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(57) Abstract :
The automated footstep with footwear sole cleaning mechanism for automobiles presents a revolutionary solution aimed at enhancing cleanliness, hygiene, and safety during vehicle entry and exit. This innovative system integrates seamlessly with modern vehicles, comprising a series of interconnected components and sensors that work in tandem to provide a superior user experience. Upon activation of the unlock/lock key, the vehicle's power circuit transmits a control signal to the Electronic Control Unit (ECU), initiating the deployment or retraction of the footstep mechanism. Concurrently, a pressure sensor detects the presence of weight on the footstep, prompting the ECU to activate the cleaning process. This activates the air compressor system, which delivers pressurized air to the cleaning mechanism for efficient removal of dirt and debris from footwear soles. Furthermore, the ECU governs the activation of individual or all nozzles based on input from the side door sensor, ensuring targeted and energy-efficient airflow. This comprehensive system not only enhances user convenience but also significantly improves hygiene standards within the vehicle cabin. In summary, the automated footstep with footwear sole cleaning mechanism represents a paradigm shift in automotive technology, offering unparalleled cleanliness and safety benefits for vehicle occupants. Its seamless integration, intelligent sensor network, and precise control mechanisms make it a valuable addition to the modern vehicle landscape, promising a more enjoyable and hygienic driving experience

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