

PORTATREE TIMING SYSTEMS

GUIDE TO SETTING UP AN ACCURATE DRAG RACING STARTING LINE

A Drag Track Starting Line must be setup accurately so that left and right lanes have the same performance level. When a race vehicle leaves the starting line, it must leave from the same position every time and both lanes must have the same starting beam locations. The vehicle starts the timing clocks when the front tire rolls out of the stage beam (stage light on the tree goes out). The vehicle's tire must rollout of the stage photo cell beam in the same manner and position for both lanes every time.

In order to setup an accurate starting line, you must measure how far the vehicle's tire rolls out of the staging beams and you must set the photo cells and light sources so that the rollout is equal in both lanes. This guide will give you insight into how rollout can be changed to meet the accuracy required for any drag track layout.

Rollout is affected by the height of the photo cell beam off of the track surface. The photo cell beam should have a consistent height off of the track surface all the way across the track. Photo cell beam height can be measured by finding the beam center and sliding a triangle (30 – 60 degree) under the beam and marking the point where the beam is blocked. The starting line beam height should be 2 inches off of the track surface. Diagram 1 will show you how a triangle is used to determine the beam height.

Measuring the rollout of a wheel through the beam should be tested with a rollout wheel. The rollout wheel should be 24 inches in diameter and of solid construction. A trailing arm should be attached to the axis of the wheel and should have a marking block on the opposite end for placing on the track surface and marking beam position. Diagram 2 shows the construction of a rollout wheel and Diagram 3 shows a rollout wheel in use.

In order to simplify the procedure and finish your job with accurate results, only work on one beam at a time. We recommend starting with the stage beam first. The rollout should be tested in the racing groove on the track surface. We like to test the rollout in several locations but rely only on the results taken in the groove. The rollout wheel should be rolled into the beam in the direction of travel of the vehicle. When the beam is blocked, a mark should be placed on the track surface. The wheel should be rolled in again until the beam is unblocked and again the track surface should be marked. The distance between the two marks should be 12 inches but can vary either way be $\frac{1}{4}$ inch. It is always best to get the best accuracy possible, but the last little bit can take many hours of work..

In order to adjust the beams for rollout, you must raise or lower the light source and or photo detector. You may also have to limit the light source or detector viewing area. This can be done with light shades or screens or even duct tape. We do recommend that the manner in which the light source is blocked off be a permanent block.

After the stage beam has been positioned and the rollout has been measured and adjusted, the pre-stage beam can be tested. Position the pre-stage beam 7 inches before the stage beam. Measure the beam height using a triangle as performed on the stage beam. When you are working on the pre-stage beam height, it is best to block or shut off the stage beam light source or reflector. You must now establish the pre-stage beam height and test the rollout with a rollout wheel. When you have the rollout set at 12 inches, you can now test the distance between the pre-stage and stage beams.

Unblock the stage beam light source and make sure that there is no crosstalk between the pre-stage and stage photo detectors. This is done by going over near the light sources or reflectors and blocking each light source separately to make sure neither light source has an effect on the other. We usually take a 4 inch square object and move it through the beams at the light sources or reflectors. This will immediately tell if there is any crosstalk.

The rollout wheel should now be placed in the racing groove and should be rolled into the pre-stage and stage beams. Each time a pre-stage light or stage light goes on or off on the Christmas tree, make a mark on the track surface with chalk. Roll in - - pre-stage on - - mark track - - roll in - - stage on - - mark track - - roll in - - pre-stage off - - mark track - - roll in - - stage off - - mark track. Take your ruler and measure the distance between marks and you should have 7 inches - - 5 inches - - 7 inches. If you have done your previous work correctly, then these measurements should be obtained.

The layout of your entire track can now begin. The starting line is the most difficult to setup and must be square and true with the rest of the track and photo cell layout. If you know where your stage beam line is located due to past surveying, then the rest of your track can be measured per our track layout drawing.