


#4400, #4401 RC12L/12LW FRONT SUSPENSION KIT

Associated's new RC12L/12LW front suspension kit includes adjustments for caster, camber, toe in and toe out, and other tuning tricks, all explained in detail in the tuning tips section following the assembly instructions.

To help you identify certain parts, an outline drawing occasionally will accompany the photo for that step. Just place your part on top of the actual-size drawing to be sure it's the one referred to.

You may use the enclosed handy turnbuckle wrench for hardware when you see this symbol. 

Retain these instructions. You'll appreciate the tuning tips at the end race after race, and every part that comes in your kit is numbered here for easy re-ordering.

Fig. 1 Dip a piece of #280 to #300 sandpaper into water and smooth all edges of the chassis (#4424). **WARNING:** graphite dust is hazardous to your health. The water will help keep you from breathing the dust.

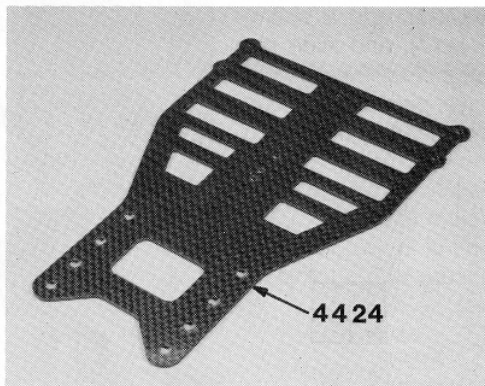


Fig. 1

Fig. 2 There are two different types of upper arm mounts as well as lefts and rights. Notice that on one side of each mount are two 'domes' with holes drilled through the middle. Orient your mounts as in fig. 2 with the 'domes' facing down. Now locate the right side 10 degree mount (as shown) and trim it from the tree.

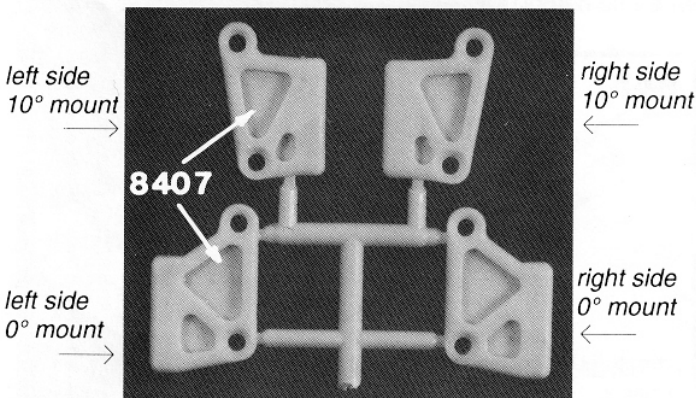


Fig. 2

Fig. 3 Attach the right side 10 degree mount (#8407) to the right lower suspension arm (#8419) using two 4-40 silver flat head screws (#8409). The 'domes' of the mount will fit the spaces in the arm.

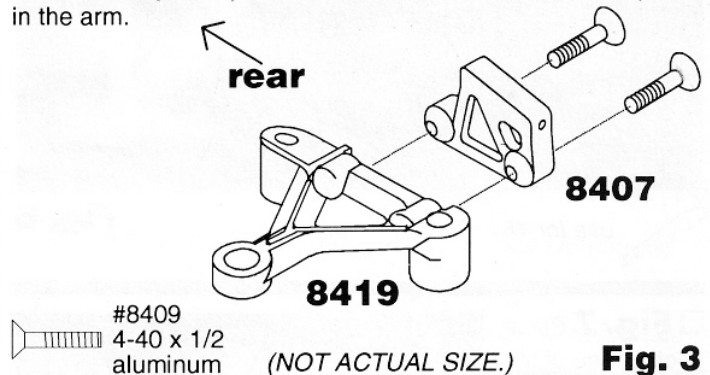


Fig. 3

Fig. 4 Place one of the pivot balls (#8417) on a flat surface, shoulder up, and snap the arm (#8419) onto it using your thumb. Always install the pivot balls from the bottom of the arms. **DO NOT USE A PLIERS!**

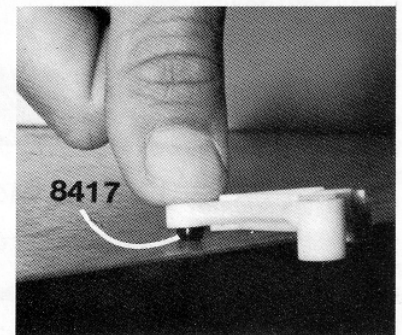
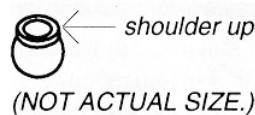


Fig. 4

Fig. 5 Align the right suspension arm over the three holes in the chassis as shown. (The farthest hole forward is for the body mount.) Mount the arm with two of the silver flat head screws (#8439). Now assemble and mount the left side arm. We have included four aluminum spacers (not shown) (#3323) for ride height adjustment.

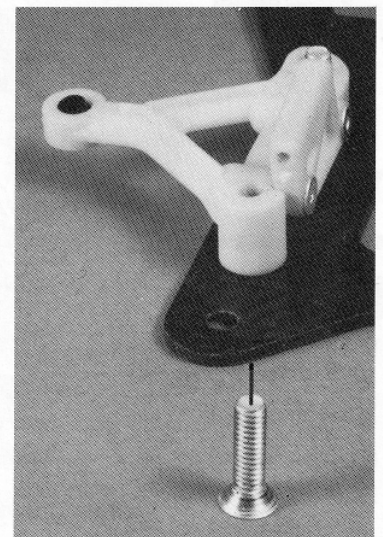
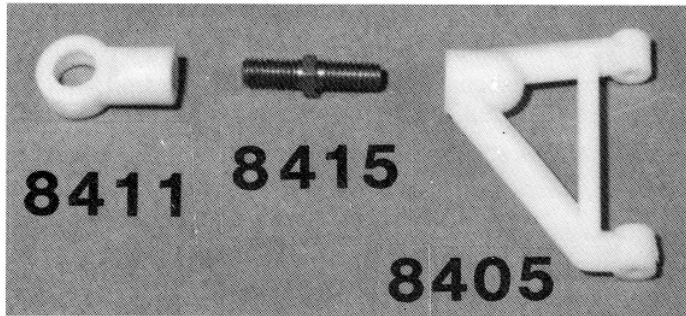


Fig. 5

ASSOCIATED ELECTRICS, INC.
3585 Cadillac Ave.
Costa Mesa, CA 92626

□ **Fig. 6** Screw one of the upper arm turnbuckles (#8415) into an eyelet (#8411) until the threads bottom. (NOTE: a 3/16 nut driver works great for this.) Then screw the other end of the turnbuckle into an upper suspension arm (#8405) until the threads bottom.




 use for #8415

Fig. 6

□ **Fig. 7** Place another one of the pivot balls (#8417) on a flat surface, shoulder down, and snap an eyelet onto it from the side that has square edges. Always install pivot balls from the side of the eyelet that has *square edges*. **DO NOT USE A PLIERS!**

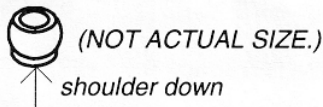
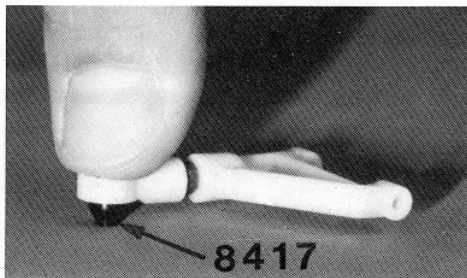
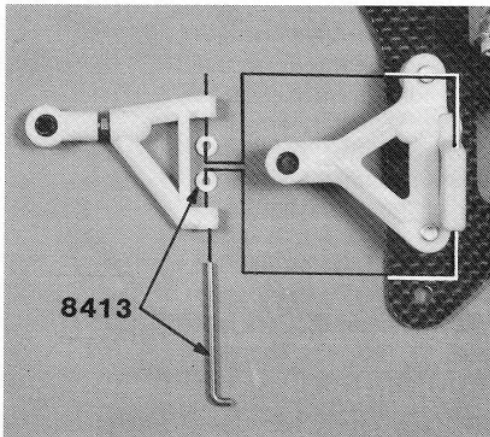


Fig. 7

□ **Fig. 8** Hinge the upper suspension arm to the arm mount by sliding the hinge pin (#8413) through the arm and mount with one white caster shim (#8413) on each side of the arm mount. Now assemble and mount the left side arm.



⊙ #8413 teflon shim

Fig. 8

□ **Fig. 9** Look closely at the steering blocks and notice the molded line on them (as shown). Carefully cut both blocks along the line.

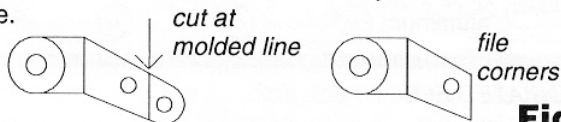
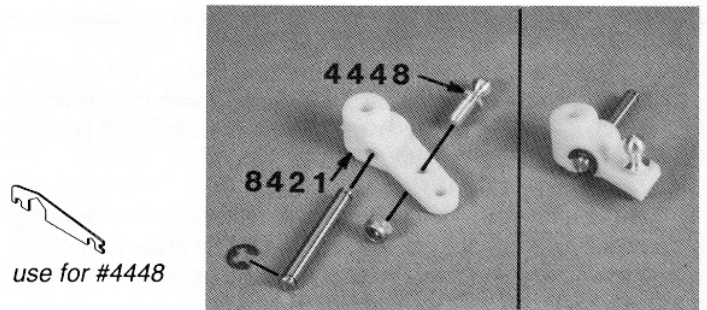



Fig. 9

□ **Fig. 10** Screw one of the aluminum ball ends (#4448) into the right steering block (#8421) and secure with an aluminum locknut (#4449). Add an e-clip (#6299) to the stub axle (#3213) and gently tap the axle into the steering block until as shown.



 use for #4448

before assembly,
before cutting block

after assembly,
after cutting block

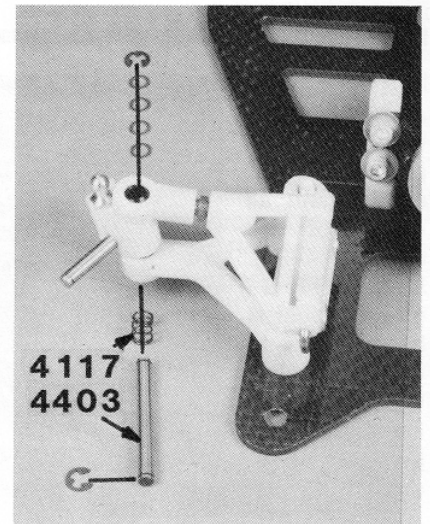
⊙ #6299
e-clip
1/8 shaft

⊙ #4449
4-40 locknut

▬ #3213

Fig. 10

□ **Fig. 11** Push an e-clip onto the kingpin (#4403), add a spring (#4117), and slide the kingpin up through the lower pivot ball through the steering block and through the upper pivot ball. Add four small shims (#8425) to the end of the king pin and secure with another e-clip.



⊙ #6299
e-clip
1/8 shaft

⊙ #8425
aluminum shim

Fig. 11

□ **Fig. 12** Push the kingpin down with your thumb so all free play is taken up by the spring. Now assemble and install the left side kingpin and steering block assembly.

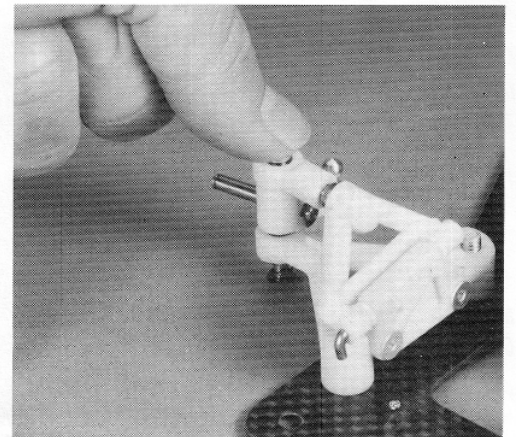
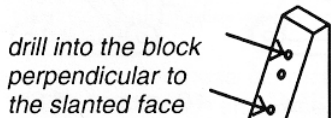
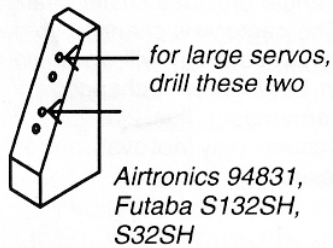


Fig. 12

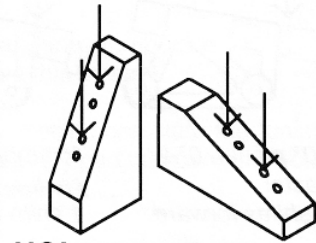
Fig. 13 Drill two 3/32" holes in each servo mounting block (#8435), depending upon what type of servo you use. See drawings for correct locations and angle.

Recommended servos: Airtronics/Sanwa 94143, 94144, 94831. Futaba S132SH, S32SH, 9601.



8435

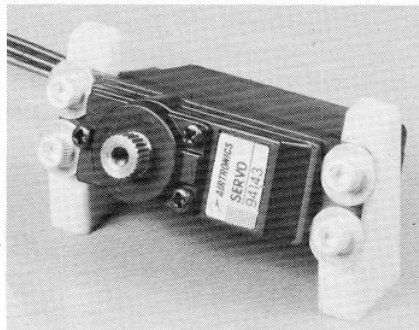
(NOT ACTUAL SIZE.)



NO! don't drill into the block at an angle to the slanted face

Fig. 13

Fig. 14 Screw the four 4-40 aluminum screws (#4145) with washers (#6936) into the servo mounting blocks (#8435) and secure the servo as shown.

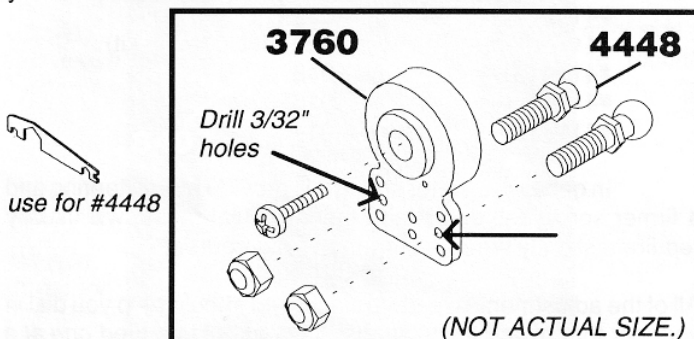


#4145
4-40 x 5/16
aluminum

#6936
#4 flat washer
aluminum

Fig. 14

Fig. 15 Drill 3/32" holes where shown and screw two aluminum ball ends (#4448) into the servo saver (#3760), secure with locknuts (#4449), and screw onto servo. Tighten only after you have installed the radio and centered the servo.



#4449
4-40 locknut

Fig. 15

Fig. 16 Screw two plastic ball cups (#6274) onto each steering turnbuckle (#6262) and match the length to the drawing below.

hold ball cups still with pliers while turning turnbuckle with tool.

use for #6262

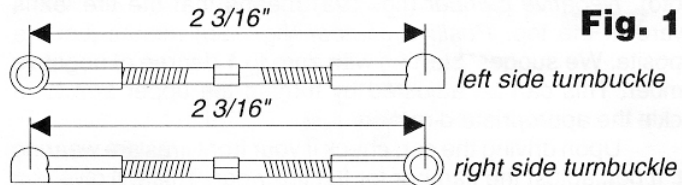
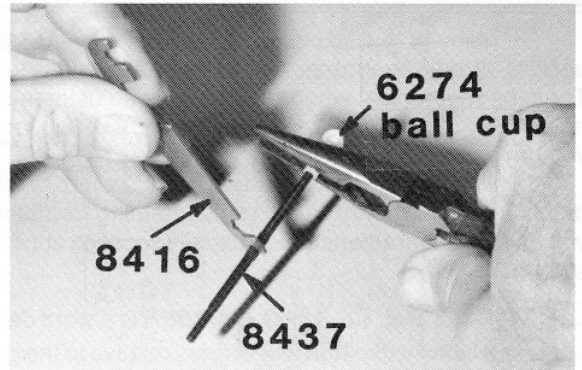
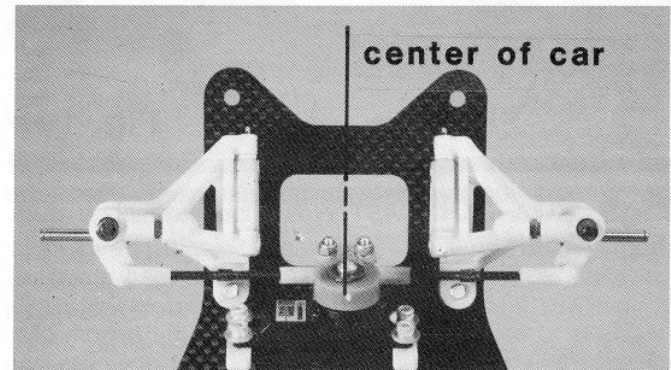


Fig. 16

Fig. 17 Snap assembled turnbuckles onto the steering block ball ends and servo saver ball ends. Align the servo output in center of your car with turnbuckles as straight across as possible.

Drill one hole for each servo mount in chassis with a 7/64" drill. Photo shows correct position of servo and turnbuckles. We have included two 4-40 flathead screws (#6292) if you wish to countersink these holes and two 4-40 buttonhead screws (#6919) if you do not.



#6292 4-40 x 3/8
#6919 4-40 x 5/16

Fig. 17

Fig. 18 Your finished front suspension should look like figs. 17 and 18.

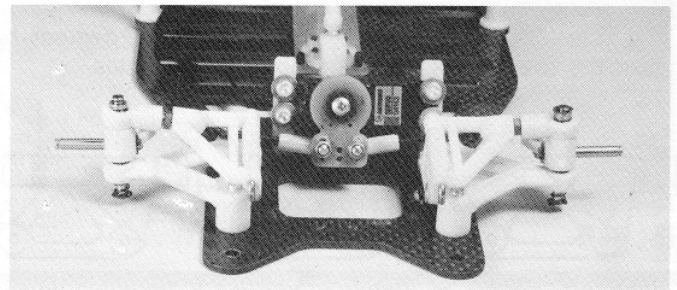


Fig. 18

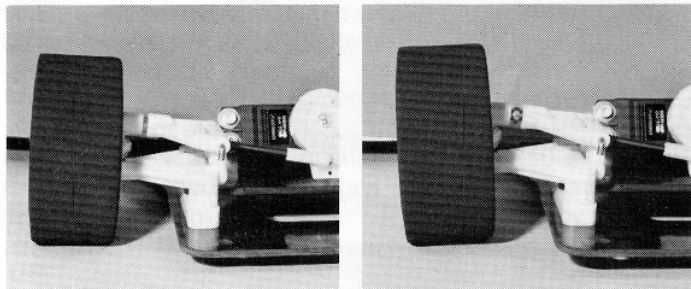
RC12L/12LW FRONT SUSPENSION TUNING TIPS

Many of the adjustments on this page are general and apply to all radio control cars, while some are unique to only a few. Try to be methodical when making your adjustments and keep notes. It is normal to have a slightly different set-up for each track you drive on.

An important point to keep in mind when making adjustments to your car: you rarely get something for nothing. When you gain one characteristic you usually sacrifice another to some extent.

□ **Figs. 19a & 19b CAMBER** is a word describing the angle to which the tire and wheel rides relative to the ground (see photo). *Negative camber* (fig. 19a) means that the tire leans inward at the top. *Positive camber* (fig. 19b) means just the opposite. We suggest starting with zero to 1 degree of negative camber. This can be adjusted by turning the upper arm turnbuckle the appropriate direction.

Upon driving the car, check if your front tires are wearing flat. If not, adjust the camber for flat tire wear. This will give you the maximum amount of steering. If slightly less steering is desired, add one or two degrees more of negative camber.



negative camber

positive camber

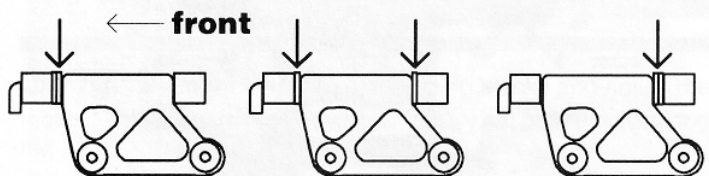
Fig. 19a

Fig. 19b

□ **Figs. 20a-20c CASTER** describes the angle at which the kingpin rides in relation to the vertical plane. Two degrees *negative caster* means the kingpin leans slightly rearward at the top. Caster has several effects; however, the easiest way to see its effects is to compare it to the casters on the bottom of a shopping cart. When the cart is pushed forward, any misalignment of the casters will cause a side load on the wheels and thus cause the wheels to align in the direction of travel.

Increasing the caster of your car will increase steering into a corner and decrease exiting a corner. Removing all caster (zero degrees) will remove a small amount of steering entering a corner but will give maximum steering in the middle of and exiting a corner.

Caster is adjustable in increments of two degrees by moving the small teflon shims as shown in the photos.



0° mount, 0° caster
2 shims forward

0° mount, 2° caster
1 shim each side

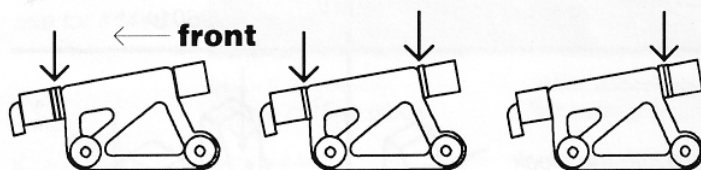
0° mount, 4° caster
2 shims to rear

Fig. 20a

Fig. 20b

Fig. 20c

□ **Figs. 21a-21c CASTER CHANGE** is relatively new to the R/C industry and is also an important adjustment possible with this new front suspension. You may have noticed by now that there are two types of upper arm mounts. One has no angle (fig. 20a) and the other mounts the upper arm at a ten degree angle (fig. 21a) to the lower arm. This angle provides caster change *during suspension movement*. The caster will change two degrees during full suspension travel. Your car will steer more aggressively when using this option. Static caster is changed in the same manner as the zero angle arm mount (figs. 21a-21c). We suggest using this option for road course only (not oval), and only if an aggressive steering feel is desired.



10° mount, 0°-2°
caster
2 shims forward

10° mount, 2°-4°
caster
1 shim each side

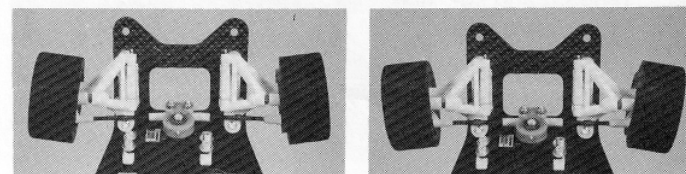
10° mount, 4°-6°
caster
2 shims to rear

Fig. 21a

Fig. 21b

Fig. 21c

□ **Figs. 22a & 22b TOE IN AND TOE OUT** is a very helpful adjustment and has a significant effect on your car. Toe in will stabilize your car and remove a small amount of steering. Toe out will allow the car to turn quicker into corners but will cause instability exiting corners or on bumpy tracks. Both toe in and toe out will scrub speed so try to use as little as possible. Adjust by turning the steering turnbuckles.



toe in

Fig. 22a

toe out

Fig. 22b

SPRINGS are available in six wire sizes. They are:

Part Number		Wire Size
#4116	firmer	.024"
#4117	↑	.022"
#4113		.020" (included in kit)
#4114		.018"
#4119	↓	.016"
#4118	softer	.014"

In general, a softer spring will provide more steering and a firmer spring will decrease steering. Oval racing will usually require a slightly firmer spring than road course.

All of the adjustments we have discussed should help you dial in your car for any track conditions. They should be tried *one at a time so you know the feeling they give your car*.

Good luck and see you at the track!