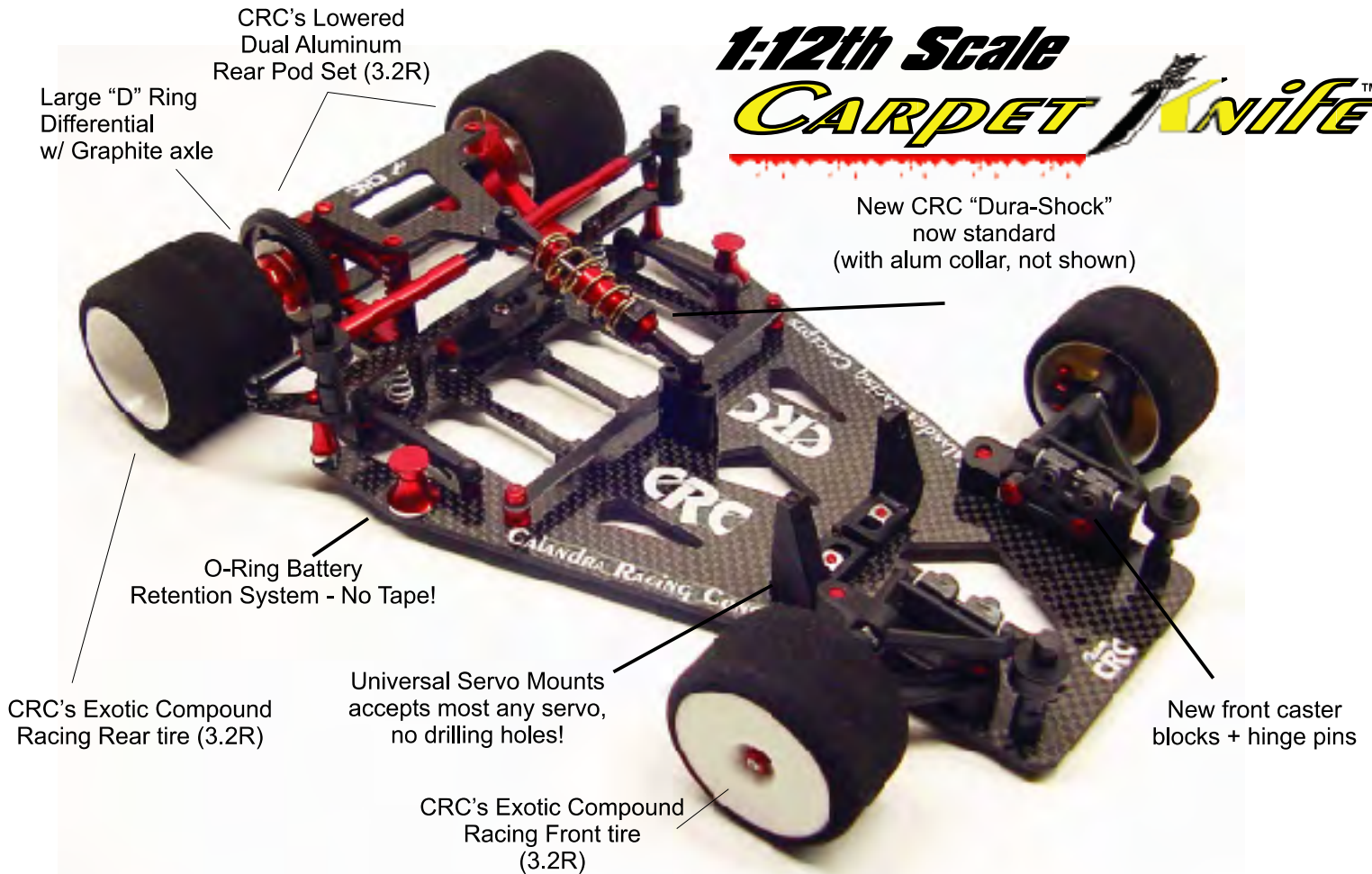
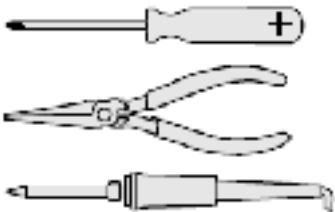


CALANDRA RACING CONCEPTS

1:12th Scale *CARPET KNIFE™*



Tools



.035, .050, 1/16, 3/32, 2.5 mm



Included Tools

A number of tools are included in your kit. However, allen drivers with large handles are helpful when building the kit. These are available from most any hobby store. Also, handy are nut drivers with large handles. Look for 3/16" and 1/4" nut drivers at your local hobby store or hardware store. Other handy items are; Scissors, double sided servo tape, Blue Locktite and pliers.

ITEMS NEEDED FOR COMPLETION

- 1 - 2 channel radio system *
- 2 - 4 cell battery pack + charger *
- 3 - Electronic speed control *
- 4 - 540 size electric motor *
- 5 - Pinion gear *
- 6 - 1/12th Lexan body-CRC Courage #4160 Recommended *

* All extra items available from Calandra Racing Concepts

Chassis Prep



BEVEL BATTERY SLOTS

1

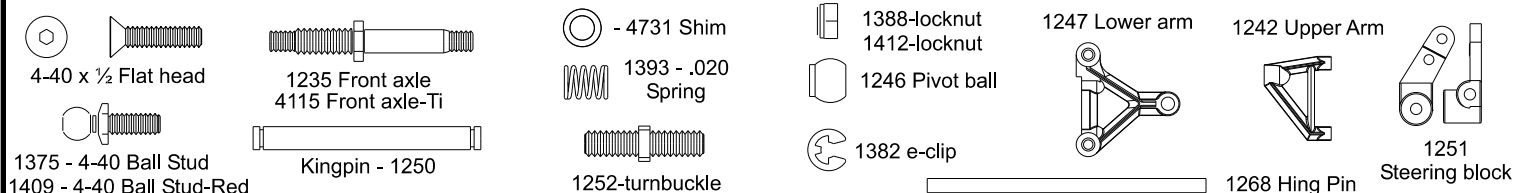


Remove sharp edge- DO NOT FILE!

1. DO NOT USE A FILE TO LOWER THE CELLS!

The cell slots are machined to require only a bit of edge de-burring. Use a sharp hobby knife to slightly deburr the machined battery slots. The batteries should sit so that the lowest point of the cell is flush but not protruding through the chassis.

WARNING! - GRAPHITE DUST CAN BE HARMFUL TO YOUR HEALTH!. WEAR SAFETY GLASSES. WHEN FINISHED, WASH THE CHASSIS IN RUNNING WATER AND DRY. THEN WASH YOUR HANDS AND CLEAN YOUR WORK AREA TO REMOVE GRAPHITE FILINGS.



1. TRIM LOWER ARM AND STEERING BLOCKS

Trim the lower arm as shown. This allows the steering block to rotate freely giving clearance to the locknut. Cut and file the steering block (1251) along the molded guide line. Round the corners.

2. MOUNT UPPER ARM MOUNT TO LOWER ARM

Bolt the 1269 (10 degree version) to the 1247 using the screws provided in Bag F.

3. INSTALL THE PIVOT BALLS

Pop the 1246 pivot balls in the 1244 pivot eyelet. Pop the ball in the side of the eyelet that has the bevel or rounded flange. The lip of the ball must point toward the steering block, 1251. Install in the 1247 arm as well.

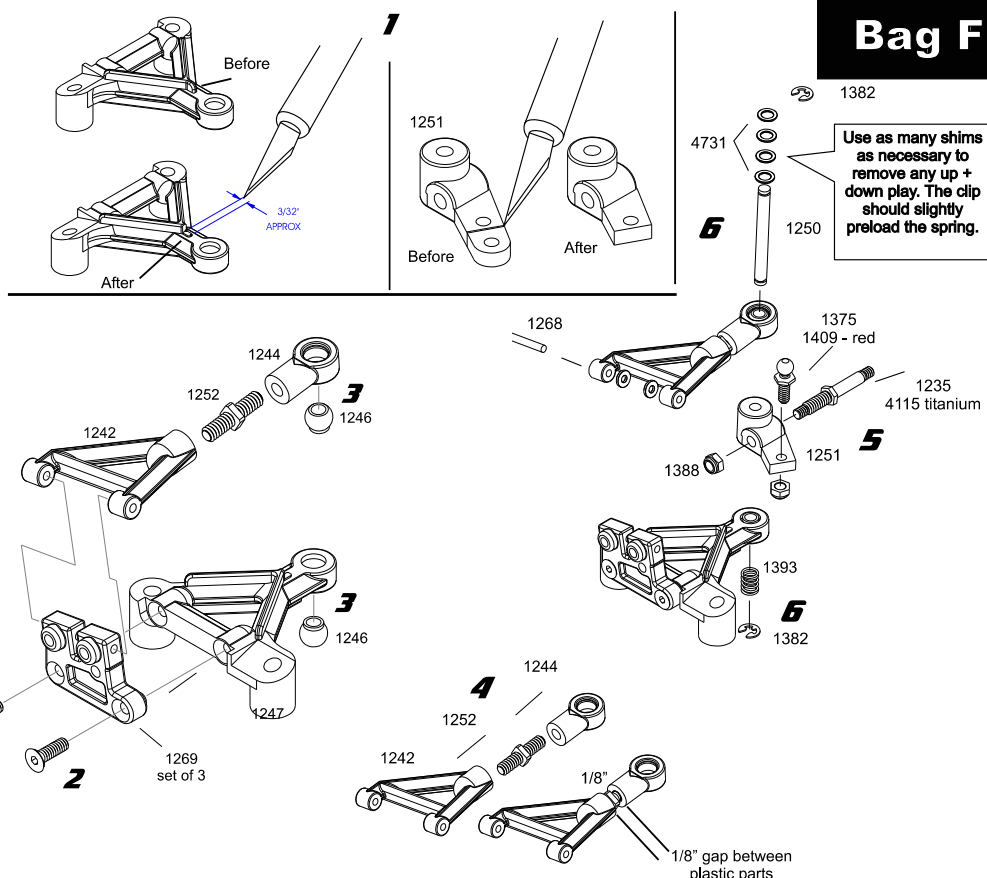
4. Thread the 1242, 1252 and 1244 together. The 1252 turnbuckle has reverse threading on one end. Tighten until there is about 1/8" gap

5. MOUNT THE FRONT WHEEL AXLE

Assemble the 1235 into the 1251 by threading the axle into the steering block. **The axle uses reverse left handed thread into the steering block!*** Fix the ball stud to the 1251 with the 4-40 locknut 1388/1412.

6. FULL FRONT SUSPENSION ASSEMBLY

Place a 1382 clip on one end of the 1250 pin. Then place the 1393 spring over the kingpin. From the bottom, slide the 1250 pin up through the 1247 arm, into the 1251 steering block and through the 1244 eyelet. Place 4 shims on top of the 1244 over the kingpin before installing the e-clip to capture the ends of the 1250 kingpin.



Bag F

Bag F cont.

1239
8-32 FH Screw

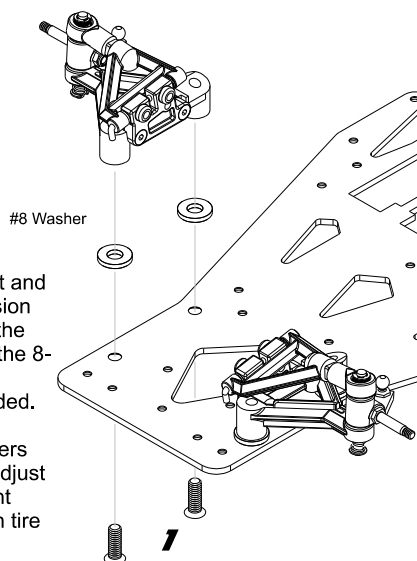


1237
#8 Alum Washer



1. Mount the left and right suspension assembly to the chassis with the 8-32 flat head screws provided.

The #8 washers are used to adjust the ride height depending on tire size.



Bag #6

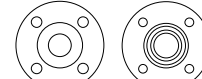
2-56 Button Head



1256 Chrome Pivot Ball
Threaded 4-40



1274 - Plastic pivots

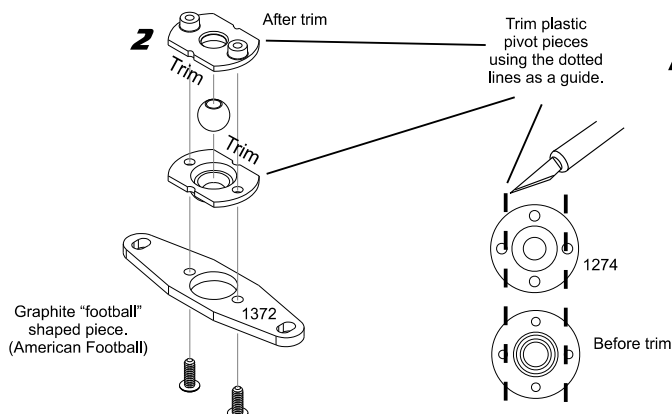


FOOTBALL PIVOT ASSEMBLY

- Trim the plastic pieces with a hobby knife as shown below.
- Assemble the pivot sockets and pivot balls using the 2-56 button head screws. The screw head will be the bottom of the football piece and face toward the chassis when installed.

The order is; screw through 1372 graphite football, then into lower part of 1274, then the 1256 ball, then the upper "castle" part of the 1274.

* Tighten the 2-56 button heads just so the 1256 pivot ball is free and has no play. Do not tighten so much that this ball binds in the plastic pivot socket.

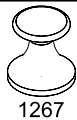


Bag 7+8

4-40 x 1/4"
Flat head

4-40 Mini
Locknut

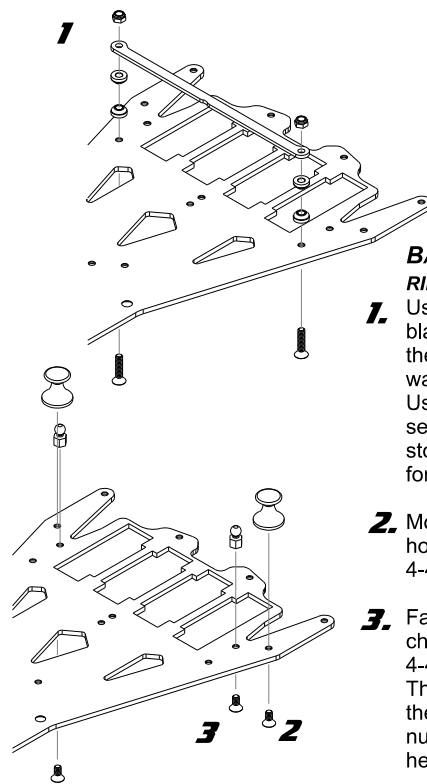
4-40 x 1/2"
Flat head



1267
Battery Hook

1361 - 4-40 Alum
Hex Ballstud
1407 - Red

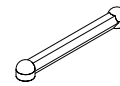
1256 - Aluminum
cone washer
1405 - red



BATTERY RETAINERS AND O-RING MOUNTS

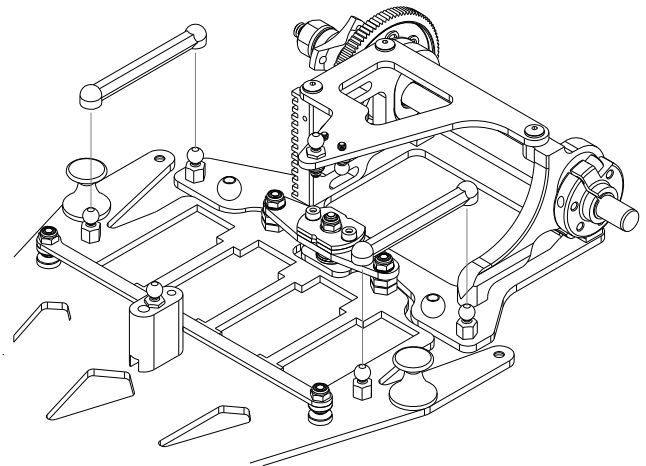
1. Use the 4-40 screw to fix the black fiberglass battery brace to the chassis. Stack the cone washers point-to-point as shown. Use a aluminum mini lock nut to secure the assembly. This brace stops the battery from flying forward in a big crash.
2. Mount hour-glass shaped battery hooks to the chassis using short 4-40 x 1/4 screws.
3. Fasten the hex balls to the chassis as shown with the short 4-40 x 1/4" screws. The short side leg goes toward the middle of the car. Use a 3/16" nut driver to securely tighten the hex balls.

Bag 2



1380 - CRC 1-piece links

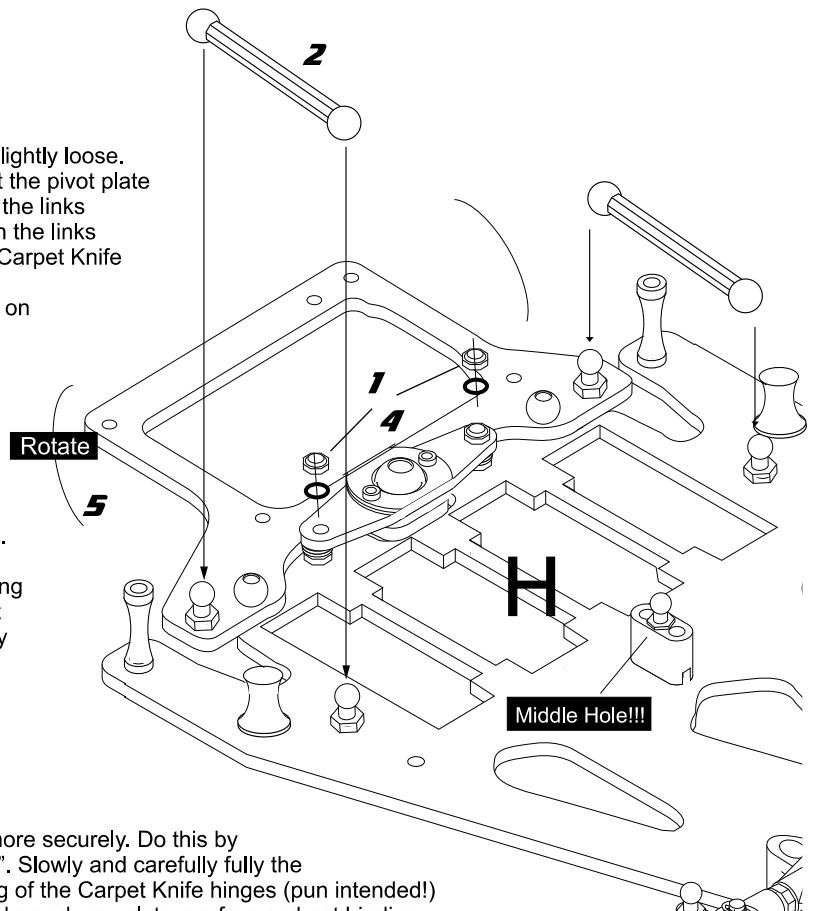
To begin the link installation, secure the hex-pivot balls to the chassis with the screws provided in Bag "2". Tighten the pivots firmly using a 3/16" nut driver. Hold the screws from underneath the chassis with the 1/16th allen wrench provided, but **TIGHTEN** the balls from above with the nut driver. If you try to tighten from underneath, you will strip out the head of the screw. Use the larger nut driver to tighten as this larger surface will not strip as easy.



During the 1-piece link installation, it is necessary to remove the top tweak brace so that the pivot plate (football shaped piece) is exposed from the top. Do this by removing the 2 button head screws that are right behind the body mounts.

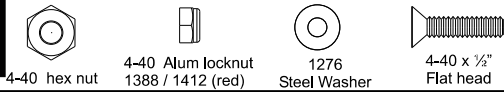
1. Be sure the 2 aluminum locknuts on top of the pivot plate are slightly loose. There should be a washer under each alum locknut. Notice that the pivot plate "floats" or moves slightly on the 2 screws. This "floating" allows the links to "free up". This ensures that the rear pod plate pivots freely on the links and center pivot ball. This is a crucial step when setting up the Carpet Knife
2. Snap the 2 links on the balls as shown. They should rock freely on the pivot balls. Do NOT install the center shock yet, if you have already, remove the center shock.
3. Place the chassis/backplate 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. Holding the chassis at the "H" point (not the rear pod) by pressing the chassis down to the table. Slowly tighten the 2 locknuts that secure the pivot plate (football shaped part). 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 football pivot more securely. Do this by again holding the chassis down to the table at the hold point "H". Slowly and carefully fully the locknuts that hold the football piece to the chassis. The handling of the Carpet Knife 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.



On this page, work from upper left (1) to bottom (2) and then to upper right (3).

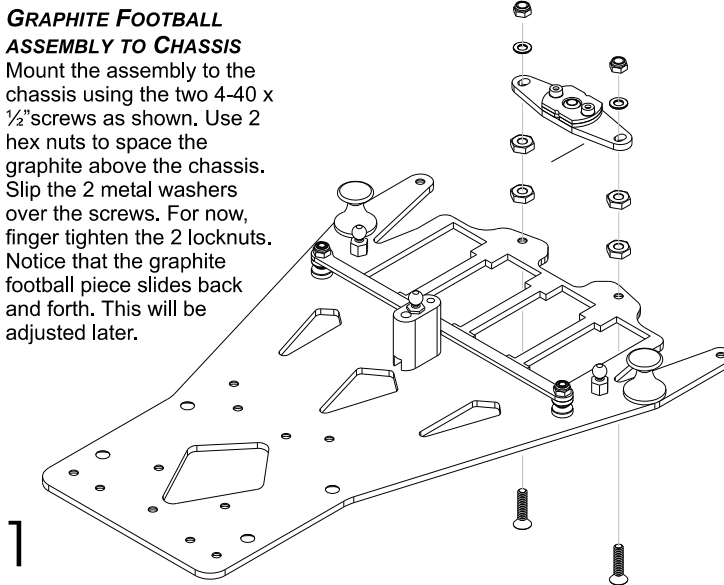
Bag 6



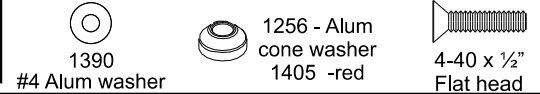
GRAPHITE FOOTBALL

ASSEMBLY TO CHASSIS

Mount the assembly to the chassis using the two 4-40 x 1/2" screws as shown. Use 2 hex nuts to space the graphite above the chassis. Slip the 2 metal washers over the screws. For now, finger tighten the 2 locknuts. Notice that the graphite football piece slides back and forth. This will be adjusted later.



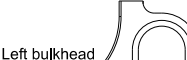
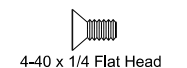
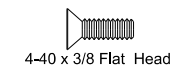
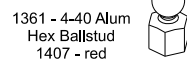
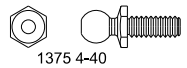
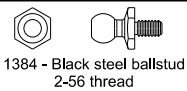
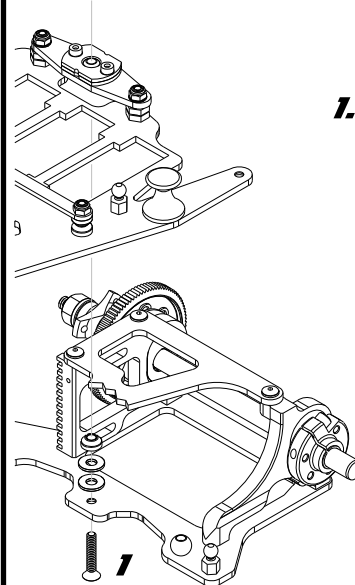
Bag 6,1



MOUNT REAR LOWER POD TO CHASSIS

- With the football assembly fastened to the chassis, line up the rear lower graphite plate. Put the 4-40 x 1/2" screw through the graphite bottom plate in the center hole as shown.

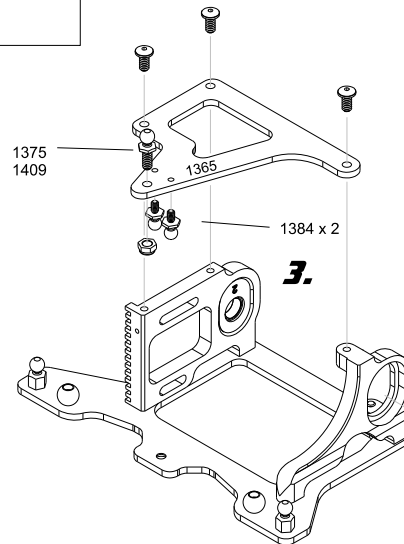
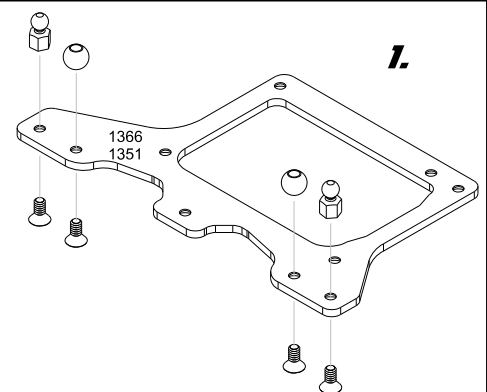
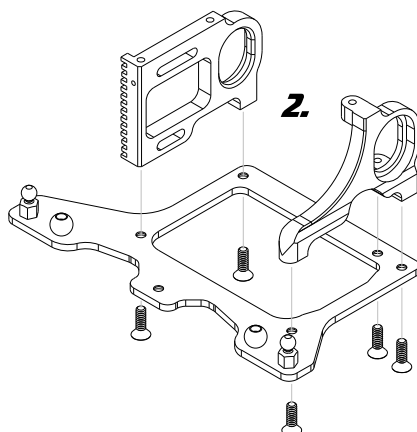
Stack 2 #4 aluminum washers and 1 cone washer (point up) over the screw. Then, thread the screw into the center mono-ball in the football assembly. Tighten using quick turns of the driver. Keep an eye on this screw the first few runs, it tends to loosen until "seated".



- Bag 1 - Fasten the hex-ball and 1256 chrome ball to the 1366 (1351 thick) lower rear plate with the short 4-40 x 1/4" screws.
- Bolt the left bulkhead (4246-red, 1368-std) to the lower plate using three 4-40 x 1/4" flat head screws. Do the same for the right side motor mount plate (4247-red, 1367 std.) Using two 4-40 x 1/4" screws.
- With the 1365 top plate upside-down on a table, thread in the small black 1384 2-56 balls studs into the 2 small holes. Be sure to be straight and perpendicular to the plate.

Mount the aluminum ballstud (larger) through the single hole near the tip of the 1365 plate. Secure with the 4-40 mini-nut.

Mount the 1365 graphite top plate to the aluminum motor pods with the 4-40 x 1/4" button head screws.



Bag 1, R + 5

Bag 3

13783 - 1/8th set screw

1287 - Metal Spring holder

1384 - Black steel ballstud

4-40 x 1/4 Button Head

1378 - Body Post w/collar

4-40 tweak screw

1290 - 4-40 x 3/4
Standoff
1402 Red

1293
Standoff 4-40 x 5/8
(3,2R)

Side Spring
1280 - Spring Set
1295 - 1299
Blue - Purple

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

Then, use super
glue or threadlock
to bond the two
together.

Tweak screw

Thread in
tweak screw

CHASSIS/TWEAK BRACE ASSEMBLY

1. Place the 1370 brace on a smooth, flat table and thread the Tweak set screws into the 1370 graphite brace. Try to be careful to thread it in straight and perpendicular.
2. With the tweak screw threaded through the 1370, glue or threadlock the tweak screw to 1287 (metal spring holder) as shown in the illustration. The tweak screw should thread in until flush with the 1287.
3. **ATTACH SPRING TO METAL RETAINER**
Use a small screwdriver or your fingernail to start the spring into the groove on the metal retainer. Pull the leading coil over the retainer and place the top coil into the groove. Then, holding the retainer securely, turn the spring counterclockwise to "open" the coil and snap the remaining portion over the groove.
4. Attach the 1384 2-56 damper tube balls to the 1370. Thread them straight and perpendicular to the 1370.
5. Attach the standoffs and the body posts to the 1370 using the button head screws provided as shown. The smaller set screw are simply threaded in until 2 thread show.
6. Thread the 13783 set screw into the body post collar as shown. The set screw will be used later to lock the collar at the height needed depending on your choice of body shell.

This brace will be attached to the chassis later.

4-40 x 1/4" Flat head

4-40 x 1/4" Button head

Bag 3 cont.

TWEAK PLATE TO CHASSIS

1. Mount the tweak plate to the chassis with the 2 flat head screws.
2. Attach the tweak plate #1370 to the standoff using the button head screw.
3. Place the chassis and back plate on a flat surface (no tires installed). Then, tighten the spring adjusters down so that the springs just touch each ball. The spring should have very little preload.

Bag R, B Assembly

1386 Flanged
Bearing x 2

1385 Plastic ride height adjusters x 2

RIDE HEIGHT/BEARING HOLDERS

Locate the bearing holders with the #2 on them. Install the 1386 flanged bearings in the plastic ride height adjusters. Then, slip the adjusters in the rear bulkheads, left and right.

Be sure each ride height adjuster is installed the same way. For example, if the #2 is up, be sure both sides has the #2 up. Different ride height adjusters are used for different rear tire sizes. When the car is completed, use the adjuster that gives the car about 1/8" ground clearance on a fairly smooth carpet track.



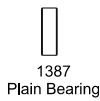
4224
Right Diff Hub



Nylon Diff nut
4126



1386
Flanged Bearing



1387
Plain Bearing



Large "D"
Diff Ring
4201

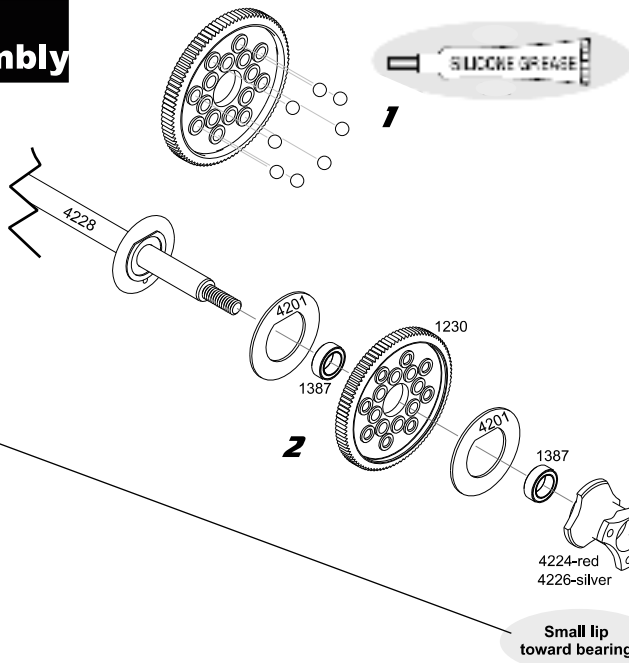


Diff Spacer
4121



Belleville Spring
Washer - 4123

Assembly



Bag G + B

INSTALL AND GREASE THE DIFF BALLS
Pop the 1/8" diff balls in each of the outer ring of holes in the 1230 diff gear. The balls snap into the socket. Place a small dab of silicone diff grease on each ball. Use very little!

FINAL DIFF ASSEMBLY

2. Hold the 4228 axle upright with the machined "D" cutout facing upward. Place one 4201 ring, and a 1387 plain bearing over the end of the axle. Align the 4201 Ring so that it notches into the axle. Place the assembled gear with the greased diff balls over the axle. Add a second 4201 diff ring, 1387 plain bearing, diff hub, flanged bearing and 4121 diff spacer.

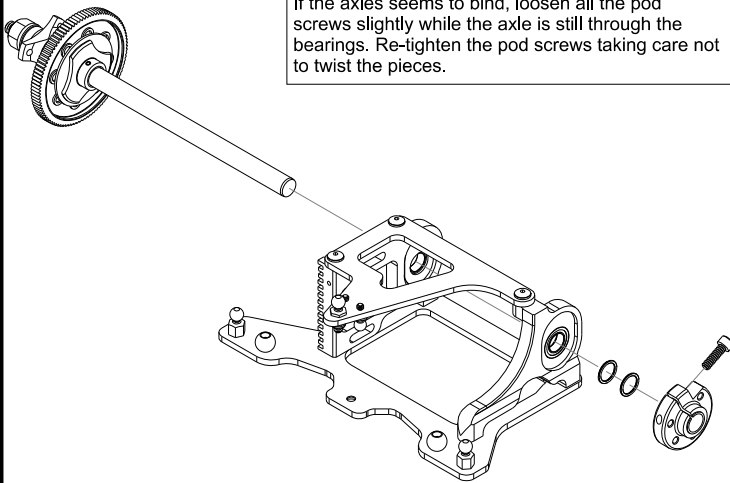
3. The diff spacer has a small machined lip into it, point that toward the bearing. Now, place the 4123, spring washer so that the cone points away from the gear. Then thread the locknut, 4126. Be sure the 2 "D" rings have settled into their notches. Just snug the nut so the parts stay together on the diff axle, later we will correctly adjust the tension on the diff lock nut.

Bag D + B

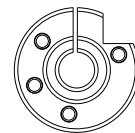
AXLE IN BEARINGS

Slip the axle through the bearings in the rear pod set. The axle should be free and smooth through the bearings.

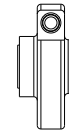
If the axles seems to bind, loosen all the pod screws slightly while the axle is still through the bearings. Re-tighten the pod screws taking care not to twist the pieces.



Bag H



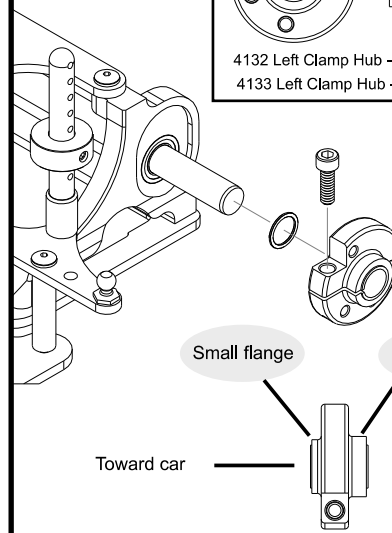
4132 Left Clamp Hub - (silver)
4133 Left Clamp Hub - (red)



5/16 Cap head
41321



1/4" Shim
4732



LEFT WHEEL HUB

On the protruding axle, slip a 4732 shim over the axle. Then slip the hub on with the narrow flange toward the center of the car. The larger flange should face out.

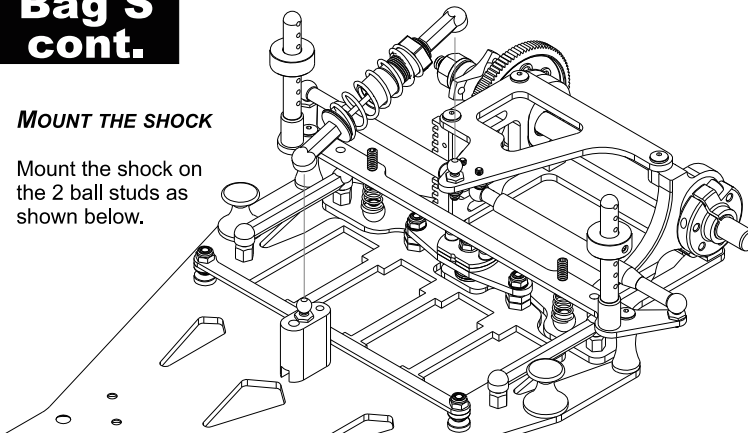
Lock the hub with the cap screw so that the axle has a small amount of side to side play in it. The thickness of 2 sheets of paper is plenty.

The wheel will be mounted to this hub later.

Bag S cont.

MOUNT THE SHOCK

Mount the shock on the 2 ball studs as shown below.



Bag B,F

4-40 x 5/16
Cap Socket

4-40 Alum
locknut

4731
1/8 shim

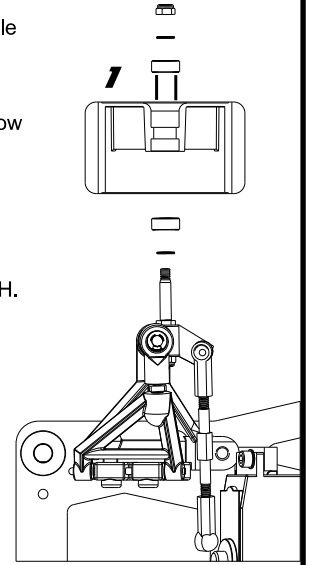
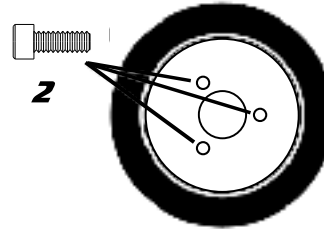
1249 - 1/8 x 5/16
bearing

1. Slip one 1/8" shim (from Bag F) over the axle followed by one 1249 bearing from Bag B.

Install the other 1249 bearing into the front wheel. The wheel/bearing assembly can now drop over the axle.

Follow that with a second shim and secure the wheel with the 4-40 aluminum locknut.

2. For the rear wheel, fasten the wheel to the hub with the 3 screws provided in Bag D + H.



Bag F cont.



12412 - Square Nuts



1241 - Universal Servo Mnts.

4-40 x 3/8"
Flat head

4-40 x 3/8"
Cap Socket

#4 Washer



Optional Kimbrough Servo Saver
113 - Airtronics, JR, KO
114 - Futaba
131 - Hitec

UNIVERSAL SERVO MOUNTS

1. Secure the servo mounts with the 4-40 x 3/8 screws provided in Bag F. Press the square nuts into the slots in the plastic mounts. Start the screw from underneath. Leave these screws slightly loose. Slide the plastic mounts around to adjust to both servo size and center.

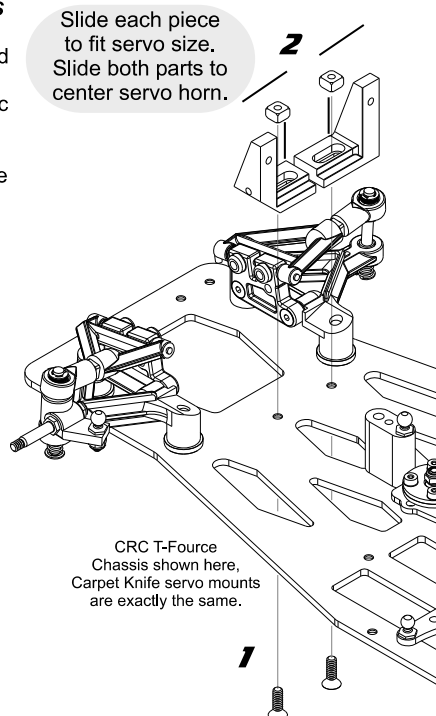
Slide each piece to fit servo size. Slide both parts to center servo horn.

2

2. With the square nut inserted slightly into the slot and the lower mounting screw started but slightly loose, place the servo in between the plastic mounts and squeeze them together.

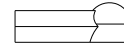
3. When the plastic is snug against the servo, secure the with cap screw provided. Refer to diagram #3 on the right. Now center the servo and tighten the screws.

4. Install the servo saver that is made for your servo. Kimbrough savers 113, 114 and 131 fit most of the servos used currently.



CRC T-Fource Chassis shown here, Carpet Knife servo mounts are exactly the same.

1

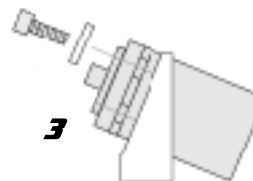


1231 - Plastic Ball Cups

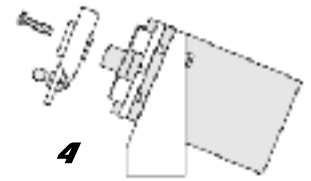


Steering Tie Rod

Mounting the Servo

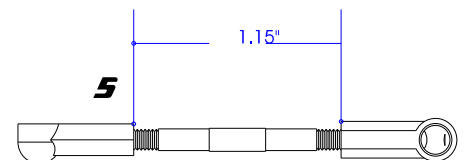


3



4

5. Using the ball cups and turnbuckles, make 2 tie rods the size shown. The diagram below is actual size.



5

1.15"

13692-Plastic
Ball Cup

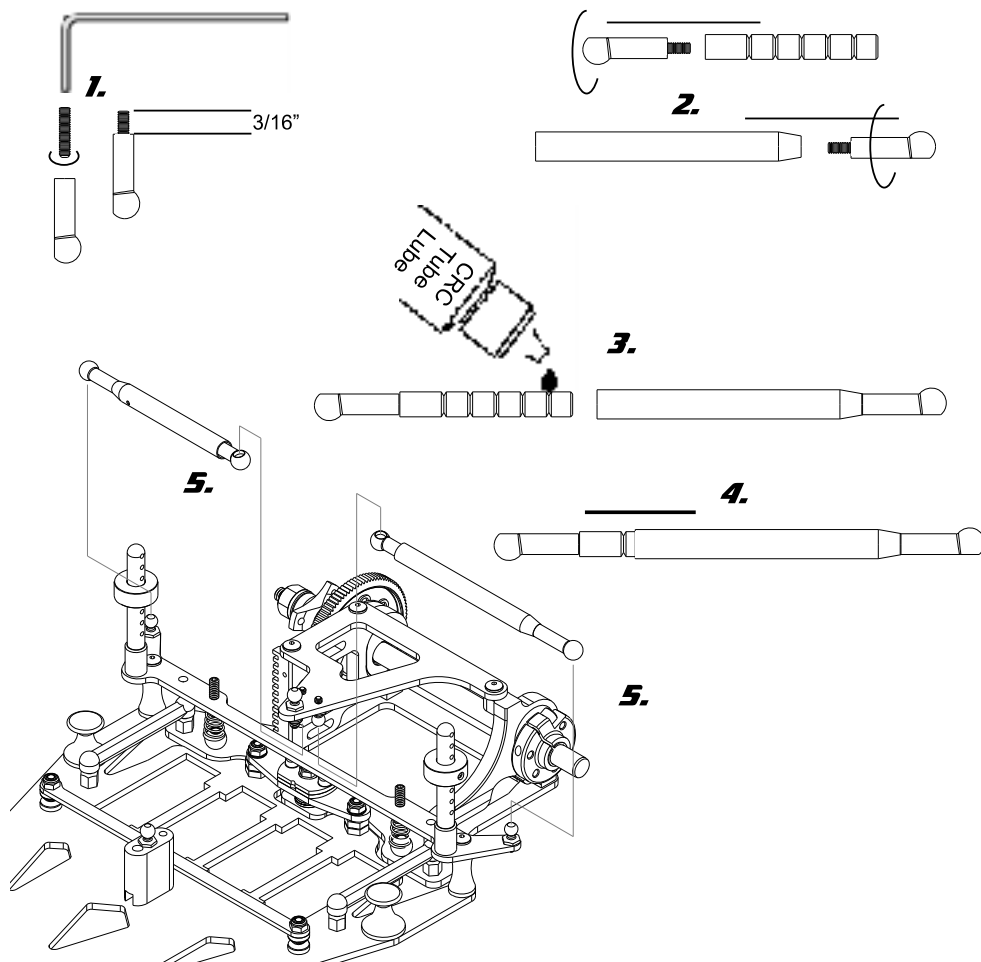
1397 - 2-56
set screw stud

Delrin Plunger
#13693

Aluminum Tube

13695 - .035"
Allen Driver

Bag 4



PREPARE THE DAMPER TUBES

Locate Bag 4 being careful not to misplace the small 1397 threaded rod set screws.

1. Using the supplied wrench, thread the stud into the black plastic ball cup. Leave about 3/16" of stud protruding from the cup. Do this for both studs and cups.
2. Thread the stud into the black delrin plunger until firmly finger tight. Be careful not to strip the threads from either the cup or the plunger. Do the same for the second cup/stud assembly into the aluminum tube.
3. **ADD DAMPING FLUID**
Using the supplied CRC Tube Lube, lightly coat the plunger with silicone fluid. Press gently and slowly as this is thick fluid and it comes out slow. Pay special attention to filling each slot with fluid. Do this on both plungers.
4. **ASSEMBLE THE DAMPER TUBES**
Slowly insert the lubed plunger into the aluminum tube twirling the plunger to spread the damper fluid evenly. Insert slowly watching for dripping fluid and overflow from the hole at the far end of the tube. Wipe any excess off with a rag.
5. **MOUNT TO THE CAR**
Now, pop the 2 completed damper tubes on the chassis at the ballstud positions shown on the illustration. One end pops on from underneath onto the graphite top plate. The other end pops straight down on the end of the graphite cross plate.

Bag 5

4-40 x 1/4" Flat head



Aluminum Ballstud

1346

Plastic Shock/Antenna mount

1347
Roll-over
mast in
front hole

Be sure to align
this little notch forward
and toward the
chassis

SHOCK-ANTENNA MOUNT

Locate the 1346, antenna/shock mount. Attach it to the chassis using the 2 small flat head screws. Be sure not to use the hole that has the slot cut into it, that hole is for the roll-over fiberglass antenna mast. Mount the aluminum ballstud in the top rear-ward hole as shown. This will be used to mount the shock to the car. Take the white fiberglass roll over antenna and insert it into the forward most hole. Later, when installing the radio, wrap the antenna wire around the mast and secure at the top with the black cap.

Bag 9

1/8 Set
Screw



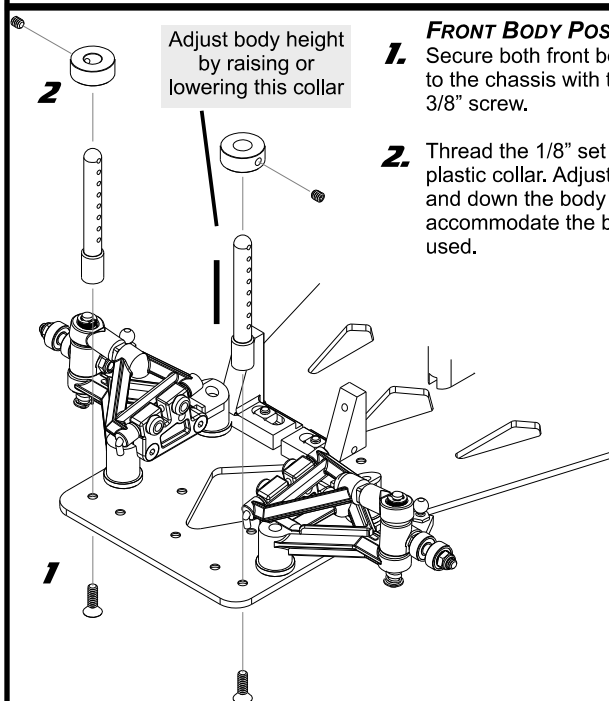
1378 - Body Post + Collar

4-40 x 3/8

Adjust body height
by raising or
lowering this collar

FRONT BODY POSTS

1. Secure both front body mounts to the chassis with the 4-40 x 3/8" screw.
2. Thread the 1/8" set screw in the plastic collar. Adjust the collar up and down the body post to accommodate the body shell used.

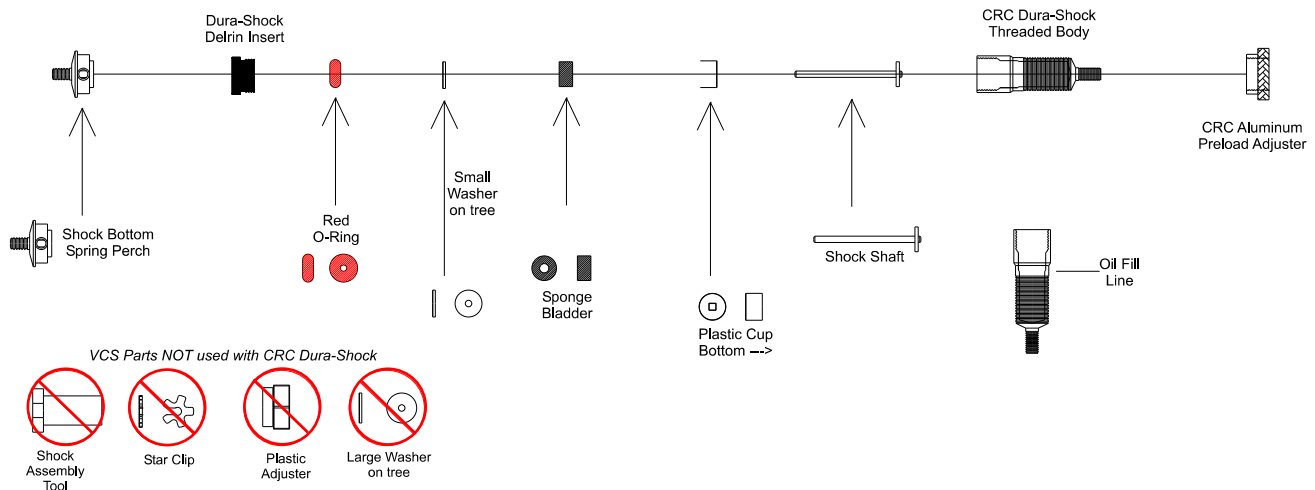


CRC Dura-Shock Assembly Instructions

***Pre assembly inspection - Take the shock shaft and slide it through the black Delrin insert. Be sure the shaft slides through freely. If the shaft drags on the Delrin, simply spin an X-acto Knife tip in each end of the delrin piece. The knife will remove the small manufacturing burr that occasionally forms right near the end of the hole.

- 1 - Using 25 weight silicone oil, soak the foam bladder in oil. Press the bladder to ensure the oil has soaked into the foam. Wet the red O-ring as well.
- 2 - Populate the shock shaft in this order; plastic cup (open end away from piston), soaked sponge, small washer from parts tree + pre-oiled red O-ring.
- 3 - Hold the body upright and fill with 25 weight oil to the line shown. Place the populated shaft in the oil slowly.
- 4 - Press the shaft slowly until it stops at the bottom of the shock. Slip the Delrin insert over the shaft and begin to thread into the shock body.
- 5 - The insert will stop threading, hydro-locking as the shock has too much oil. Oil will spill out.
- 6 - Allow the oil to bleed out, tightening and loosening the delrin insert while keeping the shaft fully depressed inside the body. This will bleed the shock.
- 7 - When the shock is fully bled, no oil will leak and the shaft will rebound out very slowly when fully depressed. The shock shaft will rebound out 1/8".
- 8 - Be sure that the shock is fully bled, any "pressure" from being overfilled with oil will cause the shock to leak during the first few uses .

***Post assemble notes: Some oil may seep out of the shock near the Delrin insert. This is simply some remnants of the oil bleed process. Just wipe it off after the first couple uses, and it should go away. This also may happen if the shock was built with too much oil in it. Be sure to bleed fully.



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