Highlights

The milestones of Porsche all-wheel drive development

The latest Porsche Traction Management (PTM) used in the 911 is the very embodiment of sporty all-wheel drive. Its intelligent nature improves agility on bends, stability when performing highly dynamic manoeuvres, and traction. PTM represents the current pinnacle of how all-wheel drive has evolved in Porsche series-production sports cars over more than 30 years. Porsche all-wheel drive has its roots in motor racing. In 1984, it helped the Type 953 to win the Paris-Dakar Rally; in 1986, the 959 super sports cars with electronically controlled variable all-wheel drive celebrated a double victory.

1988: World premiere of the electronically controlled all-wheel drive in the 911 series-production model

The first 911 road vehicle with all-wheel drive as standard celebrated its world premiere in 1988. The Type 964 Porsche 911 Carrera 4 used a planetary gear set as a centre differential to distribute propulsion force. In addition, multi-disc locks were placed between the front and rear axles (as a centre-differential lock) and on the rear axle (as a controlled differential lock).

1994: Second generation with passive hang-on system

Porsche presented the second-generation all-wheel drive in 1994, in the Type 993 911. The system was constructed as a hang-on all-wheel; if there is a difference in speed between the directly driven rear axle and the front axle, a passive viscous coupling transfers some of the propulsion force to the front axle. This system was transferred virtually unchanged for use in the 996 generation 911 Carrera and 911 Turbo models.

2002: Porsche Traction Management premieres in the Cayenne

The era of Porsche Traction Management began in 2002 with the Cayenne. At this point, PTM is a permanent all-wheel drive system with a central transfer case that distributes propulsion force to the front and rear axles at a ratio of 38:62. In addition, a reduction gear and an electronically controlled centre-differential lock deliver full off-road capability, as you would expect for an SUV. The first PTM also impressed with its driving dynamics capabilities.

2006: The first 911 with PTM

In 2006, with the Type 997 911 Turbo, Porsche presented a PTM version that had been enhanced specifically for sports cars; it featured an electronically controlled and electro-magnetically actuated multi-plate clutch with ball ramp reinforcement. This active, fully variable system distributes propulsion force between the permanently driven rear axle and the front axle much more quickly and accurately than the passive viscous coupling used in the previous version. In 2008, this system was also used in the 911 Carrera 4 models of the second generation of 997; in the first generation, they still had the all-wheel drive with viscous coupling.

2009 and 2013: Panamera and Macan with 911 technology

The all-wheel drives of most Panamera models (from 2009) and all Macan versions (from 2013) also have a controlled multi-plate clutch. The control strategy is based on that of the 911 and as such helps to ensure that the Panamera and Macan deliver best-in-class driving dynamics that are typical of a sports car.

2013: Latest PTM – even more efficient

The latest, most advanced, PTM version was first put to use in 2013 in the 911 Turbo of the first 991 generation. In contrast to the previous system, which was used with the 911 Carrera 4 models right up to the second generation of the 991 in 2015, the newly developed multi-plate clutch is now controlled electro-hydraulically rather than electro-mechanically. This has advantages in terms of performance thanks to faster and more accurate control of propulsion force in relation to traction, driving stability and steerability.