

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

Beitrag von „Albert Motorsport“ vom 28. Januar 2023, 06:07

Dear all,

I am happy to answer the 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

Beitrag von „e90m36mt“ vom 27. März 2023, 06:33

In the install documentation, there's recommended settings for dry and wet, but can you go into more details of the settings and their effect from 1-12? Also in the picture there's 2 abs knobs and 1 esc knob. what is the function of the 2 abs knobs? Basically I'm asking for more info in the system from a user perspective; what are the setting and their intended function and effect on the handling of the car.

Thank you

Beitrag von „Albert Motorsport“ vom 27. März 2023, 23:48

Hi E9,

you're welcome, thanks for your great suggestion, I'll record it!

The sensitivity of the switches is most sensitive at the lowest levels, which means that e.g. at level 1 the ABS system immediately kicks in at the slightest slip when braking and starts decelerating.

It's the same with the ESP system. These are the ideal settings for beginners who want to be 100% on the safe side. The advantage is safety: The disadvantage is the sensitive response that prevents best lap times, which, if you want to be fast, are always on the edge of the grip limit.

Accordingly, the logical consequence is that top drivers will select the highest levels in order to have as little regulation as possible and then get this at the liability limit.

Important in this context is the condition of the tires, which influences the slip, as well as the air pressure and the condition of the road surface and the degree of dirt on the route.

An experienced driver starts with our recommendation in the recommended setting 6 and then moves according to his ability, with the rotary switch in the direction of professional or in the opposite direction.

After a very short time you will learn to appreciate the system and will notice that the lap times will improve significantly.

We tried different options, hence the different knobs in the dash of the test car.

In the past, there were separate regulation options for the front and rear, which is combined in the standard system today because only marginal differences had to be compensated for, which can be recorded and regulated very well with a single rotary switch.

Another option will be available shortly, a tracking system that will then regulate the slip when accelerating in curves as well. Another advance in terms of safety and speed. I will report on this separately.

If you have any further questions, I'll be happy to answer them!

Many thanks for the comment.

Jürgen Albert

Team Albert Motorsport

Beitrag von „Albert Motorsport“ vom 27. März 2023, 23:50

Und das Gamze auch für unsere deutschsprachigen Freunde:

Hallo E9,

gerne, danke für deinen tollen Vorschlag, ich nehme ihn auf!

Die Empfindlichkeit der Schalter ist auf den niedrigsten Stufen am empfindlichsten, was dazu führt, dass z.B. auf Stufe 1 greift das ABS-System beim Bremsen sofort beim kleinsten Schlupf ein und beginnt mit der Verzögerung.

Dasselbe gilt für das ESP-System. Das sind die idealen Einstellungen für Einsteiger, die 100 % auf der sicheren Seite sein wollen. Der Vorteil ist die Sicherheit: Der Nachteil ist das sensible Ansprechverhalten, das Rundenbestzeiten verhindert, die, wenn man schnell sein will, immer am Rande der Grip-Grenze liegen.

Dementsprechend ist die logische Konsequenz, dass Top-Fahrer die höchsten Stufen wählen werden, um möglichst wenig Regulierung zu haben und diese dann an der Haftungsgrenze zu bekommen.

Wichtig in diesem Zusammenhang ist der Zustand der Reifen, der den Schlupf beeinflusst, sowie der Luftdruck und die Beschaffenheit der Fahrbahn und der Verschmutzungsgrad der Strecke.

Ein geübter Fahrer startet mit unserer Empfehlung in der empfohlenen Einstellung 6 und bewegt sich dann, je nach Können, mit dem Drehschalter in Richtung Profi oder in die Gegenrichtung.

Schon nach kurzer Zeit lernt man das System zu schätzen und merkt, dass sich die Rundenzeiten deutlich verbessern.

Wir haben verschiedene Optionen ausprobiert, daher die unterschiedlichen Knöpfe im Armaturenbrett des Testwagens.

Früher gab es getrennte Regelungsmöglichkeiten für vorne und hinten, was heute im Standardsystem zusammengefasst ist, weil nur marginale Unterschiede ausgeglichen werden mussten, was sich mit einem einzigen Drehschalter sehr gut erfassen und regeln lässt.

Eine weitere Option wird in Kürze verfügbar sein, ein Tracking-System, das dann auch den Schlupf beim Beschleunigen in Kurven regelt. Ein weiterer Fortschritt in Sachen Sicherheit und Geschwindigkeit. Darüber werde ich gesondert berichten.

Wenn Sie weitere Fragen haben, beantworte ich diese gerne!

Vielen Dank für den Kommentar.

Jürgen Albert

Team Albert Motorsport

Beitrag von „e90m36mt“ vom 28. März 2023, 04:44

Thank you for the info!

Beitrag von „e90m36mt“ vom 17. Februar 2024, 05:00

Hello Jürgen,

in a previous post you talk about updates to the abs system

"Another option will be available shortly, a tracking system that will then regulate the slip when accelerating in curves as well. Another advance in terms of safety and speed. I will report on this separately."

Did you guys end up perfecting it?

Beitrag von „Albert Motorsport“ vom 17. Februar 2024, 12:26

Hello E9,

we have discovered that the traction control system is not approved for many series. In addition, the ABS-ESP system is so perfect that the demand for TC systems is virtually non-existent or so low that it is not worth the effort for us.

In addition, Porsche has installed a TC system as standard in the R and RSR types, so retrofitting will not be an option here either.

We will analyze this again internally and then decide whether we want to continue using the TC system as a retrofit option. As I said, for us this is a primary cost-benefit question.

Thank you for your request.

Jürgen Albert