

Drag Strip Concepts

Note: For a more information on drag race terminology and concepts, please visit our drag racing info page at:

<http://www.gtechpro.com/dragstrip.html>

This web page explains concepts such as “reaction time,” “roll-out,” “full tree,” and “pro tree.”

At a dragstrip, there is a small region which contains two beams that determine where your front tires are. The first beam your vehicle encounters is called the “Pre-Stage Beam”, and the second beam is called the “Stage Beam”.

When you first move your vehicle into the starting line region, the “Pre Stage” bulb on the track’s Christmas tree illuminates to tell you that your front tires have blocked the Pre-Stage Beam and are close to the Stage Beam.

When you roll forward a bit more (usually about 6-8 inches), a second bulb, called the “Staging Bulb”, comes on. This indicates your front tires have blocked the Stage Beam. At this point, your vehicle is “staged”, and ready for a legal start.

You can typically continue to inch your vehicle forward about one foot (depending on your tire diameter) and the Stage Bulb will remain on.

As you inch forward, eventually the Pre Stage Bulb will turn off. This is OK, since the Pre Stage Bulb has nothing to do with the starting line, and is simply provided as a courtesy.

If you roll your vehicle too far forward, the Staging Bulb will go out, indicating your front tires are no longer blocking the Stage Beam, and you must back up your vehicle and re-stage before the run can begin. The Christmas Tree will not begin the countdown until your vehicle (and the vehicle next to you) is staged.

As long as the Staging Bulb is illuminated, i.e., as long as any part of your front tire is blocking the Stage Beam, you are “staged” for a legal start.

If you stop inching your vehicle forward immediately after the Staging Bulb comes on, you have “shallow staged” (i.e., you have barely entered the staging area). This will generally give you a longer reaction time but a faster E.T. and trap speed, because the vehicle has more of a “running start” before the E.T. clock starts.

If you continue to inch your vehicle forward until you have almost left the staging area, you have “deep staged” (i.e., you are very close to the starting line). Deep stagers will often roll forward until the Pre Stage Bulb goes out... making sure not to turn off the Stage Bulb as well.

Deep staging will generally give you a shorter reaction time, but a slower E.T. and trap speed, because the vehicle has virtually no running start before the E.T. clock starts.

The E.T. clock begins running once the vehicle's front tires have rolled far enough forward so that they are no longer blocking the Stage Beam. This means if you sit at the starting line for a bit after you should have launched, it won't affect your E.T., since your vehicle will still be blocking the Stage Beam. The E.T. clock stops running once the driver passes the quarter-mile mark.

The reaction time clock begins timing as soon as the third amber light comes on. Even if your vehicle doesn't move, the reaction time clock is running! The reaction time clock stops running once the vehicle moves forward enough to unblock the Stage Beam (this is exactly when the E.T. clock begins timing.)

Rollout is defined as how far your vehicle moves from a stop (when it is staged) until the E.T. clock starts. The G-tech

allows you to set the rollout distance, i.e. how far the vehicle moves before the E.T. clock starts.

A large rollout distance (such as 16”) gives the vehicle more of a “running start” before the E.T. clock starts. This can result in shaving several tenths of a second from the E.T.

As an example, say you set the rollout distance in the G-tech to 12 inches. When you launch your vehicle, the G-tech knows when your car has *barely* begun to move, i.e. a fraction of an inch. But it won't start the E.T. clock until it determines your vehicle has traveled 12 inches forward. At the track, this would mean your vehicle traveled 12 inches before the front tires rolled far enough to unblock the Stage Beam.

In any of the 4 Timing Tree modes, the G-tech will measure your reaction time. Also just like a track, it will begin measuring your 1/4 mile time when the vehicle has traveled the full rollout distance.

A poor reaction time will not hurt your 1/4 mile time. In other words, if you sit at the starting line for 2 seconds after you should have launched, you will have a terrible reaction time, but your 1/4 mile E.T. will still reflect the time it took your vehicle to move a 1/4 mile once it crossed the starting line.

If...

You typically stop your vehicle as soon as the Stage Bulb comes on at the track, this means you are a shallow stager. Set your rollout to a distance like 8, 10 or 12 inches.

If...

You typically roll your vehicle forward only a few inches after the Stage Bulb comes on, you are a deep stager. Your rollout will be smaller, maybe 2 or 4 inches.

Setting the Rollout Distance

The rollout distance is the distance that the vehicle moves before the E.T. clock starts timing. This is exactly what happens at a dragstrip.

By configuring the G-tech with a rollout distance that is identical to the rollout distance you use at the track, your times will be very close to those measured with the track's equipment.

Note: *You should use the same rollout value when doing several runs that you will compare against one another.*

For more information, refer to "Drag Strip Concepts" on page 147.

Use the following procedure to set the rollout for a run.

1 Start in **Configuration Mode** and select "Run Parameters".



A screenshot of a menu with the following items: Run Parameters (highlighted), Vehicle Data, Calibration, Gtech Setup, and Drag Strip Mode.

2 Select "Staging/Rollout".



A screenshot of a menu with the following items: Reaction time, Staging/Rollout (highlighted), Speed Mark, Distance Marks, and Exit.

3

- Enter your desired rollout distance.
Valid values are in the range 0-16 inches.
- Press **OK** to save changes.
- Press **ABT** to abort and discard changes.



G-tech Results & the Race Ticket

Many people take the G-tech to the drag strip and compare the G-tech's results against the race ticket. However, due to the effects of rollout, it is unlikely that the numbers will line up perfectly.

Your staging technique at the track has a large effect on your race results. A long rollout (shallow staging) provides more of a "running start" for your vehicle before it crosses the starting line. (When we say "crosses the starting line", we mean "rolls far enough to unblock the stage beam.") This running start can shave several tenths of a second from a vehicle's E.T., and add a small amount to the trap speed as well.

The following chart demonstrates the effect of rollout on the 1/4-mile E.T. and trap speed. In this chart, the driver drives the EXACT SAME WAY, the only difference is how much rollout the driver uses, i.e., how deeply the driver stages. (In this example, for the sake of illustration, we are assuming the vehicle pulls about 0.35g of acceleration continuously throughout the run.)

Rollout Distance	0 in.	4 in.	8 in.	12 in.	16 in.
Rollout Time (s.)	0.000	0.226	0.319	0.391	0.452
Speed at end of roll-out (MPH)	0.00	2.01	2.85	3.49	4.02
1/4 mile E.T. (s)	14.215	13.991	13.899	13.829	13.770
1/4 mile trap speed (MPH)	126.63	126.64	126.66	126.67	126.69

Notice how significantly the E.T. is affected by rollout distance, whereas the effect on trap speed is minor.

This chart indicates that the E.T. for the exact same driver in the exact same car can vary by approximately 0.5 second just because of rollout!

In other words, significant time discrepancies can arise at the track due entirely to rollout. The time it takes to roll those first few inches has an enormous effect on the timed milestones (e.g., 60 ft. mark, 1/8 mile mark, 1/4 mile mark).

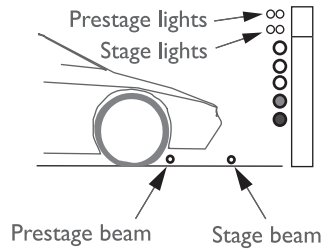
In all likelihood, when you're at the track, you will stage slightly differently each time. Maybe 6 inches one time, 8 inches the next pass, 5 inches the time after that....

The bottom line is this: for the G-tech results to match up nicely with the race ticket, the G-tech has to start timing at exactly the same time the track's E.T. clock starts timing. And the only way this can happen is if the rollout setting in the G-tech is set to exactly the same rollout distance you are about to use on this pass down the track.

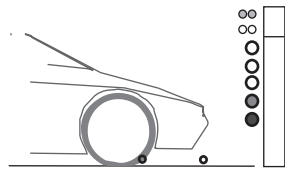
On the track, you have to concentrate on your opponent, the officials, spectators, the Christmas tree, your car, the launching revs and many other variables. We have found that concentrating on matching the actual track rollout to what is set in the G-tech is extremely difficult unless you have somebody to measure the exact rollout distance as you are staging.

In general, the small timing discrepancies between the G-tech and the track can be attributed to the difference between the G-tech's rollout setting and the actual rollout that took place on that particular run.

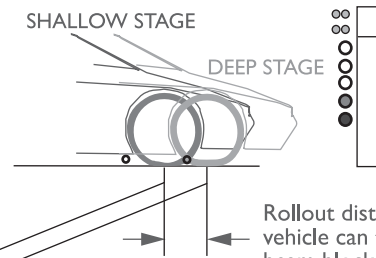
Step 1 Drive-up



Step 2 Prestage



Step 3 Stage



You are staged as soon as you block the Stage beam. E.T. timer starts when the stage beam is unblocked. Rollout can be up to 16" long (depending on your wheel and tire size).

Rollout distance is based on how far vehicle can travel and have the stage beam blocked by the wheel.

