

FINAL SET-UP AND PREP

ELECTRONICS

Now that the car is built and electronics installed, it's time to do the final set-up so the car runs straight and well. First, familiarize yourself with the set-up procedures of your various electronics: how to bind the receiver to the radio transmitter, how to set the speed controller to the radio, and how to adjust the steering settings on your transmitter.

Binding the receiver to your transmitter loads a unique identification number into your receiver, so it will only recognize your transmitter and not the others running at the same time. Each manufacturer has its own process for this. Even if this receiver was set-up previously, a re-do never hurts. Once the radio and receiver are talking together, set the ESC. Make sure the throttle and brake endpoints are at 100 on your transmitter and follow your ESC's guide. Again, there's no standard procedure across the board, but it generally involves entering a set-up mode on the ESC then modulating the throttle in a set way to 'teach' the ESC the radio's endpoints.

With all that out of the way, it's time to set the steering. First move the steering left and right, and make sure the wheels move the same direction. If not, you'll have to reverse the steering channel on your radio. Second, adjust the trim or sub-trim so that the steering rack is centered under the top plate. It's important to watch the steering rack, not the wheels, as different length tie-rods could throw off your center. You don't need to go berserk here with calipers and all, just use your eyes and get it close. Once the rack is centered, adjust your steering tie-rods so the wheels are approximately straight (0° of toe).

The third steering setting to adjust is your steering end points, or EPA. Position some blocks or your car stand such that the front wheels can move freely but the front arms are 'level' (not at full extension). Turn the right endpoint waaaay down on your radio, and then turn the steering wheel or stick all the way to the right. Look at the steering block of the left wheel – you'll see a bump where it stops against the caster block. If it's touching right now, turn the end point down more. Then *slowly* turn up the right end point until the steering block just touches the caster block. Repeat this procedure for the left side. A lot of gorillas like to run their EPA so the servo is straining at full lock – this just causes excess load on the entire steering system, including your servo. Cage the gorilla in your radio; if you want more steering, adjust the setup!

BREAK IN THE DIFF

We're ready to run now, right?! Not Quite. The next thing to do is break in the differential. This is exceedingly important to the performance of your car and life of your diff. With the car all prepped as above, and a battery in and ready to go, get the car back on its stand, with the rear wheels off the ground. Turn on the transmitter and car, then adjust the trim on the throttle so that the motor begins running at a slow constant speed. You want this to be low enough that the tires don't expand at all. Using a block, the car stand, or something similar, stop the rotation of one of the rear tires. The other tire should continue to turn with the motor, nice and easy. Leave the car like this for two or three minutes.

By holding one outdrive/diff ring is held still, you force the balls in the diff gear to roll, slowly flattening the microscopic surface features of the diff ring and creating a smooth 'polish' where they will operate for the life of the diff. Too much throttle would cause the balls to just slip along the surface, grinding and wreaking havoc on the diff rings. Letting them run in slowly creates a nice mirror finish. After two or three minutes, switch the block from the one rear tire to the other, and let the motor run for another few minutes. Doing this procedure on the bench creates a much smoother and more consistent feel than trying to break the diff in on the track. Bring the throttle trim back to neutral to stop the rear wheels.

Now we'll set a starting point for diff adjustment. Turn everything off, hold the spur gear with your left hand, and give the right tire a light flick of the wrist. The tire will probably rotate 1.5 or 2 turns; you'll want to tighten the diff so with a similar input it only rotates once. Pop off the right rear turnbuckle, swing the hub and tire out of your way, and grab your 5/64" hex driver. The diff screw is on the right side of the car; slip the wrench into the head of the screw to hold the screw steady. Rotate the left rear wheel backwards slightly to tighten the diff. Pop the right side back together and 'feel' the diff again; adjust it in small increments so as not to over-tighten.

NEVER run the car with the diff that's slipping. If you hear the diff 'bark' or 'chirp' – kind of a screech sound usually out of corners or landing jumps – immediately stop running and tighten your diff (check your slipper setting too, but we'll get to that). Even in a race, is finishing a run really worth replacing the diff balls and rings before the next one? It's a quick adjustment now rather than a lengthy and expensive tear-down

RACE PREPARATION

The 5 Ps: *Proper Preparation Prevents Poor Performance*. You want a well-built car when you arrive at the track, but top drivers also have a routine before *every* run to make sure the car's settings are consistent each time out. This makes sure the car on the track is indeed what you wanted, and any performance difference is the result of deliberate changes. Here is a list of things we check each time the car hits the track, for practice or racing. It's meant to be a quick reference list; for a more comprehensive discussion of each setting check the Tuning Section. After a few times, the list should be routine and only take a few moments; you'll be rewarded with a car that's consistent, more responsive, and faster overall. Start with a car ready to run, body off.

1 – Check ride height. Find a flat and level surface; if you're going to use a gauge make sure the surface is hard, as a pit towel could throw off your readings. Check the front height, then the rear, and from the side take a look at the 'rake' of the car. Even little changes – anti-squat adjustment, shock mounting holes, different tires, etc – will change the ride height, so it's very important to check this every time the car hits the track.

2 – Look over your X – 6 Squared. This is easily done as you adjust ride height above. Just keep your eyes open as you go through the list. Feel the shocks, inspect the ballstuds, etc. You'd be amazed how many times we find a ballstud or shock nut working loose, or a loose/cracked part before a qualifier or race.

3 – Check camber front and rear. The one thing that can throw off camber measurements more than anything else is bent rims. If the top of your wheel wobbles in and out as you rotate the tire your rim is probably bent slightly. This isn't the end of the world; you don't have to replace the tire. Simply identify a spot between the extremes, rotate the tire so that point is on the top, and set your camber from there.

4 – Check the front Toe-in. Center the steering rack under the top plate, then look at the front wheels. If you don't have a toe-in gauge, stand up and look down at the front of the car for a better perspective.

5 – Set your slipper clutch and diff. We generally recommend the 'hold the rear tires and punch it' method: Turn the car and transmitter on, hold the rear wheels securely, and give the transmitter a quick burst of 100% throttle – don't be shy! You should hear a high-pitched whine as the front end lifts off your pit table; that's the slipper working. If the diff slips (a screech sound) stop immediately and tighten it a 1/4 turn or so. Back off the slipper and try again. Besides listening, watch the front end of your X – 6 Squared as you do this. The higher off the table your front tires get the tighter is your slipper.