

# ASSEMBLY MANUAL



Rev.7 Part #1730

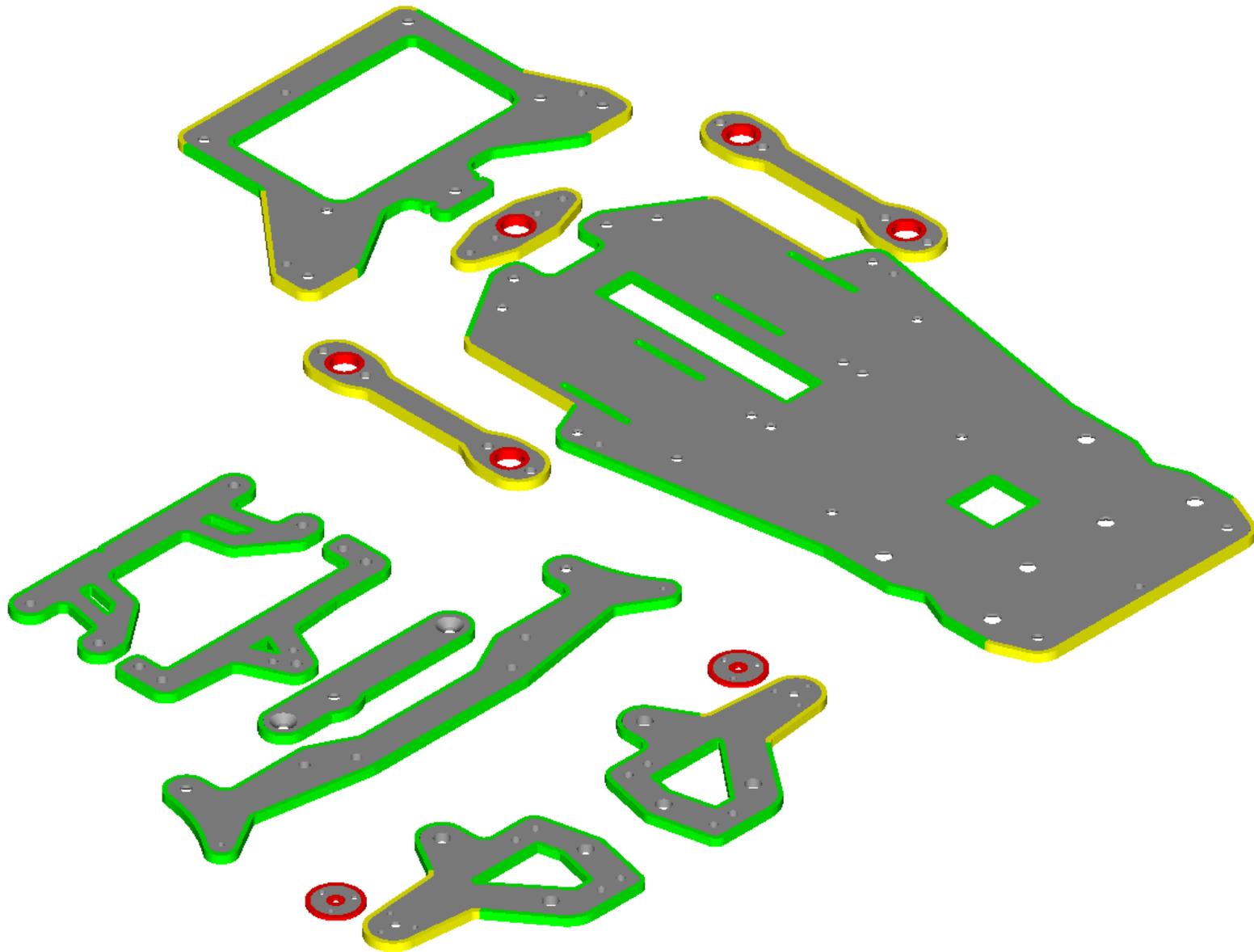
***SPEEDMERCHANT***

**25 TIME NATIONAL CHAMPION**

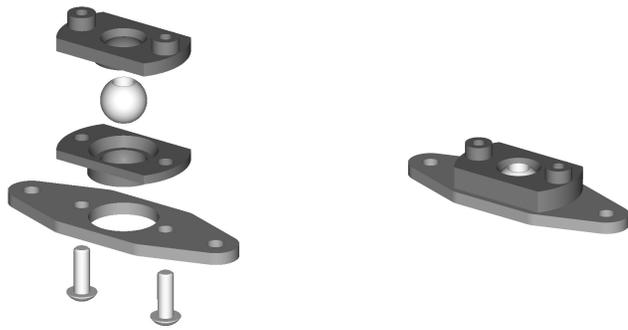
FULL KIT LESS, BODY, TIRES & ELECTRONICS

MADE IN THE USA

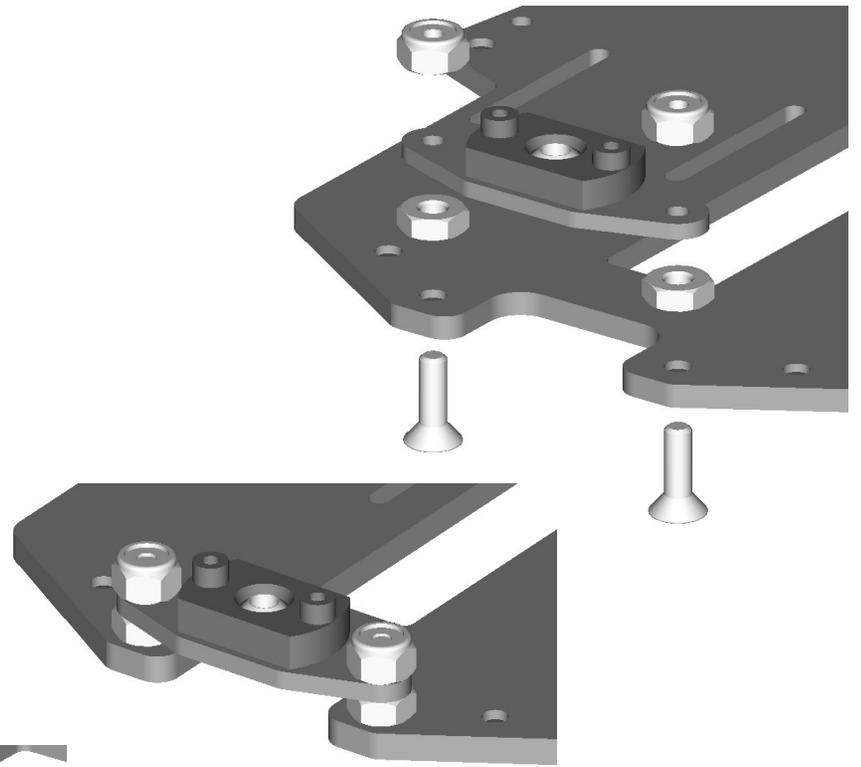
**AVID XENON**



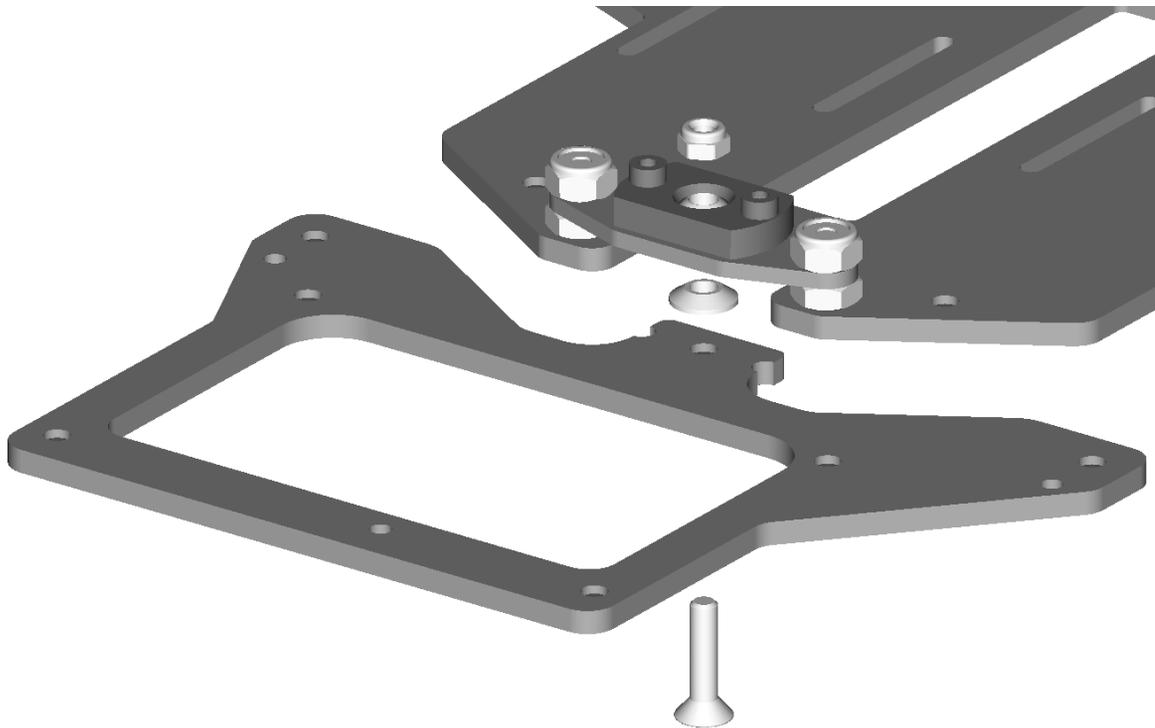
Some people like to sand/seal the chassis and other carbon fiber components with superglue for performance and feel. Do not sand or seal the areas shown highlighted in red. The chassis and rear pod plate areas highlighted in yellow are key areas for measuring the chassis. Care should be taken not to have glue extend below the chassis, as this could affect ride height measurement. Other components highlighted in yellow should not be rounded, only sealed, as this could effect strength.



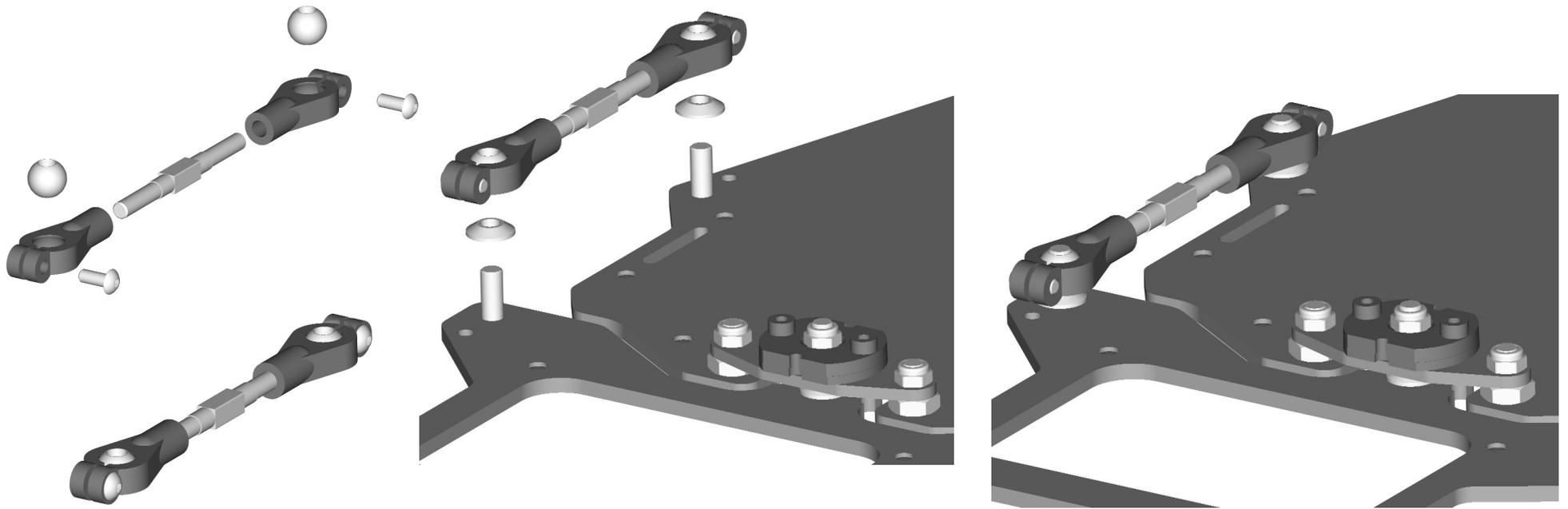
Assemble the center pivot as shown. Do not over-tighten the 2-56 button head screws. Find a 4-40 screw from the kit, and partially screw it into the ball. Use this screw to judge how much to tighten the 2-56 screws. The ball should not have play in the socket, and it should not be overly tight. There are access holes in the chassis to adjust the 2-56 screws as they seat.



Attach the center pivot to the main chassis, leave the lower nuts loose until the pivot is installed onto the screws. Use needle nose pliers to hold the lower nuts in place while tightening the screws. Then install locking nuts.



Thread the screw into the lower pod plate, low roll center cone, into the pivot ball first. This screw needs to be tight, be careful not to break your wrench or strip the hex in the screw. After the pod plate is attached, then install the locking nut.



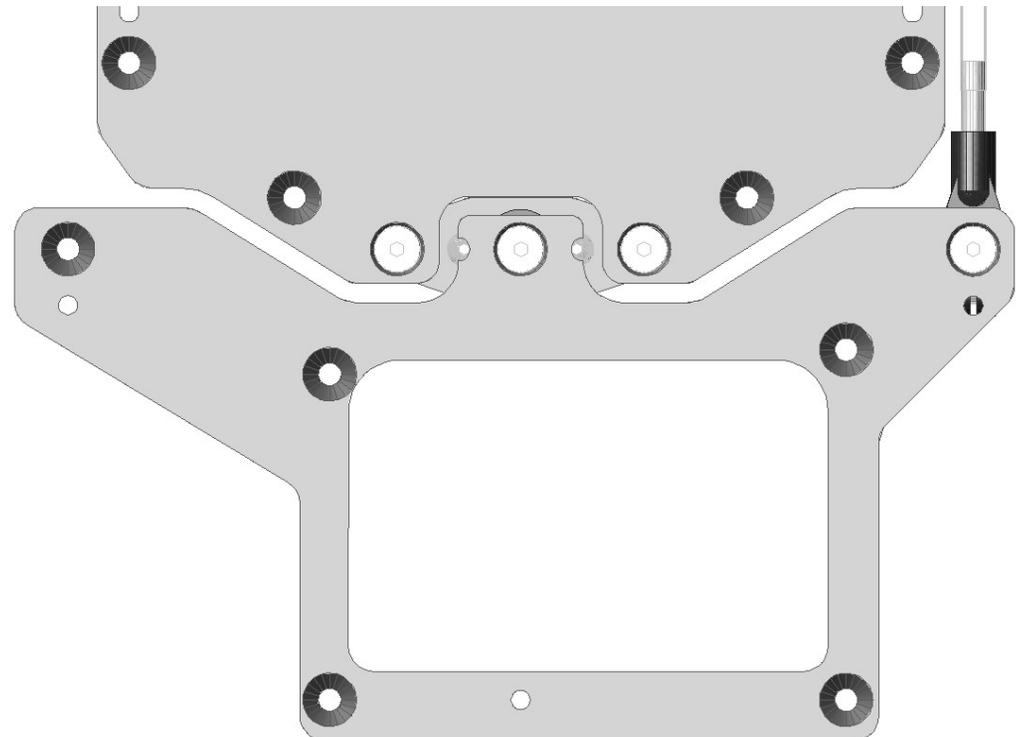
### Standard side links

Assemble side links as shown, balls should be installed before the rod end screws. The small screws should drop into one side of the rod end, then thread into the back side. The rod end screws should be positioned to the outside of the chassis to make adjustments easy. When attaching the side links to the chassis, to tighten the links (shorten) the turnbuckle wrench should be turned toward the center of the chassis. This will make fine tuning easier to remember.

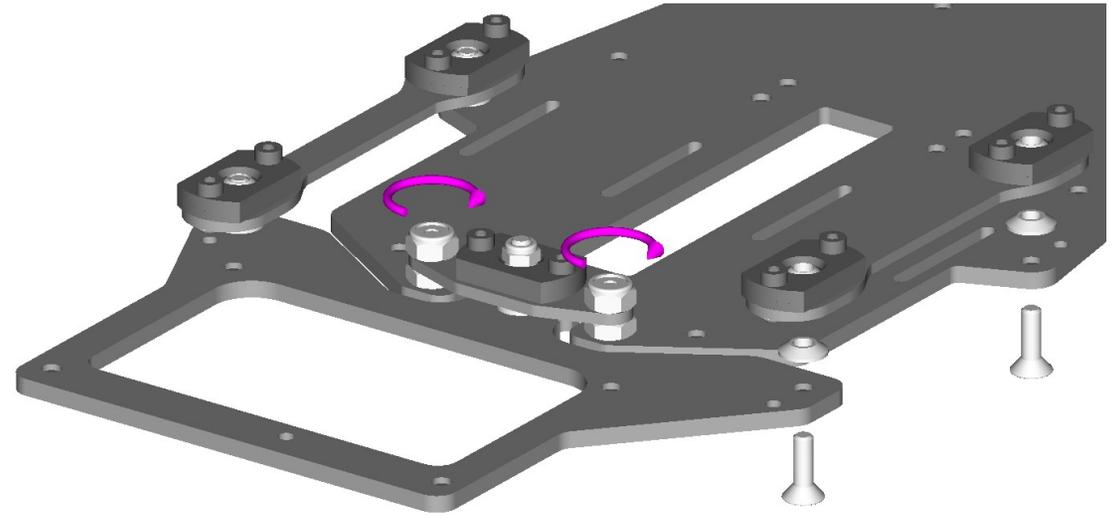
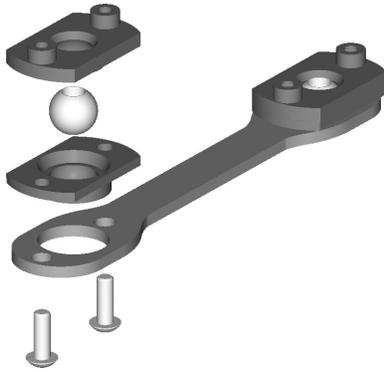
Tightening the link balls to the chassis will require substantial amount of torque. Be careful not to break your wrench.

After installing only one link, check to see that the gap is even all the way across the chassis/pod split. The plates in your kit match, as they were cut from the same sheet, nested as they are shown here.

Rough measurement link length is 2.125" hole to hole.



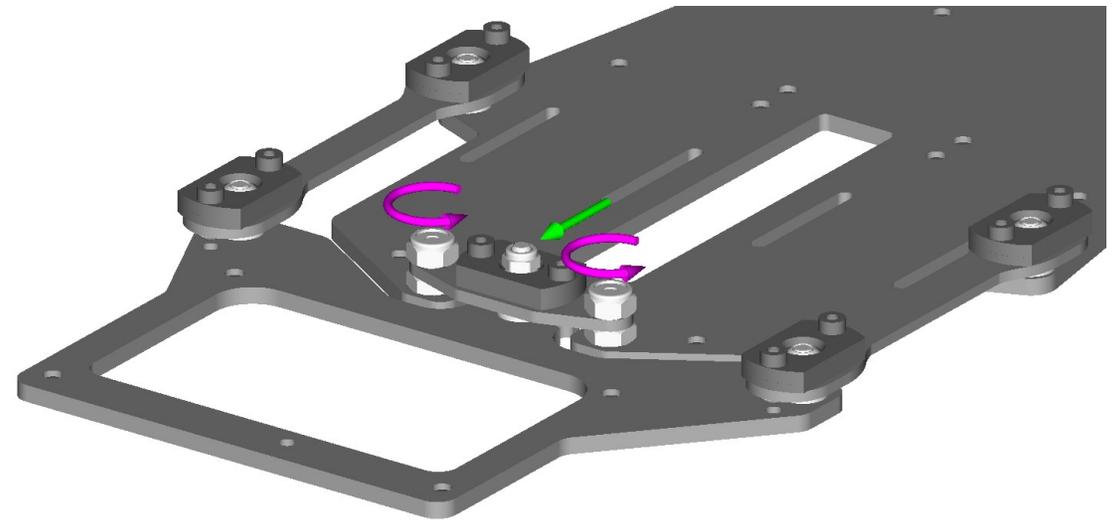
## Optional carbon side links: #1785



Assemble side links as shown above. Do not over-tighten the 2-56 button head screws. Find a 4-40 screw from the kit, and partially screw it into the ball. Use this screw to judge how much to tighten the 2-56 screws. The ball should not have play in the socket, and it should not be overly tight. There are access holes in the chassis to adjust the 2-56 screws as they seat.

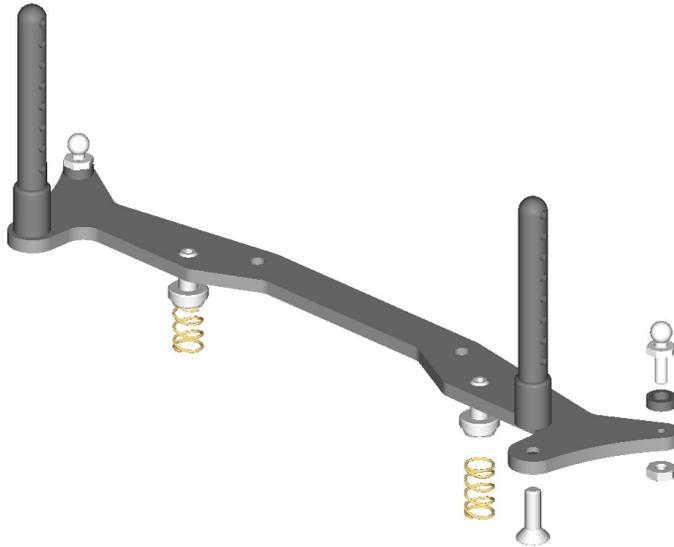
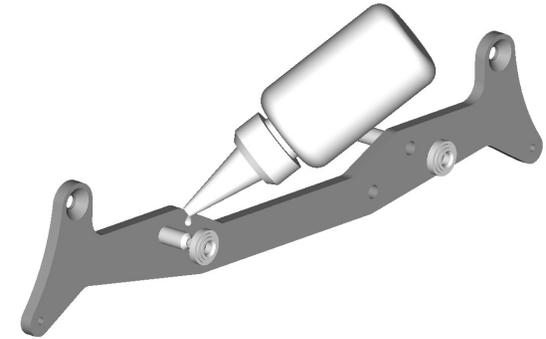
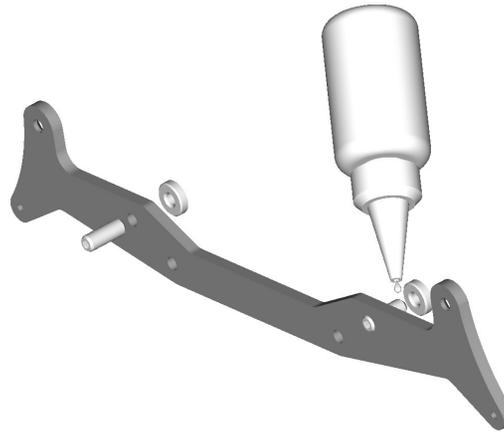
Attach the links to the chassis as shown (top right). Order should be 4-40 x 3/8 flat head screw through the chassis, low roll cone, screwed into the ball in the link. Tightening the link balls to the chassis will require substantial amount of torque. Be careful not to break your wrench or strip the hex in the screw.

After installing the links, loosen the nylon lock nuts (top illustration, purple arrows) attaching the pivot to the chassis  $\frac{1}{4}$  to half a turn. Place the chassis assembly on a flat surface. While holding the chassis down, use your thumb to put pressure on the center of the pivot in the direction of the green arrow, tighten the pivot nylon lock nuts (purple arrows). Your links are now adjusted.

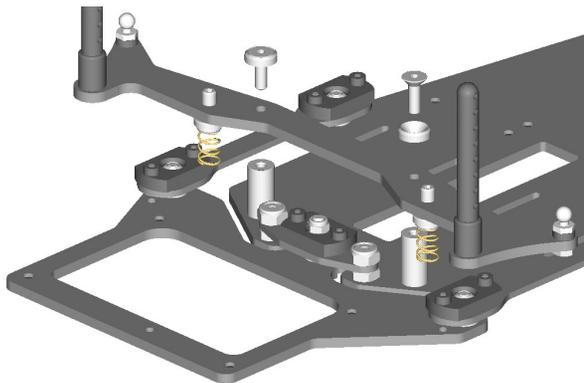
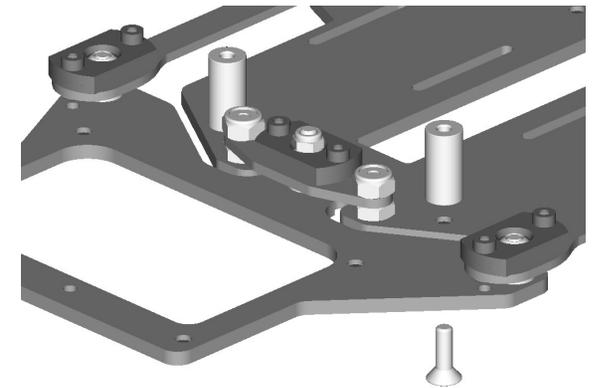


Screw the 6-32 set-screws through the tweak plate so that the wrench side is flush with the top of the tweak plate (the bottom of the tweak plate has counter sunk holes for the body mounts)

Apply a small amount of superglue to the end of the set-screw and screw the spring carrier onto the screw. Be careful that the smooth side of the carrier goes toward the tweak plate. Make sure that the superglue doesn't wick up the threads of the set-screw.

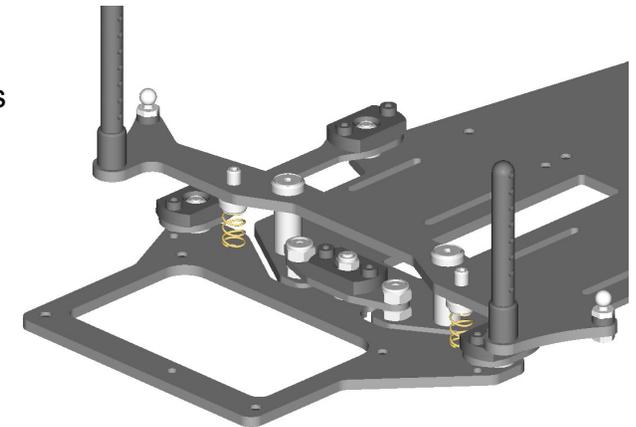


When the superglue has cured, assemble the tweak plate as shown: Attach the linear rate springs to the carriers. Install the 2-56 ball stud with spacers as shown. Attach the body mounts to tweak plate as shown. Attach stand-offs to the main chassis plate as shown (right).

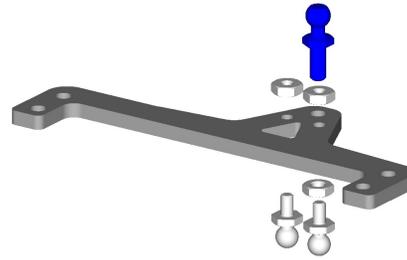
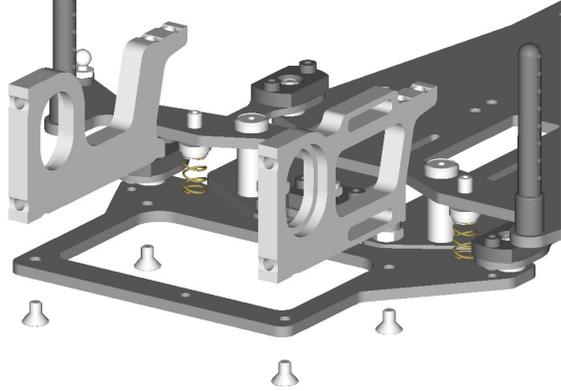


Attach the tweak plate to the stand-offs using 4-40 x 3/8" flat head screws with counter-sunk washers.

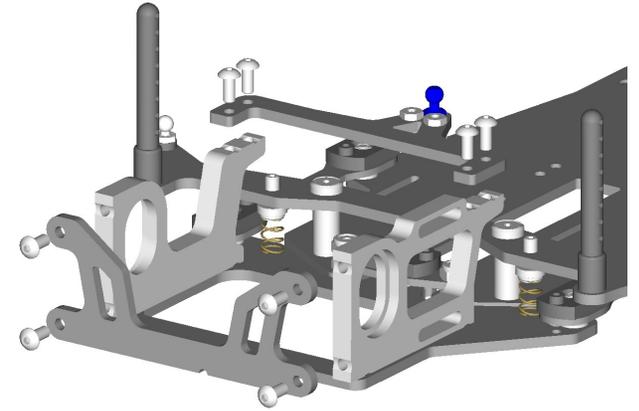
Back tweak springs out until the lower pod plate sits level with the chassis sitting flat on bench.



The aluminum bulkheads attach to the lower plate, then the rear plate to the bulkheads, all using flat head screws.



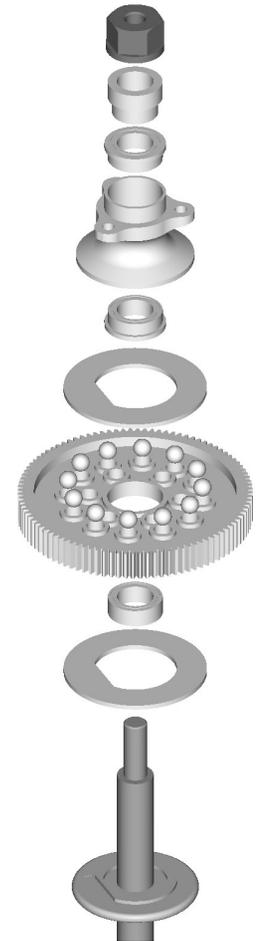
Pre-assemble the top plate with the 2-56 ball studs, then the 4-40 ball stud and spacer. Note orientation in the above drawing. Next attach the top plate with button head screws.



The quest to build the perfect differential has eluded many for quite some time. However, we have the secret right here.

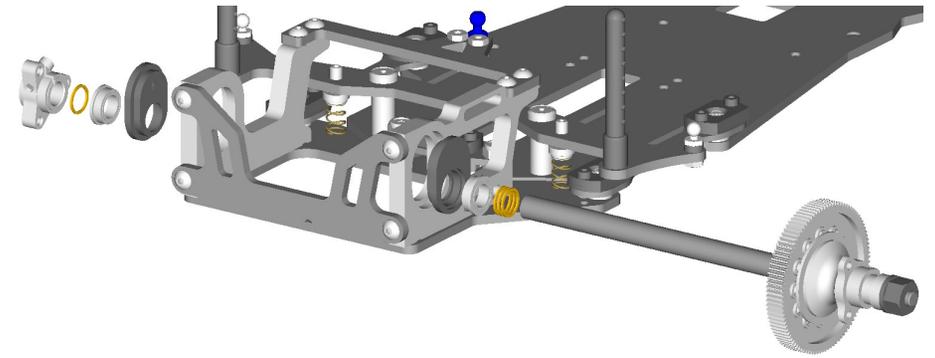
1. install un-flanged bearing.
2. place 3 – 4 dots of diff lube on the mounting flange to hold the diff ring (big washer) in place.
3. install spur gear of choice (there is one included in kit), then put a drop of diff grease in each perimeter hole. We recommend Stealth diff lube Associated No.6591.
4. put diff gear onto axle, locating un-flanged bearing installed earlier into the center of the spur gear
5. install diff balls into holes previously greased
6. place 3 – 4 drops of diff lube on diff ring mounting flange of right side hub, install second diff ring.
7. insert 2 flanged bearings into each side of the right side hub, slide onto axle
8. NOTE orientation of the thrust cone, install this next
9. using a nut driver, install the new diff nut. This is a new nut, and there are no threads. Carefully thread the diff nut onto the axle, being sure to keep the nut in-line with the axle.

Screw the diff nut down until it just starts to compress the diff. From this point on the diff will need breaking in. Hold the left hub in one hand and the spur gear in the other. Twist back and forth several times, stop to give 1/8<sup>th</sup> of a turn to the diff nut. Do this for about 1/2 to 3/4 of tightening the diff nut. Save checking for tightness with the wheels installed. The diff should be firm but smooth. The gear should slip a little when holding the left tire with left hand, right tire with right hand, and spinning the spur with your thumb.



Install bearing carriers into pod plates with flanged bearings. For 12<sup>th</sup> scale, the bearings go toward the bottom. Be sure that you are using the same height axle spacers on each side.

Install the axle with assembled differential to the chassis in this order, put three shims on the axle, slide into the rear pod as shown, install one more shim on the opposite side, then the left side hub. There should be a very small amount of play between the bearing and left hub. Otherwise a pre-loading condition will occur, wearing the bearings out prematurely.

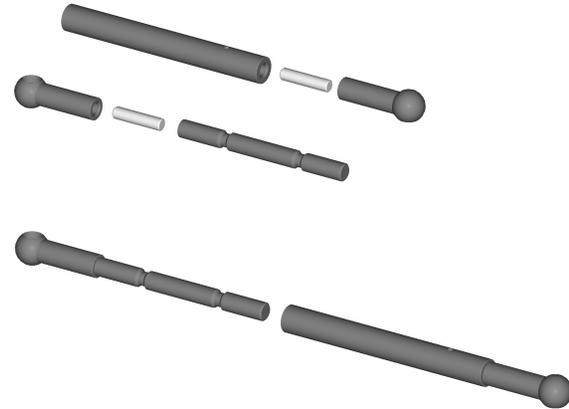


Assemble damper tubes as shown. Only screw the set-screw in half-way.

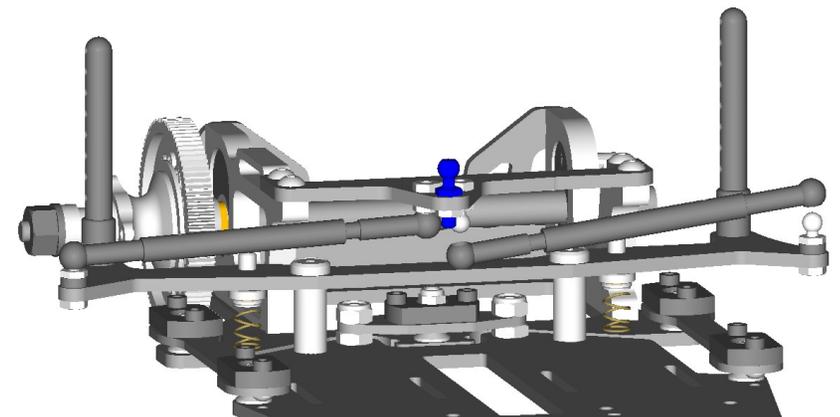
To properly fill the damper tube, squeeze a fair amount of Tube Spooge into the damper tube, set aside. Apply a light coating to the damper shaft, filling in the grooves.

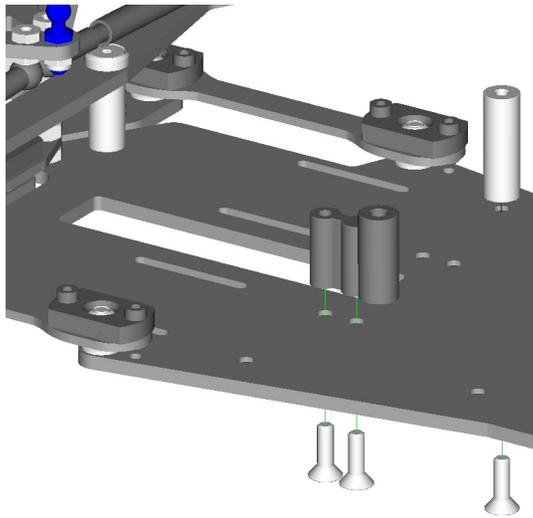
Over a rag, 'screw' the damper shaft into the tube, allowing the spooge inside the tube to fully come in contact with the shaft. Some people will block the bleeder hole at the base of the tube with their thumb to help drive the Tube Spooge out the top, ensuring full coverage and consistent damping from build to build.

These dampers will need to be cleaned and rebuilt from time to time. Spraying them out with electric motor cleaner, and removing all debris from the bleeder holes will prep them for more Tube Spooge. We recommend starting with green (light) and tune from there.



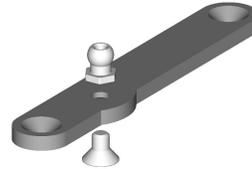
Attach the tubes as shown, with the vents to the outboard side of the chassis, and the telescoping side toward the middle. This will help keep debris out of the tube longer.



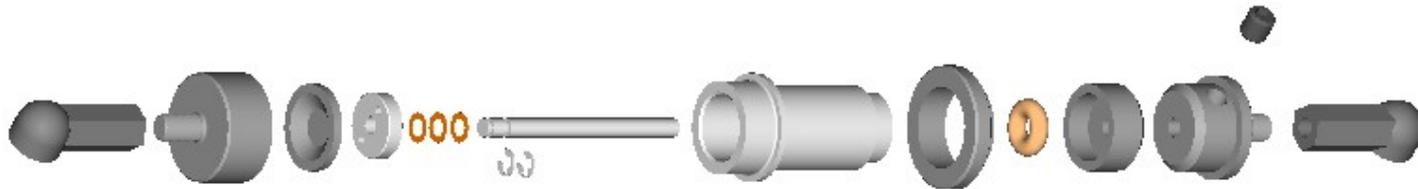
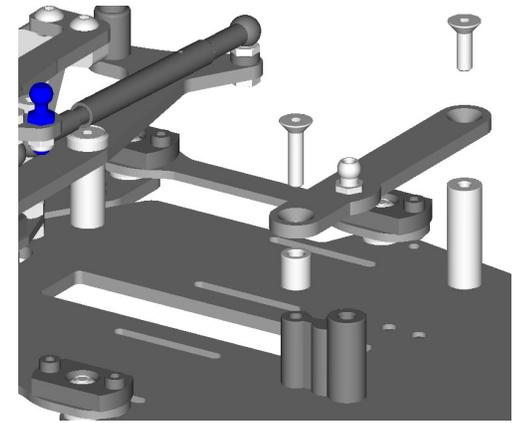


Using the flat head screws, attach the shock/antenna mount, and the stand-off as shown.

Build battery hold-down as shown with the female ball stud, and flat head screw.



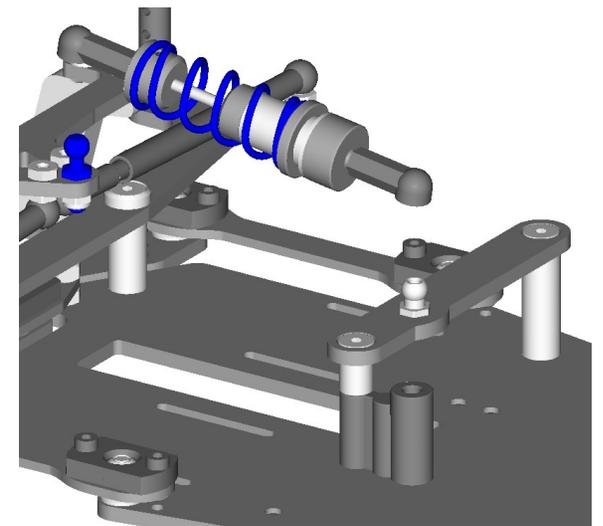
There is a provided long flat head screw and short stand-off (un-threaded), that secures the battery hold-down on the left side of the chassis to the plastic shock/antenna mount. A standard screw is used on the right side.



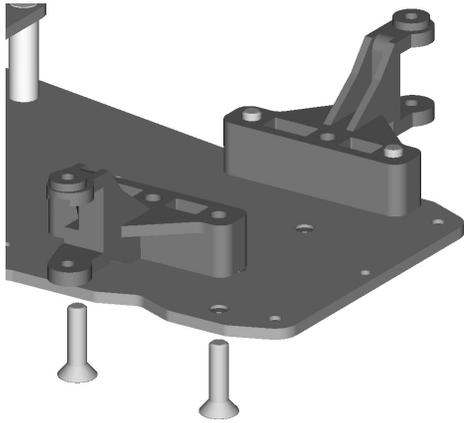
To assemble the main shock (damper):

- start by installing the threaded ride height adjuster knurled side first
- put some oil on the o-ring, and install in the bottom of the main shock body
- attach the bottom of the main housing, capturing the o-ring
- install e-clip to shock shaft in the lower position
- add the included three tiny shims
- install the piston, followed by the remaining e-clip
- put a few more drops of oil inside the main body so that it drips out the hole
- install shock piston assembly
- install main spring (not shown), and lower end of shock, securing with set-screw
- fill shock with oil (25 – 35 wt recommended to start), set aside to bleed air bubbles
- thread ball-cup onto the shock cap while waiting for air to settle
- bleed air from shock by slowly cycling piston, allowing the air to come to the surface
- if bleeding air is complete, slide on rubber bladder, and install cap
- thread on ball-cup onto remaining shock end

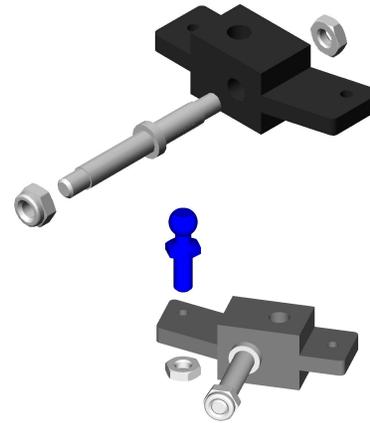
Installing the shock on the chassis in the direction shown will help keep debris off the shock shaft longer, helping to keep damping consistent, and providing better longevity between rebuilds.



(new) machined Old Skool front suspension: #1790



Install old-skool arms as shown. Note direction of arms (bump forward)!

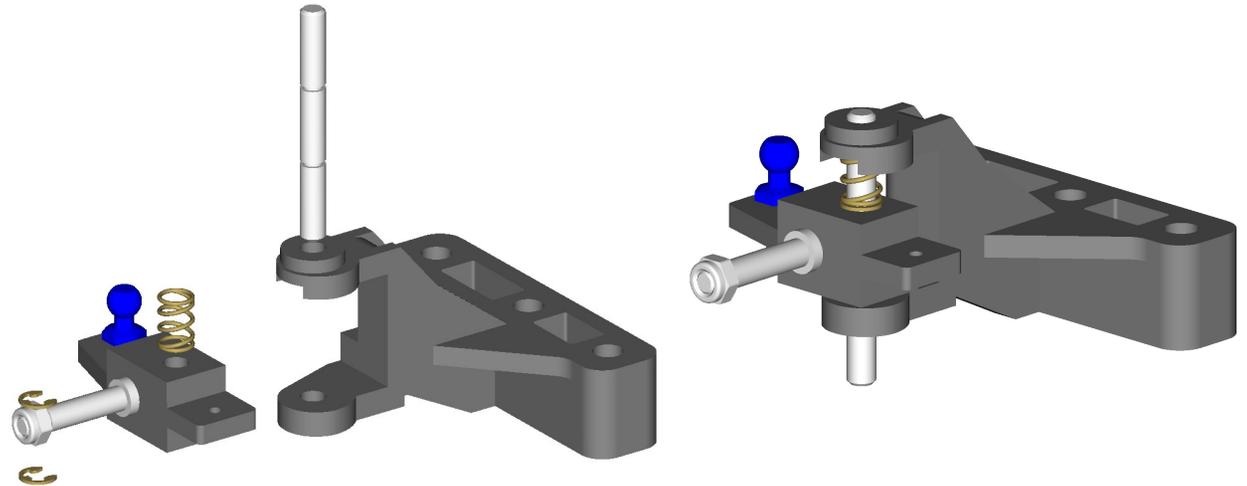


Push straight knurled side of front axle through the knuckle. Be sure to note direction of the knuckle. Use a thin flat nut to secure axle to knuckle.

If a .112 diameter or No.34 drill is not available, use a body reamer or hobby knife blade to slowly open the hole for the ball stud. Screw ball stud through the knuckle, and secure with 4-40 thin flat nut.

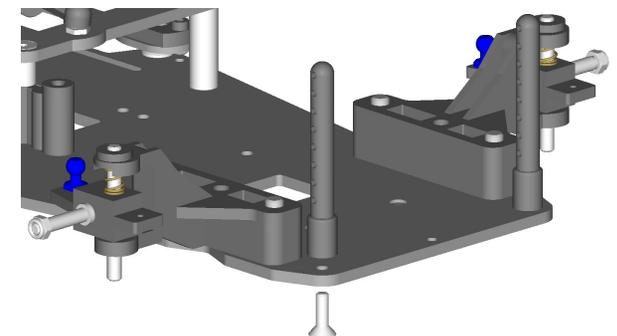
Easiest method of installing knuckles into old-skool arms, push the kingpin through the top of the arm. Install spring onto kingpin as it comes through arm, then the knuckle. Note direction of arm and knuckle!

Continue pushing the kingpin through the knuckle, it will be hard to push through the new knuckle. Align the e-clip grooves above and below the knuckle. With your finger tip, gently separate the spring from knuckle while slipping the e-clip into the slot with needle-nose pliers. Let the spring go gently, then the e-clip. Next drive the e-clip in with the back of a hobby knife blade.

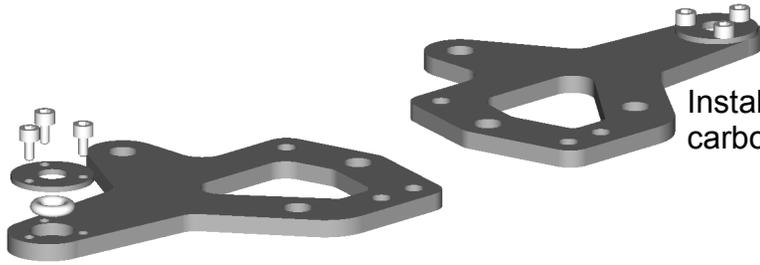


For the lower e-clip, using a pair of needle nose pliers, slide the e-clip with the open end first between the lower edge of the knuckle. Pinch the knuckle and lower arm to hold the e-clip in place. Use the back edge of a hobby knife blade to drive the e-clip in the rest of the way while keeping gentle pressure on the knuckle and lower arm.

Attach front body mounts as shown using flat head screws.



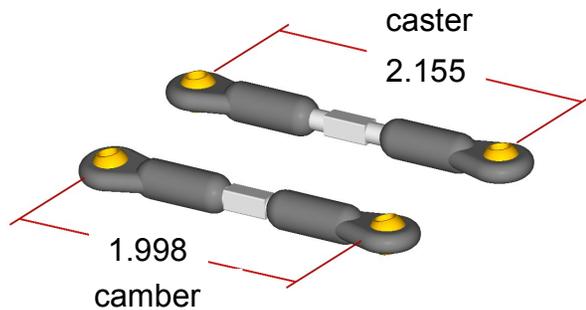
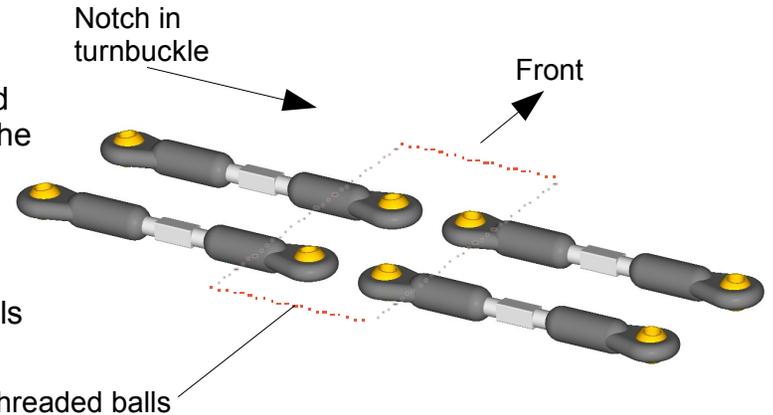
## Formula 3 Front Suspension: #1675



Install the o-ring into the counter-bore on the bottom side of the arm, followed by the carbon retainer, all attached with 3 socket head cap screws. Repeat this for both arms.

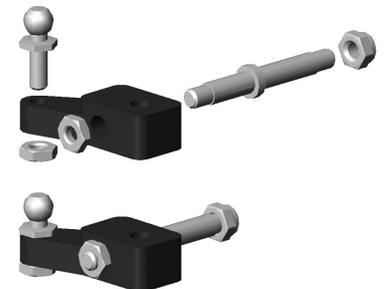
Build 4 links keeping careful note of the construction. One link will have a threaded ball, the other will fit the king pin. Assemble all links so that turning the wrench to the front of the car tightens (shortens) the link. This will make adjustments easy when getting ready for races.

To minimize confusion, lay the parts out on a towel in your work area, and pre-arrange the parts. Keep the threaded balls in the middle and the non-threaded balls to the outside.

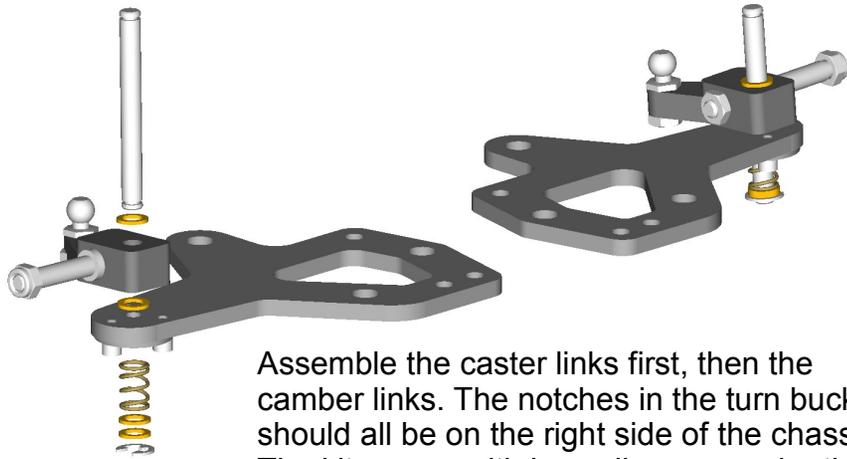


The following lengths will get you to a ball park of 3° caster and -2° camber.

Assemble steering knuckles as shown. Axle is a press fit into the knuckle. Ball stud threads into the knuckle. Use mini 4-40 flat nut on both. DO NOT ream out kingpin hole. The pin is meant to fit tight. Tip: if the kingpin loosens over time (from hits, etc) tighten the mini flat nut on back of the axle.

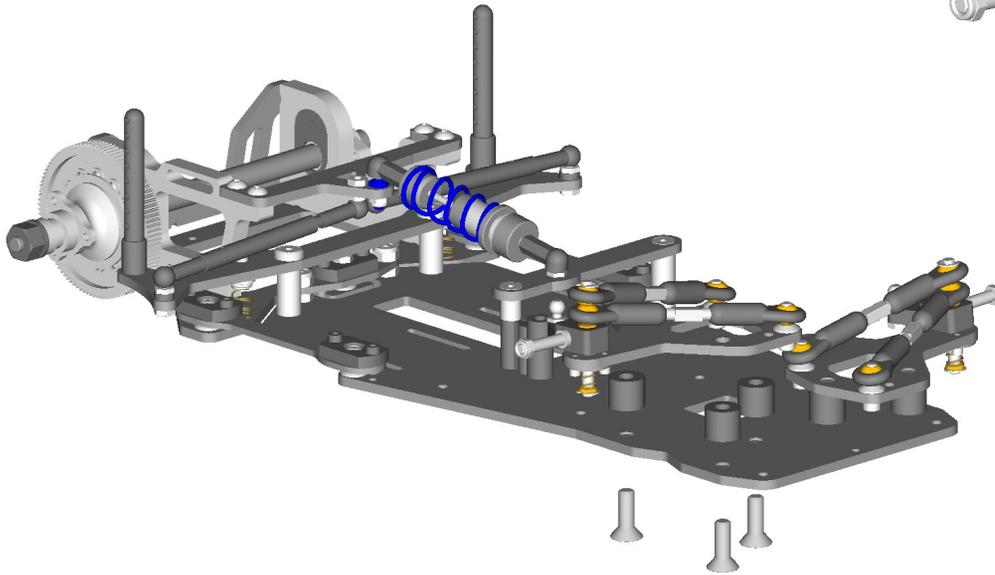
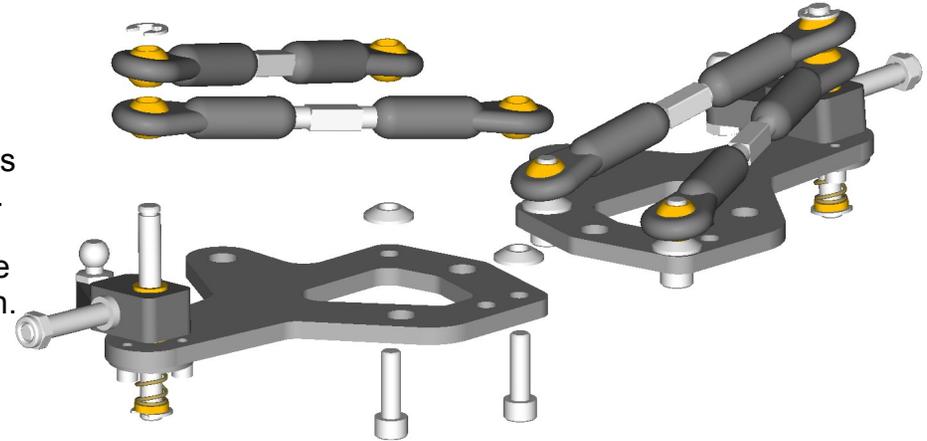


## Formula 3 Front Suspension: #1675



Assemble the caster links first, then the camber links. The notches in the turn buckles should all be on the right side of the chassis. The kit comes with low roll cones under the camber and caster links. Really tighten these screws, they may need to be tightened again.

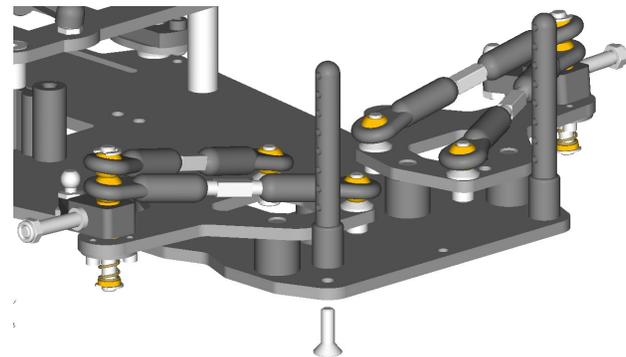
Order of assembly. Add some red or green Tube Spooge to the king pin when installing in o-ring. We also use Tube Spooge on the king pins to help damp the front end. Don't be afraid to leave some on the king pin after assembly, usually applied to the pin, through the spring up near the o-ring.



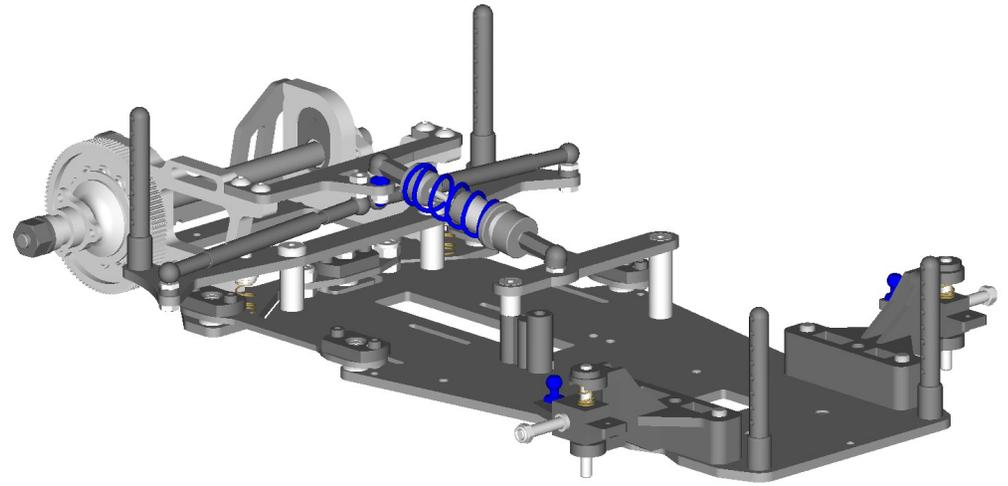
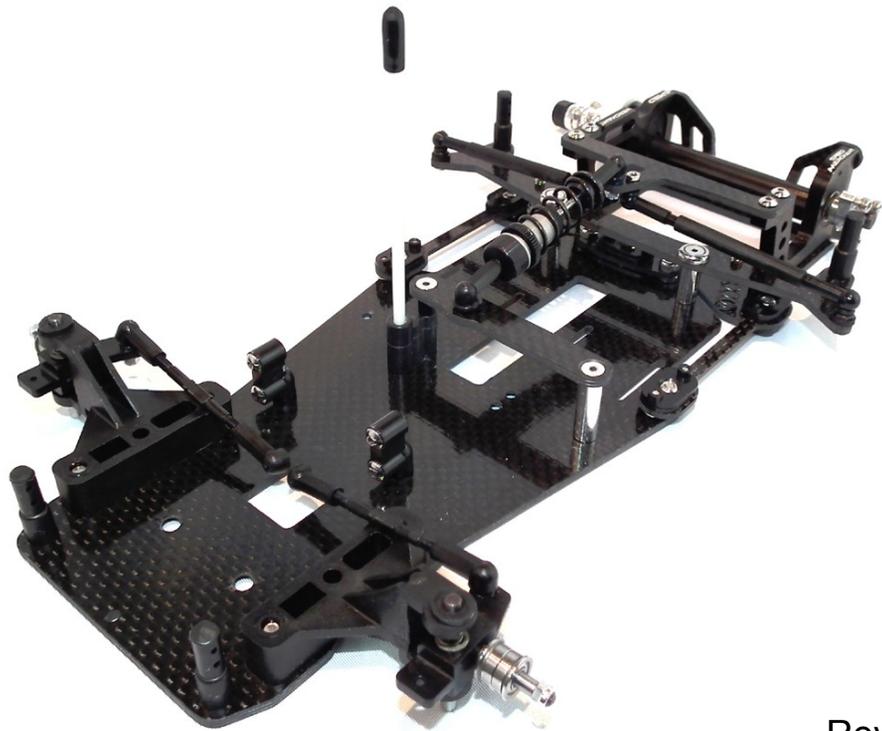
Locate and install front body mounts using 4-40 flat head screws.

Using the spacers included in the kit, attach the front lower arms to the chassis using the (6) 8-32 flat head phillips screws. Use a full sized screw driver with a tip in good condition. Use of a power screwdriver is not recommended.

The screws can be tightened to the point that the arm is loose, then follow a pattern working your way around the arm, tightening the screws a little at a time.



Rev7 Sport: #1735



Rev7: #1730

