

## **TUNING SECTION**

Take this for what it's worth – we make no guarantees!

### **TRANSMISSION HEIGHT**

The X – 6 Sq. continues our adjustable height transmission. This allows you to adjust the height of the point of contact between the dogbones and the outdrives. In theory, raising this point of contact gives more forward bite and less side bite. Lowering the point of contact does the opposite: more side bite and less forward.

We are changing the angle of the dogbone in the outdrive. If you keep the ride height the same, changing the height of the outdrives changes the angle of the dogbones. On a conventional buggy, rear ride height changes are done to affect dogbone angle, and front ride height is adjusted secondly to compensate for the rear.

The New Math allows you to set dogbone angle and ride height independently. The Team usually sets transmission height first, then adjusts the remainder of the car, with front and rear ride heights based on the remainder of the set-up rather than dogbone angle considerations.

Included in Bag B is a Ziplock bag of transmission shims; four each of .030", .060", .090" and .120" Counting zero, this gives five transmission height positions. .060" is about the same as your B4.

Unfortunately, we have yet to figure out an economical way to change transmission height without moving the motor in tandem. Therefore, changing transmission height also changes the car's C.O.G. slightly, which affects handling. As with any other buggy, by the time qualifying starts it's the whole package that counts. We solicit input from the X Factory Family on this problem. The key word here is economical – nobody will buy a \$600 buggy!

*Important note:* For all settings above .030", add equal shims under the motor plate support. You can use #4 flat washers for this purpose.

### **ANTI-SQUAT AND TOE-IN – More Math!**

Your X – 6 Sq. has been designed to make adjustments of rear toe-in and anti-squat as easy as possible. Two toe-in bars are provided in Bag C: 3° per side and 4° per side. More toe-in helps the buggy develop forward traction coming out of corners, but less toe-in gives better side bite. So it's another trade-off and is an adjustment you

should make early in your set-up work for each track. There are commercially available hub carriers from RaySpeed and Racer's Edge which put different amounts of toe-in at the hub (the AE hub carriers are 0°), so you have a wide range of options.

We have run all the way from 3° at the pivot + 0° at the hub = 3° to 4° at the pivot + 1 1/2° at the hub = 5 1/2°! At 5 1/2° the rear end gets so locked up that steering reaction decreases, but you can do it. On the xx-4 it was discovered that toe-in at the pivot performs differently from toe-in at the hub, so please have at it and let us know how it works out.

Anti-squat adjusts the up-and-down angle of the rear hinge pins, thus affecting the angle of the rear hubs. This changes the way the wheels put power on the ground and changes the way the suspension works. Tilting the hinge pins so the rear is down increases forward bite, reduces side bite, makes the car jump with a higher arc and lets it accelerate better through bumpy sections. Raising the rear of the hinge pins does the opposite: less forward bite, more side bite, flatter jumps, better acceleration in smooth areas.

Bag C includes a Ziplock bag with 2 .030" shims and four .060" which allows anti-squat adjustment all the way from zero to .150". The Team no longer refers to anti-squat in degrees, but rather we discuss the number of inches of shim.

Once again, you should adjust anti-squat early in your preparation for a race, taking into consideration dogbone angle.

## **IT'S ALL ABOUT WEIGHT DISTRIBUTION**

"I never saw a Ferrari with the motor hanging out the back." That's a quote from Greg Hodapp, former Worlds' TQ and ROAR National Champion. Better weight distribution is the *raison d'être* for the X – 6 Sq. The typical rear-motor buggy has weight distribution of about 70% on the rear wheels and 30% on the front. The X – 60 is about 60 – 40%. The New Math.

Everything about the X – 6 Sq. is different from a rear-motor buggy, and many drivers must learn to drive all over again. A rear motor acts like a pendulum, making the back of the buggy want to "come around" in corners or fly up like a bucking bronco over bumps. With the weight in the center these things no longer happen.

First, you'll carry more speed through corners. With more weight on the front wheels, the X – 6 Sq. turns in better. With no pendulum effect in the back, the rear end stays more planted. The car naturally takes a smoother "normal" racing line through corners rather than the "point-and-shoot" or "rotate" line now in use with rear-motor buggies. Watch out that you don't run into other cars slowing down for the corners!

Even though less of the X – 6 Sq's weight is on the rear, the Team runs rear springs, oils, pistons as stiff or stiffer than a "normal" buggy. (What's "normal" about the motor hanging out the back?) Initially, we thought we would run softer because of less weight back there, and we've still got bottles of 15-wt oil and Losi white springs hanging around. But as we've learned to calculate The New Math, we've gotten stiffer, and it's remarkable how close most of our set-ups are to "normal."

We're still learning in the area of set-up, so stay tuned to our web site, [www.2wdrc.com](http://www.2wdrc.com) for the latest set-up tweaks.

## **GEARING AND SLIPPER**

The Team mainly uses the 78 spur gear. The 81 will fit, but to use it you should grind a bit off the ends of the dogbone pins so the pins no longer protrude from the outdrives. Under certain circumstances, we think often when the car is up-side-down, we've experienced contact between the pins and the 81 spur. It doesn't seem to bother the pins much...

We suggest initial slipper adjustment slightly looser than on the B4. Slipper and diff adjustment is critical on the X – 6 Sq. Under all circumstances, the slipper must slip before the diff, so after adjusting the slipper as you need, re-adjust the diff to suit.

Running a looser slipper allows you to get on the power harder and quicker coming out of corners and through rough sections, taking advantage of The New Math's higher speeds in these sections.

There is one advantage to a rear motor car: in the first five feet after a corner weight pivots back on acceleration reducing the car's tendency to "fishtail." On most tracks the X – 6 Sq. has no problem here (see Weight Distribution above), but on slippery surfaces (That's different from "loose.") power application is more difficult and trigger skill is required. A looser slipper helps now. It's not a real disadvantage – remember that you came through the corner faster – but many drivers will want to readjust the slipper and learn better throttle control for the occasional slippery track

That's really more than you wanted, but we can't stop talking with The Family.

We've worked very hard to improve quality on every part of the X – 6 Sq. over our previous Kits. These improvements have been very costly, but we think they are important and you will like this new car.

Please, please, call or E-mail with comments and suggestions. Complaints go to the top of our list because that's how we improve our products. Suggestions from the Family are the fastest way to new ideas for improvement and new products. We solicit your input.

The X – 6 Sq. is the most dialed thing we've made yet, so

Let's go crush the competition!!!

