



National Fleet Driver Trainers Conference

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Does Technology Affect The Decision Process of the Driver and Trainer?

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Proving Ground

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What Technology?

Anti-lock Braking Systems (ABS)

Stability Control Systems

Roll Stability Control/Mitigation

Traction Control

Adaptive Cruise Control

Lane Discipline/Departure

Blind Spot Monitoring

Vehicle Speed Alert and Sign
Recognition

Adaptive Headlights

Assistive Parking

Tyre Pressure Monitoring

Automatic Crash Notification

Vehicle to Vehicle Communication
and Control

Intelligent Transport (Autonomous)

Crash Protection

Pedestrian Safety

Does Technology Affect The Decision Process of the Driver and Trainer?



ABS

- Basic operation
- Brake Assist
- Disc Conditioning
- Brake Knockback
- Split μ (Mu)
- Low μ (Mu)
- Interaction with other systems – Adaptive Cruise, Stability Control etc.

Stability Control Systems – ESC, DSC, ASP, DSA etc.

- Basic operation
- Torque Vectoring
- Active damping and roll control
- Electric vehicles – regeneration, active stability control
- Interaction with other systems – ABS, Roll Stability

The Antilock Braking System ABS keeps the vehicle steerable, even when braking – independent of road conditions

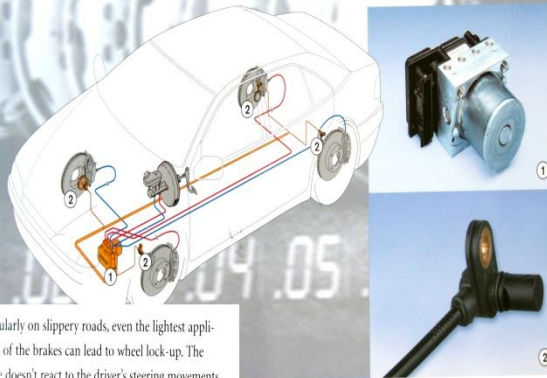
Chassis Systems

The Traction Control System TCS ensures stability and steerability during acceleration

Chassis Systems

The Electronic Stability Program ESP keeps your car right on track

Chassis Systems



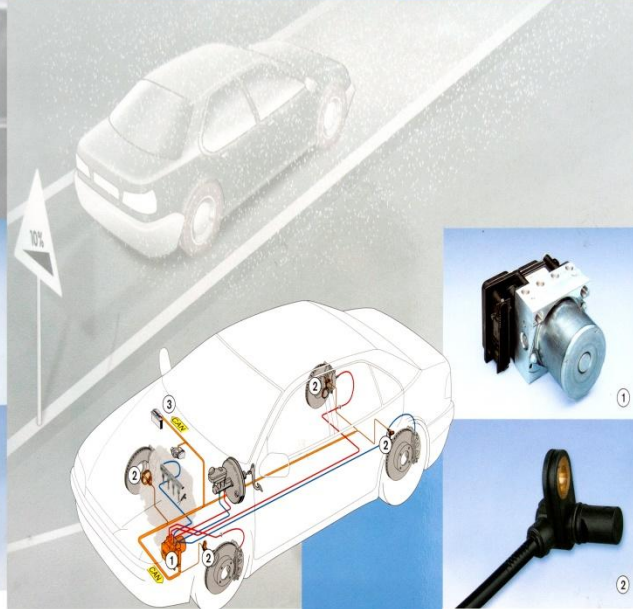
Particularly on slippery roads, even the lightest application of the brakes can lead to wheel lock-up. The vehicle doesn't react to the driver's steering movements.

With ABS the vehicle remains under control so that it can be steered around an unexpected obstruction even when the driver has slammed the brakes in panic.

Wheel-speed sensors continuously monitor each wheel. As soon as incipient lock-up is detected at a wheel, ABS temporarily reduces the braking pressure at the wheel in question to such a degree that lock-up is prevented.

ABS repeats this monitoring and control cycle in rapid succession for each wheel. This form of electronic wheel-slip control ensures optimum braking distances while at the same time maintaining full steerability and stability.

The Bosch ABS components:
 1 Hydraulic modulator with add-on ECU
 2 Wheel-speed sensors

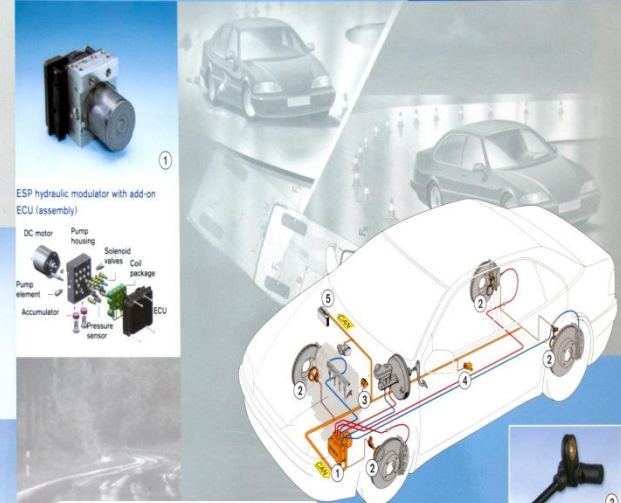


In order to maintain directional stability and prevent the vehicle breaking away, the wheels should neither lock up during braking, nor should they spin when driving off.

Bosch TCS prevents the wheels from spinning. It ensures good traction, stability and steerability when driving off or accelerating.

Each wheel is continuously monitored by wheel-speed sensors. TCS evaluates the wheel-speed sensor signals and immediately recognises when a wheel is about to start slipping. In this case TCS is active and regulates the drive torques of the driven wheels. This electronic wheel-slip control selectively brakes individual wheels and intervenes in the engine management.

The Bosch TCS components:
 1 Hydraulic modulator with add-on ECU
 2 Wheel-speed sensors
 3 Communication with engine management



ESP hydraulic modulator with add-on ECU (assembly):
 DC motor
 Pump housing
 Solenoid valves
 Coil package
 Accumulator
 Pressure sensor
 ECU

An incorrectly assessed traffic situation, an obstacle appearing suddenly out of nowhere or icy patches on the road – every driver is confronted sooner or later with critical driving situations. Despite observing appropriate driving speed the driver can lose control of the vehicle.

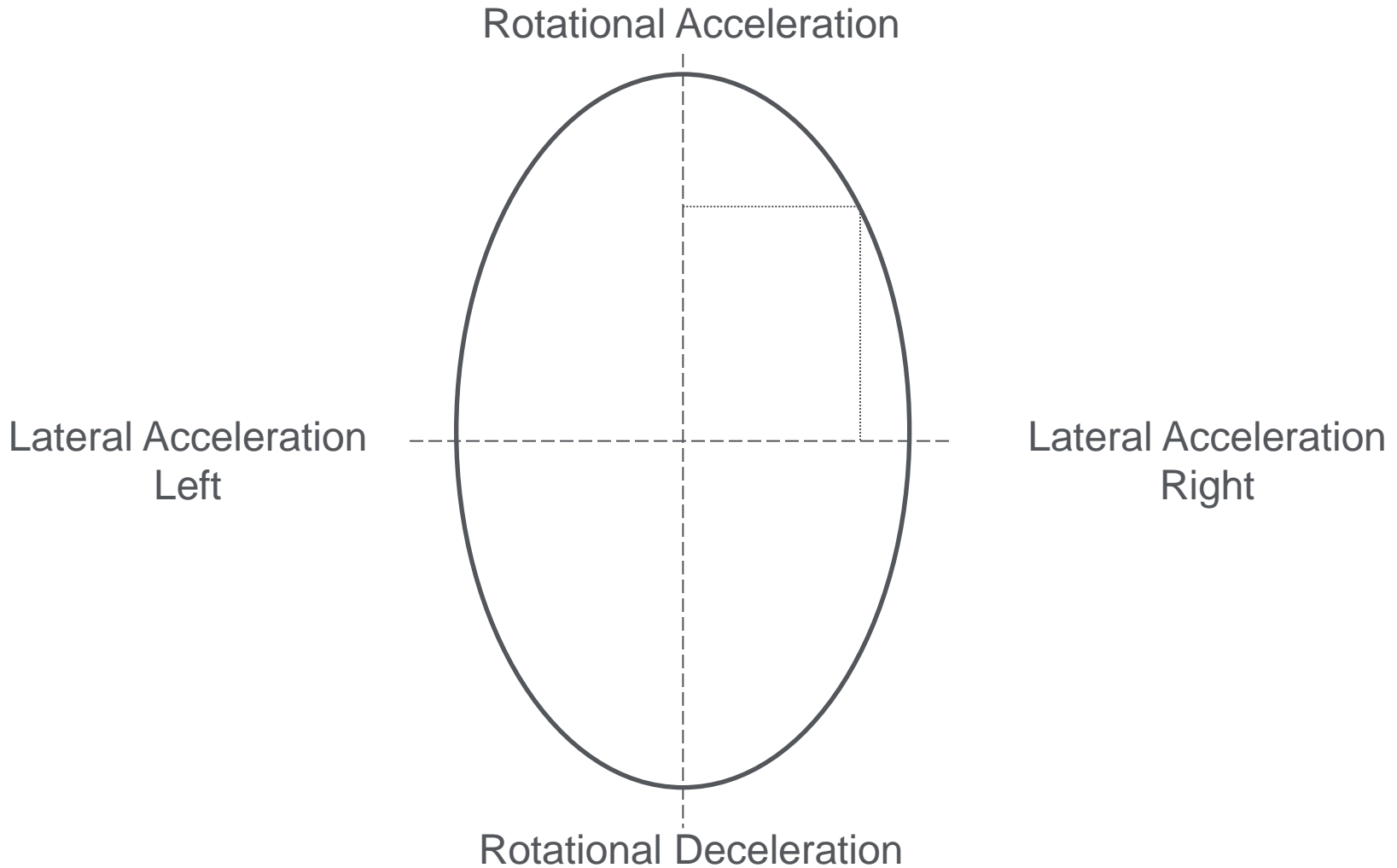
ESP prevents possible skidding from the start. This is achieved by instantaneous interventions in brakes, engine management and transmission-shift control.

From the steering angle and the wheel speeds ESP calculates what manoeuvres the driver intends to perform.

From the signals of the yaw-rate and lateral acceleration sensors ESP recognises whether the vehicle threatens to skid off course. In this case ESP reacts fast as lightning: By selectively applying braking pressures at each wheel ESP "steers" the vehicle into the desired direction. This way ESP increases directional stability in all driving situations.

The Bosch ESP components:
 1 Hydraulic modulator with add-on ECU
 2 Wheel-speed sensors
 3 Steering-angle sensor
 4 Yaw-rate and lateral acceleration sensor
 5 Communication with engine management

Tyre Grip



Tyre Grip

