This part of the instruction manual will take you through the necessary steps to modify your Micro RS4 to fit a 540-sized motor with the use of our conversion kit.

Due to the nature of modifications that need to be performed to the stock parts of the Micro, the x3 series conversion kits are intended for more experienced RC hobbyists. If you do not feel comfortable performing these modifications, do not attempt them or ask an adult for assistance. This is a short list of some tools you will need:

Curved Lexan Scissors
Rough sand paper (about 60 grit)
Hobby file
Drill and 1/16" [1.5mm] drill bit
Phillips screwdriver (#1)

We recommend having a clutter-free workbench or clean area where you can work safely and where you won't lose any pieces or parts. A lot of the drilling and sanding is very meticulous and takes time and patience to get right.

DO NOT rush through any of these modifications. Take your time and do it right. DO NOT skim through this instruction manual. Read every step and follow every instruction.

If you don't follow these procedures as outlined you could miss many of the small details which help explain the how and why you are to do some of the procedures involved in performing this complicated conversion.

STEP 1: MODIFYING THE REAR BULKHEAD AND MOUNTING THE MOTOR PLATE

This part of the instruction manual will explain how to modify the rear bulkhead to fit the motor plate.

You will need to perform two modification to the rear bulkhead:

1. Drill two 1/16" holes in the lower and upper side for the mounting motor plate screws
2. Sand off the upper mount and shave down the front-side of the carrier

The motor plate is designed to fit over the rear bulkhead and mount with three screws: AE - (2) M2 x 5mm Phillips Pan-Head Motor Plate Screws and AF - (2) 1/4" 2-56 Phillips Flush-Mount Motor Plate Screws. The holes for the AF 2-56 screws need to be drilled into the side of the rear bulkhead in the locations shown by the holes in the motor plate. Press-fit the motor plate onto the axle housing and notice the locations where the screws are supposed to go. Drill a 1/16" hole straight into the side of the rear bulkhead in each location as shown with the motor plate attached. See Figure 1 and Figure 2. Do not drill deeper than 5/16".

Be careful not to drill at an angle as the bit could protrude out the side of the rear bulkhead.

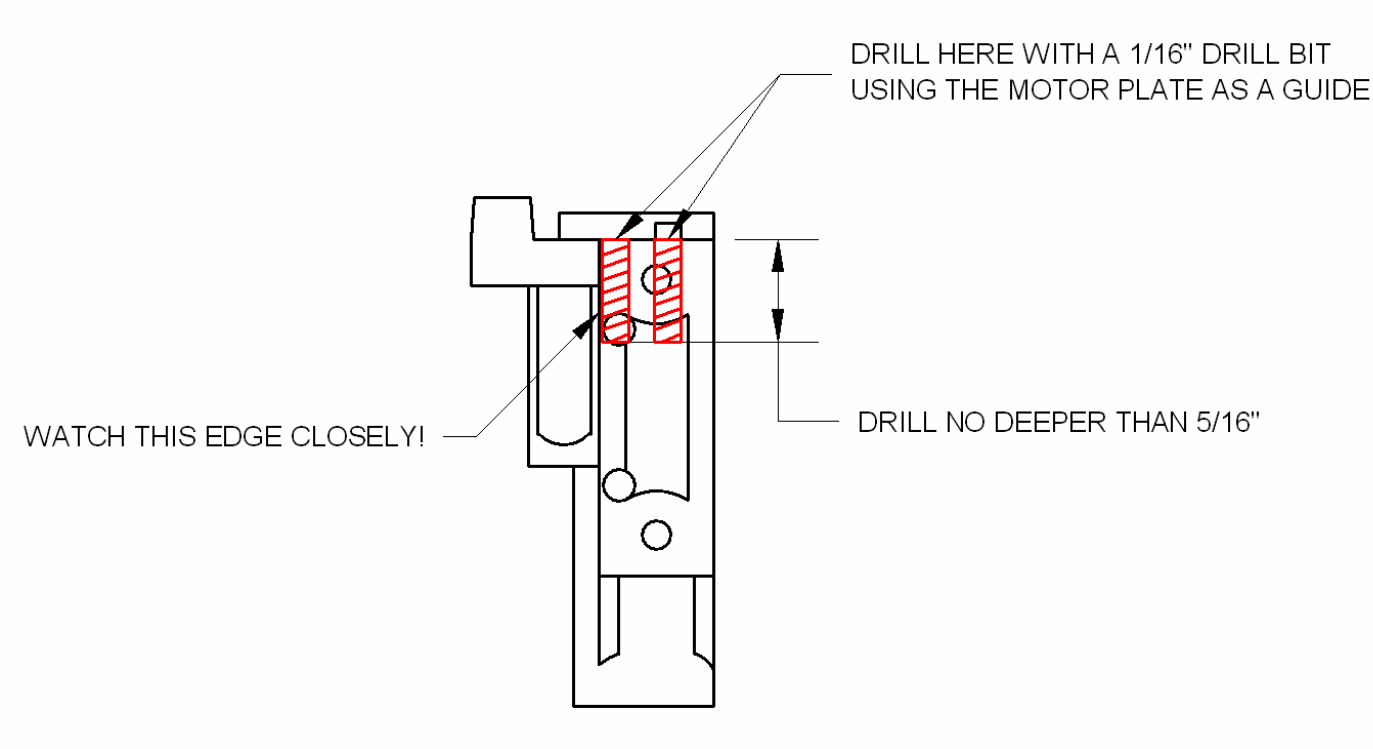

Figure 1. Underside view of rear bulkhead showing where to drill holes.

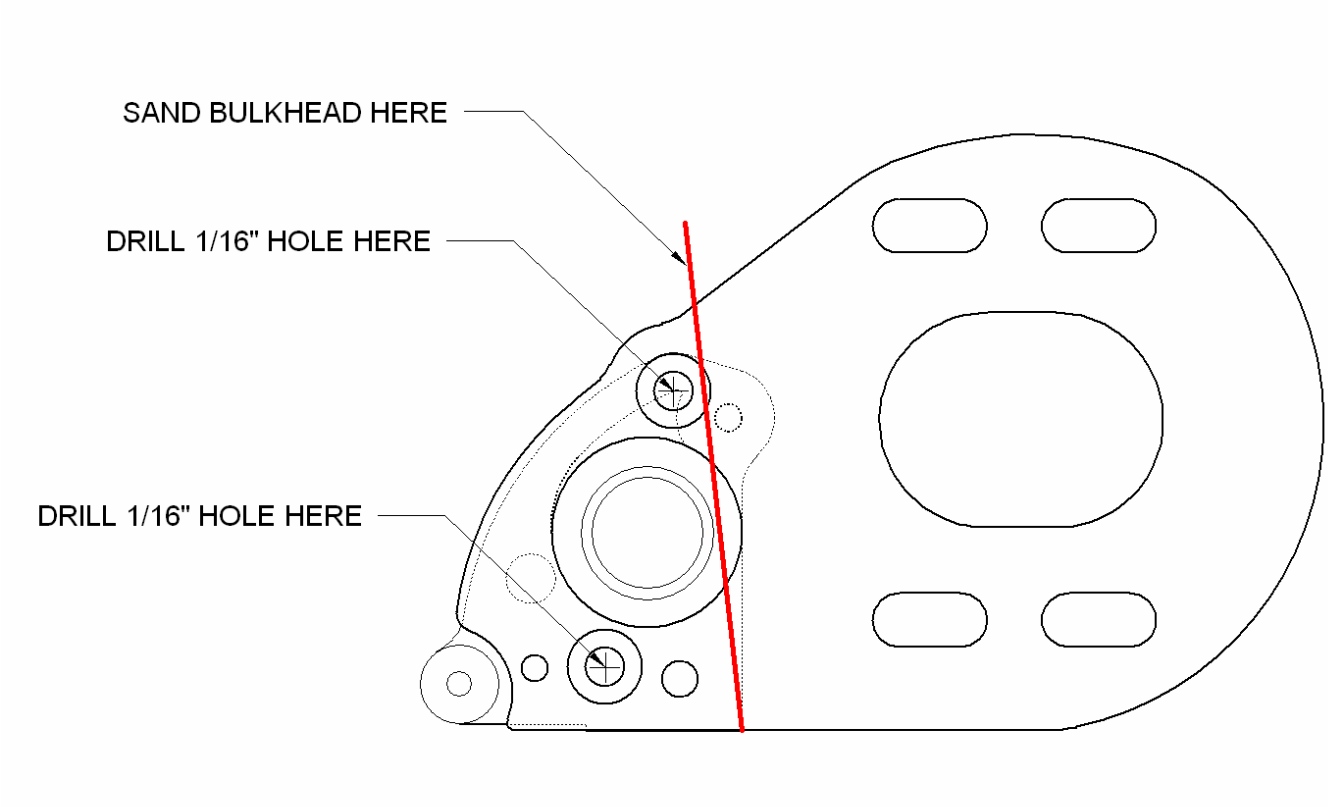

Figure 2. Drill two 1/16” holes into the rear bulkhead as shown.

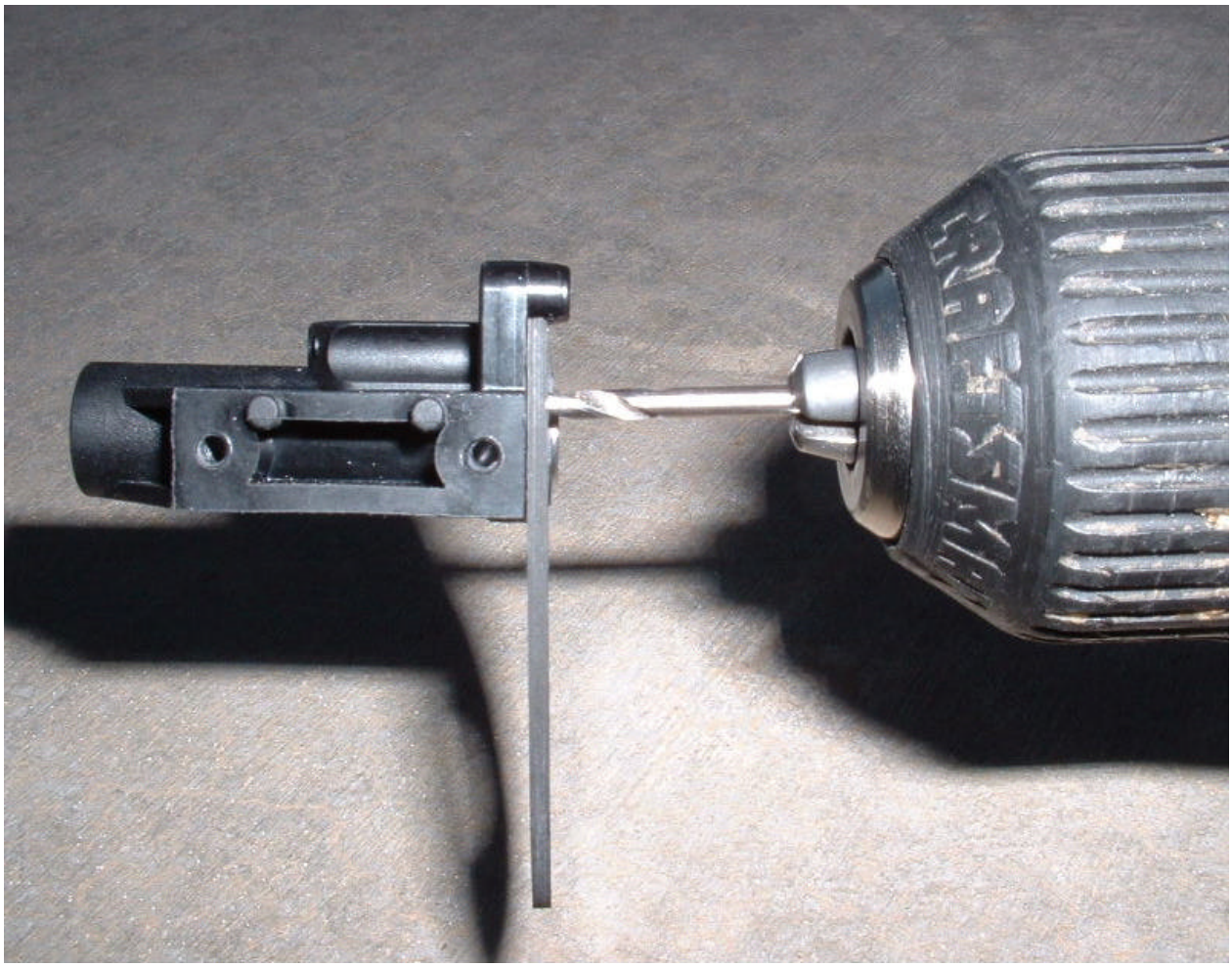

Figure 3. Use the motor plate holes as a guide when drilling the two new motor plate holes.

SANDING THE REAR BULKHEAD

Now you will need to shave the inner-most portion of the rear bulkhead completely flat. See Figure 4. This modification will allow you to use pinions as small as 27-tooth, which will mean insane amounts of low-end power, and more torque than your tiny tires will know what to do with. The best way to accomplish this task is with a belt sander, disc sander, wheel grinder, or a piece of sandpaper. Place the rear bulkhead front-side down at a slight angle and begin sanding. Go little by little, sanding all the way down until the bearings almost begin to show through. Periodically test your progress by setting your motor up against the rear bulkhead with the pinion you intend to run in place. Put the bearings and differential in place and see if you can get the two gears to mesh. If not, keep sanding. If they mesh without any problems, then you are done and can move onto the next step.

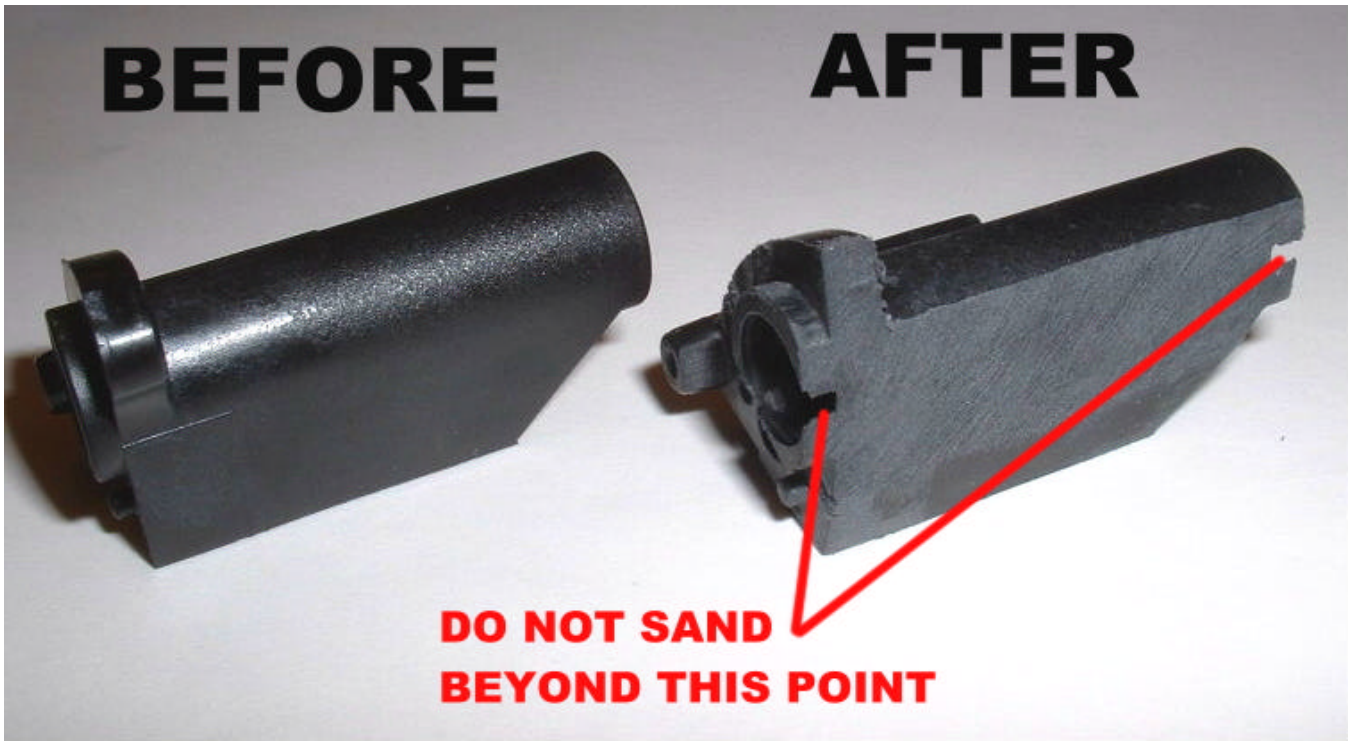

Figure 4. Sand down the front-side of the rear bulkhead as far as possible to fit 27-tooth pinions. The front-side of each bearing will just barely show through.

If you do not have any power tools to do this task quickly, you can use a sheet of 60 grit sandpaper. Place the sheet of sandpaper on a workbench and sand the front-side of the rear bulkhead until it looks like the rear bulkhead shown in Figure 5. Sand at a slight angle and do not sand further than the bearing support edges. If you do not intend on running a pinion smaller than 30-tooth, then you do not need to sand down so much of the rear bulkhead. The rear bulkhead shown in Figure 5. will support pinions as small as 30-tooth and only requires a few minutes of light sanding.

Figure 5. This rear bulkhead will accept pinions as small as 30-tooth. However, keep sanding if you wish to fit a smaller pinion.

Once you are done sanding the rear bulkhead, and the pinion you wish to run meshes without any problems, install the motor plate back onto the rear bulkhead. Screw the 2-56 phillips-head screw into the new holes as shown in Figure 6a.

You will want to put a very small drop of CA into each hole before putting in the screws to strengthen the joints.

Turn the rear bulkhead around and screw the M2 screw into the backside of the motor plate as you have done on the stock Micro as shown in Figure 6. This hole is not tapped (i.e., it is not threaded). Be careful not to strip the fibers in the CF as they are softer than typical aluminum. It should thread in tightly and securely. Your motor plate is now attached to the rear bulkhead and will support any 540-sized motor you wish to use.

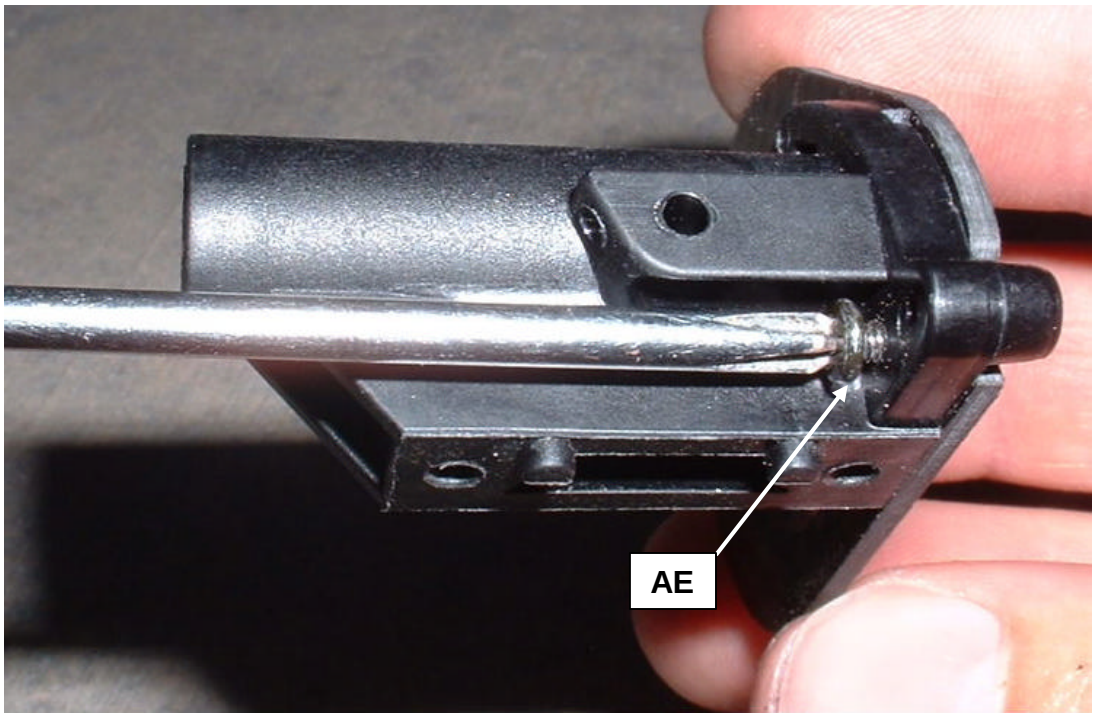

Figure 6. Screw the M2 x 5mm Phillips Pan-Head Motor Plate Screw [AE] into the motor plate as shown.

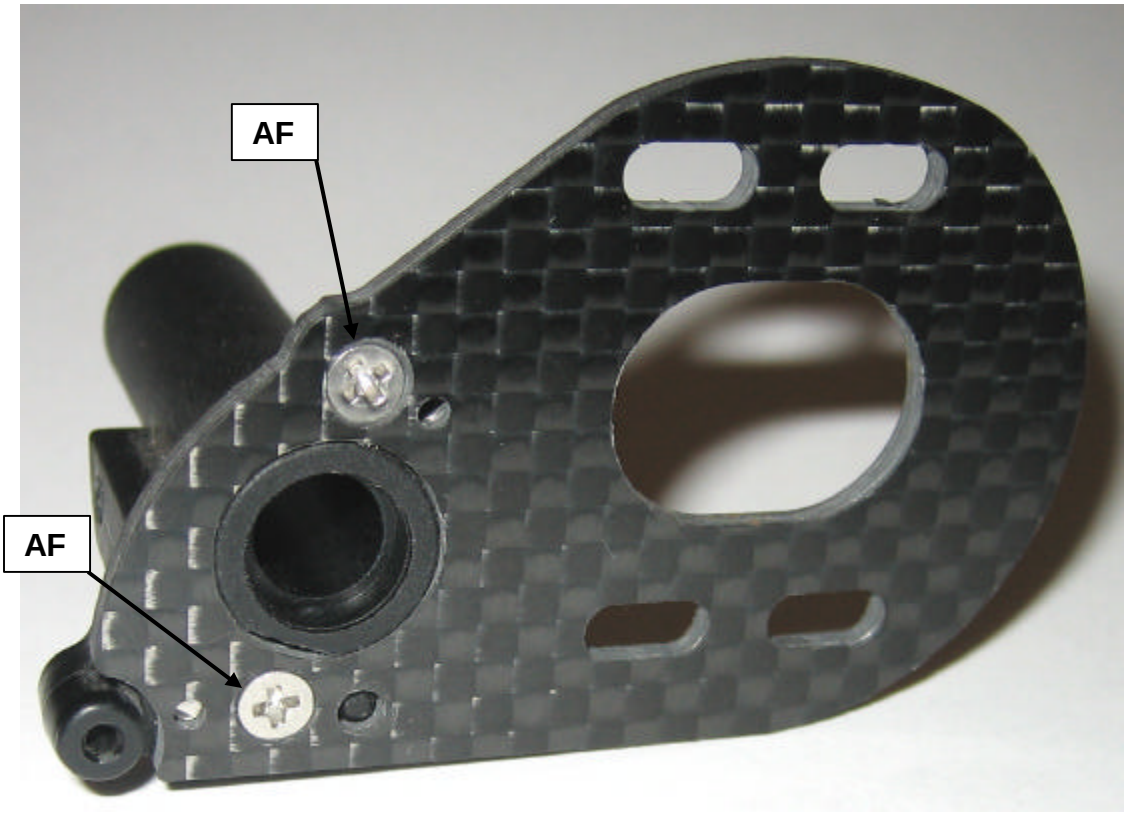

Figure 6a. Screw the two 1/4" 2-56 Phillips Flush-Mount Motor Plate Screws [AF] into their respective holes in the rear bulkhead.

STEP 2: MODIFYING THE AXLE

NOTE: This procedure has been carried over from earlier editions of our 540 kits, however we've recently found it not to be necessary. As long as the set screw is tight enough, the purple Hub-L piece should never come loose. However if you're having trouble keeping everything nice and snug, then follow the procedure below.

The next step requires modifying the axle so that the Hub-L piece can sit out 3mm (0.125") further on the axle and still mount with the set screw. A Dremel® or a small hobby file works best for this modification. Carefully lengthen out the flat spot about 3mm further on the axle. Be sure to keep the flat spot smooth and the same depth as the original flat spot. Work slowly and do not cut too deeply. Use the 3mm aluminum spacer that came with your kit as a guide to see how much longer to make the notch. It should look like the picture in Figure 10.

Once the notch for the set screw in the axle has been lengthened, the rear axle assembly goes together exactly as it did with your original Micro. Install the 3mm small-diameter spacer between the bearing and the purple Hub-L piece. Make sure that the axle spins freely and does not bind against the bearings. If the notch you made is not exactly flat, the set screw may have a tendency to slide or walk as it is tightened which could cause binding. After the set screw in the Hub-L is tight, make sure you can slip a piece of paper between the 3mm spacer and the bearing.

It is important to watch the axle in this location carefully as sometimes after a rollover, the Hub-L will get pushed on further into the bearing and cause unwanted friction. This scenario is not exclusive to the our kits, but is common to the Micro RS4 in general.

Figure 7. Lengthen the notch in the axle an extra 3mm.

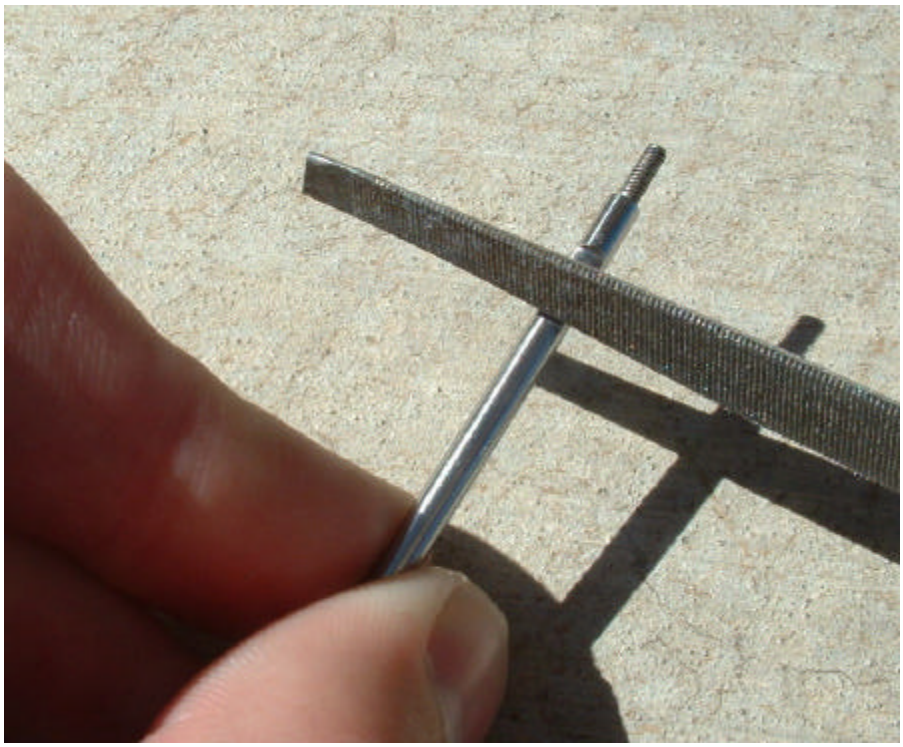

Figure 8. Use a fine-tooth file to extend the set screw notch in the axle.

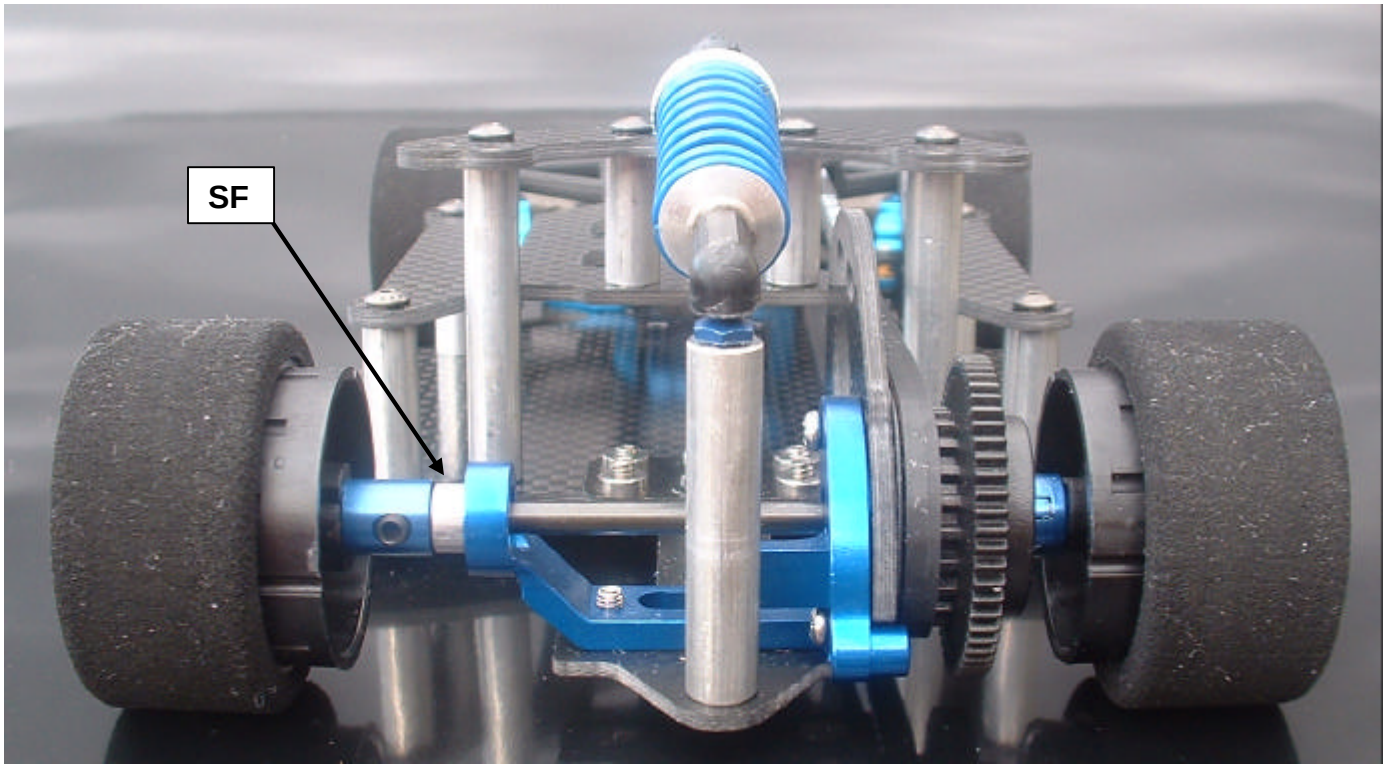

Figure 9. Rear axle showing 3mm spacer [SF] and total wheel offset with unmodified wheel drum.

The white M2 [MG] nylon washer that came in your kit is to be used over the axle threads on the rear driver-side wheel drum. Remove the stock plastic spacer from the wheel drum that came with your original kit. Install the M2 nylon washer over the threads and tighten down the stock M2 lock nut that came with your original kit. See Figure 10.

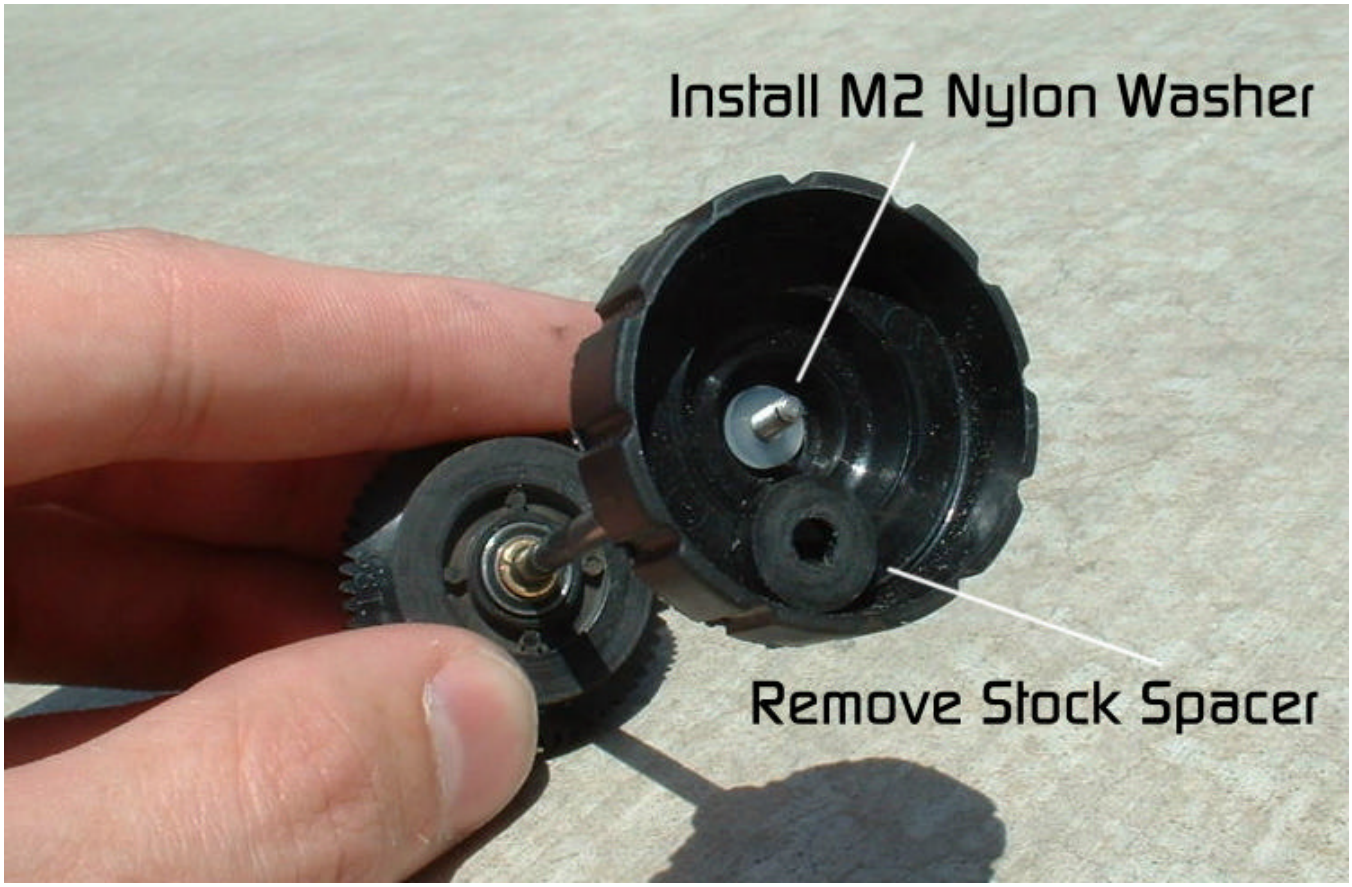

Figure 10. Remove the original kit wheel drum spacer and install the white nylon M2 washer.

EQUAL WHEEL OFFSET TRICK

It is possible to achieve the proper amount of clearance without filing the axle or having to use the 3mm spacer at all. This trick only works with certain types of motors, and may require modifying the motor for proper installation. Please visit www.aktionrc.com and check out the TIPS section for details.

STEP 3: CUTTING THE INNER WHEEL DRUM

Using the Lexan scissors, begin making a cut from the edge of the wheel drum to the center of the wheel drum. Cut in small portions all the way around the wheel drum until you have a nice clean cut. Trim away any excess plastic on the wheel hub and Voila! Your inner wheel drums are perfectly cut and will now accommodate the long can of almost any 540-sized motor.

Figure 11. Cut from the outside edge to the center of the wheel drum and all the way around.

Figure 12. Finished product should look like this.

Once you have cut off most of the inner portion of the wheel drum, you will want to go back and sand down the rough edges so that there is no ridge left on the wheel drum. The finished product should look something like what you see in Figure 13.

Figure 13. Finished inner wheel drum with inner portion cut away.

Figure 14. Comparison of a cut and uncut inner wheel drum.

This modification adds about 6.5mm-7mm of inner-drum clearance to both the left and right wheels. This is almost enough to clear the can of the 540 motor on the left wheel, but not quite. The additional 3mm spacer on the left wheel increases the total clearance to 10mm, which is just enough to allow the motor to not come into contact with the wheel.

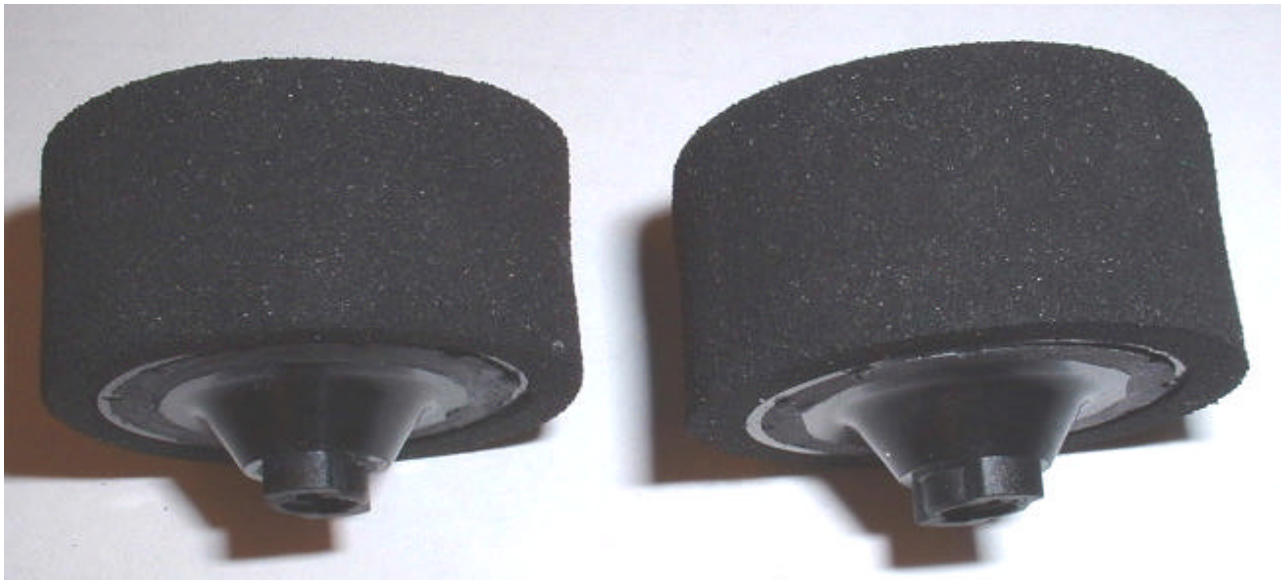

Figure 15. Finished wheels, rims and foam tires with additional 7mm clearance.

Now that the inner wheel drums have been cut down to size, you will notice that there is mush less inner drum for the rim to attach to. It becomes obvious that the wheel is not going to stay put on that tiny drum while driving without either pushing itself all the way in or falling off

entirely. Which is why at this point, the rim/wheels must be glued to the drum with just a few drops of CA. When you are ready to attach the rim/wheel, drop 3 drops of CA into the 3 grooves that the wheel's 3 splines will fit into. Slide the rim/wheel on slowly all the way to the edge that you just cut.

Make sure that the rim/wheel is pushed on an equal amount all the way around the wheel drum, or the wheels will wobble.

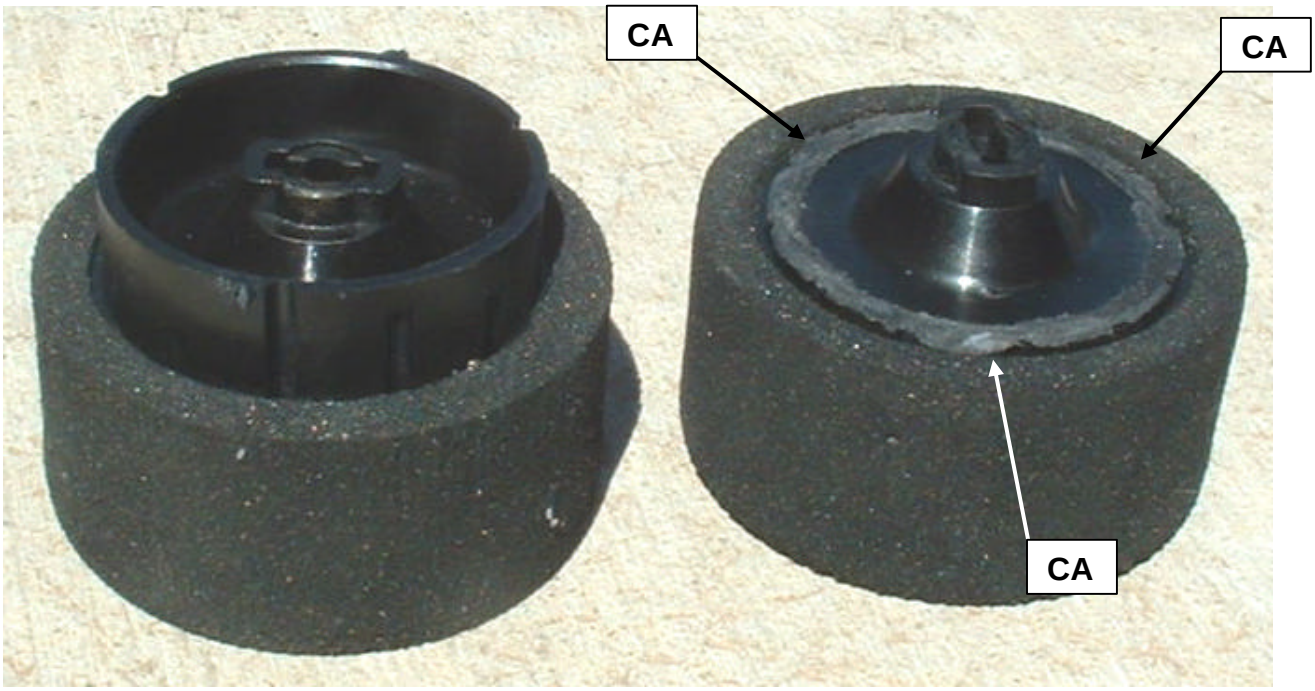

Figure 16. Put a small drop of CA in three spots on the inner wheel drum before putting on the rims/wheels.

You will want to put the wheel assembly on the axle and spin the wheel to do a quick wobble check. You will not have much time as the CA will begin to set within a few seconds. So do this part quickly. Allow the rims and drums ample time to dry before using them. When this method is done right, it will ensure that your wheels never fall apart, no matter how many times you crash, rollover, or slam into the boards on the track. But will also allow the rims to be removed from the wheels at a later date if necessary.

This operation is only necessary for the left wheel. However, you may want to do both wheels for aesthetics.

Congratulations, you just made your very own set of one-piece wheels! Pat yourself on the back, you are almost ready to perform the ultimate 540 Hybrid swap.

INSTALLING THE OPTIONAL VCS MICRO SHOCK

Your Micro Hybrid was designed to function best with the available VCS shock made by Team Associated. The VCS shock uses real shock oil and offers many spring rates for unlimited tuning options.

The ball studs required must have a 4-40 thread with a 4.2mm diameter ball and do not come with the VCS Micro Shock kit.

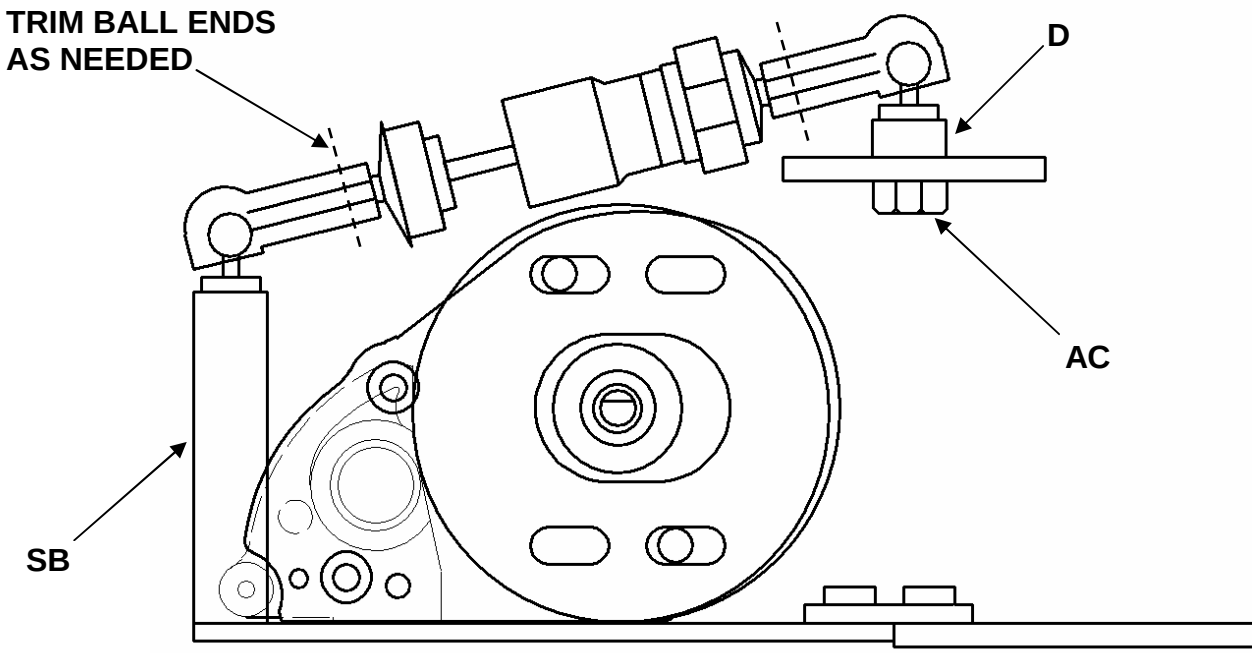

Figure 17. The VCS shock should be installed as shown.

Install the rear 1.25" standoff [SB] to the rear pod [H, J or K] using a 4-40 flush-mount phillips-head screw [AA].

Install a 4.2mm 4-40 threaded ball stud into the rear standoff [SB].

Install a 4.2mm 4-40 threaded ball stud into the .125 x .250 x .118 unthreaded spacer [SF] and through one of the two center holes in the rear deck [D] and secure with a 4-40 lock nut [AC].

Snap an assembled VCS shock onto the ball studs and adjust preload nut as desired.

The ball ends on the VCS Micro Shock may need to be trimmed down in order to properly fit.

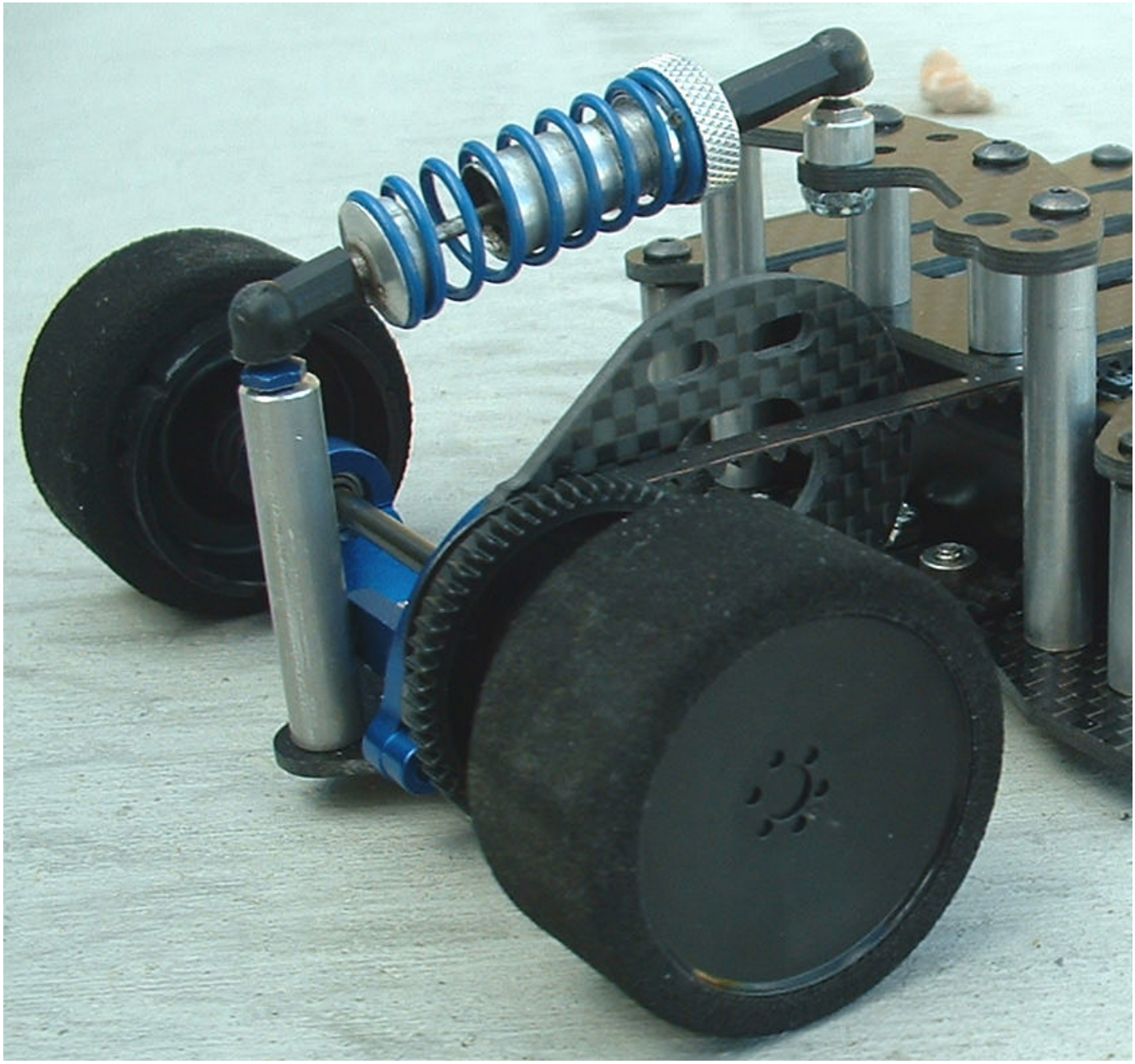

Figure 18. Installation of VCS shock should look like this when complete.

CHOOSING A PINION AND SETTING THE GEAR MESH

The Micro Hybrid is designed to accommodate standard 48-pitch pinions for 1/10th and 1/12th scale RC cars ranging from 27-tooth to 35-tooth. This will provide gear ratios that range from 2.15:1 to 1.66:1. Even though most stock 27-turn motors will be able to drive a 1.66:1 gear ratio, we recommend that you run something between 27-tooth and 30-tooth. This will put less stress on your motor and your batteries and ensure many useful races out of your cells and motor. As you become more experienced with your Micro Hybrid, you may then experiment with even larger pinions.

The proper meshing of a standard pinion and the stock 58-tooth Micro spur gear is no different than any other RC car. However, there are some slight variances in the teeth dimensions that cause the spur gear and pinion to mesh rather roughly if meshed even the slightest bit too tight. This is noted by a rather gritty or notchy feeling when the two gears spin together. It is imperative that the gears be meshed with some space between them to ensure that the grittiness or notchy feeling is completely eliminated for uninhibited drive train running. The spur gear must be able to rock back and forth ever so slightly without the pinion gear moving. If you can slip a piece of light weight paper between the gears, then they are most likely meshed correctly. If the gears are meshed too loosely, you could end up stripping the spur gear during hard acceleration or breaking.

One trick is to loosen the set screw on the pinion so that it can spin freely on the shaft of the 540 motor. Then spin the spur gear with your finger and move the motor until the pinion and spur gears mesh. Move the motor back and forth as if to adjust it, as you continue to spin the spur gear, until you get a good idea of what the gears feel like when meshed too tight, just right, and too loose. You will be able to feel when it is just right. At that point, without moving the motor, tighten down the motor mount screws. Recheck the mesh visually and by feeling the rotation of the gears. Finally tighten down the set screw in the pinion.

See Figure 19. for a typical gear mesh configuration.

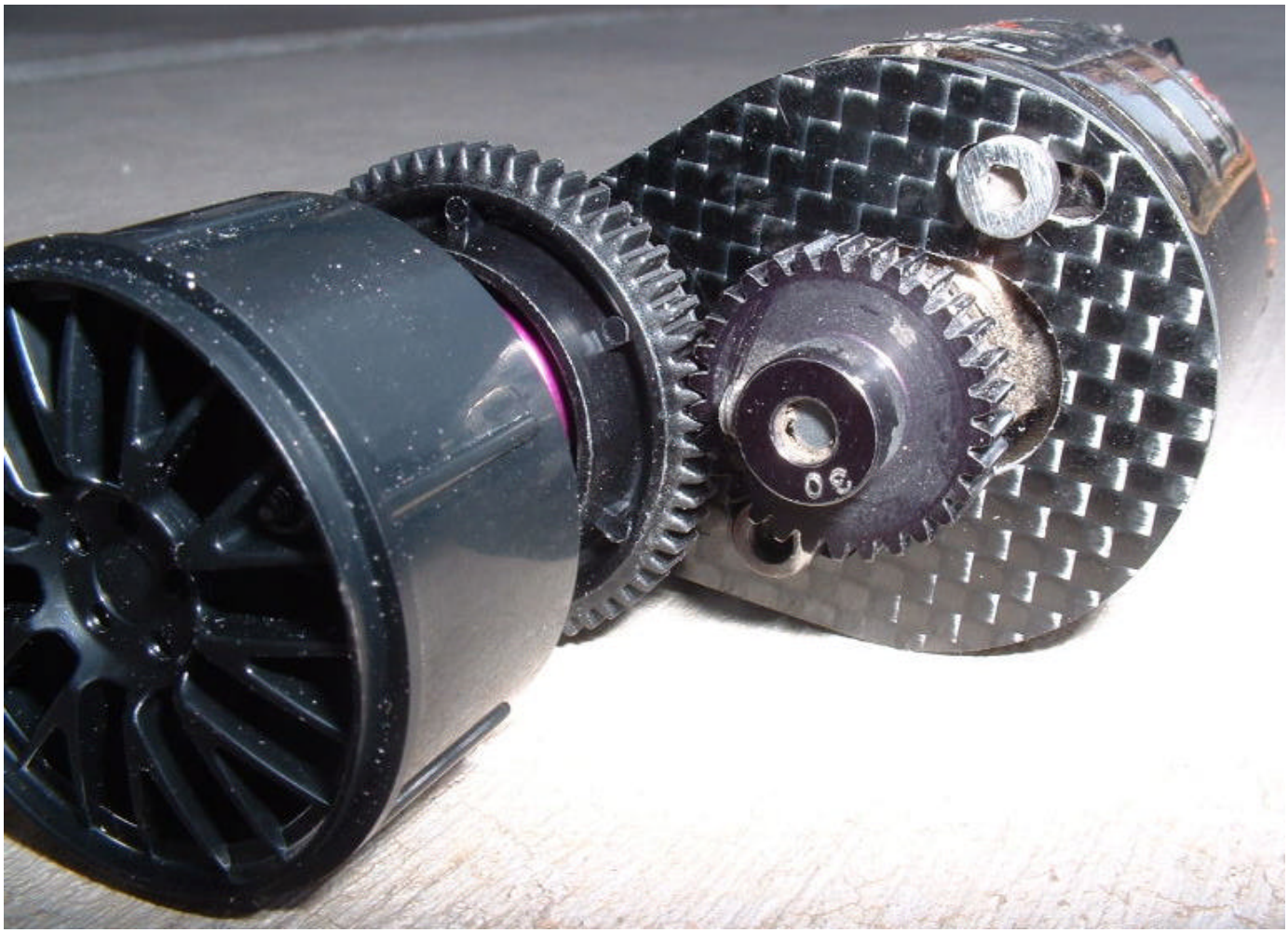

Figure 19. Picture of a 30-tooth pinion gear meshing with the 58-tooth spur gear. Notice the reverse orientation of the pinion gear.

WARNINGS

The x3 Series Micro 540 Conversion Kits have the capability of making your Micro run much faster than it was ever intended to run. Improper use could result in death or injury. Most likely, however, many of the stock kit parts that came with your Micro will not be able to sustain the power of a 540 motor. Not to mention that if and when you wreck, you could break quite a number of components. For this reason, care must be taken to always drive your Micro in a responsible, controlled and mature manner.

DO NOT drive excessively fast for the driving conditions. Keep it light on the trigger and nimble with the steering.
DO NOT race with 1/5th, 1/8th, 1/10th or 1/12th scale cars as they are much bigger and much heavier than your Micro and could do considerable damage if they were to crash into you.
DO NOT hold your Micro in your hand off the ground and run full throttle to see how fast the wheels can spin, as parts or pieces of the wheels could fly apart and hurt yourself or someone else.
DO NOT drive your Micro into yourself, as you could hurt yourself and damage your Micro.
DO NOT run your micro into any stationary objects (curbs, parked cars, walls, etc.) as this will cause considerable damage to the chassis and/or other parts of your Micro.
DO NOT jump your micro off curbs, ramps or other objects that may propel your micro into the air as this causes a considerable loss of control which will damage the chassis and/or other parts.

Aktion RC is not liable for damages of any kind caused by you due to abuse or misuse of our products. Please drive responsibly!

PARTS RECOMMENDATIONS

The following is a list of aftermarket hop-up parts that are required for your x3 Kit:

Rear ball differential
Front ball or one-way differential
Aluminum, titanium or steel universal joints (dog bones)

The following is a list of highly recommended aftermarket parts that are not required, but will vastly improve the performance and durability of your Micro 540 Conversion:

Aluminum pulley
HPI servo mount and dual-link tie rod set
VCS shock kit (and a pair of ball studs)
Stiffer front springs
Aluminum Knuckles

You will need to use all of the following stock Micro RS4 kit parts:

Bearings
Screws
All other stock hardware (nuts, washers, etc.)
Rear bulkhead
Rear axle
Front bulkhead
Upper a-arm bulkhead mount
Stock front shock assembly
A-arms
Knuckles
Wheels (inner drums, rims and tires/foams)
3M 150mm belt

TROUBLESHOOTING

If you are experiencing any kind of difficulty with your x3 Series Conversion Kit, you can ask questions on any of the popular forums on the web which are dedicated to 1/18th scale racing. You can also stop by www.aktionrc.com for updates and information regarding your x3 Series 540 Micro, including tips and tricks on assembly and learning how to drive your new 540 Micro.