

Part 573 Safety Recall Report

22V-223

Manufacturer Name : Arcimoto Inc**Submission Date :** JUN 01, 2022**NHTSA Recall No. :** 22V-223**Manufacturer Recall No. :** NR**Manufacturer Information :**

Manufacturer Name : Arcimoto Inc

Address : 2034 W. 2nd Ave
Eugene OR 97402

Company phone : 5416836293

Population :

Number of potentially involved : 516

Estimated percentage with defect : 1 %

Vehicle Information :

Vehicle 1 : 2019-2022 Arcimoto FUV

Vehicle Type : MOTORCYCLES

Body Style : OTHER

Power Train : HYBRID ELECTRIC

Descriptive Information : Affects all five-hundred sixteen MY2019 - MY2022 vehicles (fifty-seven MY2019 T-FUV, one-hundred twenty-six MY2020 T-FUV, six MY2020 D-Deliverator-1, four MY2021 Roadster, one MY2021 E-Rapid Responder, two-hundred sixty-five MY2021, twenty-three MY2021 D-Deliverator-1, twenty-one MY2021 Roadster T-FUV, and 15 MY2022) produced from 09/19/2019 through to 03/21/22.

Production Dates : SEP 19, 2019 - MAR 21, 2022

VIN Range 1 : Begin :	7F7ATR312KER00000	End :	7F7ATR317KER00056	<input type="checkbox"/> Not sequential
VIN Range 2 : Begin :	7F7ATR312LER00001	End :	7F7ATR310LER00126	<input type="checkbox"/> Not sequential
VIN Range 3 : Begin :	7F7ATR310MER00001	End :	7F7ATR318MER00182	<input type="checkbox"/> Not sequential
VIN Range 4 : Begin :	7F7ATR311MER00184	End :	7F7ATR313MER00185	<input type="checkbox"/> Not sequential
VIN Range 5 : Begin :	7F7ATR317MER00187	End :	7F7ATR314MER00194	<input type="checkbox"/> Not sequential
VIN Range 6 : Begin :	7F7ATR311MER00198	End :	7F7ATR313MER00221	<input type="checkbox"/> Not sequential
VIN Range 7 : Begin :	7F7ATR317MER00223	End :	7F7ATR310MER00239	<input type="checkbox"/> Not sequential
VIN Range 8 : Begin :	7F7ATR310MER00242	End :	7F7ATR314MER00244	<input type="checkbox"/> Not sequential
VIN Range 9 : Begin :	7F7ATR31XMER00247	End :	7F7ATR31XMER00247	<input type="checkbox"/> Not sequential
VIN Range 10 : Begin :	7F7ATR313MER00249	End :	7F7ATR314MER00275	<input type="checkbox"/> Not sequential
VIN Range 11 : Begin :	7F7ATR319NER00001	End :	7F7ATR314NER00004	<input type="checkbox"/> Not sequential
VIN Range 12 : Begin :	7F7ATR31XNER00007	End :	7F7ATR313NER00012	<input type="checkbox"/> Not sequential
VIN Range 13 : Begin :	7F7ATR319NER00015	End :	7F7ATR312NER00017	<input type="checkbox"/> Not sequential
VIN Range 14 : Begin :	7F7ATR316NER00019	End :	7F7ATR312NER00020	<input type="checkbox"/> Not sequential

Vehicle 2 : 2021-2022 Arcimoto Rapid Responder

Vehicle Type : MOTORCYCLES

Body Style : OTHER

Power Train : HYBRID ELECTRIC

Descriptive Information : Affects all five-hundred sixteen MY2019 - MY2022 vehicles (fifty-seven MY2019 T-FUV, one-hundred twenty-six MY2020 T-FUV, six MY2020 D-Deliverator-1, four MY2021 Roadster, one MY2021 E-Rapid Responder, two-hundred sixty-five MY2021, twenty-three MY2021 D-Deliverator-1, twenty-one MY2021 Roadster T-FUV, and 15 MY2022) produced from 09/19/2019 through to 03/21/22.

Production Dates : JAN 01, 2021 - MAR 21, 2022

VIN Range 1 : Begin : 7F7AER318MER00001 End : 7F7AER318MER00001 Not sequential

Vehicle 3 : 2020-2022 Arcimoto Deliverator

Vehicle Type : MOTORCYCLES

Body Style : OTHER

Power Train : HYBRID ELECTRIC

Descriptive Information : Affects all five-hundred sixteen MY2019 - MY2022 vehicles (fifty-seven MY2019 T-FUV, one-hundred twenty-six MY2020 T-FUV, six MY2020 D-Deliverator-1, four MY2021 Roadster, one MY2021 E-Rapid Responder, two-hundred sixty-five MY2021, twenty-three MY2021 D-Deliverator-1, twenty-one MY2021 Roadster T-FUV, and 15 MY2022) produced from 09/19/2019 through to 03/21/22.

Production Dates : NOV 17, 2020 - MAR 21, 2022

VIN Range 1 : Begin : 7F7ADR316LER00001 End : 7F7ADR315LER00006 Not sequential

VIN Range 2 : Begin : 7F7ADR314MER00001 End : 7F7ADR313MER00023 Not sequential

Vehicle 4 : 2020-2022 Arcimoto Roadster

Vehicle Type : MOTORCYCLES

Body Style : OTHER

Power Train : HYBRID ELECTRIC

Descriptive Information : Affects all five-hundred sixteen MY2019 - MY2022 vehicles (fifty-seven MY2019 T-FUV, one-hundred twenty-six MY2020 T-FUV, six MY2020 D-Deliverator-1, four MY2021 Roadster, one MY2021 E-Rapid Responder, two-hundred sixty-five MY2021, twenty-three MY2021 D-Deliverator-1, twenty-one MY2021 Roadster T-FUV, and 15 MY2022) produced from 09/19/2019 through to 03/21/22.

Production Dates : JAN 01, 2020 - MAR 21, 2022

VIN Range 1 : Begin : 7F7ARR314LER00001 End : 7F7ARR31XLER00004 Not sequential

VIN Range 2 : Begin : 7F7ARR312MER00001 End : 7F7ARR316MER00020 Not sequential

Description of Defect :

Description of the Defect : Once the battery temperature reaches a temperature below 0°C the VCU will send a message to the BMS. Then the BMS will send a message to the charger enabled relay (CER) switch so that it is disabled. When the CER is disabled charging will not be allowed until the battery temperature goes above freezing again, at which point the CER will become re-enabled. This design is to prevent unsafe charging at temperatures below freezing, which can damage the battery. When a freezing event happens twice in one minute the CER will lose its ability to be re-enabled. This will disable all charging for the vehicle, (KERS) or outlet, until a hard reset can be done.

FMVSS 1 : NR

FMVSS 2 : NR

Description of the Safety Risk : If an owner were to attempt to charge their vehicle overnight, not knowing the vehicle is unable to be charged due to the defect, the owner could feasibly start the vehicle and attempt to drive it. The result could be that the engine unexpectedly stalls, creating a risk of a crash.

Description of the Cause : This defect is being caused because the battery is trying to prevent an unsafe charging situation. If a battery is below 0°C the VCU will send a message to the BMS and then to the CER so that charging can not occur. Once the temperature goes back above freezing then the VCU will send a message using the BMS to enable the CER and charging can resume. This whole process is a safety feature to prevent the battery from charging during freezing temperatures which can damage the battery.

However if the battery temperature drops below freezing twice in a minute which can happen the CER will not re-enable after two times in one minute.

Identification of Any Warning that can Occur : None

Involved Components :

Component Name 1 : VCU, ECOTRONS, ES1274A

Component Description : VCU

Component Part Number : 003222

Component Name 2 : ORION BMS 2

Component Description : BMS

Component Part Number : 001052

Supplier Identification :

Component Manufacturer

Name : Ecotrons LLC

Address : 13115 Barton Rd Ste H
Whittier California 90605

Country : United States

Chronology :

Beginning on 12/14/21, the service team started to receive emails and phone calls about vehicles being unable to charge. There were field reports on 12/15/21, 12/22/21, there were (2) two on 12/28/21, (1) one on 12/30/21 and then (1) one on 1/5/22. The Arcimoto service department notified the Regulatory and Quality Departments and on January 13th a problem communication meeting was called to begin evaluating the situation so that a root cause could be established and a remedy found. Until the severity of the known issue could be evaluated a hold on shipping was requested. The electrical engineering team and the service department continued investigating the defect. On 2/17/21 it was confirmed that the VCU was sending a message to the BMS and disabling the CER whenever the temperature was below 0°C. The research went on to show that once the temperature went back above 0°C the VCU would have the BMS re-enable the CER. The problem was that this defect was causing the CER to be disabled twice in a minute if the temperature changed above/below freezing more than twice in a minute. The firmware was programmed to disable the CER as an extra safety feature. This however disabled all charging until a hard reset could be done on the vehicle. On April 4th Arcimoto discussed with NHTSA representatives the potential safety risk. At that time it was discussed that an operator of the vehicle could possibly not check battery charge after a night of non-charging and try to drive, due to the defect. This could result in a operator becoming stranded in a dangerous situation that would leave the vehicle in a vulnerable state which would increase the risk of a crash. There was internal discussion regarding the safety risk for this defect and if it would be filed as a TSB or recall. After discussing with NHTSA staff on April 4th 2022 Arcimoto filed the part 573 report for a safety recall.

Description of Remedy :

Description of Remedy Program : Owners will be notified by mail and instructed to contact Arcimoto to schedule a service appointment to have their firmware updated to prevent the defect from happening. Only the Arcimoto service department is allowed to update the firmware, so there will be no reimbursement if the firmware is updated by anyone other than Arcimoto. There will be no charge to vehicle owners for this service. To the best of our knowledge, no owners have incurred any costs resulting from this defect.

How Remedy Component Differs from Recalled Component : The new firmware will still allow the VCU to disable the CER and will prevent charging if the temperature falls below 0°C The difference is that the amount of times that the temperature goes below and above freezing during a minute will be increased and make it mathematically impossible to have the CER latch out again during fluctuating temperatures around the 0°C mark.

Identify How/When Recall Condition was Corrected in Production : On March 11th the new firmware was confirmed and released to both service and production teams. The production department is now able to continue manufacturing the vehicles with the new firmware in place.

Recall Schedule :

Description of Recall Schedule : Arcimoto does not intend to send any dealer or distributor notifications, as it has neither dealers nor distributors at this time.

Planned Dealer Notification Date : JUN 03, 2022 - JUN 10, 2022

Planned Owner Notification Date : JUN 03, 2022 - JUN 10, 2022

* NR - Not Reported