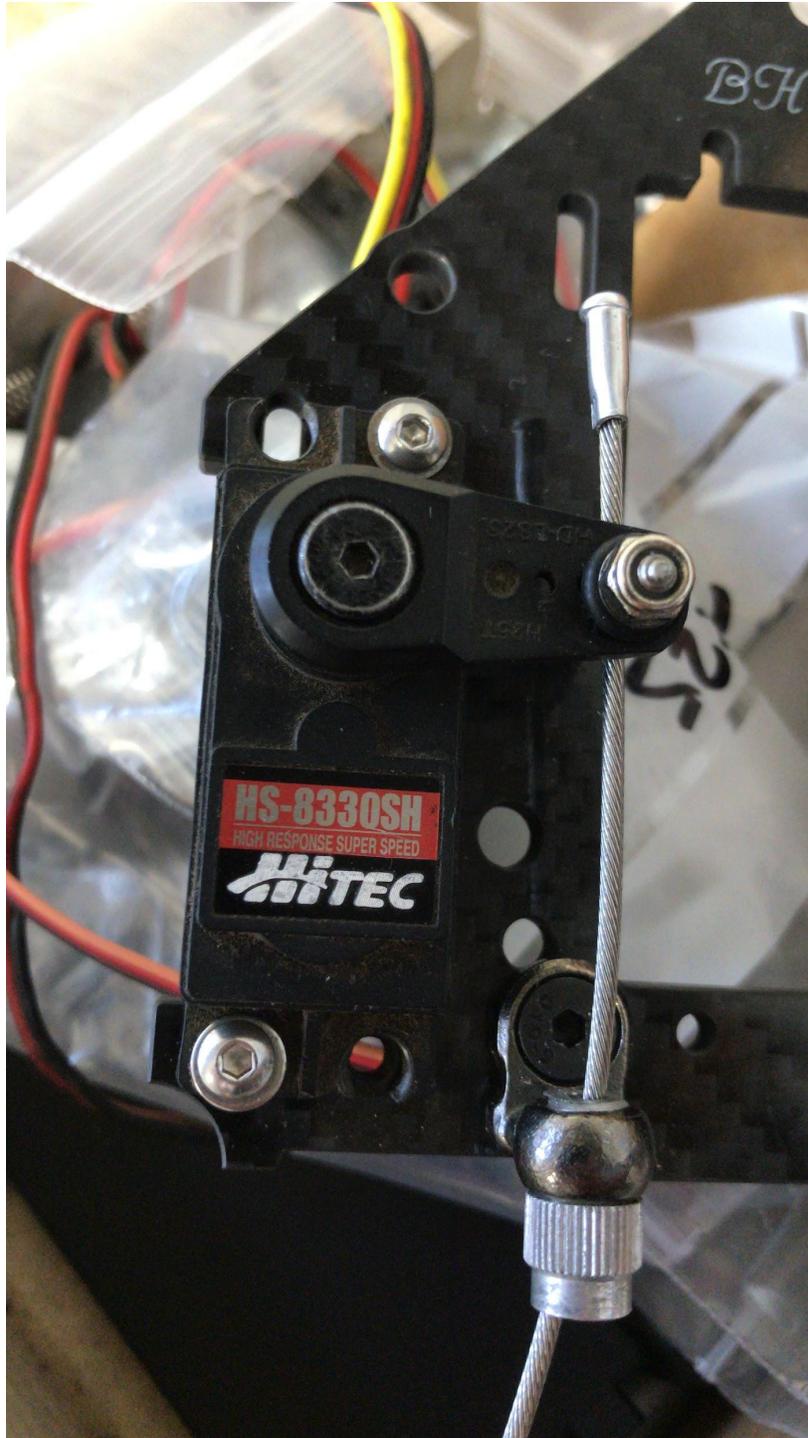
Use the other collar to set the proper tension, once happy remove the horn and nip the grub screw up on the horn refit and you should be good.

Leave the spare collar on to reinforce don't have you end points set high or you could rip the cable out (depending on what kg Servo you use)



To set the end points on the brake loosen the brake cam end collar and push the brake cam, then set your end points till the Servo maxes out the same tension you'll applying with your finger.

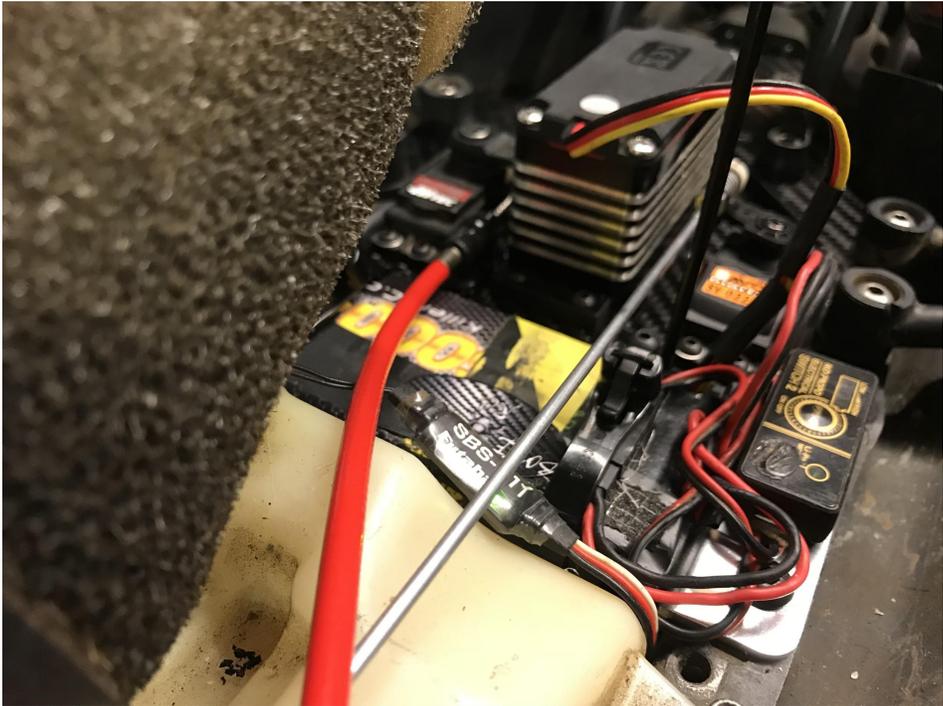
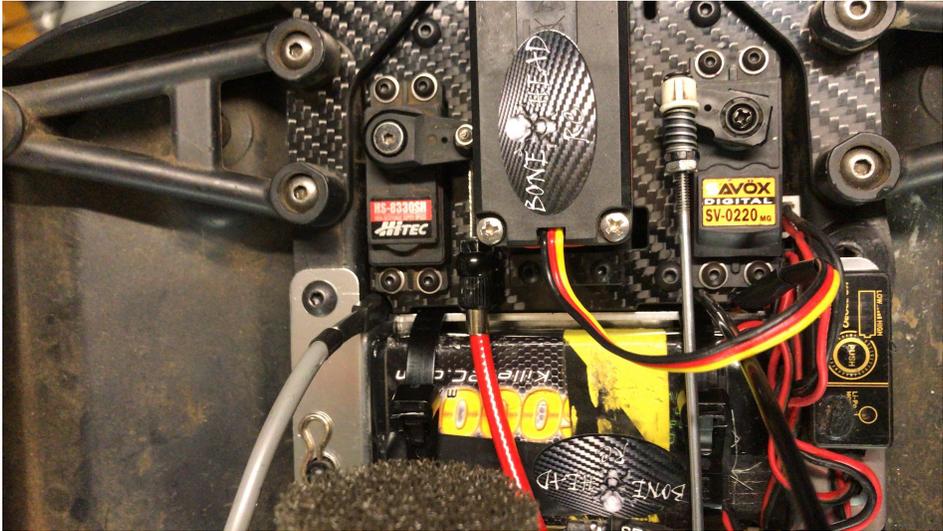
Once you've done this nip up the grub screw, reset your brake end points on the field till your happy with your braking power.



Now your endpoints should still be set low if not set them low before testing, bring in the epa until you're happy.

Final adjustments can be done on the field.

You can now move onto your throttle linkage, you can use the stock linkage if required.



Or email

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Please join my Facebook group if you haven't already, and leave a comment this would be greatly appreciated.