

Motorcycle Crash Rating Tool

Super Feature **G**ood **A**cceptable **P**oor

Year:	Make:	Model:		
<i>Directions: Print and "X" the features of a specific motorcycle model.</i>				
Crashworthiness Rating*				
Feature	S	G	A	P
Airbag	Yes	-	-	No
Fuel Tank Slope	Seat level w/ tank	Gradual Slope	Moderate Slope	Severe Slope
Wheels		Spoke	Cast Alloy	Carbon Fiber
Frame		Double Cradle	Twin Spar or Trellis	-
Fairing		Naked	Windscreen	Full Front Fairing
<i>*Features that will affect crash energy diffusion</i>				
Crash Prevention Rating**				
Feature	S	G	A	P
Inertial Measurement Unit (IMU)	Yes	-	-	No
Antilock Braking System (ABS)		Yes	-	No
Traction Control (TC)		Yes	-	No
Warning Systems		2 or more	1	None
Wheelbase		64" or more	63" – 55"	54" or less
Top Speed		Less than 99 mph	100-149 mph	Over 150 mph
Horsepower		Less than 89 hp	90-149 hp	Over 150 hp
<i>**Features that will affect crash avoidance/severity or slow the rider's forward momentum</i>				

This rating system is for reflective purposes only and is not scientific. Consider this checklist a "rule of thumb" evaluation. Specific motorcycle model crash testing is not available as it is for automobiles. In the absence of this information, motorcycle owners and the general public can use this rating system to form a general impression of how crashworthy certain motorcycle models are in frontal collisions.

This checklist evaluation was created by Jon DelVecchio (streetskills.net) from the research of James Ouellet and Jesse Wobrock (see *Motorcycle Consumer News* July 2006). Ultimately, motorcyclists are responsible for their own safety.

This rating system is a work-in-progress so please send feedback or comments to jon@streetskills.net.

Crashworthiness Feature Descriptions:

Airbag: An airbag on a motorcycle absorbs the rider's forward energy. This not only protects the pelvis from severe tank collision injuries, but it also prevents inertial and sharp jolt brain injuries.

Fuel Tank Slope: A fuel tank in front of the riders "crotch" area causes severe injuries to the pelvis in a forward crash. The steeper the tank slope, the more severe pelvic injury potential. Pelvis injuries have a high rate of fatality associated with them.

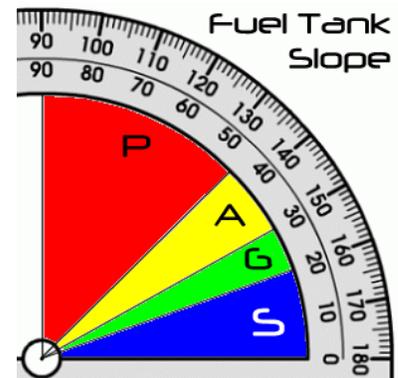
Measuring angle from the seat's lowest most forward point to the tallest part of the tank without contact:

Seat level w/ tank: 20° or less

Gradual Slope: between 20° - 30°

Moderate Slope: between 30° - 45°

Severe Slope: 45° or more



Wheels: Spoke wheels will absorb more crash energy than cast wheels.

Frame: More rigid frame materials and structural design will not absorb as much crash energy as less rigid frames.

Fairing: More obstacles in front of a rider will restrict forward movement in a frontal crash, leading to more severe injuries.

Crash Prevention Feature Descriptions:

IMU: This state-of-the-art electronic controller has proven to be extremely effective in crash prevention. The controller acts as a central processing center for providing Motorcycle Stability Control (MSC), ABS, TC and a host of other passive interventions to provide increased safety, comfort and performance. IMU's can also be used for lighting systems that predict changes in direction for adaptive illumination.

ABS: ABS slows the rider's forward momentum more effectively than standard brakes. This may lead to lower crash speed (less crash energy) or elimination of crash altogether.

TC: TC can provide stability in loss of traction situations, slowing the rider's forward momentum or eliminating a crash.

Warning Systems: This rating is by quantity available on a certain model. Warning system examples are Tire Pressure Monitoring System (TPMS), Ice Warning or Self-Canceling Turn Signals. This rating includes any feature with the purpose to alert the rider to an impending hazard.

Wheelbase: Longer wheelbase motorcycles have a better chance of keeping both tires in contact with the road surface for shorter stopping distances. This may slow the rider's forward momentum more effectively. Wheelbase may also influence how and when the rider is ejected in a forward crash due to rear wheel lift. *Note: wheelbase length does not always affect total stopping distances.*

Top Speed/Horsepower: The speed when a forward crash occurs directly relates to injury severity. Lower speed and power could result in slower crash speeds or more practical stopping distances in traffic.

Overall Rating Calculations

Crashworthiness: _____

Any  rating results in an  overall rating for crashworthiness.

 = 2 points each

 = 1 point each

 = 0 points

Overall Crashworthiness Rating is calculated by total points in the following ranges:

 = 5+ points

 = 3-4 points

 = 0-2 points

Crash Prevention: _____

Any  rating results in an  overall rating for crash prevention.

 = 2 points each

 = 1 point each

 = 0 points

Overall Crash Prevention Rating is calculated by total points in the following ranges:

 = 7+ points

 = 4-6 points

 = 0-3 points

For more detailed feature descriptions and design solutions, watch this video presentation:



The IMPACT of Motorcycle Design - See what happens to motorcycle and rider in a crash

<https://youtu.be/7tPtQ-6M-0M>



The IMPACT of Motorcycle Design - See what happens ...
Jon DeVecchio

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