Safety Corner

This month's article will focus on riding at night and the ability to stop or slow sufficiently to avoid a hazard within your field of vision.

The article is at the request of a Chapter Member and also follows closely the subject matter of last month's article.

First we are going to talk about the factors that come into play when you need to effectively stop quickly and later the correlation between how fast you are traveling and your ability to see a hazard and bring the bike to a stop.

It is probably safe to say that most riders do not fully grasp the required distance needed to bring a bike to a full and safe stop. To give you a perspective on this I have included a chart from www.Motorvike.com that should help bring some clarity to stopping distances. Keep in mind however, that these numbers are not absolutes and your perception of the danger and your reaction time to it will considerably increase your stopping distance.

Speed	Braking Distance
90 MPH	300 feet
80 MPH	238 feet
70 MPH	182 feet
60 MPH	134 feet
50 MPH	93 feet
40 MPH	59 feet
30 MPH	33 feet
20 MPH	15 feet
10 MPH	4 feet

Whenever you apply your brakes in an emergency situation, on average 70% of your stopping power is coming from your front brake depending upon road surface conditions. This occurs when the majority of the bike's weight as well as your weight transfers to the front wheel, which compresses the front suspension and results in the front tire engaging the road surface. However; misuse the front brake and lock it up, and you are in all probability going to lose control of the bike and go down. Another potential consequence of locking up the front brake is being propelled forward over the handlebars and onto the road surface. Without further discussion, this is understandably a very bad scenario. The remainder of the stopping power obviously is derived from the rear brake. Lock it up and your ability to recover and maintain control of the bike is significantly higher than with the front brake.

One braking technique as provided by Hoddy Hodson, http://www.msgroup.org/TIP030.html is as follows:

1. You apply both brakes (the front and the back) gradually and with almost equal force for the first phase of your braking.

2. The weight will transfer forwards as the front suspension compresses, and your arms bend, the front tire now bites into the pavement.

3. There's now more weight on the front

4. You now let off most - or all - of the rear brake and increase pressure on the front, which now has most or all of the grip. This middle phase of braking can be 100%:0% - if it is less than 85% Front, you probably aren't braking near your bike's limits.

5. The bike slows and the forces you are exerting through the brakes and tires diminish (the energy in the bike is proportional to the square of your speed).

6. The front begins to rise back up on its suspension.

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You taper off on the front brake - to prevent a slow speed lock up - and increase the rear brake pressure once more.

This is by no means the only suggested controlled emergency stopping technique that is out there, although most will certainly share universal component parts. Without going into extensive detail, the American Motorcycle Safety Foundation recommended applying both brakes progressively, but concentrating almost all of your efforts on manipulating and controlling the front brake to bring the bike to a stop. In other words, apply the rear brake with the front and forget it, using all of your skills to apply staged braking to harness the superior stopping power to the front brake.

Emergency breaking is a learned skill and not one that you ever want to practice when you are in the crisis situation. This is a skill that you need to develop over time and practice often in a safe location.

When riding in the daylight, your unobstructed field of vision is virtually unlimited. However, when riding at night, your field of vision is dependent upon the lighting resources on your motorcycle. With a 7" OEM headlight in low-beam configuration your headlight reaches out approximately 330' ahead and 25' side to side or 50'; however that beam narrows considerably the farther out it reaches. In high beam configuration, the same headlight will illuminate out to 500' and approximately 130' across at its maximum. Again this beam effectiveness narrows considerably at its farthest point.

With a 7" LED OEM, in a low-beam configuration. Your headlight will reach out approximately 525' and has roughly the same side to side width as the incandescent headlight. In a high-beam configuration the 7" LED headlight will reach out 650' with again a similar side to side lighting advantage.

To determine if you have sufficient stopping distance for your speed you need to calculate your feet per second, and the ideal stopping distance for your bike. The formula to calculate how many feet per second you are travelling is: speed x 5,280ft divided by 3600 sec per hour.

So if you are traveling at 80 mph, according to the provided chart you ideally need 238 feet to effectively stop your bike, after you perceive the danger and react. At 80 mph you are traversing a distance of 117 feet every second. According to studies a typical response time is 3 sec, or 351 feet in this situation. This is an ideal response time which will be longer if you are tired or have had a modest amount of alcohol. Since ideally you need 238 feet to stop and your OEM incandescent headlights in high beam has an range of 500 ', you are in all likelihood not going to have enough time and distance to stop the bike. Essentially you are over-driving your headlights.

At 60 mph, with an incandescent in high-beam and again under ideal conditions you have 1 + seconds on the plus side, not a huge safety margin by any stretch.

Without belaboring the point any further, it is possible to over-drive your headlights or operate your bike within a minimal safety margin. With this in mind a quick referral to the lighting chart provided by Harley Davidson which compares incandescent headlight bulbs with LED lighting will provide a clearer picture of the added safety margin with LED headlights.

LED lighting is not inexpensive, however it certainly adds to the safety margin and for that alone is deserving of consideration insofar as your personal safety is concerned.

As always ride safe, and if you decide that LEDs are not an option at this point, at the least do the math and see what safety margins exist at various speeds so if necessary you can adjust your driving habits.