What is an ABS - ESP - TC system and how does it work?

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Dear all,

I am happy to answer ths question of our customer:

Previous

ABS (anti-lock braking system)

This is a technical system that ensures greater driving safety and less wear on the tire treads. In the event of an emergency stop without ABS, as happens continuously during races, you would brake flat tires in the tires.

The ABS system counteracts blocking when braking by a pulsating reduction of the brake pressure. This preserves steerability and directional stability. The ABS - system uses this form of regulation to shorten the wheel slip and thus the braking distance, especially on wet roads. On the other hand, the braking distance can increase on dry roads or loose surfaces - e.g. on gravel or snow.

ESP (Electronic Stability Program)

Is also a technical system that is intended to prevent understeering or oversteering of the vehicle through targeted braking of individual wheels. When cornering, the system intervenes so that the driver retains full control. It is irrelevant whether the current instability is caused by excessive speed, a sudden change in the road condition or a possible evasive maneuver.

In the event of understeer, the ESP decelerates the rear wheel on the inside with a simultaneous reduction in engine power. In the event of oversteer, the ESP system intervenes in the engine and, if necessary, also in the transmission management in road vehicles. In racing cars, the system actuates the brakes of the front wheel on the outside of the corner. With our Porsche, for example, the ESP system is called: PSM and that means: Porsche Stability Management

TC or traction control or ASR (anti-slip regulation)

With these terms, the explanation is already built in. The traction control should prevent the drive wheels from spinning.

You can implement a traction control in 2 ways:

1. via the torque control of the engine

2. by regulating the drive torque via the brake.

Traction control helps us when starting and accelerating so that the wheels don't spin, at high speed - very good when cornering - by "not spinning the wheels" and on slippery roads: cold - wet - dirt on the track as well.

Traction control not only prevents the wheels from spinning, especially in our racing cars, but also prevents highly motivated drivers from swerving to the side in a clinch. If one wheel spins, the second wheel follows immediately and the car is otherwise at right angles to the road.

The electronics of our traction control controls each wheel individually. If a wheel slips, the electronics takes the driving force away from this wheel (in racing cars through the ABS) and increases the power on the still stable wheel in order to prevent it from spinning.

The traction control realizes all this via the brake control of the antilock braking system.

The almost spinning wheel is deliberately braked.

HERE you´ll find our systems for Porsche 991 Cup
HERE you´ll find our systems for Porsche 997 Cup

Respond to questions I like it as always.

Warm greetings

Jürgen Albert

master mechanic