



QUICK TIPS: Anti-Lock Braking Systems (ABS)

How Does ABS Work?

If either of a motorcycle's tires loses traction and skids along the road surface during braking, the rider might lose control of the motorcycle. An anti-lock braking system (ABS) helps maintain traction by preventing the wheels from locking up as the tires approach the maximum braking limit. With ABS, each wheel has a speed sensor that sends signals to an electronic control unit (ECU). The ECU is a computer that monitors the rotational speed of the wheels and modulates brake pressure to provide maximum braking capacity in a given situation while maintaining maximum traction.

If one of the wheels is on the verge of coming to a sudden stop (a skid), the ECU will decrease the braking force in order to prevent the skid. To decrease braking force, the ECU sends a signal to open a relief valve that reduces hydraulic pressure in the braking system on that individual wheel. When the tire regains traction and starts spinning again, the ECU sends a signal to restore the hydraulic pressure in the brake line, which in turn, increases the braking power. This process occurs rapidly and repeatedly, causing the brakes to pulsate when the ABS is in use. It is important to note that this process occurs independently between the front and rear wheels. If the ABS system fails, an indicator light will come on, and the brakes will still work, but without the ABS function.

What Can and Can't ABS Do?

- Several studies have cited improper braking as a pre-impact factor responsible for some motorcycle crashes. Some manufacturers offer ABS as an option on certain models, allowing consumers to choose ABS technology to help them brake more effectively.
- ABS is not guaranteed crash prevention, but in certain situations it can help riders avoid a crash.
- ABS only works when the front brake lever and rear brake pedal are continuously applied during stopping, and not "pumped."
- ABS can quickly respond to a change in surface friction during braking and help prevent the rider from losing control. ABS's greatest benefit may be on wet or icy roads.
- ABS is most effective when the bike is completely upright and going in a straight line.
- The dynamics of motorcycles, which must lean to corner, prevents the ABS from assisting the rider in every situation.
- During aggressive cornering, ABS may not have the intended effect. Cornering at the limit requires very smooth braking, and the pulsing caused by ABS can upset the bike, causing it to "low-side" and slide out from under the rider.
- It is important to note that ABS is not a substitute for proper braking techniques and common sense. ABS is not intended to shorten stopping distances on dry roads, so riders are not free to speed or tailgate in hopes that ABS will compensate for their poor judgment.
- ABS does not allow a motorcycle to violate the laws of physics.