ASSEMBLY

INSTRUCTIONS

Version 1.2

FACTORY X

RC RACING PRODUCTS

www.4wdrc.com

Contains
Josh Cyrul-designed
body, wing, window mask
made by CEFX

X - 5 Conversion Kit

TABLE OF CONTENTS

X - 5 ASSEMBLY INSTRUCTIONS

FIRST THINGS FIRST

A) ASSUMPTIONS These instructions assume several things:

A1) You have at least some experience building R/C cars. These instructions are not written for a first-timer.
A2) You have the usual complement of R/C tools, including a hand-held rotary tool with sanding and cutting attachments.
A3) You have a complete Team Losi XX-4. Any model will suffice.

If you do not meet all of the assumptions above, please contact us. The postal address and phone number are listed elsewhere in these instructions, or you may E-mail us at www.4wdrc.com .

WE WANT YOU TO HAVE A PLEASANT EXPERIENCE BUILDING THIS KIT, AND HOPE YOU HAVE MANY PLEASURABLE DAYS DRIVING YOUR NEW X – 5. Please contact us with the slightest problem. We want to help.

B) We suggest you have a clean, well-lighted work area with enough space to simultaneously do three things: Work on the car; Store sub-assemblies for later use; Store parts which will no longer be needed.

C) You will probably want to re-build many components, for example shocks, or to disassemble some assemblies for inspection, cleaning and possible replacement of parts. We will include no instructions for this – follow the appropriate steps in your Losi XX-4 manual.

D) All references to right and left are from the viewpoint of the driver in the car facing forward.

E) Throughout this manual the names of many parts are followed by a number in parenthesis. This is the number used in the original Losi XX-4 instruction manual, copyright 1997. It is possible these numbers may have changed in later manuals. These numbers are NOT Losi part numbers.

SOME IMPORTANT INFORMATION

This is our first kit, and we know we are not perfect. If you experience the slightest difficulty assembling your X – 5, either because a part does not fit properly or because you have difficulty with the instructions, please contact us immediately. Even if you figure out what needs to be done, or make a modification that allows the part to fit, we want to make changes to help the next person.

Contact us by: E-mail chazz@4wdrc.com

Snail mail X Factory Racing Products
P.O. Box 2361
Whitehouse, Ohio 43571

Phone: 419-875-5455 (USA)

Thanks in advance for your help.

These instructions are available on our web site, www.4wdrc.com. The pictures are in color. In many cases, particularly in the installation of electronics, the color photos on the web are much better than the black and white in this manual.

THANK YOU FOR YOUR CONFIDENCE IN THE X – 5

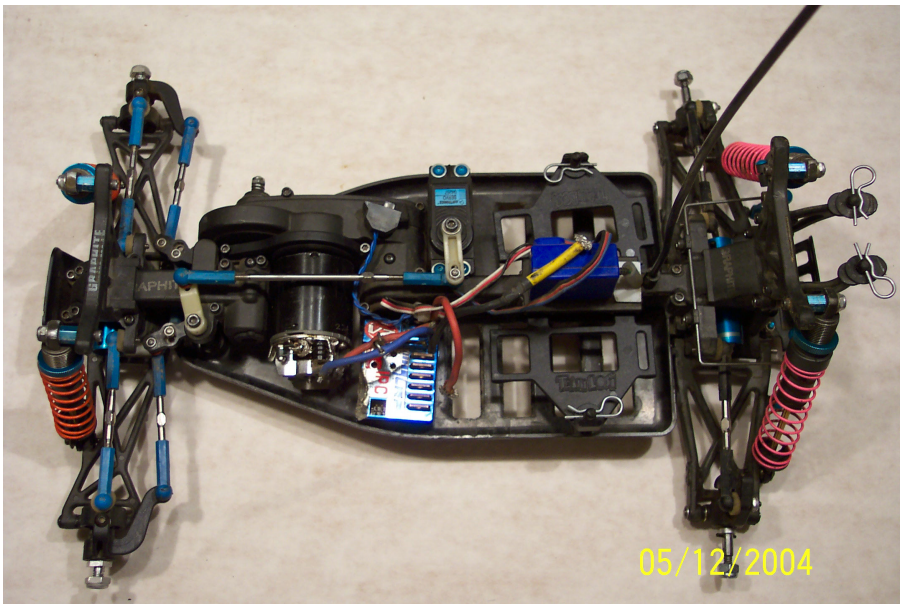
Charles Sinclair

XX-4 DISASSEMBLY

☐ 1) Remove the body (172). Set the clips (113) aside for re-use. The body will not be needed.

☐ 2) Remove the rear wing (173). Set the body clips (113) and fiber washers (112) aside for re-use. You may want to re-use the wing. More on that in the Tuning Section.

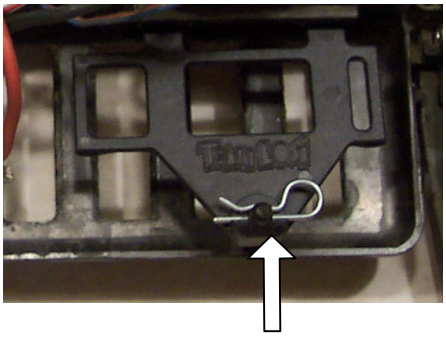
☐ 3) *This step is included to make later assembly easier.* Remove the wheels. Set them and the wheel nuts aside for re-use.



☐ 4) Disconnect and remove the speed control and set it aside for re-use. You may want to remove any sticky residue from the speed control.

☐ 5) Disconnect and remove the receiver and antenna tube and set them aside for re-use. You may want to clean them.

☐ 6) Remove the batteries from the car. Save the clips (113) for re-use. The hold-downs (168) will not be needed. Save the batteries. From under the chassis remove the screws that hold in the battery posts (166). Save the posts for re-use. They will be installed with different screws.



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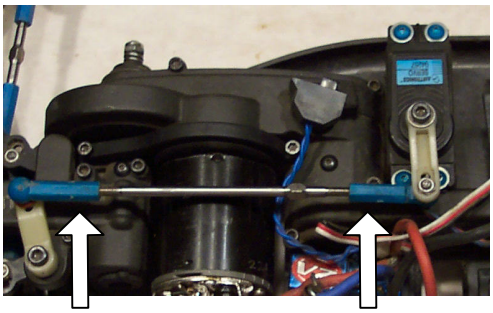
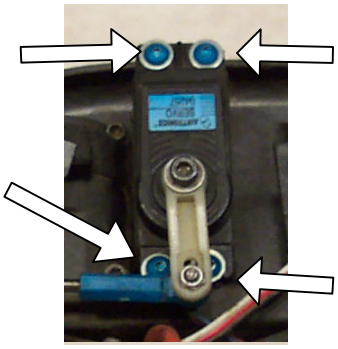
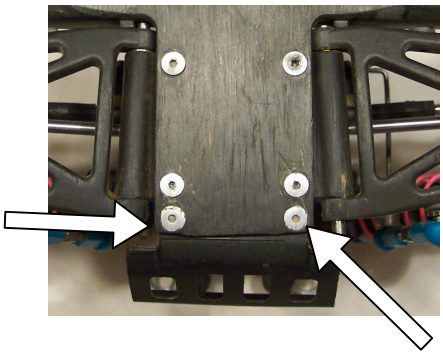
☐ 7) Remove the steering rod (165) from the ball studs. It's the long turnbuckle. Remove the ball cups from each end and save them for re-use. The turnbuckle will not be needed. Leave the ball studs in both arms, and leave the arms attached to the servo and bellcrank for now.



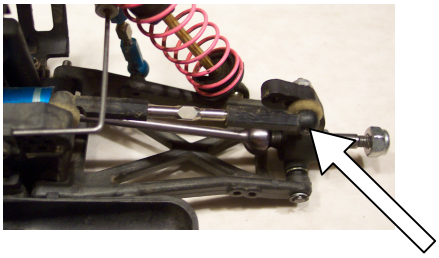
☐ 8) Remove the four screws and washers holding the servo, and set them and the servo aside for re-use. We suggest you leave the servo horn on the servo for now. From under the chassis, remove the 2 screws holding the servo mount (161). Note whether the mount is set for wide or narrow servo. Save the mount. The screws will not be used.



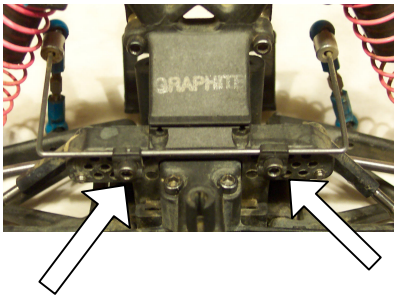
☐ 9) At the very rear of the chassis, remove the two screws which hold on the rear bumper (115). The heads of these screws are under the chassis. Save the bumper and screws for re-use.



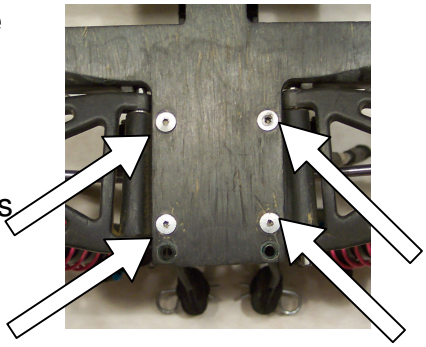
☐ 10) *This step is included to make later assembly easier.* Detach the rear camber link (128) from the hub carrier ball stud. Leave the camber link attached to the shock tower ball stud. Leave the ball cup on the turnbuckle. Do this on both sides.



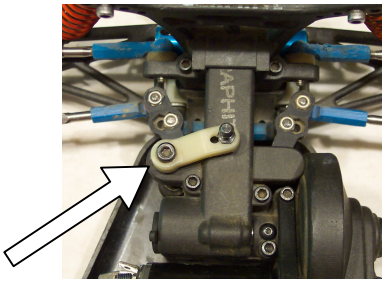
☐ 11) If you have a sway bar, remove it. Leave the ball studs and links on the control arms. Save the hardware for re-use. The bar itself will not be needed, but all other sway bar parts will be re-used if you run a sway bar on your X – 5. More on this in the Tuning Section.



☐ 12) At the rear of the chassis, from the bottom, remove the four screws that hold in the pivot blocks (108) and rear shock tower (110). Set the tower and 2 pivot block-control arm-hub carrier-drive shaft assemblies aside for re-use. Be sure to save all pivot pins, E-clips, etc. If you have anti-squat shims note where they were and save them for re-use.

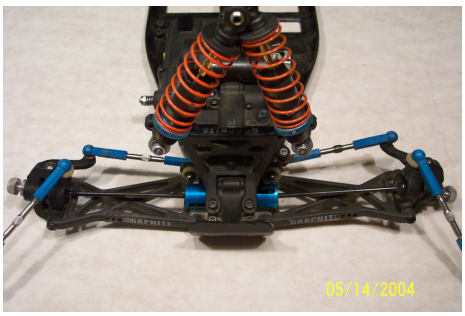


☐ 13) Carefully remove the screw holding the bellcrank arm (72) to the steering bellcrank (63). Save the arm and screw for re-use.

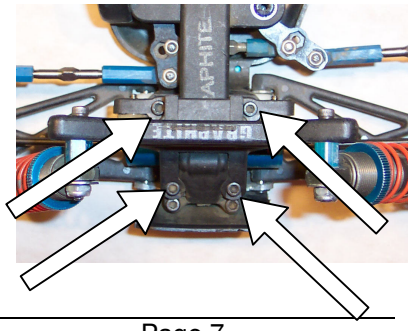


☐ 14) Remove the bolts that hold the front shocks to the control arms. Don't lose the swivel balls (137). Set the bolts aside for re-use.

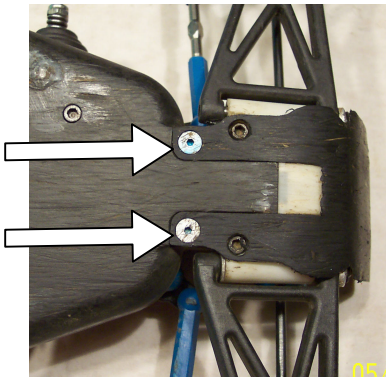
☐ 15) Disconnect the front camber links (103) from the shock tower ball studs. Disconnect the steering turnbuckles from the idler arm (61) and bellcrank (63).



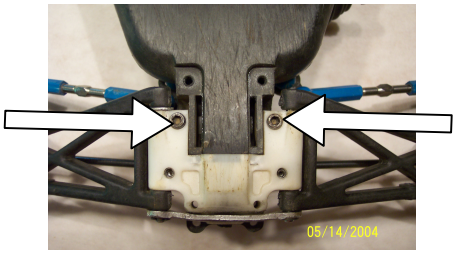
☐ 16) Remove the 4 bolts that hold the front shock tower (84). Set the tower (with shocks attached) and bolts aside for re-use.



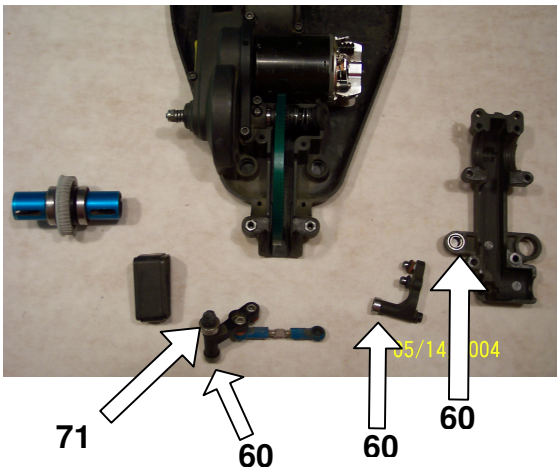
☐ 17) Remove the front bumper (81). It is held on with 4 screws. Two are from the top – the very front two screws on the car. The other two are small flathead screws from the bottom of the chassis just behind the bulkhead (76). Save the bumper and all four screws for re-use.



☐ 18) From the bottom of the chassis remove the 2 cap-head screws that hold the bulkhead (76). The bulkhead, with control arms, hub carriers, driveshafts, camber links, steering links all attached, should now come free. Save the entire assembly and the two screws for re-use. Be sure to save all pivot pins, E-clips, etc.



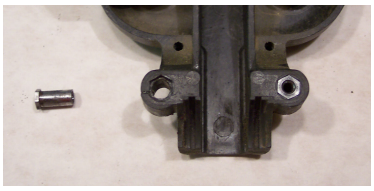
☐ 19) Remove the remaining two screws holding on the front belt cover (70). The steering bushings (60 & 71) or bearings, if you've upgraded, will come off with the cover, or stay on the bellcranks. Either way, save them. Save the cover and screws for re-use. If there is a belt roller (31) in your cover, discard the roller, shaft, and washers. (We wouldn't throw the washers away – they're handy. But you must NOT use the belt roller in the X – 5.)



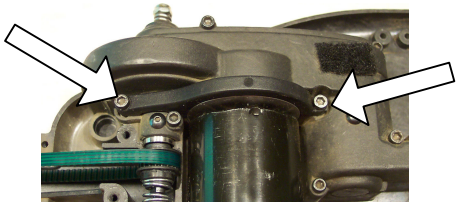
☐ 20) Remove the front differential and outdrive bearings (52); save them for re-use. If your front diff has the large O-rings (69), discard them.

☐ 21) *This step is done this way for ease of re-assembly.* Disconnect the steering drag link (64) from one of the two ball studs. Then remove the bellcrank (63) and idler arm (61) with ball studs attached. Remove the steering tunnel (59). Remove the two steering bushings (60) or bearings from the chassis. Set all these parts aside for re-use.

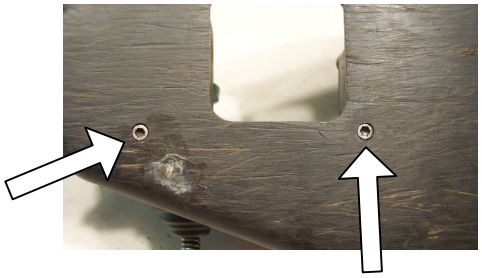
☐ 22) Remove the two short threaded inserts (65) from the chassis and set them aside for re-use.

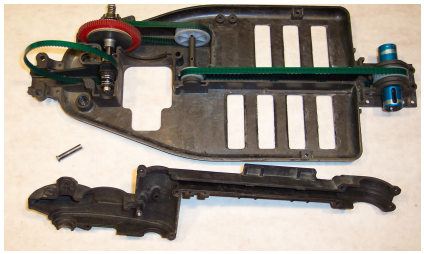


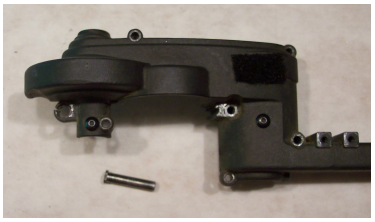
☐ 23) Remove the two screws which hold the motor mount clamp (157). Neither the screws nor the clamp will be needed. Remove the motor and its mounting plate (155) and set them aside for re-use.



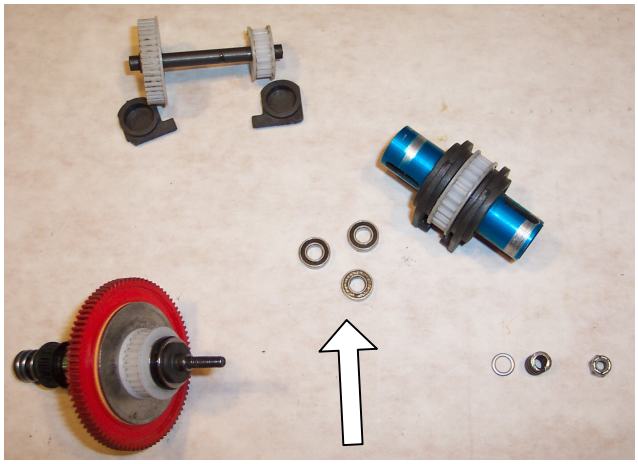
☐ 1) Remove the rear belt cover (53). This will require removal of all the screws through the top as well as the two screws that go into the threaded inserts (54) from the bottom. Remove the two long threaded inserts from the cover and set them aside for re-use. Save the access plug (160) for re-use. The belt cover will not be needed.







☐ 2) Remove the rear differential and the bearing blocks (51) and set them aside for re-use. If there is a belt roller (31) between the bearing blocks, discard it, the shaft, and washers. You must NOT use the roller in the X – 5.



☐ 26) Lift out the lay shaft (2) with its bearings. Remove the 3/16 X 3/8 bearings (20) and set them aside for re-use. The layshaft and pulleys will not be needed.

☐ 27) Remove the slipper shaft (7). Take the nut off either end and remove the parts necessary to retrieve a 3/16 X 3/8 bearing (20). Set the bearing aside for re-use. The shaft and all its other components will not be used.

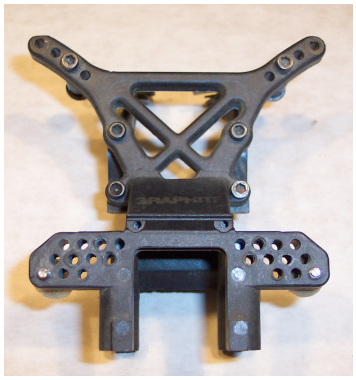
That's it for disassembly. Time to get out your goggles.

MODIFICATION OF PARTS

ALWAYS WEAR SAFETY GLASSES
WHEN OPERATING A HAND-HELD ROTARY TOOL

NOTE: Please read each step entirely before beginning it
Make sure you have a "feel" for what you are about to do.

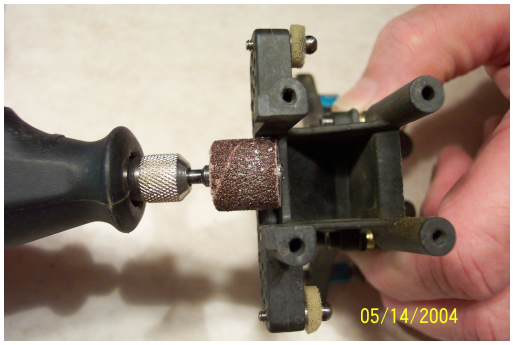
☐ A1) MODIFYING THE REAR SHOCK TOWER.(110)



Due to the X – 5's single belt drive system, the rear diff cover must slope upward toward the front. On the XX-4, the belt cover is flat. This means that some material must be removed from the front underside of the rear shock tower.

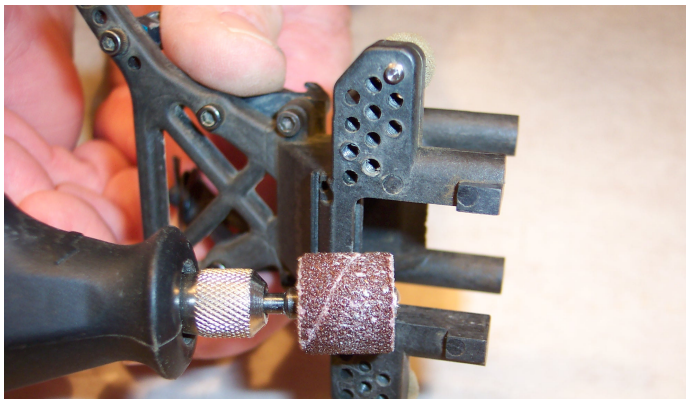
You may wish to remove the shocks and camber links from the tower for convenience. If you do, remember to put them back.

Turn the tower upside down, so you are looking at the bottom. On the side that normally points forward, you will notice two braces running across the tower. These braces are the only part of the tower to be modified; do not modify either side or the rear of the shock tower. Of the two braces, you will need to modify the front brace more than the other.



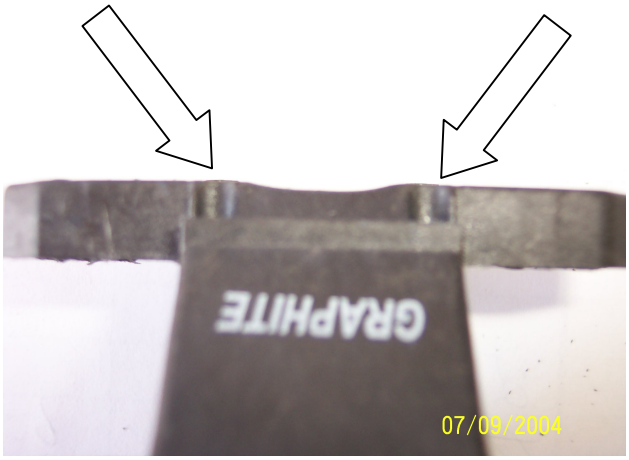
Using a sanding drum, remove material in a curving fashion from the center underside of the front brace. Remove about .150" from the center of the brace, and curve your cut so you take NO material from the corners. Do the same with the second brace, but remove less material, about .100" from the center. Your cut on the second brace should not be as wide as the cut on the front brace. Try to round the shock tower to match the rounded shape of the diff cover. Remove no more material than you have to, especially at the sides. Use the cover as a guide. We use a ½" diameter sanding drum on a motorized rotary tool for this work

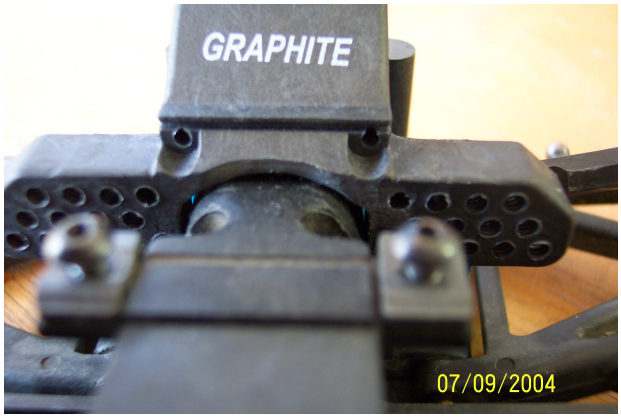
It may be necessary to remove some material from the front of the front brace. Again, it should be necessary only to take material from the center of the brace. Try not to take any strength away from the corners. You'll be removing material from the area where the sway bar normally goes. Taking material here may mean you need to take less off the bottom.



The shock tower is held in the car by the vertical posts where the screws come up from under the chassis, and the area where these posts connect to the tower must be maintained. We have designed the diff cover so you need take no material out of the corners where the posts attach to the rest of the tower. The arrows in the pictures below show how we have removed nothing from the corner.

When you make these cuts, err on the side of removing too little; finish the job when installing the tower. It's difficult to gauge when the tower is correct from looking at the cover alone, as the pivot blocks go between the tower and chassis. In our work with prototypes, we cut too much off at least one tower until we learned to do the final cutting at installation time.

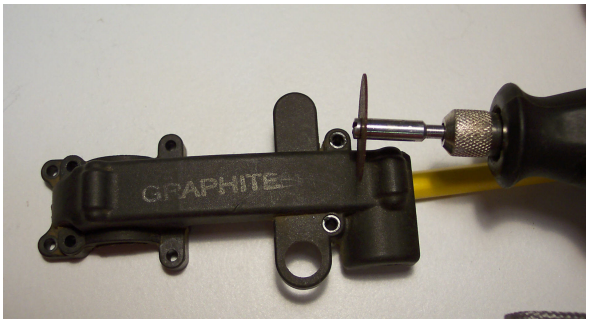




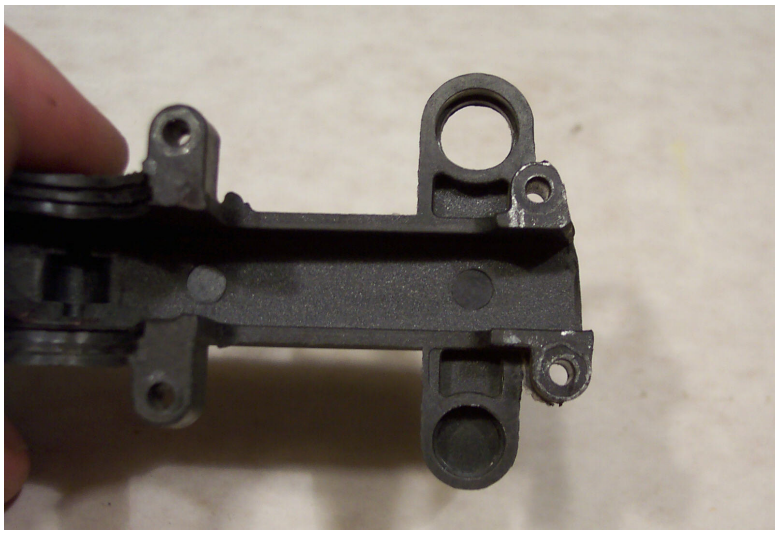
NOTE: DO NOT REMOVE ANY MATERIAL FROM THE X – 5 REAR DIFF COVER. We have molded the top corners of this cover with shock tower modification in mind. The cover is as low and thin as possible. Removal of material from the cover will likely result in putting a hole in the cover.

☐ A2) MODIFYING THE FRONT BELT COVER (70)

The X – 5 uses most of the XX-4's front belt cover, but not all of it. You need to cut off the back part which enclosed the one-way clicker and drive gear for the front belt. Leave intact the back two bolt holes and the shoulders around them. Make your cut straight, from the back side of one shoulder across the cover to the back side of the other shoulder. Your cut will be on a slight diagonal.



The cover should fit on the chassis, with the two bolts threading into the holes provided. We suggest you use a cut-off wheel for this, and leave .040" - .050" extra material on the back of the cover and bolt shoulders. Then use a sanding drum to make a good tight fit against the chassis' belt tunnel.

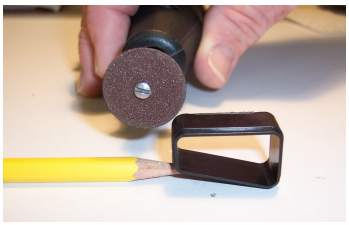


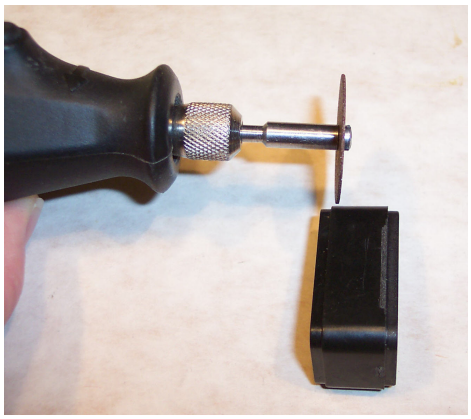
☐ A3) MODIFYING THE STEERING TUNNEL (59)

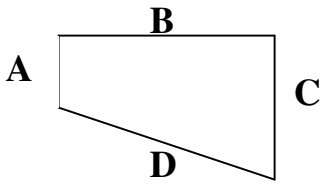
Believe it or not, this is the one that has caused us the most grief. One time we cut the wrong corner of the tunnel (oops!), once we slipped and cut the tunnel shoulder apart (the tunnel wouldn't stay in correctly), and once we cut off far too much. It's actually quick and easy; just understand what you're doing and be careful.

Why do we do this? The X – 5's belt comes forward to the front diff off the bottom of the idler pulley, which is lower than the top of the one-way clicker in the XX-4. The belt doesn't quite clear the tunnel under all circumstances, and rubbing here will tear off the belt teeth. Does it let dirt in the drive line? Probably, but, like cutting the rear shock tower, it's something we've got to live with. We've experienced no problems to date.

A picture is worth 1,000 words. Study the photos carefully and we believe you'll understand what needs to be accomplished.







NOW FOR THE 1,000 WORDS
SEE MORE PICTURES BELOW

The tunnel has four sides, which we've labeled A, B, C, and D in the drawing above. We will remove the top portion side A, most of side B and a little bit at the top of side C. Do not cut anything from side D.

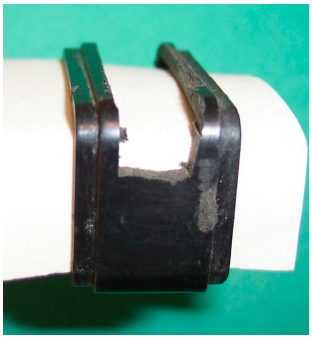
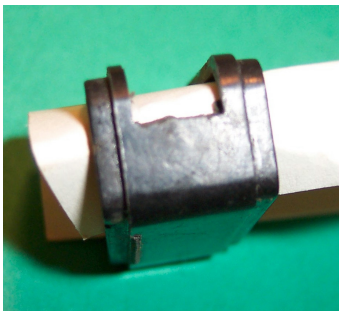
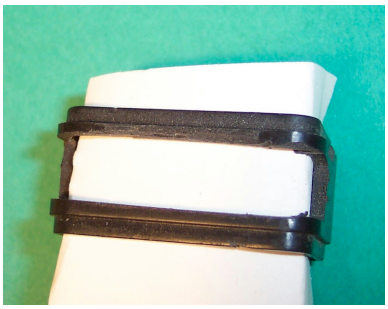
All four sides of the tunnel have a shoulder where the tunnel fits into the chassis. You must leave this shoulder intact all the way around the tunnel. You are going to remove 0.200" – 0.240" from the raised center section of the tunnel.

Remove about 1/4" from the top of side A, all of side B, and the top 3/16" of side C – just a little wider than the belt. We use a fine cut-off wheel for this.

Start at the corner where sides A & B intersect. Cutting down here will cut both sides A & B. Make one cut just inside the shoulder on one side, then another just inside the shoulder on the other side of this same corner. Now extend the cuts along side B until your cut extends the proper amount down side C. You will now have two continuous cuts just inside each shoulder, each one including sides A, B, and C.

Now the hard part. Working cross-wise to the tunnel, connect the two cuts at each end. Don't cut too deep, or you'll cut the shoulder. The part you're trying to remove won't come out because the sides won't be cut through; you'll need to work some with an hobby knife or pliers to get it out. Then you'll want to sand the inside edges to remove the nasty spots. Remember that the belt can't catch on anything.

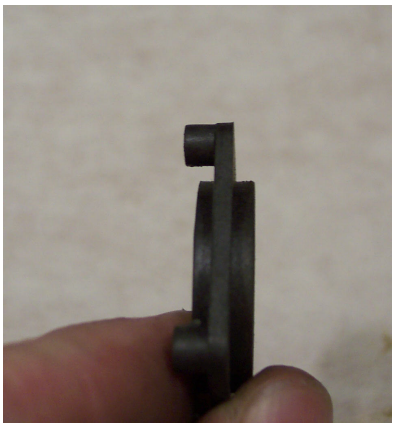
If you've left the shoulders intact, the tunnel will fit in the car and keep most of the dirt out. Look carefully at the photos and the drawing.

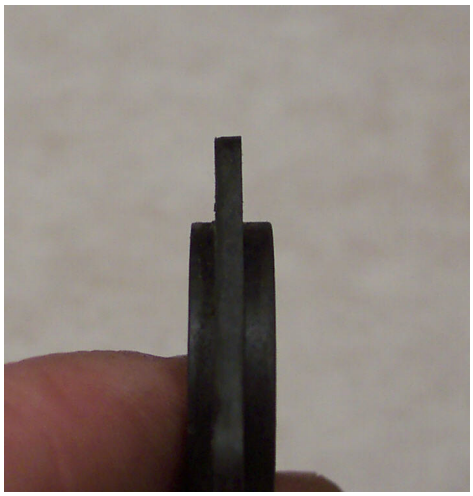




☐ A4) MODIFYING THE BEARING BLOCKS (51)

We saved the easy one for last. The outdrive bearings for the rear differential are held by two bearing blocks which mount the diff in the rear of the chassis. The flat side of the block goes down, against the floor of the chassis. There are two sets of these blocks, marked "A" and "B". By choosing one set and positioning the arrows to point front or back you set the rear belt tension in the XX-4. They do the same thing in the X – 5.

The blocks have little bosses on the inside bottom corners which used to hold the belt rollers. Most racers stopped using the belt rollers long ago, but the bosses remain. Sadly, they interfere with the X – 5's larger diameter diff gear, so they've got to go. Simply sand them off from both front and back corners of all the blocks so the blocks are flat. It doesn't appear that you need to do this, but our experience has taught us the hard way that it must be done, so please take the minute or two needed and remove both bosses from each bearing block. You'll go faster.





ASSEMBLING THE X - 5

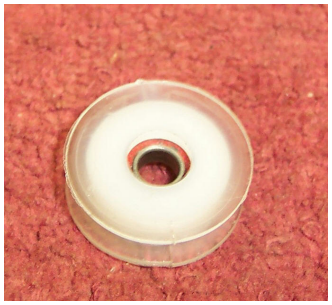
Now for the fun stuff – Let's get going

BAG A

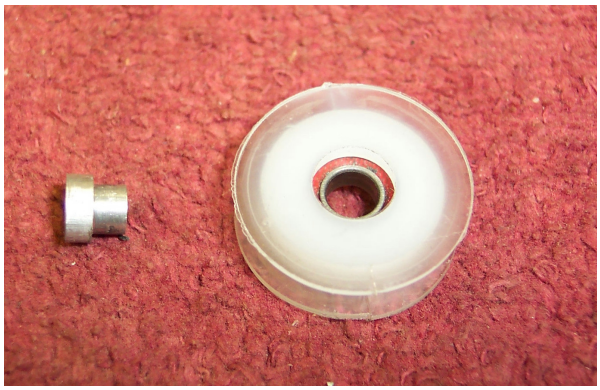
IDLER PULLEY ASSEMBLY

The X – 5 uses the idler pulley both to "wrap" the belt around the drive gear and to set belt tension.

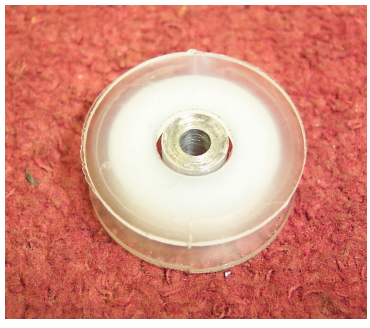
☐ T1) Press a 3/8 X 3/16 bearing (20) into the idler pulley. This bearing came off the slipper or lay shaft. It will only go in from one side, and will "snap" into the pulley.



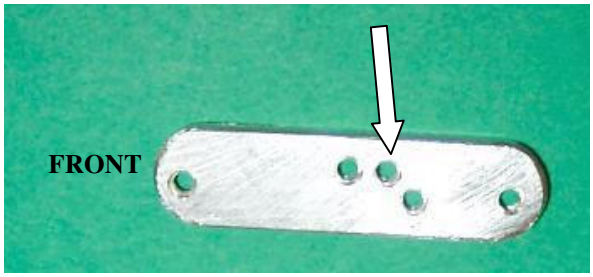
☐ T2) Place the #4 gold washer over the 4-40 X 3/8 button head screw. Place the idler pulley spacer into the bearing from the "closed" side of the pulley.

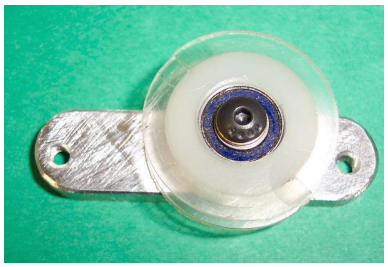


Put the screw and washer through the spacer from the "open" side of the pulley.

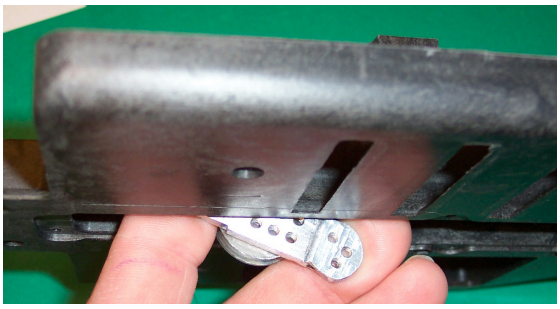


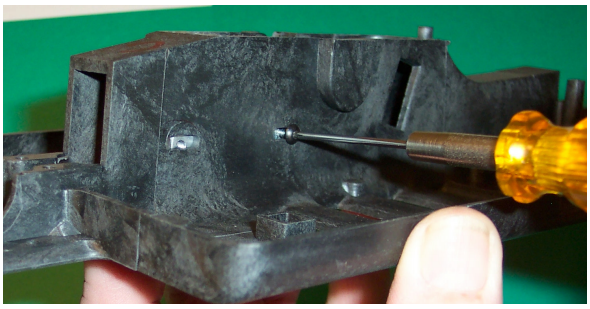
☐ T3) Screw the idler pulley screw into the adjustment bar. Start with the rear hole in the row of two holes. In the pictures below, the side of the bar to the left is toward the front of the car.





☐ T4) Position the idler pulley adjustment bar (with pulley attached) inside the right side of the belt tunnel, and secure the adjustment bar with two 4-40 X ¼ button head screws. The screws go through the slots in the belt tunnel from the outside. Use the single hole at the rear of the bar. Use the center hole of the three in the front of the bar to start. Place the adjustment bar so the screws are about in the middle of the slots, and tighten the screws finger tight. Re-tighten them after final belt adjustment.





☐ T5) *See the Tuning Section for important information on further changes to idler pulley location and how this affects belt tension.* BELT TENSION AFFECTS DRIVELINE PERFORMANCE MORE THAN ANY OTHER THING.

BAG B

DIFFERENTIALS & FRONT SUSPENSION

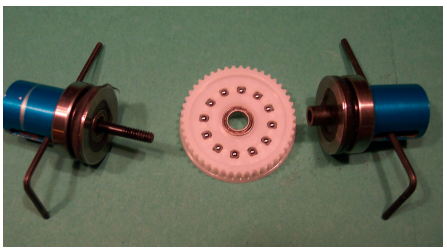
Your X – 5 uses custom-made 28-tooth diff gears.
All other differential parts are standard Losi parts from your XX-4.
Front suspension and steering are entirely from your XX-4.

REAR DIFFERENTIAL

☐ B1) If not done previously, remove the bearing blocks (51) and outdrive bearings (52) from the differential. Set them aside for re-use.

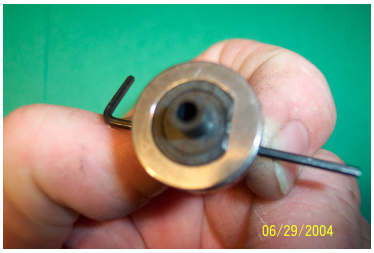
☐ B2) Insert an Allen wrench crosswise through the slots in the right outdrive (39) – the side with the nut and washers. Maintain a slight pressure on this wrench during operation 3 below to hold the diff nut carrier (37) and 6 Belleville washers (22) in the outdrive. Throughout these instructions, Trinity outdrive savers are shown.

☐ B3) Unscrew the diff adjusting screw (46) so the differential comes apart. Do not remove the adjusting screw from its outdrive (39). Make sure the thrust bearing assembly (50) stays inside the left outdrive and on the screw.

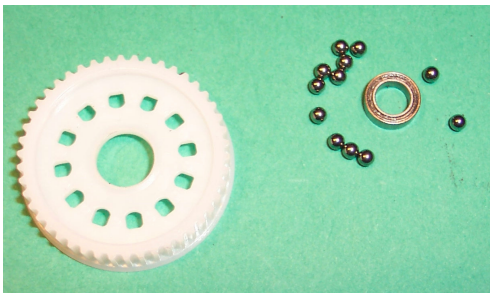


☐ B4) Remove the XX-4 diff gear (43). The diff balls (44) should come with the gear. If they do not, be sure to retrieve all 12. The bearing (42) may come with the gear or stay in the outdrive. Either way, remove it and save it for re-use.

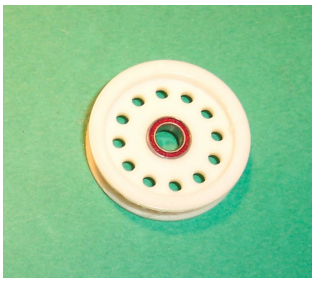
☐ B5) The diff rings (41) should stay on the outdrives. Clean all grease and dirt from them. You may want to "flip" or replace them.

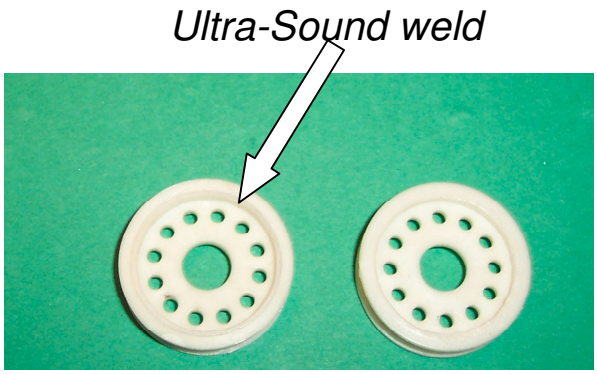


☐ B6) Remove the diff balls from the gear. Carefully clean and save all 12 of them. Remove and clean the bearing. The gear will not be used.

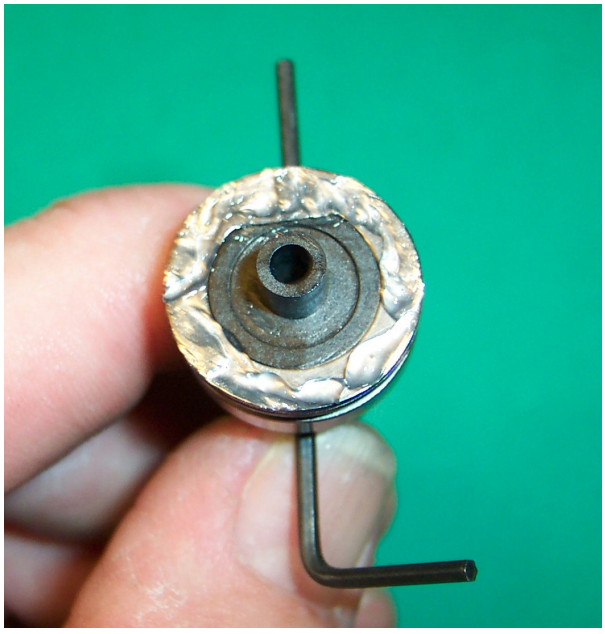


☐ B7) You will see that one side of the X – 5 diff gear has its flange molded in and the other side has its flange put on by an Ultra-Sound welding technique. We suggest you place the molded-in flange to the right side of the car. Install the bearing from the above step into the center of a 28-tooth X – 5 diff gear.





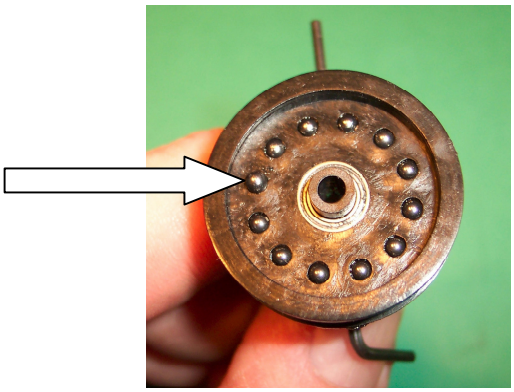
☐ B8) Maintain pressure on the Allen wrench holding in the Belleville washers and diff nut carrier in the right outdrive. Holding this outdrive so the diff ring is up, place a small bead of diff lube in a circle on the diff ring where the diff balls will run. (We use AE Stealth Lube.) Then place the gear and bearing from step 7 above on the outdrive/diff ring. The 12 holes should be in the lube; If they are not, take the gear off and re-lube. Some lube should be in each hole. The molded-in flange should be down.



Gear shown as black to enhance image

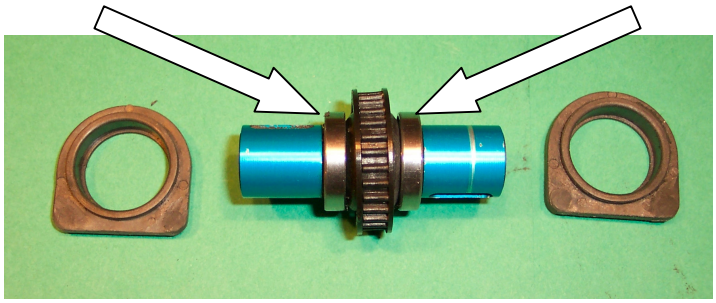
☐ B9) Put one diff ball from step 6 above into each of the 12 holes in the diff gear. The lube should help them stay in their holes. After the balls are all in, put a small circle of lube around the diff gear on top of the balls. Because of the lube on the other side, you don't need much grease here.

Gear shown as black to enhance image



☐ B10) Put another Allen wrench across the slots in the left outdrive so the wrench is engaged in the adjusting screw slot and hold that wrench with a little pressure. Put the two sides together, tighten the adjusting screw, and adjust in the normal manner.

☐ B11) Clean any excess grease between the outdrive and the gear and set the completed rear differential aside with its outdrive bearings and bearing blocks

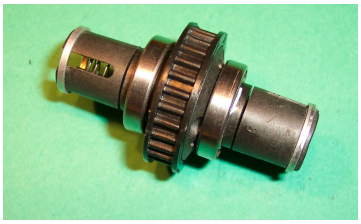


Gear shown as black to enhance image

FRONT DIFFERENTIAL

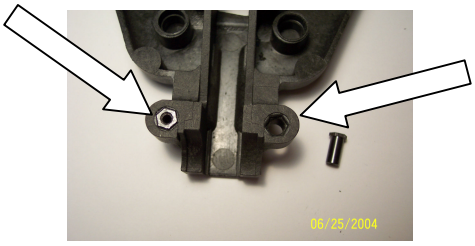
☐ B12) If you plan to use a front differential, re-build your XX-4 front differential with a 28-tooth X – 5 gear using steps 2 through 11 above.

☐ B13) If you plan to use a 1-way in the front, refer to the Tuning Section.

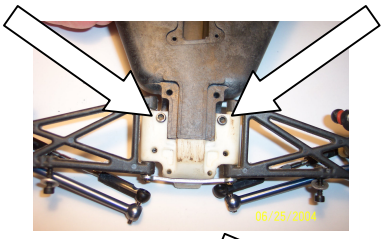


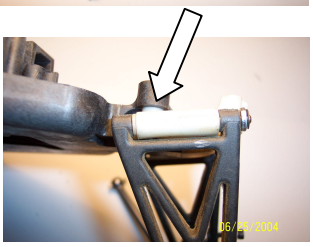
FRONT SUSPENSION

☐ B14) Install the short threaded inserts (65) in the hex-shaped holes near the front of the chassis. The hex is on top, and mates with the hole just as it did on your XX-4. You may have to hold them in with your fingers until step 15 below is started.

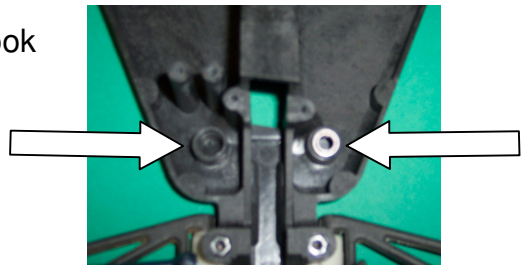


☐ B15) Bring the front bulkhead (76), with suspension assemblies attached, into position under the front of the chassis, and bolt it into the threaded inserts using the 4-40 X 3/8 cap head screws you took out. These screws should be good and snug, but do not over-tighten so they bite into the bulkhead further than the recesses in the bulkhead. The bulkhead must be over the inserts and the white plastic bulkhead should be tight against the black graphite chassis. No part of the threaded insert should be visible between them.

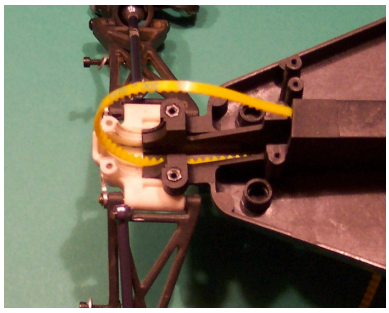




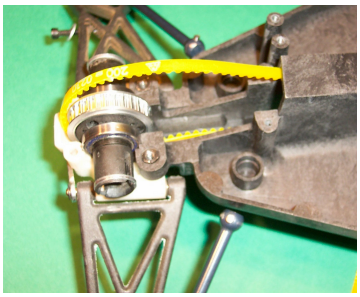
☐ B16) Install the two steering bushings/bearings (60) you took out of the XX-4 chassis into the same bosses on the X – 5 chassis.



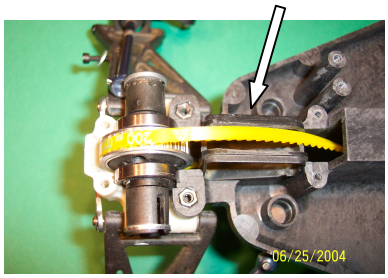
☐ B17) Put the yellow drive belt in the chassis from the long bottom opening so a small loop of belt sticks out the front of the tunnel for the front diff and the bulk of the belt hangs down underneath the chassis. The teeth of the belt face the inside.



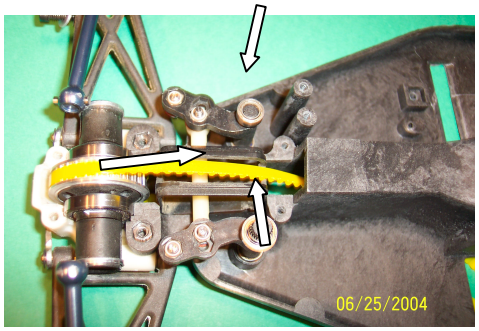
☐ B18) Install the outdrive bearings (52) to the front differential and put it in its place with the belt around it. If you are using a diff, make sure the head of the adjusting screw is on the left side. If you are using a 1-way, make sure the arrows point forward when they are on the top.



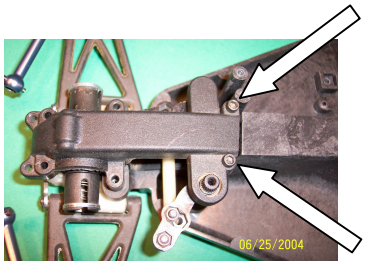
☐ B19) Install the modified steering tunnel (59) behind the front diff with the belt running over and under it. The “tall” end should face forward, and the open part of the tunnel should be on top.



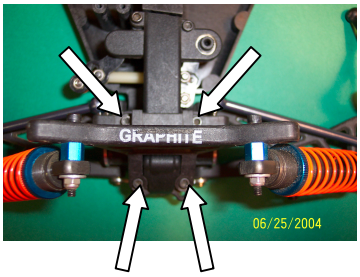
☐ B20) Slide the drag link (64) through the tunnel, and install the idler arm (61) and bellcrank (63) into their bearings. Snap the drag link back over its ball stud so the bellcrank and idler arm are connected. If the top bushings/bearings (60 & 71) are no longer in the cover, install them over the idler arm and bellcrank. If they stayed in the cover, you can leave them there.



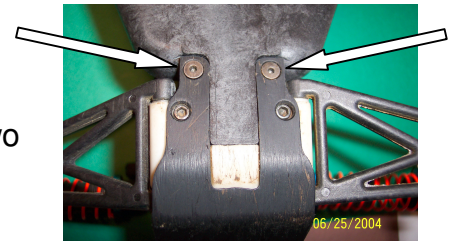
☐ B21) Install the modified front belt cover (70). Make sure the idler and bellcrank are still seated properly in their bottom bushings, and that the cover snaps properly over the upper bushings. Secure the cover with the two 4-40 X 5/8 cap head screws by putting them in the two holes at the back of the front belt cover. Snug them down but do not over-tighten.

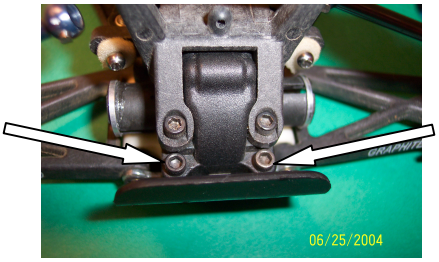


☐ B22) Place the front shock tower (84) over the front belt cover and bolt it in using the four 4-40 X 5/8 cap head screws you took out.

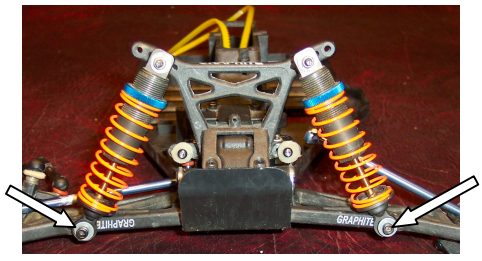


☐ B23) Install the front bumper (81) to the bottom front of the chassis. Make sure the screws holding on the bulkhead show through the holes in the bottom of the bumper. Attach the bumper at its back end using the two 4-40 X ¼ flat head screws you took out. From the top, install the two 4-40 X 3/8 cap head screws you took out to secure the very front of the belt cover to the bumper. Don't over-tighten these screws – the threads in the bumper strip easily.

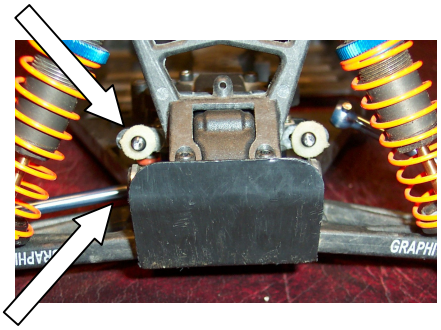




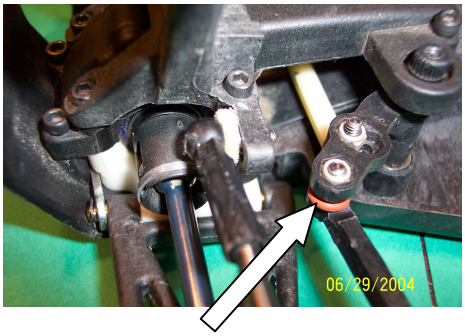
☐ B24) Bolt the bottom of the shocks back on the control arms in the same holes they were in before, using the same bolts.



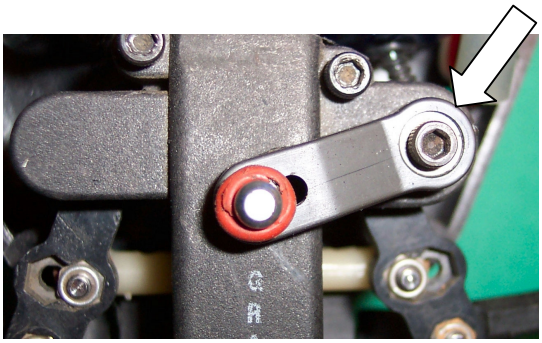
☐ B25) Make sure the right driveshaft is in the outdrive. Re-attach the camber link ball cup to the shock tower ball stud. Repeat for the left side.



☐ B26) Install the right tie rod ball cup over the ball stud on the drag link. Repeat for the left side ball cup and the bell crank ball stud.



☐ B27) Re-install the steering bellcrank arm (72) using the screw you took out. This arm and the bellcrank are keyed together, so take care with the installation. When the front wheels are straight, the arm should extend over the front belt tunnel. These arms have a terrible tendency to twist on the bellcrank at the worst moment, ruining the splines on both arm and bellcrank. We long ago stopped using the 4-40 X ¼ button head screw that comes in the kit, replacing it with a 4-40 X 3/8 cap head and a washer that just fits into the arm. Make sure this screw is tight.



That's it – the front end is done!

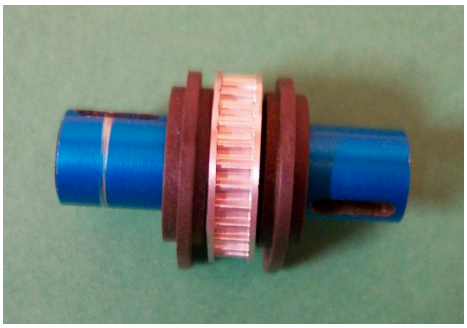
BAG C

REAR DIFFERENTIAL

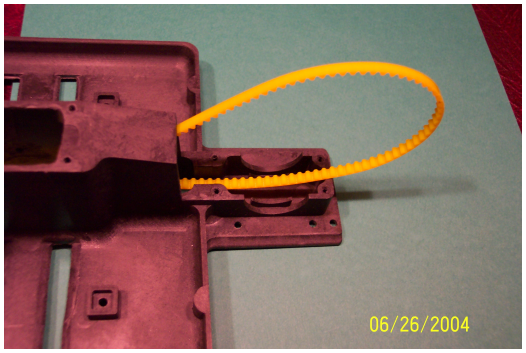
BEARING BLOCKS

☐ C1) The XX-4 came with two sets of bearing blocks (51). Hopefully you still have them both and have completed the modifications outlined above. They all have an arrow on the top, and come in pairs marked “A” and “B”. Consult page 9, figure 23 of your Losi manual. The B blocks keep the diff closer to the center and the A blocks extend the diff away a bit further from the center. When the arrows point forward, the diff is forward of center, when the arrows point to the rear, the diff is further back, increasing the belt tension. These blocks do not have a significant effect on tension, but they do change it slightly. See the Tuning Section. We suggest you start with the B blocks, arrows forward.

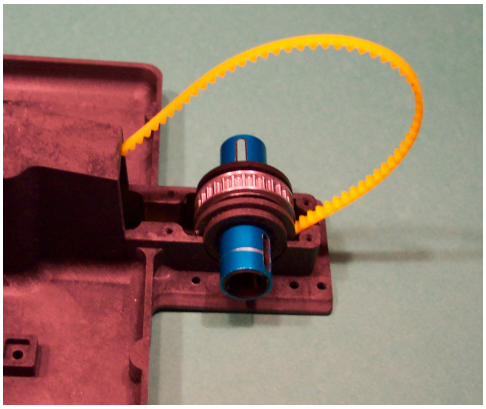
☐ C2) Install the outdrive bearings (52) in the modified bearing blocks and put them on the rear diff outdrives. Make sure the diff adjusting screw is on the left.



☐ C3) Work the belt through the chassis so there is a loop of belt sticking out the back of the tunnel. Make sure the belt is not twisted and the teeth are on the inside of the loop.

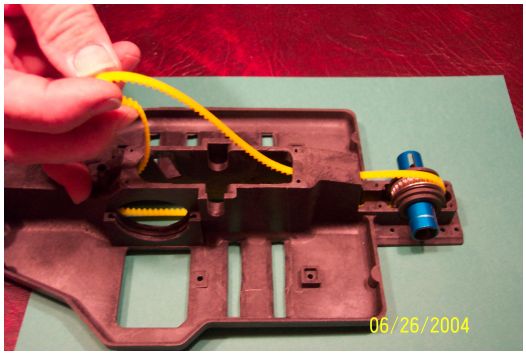


☐ C4) Put the rear diff, with bearings and bearing blocks installed, inside the belt, and place the bearing blocks in the rear of the chassis. The flat side of the blocks should be down. Press the blocks all the way down into the chassis. This goes together just as your XX-4 did.

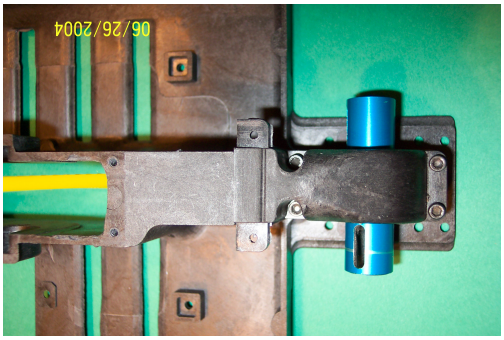


REAR DIFF COVER

☐ C5) Pull the excess belt into the center of the chassis, so it is tight around the rear diff.



☐ C6) Place the X – 5 rear diff cover over the chassis and rear diff, securing it with four 4-40 X 3/8 cap head screws. Do not over-tighten these screws; the diff must rotate freely.

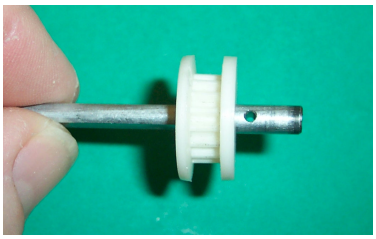


☐ C7) MAKE SURE THAT BOTH DIFFS ROTATE FREELY. You should be able to take up the slack in the belt and move it back and forth easily. If it grabs, or is "notchy," or takes excessive force to move, find and repair the problem now.

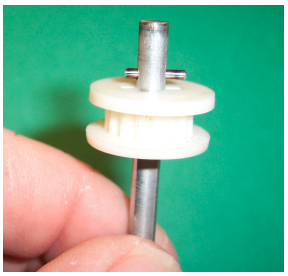
BAG D

SLIPPER SHAFT

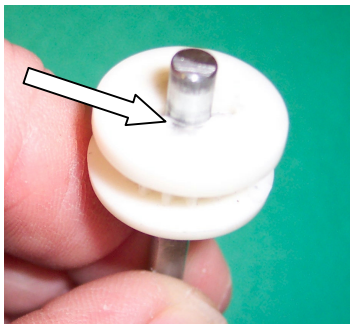
☐ D1) Place the drive gear on the shaft so the gear is just to the left of the hole in the shaft with the recess for the pin facing the hole.



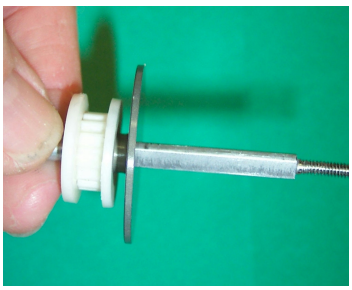
☐ D2) Place the hardened solid pin in the hole. The pin is slightly smaller than the hole, so be careful that it doesn't fall out



☐ D3) Now slide the gear over the pin so no part of the pin protrudes from the gear.



☐ D4) Slide one slipper plate over the threaded end of the shaft. The hub of the plate must face the gear and fit snugly against the gear. The plate indexes to the flat sides of the shaft.

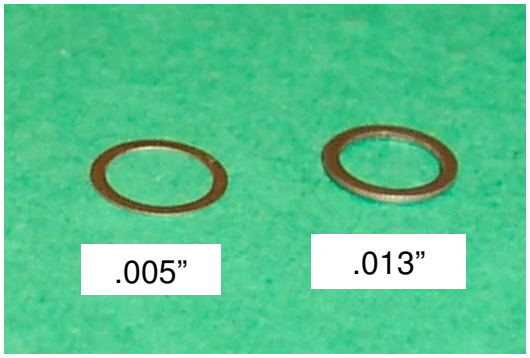


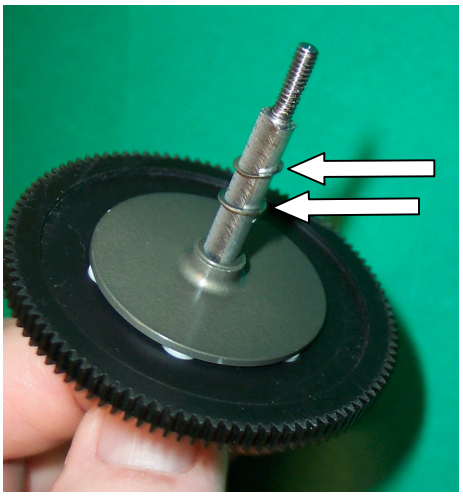
☐ D5) Slide the spur gear over the threaded end of the shaft so it is against the flat side of plate.

☐ D6) Hold the shaft so it is vertical, with the threaded end up. Continue holding it this way until you complete step 48. Place the six slipper pucks into the holes in the spur gear.

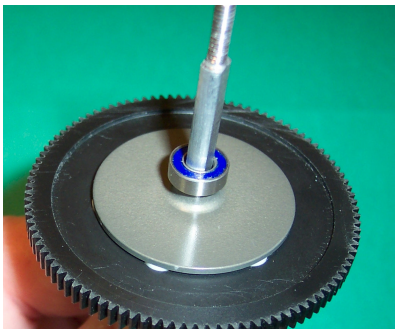
☐ D7) Install the other slipper plate over the threaded end of the shaft, with the flat side facing the spur gear, and the hub facing up.

☐ D8) Place the two tiny spacers over the threaded end of the shaft next to the slipper plate.

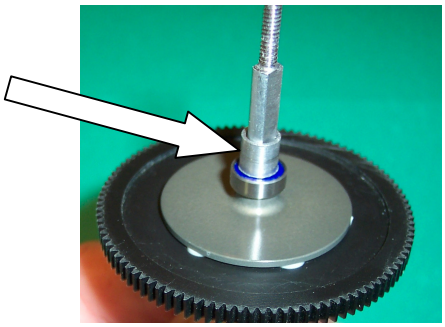




☐ D9) Install a 3/16 X 3/8 bearing (20) over the threaded end of the shaft. This bearing, was which was saved from the XX-4 slipper or layshaft, goes next to the tiny spacers.



☐ D10) Install the metal spacer over the threaded end of the shaft next to the bearing.



☐ D11) Install the large black plastic spring retainer over the threaded end of the shaft with the “small” end toward the spacer and the “big” end facing out.

☐ D12) Install the slipper spring over the threaded end of the slipper shaft onto the retainer

☐ D13) Install the smaller black plastic spring retainer over the threaded end of the shaft so the neck of the retainer fits inside the spring and the flat side is up.

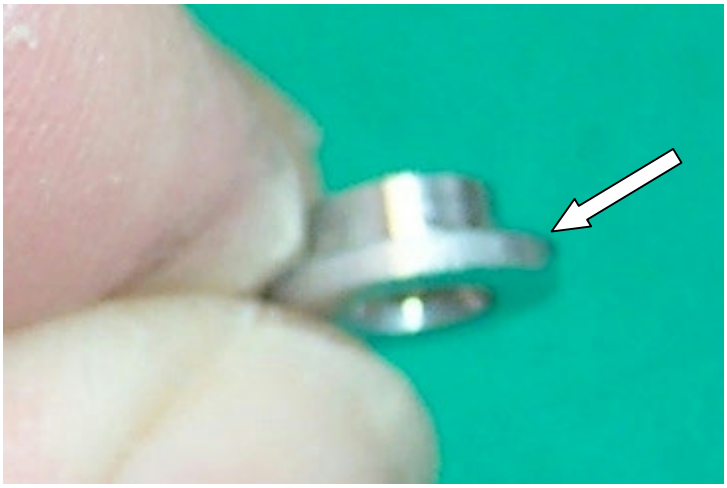
☐ D14) Install the 4-40 locking nut on the threaded end of the shaft with the flat side toward the spring retainer. Tighten the nut until the spring is fully compressed. Now back off the nut 1 ½ complete revolutions.

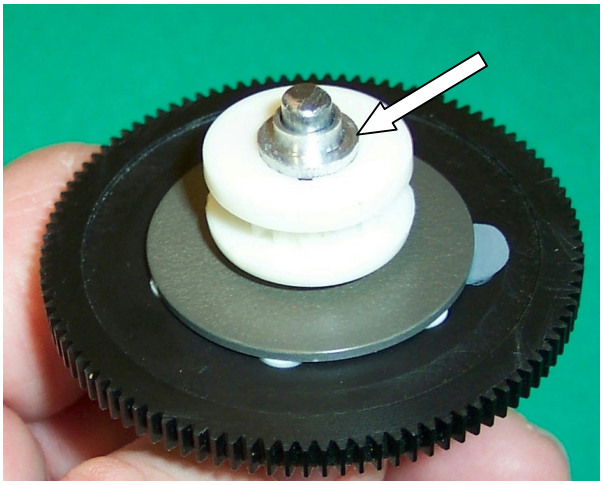
☐ D15) *Check the Tuning Section for information on slipper adjustment.* The setting described above is simply a starting point. IMPROPER SLIPPER ADJUSTMENT WILL RESULT IN POOR VEHICLE PERFORMANCE AND POSSIBLY DAMAGED SLIPPER PUCKS OR PLATES.

BAG E

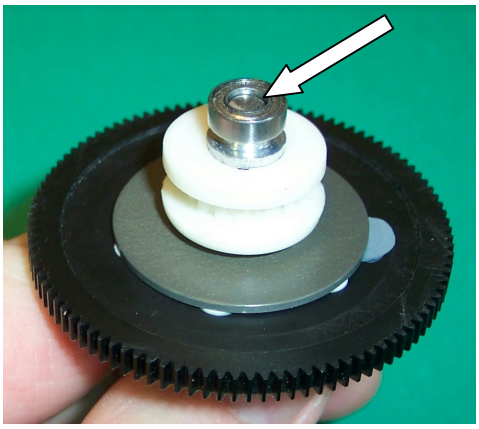
SLIPPER INSTALLATION

E1) Place the right side bearing spacer next to the gear with the wide shoulder against the gear.

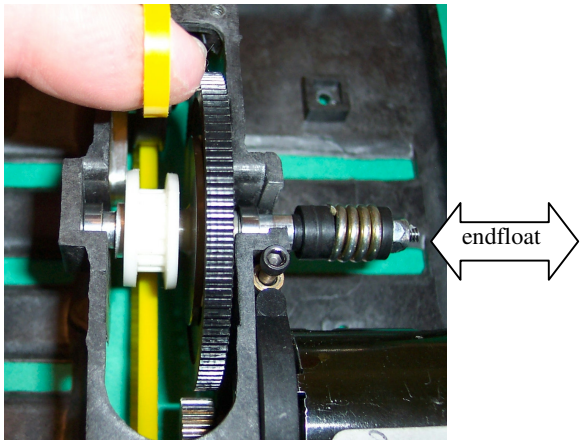




☐ E2) Place the other 3/8 X 3/16 bearing on the end of the shaft. The small part of the spacer must contact only the inner race of the bearing. The shaft should not quite go all the way through the bearing.



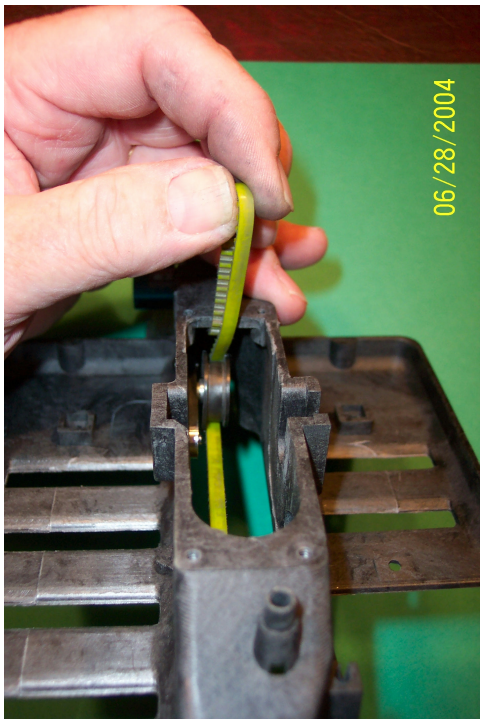
☐ E3) Without engaging the belt, put the shaft in the car to check freedom of rotation and endfloat. You want the smallest endfloat possible while still allowing total freedom of rotation. The shaft should move from side-to-side ever-so-slightly, and when you flick the spur with your finger it should rotate very freely.



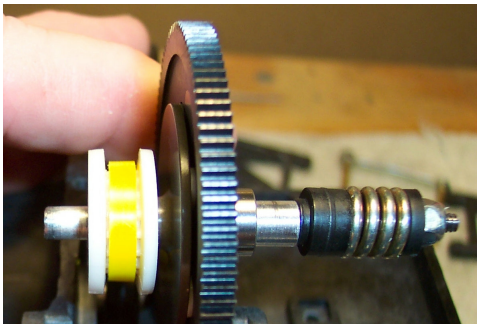
☐ E4) ENDFLOAT ADJUSTMENT: If the shaft is too tight, remove it from the car, take off the slipper spring, spacer, and bearing, and remove the smaller of the two tiny spacers. Reassemble and try it in the car again. If still too tight, remove and disassemble again, this time taking out the larger spacer and putting the smaller one back in. Try it again. If still too tight, remove the tiny spacer altogether and try again. One of these settings should work. If the shaft is too loose initially (This has never happened for us.) add spacers in a similar fashion.

☐ E5) If both small shims have been removed and the shaft still isn't free, first check that there are no burrs on your shaft, that the shaft does not protrude through the right-side bearing, that the spring spacer is not contacting the chassis, and that there is no debris in the chassis bearing slots. If the shaft is still too tight, remove a bit of material from the small end of the right side bearing spacer. (This has never happened to us – we always wind up with at least one tiny spacer.)

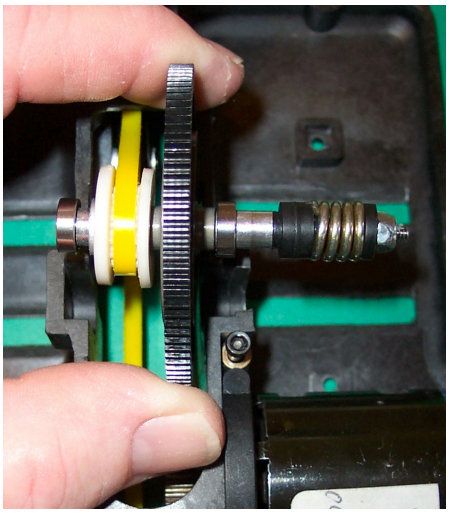
☐ E6) Working from above and below, thread the belt around the idler pulley. The smooth back of the belt should run flat along the bottom of the car. From the top of the front differential, the belt should run back to the bottom of the idler, around it, and a loop of belt should stick out the top of the belt tunnel. The smooth back of the belt should contact the idler pulley. Hold the loop with your finger so the belt is tight against the two differentials and the idler pulley. You should be able to move the driveline easily and freely. *If the belt and diffs are not free, now is the time to find out why and repair it.*

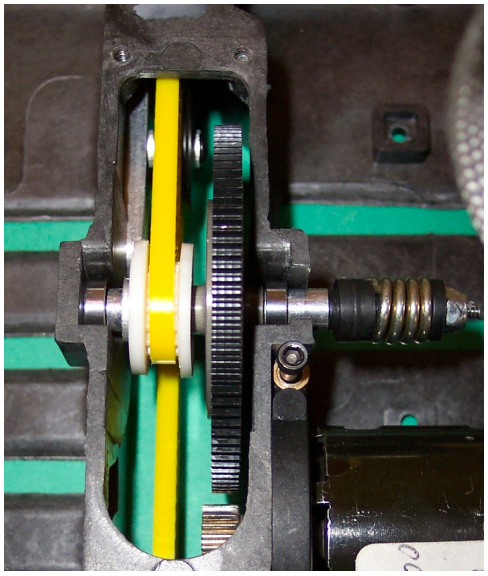


☐ E7) Take the right side spacer and bearing off the shaft so they don't fall off. Still holding the belt loop, insert the slipper shaft so the drive gear engages the teeth of the belt. The spring side of the shaft should be on the left side of the car. There is a slot in the belt tunnel so the bearing will ride in the tunnel and the spring will stick out.

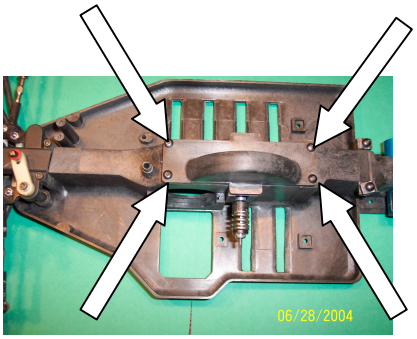


☐ E8) Maintain pressure against the belt loop so it doesn't fall off the idler. Replace the spacer and bearing. Push the slipper shaft bearings into their slots, which are beveled at the back to make this easier. When the idler is adjusted for proper tension, there will be only a slight difficulty as the shaft pops "over center" into the slots. If the shaft just drops in, or if it's nearly impossible to get the shaft into its slots, take the bearing & spacer off, take the shaft out, loosen the two screws holding the idler tension bar, and move the bar & idler. Re-install the shaft. Check the Tuning Section under Belt Tension.

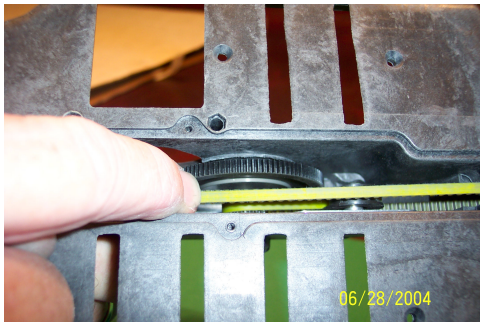




☐ E9) Put the top cover in place, sliding the two prongs into the slots over the bearings. Be careful of these prongs so they do not break. They secure the slipper shaft and are critical to the performance of your X – 5. Secure the top cover with the four 4-40 X ¼ button head screws. Don't over-tighten these screws.



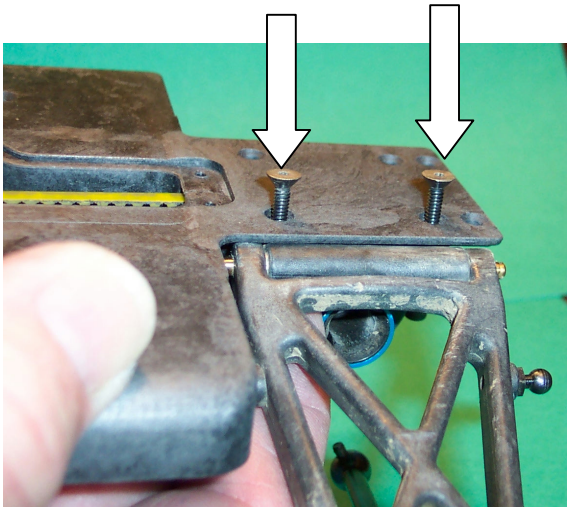
☐ E10) This is the final time to check your belt tension. Belt tension is the single most critical adjustment to overall vehicle speed. Refer to the tuning section and make final belt-tension adjustments now. From the bottom of the chassis, feel the belt tension. As you push the belt up, there should be resistance and it should not quite touch the underside of the drive gear. However, at rest, the belt should <u>not</u> be tight like a violin string.

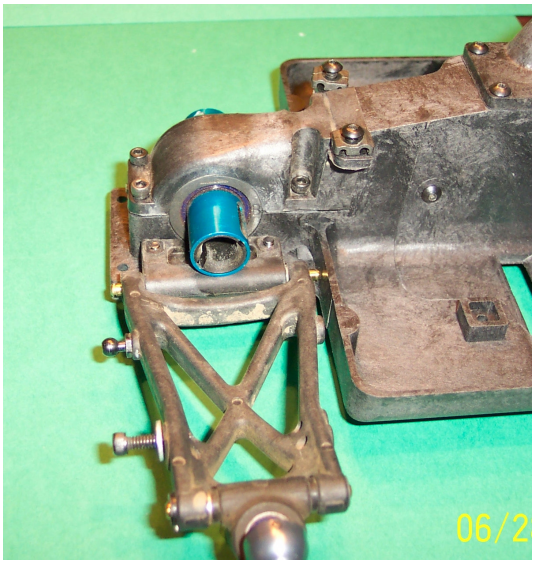


Do not install the bottom cover at this time.

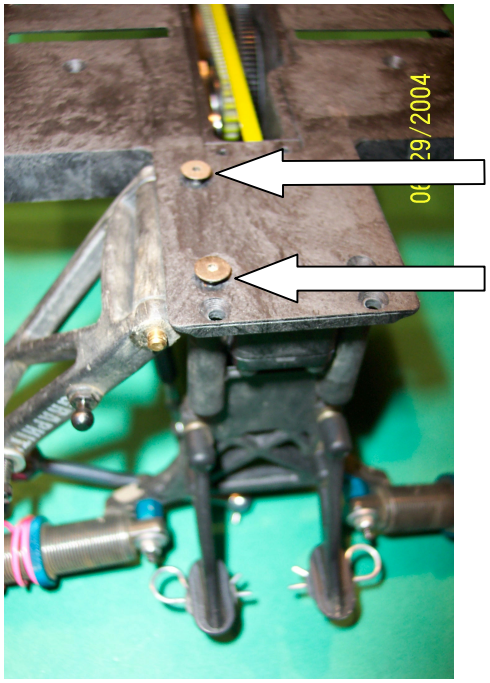
REAR SUSPENSION

☐ E11) You need five hands for this. Secure the right rear pivot block (108), with assembly attached, to the chassis by sticking two saved 4-40 X 5/8 flat head screws up from the bottom of the chassis and through the two holes in the pivot block. If you used an anti-squat shim, make sure it's installed under the pivot block in the right place.

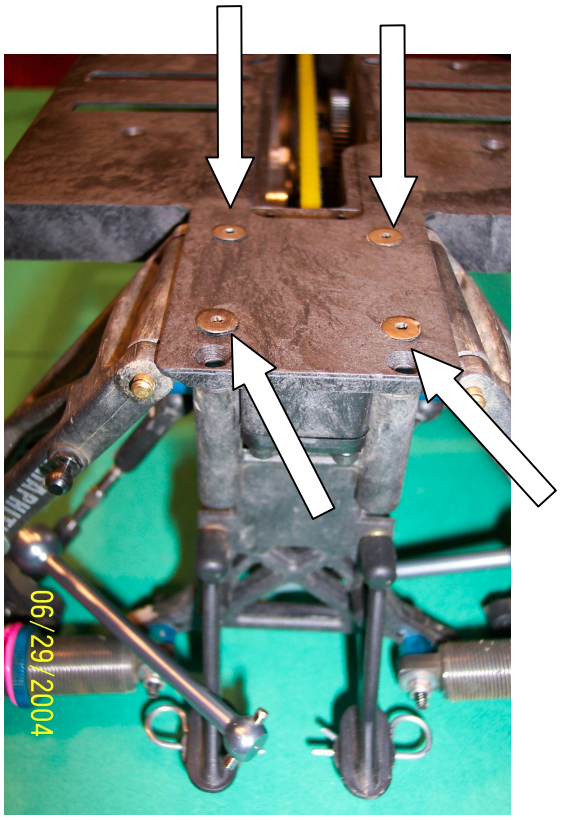




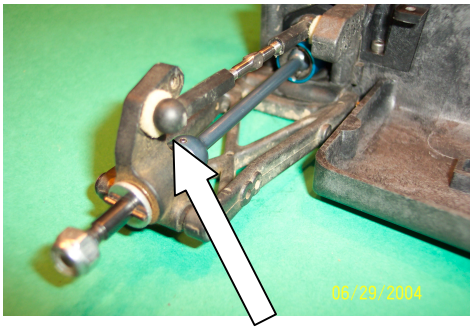
☐ E12) Now place the rear shock tower (110) over the pivot block and install the two screws through the pivot block into the shock tower. Leave them slightly loose to facilitate step E13 below.



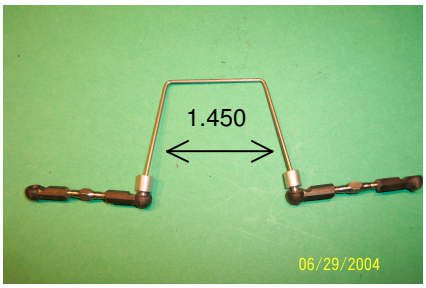
☐ E13) Slide the left pivot block, with assembly attached and any anti-squat shims, under the shock tower and install the other two saved 4-40 X 5/8 flat head screws. When the left side is done, tighten both sides.

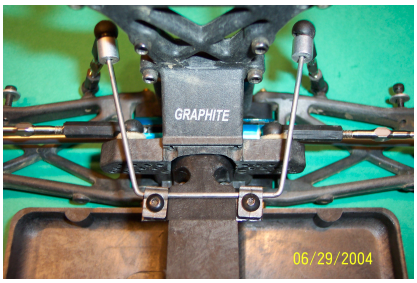


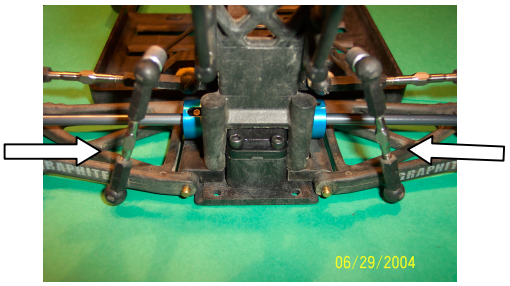
☐ E14) Make sure the right side dogbone is engaged in the outdrive and pop the camber link ball cup onto the hub carrier ball stud. Repeat for the left side.



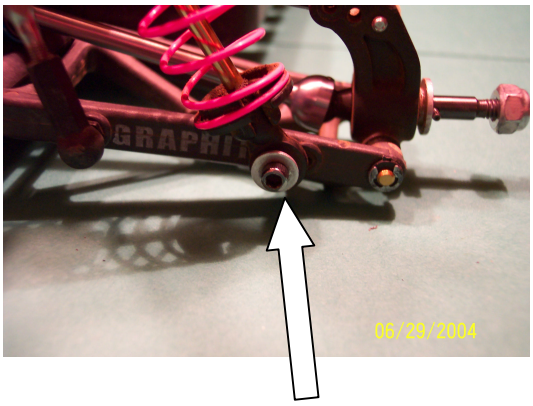
☐ E15) If you had a sway bar on your XX-4, make a new one. See the Tuning Section for the diameter of the wire. Cut the wire about 5 1/2" long. Make two 80 degree bends in the wire about 1.450" apart in the center of the wire so you have something resembling the letter "U". Place the center portion of the wire across the rear diff cover just behind the two tabs and secure with Losi sway bar mounts. Connect the links.







☐ E16) Re-attach the shock absorbers to the control arms



☐ E17) Attach the rear bumper (115) using the saved flat head screws.

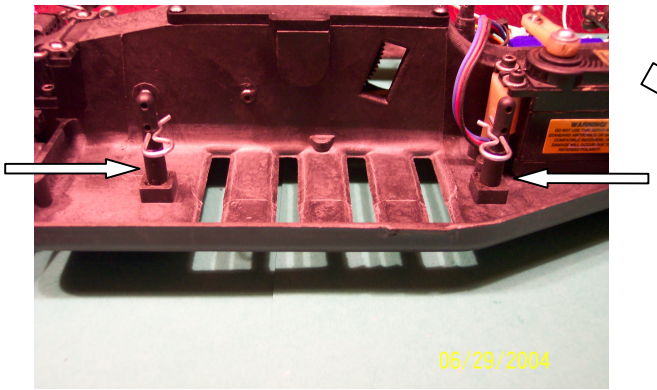
BAG F

MISCELLANEOUS PARTS

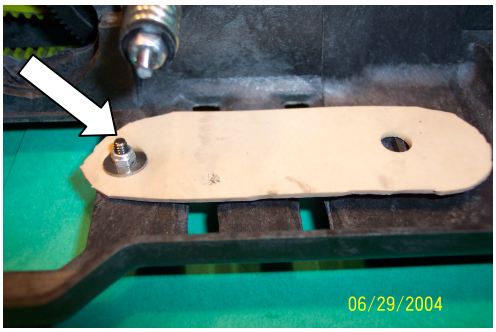
☐ F1) Extend the servo's wire between the posts at the bottom of the white servo mount (161). The flat top of the mount goes under the servo's mounting tabs. The mount accommodates wide or narrow servos by flipping the mount so the other side faces the servo. If you are using the same servo from your XX-4, orient the mount the same way. If you are using a different servo, check the table on page 36 of your XX-4 instructions.

☐ F2) Using two 4-40 X 3/8 flat head screws, secure the posts of the servo mount to the bottom of the chassis. Then, using the cap head screws you saved, secure the servo to the chassis and the mount.

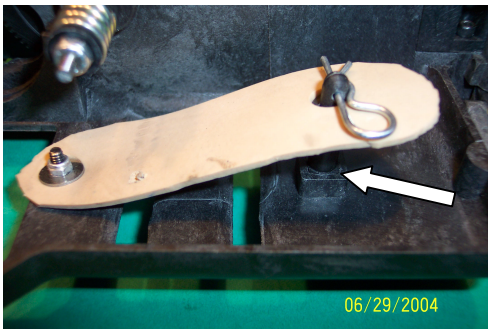
☐ F3) Install the two saved battery posts (166) in the two bosses on the right side of the chassis using 4-40 X 3/8 flat head screws. We've found it best to orient the body post holes so the clips slide in from the side rather than from front-to-back.



☐ F4) There is a flat angled boss on the floor of the chassis just behind the motor cooling hole with a countersunk hole in it. Push a 4-40 X 3/8 flat head screw up through the hole. Place the small hole in the rubber battery strap over the bolt, put on the flat washer, and secure with the self-locking 4-40 nut. Do not over-tighten – just snug it down so it's tight but the rubber is not distorted. Make sure the rubber runs straight toward the rear of the car.



☐ F5) Install the X – 5 battery strap post in the boss at the left rear of the chassis using a 4-40 X 3/8 flat head screw. We suggest you orient the post so the body clip runs sideways.



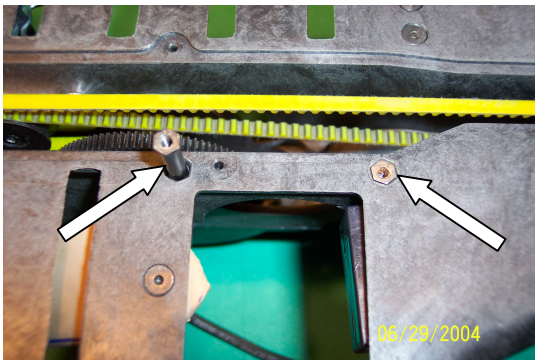
BAG G

MOTOR & ELECTRONICS

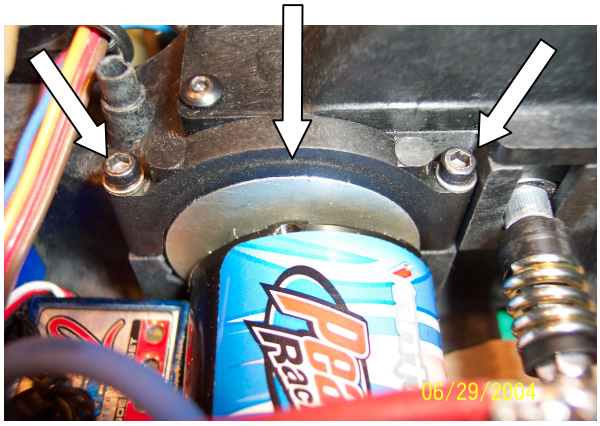
☐ G1) Attach the motor (not included) to the motor mount (155) as you did in the XX-4. Orient the motor so that, when the pinion is engaged with the spur gear, two solder tabs are near the top with the positive side toward the rear of the car. Note: You should NOT use the Trinity extra-cooling motor mount that was popular for the XX-4. This part extends the motor too far out from the center of the car, and the endbell may hit the chassis. If that blue Trinity mount is all you have, Losi part # A3219 should be available at your local hobby store.

☐ G2) Secure the pinion (not included) to the motor shaft so the pinion extends out from the motor such that it properly engages the spur gear.

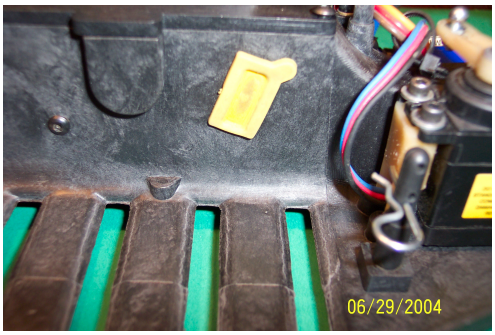
☐ G3) Insert the two long threaded inserts into the holes in near the center from the bottom of the chassis. Make sure the flats line up correctly with the holes.



☐ G4) Place the motor mount in the chassis groove as you did in the XX-4. The pinion should engage the spur correctly (See the Tuning Section) and the motor should be low in the chassis. Place the motor strap over the motor mount, put a #4 gold washer over each 4-40 X 1 ½ cap head screw, and secure the motor strap. Pay attention that the motor does not twist as you tighten these screws; this may change your pinion-to-spur adjustment. The motor clamp only fits one way, with the small shoulder out.



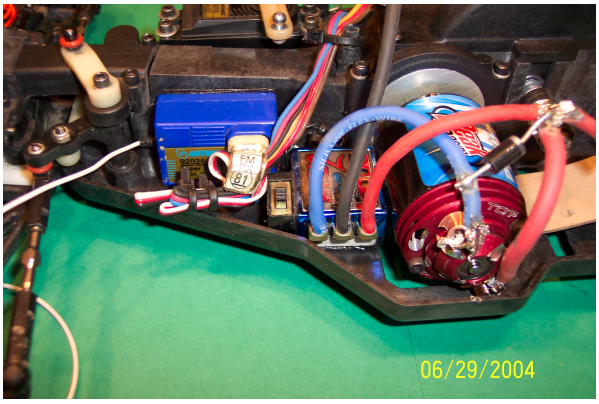
☐ G5) Insert the access plug (160) into its hole on the left side of the belt tunnel.



RECEIVER & E.S.C.

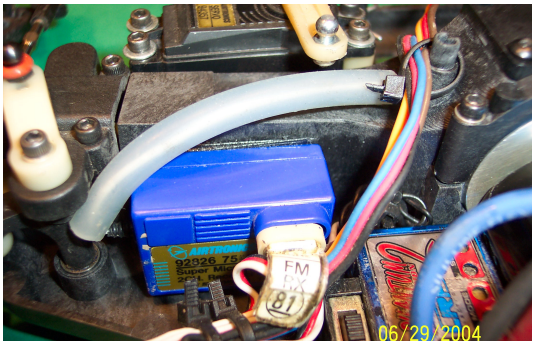
☐ G6) Using double-sided tape, attach the radio receiver (not included) vertically against the left side of the belt tunnel. We suggest you place the receiver as far forward as possible.

☐ G7) Using double-sided tape, mount the E.S.C. (not included) to the floor of the left side of the chassis between the receiver and the motor. Make sure no bare wires touch the chassis. This is a small area. The team uses the LRP Quantum 2, which fits flat onto the chassis floor here. You may need to mount your E.S.C. on its side. If your E.S.C. still won't fit here, perhaps you will have to mount it another place on the chassis and use longer wires. Secure the E.S.C.'s on-off switch so you can operate it conveniently.

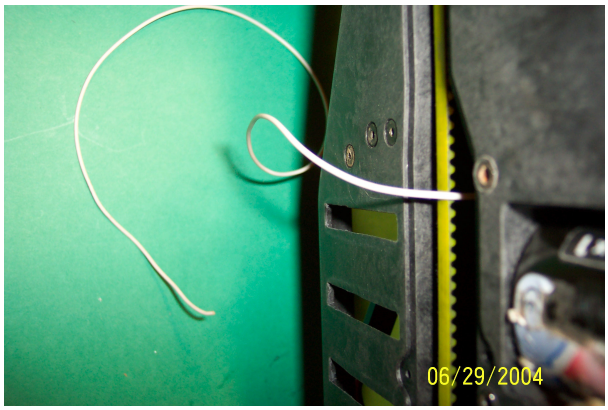


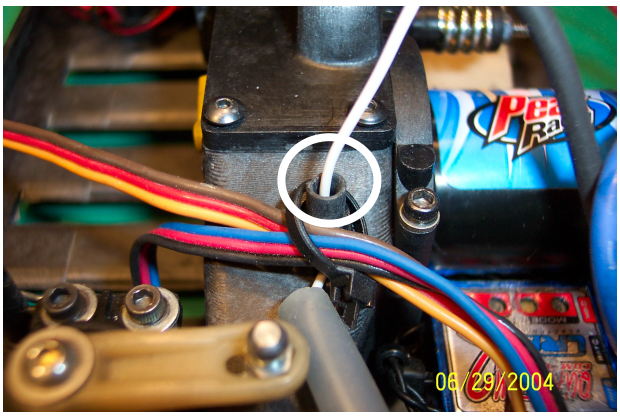
☐ G8) Plug the wires from the servo and E.S.C. into their slots in the receiver. The team's mantra is: "Steering is more important," so the servo goes in channel 1.

☐ G9) *This step is suggested only, and will vary depending on your receiver.* The Team cuts off a piece of fuel tubing about 2" long and threads the antenna wire through the tubing. We then secure the tubing to the top of the receiver. The idea is to keep the antenna wire away from the chassis as it travels from the receiver to the antenna mount so as to help keep the infamous "glitch demon" at bay.

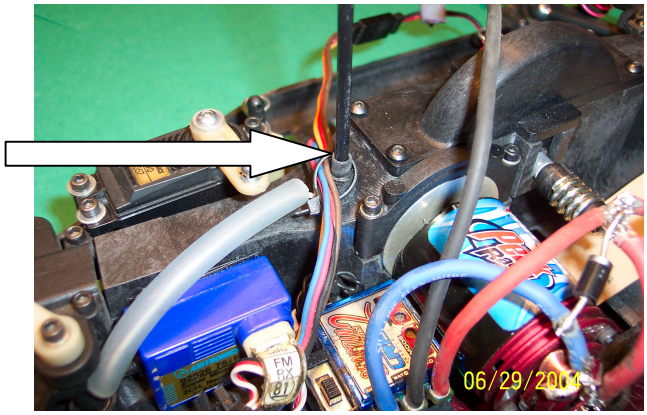


☐ G10) Insert the antenna wire from the receiver into the hole in the base of the antenna mounting post on the top of the belt tunnel. Pull the wire through so most of it protrudes through the bottom of the chassis. Now, push the wire back up through the antenna mount so it sticks out the top of the antenna mount hole. Be careful to not rub insulation off the antenna wire as you pull it through the hole.

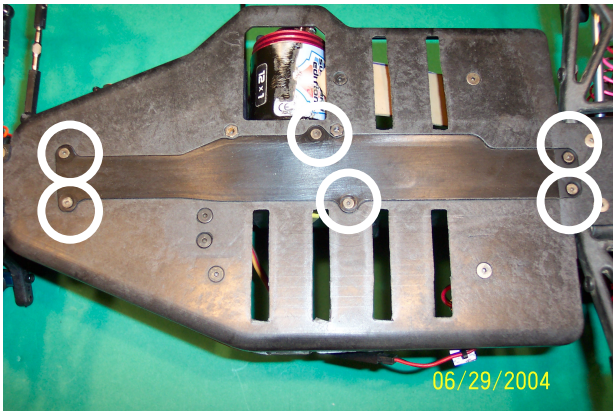




☐ G11) Insert the antenna wire fully into the antenna tube, and push the tube firmly into the antenna mount post.

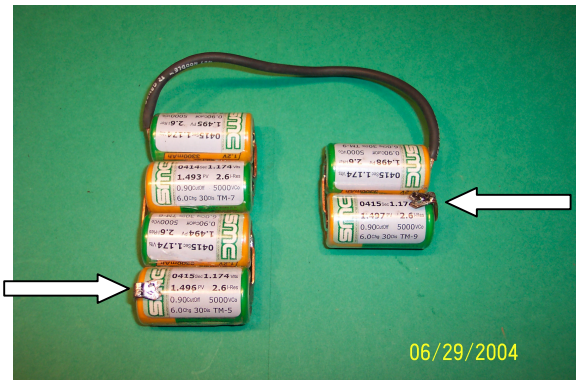


☐ G12) Install the bottom cover with the lip facing up into the chassis. Use the six 2-56 X 3/16 screws for this. Install the little screws snugly, but DO NOT OVER-TIGHTEN. The bottom cover has been made to fit tightly. Over-tightening the screws will distort the cover, letting dirt in, which is bad. Worse, over-tightening may strip the threads in the chassis, and there's not much you can do to fix it.

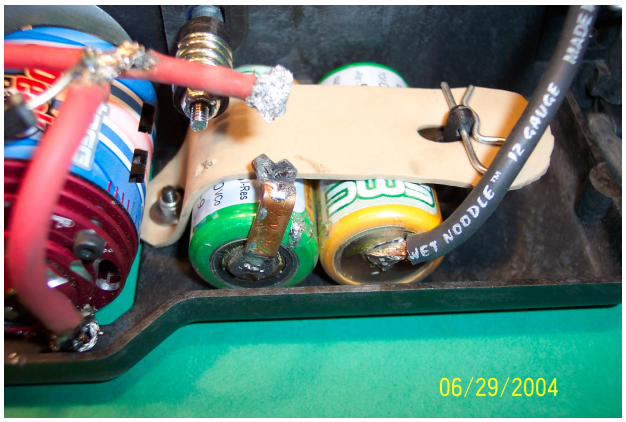


BATTERIES

☐ G13) You will need to re-make your saddle pack from the current 3+3 arrangement into the X – 5's 4+2. We suggest you arrange your cells so that the positive end is the front of the "2" side and the negative end is at the front of the "4" side. You should have the solder tabs to the outside so the positive end is away from the slipper shaft. This will require about a six-inch jumper wire, which crosses the chassis at the rear, near the sway bar mount. We wish it weren't this way, but the 4+2 arrangement gives, by far, the best weight distribution. The Team's X – 5 is within ½-ounce per wheel of the XX-4.



☐ G14) Place the battery pack in the car, securing the four cells on the right side with the battery strap and two saved body clips. Secure the two cells on the left side with the rubber strap and a saved body clip.



FINAL ASSEMBLY

☐ G15) If you removed them, put the wheels and tires on, using the nuts you saved.

☐ G16) Make sure the bellcrank and idler arm are at equal angles to straight ahead. Make sure the steering tie-rods are of equal length. Check and adjust ride height at front and rear. Check and adjust rear camber. Check and adjust front camber. Finally, adjust front toe-in, making sure to retain equal tie-rod length.

☐ G17) Check the E.S.C. switch to be sure it is in the “OFF” position. Install the E.S.C. wires according to the E.S.C. manufacturer’s instructions.

☐ G18) Carefully remove the servo arm (164) from your servo. Leave the ball stud as is. Save the screw.

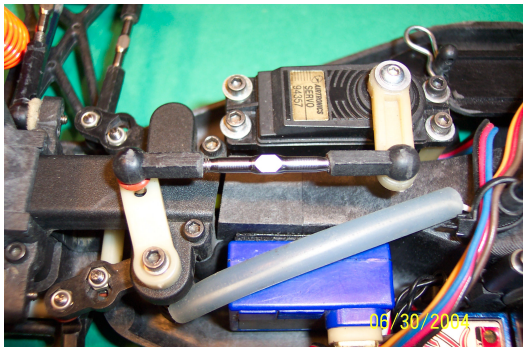
☐ G19) Support the car so all the wheels are off the table or ground.

☐ G20) If you are using a different E.S.C. from the one in your XX-4, follow the manufacturer’s instructions for setting the E.S.C. and your transmitter.

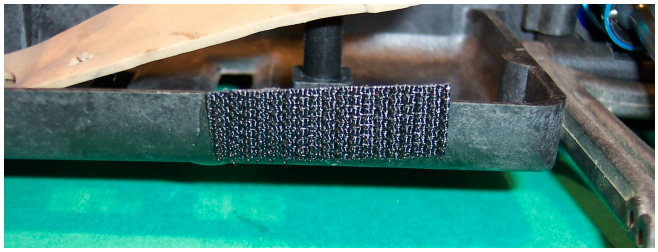
☐ G21) If you are using the same servo as in your XX-4, turn on the transmitter, then the car. Make sure your steering control is in the neutral position, and re-attach the steering arm to the servo using the screw you saved. The arm should be at 90 degrees to the servo, extending perpendicular to the centerline of the car. If you are installing a new servo, follow the manufacturer’s instructions. Use the appropriate servo arm from Table 92 on page 36 of the Losi manual and secure it in the same fashion as above with the screw you saved.

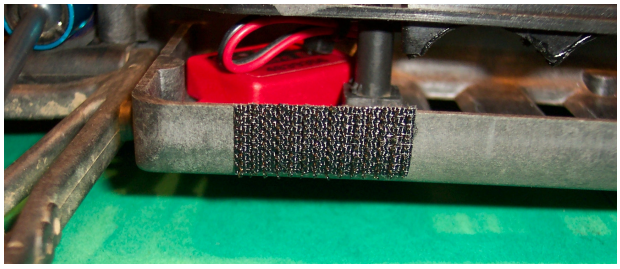
☐ G22) Turn off the car, then the radio, in that order. Do not allow the front wheels or the servo arm to move.

☐ G23) Put the saved ball cups on the turnbuckle from Bag G. Adjust the length of the steering rod so it fits on both the servo arm and steering arm without moving either arm at all. Snap the steering rod ball cups over the two ball studs. Turn on the transmitter, then the car, and make final steering adjustments on your transmitter.



☐ G24) Paint your body (window masks are included) and trim along the cut lines provided. Place a bit of Velcro on each side of the chassis near the rear and the other side of the Velcro on the inside of body to match. Put holes in the body for the antenna and front body mount and cut out the motor-cooling air hole on the left side of the body and the battery-cooling air hole on the right. We suggest you leave the back of your body as open as possible to allow better air flow.





☐ G25) Paint the wing and cut it out on the cut lines provided. There are three different cut lines on the vertical section at the rear of the wing – select the cut for the down force you desire. You also have your choice of three wing-mounting positions.

At this point, we <u>strongly</u> recommend you read and understand the entire Tuning Section. Make adjustments as required.

All Set?

LET'S GO RACING!!!

Hoo – Hah! This is gonna be fun!

TUNING SECTION

T1) **BELT TENSION**

Belt tension affects performance more than any other single item. Too loose and the belt skips -- bad. Too tight and the motor must work too hard = car slow. You're trying to balance on the edge of a cliff. Get the belt as loose as you can with minimal skipping on acceleration. Some belt skipping on braking and landing jumps is inevitable, and seems not to hurt the belt. A little skipping on acceleration is OK too. We know we're using a sedan belt; so far, we've never broken a belt from skipping. The belts seem almost indestructible

We've designed the tension adjuster bar to allow precise adjustment. There are three holes for the idler pulley, designed to give a wide range of adjustment. Once you find the "sweet spot," you won't touch this adjustment again until you change belts. We suggest you use a marker to make a small dot on the side of the belt tunnel above the bolts so you can easily return to this setting.

For even finer adjustment, change the bearing blocks at the rear diff. We find this makes very little difference in overall belt tension and normally run B forward. After several runs on a belt, you may want to change the blocks to increase tension.

One of the most reliable gauges of belt tension is how the slipper shaft installs in its slots. Set the idler pulley so a small bit of effort is required to "pop" the slipper shaft over center into its slots, but not so that the shaft just falls into the slots, and not so that you have to lift weights to obtain the strength to do it. If you must push hard on the shaft to get it in, the belt is probably too tight.

With the top cover on, the bottom belt should not be tight like a violin string, and should be fairly easy to push about 1/8 inch, but it should not go all the way up to the belt above.

Belt tension is more art than science. You'll have to try it at various tensions to see what gives the most power with minimal skipping. We put a motor in the car and run it on our dyno, looking for lower amp draws at the same voltage. Then we run the car and listen for skipping. We wish this were more science and less art, but art is fun. Really.

T2) **WING**

The X – 5 has been designed with great aerodynamic downforce on the rear. Both the body and the wing combine to help keep the rear wheels planted in high-speed corners. This produces high-speed push, which is a nice problem to have – it means you're going too fast. Almost immediately we added a washer

under the front outside ball stud, and this took care of much of the push. Also, see the section below on Sway Bars.

Naturally, you can trim your wing any way you'd like. The wing has been designed with three cut lines, depending on how much downforce you want. Further, the Team adds or subtracts washers between the lower wing mount and the shock tower to change the rake of the wing.

We carry several different wings, changing both wing and the washers to suit each track. It's an important part of our race set-up. With the rear wheels planted, you can apex high-speed corners a bit late, get on the power well before the late apex, and let the front wheels pull you through. This allows application of power well before many other cars, generating higher speeds in the following straight and quicker lap times, but it's a whole different driving technique.

The shorter the track the more rake we put in the wing and the more vertical wing we leave on at the rear. This is because with a shorter straight we expect lower speeds; more "wing" is required to generate the downforce. On a track with a longer straight, we'll use fewer washers, or less vertical on the wing, or both to generate the right amount of downforce. If there's a long fast sweeper, we'll add wing. If the course has many tight 180s where you must slow way down, we take wing out to give more speed on the straight.

Sometimes a particular big jump may require more or less wing for the car to fly and land right, and you must adjust for this feature of the track above all others. Here is where having two places to tune, the washers and the vertical on the wing, gives needed flexibility.

At the '04 ROAR Mod Nats there was a high-speed jump where the car stayed flat and relatively low. At times the wind would blow gusts as high as 40 MPH straight into the direction of travel. Here, downforce generated by the X – 5's body and big wing literally picked the nose up, and the wind then flipped the car over! We actually had to abandon the X – 5 wing and put on a different, smaller one so we could handle the jump. This hurt performance at the end of the straight where rear downforce was critical, but it couldn't be helped.

How much wing to run is as much feel and art as science. Don't be afraid to order extra wings and cut them to different sizes, trying them in different situations. When the lay-out at a given track is changed, remember that you may need to adjust your wing to suit.

T3) SWAY BAR

Because the arms of the X – 5's sway bar are longer than those on the XX-4, they are more likely to bend rather than move the opposite side control arm. Therefore, The Team runs a bar about .010" larger diameter than on the XX-4.

The sway bar is one of the most important tuning tools, and one of the easiest to change. The Team travels with sway bars of varying diameters, trying different ones at different tracks. Generally, the shorter the track, the smaller the bar, but this doesn't always hold true.

The purpose of a suspension in racing is to control weight transfer. Imagine a car with solid axles bolted directly to the chassis. In a corner the chassis would stay flat until it picked its inside wheels off the ground, followed soon after by roll-over. On the other hand, a too-soft suspension would have gross understeer ("push") and would never get around the corner at all, driving off the outside of the turn. Those are the two extremes of weight transfer.

A rear sway bar will affect the way the chassis flexes, thus changing what happens at the front. Further, the sway bar resists weight transfer, again affecting steering. Don't be afraid to change thickness of the bar, or even take it off, as you tune for a particular track.

T4) SLIPPER ADJUSTMENT

The Team runs its slippers very tight. Several factory Losi XXX-4 drivers have been known to remove the slipper entirely, replacing it with the direct-drive set-up from a XXX-S.

Usually, the looser the surface, the looser the slipper. This is because on a loose surface it's easy to induce wheel spin. There, a tight slipper would make squeezing the throttle more difficult on any straight section of the track. The slightest amount of throttle would generate gyrations sideways.

High-traction surfaces, on the other hand, require a tighter slipper. Here, wheel spin is not a problem, and you want to get power on the ground as fast as possible.

The X – 5 manual suggests this initial slipper adjustment: Tighten it all the way, then back it off 1 ½ full turns. Two turns is the loosest the Team has ever run.

Power of the motor has an effect. The Team normally runs a 10 X 1 for most races in the U.S.A., with a final drive ratio around 10.5/1 These races are generally on high-bite dirt tracks with main straights around 120 feet. You'll simply have to try it at different settings for each surface you encounter. Since more motor = more power, slipper adjustment varies with the motor. Also, a more powerful motor will induce more belt skipping on acceleration, and slipper adjustment can play a role here, too.

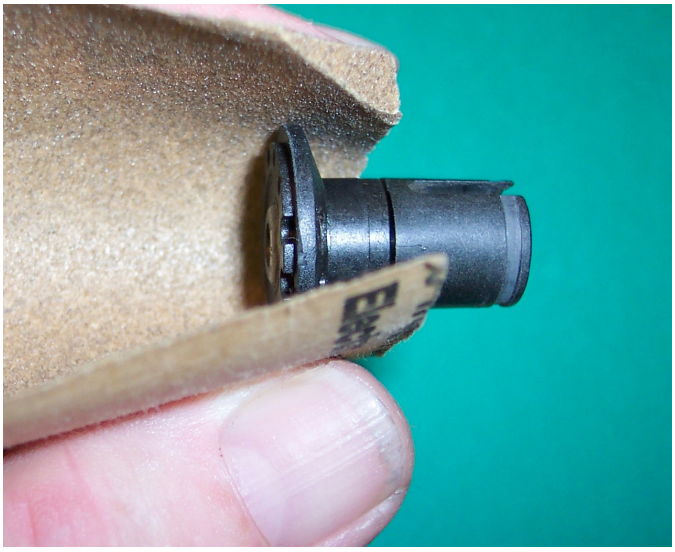
Don't start with the slipper too loose. The pucks are Teflon and there's Teflon on the plates, so much pressure is required to turn the assembly in the first place. Excessive slippage will harm both pucks and plates.

The arrangement with the Teflon pucks is copied from the XXX-4. We wanted to use fiber pads like the XXX buggy, but the pucks allow a narrower unit, which allows motor and batteries closer to the car's centerline for better handling.

T5) **ONE-WAY**

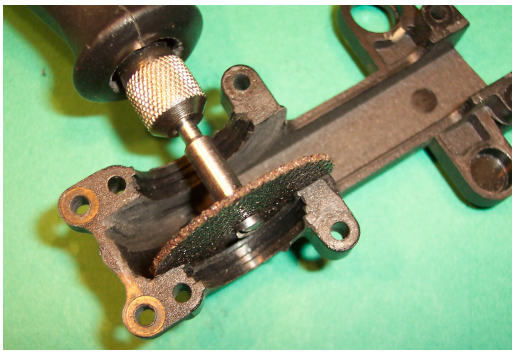
Because of its single-belt drive system, there is no way to put a one-way clicker system in the front wheels' drive arrangement. We would very much like to be able to include a clicker, as we think it's the best system for power delivery and braking, but there must be at least two belts to do it.

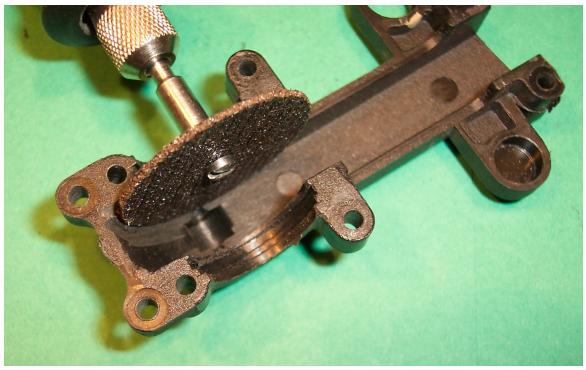
The XXX-4 comes standard with a front differential, as does the X – 5. This creates problems under braking, as there's just too much brake bias to the front wheels, leading to spin-outs if you hit the brakes too hard. However, the diff unit is virtually bulletproof.



The Team installs the Losi one-way unit, made originally for the XXX-S. The 1-Way bearing housing is slightly too large to fit in the X-5 diff gear. The outside diameter must be reduced by about .020". Prepare the outdrive and housing as detailed in this section. Put the bearing in the housing and push in the outdrive with its shaft attached. Place a piece of medium-grit sandpaper between your thumb and forefinger, put the outer edge of the 1-Way housing in the sandpaper, and use the outdrive to rotate the housing in the sandpaper. Blow the dust away frequently, and in no time you'll have the 1-Way fitting nicely in the gear. The side of the gear with the ultra-sound welded flange is a bit smaller than the other, and this 1-Way housing will require more sanding.

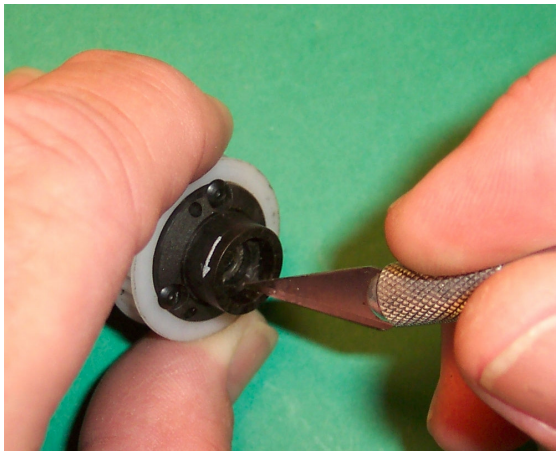
Because the one-way is about .030" wider than the diff, you must widen the white bulkhead and the front belt cover to accept the one-way. We use a coarse cut-off wheel as though it were a sander to remove about .020" from each side. We just put the wheel in the cover and push against one side, then pull against the other; the same with the bulkhead. The radius of the wheel works out about right for the shape of the cut. Only take material off the sides of these parts; you should not need to remove material from where the belt runs. Your X – 5 chassis has been built with the correct width, so no modification of the chassis is needed.



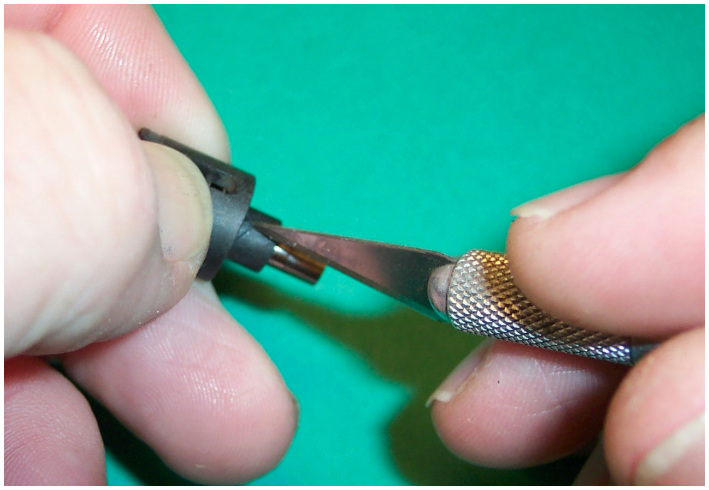


The outdrives of the one-way have an habit of working their way out. This means the drive pins are no longer straight in the one-way rollers, and contact between the now-raised-on-an-angle end of the drive pin and the rollers tears up the rollers. Here are some tips from The Team to increase one-way life:

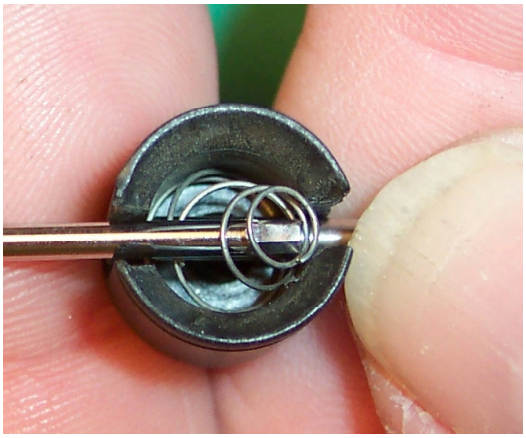
T6) Use an hobby knife to score the inside of the housing where the outer race of the outdrive bearing goes. This knurling will help keep the bearing from working its way out, taking the outdrive and its pin along.



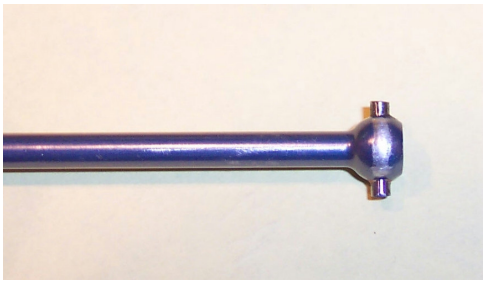
T7) Similarly, score the plastic of the outdrive where it fits inside the outdrive bearing. Again, this knurling helps keep the outdrive from working its way out.



T8) Every few battery packs use a pair of small wrenches to stretch the spring inside the outdrive. The purpose of this spring is to push against the dogbone, holding the outdrive and its pin in, and we've found the springs collapse a little after some use.



T9) Grind off the ends of the dogbone pin so that it fits easily through the outdrive saver ring.



Every time you remove an outdrive from the bearing, re-score the outdrive. Every time you remove an outdrive bearing, re-score the housing. By doing these things religiously, our one-way bearings last many races. We ran the same one-ways from the Mod Nats qualifying and main through the Shoot-Out practice, qualifying, and main, and we're still running that set. It can be done!

(Thanks to Skip Gear for these tips.)

P.S.: The Team always carries several spare bearings for each side. Leave home without an American Express card if you like, but don't leave home without spare 1-way bearings!! (The American Express reference is from a popular TV commercial in the US.)

T9) **PINION – SPUR ADJUSTMENT AND PINION SELECTION/MOTOR PLATE**

Pinion – spur adjustment on the XX-4 is pretty easy. Adjust it the same way on the X – 5. But, for some reason, moving the motor plate that last little bit is difficult on both the XXX-4 and the X – 5, which uses the same system. Don't ask us why, we don't know. It just is, and that's the karma, and it's not nice to fool with Mother Nature.

Be careful as you tighten down the two bolts on the motor strap, and re-check the mesh constantly. The Team tries hard to tighten the bolts evenly from side to side. Also, you'll find that tightening one side first tends to loosen the mesh, while tightening the other side first does the opposite. The further down you can

seat the motor plate in the chassis by hand before putting on the strap, the more accurate your initial adjustment will be.

For hot mod motors on U.S. tracks, we start with a pinion 7 teeth over the wind. That is, a 12 turn motor would get a 19-tooth pinion. We've not run 19-T or stock, so we can't advise. However, if you've run these motors in your XX-4, you can work out the pinion for your X – 5 mathematically. The "internal" ratio of the X – 5 is 1.75:1. Here's an example:

XX-4 (2.30 internal) 20 pinion 84 spur = 9.66:1 final drive

84 / 20 x 2.30 = 9.66

X - 5

9.66 / 1.75 = 5.52

(standard spur) 102 / 5.52 = 18.47 pinion

So, an 18 pinion will give a bit more torque, and a 19 a bit more top speed. To get closer to that 9.66 ratio, use a different spur.

The Team uses the old, non-lowered Losi motor mounting plate, A-3219. If you only have the lowered plate supplied with the XX-4 WE and the XXX-4, we suggest you get the 3219. The lowered plate fits and works, but with a pinion higher than 18, or the 104 or 106 spur gears and any pinion, the motor is too low in the chassis. In some instances the motor will actually stick out through the cooling hole and be lower than the chassis. Frankly, we may have gone overboard making the motor as low as possible. With the lowered plate, the motor can hit the ground on bumps and jumps, which tends to alter the pinion/spur mesh. With the old-style plate, the motor is nicely positioned for cooling and low C.O.G. If your hobby store does not have the A-3219, they are for sale on our web site, www.4wdrc.com.

That's more than enough bloviating from us.

We hope you have a ton of fun with your X – 5.

Please, please call or E-mail us with any
comments, suggestions, or complaints.
This is our first car and instruction manual,
and we solicit your help for the future..

Now let's tear up the competition!!