Setup Information Package

Congratulations on the purchase of your new Tempest V_2. This step by step setup sheet, supplied by Hi-Tech Racing Inc, will help make the assembly and setup of your Tempest quick and simple.

In the following pages, we will discuss:

Setting Toe
Mounting the Seat
Mounting the Body Kit
Setting Camber
Setting Castor
Tire Stagger
Weigh Out

We hope this information package aids you in the assembly of your Tempest. 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!

We appreciate your business.

Technical Support, Ordering, and/or Bragging
864-269-8947
www.MilleniumRacingChassis.com
www.HiTechRacing.net

We look forward to hearing from you!

Class	Front Stagger	Rear Stagger	Front %	Left %	Cross %
Jr 1 Sports-man	1-1/2”	3/4” to 7/8”	47.0 %	53.5 %	60.0 %
Jr 2 Sports-man	1-1/2”	7/8”	47.0 %	55.0 %	62.0 %
Jr	1-1/2”	7/8”	46.0 %	55.5 %	63.5 %
Stock Light	1-1/2” to 1-3/4”	3/4” to 7/8”	45.0 %	56.5 %	64.5 %
Stock Me-dium	1-1/2” to 1-3/4”	7/8” to 1”	45.0 %	57.0 %	63.5 %
Stock Heavy	1-1/2” to 1-3/4”	7/8” to 1”	44.8 %	57.5 %	63.0 %
Super Heavy	1-1/2” to 1-3/4”	7/8” to 1”	44.5 %	58.0 %	62.0 %
Limited Medium	1-3/4”	3/4” to 7/8”	46.0 %	56.5 %	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 %
Jr Champ	1-3/8”	1”	44.0%	56.5%	52.0%
Senior Champ	1-3/8”	1”	43.5%	57.5%	53.0%

Hi-Tech Racing Inc does not warranty any item and/or service sold.
End user assumes all risks associated with items and/or services purchased.

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.

Setting Toe

First, set the toe in/toe out. We recommend 1/32" to 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.

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. Using the ProLine laser alignment tool, attach the gauge to the right front spindle. Using the level on the tip 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 the zero position. Repeat the procedure for the left side leaving it 1/32" to 1/16" toe out.

Mounting The Seat

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 everybody 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. Because 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 Tempest 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" to 1-1/4" to the right of brake rotor
130 to 180 lbs.	Center of seat 1-1/4" to 1-1/2" to the right of brake rotor
180 plus lbs.	Center of seat 1-1/4" to 1-3/4" 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 stand point. 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.

Hi-Tech Racing Inc does not warranty any item and/or service sold.
End user assumes all risks associated with items and/or services purchased.

Mounting the Body Kit

Mounting your body kit is the next crucial step in your kart's performance. We recommend using the body kit recommended by Hi-Tech Racing. These kits are designed to properly fit the Tempest. 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. Drill the outer two holes allowing the side panels to pivot. Place the kart on a level surface and slide the body kit onto the kart. Put an axle underneath the front of the nose. After the tires are centered up on the body kit, mark and drill the holes for the front bumper. When running high cross, use rubber grommets on the right side holes of the front bumper to even up the nose piece with the ground. Next, hold the side panels in place, allowing enough clearance above the tires without using a brace. 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 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.

Left Front Right Front

Positive Camber - Tires lean out at the top.

Left Front Right Front

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

Left Front Right Front

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.

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 tool, camber and toe can be set simultaneously.

Setting Castor

The Tempest has the added feature of adjustable castor. Castor adjustment is achieved by changing the pills inside the caster plates. To increase castor, the top of the king pin will rotate toward the rear of the chassis. To decrease castor, the top of the king pin will rotate forward. Be sure to pay very close attention to the direction the pill is moving the king pin. The offset in the pill is what changes the castor. The Tempest comes standard with 0 degree pills on each side. The actual castor with 0 degree pill is 8 degrees on the left and 12 degrees on the right. We call this a 4 degree castor split. This combination has been tested and proven to work on hard, dry racing conditions. We recommend changing castor when conditions are extreme. Wet track racing will tend to favor an increase in castor and a decrease in castor split; i.e., 13 degrees on the right and 11 degrees on the left is a good starting point. For the asphalt racer, an increase in castor split is normally preferred; i.e., 10 degrees on the right and 5 degrees on the left is a good starting point.

Hi-Tech Racing Inc does not warranty any item and/or service sold.
End user assumes all risks associated with items and/or services purchased.