

MERCEDES F 400 CARVING

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Mercedes F 400 Carving is a laboratory on wheels filled with the technology of the future.

This two-seater car looks like a guest from the future. When creating the F 400 Carving, engineers at the DaimlerChrysler research center used the most modern technologies - Drive-by-Wire and active wheel camber angle control.

The F 400 Carving is a carrier of new technologies, including Drive-by-Wire steering, ceramic-reinforced Brake-by-Wire brakes, and hydraulics that change the camber angle.

The F 400 Carving concept car was used as a laboratory on wheels. The body of this open two-seater roadster, which is practically unprotected from the vagaries of the weather, is made of carbon fiber composite material (CFK). The body weight is less than 100 kg. A well-proven V-shaped 6-cylinder unit with a working volume of 3.2 liters was used as the engine.

The F 400 Carving was intended to explore the potential of new technologies used in undercarriage adjustment. The two-part wheel racks and powerful hydraulics made it possible to apply an active computer system for adjusting the camber of the wheels at an angle of up to 20°. This has significantly improved cornering dynamics and increased vehicle safety.

Using the active hydropneumatic system (ANR), it became possible to quickly change the stiffness of the elastic suspension elements in accordance with the traffic situation.

Tires with a special (heterogeneous) rubber composition and an asymmetric tread pattern, developed jointly by DaimlerChrysler and Pirelli, have made a significant contribution to improving driving dynamics.

Technical characteristics of Mercedes-Benz F400 Carving
Engine and transmission:

- 6-cylinder V-shaped liquid-cooled engine
- Working volume 3.2 liters
- Power of 165 kW (224 hp) at 5600 rpm
- Torque of 315 Nm at 3000-4800 rpm
- Rear wheel drive - Sequential 6-speed transmission

Body and chassis:

- Tires 255/35 ZR19 front and 255/45 ZR 17 rear
- Active Body Control with active hydropneumatic suspension
- ESP, Drive-by-Wire steering
- Electro-hydraulic Drive-by-Wire brakes made of ceramic-reinforced

carbon fiber, diameter 330 mm

Traction and dynamic characteristics:

- Acceleration from 0-100 km/h in 6.9 seconds
- Maximum speed of 214 km/h

Advanced technology

In the case of emergency braking, all four wheels were automatically adjusted to a positive camber angle. The support surfaces of the tires with an optimized coefficient of friction made it possible to reduce the braking distance by about 5 m when braking at a speed of 100 km/h. In order to reduce the risk of aquaplaning, the camber angle could be changed by 5°.

The F 400 Carving had no mechanical connecting elements of the steering or braking system. The corresponding commands were transmitted electronically (by Wire). In critical situations, the system even actively interfered with the steering. Already in 2002, Mercedes-Benz began mass production of cable-operated brakes.

An absolute novelty is the state-of-the-art technology for transmitting light from xenon lamps via optical fiber. The F 400 Carving received two additional side cornering lights. They were switched on depending on the angle of rotation of the wheels.

The carbon fiber composite body weighed less than 100 kg. Tiny wind deflectors provided protection from the wind. The asymmetrical tires are a joint development between Mercedes and Pirelli.

Thus, the F 400 Carving has become a real laboratory on wheels, where engineers at the DaimlerChrysler research center have tested the most advanced technologies of the future, including active undercarriage control, electronic steering, brakes, as well as new solutions in the field of lighting and aerodynamics.