

Boeing 737-9 Max Grounded Amid Renewed Concerns About Manufacturing Quality and Product Safety

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On January 5, 2024, a Boeing 737-9 Max airplane operated by Alaska Airlines experienced an in-flight separation of a door plug shortly after departure from Portland International Airport, Oregon, for a scheduled flight to Ontario, California. The airplane made an emergency landing in Portland and all 177 occupants, including 171 passengers, survived. [Alaska Airlines](#) immediately grounded all 65 of its 737-9 Max airplanes, and the National Transportation Safety Board ([NTSB](#)) [launched an investigation](#) of the [accident](#).

On January 6, the Federal Aviation Administration (FAA) issued an [emergency airworthiness directive](#) requiring inspections of all 737-9 Max aircraft with mid-cabin door plugs. A door plug is a device used to seal off a fuselage opening when an additional emergency exit door is not required by regulation based on the particular airplane's seating configuration. The door plugs on the 737-9 Max are held in place by stop fittings pressed against stop pads and secured by upper and lower bolts. [Reportedly, both Alaska Airlines and United Airlines](#), the two U.S. operators of 737-9 Max airplanes, identified loose door plug hardware, including bolts that require additional tightening, during these mandated inspections. Boeing has been working on revising its instructions to remedy loose door plug hardware, which has extended the grounding until FAA is satisfied that the airplanes can safely return to operation. [FAA elaborated](#) that "[t]he safety of the flying public, not speed, will determine the timeline for returning the Boeing 737-9 Max to service." FAA has also [launched an investigation](#) to determine whether Boeing failed to meet regulatory requirements for airworthiness certification due to lapses in product inspections and testing.

The mishap and subsequent grounding came on the heels of [Boeing announcing unrelated concerns about potentially loose hardware in the rudder control systems](#) of all 737 Max airplanes in late December 2023. Boeing issued a notice to operators urging inspections of about 1,400 737 Max aircraft in service after an international operator reportedly discovered a missing nut during routine maintenance, and Boeing subsequently found a loose nut on an undelivered airplane.

On January 12, 2024, [FAA announced](#) that it would launch a comprehensive audit of 737-9 Max production and its suppliers to evaluate compliance with approved quality procedures and increase monitoring of 737-9 Max in-service events. It also indicated that it would conduct assessments of

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airworthiness certification activities that it has delegated to Boeing and quality oversight practices at Boeing and Boeing supplier facilities. FAA further indicated that it would examine possible options for transferring oversight and airworthiness certification responsibilities to independent, third-party entities.

The January 5, 2024, mishap has raised specific questions about quality controls at Boeing suppliers and Boeing oversight of supplier work. The main fuselage and the door plug assembly on 737-9 Max airplanes, including the Alaska Airlines airplane discussed here, were manufactured by [Spirit Aerosystems, Inc.](#) at a facility in Wichita, KS, then shipped by rail to Boeing facilities in Renton, WA, for final assembly as part of a complex supply chain. Reportedly, [Boeing engineers have expressed concerns](#) for more than two decades over the potential safety implications of outsourcing extensive amounts of work without providing suppliers with adequate technical support and quality monitoring.

Quality and safety concerns have troubled the [Boeing 737 Max](#) over its relatively short history. The airplane first entered service in 2017 as the latest generation of Boeing's highly successful 737 single-aisle airplane first introduced in 1968. The 737 Max was developed as a more efficient and more environmentally friendly variant to compete with the [Airbus A320neo](#) family of airplanes that debuted in 2016. There are four versions of the 737 Max. Both the 737-8 Max and the slightly bigger -9 are fully certified and in service worldwide, while a larger -10 version and a smaller -7 version are still seeking FAA certification. Two catastrophic airline crashes overseas involving 737-8 Max aircraft—[Lion Air flight 610](#) on October 29, 2018, and [Ethiopian Airlines flight 302](#) on March 10, 2019—led to a 20-month worldwide grounding of all 737 Max airplanes. The 737 Max design and certification process were thoroughly investigated, and several reforms were ordered by FAA as conditions for the fleet's return to service. Moreover, changes to the design of a flight control feature known as the [Maneuvering Characteristics Augmentation System \(MCAS\)](#) and pilot training related to that system were [ordered](#) to address the circumstances of those two mishaps, paving the way for a resumption of Boeing 737 Max flights in late 2020.

Broader concerns over the certification of the Boeing 737 Max prompted intense scrutiny of FAA's delegation of certification responsibilities to manufacturers like Boeing, culminating in legislation requiring sweeping reforms to the aircraft certification process and FAA's oversight of aircraft manufacturers. The Aircraft Certification, Safety, and Accountability Act (Division V of P.L. 116-260) required FAA to reform policies and practices related to aircraft certification and mandated industry-wide implementation of approved safety management systems (SMSs) among aircraft manufacturers. FAA issued [a proposed rule](#) in January 2023 that would require SMSs for manufacturers that design and produce aircraft and aircraft engines. FAA contends that implementation of SMSs among manufacturers will improve safety by requiring proactive hazard identification and risk assessments as well as implementation of mitigation measures to reduce the likelihood of potential product failures. Although effective safety management and manufacturing quality assurance are not completely analogous, it is widely regarded that the two go hand-in-hand and that safety cannot be assured without adequate quality controls.

Past congressional oversight and legislation, as well as ongoing FAA regulatory actions, primarily have focused on the certification of new or highly modified aircraft systems and components. This latest mishap [may prompt congressional scrutiny](#) of Boeing's manufacturing practices, commercial aircraft supply chains, and quality and safety oversight of aircraft production and assembly, as well as airworthiness certification of large commercial airplanes.

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