# Prodigy SC Mod

## *2020 Edition*

## *Instruction Manual*

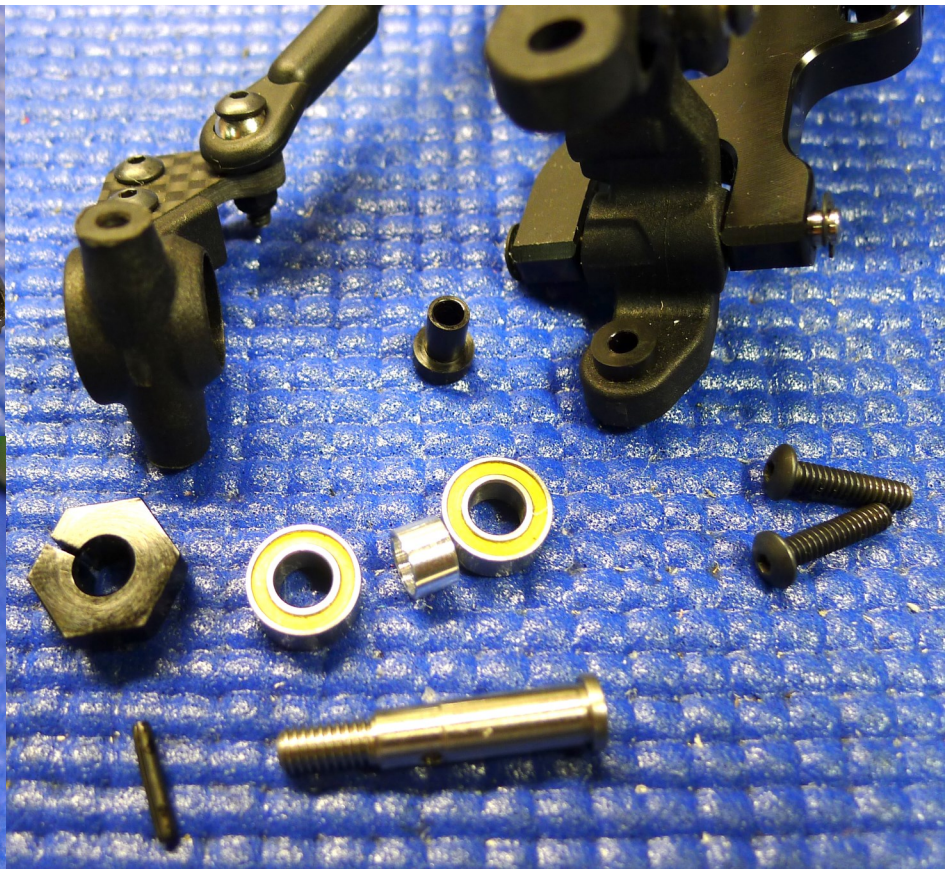
**Needed Tools**

- 1/16”, 3/32” & 5/64” 1.5mm 2mm Allen Drivers
- 3/16”, 1/4” & 11/32” Hex Drivers or sockets
- Hobby knife
- Emery board, needle files or fine sandpaper
- 1/8” Reamer, (drill will work)
- Shock or other non-marring pliers
- Synthetic grease
- Silicone shock oil (30 wt. recommended)
- 10K Weight diff fluid

**Bag A** (you will also need the main chassis plate and front shock towers in this step)

- Attach 30* nose plate to chassis using (2) 8-32x5/8” & 1 8-32x1/4” FHS. The longer screws go in the two holes toward the front of the car and will protrude through the nose plate.
- Attach front bulkhead to nose plate using (4) 8-32x7/16” FHS
- Attach the front shock tower to the nose plate using (4) 4-40x5/16” BHS
- Find (2) front suspension arms, (2) 1.52” inner hinge pins and (4) e-clips. Ream the inner and outer hinge pin holes in the suspension arms & the hinge pin holes in the front bulkhead with a .125” reamer. The parts should move freely after assembly.
- Using (2) 8-32x7/16” FHS, mount the front bumper mount to the nose plate
- Thread the (2) bellcrank standoffs onto the two 8-32x5/8” screws that protrude through the nose plate.

- Below left is a photo of the front steering block, with the carbon fiber extension attached and the #5 camber insert partially installed in the block. Note Steering block marked R goes on Left side and L goes on Right side, which places the carbon fiber extension on the bottom of the block as shown.
- The bearing and axle installation is described below but the photo on the right shows them in the order of assembly as well as the upper and lower king pin bushings and king pin screws. (Steering block is flipped upside down in photo)



**Bag B**

- Insert (2) 6x10mm flanged and (2) 5x8x2.5mm bearings into each steering bellcrank as shown
- Attach the ackerman plate to the steering bellcranks using (2) bellcrank insert nuts and (2) 4-40x5/16" FHS and countersunk washers
- Attach bellcrank assembly to standoff using (2) 4-40x5/16" FHS and countersunk washers
- Attach carbon fiber steering arms to steering blocks using (2) 4-40 BHS. *Note; steering blocks are marked R and L. They are reversed! R goes on Left side and L on R side.*

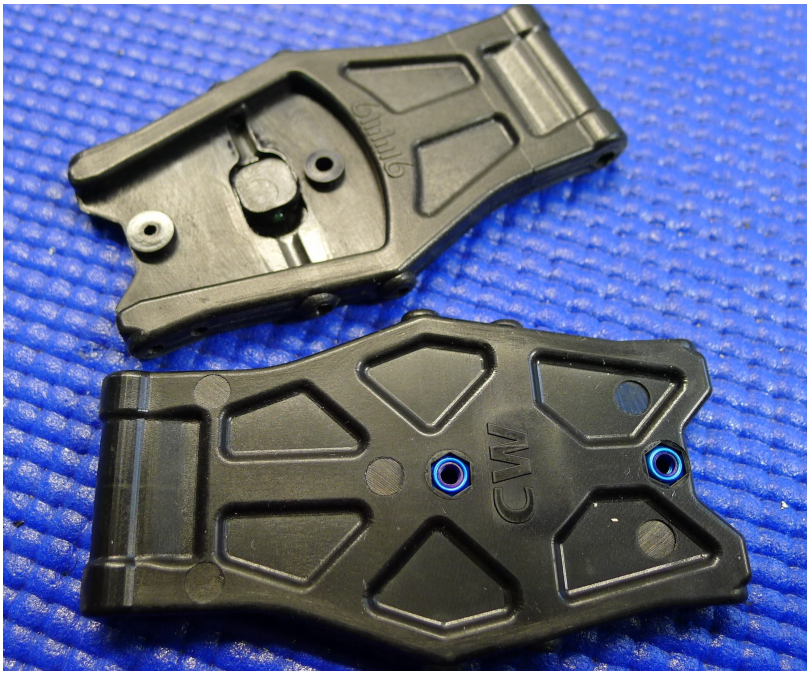
**Bag B Cont**.

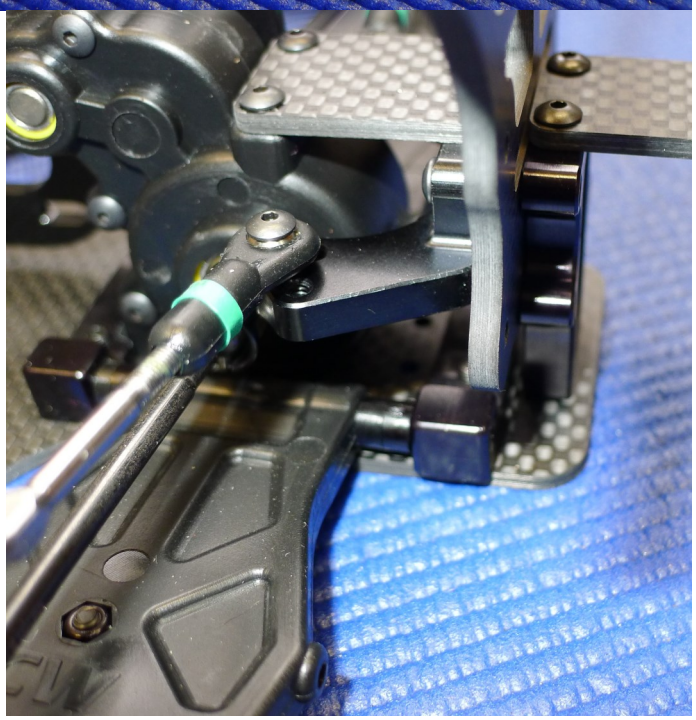
- Insert the inner 5x10x4mm bearings into steering blocks, slide the axles in place and press in the outer bearings with aluminum crush spacer between.
- Push the 1/16x3/8” roll pins in place, slide the hex adaptors in place and affix with the 1-72 screw.
- Press a #5 insert into the caster blocks and ream the pin holes as needed.
- Attach the castor blocks to the front arms using 1.285” hinge pins and e-clips.
- Make (2) camber links from 2.250” turnbuckles and rod ends. Starting length = 3.125”. A small amount of grease in the holes of the rod ends eases assembly. Note there is one Right hand thread and one Left hand thread on each turnbuckle. We recommend marking the right hand rod end upon assembly with heat shrink tubing, paint or other mark to speed adjustment at the track. Attach the camber links to caster blocks and shock towers as described above and shown in photos.
- Make (2) Tie rods from 1.75” turnbuckles and rod ends using the same technique as the camber rods. Starting length = 3”.

- Front suspension arm assembled. Note; shock will be mounted in center hole in arm. Bottom is retained with 4-40 x 1/2” BHS. Top with 4/40 x 5/16” BHS into the .375” shock stand-off. Top of shock gets mounted in upper outer hole.
- The camber link outer rod end is mounted to the inner hole in the castor block on both sides. By passing a 4-40x5/8” BHS through the block, adding a cone washer and securing the rod end with a black 4-40 locknut On the right side the inner rod end is in the middle row second hole from the top. On the left side it goes in the top hole in the middle row.
- *Note: Tie rods mount to underside of steering blocks and ackerman plate.*

**Bag C**

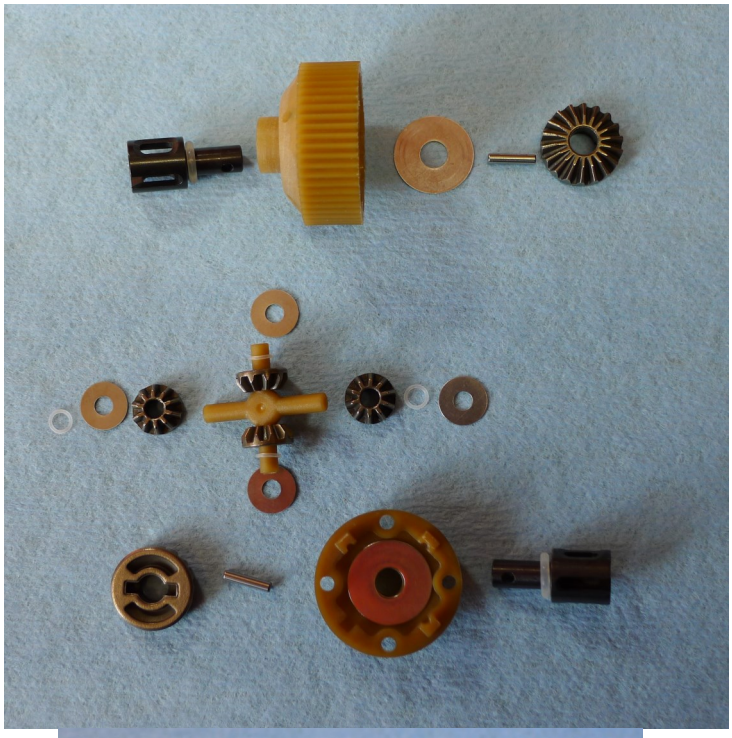
- Assemble adjustable rear arms by applying a small amount of grease to hole in slide nut and outside of part to ease assembly
- Using (1) 4-40x5/16" BHS and washer, (1) 4-40x5/16" FHS together with (2) 4-40 lock nuts; assemble the two halves of the rear arms as shown
- Thread the adjusting screw through the assembly until it just makes contacts with the inner arm and begins to move the outer arm. (Do not over-tighten)
- Hold the head of the adjusting screw and thread a 4-40 lock nut onto the opposite side until it just makes contact with the arm. Back off 1/4 to 1/2 turn to allow for free adjustment of the arm. Arms are secured in place by tightening the through bolts, NOT the adjusting screw and locknut. (Note, you must build a Right and Left hand arm as shown in diagram and photos.
- Place 4 hinge pin pivot bushings into hinge pin mounts marked C & D.
- Fasten mount D to rear of chassis with (2) 4-40x5/16" FHS. Insert an inner hinge pin into each rear arm, add black plastic spacers to each side of both arms.
- Insert the arm assembly into hinge pin mount D making sure to orient the arm correctly, (Screw heads to bottom, adjusting screws toward the rear)
- Add hinge pin mount C to the front of the assembly and secure to chassis with 4-40x 5/16" screws
- Find (2) rear hub carriers, (2) 10x15x4mm & (2) 6x13x5mm bearings. Install one of each size bearing into corresponding openings hub carriers
- Using (2) 1.128" hinge pins and (4) E-clips attach the hub carriers to the rear suspension arms as shown. (Large bearing faces inside of car) Pins go into 2nd hole from the top in hub carriers
- Build (2) rear camber links using (4) rod ends and (2) turnbuckles. Starting lengths; (R = 3 5/16" L= 3 1/2") Set aside for later use
- Mount rear the rear camber mount block and rear shock tower to the rear bulkhead with BHS, then use (2) 4-40x1/4" flat head screws to attach the bulkhead assembly to the chassis

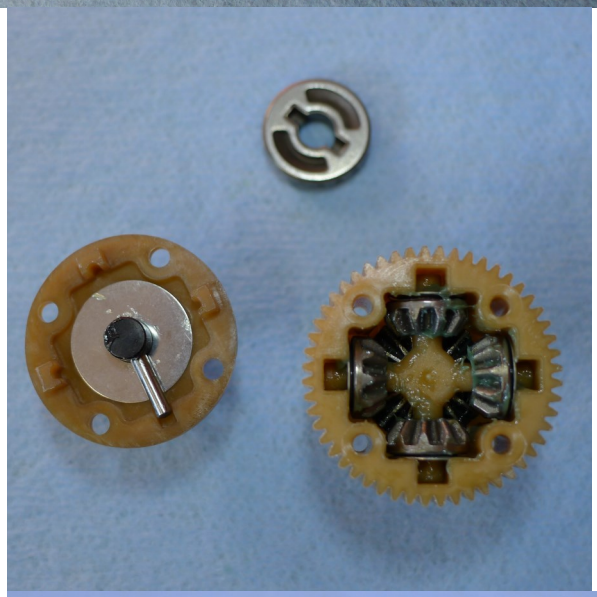


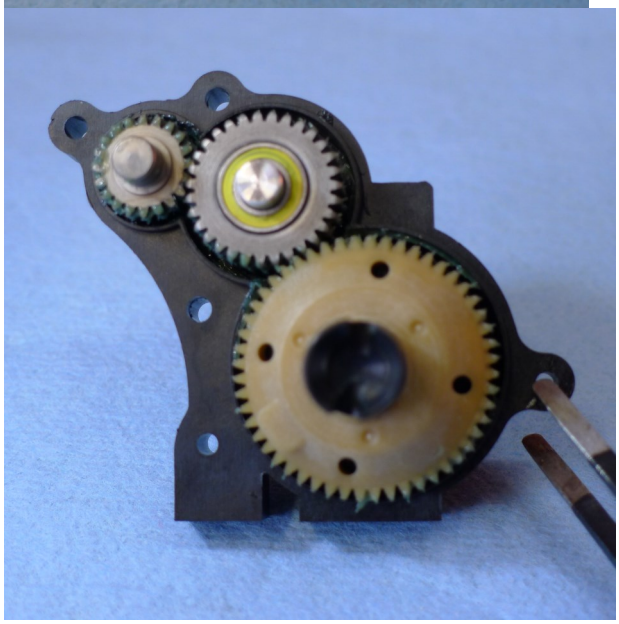



**Gearbox and Gear Diff**

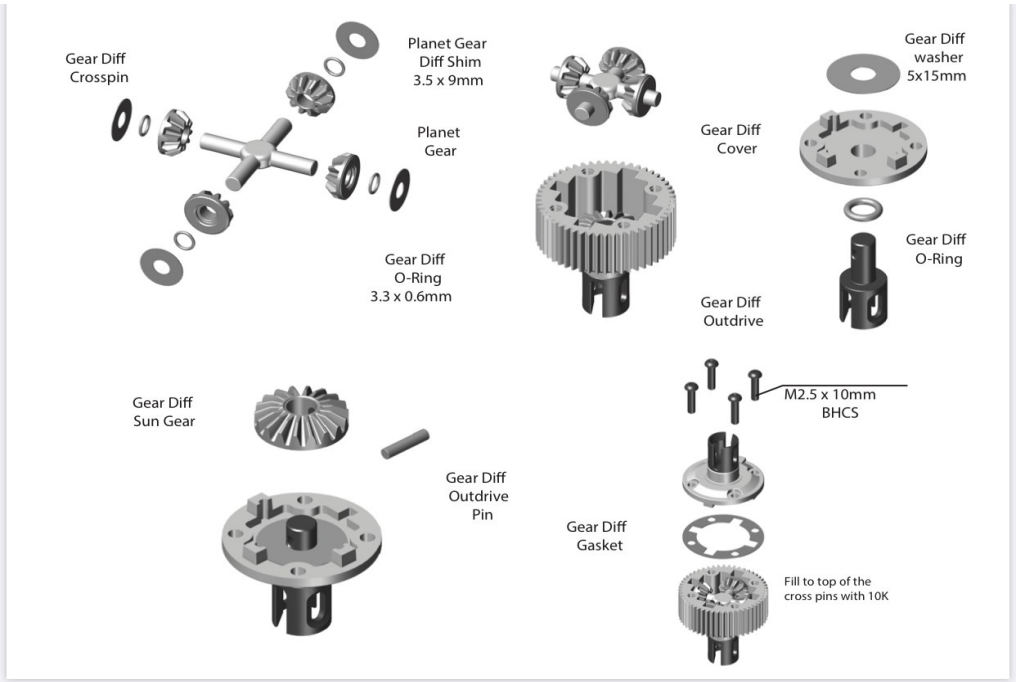
- Lightly lubricate both gear diff O-rings. Slide (1) Gear Diff O-ring onto an outdrive and then thru the diff gear.
- Place a 5x15mm washer over outdrive and slide an outdrive pin through the hole place a sun gear over the outdrive shaft, engaging the pin.
- Slide a planet gear followed by a lightly lubricated 3.3x0.6mm O-ring and 3.5x9mm planet gear shim over each of the 4 shafts on the diff crosspin. Place the completed crosspin assembly into the diff gear.
- Fill the diff gear assembly with 10K diff fluid until the cross-pin is covered with fluid.
- Put the second diff O ring on the remaining outdrive and push the shaft through the diff cover. Add the 5x15mm washer and retain it with a pin. Ue a bit of synthetic grease to retain the sun gear on the shaft. (NOTE: there is a notch in the diff cover that allows the pin to be inserted into the outdrive)
- Lightly coat the diff gasket with oil or diff fluid and place it onto the inside surface of the diff cover, noting the proper orientation as you do. Secure the cover with (4) 2.5x10mm BHS. (Do not over-tighten)
- Insert 2 5x10x4mm bearings into the 39t idler gear and slide the aluminum idler gear shaft into the bearings. Find a second pair of 2.5x10mm bearings and the thin metal spacers. Put one bearing and one spacer on each side of the input shaft.
- Install (1) 10x15x4mm bearing into each gearbox half. Install the input shaft assembly into the gearbox with the shaft protruding from the right side of the gearbox. Add the idler gear assembly to the center hole in the gearbox and finally place the gear diff into the gearbox as shown.
- Use a 4-40x1/2” BHS in the lower hole to join the two gearbox halves together. Add a 3/8” long screw to the lower back hole to the gear case. Finally use (3) 4-40x 7/8” BHS and 3 black plastic spacers to mount the motor plate to the gearbox as shown.
- Two (2) 4-40x5/16” FHS will secure the gearbox to the corresponding holes in the chassis, positioning it between the rear suspension arms.
- Use (2) 4-40 BHS to attach the upper gearbox support, connecting the gearbox to the rear camber mount. Additionally 4-40 BHS are used to attach the body mount strut to the top of the rear bulkhead.





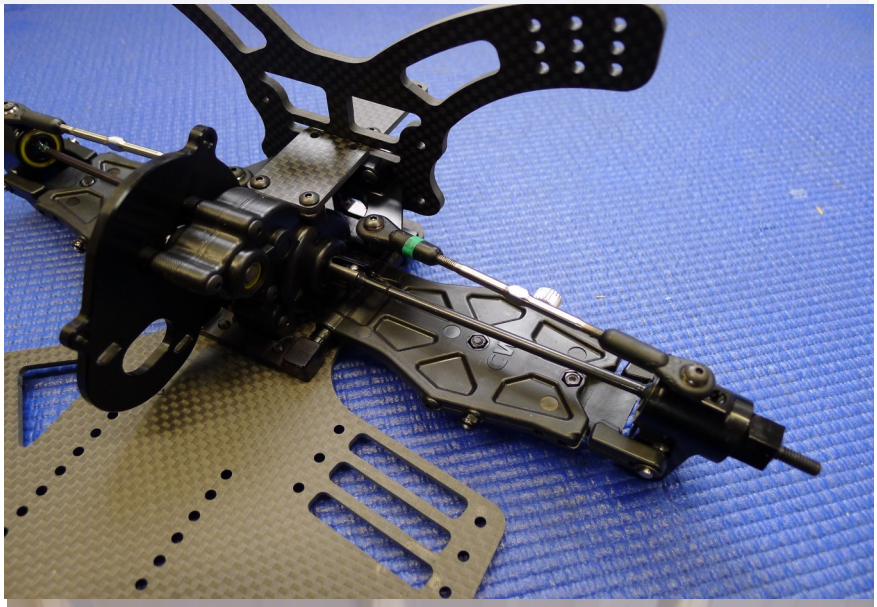


**Gear Diff Parts Diagram**



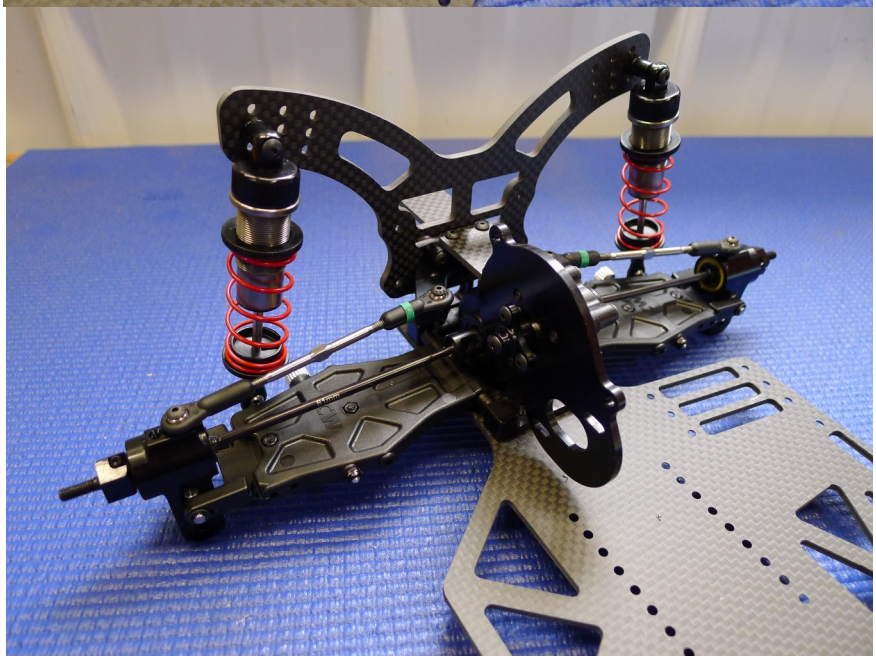

**CVD & Rear Suspension**

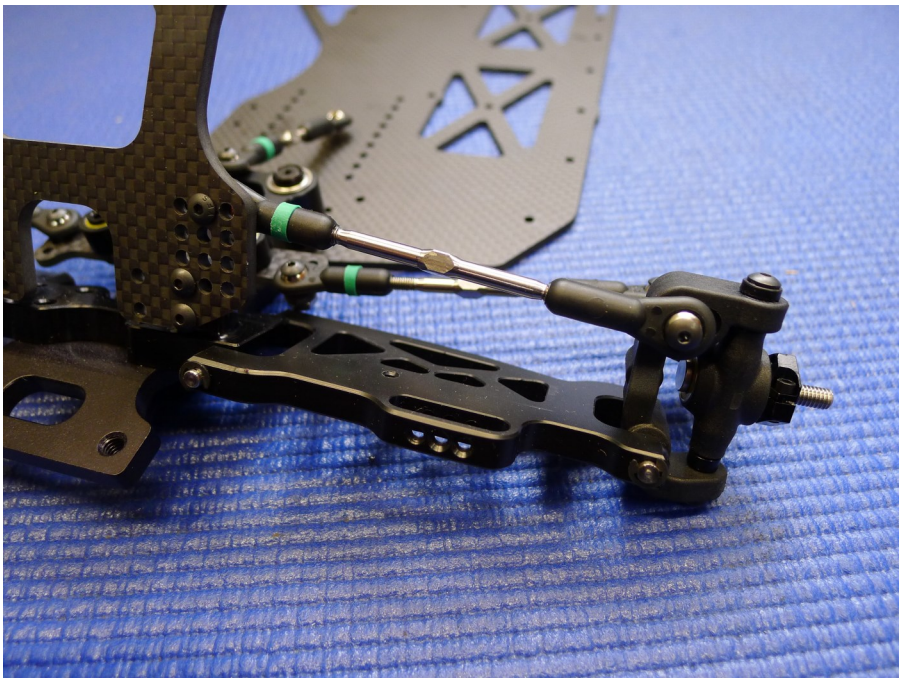
- Build CVD's according to the CVD manual.
- Insert CVD's into the rear hub carrier's, insert the drive pins through the axles then press firmly in on the axles while sliding the hex adaptors in place. Secure the adaptors with the supplied 1-72 SHCS. Maintaining tension on the axles and hex adaptors provides some pre-load on the bearings which will ensure smooth operation.
- Using 4-40x 3/8" BHS attach rear camber links to the front holes in the rear camber block. The outer end of the rods mount to the inner holes in the top of the hub carriers with 4-40 screws.



**<u>Bag F</u>**

- Build all (4) Shock Absorbers using the assembly guide for Big Bore shocks.
- Mount the top of front shocks in the upper outer holes using .375" shock standoff's and 4-40x 5/16" BHS and 4-40 x 1/2" BHS. Bottom of shocks mount in the center hole on the arms.
- Mount the top of the rear shocks in the outer middle holes using .375" standoffs and 4-40 BHS as you did the front shocks. The bottoms mount in the inner hole of the rear arms using 4-40 x 1/2" BHS and a 1/8" black cone washer between the arm and the rod end.





**Bag G**

- Attach rear body mount to the transmission brace with 4-40 x 3/8” BHS and lock nuts
- Attach front body mount to chassis with 4-40 x 3/8” FHS and lock nuts
- Fix both battery mounts to chassis using 4-40 x 1/2” FHS, .100” spacers and lock nuts.
- The battery standoffs get fastened with 4 -40 x 3/8” FHS, use 4-40 BHS to attach the hold down to the standoffs.
- Mount body posts and your body to the car, install you electronics and your ready for the track.