



Chrysler Portal Concept **ENGINEERING**

Chrysler Portal Concept Engineered to Roll with Millennials' Life Stages

- Sensor technologies enable SAE Level 3 autonomous driving; upgrade to higher levels of autonomy when technology advances
- Individual seating system grows with needs; track system flexibility for passenger and cargo mix
- Portal-shaped, articulating side doors create wide, 5-foot entryways

The Chrysler Portal concept offers a future look at family transportation, one where a single vehicle is engineered to be flexible enough that it easily adapts to evolving life stages and advances in technology.

Developed with the millennial generation in mind, the Chrysler Portal concept melds the need for vehicles of the future to operate effortlessly in crowded urban environments. At the same time, the Chrysler Portal integrates with advanced technologies – in the surrounding infrastructure and devices brought into the vehicle by occupants – to minimize any discomforts.

Research shows that millennials want a vehicle that is socially conscious, easy-to-upgrade technology and it must be affordable. The Chrysler Portal concept was engineered to have the flexibility to help them adapt to life stages quickly and easily.

The battery-powered Chrysler Portal concept electric vehicle was unveiled today at CES 2017 in Las Vegas.

Entryway to autonomous driving

The Chrysler Portal concept uses current and near-term sensor technologies, along with advanced computing power and vehicle network infrastructure, for SAE Level 3 autonomous driving. The Portal is designed to accept technology upgrades that would let it operate in full autonomous driving mode, if desired by the owner.

To operate at Level 3 autonomous mode, the Chrysler Portal concept must “see” its location and surrounding environment. To do that, it relies on a suite of sensing technologies. They include:

- **Cameras:** A combination of short- and long-range cameras to see forward, the sides and rear of the vehicle. The cameras can provide the driver a view of the road ahead and behind, as well as “ground truth” information, such as lane markings and potholes. Also, a camera in the interior monitors the driver
- **Radar:** Using radio waves, detects objects to the front, rear and corners of the vehicle.
- **LIDAR:** Using light from pulsed laser beams to illuminate and sense objects ahead of the vehicle
- **Ultrasonic:** Sensors embedded in front and rear bumpers can sense the presence of multiple objects within a short range

These sensing technologies, in various forms, are in use today in some FCA vehicles, such as radar sensors for Blind-spot Monitoring, radar and cameras for Forward Collision Warning-Plus and adaptive cruise controls, and ultrasonic sensors for ParkSense park assist systems.

In addition, other technologies needed for Level 3 autonomous driving include:

- Global Positioning System (GPS) connectivity for the vehicle to determine its location
- Internet/cloud connectivity for real-time traffic, weather and infrastructure information
- Redundant steering and brake actuators, and a redundant power source
- High-speed computer modules for near range and inertial sensing, high-definition maps and decision making

The technology in the Chrysler Portal concept enables the driver to turn control over to the vehicle when it is traveling on predetermined sections of a highway, a situation known as “geo-fencing.”

While at Level 3 autonomy, the vehicle maintains speed and course, but the driver must continue to monitor the road and driving environment. A camera mounted on the Portal’s instrument panel uses facial recognition software to monitor the driver.

If the vehicle determines that the driver is not monitoring the road or driving conditions change, it alerts the driver to retake manual control. If the driver does not respond to the alerts, the vehicle will maneuver itself to the side of the road and come to a safe stop.

In anticipation of being upgraded to higher levels of autonomous driving, the Portal concept is equipped with a steering wheel that condenses and retracts into the instrument panel. This opens space in front of the driver, as well as provide a seamless look for the entire instrument panel.

Maximum interior, minimized exterior

The interior of the Chrysler Portal concept contains about 180 cubic feet of space and comfortably holds up to six adult, yet does so in a vehicle with an exterior footprint that is significantly smaller than many of today's family and utility vehicles.

A key enabler of that roomy interior is the Chrysler Portal concept's flat, low floor. That feature is a direct result of the engineering team choosing a battery electric powertrain for the vehicle.

The Chrysler Portal concept's approximate 100 kilowatt-hours (kWh) lithium-ion battery pack is mounted beneath the vehicle floor, creating a solid platform and maximizing interior volume by removing any drivetrain intrusions.

The innovative in-floor track mounting system for the Chrysler Portal's adjustable seats and console frees up foot and legroom by dispensing with traditional seat tracks.

The battery pack is contained within the Portal's 118.2-inch wheelbase. The battery pack and in-floor seat tracks mount to the underbody, which lowers the center of gravity, improving ride and handling performance.

The Chrysler Portal's electric motor is a fraction of the size of an internal combustion engine, which enabled engineers to reduce the Portal's front overhang by 5 inches. At the same time, by moving the base of the windshield forward the interior was further expanded.

An abundance of natural light amplifies the spaciousness inside the Chrysler Portal. Light enters through the large windshield, upper and lower windows in each sliding door unit and the clear polycarbonate roof panel.

A carbon fiber X-brace, mounted under the roof panel, bolsters structural rigidity. The X-brace design also creates individual portals of overhead light for passengers. Electrochromic technology could darken the roof panel for shading.

Each seat is the best in the house

The Chrysler Portal concept engineering team worked closely with seating system supplier Adient to develop premium next-generation seats that combine comfort and flexibility in a lightweight package.

Each seat in the Chrysler Portal concept is a self-contained unit, including armrests and the integrated seat belt restraint system.

The basic design consists of a rigid perimeter frame with plastic support, to create contouring comfort, like a hammock, for all occupants.

The design delivers premium quality and comfort for each seat, regardless of where it is positioned in the Portal. Yet, each seat is thinner than a contemporary vehicle seat, enhancing the feeling of roominess inside the Portal and creating maximum cargo room when the seats are condensed.

Each Portal seat features a pedestal-style base that slides into tracks embedded in the vehicle floor. Two seat tracks run the length of the Portal, and each can hold up to three seats.

The space between the seat tracks narrows slightly toward the rear of the vehicle, giving second- and third-row occupants a unique “over the shoulder” view of the cabin. Each seat changes position manually, with a stop located approximately every half-inch, to create the optimum amount of legroom in every row.

The Portal’s seat backs fold down to create a flat load surface. The seat bottoms fold up stadium style, to let the seats move together to expand cargo room. For maximum cargo space the seats, which weigh about 40 pounds each, can be removed out the back of the Portal.

Accessory attachments for the seat rail system enable users to easily secure athletic equipment, such as a mountain bike, inside the vehicle.

A spacious center storage console mounts to a third rail that runs down the center of the Portal’s floor. The rail mounting enables the entire console to move throughout the cabin, or multiple consoles to be installed.

Wide openings ease entry/exit for passengers and cargo

Getting in and out of the Chrysler Portal concept is made easier by a pair of unique portal-shaped, articulating doors on each side. The doors part in the middle to reveal an entryway that measures just over 5-feet wide.

The large opening provides unfettered access to the interior and the first two rows of seats. The opening is made possible with B-pillars that are integrated into the edges of the doors. When the doors are closed, the integrated B-pillars add more support to the body structure.

Additionally, the wide side openings make it easy for commercial users to load large cargo without raising the rear liftgate. The body-hugging articulating door system provides easy access even when adjacent space is limited, such as in parking lots or curbside parking on busy streets.



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