

Electronic Stability Control *made simple* – 2

By Allan Lamb and Bob McHugh

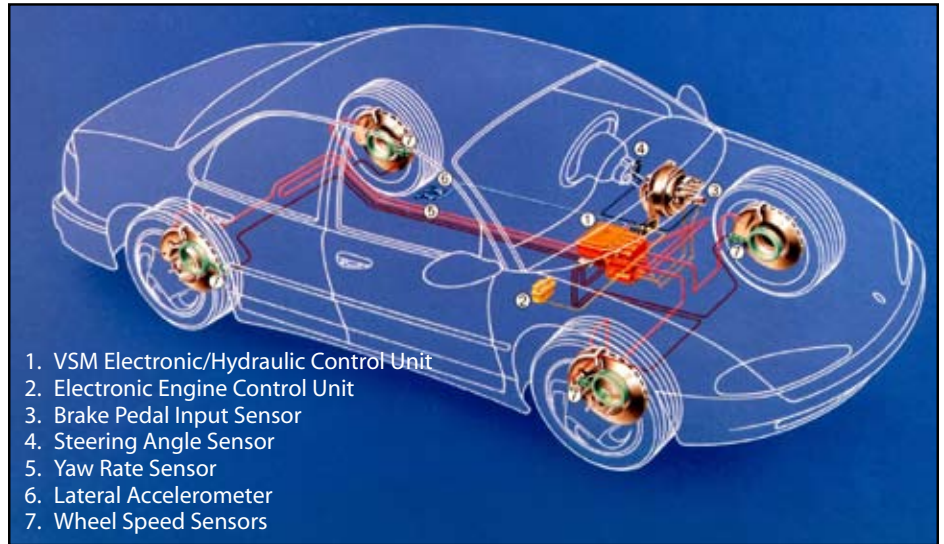
Earlier this month the U.S. National Highway Traffic Safety Administration (NHTSA) announced a plan that will make Electronic Stability Control (ESC) standard equipment on every new passenger vehicle sold in America by 2012.

If you've been following this column, you'll know that we already covered ESC last December. However, with this announcement and extremely favorable new research results, we felt ESC was already worthy of a revisit and an opportunity to take a look at an allied technology that's generally categorized as Active Rollover Protection (ARP).

It's now estimated that ESC could ultimately save up to 10,000 lives each year on U.S. roadways. It's being heralded by some safety advocates as the biggest step forward in occupant protection since the invention of the seat belt.



Rollovers account for almost 40 per cent of road fatalities each year in the US.



Components of an Electronic Stability Control System.

ESC is an active safety feature that helps a driver to avoid a collision, so it's harder to predict specific numbers. In Canada it would probably translate to at least 1,000 lives saved annually and probably over 100 of those would be in BC. And since our winter driving conditions tend to be more treacherous the benefit (or number of lives saved) is likely to be even greater.

An ARP system adds an additional active shield that's particularly useful in taller vehicles with a higher centre of gravity, such as vans, trucks or SUVs, etc. Rollovers account for

just 2 per cent of all vehicle collisions, but claim almost 40 per cent of road fatalities annually in the US.

How do ESC and ARP work? ESC works in collaboration with both the anti-lock braking and traction control systems and includes a clever device called a "yaw" sensor. If the ESC system decides, "Uh-oh, this vehicle is not going in the intended direction," it quickly takes corrective actions to bring the vehicle back on its desired path.

The type of corrective action varies from system to system, but generally the brakes are applied on a specific wheel, engine power may be reduced, a transmission shift may also occur, or all of the above. It can all happen without the driver even knowing, although generally a warning light will flash on the instrument panel.

The yaw sensor measures "yaw rate," which is rotary motion around an axle. Based on additional steering angle and other inputs, the ESC can sense and over-steer or under-steer in a skid situation. It can't increase the

Drive to Save Lives

Consider Electronic Stability Control (ESC) an essential feature when shopping for a new vehicle.

A safety tip from the BCAA Traffic Safety Foundation





This simulation shows the advantages of Ford's AdvanceTrac system.

traction, but it can make maximum use of what's available to help keep the vehicle under control.

In advanced ARP systems, an additional gyroscopic sensor is used to measure the vertical or tilting motion of the vehicle. The corrective action

taken is similar to ESC although some ARP systems can also make minor steering corrections.



Chevy's StabiliTrak system at work.

Volvo was the first automotive company to use an ARP system on a production passenger vehicle (2003 Volvo XC90) and Volvo calls the system Roll Stability Control. As with ESC, different names, such as Electronic Roll Mitigation or Proactive Roll Avoidance, are used by different auto manufacturers for their ARP systems.

Although we'll get vehicles that meet the new US safety standard for ESC by default, Transport Canada is also looking at requiring ESC on all new light vehicles sold in Canada. And according to its official web site, "The department also encourages all Canadians to seriously consider ESC as an essential feature when shopping for a new vehicle."

Allan Lamb is the Executive Director of the BCAA Traffic Safety Foundation and Bob McHugh is a freelance automotive journalist. This article was originally published in The Province newspaper.