



Setup Information Package

Congratulations on the purchase of your new Vector. This step by step setup sheet, supplied by Hi-Tech Racing Inc, will help make the assembly and setup of your Vector quick and simple.

In the following pages, we will discuss:

1. Mounting the Seat Bar Kit and the Seat
2. Mounting the Body Kit
3. Setting Toe
4. Setting Camber
5. Setting Castor
6. Weigh Out and Tire Stagger
7. Rear Cassette Pill Kit System

We hope this information package aids you in the assembly of your Vector. Remember all the information supplied to you in this package is only a starting point. Sometimes, track conditions and tire choice may slightly change your initial setup.

With our years of racing experience and extensive track testing, we feel you have in your possession the highest quality and most technologically advanced racing chassis on the market today. Best of luck and many victories!

Class	Front Stagger	Rear Stagger	Front Percent	Left Percent	Cross Percent
Jr 1 Sportsman	1-1/2"	3/4" to 7/8"	47.0 %	53.0 %	60.0 %
Jr 2 Sportsman	1-1/2"	7/8"	47.0 %	54.0 %	62.0 %
Junior	1-1/2"	7/8"	46.5 %	55.0 %	63.5 %
Stock Light	1-1/2"	3/4" to 7/8"	46.5 %	55.5 %	64.5 %
Stock Medium	1-1/2"	7/8" to 1"	46.0 %	56.0 %	63.5 %
Stock Heavy	1-1/2"	7/8" to 1"	46.0 %	56.5 %	63.0 %
Super Heavy	1-1/2"	7/8" to 1"	45.5 %	57.0 %	62.0 %
Limited Heavy	1-3/4"	3/4" to 7/8"	45.5 %	57.0 %	62.0 %
Jr Sportsman Champ	1-3/8"	7/8"	44.5 %	55.5 %	51.0 %
Junior Champ	1-3/8"	1"	44.0%	56.5%	52.0%
Senior Champ	1-3/8"	1"	43.5%	57.5%	53.0%

### Rear Cassettes

The rear cassettes have a pill kit system which allows cross adjustment on the left rear and axle lead adjustment on the right rear.

For Junior Sportsman classes, we recommend the 0 pills on both sides. For adult classes, where more cross is needed, we recommend the 1/16 pills on the left rear and the 0 pills on the right rear.

We appreciate your business.

Technical Support, Ordering, and/or Bragging  
 864-269-8947  
[www.MillenumRacingChassis.com](http://www.MillenumRacingChassis.com)  
[www.HiTechRacing.net](http://www.HiTechRacing.net)  
[www.MillenumRacingChassisStore.com](http://www.MillenumRacingChassisStore.com)

We look forward to hearing from you!

Track Conditions	Banking	Left Front Camber	Right Front Camber
Wet	0 to 5 degrees	+ 0.75	- 3.00
Wet	5 to 15 degrees	+ 1.00	- 3.25
Tacky	0 to 5 degrees	+ 0.50	- 3.00
Tacky	5 to 15 degrees	+ 0.75	- 3.25
Dry and/or hard	0 to 5 degrees	+ 0.50	- 2.75
Dry and/or hard	5 to 15 degrees	+ 0.25	- 3.25

It is highly recommended that you use a camber gauge to properly set camber. Camber should always be set with the kart on a level surface, preferably your scale platform, with the driver sitting in the seat. (Remember that camber should always be checked with the tire stagger that you would race.) Always remember when a final camber adjustment is made, toe should be reset.

Using the ProLine Laser Alignment System, camber and toe can be set simultaneously.

### Setting Castor

The Vector castor block system gives you a huge amount of adjustability. Our standard setting for most dirt tracks is 8 degrees on the left and 12 degrees on the right. This gives a 4 degree castor split. This split number is a proven winner for dirt. Asphalt racers and indoor racers may want to increase the split number.

### Weigh Out and Tire Stagger

You are now ready to weigh out your tempest. Consult the “recommended settings table” for the correct weigh out of your chassis depending on class weight. (Stagger settings are also recommended.)

Tire stagger is the difference in circumference from the right side tire to the left side tire. (Right side tires are always larger than left side tires.) The chassis should always be weighed out with race stagger.

Left side weight, front weight, and cross weight are simply the percentages of the weight of two tires relative to your total weight. If you do not have digital scales to figure these percentages, it is quite simple to do with a calculator. When figuring front weight percentage, simply add your left front wheel weight to your right front wheel weight and divide by the total of all four wheel weights (total weight). To obtain left side percentage, simply add your left front wheel weight with your left rear wheel weight and divide by your total weight. To obtain cross weight percentage, add your right front wheel weight with the left rear wheel weight and divide by total weight. Always remember, any changes to cross in the front end should always be followed with front end realignment using the ProLine Laser Alignment System.

### Mounting The Seat Bar Kit and The Seat

The seat bar is usually the first procedure in the kart assembly. Using Picture A (shown below), set the right side seat bar mount 1-3/8” from the inner motor mount rail. Be sure 1/2” threaded mount stud is perpendicular or 90 degrees to chassis. Then tighten all four 1/4” bolts. Make certain heim joints are threaded into the bar as far as possible. In other words, you want the seat bar assembled length to be as short as you can make it. Next, install right side of bar over 1/2” threaded stud with one .060 washer on top of the heim joint. Then tighten the 1/2” - 20 nylon nut. Then, put the heim joint, washer, and 1/2” - 20 nylon nut over the left side stud. Tighten the heim joint jam nut. Next, set the mounting stud bracket on the left side nerf bar tube. Then tighten the four 1/4” - 20 bolts. The last step of the process is to set the amount of vertical travel you want on the seat bar. This is done by loosening the two 1/2”-20 nylon jam nuts on the left side. We like to have slightly more vertical travel on the left side versus the right side, approximately .030 to .035 on the left and .015 to .020 on the right. Picture B shows full assembly of the seat bar.



Picture A



Picture B

The next step is to mount the seat. Seat position is crucial for optimum performance of your chassis. Most importantly, seat position should be comfortable for the driver. Since everyone is built differently, it is very difficult to determine exactly the best seat position for you. But we can tell you how we like to mount our seats. Since body weight has the greatest effect on left side weight percentage, we first ask how heavy the driver is. This helps us to determine how far left or right the seat will be positioned. We use the center of the seat in reference to the brake rotor on the Vector as our guideline. This is not perfect for everyone, but it is a great starting point.

Driver Weight	Seat Position
50 to 100 lbs.	Center of seat in line with center of brake rotor
100 to 130 lbs.	Center of seat 1/2” to 1” to the right of brake rotor
130 to 180 lbs.	Center of seat 1” to 1-1/4” to the right of brake rotor
180 plus lbs.	Center of seat 1-1/4” to 1-1/2” to the right of brake rotor

Place the kart on a flat surface (i.e. table, floor) to keep the seat flush with the bottom of the frame rails. Seat height is a personal preference from a comfort standpoint. We prefer the seat be mounted as low as possible without losing comfort. A lower center of gravity, in most cases, generates better performance and lower lap times. Make sure you loosen the four seat bolts 1/4 to 1/2 turn for flex. There is one final check to ensure that the seat is mounted properly. After the seat is completely mounted, remove the top left 5/16" button head bolt and nut. Remove the rubber seat grommet from between the seat and seat strut. The bolt should now move freely through the seat and seat strut, and the distance between the seat and seat strut should remain the exact thickness of the rubber grommet. This ensures that the seat is not mounted in a bind.

## Mounting the Body Kit

Mounting your body kit is the next crucial step in your kart's performance. We recommend using the body kits supplied by Hi-Tech Racing. These kits are designed to properly fit the Vector. If you prefer another brand, the most important thing to remember when mounting the kit is to be sure that the kit is not in a bind. Improper mounting of the body kit will result in erratic and unpredictable handling characteristics.

When mounting the body kit, use clamps to hold the body in place with all four tires mounted on the kart. Drill one inner hole where the side meets the nose allowing the side panels to pivot. Place the kart on a level surface and slide the body kit onto the kart. Put an axle or 2 x 4 underneath the front of the nose. After the body kit is centered up on the tires, mark and drill the holes for the front bumper. Next, with the kart sitting on the floor, install a 3/4" shim below each side panel and on top of each front tire (between the tire and underneath the side of the nose). This will ensure proper tire clearance. Check the ground clearance of the nose at this point and make adjustments to the height of the body mount brackets on the front bumper if needed. Then simply mark and drill side panels and you're done. After all the holes have been drilled and the body is mounted, make sure that the nerf bars are loose and the body kit is not in a bind.

## Setting Toe

With the assistance of the ProLine Laser Alignment System, initial set up time is fast and simple. First, set the toe in/toe out. We recommend 1/16" toe out for all track conditions. "Toe out" as opposed to "toe in" makes for a more "drivable" chassis set up. No toe or "toe in" tends to make a kart dart about and hard to hold in a straight line. We recommend setting the left side square and the right side "toe out" at 1/16".

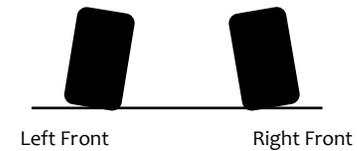
Setting toe is quite simple. First, stand at the rear end of the kart, and look down the steering shaft. The pivot arm at the bottom of the steering shaft, where the left and right tie rods meet, should be as close to vertical as possible. When the steering shaft has been set to this position, insert the pin into the upper steering block. Then tighten the collar. Using the ProLine Laser Alignment System, attach

the gauge to the right front spindle. Using the level on the end of the gauge, center up the bubble for a more accurate reading. Insert the post into the rear axle and place the mirror onto the shaft. Adjust the right side tie rod aligning the laser to 1/16" "toe out". Repeat the procedure for the left side leaving it on zero.

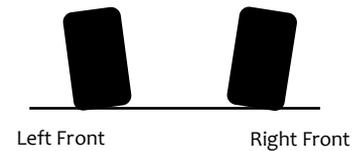
## Setting Camber

Now, it is time to set the camber on your Tempest. Camber is the angle or degree at which your tire stands relative to vertical or straight up and down. The diagram below will help explain the difference between positive and negative camber.

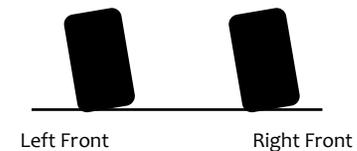
**Negative Camber** - Tires lean in at the top.



**Positive Camber** - Tires lean out at the top.



**Ideal Track Camber** - Left front has positive camber, and right front has negative camber.



The following table shows the proper camber angles for oval track racing. The track you are racing on determines the correct amount of camber. Generally, the more banking on the race track, the more camber you should run. This utilizes more of the contact patch on the tire giving you greater turn speed. The following table will give you a starting point for your race track.