

Timing Is Everything

by Ken Condon

GOOD TIMING is one of those factors that can be difficult to judge. You know when your timing is right because of the results. People will laugh hysterically if a joke is told with perfect timing, but you'd be lucky to get even a chuckle if the timing is off.

The same thing happens when riding a motorcycle. Time your braking, accelerating or turning maneuver just right and you are rewarded with a favorable outcome. Do any of these things too early or too late and the result could be no laughing matter.

Brake Timing

As you approach a turn, you must determine exactly where and when you should begin to brake and how much brake pressure to use. Sounds simple, right? Well, many people brake too early or brake too late and charge into the corner too fast—a significant factor that results in cornering crashes.

Braking for cornering involves adjusting your entry speed so that you can safely and skillfully execute the turn. Slow down enough to be able to accelerate throughout the curve to stabilize the bike and carve a predictable path. In many street riding situations, brake timing is not terribly critical; simply start applying brake force at the right time and with the right intensity (lever and pedal force) to be at the right speed before tipping into the lean. However, there are a lot of factors that can lead to poor timing, such as inexperience, impairment, poor judgment or blind corners. Braking too soon or harder than needed will cause you to approach the turn slower than necessary—which is not usually a problem unless fast traffic is on your tail. However, delaying braking too late or not braking hard enough will result in too fast an entry speed—which can easily be a problem.

Poor brake timing may cause you to brake harder than you feel comfortable and may even cause a tire skid if you brake too hard or too abruptly on a surface that has less than ideal traction. To avoid this, brake a bit earlier.

Once entry speed is established, you then must release the brakes. Brake release usually occurs right around the moment when you begin to lean. Beginner rider courses teach students to release the brakes before initiating a lean with countersteering. This ensures that traction is preserved because braking force is



Precise timing increases safety and cornering confidence.

separated from cornering force. However, there are benefits to releasing the brakes a bit later, just after the motorcycle begins to lean. First, a motorcycle changes direction more easily with the front tire slightly loaded as the suspension compresses and front tire traction increases. Second, by keeping a bit of brake pressure as you turn in, you stabilize the front suspension by eliminating the rebound that occurs when the brakes are suddenly released. By keeping a slight amount of brake force, the springs remain compressed and the chassis remains more stable.

Understand that the majority of brake release begins before the rider countersteers to initiate a lean, with only about 5% or so of brake pressure remaining. The brakes are then smoothly released completely as the bike banks into the turn.

Braking In Traffic

Proper brake timing is also very important when slowing or stopping in traffic. Slowing too soon for a stop sign can confuse surrounding traffic, which can lead to unpredictable driver behavior as they try to figure out what you're doing or attempt to put you behind them. Sudden, late braking is another action that should be avoided, because it can lead to a rear-end collision when inattentive drivers expect predictable actions.

Well-timed braking is also critical for maintaining traction, especially when the road surface is wet or otherwise compromised. Wait too long to apply the brakes before stopping for an intersection and you'll be braking hard to stop in time. This can lead to traction problems, because hard braking puts almost all of the motor-

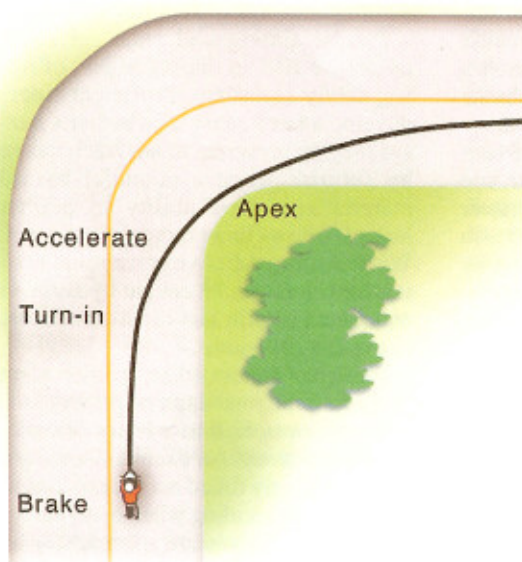
cycle's weight onto the front tire, causing the tire to slide on slippery road markings or surface contaminants.

Smooth braking technique also benefits passengers. Abrupt brake action propels the passenger into the rider's back forcing the rider to support both his body weight and that of the passenger. Slowing early and smoothly minimizes this dramatic weight shift.

Most motorcycles have separate braking controls for the front and rear brakes, and under normal conditions both brakes are applied simultaneously. However, there are times when it's best to apply the brakes at different times. For instance, applying the rear brake before the front brake causes the rear to "squat," which helps reduce forward pitch and front end "dive," helping passengers maintain their equilibrium. It's also wise to apply the rear brake first to maintain control in slippery conditions.

As a rule of thumb, the rear brake has more importance on slick surfaces because overall braking force and forward dive will necessarily be less, which keeps the rear tire in firmer contact with the road. Sometimes it's best to use the rear brake exclusively when braking on gravel or slick surfaces, because control can usually be maintained if the rear tire skids, but you'll be hard pressed to stay upright if the front tire slides for more than an instant.

Emergency braking is a skill that requires constant practice to remain sharp. Untrained riders will often overbrake when faced with a panic situation, causing the tires to skid. Careful timing prevents this situation. Front tire skids usually



Appreciating reference points allows accurate timing of cornering actions.

occur when the front brake is applied fully before the load transfers forward onto the front tire. Progressively squeezing the front brake allows enough time to pass to allow load transfer to occur, increasing front tire traction.

The distance it takes to perform an emergency stop is significantly affected by the time needed for the rider to perceive and react to an unexpected situation unfolding ahead. Smart riders reduce perception time by predicting potential problems before they occur and reduce reaction times by covering the brakes with both their foot and hand as soon as they see potential problems.

One of the most difficult maneuvers is braking quickly while leaned, because much of the available traction is being used for cornering, leaving little for braking. If you brake hard while still leaned, you can easily use more traction than is available. The most effective way to stop quickly in a curve is to straighten the motorcycle at least partially to free up traction for maximum braking. But it takes accurate timing to pull off this maneuver without skidding or running off the road. The key is to delay maximum braking until the motorcycle is completely upright.

Shifting

Smooth shifting is an important part of motorcycle mastery and requires precise timing. Many "shifting-challenged" riders make the mistake of upshifting slowly and deliberately by rolling off the throttle fully and squeezing the clutch all the way to the handgrip. But, this results in abrupt

upshifts, because the engine rpm will drop almost to idle and must then rise to match the road speed once the clutch is released.

Most experienced riders have figured out that a quick shifting procedure can make shifting seamless. A quick upshift involves rolling off the throttle partially to allow the rpm to drop just enough to match a higher gear at the same road speed, squeezing the clutch just enough to disengage the power to the rear wheel and simultaneously lifting the shift lever into the next gear. All this happens in about half a second.

Smooth downshifts require precise timing to avoid excessive engine braking. Engine rpm naturally drops when the throttle is closed and the clutch is disengaged. As the clutch lever is released, a too low engine rpm will cause resistance as the rear tire tries to accelerate the engine. Releasing the clutch abruptly will also exacerbate this problem. The result is a "chirping" rear tire skid. One solution is to delay your downshifts until the rpm are relatively low and to then ease out the clutch lever slowly to let the engine rpm rise gradually. Another option is to "blip" the throttle during the downshift to raise the engine rpm to match the lower gear with the road speed.

Corner Reference Points

Cornering skillfully requires you to be aware of the basic reference points: braking, turn-in, apex (path of travel or cornering line), and acceleration point. These points tell you when and where to act so that you carve a predictable path through any given curve. The more reference points you use, the better you can time your actions and "connect the dots" to put together a smooth, precise turn.

Racers identify multiple detailed reference points for each corner, including where to begin rolling off the throttle, set body position, begin braking, downshift, initiate turn-in, release the brakes, roll on the throttle, and where to upshift.

Street riders don't have the benefit of being able to perfect their approach to individual corners with every lap the way

a track rider does. Instead, street riders identify reference points in the moment, and every street rider identifies reference points, even though they may not be aware of it. Proficient riders can look at an unfamiliar corner and pick out the basic reference points without much trouble. No matter what level rider you are, conscious awareness of reference points can increase a sense of control and mastery in dealing with both familiar and unfamiliar roads.

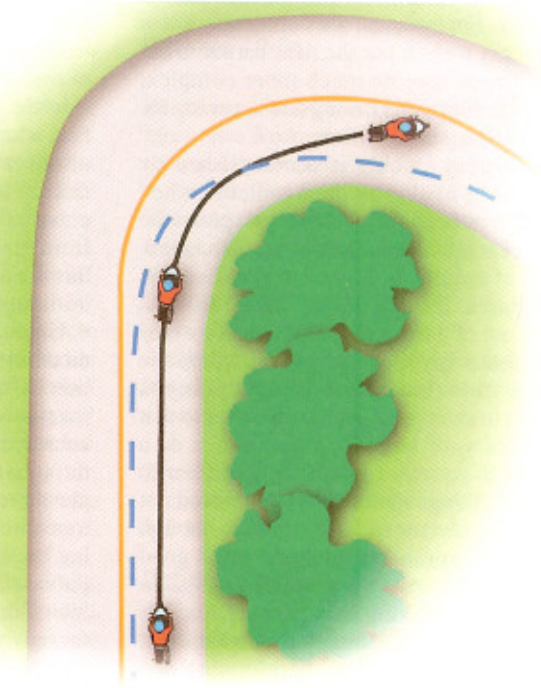
Countersteering Timing And Intensity

It is important to initiate lean at the precise place and time. When and where to initiate lean depends on approach speed and turn radius. As with braking, exactly when you begin to turn and the intensity of the countersteering force placed on the handlebar must match to cause the motorcycle to neither oversteer into the inside of the curve, nor run wide.

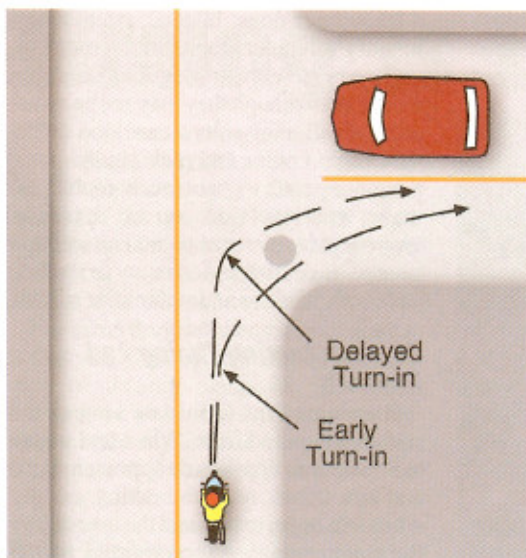
A slow entry allows a later, more relaxed turn-in compared to a faster entry, which requires a sharper turn-in. If you enter a turn fast, but turn too late, then you risk running wide. However, you can avoid running wide if you press harder on the handlebar to turn quicker.

Quick Turns

Quick turning is not necessary in most situations, but it is an important tool to have. Unfortunately, many riders avoid turning quickly for fear of either losing traction or experiencing the unsettling



When and where you begin your turn affects your exit.



Mastering quick turning technique helps avoid surface hazards.

feeling of the motorcycle quickly falling into a corner. However, most riders do not turn quickly because they simply don't understand the benefits of turning quickly.

Having the ability to turn quickly is an important tool for improving cornering precision. Being able to precisely get your motorcycle from upright to leaned in a short distance and period of time allows you to select one of many options for executing a turn. A smooth, gradual tip-in is appropriate for most street riding situations. But when the curves get technical and/or come in quick succession, then you need to be able to use different methods of attack. For instance, one corner may allow an easy turn-in but the next corner in the sequence may be much more complex, demanding exact timing and accuracy for you to stay in your lane.

Turning quickly is accomplished by pressing harder on the handlebar when countersteering. The harder you press, the quicker the bike will respond. One example of a quick turn is a swerve. Imagine having to avoid a 3' long 2"x4" that just fell out of a truck ahead of you. To avoid the hazard, you would press hard on the handlebar (the bar in the direction you want to swerve) to get the bike over to that side of your lane. You would then do a second, equally forceful countersteer to recover. A gentle countersteer would not get the bike moved over quickly enough and you'd probably hit the board. A good way to improve your quick turns is to practice swerving in a parking lot. It's important to remember that traction is limited, so braking or accelerating and swerving at the same time is a bad idea. If you must slow before a swerve, brake first

then release the brakes before initiating the swerve. Sometimes it's necessary to slow or stop after a swerve. In this situation brake after the swerve is completed.

Turning quickly has other benefits besides being able to turn into a corner with precision or to steer around a hazard. Quick turns also offer a greater margin of safety by getting the majority of the direction change done at the beginning of the curve. Getting the turn finished earlier means that the motorcycle is standing up earlier in the corner and is pointed toward the corner exit rather than toward the road edge.

Under dry conditions, tires have no problem sticking to the road even with a very forceful shove on the bars. But if traction is limited, forceful countersteering can overtax the front tire's grip and the tire can slip.

Knowing that, it's important to accurately time your countersteer to avoid initiating lean when your front tire is directly over a slippery patch of pavement. Instead, begin leaning earlier to take a tight, inside line, or delay your turn-in to ride around the outside of the hazard. The problem is that either of these choices can result in a cornering line that points you wide at the exit. As soon as you are past the hazard, use the quick turn technique to stay in your lane.

On The Gas

Careful timing and throttle control is necessary to finish the turn. Too much throttle while leaned can slide the rear tire, whereas too little throttle puts most of the cornering forces on the front tire, risking a front-tire slide and a low-side crash. To achieve a smooth transition from braking to acceleration, roll on the throttle smoothly as soon as you can after initiating lean and releasing the brakes.

Gradual acceleration maintains a predictable path of travel and manages traction by limiting spikes in load that might overtax tire traction. The technique for achieving utmost stability is to begin throttle roll-on before the brakes are completely released. You enjoy the smoothest transition and the greatest control by timing brake release and throttle to overlap the last 5% of brake force with the first 5% of drive force. This is done simultaneously while initiating lean. One way to make this easier is to use two fingers on the front brake so that you can operate the throttle and brakes equally well.

Timing And Traffic

Precise timing and clear reference points are also an important part of riding safely in traffic. Proficient riders develop a keen sense of whether a hazard may be present and are rarely taken by surprise when a potential hazard materializes. This ability to predict hazards allows them more time to react. Without this predictive perception, inattentive riders can be caught by surprise and must perform last-ditch maneuvers to avoid a collision.

Proficient motorcyclists are also adept at reading the road and can predict how one action can lead to a series of undesirable reactions. An excellent example of how a poorly timed action can lead to a collision is deciding when to signal for a turn. Let's say you are approaching an intersection where you plan to turn right, but there is an entrance to a gas station also on the right, about 75' from the corner. A driver waiting to exit the station sees you turn on your signal and assumes you're about to turn into the gas station, so proceeds to pull in front of you. To avoid this situation, delay the signal until you are at or past the station entrance.

Another example of how proper timing affects your safety is when you slow for a planned turn. The proper procedure is to signal before slowing. Those who slow before they signal cause traffic behind to question their intent and risk being rear-ended.

Timing is a skill that is worth developing to a very high level. Accurate timing increases safety and can enhance your connection to your motorcycle and your riding, especially when cornering. The rhythm of a perfectly executed set of corners is euphoric, which can only happen with a precise combination of successively well-timed cornering maneuvers. Next time you're on a ride, recognize how critical good timing is and how slight refinement in timing can produce significant gains. ■

THE AUTHOR

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