

Quarter Midget Baseline Chassis Setup

The following steps are intended to help handlers understand the basic steps required to setup their quarter midget chassis. Actual settings are not provided as they are different for each brand and model of car plus the class the driver is racing in.

1. Tire Pressures

Each time the car is setup make sure to put the tires at the pressure you will race them to make sure that any other measurements taken are relative to how the car will be raced. For asphalt this can be anywhere from 10 to 14 lbs for the right sides at the start of a race and between 5 and 8 for the left rear and 8 to 10 for the left front.

2. Approximate Ride Heights

Put the car on a level flat surface and then set each corner to the height you want it in race trim. Even though this step will be repeated later it is important to do it now at this point also to ensure the next steps are accurate. Choose whether or not to complete these steps with or without driver and then always do it the same way for uniformity. Because this is kids racing and they are not always easy to find doing without driver is the most common. This means that comparing ride heights with other handlers may not always be a proper apples to apples comparison but it will make sure your process is consistent. If you were to measure from the bottom of the car to a level surface underneath your left side heights are going to be somewhere around $\frac{3}{4}$ to $1\frac{1}{2}$ inches while the right side will be about $1\frac{1}{2}$ inches. All car manufacturers have different settings they prefer and I recommend following those.

3. Square the car

Most often this is done by taking off the wheels and hubs and placing the car into a set of alignment bars. While some setups result in the rear axle being slightly out of square, for a baseline start with it parallel to to the lower roll cage bar in front of or behind the engine. Be careful to measure precisely using squares to your level surface for references to make sure your measurements on each side are consistent. Even $\frac{1}{16}$ th of an inch in variance will make a big difference. Adjust your rear radius rods accordingly to put the axle square.

4. Square birdcages

Most brand cars are designed so that the rear bird cages or "bearing carriers" are positioned so that the two radius rod mounting points are directly above / below each other. If a line was drawn from the top point to the bottom and continued to your level surface it would be perpendicular to the level surface. Not being square can result in some funny rear axle steering movement as it travels up and down. This is also adjusted by lengthening and shortening the radius rods, again be careful to either make equal adjustments on top and bottom or to re square the rear axle when you are finished.

5. Set Axle Lead

Next the front axle lead is measured by tape measuring from the outside edge of the front axle with wheels in straight position (if they were on the car) back to the rear axle with the table parallel to the outside frame rail of the car. There is a big difference is brands of cars with this setting. Anything from from the right side shorter by a quarter inch to the right side longer by a whole inch. This is adjustment by lengthening or shortening the front radius rods. Making sure to adjust the top and bottom rods evenly on the side adjustments are made.

6. Set Caster Camber

Caster can be set with either a caster / camber guage or an angle finder. Use an angle finder to measure the angle from the top of the spindle bolt to the bottom parallel to the length of the car front to back. Right front caster is usually set somewhere between 2 and 5 degrees. Caster is adjusted most often by shortening or lengthening a single radius rod on that corner of the car. Tiny adjustments make a big difference. Most front axles have a caster split built into them so setting the caster is done on a single corner and the LF will be what it will be.

7. Set Front Alignment

The Toe-In / Toe-Out is set next so that the front wheels are are parallel with each other while the car is in the alignment bars or has the wheels on it on a level surface.

8. Final Ride Heights

With all the wheels and tires back on the car and back on your level surface check the tire pressures one more time then re-measure to make sure each corner of the car is set to the desired height.

9. Wheel Spacing

Make sure the wheels are moved in or out to the desired position for each corner. This usually means the left sides are tucked in as far as legally possible (not inside the side nerf bars) and right rear in the middle of its adjustment range.

10. Scale the car

Using anything from accurate bathroom scales to electronic scales put each wheel on its appropriate scale pad and record the weights. Make adjustments to the coil spring collars or torsion bar adjusters to each the Cross Weight or Left Rear Split you are looking for. Make sure to make 4 equal adjustments all the way around the car. This will ensure that the ride heights remain where they should be.

For example if the cross weight is $50\% (LR + RF) / \text{Total}$ and you are looking for 54% then put 1 turn in the LR and RF (clockwise) and take a turn out of RR and LF (counter-clockwise).

11. Practice

Put the car and driver on the track