

## Press Release

Findings from the 2022 DEKRA Road Safety Report

# Keeping Vehicle Systems and Components in Good Condition Can Save Lives

- Condition of vehicles has major impact on critical driving maneuvers
- Details of latest DEKRA road tests investigating tires, brakes, chassis, etc.
- Novice drivers in particular should not drive without ESP

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**Studies have repeatedly shown that state-of-the-art vehicle technology can prevent many accidents, or at the very least significantly mitigate their consequences. To ensure this, the systems and components that are installed should always be kept free of any serious defects or impermissible changes to their design and should be working flawlessly. DEKRA has clearly shown just how important this is in its road tests conducted for the 2022 DEKRA Road Safety Report, entitled Mobility of Young People. “Whether a vehicle’s occupants reach their destination safe and sound crucially depends on the condition of the brakes, the chassis, and the tires,” explains DEKRA accident researcher Markus Egelhaaf.**

Generally, the more recent a vehicle is, the longer the list of driver assistance systems installed in it. These systems help the driver maintain control of the vehicle in critical situations. All drivers understand – even in an abstract sense – that the systems can only operate within the laws of physics. However, many are unaware of just how big an impact the condition of the tires, brakes, and chassis has on where these physical limits lie.

To provide answers to these questions, DEKRA investigated them in more detail in several road tests. For its 2022 DEKRA Road Safety Report, the DEKRA Technology Center at the DEKRA Lausitzring racing and testing complex in Brandenburg tested a series of used cars. The models studied are especially popular among young novice drivers on account of their low price or reputation for excellent reliability.

For example, the DEKRA experts put a VW Golf VII through comparative brake tests on a wet road surfaced with high-grip asphalt at an ambient temperature of 3-5°C (37-41°F). The original tires used were all-season tires from a premium brand with a minimum tread depth of 4-4.8 millimeters (around 5-6/32”). From an initial speed of 100 km/h (62 mph), the braking distance was almost constant at 44.4 meters (146 feet) in several tests. Tires, brakes, and shock absorbers were

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then replaced. The tires were replaced with new winter tires from a premium brand. The braking distance was then reduced to an average of 38.7 meters (127 feet).

In the same test configuration, the vehicle was also driven at an initial braking speed of 160 km/h (99 mph). Here, the replacements reduced the braking distance from 111 to 98.3 meters (364 to 322 feet). As a result, the braking distance could be reduced by around 11-13% at both speeds. The added safety that this provides becomes clear from the continuing speed of the unrepaired vehicle at the point where the one with the replaced parts had already come to a standstill. From an initial speed of 100 km/h (62 mph), this was almost 30 km/h (19 mph); and strikingly, from 160 km/h (99 mph), it was still around 55 km/h (34 mph).

### **The condition of dampers and springs has a major impact on driving safety**

The DEKRA experts also performed a double lane change with a Honda Jazz. In this test, an evasive reaction to an obstacle suddenly appearing on the roadway and the subsequent steering back to the original lane were simulated (this is the successor to the so-called “moose test”). The amount of water on the road surface was identical in all test drives. In its original condition, the vehicle was fitted with all-season tires which each had at least five millimeters of tread depth. With this setup, the course could be driven through at speeds of up to 65 km/h (40 mph). At higher speeds, the vehicle which was not fitted with ESP swerved.

After fitting new brakes, tires, and shock absorbers, it was possible to drive through at 70 km/h (43 mph). New all-season tires from a well-known manufacturer were used. However, it is worth noting that all the tests were carried out by a professional test driver and the tires in the first series of tests had a good tread depth. Even for experienced “normal” drivers, it would be extremely difficult to drive safely through such a course – or to go around the obstacle in a real emergency situation. “In an emergency, inexperienced novice drivers can be expected to lose control even at much lower speeds,” comments Egelhaaf, the DEKRA accident researcher. The additional safety that is gained through replacing these parts should not be underestimated, he adds.

### **ESP can prevent skidding accidents and drifting out of lane**

Another test showed how important it is to maintain the condition of the vehicle’s chassis, brakes, and tires to ensure that the ESP system installed works effectively. The BMW 1 Series (E87) that was used was equipped with name-brand summer tires. The tread depth was 2.2 and 2.6 millimeters (around 3/32”) on the front axle and 1.7 and 2.0 millimeters (around 2/32”) on the rear axle. The car was accelerated to 130 km/h (81 mph) three times on a wet asphalt roadway, after which a steering robot took sudden evasive action. Normally, it is not a problem to keep the vehicle stable in this situation using ESP. However, even though the ESP was working properly, the vehicle swerved during several test drives. “This shows that the ESP control is only effective to the extent to which the

chassis, brakes, and tires can transfer the corresponding forces to the road surface,” Egelhaaf says. The brakes and shock absorbers were then replaced, and the wheels were fitted with new tires of the same type. In each of the three test drives after this repair, there was no loss of traction at any point. The vehicle was consistently caught by the ESP and remained stable.

As a basic principle, good brakes and reliable and stable contact between the tires and the road are essential in all road conditions. They are also basic prerequisites for ensuring assistance systems like ABS or ESP work to best effect. As a result, when buying a used car, it is crucial to ensure that these components are in good condition or are professionally repaired straight after buying an inexpensive car. Cars without ESP should not be bought, especially by beginner drivers.

### **Inspection reveals safety-related deficiencies**

The tests conducted by DEKRA underline once more how important a well-maintained vehicle is for ensuring road safety and the importance of having it inspected by an independent party at regular intervals. This applies in particular to older vehicles, which usually exhibit significant defects much more frequently and thus present a greater accident risk than newer cars. “Alongside the natural aging of components and wear and tear on the vehicles, people often have a lack of awareness about technical faults or skimp on repairs and maintenance – which can have fatal consequences,” Egelhaaf warns. In this context, the DEKRA expert is referring particularly to young drivers, who very often drive older vehicles for financial reasons.

The findings in the 2022 DEKRA Road Safety Report, covering required periodic inspections on cars conducted by DEKRA in Germany in 2020, clearly demonstrate how the prevalence of defects increases as vehicles become older. Under 8% of vehicles up to three years old had defects, while around 20% of vehicles between five and seven years old had them. Vehicles older than nine years had a defect rate of 40%, with 25% having serious defects. If we examine the defects identified more closely, it becomes clear that lighting equipment was the most common cause for complaint, accounting for around 25% of cases, followed by the brakes at roughly 16%. Defects in axles, including wheels and tires, also ranked high at over 14%.

Background information on this subject and much more can be found in Mobility of Young People, the 2022 DEKRA Road Safety Report. It is available to download from [www.dekra-roadsafety.com](http://www.dekra-roadsafety.com). You will also find all previous reports there, as well as additional information, including video clips and interactive graphics.

### **Captions**

1: Full braking from 160 km/h (99 mph): With renewed brakes, tires and shock absorbers, the braking distance is significantly reduced.

2: "Moose test": In its original condition, the test vehicle swerves at 70 km/h (43 mph) – and with a professional test driver. For novice drivers, the vehicle would no longer be controllable in such a situation, even at significantly lower speeds.

3: Steering intervention at 130 km/h (81 mph): The vehicle breaks away with worn tires – the ESP cannot realize its full potential.

### **About DEKRA**

*DEKRA has been active in the field of safety for almost 100 years. Founded in 1925 in Berlin as Deutscher Kraftfahrzeug-Überwachungs-Verein e.V., it is today one of the world's leading expert organizations. DEKRA SE is a subsidiary of DEKRA e.V. and manages the Group's operating business. In 2021, DEKRA generated sales totaling more than EUR 3.5 billion. The company currently employs almost 48,000 people in approximately 60 countries on all continents. With qualified and independent expert services, they work for safety on the road, at work and at home. These services range from vehicle inspection and expert appraisals to claims services, industrial and building inspections, safety consultancy, testing and certification of products and systems, as well as training courses and temporary work. The vision for the company's 100th birthday in 2025 is that DEKRA will be the global partner for a safe, secure and sustainable world. With a platinum rating from EcoVadis, DEKRA is now in the top one percent of sustainable businesses ranked.*