Assembly Manual

WTF1

1/10th Formula 1 Car

Calandra Racing Concepts

6785 Martin Street ~ Rome, NY 13440
Tel + Fax 315-338-0867 ~ www.teamcrc.com

Center Pivot

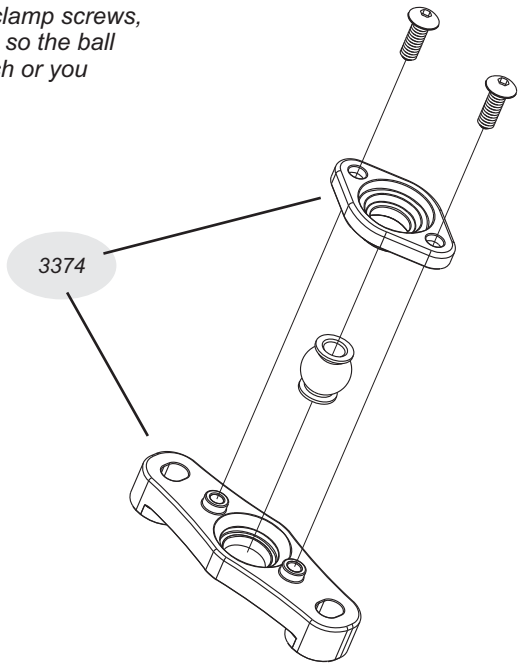
Bag 1

3374 - Center Pivot Socket

40194 - Hard Anodized Alum Pivot ball

3254 - 2-56 Button Head

Note - Sometimes it is helpful to **slightly over-tighten the top clamp screws, then work the ball around by hand, and then loosen the screws so the ball floats around very free. Do not over-tighten the screws too much or you could warp the pivot socket.*

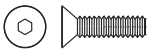


Center Pivot

Bag 1

1555 - WTF-1 Chassis Plate

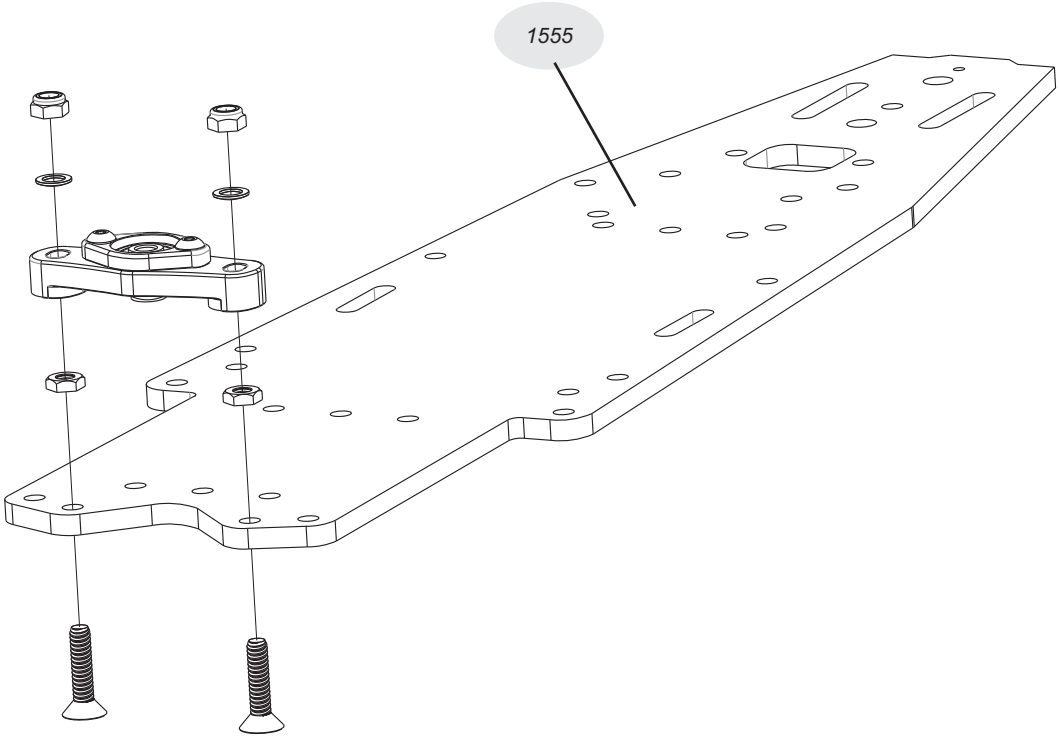
1430 - 4-40 x ½" Flat Head



12772 - 4-40 Thin Hex Nut

1209 - Washer

1412 - Red Locknut



Bag 2

1426 - 4-40 x 5/16" Flat Head

13615 - Red Low-Profile Ball

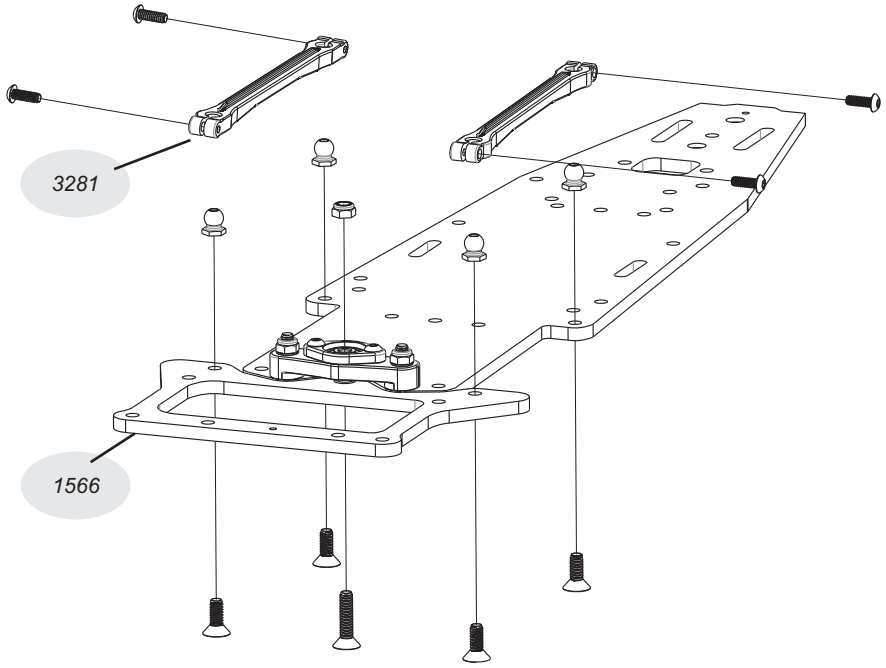
1412 - Red Locknut

1566 - Rear Bottom Plate

1430 - 4-40 x ½" Flat Head

3254 - 2-56 Button Head

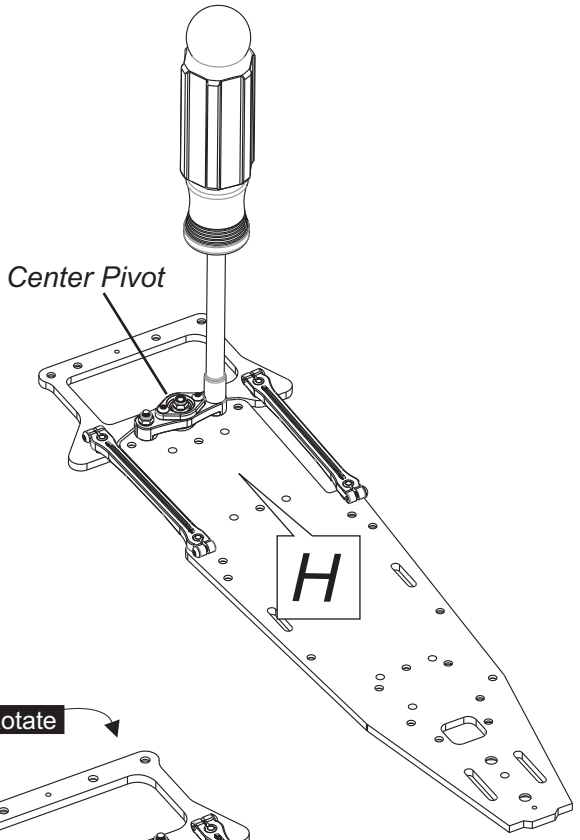
3281 - One-Piece Side Links



**NOTE - Before installing, inspect the side links and you will notice that the screw holes on one side of the link are larger than the holes on the other side. Before popping the links on the balls, be sure that the larger hole faces toward the outside of the chassis.*

Slide the 2-56 button head screws through the large holes in the outside of the side links, and then thread them into the small inner holes as shown in the illustration. Do not tighten these screws down all the way. Put just enough tension on them so that there is no play in the links, but so they pivot freely on the balls. The car will NOT handle properly if the links are too tight on the balls!

Setting the One-piece links



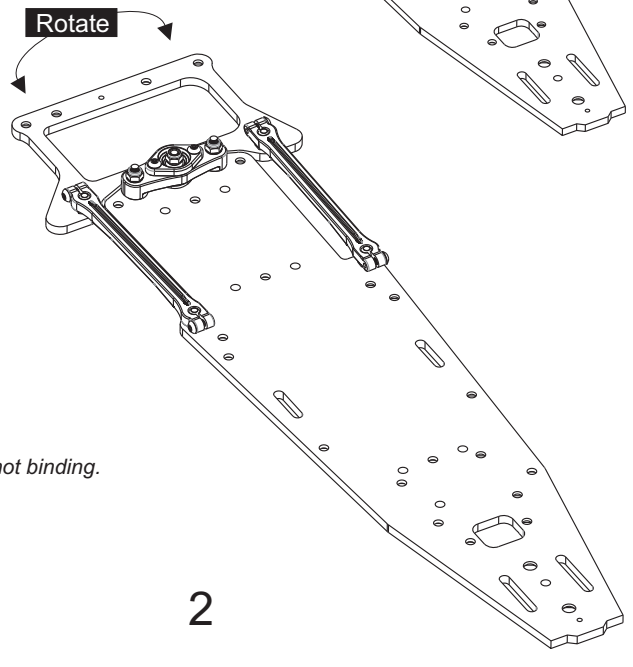
1 - Be sure the 2 aluminum locknuts on top of the center pivot are slightly loose. There should be a washer under each alum locknut. Notice that the center pivot "floats" or moves slightly on the 2 screws. This "floating" allows the links to "free up". This ensures that the rear pod plate pivots freely on the links and center pivot ball. This is a crucial step when setting up the WTF-1.

2 - Snap the 2 links on the balls (done in previous step). They should rock freely on the pivot balls.

3 - Place the chassis / rear bottom plate assembly on a flat surface. No tires and no diff on the car! A smooth table or desk should do. Be sure that the rear bottom plate and chassis are in a straight line, flat against the table, again, no tires on the car. Lightly "tap" the chassis and rear pod releasing any tension in the links. Keep the chassis flat on the table for step 4.

4 - Hold the chassis at the hold point "H" (not the rear pod) by pressing the chassis down to the table. Slowly tighten the 2 locknuts that secure the center pivot assembly. For now, just lightly snug one side then the other.

5 - Pick up the car and check the pivoting action of rear lower plate. Rotate the rear plate from side-to-side. It should move free without binding or "clicking". If it does not, loosen the pivot locknuts and repeat steps 3+4.



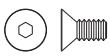
If it rotates smoothly, tighten the locknuts on the center pivot more securely. Do this by again holding the chassis down to the table at the hold point "H". Slowly and carefully, fully tighten the locknuts that hold the center pivot assembly to the chassis. The handling of the WTF-1 hinges (pun intended!) on the free movement of this rear plate. Be sure that the rear links and rear plate are free and not binding.

Slider Pod

Bag 3

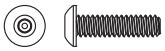
3440 - Motor Plate
33411 - Slider Bearing Carrier
3442 - Left Side Pod Plate
1574 - Graphite X-brace

1424 - 4-40 x 1/4" Flat Head

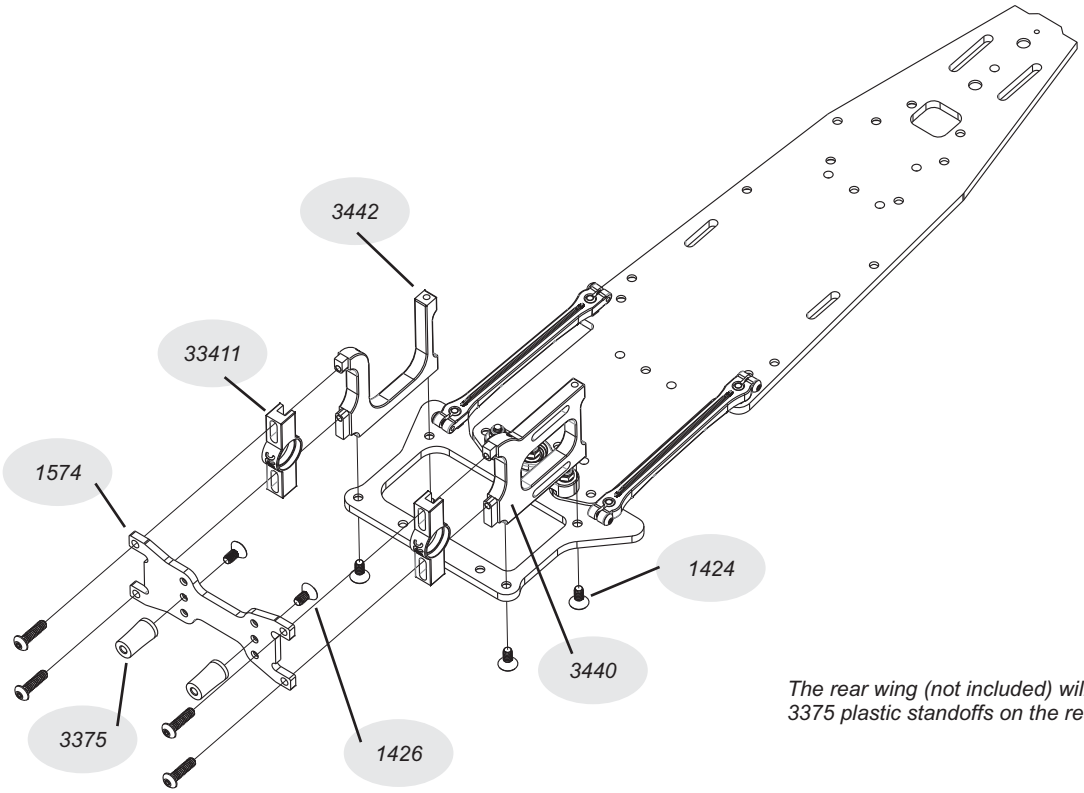


1426 - 4-40 x 5/16" Flat Head

1435 - 4-40 x 7/16" Button Head



3375 - Molded ½" Standoffs (4)



The rear wing (not included) will mount to the 3375 plastic standoffs on the rear pod.

Tweak Plate

Bag 4

3288 - 4-40 x 3/8" set screw

1570 - Tweak Plate

3387 - Molded Plastic Spring Holder

1791 - Pro Tapered Springs .45mm

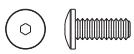
1434 - 4-40 x 1/4" Button Head

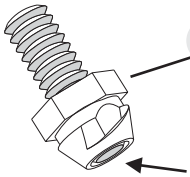
13615 - Red Low-Profile Ball

3375 - Molded ½" Standoffs (4)

1424 - 4-40 x 1/4" Flat Head

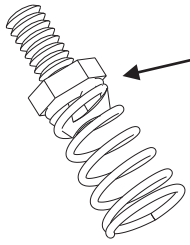
1436 - 4-40 x 3/8" Button Head

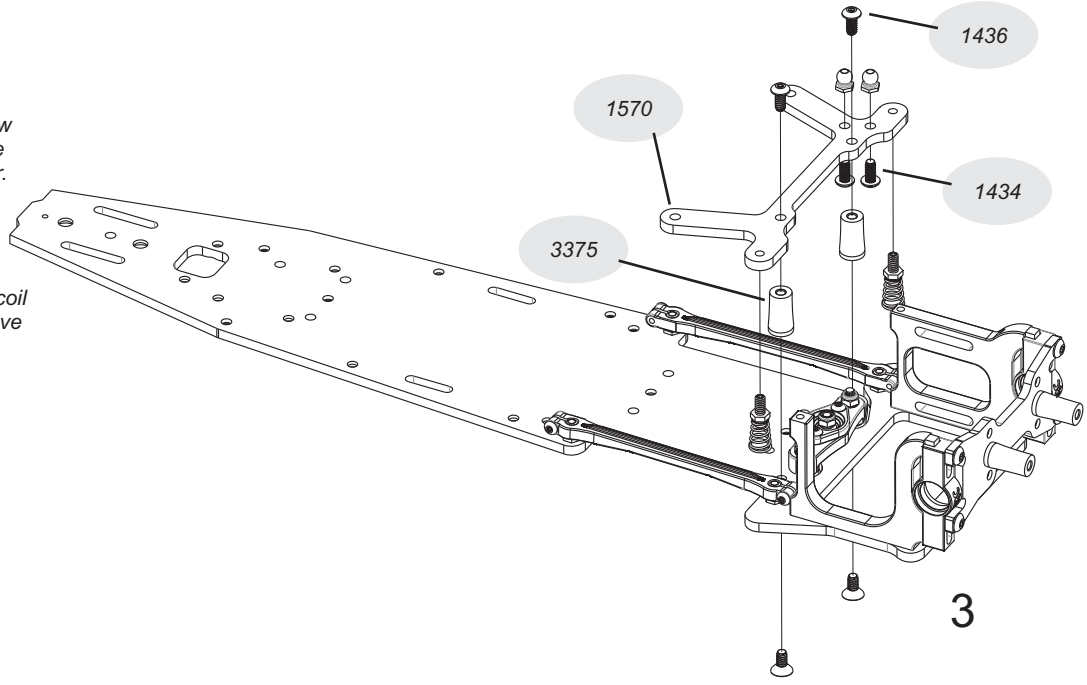




Thread the set screw in until flush with the bottom of the holder.

Make sure spring coil is seated into groove on spring holder.





Top Plate

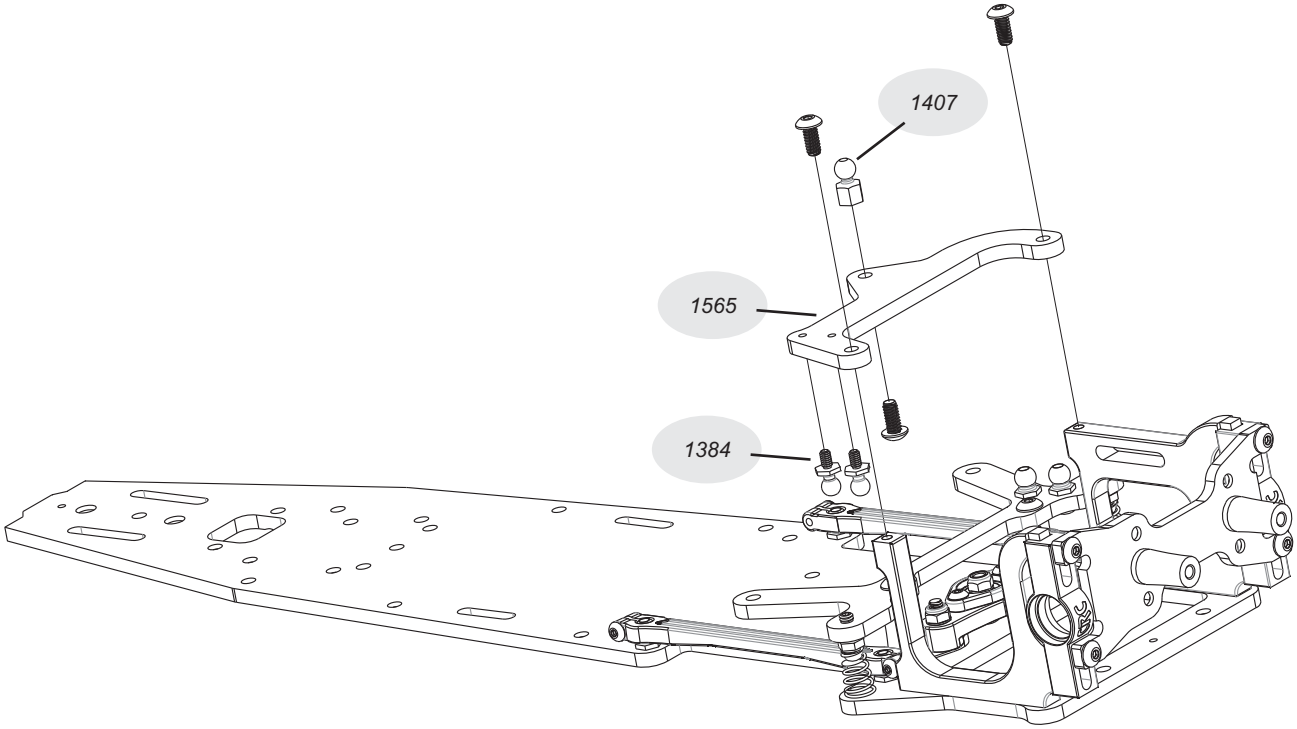
Bag 4

1565 - WTF-1
Rear Top Plate

1434 - 4-40 x 1/4"
Button Head

1407 - Anodized Hex Balls (4)

1384 - 2-56 Steel Ballstuds & Cups
for Damper tubes (4)

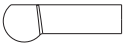


Damper Tubes

Bag 5

1397 - 2-56 set-screw stud

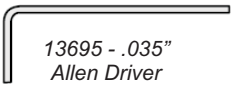
1384 - 2-56 Steel Ballstud & Plastic Ball Cup



1288 - 4-40 x 5/16" set screw

32694 - Short 4-40 Plastic Ball Cup (on tree)

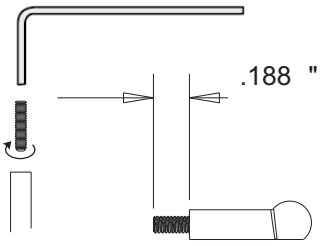
13695 - .035" Allen Driver



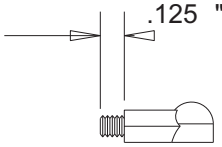
32693 - Delrin Plunger

32691 - Aluminum Tube

Step 1 - 2-56 stud and thin cup

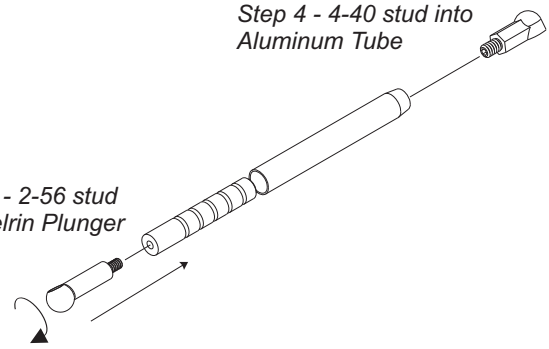


Step 2 - 4-40 stud and hex cup

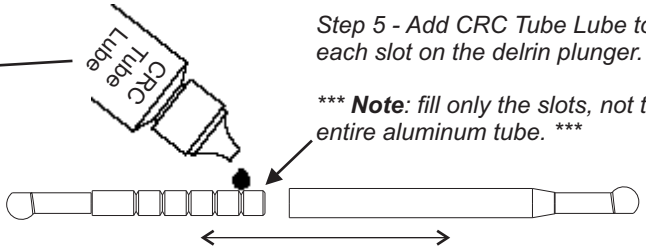


Step 4 - 4-40 stud into Aluminum Tube

Step 3 - 2-56 stud into Delrin Plunger



4505
4510
4520
4530



Step 5 - Add CRC Tube Lube to each slot on the delrin plunger.

**** **Note**: fill only the slots, not the entire aluminum tube. ****

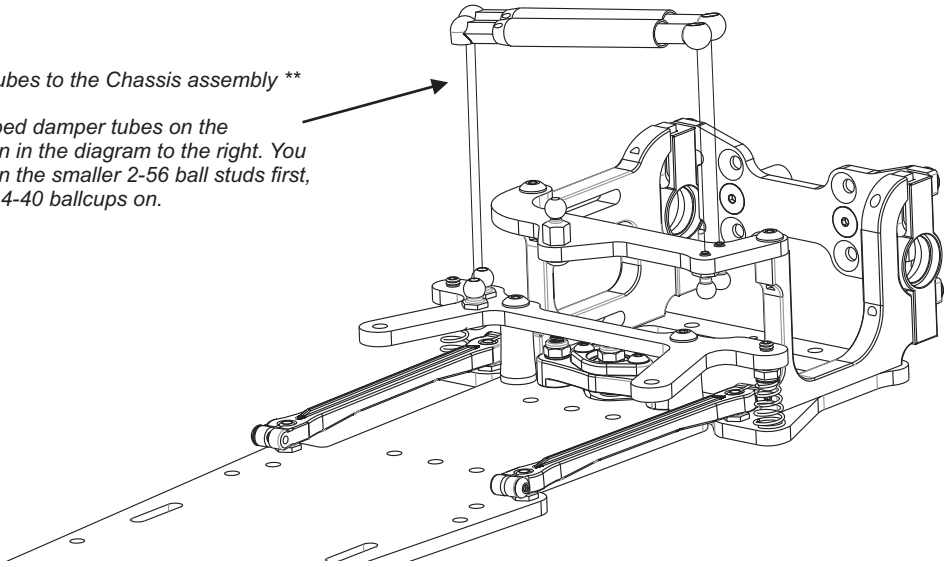
Damper Tubes

continued...

Bag 5

*** Adding the Damper Tubes to the Chassis assembly ***

Snap the assembled & lubed damper tubes on the respective points as shown in the diagram to the right. You will find it easier to snap on the smaller 2-56 ball studs first, then pop the lower, larger 4-40 ballcups on.



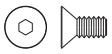
Top Deck

Bag 6

1854 - Top Deck - Gen-X10 SE

1537 - Hex Standoff - WTF-1 Top Deck

1424 - 4-40 x 1/4" Flat Head



1434 - 4-40 x 1/4" Button Head

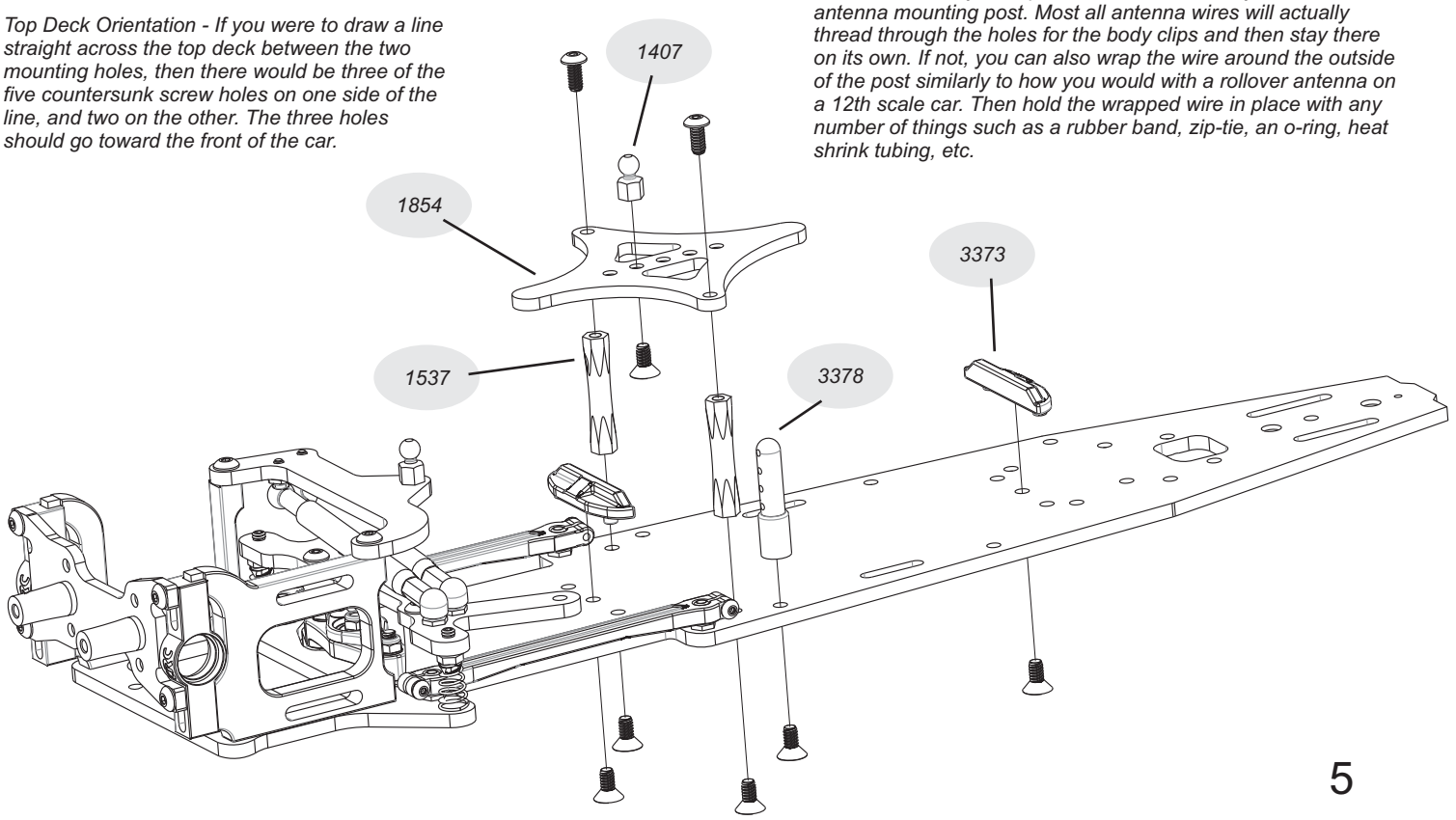
1407 - Anodized Hex Balls (4)

3378 - Body Posts w/ collars (1 in.)

3373 - Plastic Battery Position Pieces

Top Deck Orientation - If you were to draw a line straight across the top deck between the two mounting holes, then there would be three of the five countersunk screw holes on one side of the line, and two on the other. The three holes should go toward the front of the car.

The 3378 1" Body Post pictured in this assembly is used as an antenna mounting post. Most all antenna wires will actually thread through the holes for the body clips and then stay there on its own. If not, you can also wrap the wire around the outside of the post similarly to how you would with a rollover antenna on a 12th scale car. Then hold the wrapped wire in place with any number of things such as a rubber band, zip-tie, an o-ring, heat shrink tubing, etc.



Center Shock

Bag 7

3290 - CRC Encore Shock

(Each assembly step below corresponds to the numbered boxes in the diagram. You may run into issues if you try building the shock out of order.)

*1 - Thread the spring adjuster nut onto the shock body as shown. *This needs to be installed first or you will not be able to get it on later after the lower end of the shock is assembled!**

2 - Insert only 1 of the small o-rings into the lower end of the shock body. Next, install the bottom shock plug and tighten the bottom shock cap.

3 - Insert 1 of the small e-clips into the lower groove of the shock shaft. Slide the piston over the shaft until it stops against the e-clip and then secure it in place with the other e-clip in the end groove. Next, slide the other small o-ring over the shock shaft and up against the piston. This o-ring acts as a travel limiter.

4 - Put a small dab of the included shock oil on the threads of the shock shaft to lube it and then slide the shock shaft through the bottom end of the shock carefully so you do not damage the o-ring with the threads on the shock shaft. Pull the shaft all the way through until the piston bottoms out in the shock body.

*5 - Wipe off any excess oil from the threads of the shock shaft and then thread on the shorter of the 2 included ballcups. *If you need to hold the shaft with pliers, be sure to wrap a rag around the shaft first so the pliers do not damage the shaft. If there is any damage to the shaft, the sharp edges will damage the o-ring and cause the shock to leak.*

6 - Now with the shaft still fully extended, hold the shock body upright and fill with the included shock oil. Press the shaft in about half way and then return it to full extension. Look inside the shock and you will notice small air bubbles in the oil. This is the rest of the air that was trapped below the piston. Allow enough time for the air bubbles to work their way to the surface and pop.

7 - Once satisfied that all of the air is out of the shock, top off with oil and then insert the shock bladder by laying one side into the oil and then rolling your finger across the top of the bladder to expel any excess air and/or oil.

*8 - Insert the flanged ballcup into the upper shock cap and then tighten this down over the shock bladder, being careful to not knock the bladder off its seat and allowing air to enter the shock. *Double check that the shock is working smoothly through its range of motion and that you can fully compress the shock. If it binds up before being fully compressed, then it has too much oil and you will need to crack the top cap loose and expel a very small amount of oil and re-tighten.*

9 - Slide the shock spring over the shock body and keep in place by clicking the spring retainer over the shock shaft and sliding it down over the short ballcup to keep it in place.

Encore Shock Parts List:

3291 - Encore Shock-Body + alum parts

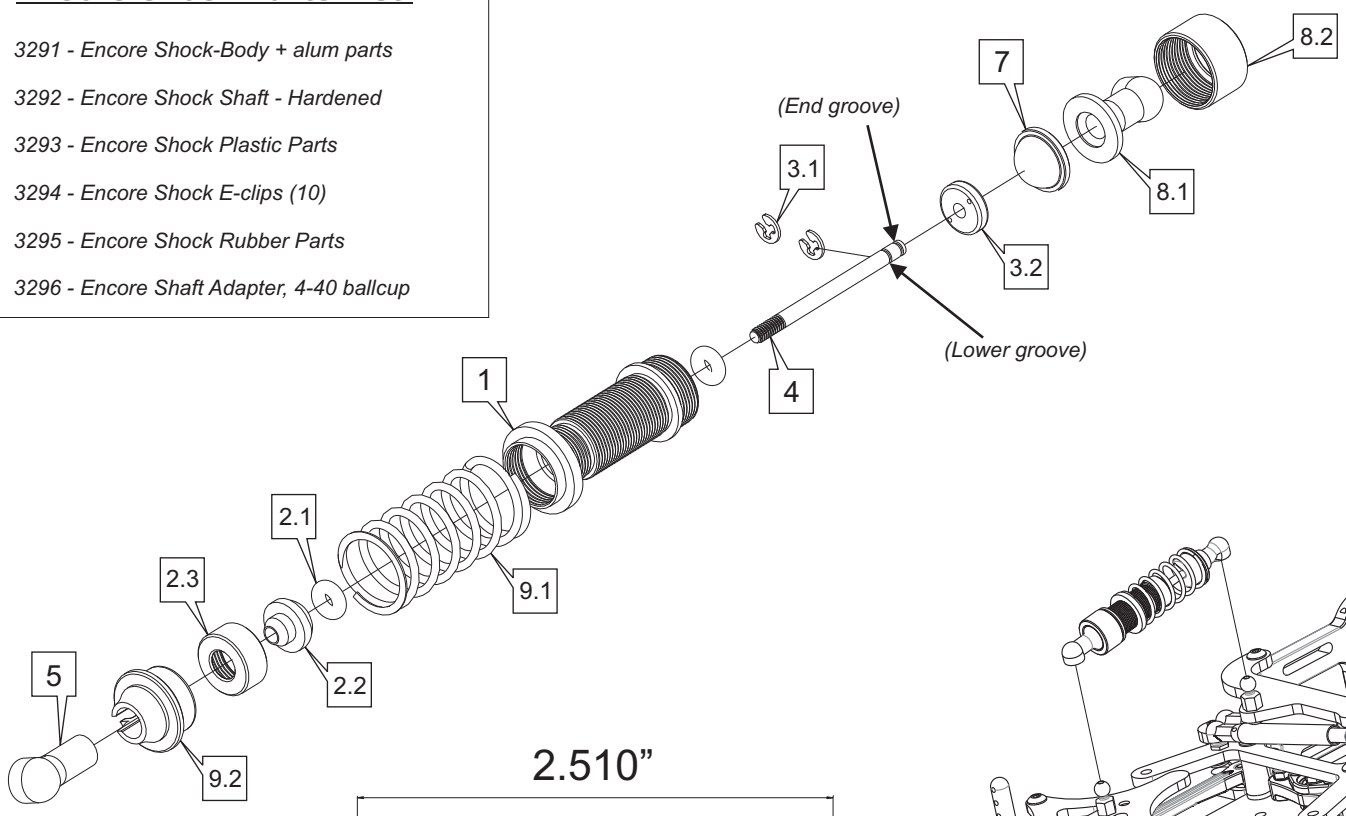
3292 - Encore Shock Shaft - Hardened

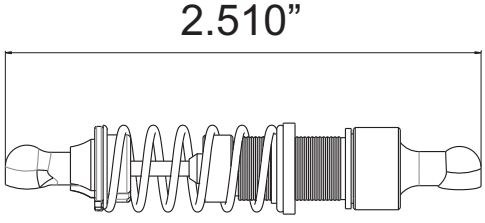
3293 - Encore Shock Plastic Parts

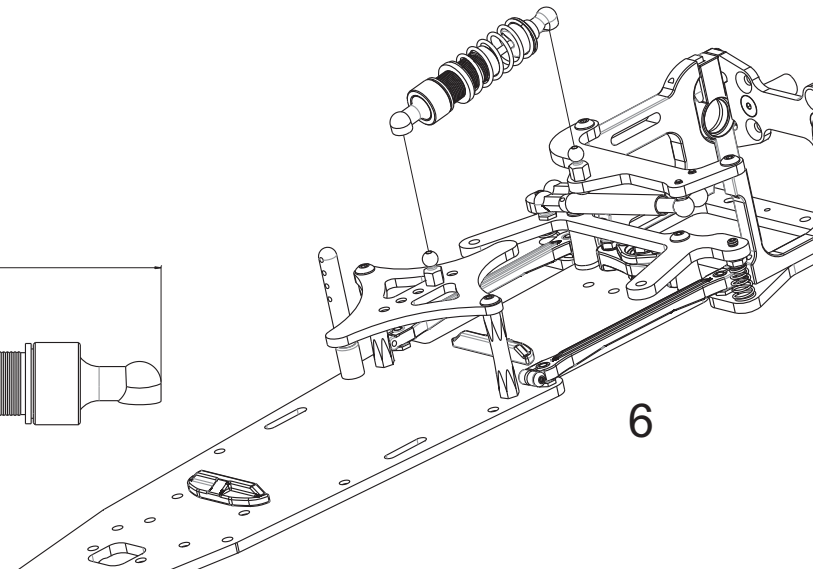
3294 - Encore Shock E-clips (10)

3295 - Encore Shock Rubber Parts

3296 - Encore Shaft Adapter, 4-40 ballcup







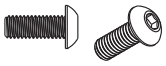
Front End

Bag F

1540 - Front End Plate - F1

1543 - F1 Upper / Lower Plastic Arm Mounts

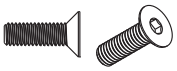
1490 - M3 x 8mm Button Head



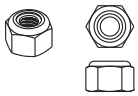
1547 - F1 Lower Arm Ball Socket

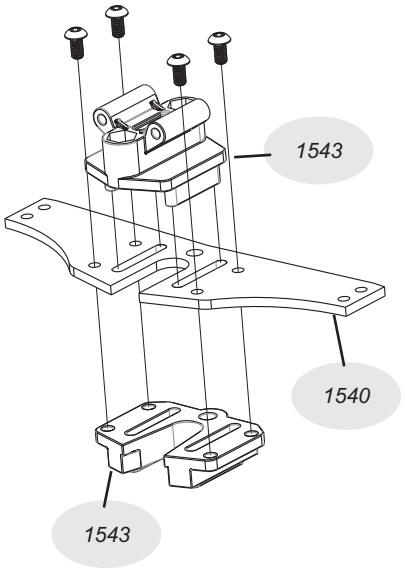
1546 - F1 Lower Arm Pivot Ball

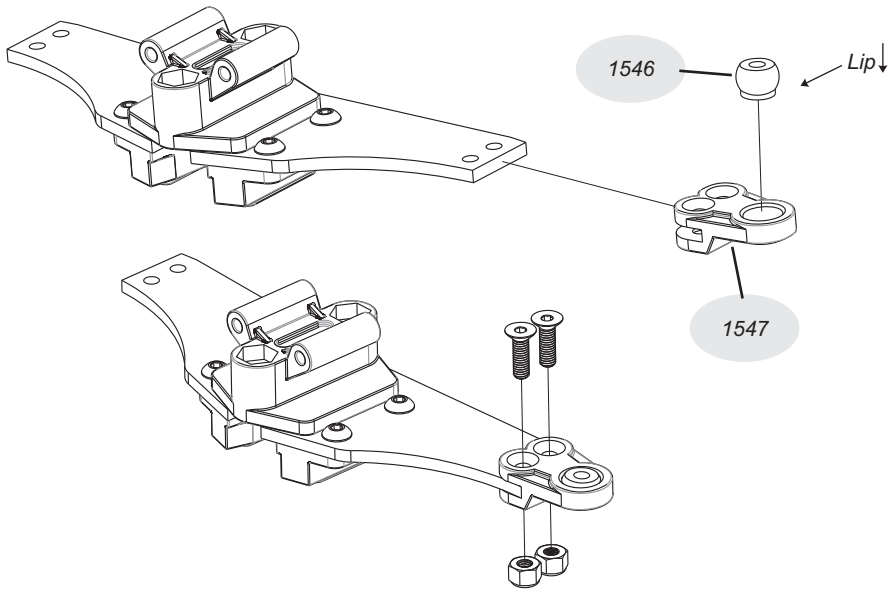
1482 - M3 x 8mm Flat Head



1498 - M3 Locknut







Front End

Bag F

1535 - F1 Steel Stub Axle

1412 - Red Locknut

3234 - Brass Set Screw

3221 - Steering Block Set

1434 - 4-40 x 1/4" Button Head

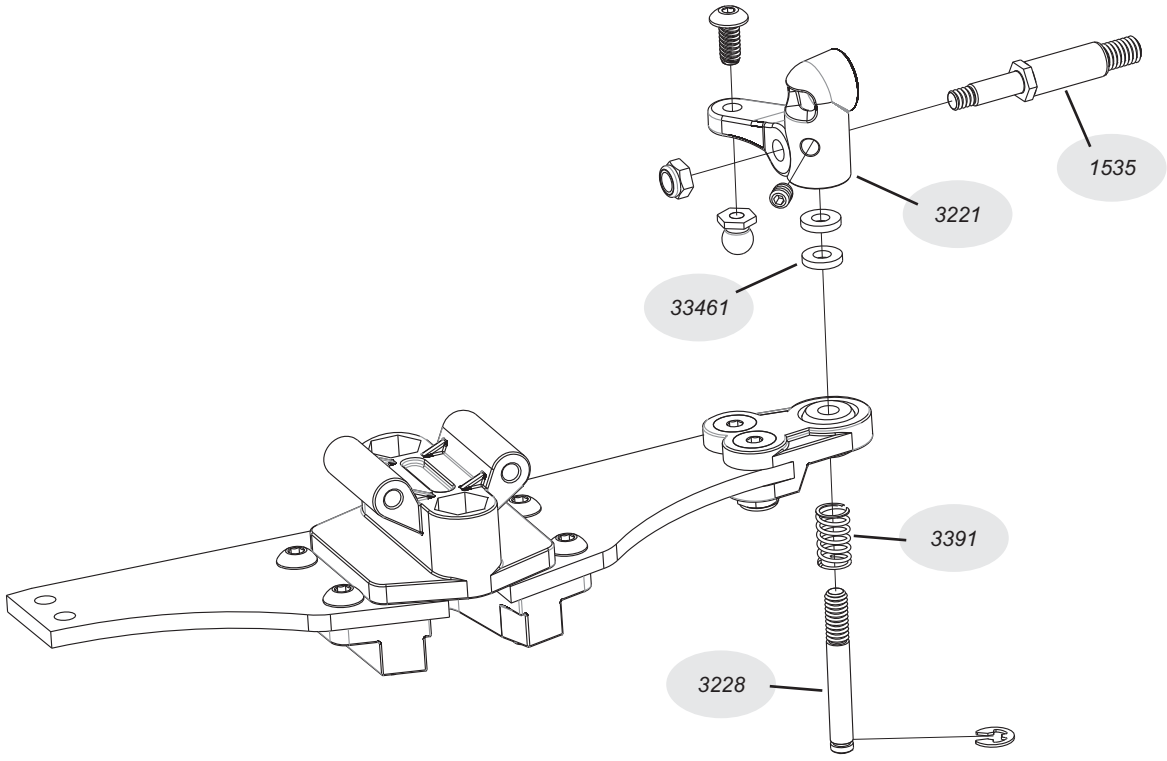
13615 - Red Low-Profile Ball

3391 - .45mm Front Spring

3228 - CRC King Pin - Long 1:10

33461 - Plastic Spacer 1/8 x .060"

1382 - E-Clip



Front End - continued...

Bag F

1542 - F1 Upper Arms

1545 - F1 Upper Hinge Pin

1550 - Caster shims (10)

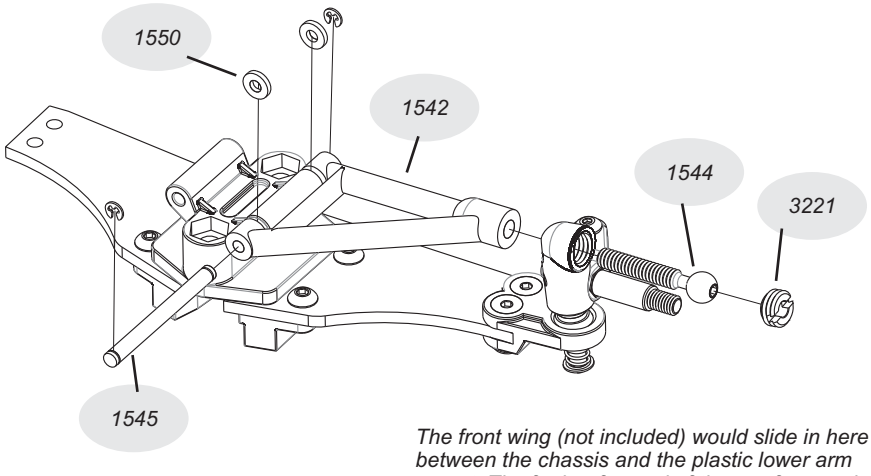
1582 - E-Clip for Upper Hinge Pin

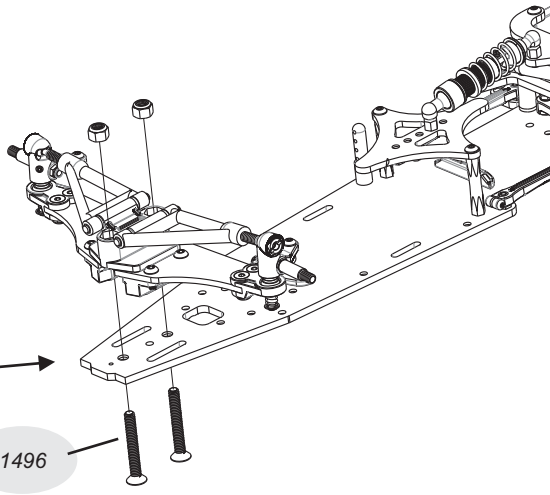
1544 - F1 Upper Arm / Steering Block Ball

3221 - Steering Block Set

1496 - M4 x 30mm Front End Screw

1499 - M4 Locknut





The front wing (not included) would slide in here between the chassis and the plastic lower arm mount. The further forward of the two front end screws will pass through the front wing before passing through the upper arm mount and into the M4 locknut.

Front End - continued...

Bag F

3355 - Alum Vertical Mount Set-Red

1553 - Graphite Servo Mount Plate-F1

1424 - 4-40 x 1/4" Flat Head

3376 - Molded Servo Saver Brace

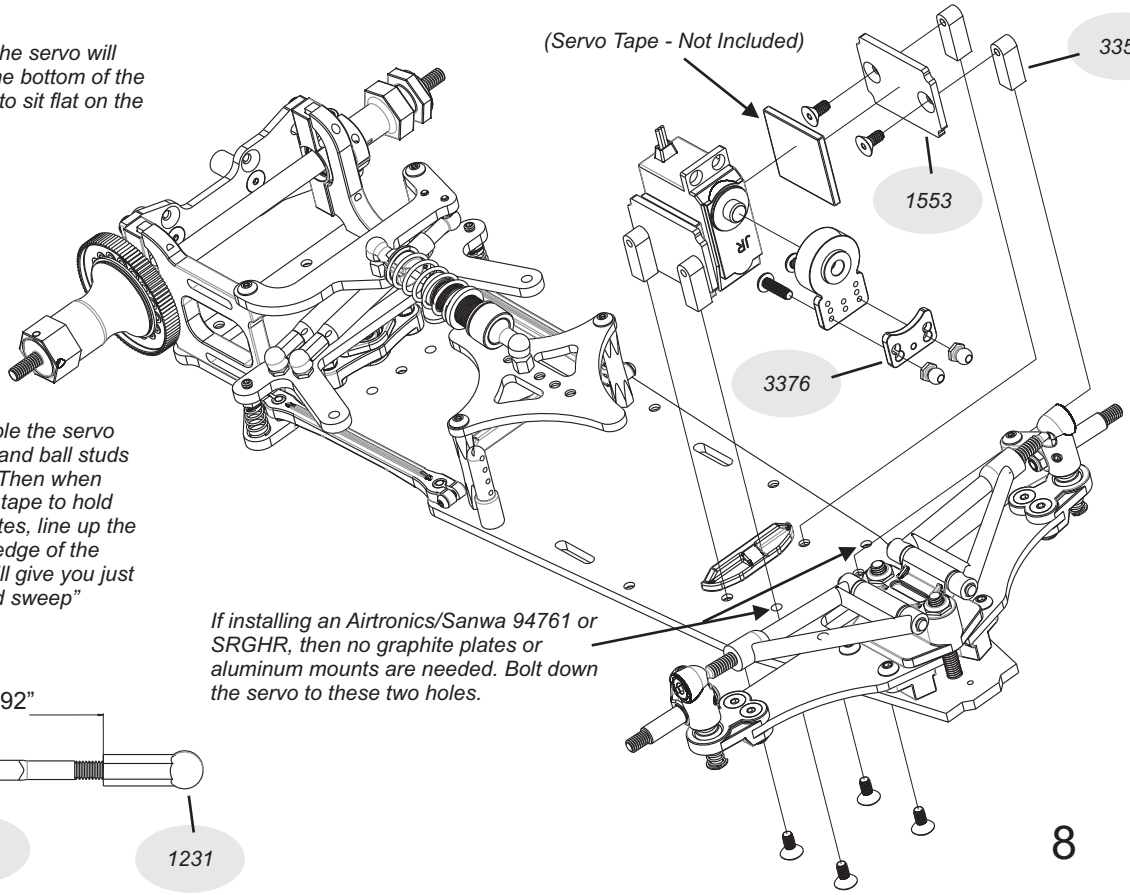
13615 - Red Low-Profile Ball

1436 - 4-40 x 3/8" Button Head

1317 - 42mm Steering Tie-Rod

1231 - Plastic Ball Cups

The mounting "ears" on the servo will need to be trimmed off the bottom of the servo case for the servo to sit flat on the chassis.



Servo Alignment - Assemble the servo saver, servo saver brace, and ball studs as shown in the diagram. Then when using the two-sided servo tape to hold the servo between the plates, line up the servo case flush with the edge of the graphite plates and this will give you just the right amount of "tie-rod sweep" (steering ackerman).

If installing an Airtronics/Sanwa 94761 or SRGHR, then no graphite plates or aluminum mounts are needed. Bolt down the servo to these two holes.

Differential Axle

Bag 8

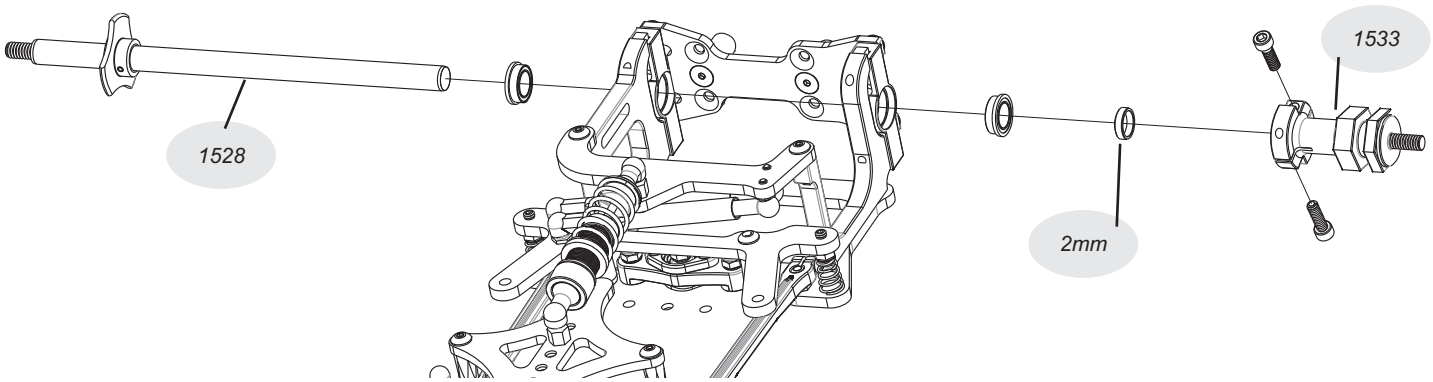
4720 - Axle Spacer- Xti-2 + 5mm

1386 - 1/4" x 3/8" Flanged Bearing

1528 - Graphite Axle w/ 4mm Stud

1533 - Left Clamp Hub

1376 - 4-40 x 3/8" Steel Socket Cap



Differential

Bag 9

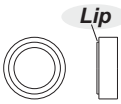
4201 - Diff Ring

1387 - 1/4" x 3/8" Plain Bearing

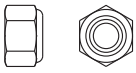
1228 - 3/32 Diff Balls

4121 - Diff Spacer

Lip



4123 - Spring Washer



1499 - M4 Locknut

1525 - Diff Hub

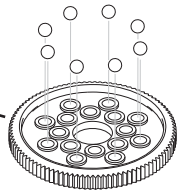
1526 - F1 Pin Drive Cap

1527 - 2x14 Drive Pin

1597 - 2-56 x 1/8 Set Screw

*** Balls in outer ring of holes in gear ***

64172
64180
64188
64196



1

1 - Install and grease the diff balls

Place the spur gear flat on the table in front of you with the side that says "CRC" facing down. The diff balls will fall into each of the outer ring of holes in the diff gear, but won't fall out the other side. Place a small dab of silicone diff grease on each ball to lube the ball and prevent the balls from falling back out of the holes during assembly. Use very little!

2 - Diff Assembly

*(Holding the car on it's side, with the rear axle pointing upright will ease assembly of the diff.) Place 1 diff ring, and then a 1/4" x 3/8" plain bearing over the end of the axle. Align the diff ring so that it notches into the axle flange. Place the assembled gear with the greased diff balls over the axle and push it down over the plain bearing. Next, insert the other plain bearing into the back of the diff hub. Then, align the second diff ring with the notch on the back of the diff hub. *(place a small dab of the diff grease on the hub first to hold the ring in place.)* Now, slide the hub, bearing, & diff ring down over the axle. Next, slide a flanged bearing over the axle and into the front of the diff hub.

4 - Mount the Right side Wheel

First, insert the 2-56 set screw into the pin drive cap. You need to thread this in first because it will not fit through the hole in the diff hub. Next, insert the cap into the hub and lock in place with the drive pin. Now slip the .035 allen wrench through the hole in the hub to lightly snug the set screw. This doesn't need to be tight. It is just so it doesn't get lost when you take the wheel off. The wheel actually holds the pin.

Diff Assembly - continued...

The diff spacer has a small machined lip on one side, point that lip toward the bearing. Now, place the spring washer so that the cone points away from the gear. The outside of the washer should be against the diff spacer, and the inside of the washer should be against the diff nut, which now goes on last. *Be sure the 2 "D" rings have settled into their notches. Just snug the nut so the parts stay together on the diff axle. DON'T over-tighten so the outer diff hub bearing gets crushed! Correct diff tension needs to be set with tires on the car.

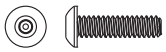
3 - Setting the Diff

First, you will want to mount a rear wheel (not included) to the left rear clamp hub using 1 of the M4 nuts contained in Bag 11. Until you are happy with the diff tension, you can just slip the right rear wheel over the hex without mounting it. Now adjust the diff nut so that the tires spin back and forth freely when holding the spur gear, but it is very difficult to slip the spur gear with your thumb when holding both tires. Again - DON'T over-tighten so the outer diff hub bearing gets crushed! Re-check diff tension after the first run.

Bag 10

13783 - 4-40 x 1/8" Set Screw

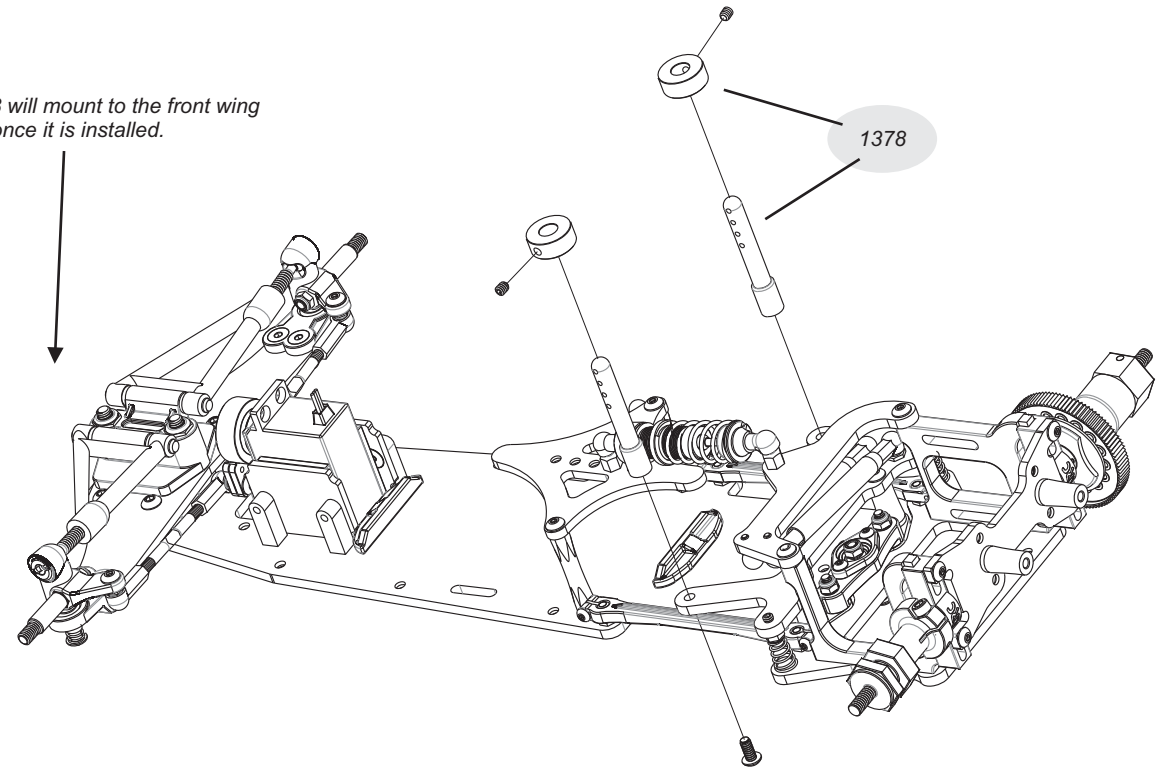
1436 - 4-40 x 3/8" Button Head



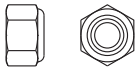
1378 - Body Posts w/ collars (2 in.)

3378 - Body Posts w/ collars (1 in.)

1 piece of 3378 will mount to the front wing (not included) once it is installed.



Bag 11



1499 - M4 Locknut

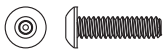
1529 - 5mm Plastic Spacer - F1 Fr Axle

4735 - 5mm Shim

1532 - Thin #8 Washer - F1 Rr Wheel

1549 - 5 x 10 mm Unflanged Bearing

1436 - 4-40 x 3/8" Button Head



The 2 pieces of 3/8" Button Head screws contained in this bag are for mounting the rear wing to the plastic standoff posts on the rear pod. Save these for adding the rear wing of your choice.