

# Part 573 Safety Recall Report

# 23V-110

**Manufacturer Name :** Lucid USA, Inc.**Submission Date :** MAR 23, 2023**NHTSA Recall No. :** 23V-110**Manufacturer Recall No. :** SR-23-01-0**Manufacturer Information :**

Manufacturer Name : Lucid USA, Inc.

Address : 7373 Gateway Blvd.

Newark CA 94560

Company phone : 1-510-648-3553

**Population :**

Number of potentially involved : 637

Estimated percentage with defect : 6 %

**Vehicle Information :**

Vehicle 1 : 2022-2023 Lucid Air

Vehicle Type : LIGHT VEHICLES

Body Style : 4-DOOR

Power Train : NR

**Descriptive Information :** Sensata Technologies, Inc. (Supplier) manufactures contactors for 2022 and 2023 Lucid Air vehicles. Contactors are electrically activated switches that close at vehicle startup to transfer energy to and from the drive units, and open at vehicle shut down. Supplier and Lucid determined that in a small population of contactors the spring force may overcome the magnetic holding force. In normal closing, the contactor current exhibits a single-dip signature due to the motion of the internal components in the magnetic field. A double-dip in the current signature indicates a contactor that may be susceptible to opening unexpectedly due to the spring force issue, though many contactors operate normally even with a double-dip signature. Lucid determined 18 vehicles manufactured prior to the factory clean point experienced unexpected contactor openings due to the spring force issue. Lucid also observed six vehicles that had contactor openings while stationary that could not be confirmed to be due to the spring force issue. No contactor openings due to the spring force issue have occurred in vehicles manufactured after the clean point. An over-the-air software update allowed Lucid to analyze customer fleet data and remotely identify at-risk contactors in 273 vehicles. Owners of 336 vehicles have not updated their software to enable contactor analysis. Lucid is currently examining data from 28 vehicles that have updated software. Lucid expects that once all vehicles are updated and analyzed, approximately 20 additional vehicles may require contactor replacements. Recalled contactors exhibit a double-dip signature during closing more than 5% of the time. Vehicles not in the recall population always exhibit a single-dip closing signature or exhibit a double-dip closing less than 5% of the time. By analyzing known bad contactors, Lucid determined a 5% cut-off is statistically significant in determining potential bad contactors with greater than a 99.999% confidence interval.

Production Dates : OCT 19, 2021 - NOV 01, 2022

VIN Range 1 : Begin :

NR

End : NR

 Not sequential

## Description of Defect :

Description of the Defect : A small population of contactors are susceptible to opening unexpectedly.

FMVSS 1 : NR

FMVSS 2 : NR

Description of the Safety Risk : If a contactor opens unexpectedly while driving, the vehicle's electric motors will no longer be supplied power. This may lead to a loss of propulsion without pre-warning and may increase the risk of a crash.

Description of the Cause : Contactors in which the spring force may overcome the magnetic holding force may unexpectedly open. These defective contactors exhibit double-dip current signatures during closing.

Identification of Any Warning that can Occur : The driver would not receive a warning prior to an unexpected contactor opening as a result of this condition. When an unexpected contactor opening occurs, the driver receives notifications of a system fault and that driving power is reduced. Vehicle displays, power steering, and power brakes will continue to function as they are not powered by the high voltage system.

## Involved Components :

Component Name 1 : Contactor GXV600-010/-018

Component Description : Contactor, internally economized

Component Part Number : P00-HJ4100-00

## Supplier Identification :

### Component Manufacturer

Name : Sensata Technologies, Inc.

Address : 529 Pleasant Street

Attleboro Massachusetts 02703

Country : United States

## Chronology :

Lucid began investigating this issue in May 2022, following a loss of motive power in a vehicle brought to a Lucid Service Center. Through Sept. 2022, Lucid investigated 14 contactor openings. Lucid's Product Safety Working Group was briefed on Oct. 14. At that time, testing a vehicle for the spring force issue required manually observing the contactor closing signature during startup. A double-dip closing signature indicates a risk of contactor opening, though many contactors with double-dip signatures have no unexpected openings.

Fewer than 1% of vehicles manufactured prior to the clean point experienced an unexpected contactor opening. Displays, power steering, and power brakes remain available following contactor opening, and the vehicle can coast and should restart after a shutdown. On Nov. 3, Lucid briefed NHTSA on this issue and Lucid's plan to develop software to permit telemetric screening of vehicles based on current signature. The software update was sent to customer vehicles starting Dec. 16, and Lucid analyzed contactor closing data in its customer fleet through Jan. 2023. Lucid briefed NHTSA of its progress in early Jan. and early Feb. 2023. After analyzing the fleet data, Lucid determined 232 customer vehicles exhibited double-dip signatures at least 5% of the time, which provides a greater than 99.999% confidence interval for capturing affected contactors. As of Feb. 22, owners of 533 vehicles had not updated their software. Approximately 27 of these were expected to require contactor replacement. The Lucid Product Safety Executive Council (PSEC) determined on Feb. 14 that an unreasonable risk to safety exists in vehicles with double-dip current signatures at least 5% of the time, and that Lucid would recall these vehicles and replace the contactors. Lucid filed this report with NHTSA on Feb. 22. After discussions between Lucid and NHTSA, Lucid's PSEC determined on Mar. 22 to amend this report to increase the number potentially involved to 637.

## Description of Remedy :

**Description of Remedy Program :** Owners of subject vehicles will be notified by first class mail with instructions when to contact Lucid to schedule replacement of contactors at NO COST to the customer. Owners of vehicles who did not download the software update for the double-dip test will be notified by first class mail to update their software at home or bring their vehicles to a Service Center for a software update. After Lucid analyzes the contactor data provided by the software update, Lucid will replace contactors showing a double-dip signature at least 5% of the time at NO COST to the customer. Lucid will reimburse owners for costs an owner reasonably incurred to obtain a remedy for this safety defect during the period starting from initial vehicle delivery through 10 days after Lucid's mailing of the owner notification letter concerning this noncompliance. If an owner has such a claim for pre-notification reimbursement, they may contact Lucid Customer Care at 1-888-99-LUCID or 1-888-995-8243.

**How Remedy Component Differs from Recalled Component :** Replacement contactors have been redesigned to have increased magnetic holding force and have undergone additional quality screening to ensure they do not exhibit a double-dip current signature during closing.

**Identify How/When Recall Condition was Corrected in Production :** As of the factory clean point on November 1, 2022, all contactors used in manufactured vehicles include the redesign for increased magnetic holding force or have undergone additional quality screening to ensure they do not exhibit a double-dip current signature during closing.

## Recall Schedule :

**Description of Recall Schedule :** Owners of the 273 known affected vehicles will be notified by first class mail with instructions that they may contact Lucid Customer Care or a Lucid Certified Service Center to schedule the recall repair. There will be NO COST for this service.

Owners of the 336 vehicles requiring a software update to assess their contactors will be notified via first class mail with instructions to bring their software up to date or to contact Lucid Customer Care or a Lucid Service Center for assistance in bringing their software up to date. Lucid will evaluate the contactor closing signatures of updated vehicles to determine whether any require contactor replacements and will notify those customers needing replacement to contact Lucid Customer Care or a Lucid Service Center to schedule the recall repair. Owners of updated vehicles that have not completed double-dip testing by April 21, 2023, will be notified by first class mail with instructions that they may contact Lucid Customer Care or a Lucid Certified Service Center to schedule the recall repair. Lucid will send reminder emails to all customers who have uncompleted recall campaigns every six months.

Planned Dealer Notification Date : FEB 22, 2023 - FEB 22, 2023

Planned Owner Notification Date : APR 21, 2023 - APR 21, 2023

\* NR - Not Reported