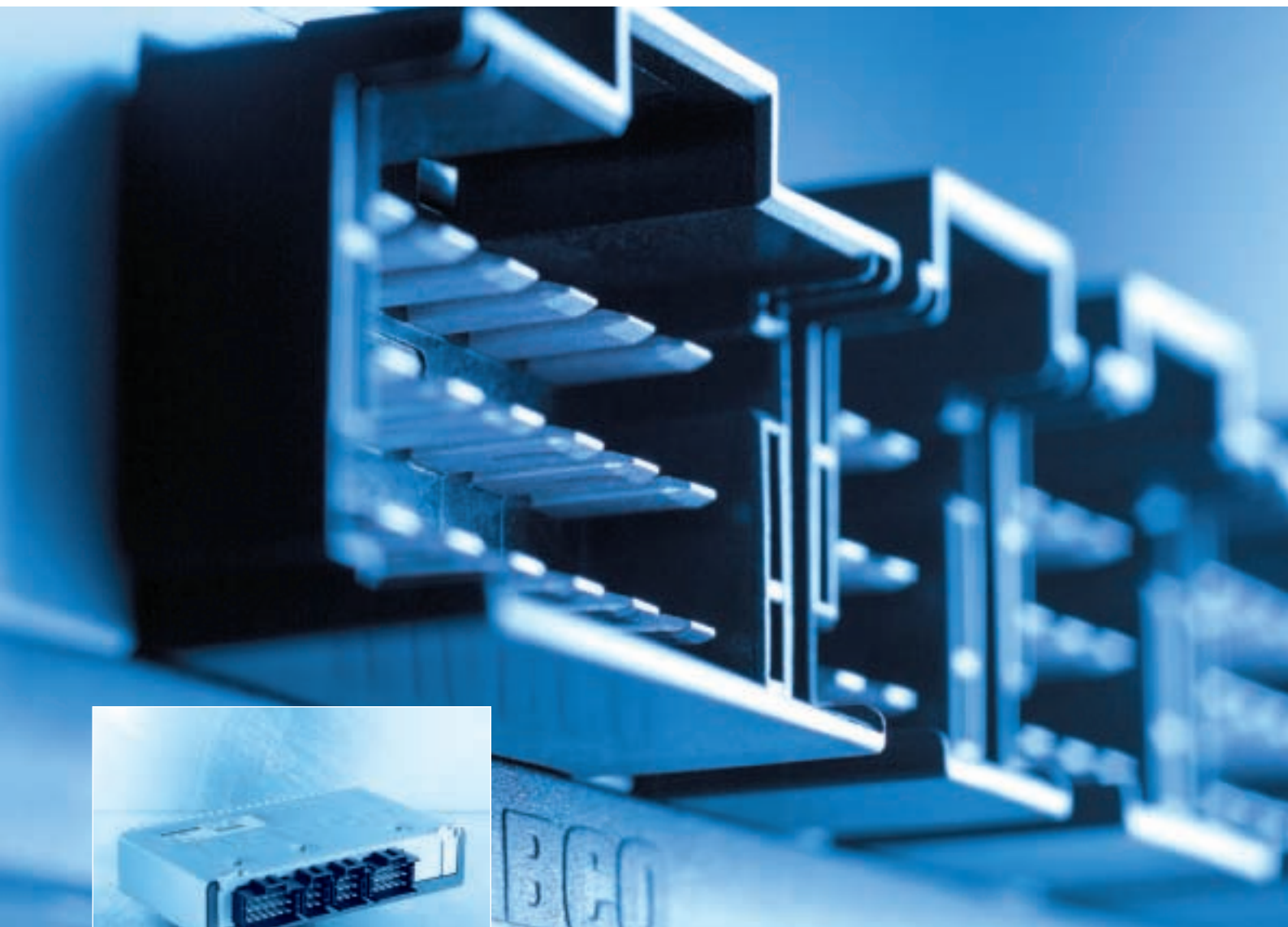


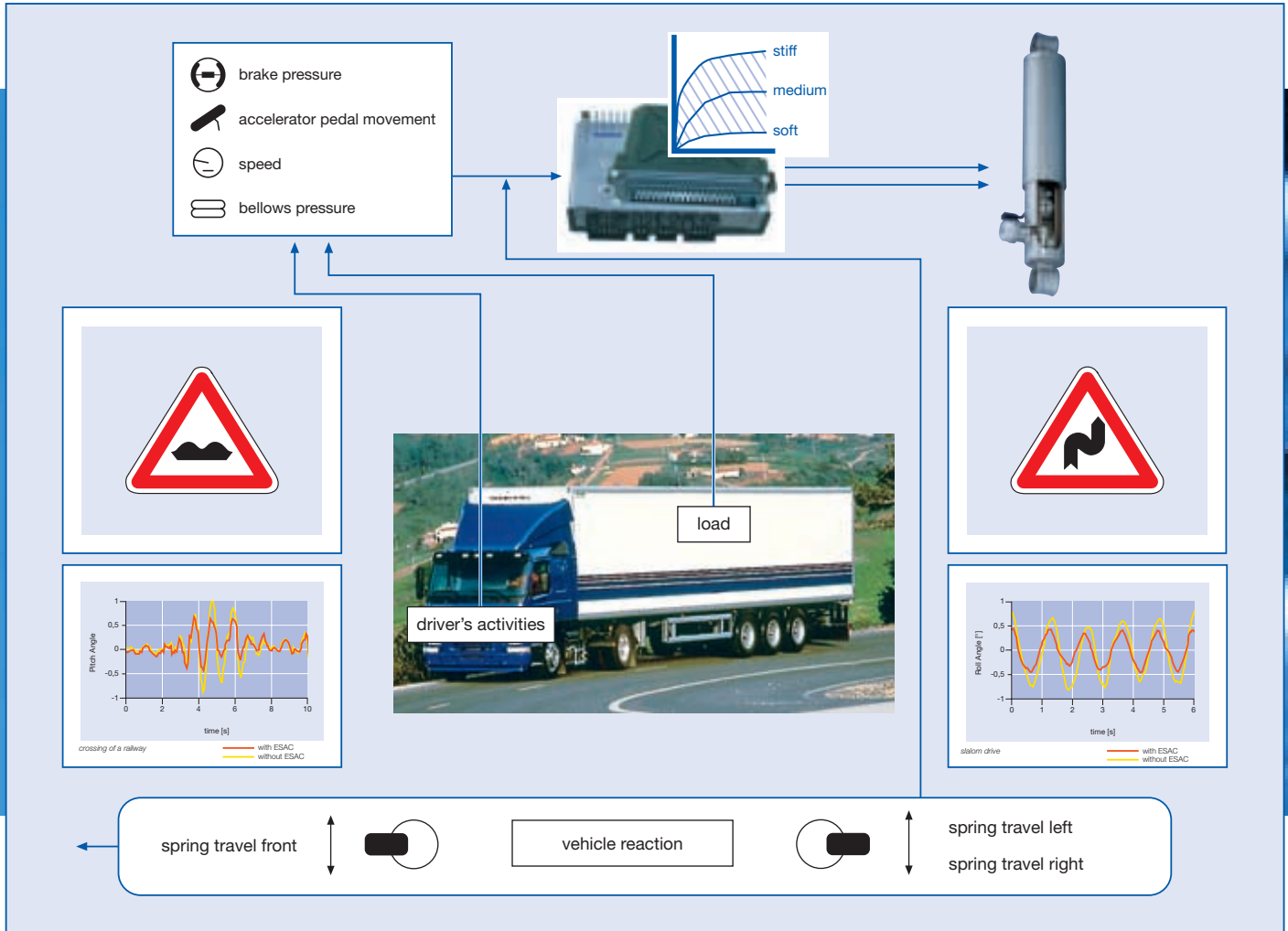
ESAC

Electronic Shock Absorber Control



WABCO

Combined safety and comfort for commercial vehicles



The chassis of commercial vehicles are usually electronically controlled. WABCO's Electronically Controlled Air Suspension system (ECAS) has been a major contribution towards this feature and is nowadays widely in use. Based on this system, WABCO offers an integrated control system, the Electronic Shock Absorber Control (ESAC).

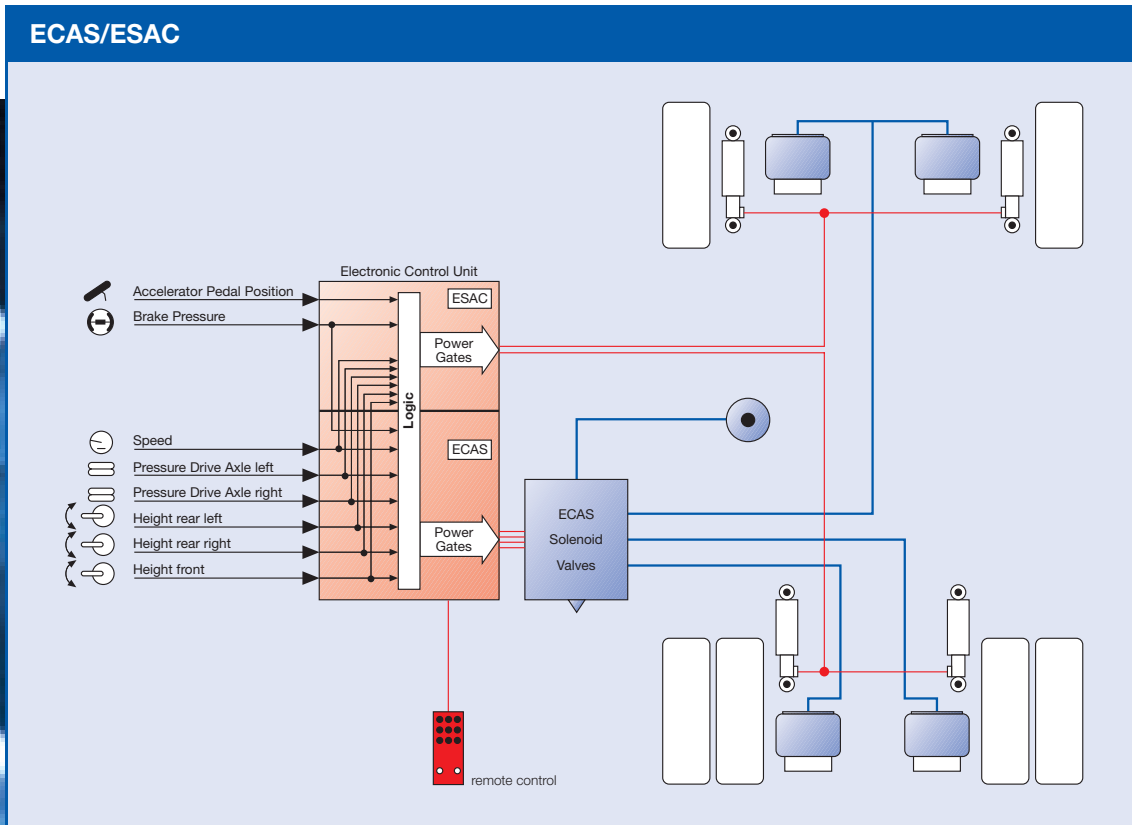
ESAC in operation

- Sensors directly or indirectly installed on the vehicle body assess the vehicle's load as well as information on the road surface, on the vehicle's speed, the movements of its superstructure and its lateral acceleration.
- The electronic control unit of ESAC determines the optimal damping action, providing for the electrical actuation of the proportional valves for the chassis dampers and changing the damping characteristics within milliseconds.
- The electrically adjustable dampers for ESAC have been developed by ZF Sachs.

Benefits of ESAC

- Maximum driver comfort
- Protection of load and vehicle independent of the load condition
- Improved vehicle stability during abrupt steering or swift negotiation of curves due to diminished roll-rate
- Significantly reduced dive and squat when the vehicle is braked or moved off (especially for vehicles with short wheel base, e.g. tractors)
- Improved control behavior of the air suspension system due to intelligent interaction of ECAS and ESAC
- Reduced road wear

ESAC + ECAS = The intelligent suspension



ESAC is a further development of ECAS (Electronically Controlled Air Suspension), which is integrated in ESAC. This systems integration allows for existing sensors, and thus for existing information to be used. ESAC works with leaf / air suspended vehicles as well as fully air suspended 4x2, 6x4 or 6x2 vehicles.

ESAC system components

- Electronic control unit
- Solenoid valves
- Height sensor
- Air spring pressure sensor
- Brake pressure sensor
- Accelerator pedal sensor
- Shock absorber





WABCO, the vehicle control systems business of American Standard Companies, is the world's leading producer of electronic braking, stability, suspension and transmission control systems for heavy duty commercial vehicles. WABCO products are also increasingly used in luxury cars and sport utility vehicles (SUVs). Customers include the world's leading commercial truck, trailer, bus and passenger car manufacturers. Founded in the US 135 years

ago as Westinghouse Air Brake Company, WABCO was acquired by American Standard in 1968. Headquartered in Brussels, Belgium, the business today employs nearly 6500 people in 29 office and production facilities worldwide. In 2003, WABCO contributed US\$ 1.358 billion to American Standard's total sales of US\$ 8.568 billion.

Website: www.wabco-auto.com

