

# Part 573 Safety Recall Report

# 23V-687

**Manufacturer Name :** Ford Motor Company**Submission Date :** OCT 13, 2023**NHTSA Recall No. :** 23V-687**Manufacturer Recall No. :** 23S56**Manufacturer Information :**

Manufacturer Name : Ford Motor Company

Address : 330 Town Center Drive

Suite 500 Dearborn MI 48126-2738

Company phone : 1-866-436-7332

**Population :**

Number of potentially involved : 34,762

Estimated percentage with defect : 100 %

**Vehicle Information :**

Vehicle 1 : 2021-2022 Ford Mustang Mach-E

Vehicle Type : LIGHT VEHICLES

Body Style : ALL

Power Train : HYBRID ELECTRIC

**Descriptive Information :** The recalled Bussed Electrical Center parts NK48-10C666-AA, NK48-10C666-BA, or LK98-10C666-AB were introduced into production on 05/27/2020 and were taken out of production on 05/24/2022.

Affected vehicles are equipped with the extended range battery.

These vehicles are not produced in VIN order. Information as to the applicability of this action to specific vehicles can best be obtained by either calling Ford's toll-free line (1-866-436-7332) or by contacting a local Ford or Lincoln dealer who can obtain specific information regarding the vehicles from the Ford On-line Automotive Service Information System (OASIS) database.

Production Dates : MAY 27, 2020 - MAY 24, 2022

VIN Range 1 : Begin :

NR

End : NR

 Not sequential**Description of Defect :**

**Description of the Defect :** Direct Current ("DC") fast charging and repeated wide open pedal events can cause the high voltage battery main contactors to overheat. Overheating may lead to arcing and deformation of the electrical contact surfaces, which can result in a contactor that is prevented from closing or a contactor that welds closed.

FMVSS 1 : NR

FMVSS 2 : NR

**Description of the Safety Risk :** An overheated contactor that is prevented from properly closing while

**Description of the Safety Risk :** driving can result in a loss of motive power, which can increase the risk of a crash.

**Description of the Cause :** The high voltage battery Bussed Electrical Center (BEC) main contactor design and part-to-part variation is not robust to heat generated from multiple wide-open pedal and DC Fast-Charge events. Damage to the Extended Range and GT contactors caused by heat and accumulated wear during customer usage prior to the software update may reduce the effectiveness of the software deployed with 22S41. If the contactors are damaged, the contactors may be prevented from properly closing or weld closed when driving.

**Identification of Any Warning that can Occur :** For those vehicles that previously received the 22S41 remedy, in most cases, the software will proactively detect damage to the contactors and display a warning to the customer.

If the contactors weld closed while driving, there will be no immediate effect on vehicle operation. Upon the next key cycle, a wrench light will be illuminated, vehicle diagnostics will set a DTC and vehicle will not start.

If the contactors are prevented from properly closing while driving, vehicle diagnostics will set a DTC, a wrench light will be illuminated, the vehicle will display "Stop Safely Now" and the vehicle will immediately lose motive power. The vehicle will coast to a stop, and all 12V systems including power brakes and steering will remain functional.

## Involved Components :

**Component Name 1 :** Bussed Electrical Center

**Component Description :** BEC – Extended Range RWD

**Component Part Number :** NK48-10C666-AA

**Component Name 2 :** Bussed Electrical Center

**Component Description :** BEC – Extended Range AWD

**Component Part Number :** NK48-10C666-BA

**Component Name 3 :** Bussed Electrical Center

**Component Description :** BEC – GT

**Component Part Number :** LK98-10C666-AB

## Supplier Identification :

### Component Manufacturer

Name : TE Connectivity  
Address : Blvd. Industrial Norte #23 & Blvd. Solid  
Hermosillo Foreign States 83118  
Country : Mexico

## Chronology :

Chronology is provided as an attachment

## Description of Remedy :

Description of Remedy Program : Owners will be directed to take their vehicle to a Ford or Lincoln dealer to complete a replacement of the Bussed Electrical Center (BEC) also referred to as the High Voltage Battery Junction Box (HVBJB) as per workshop manual. There will be no charge for this service.

Ford provided the general reimbursement plan for the cost of remedies paid for by vehicle owners prior to notification of a safety recall in May 2023. The ending date for reimbursement eligibility is estimated to be March 31, 2024.

Ford will forward a copy of the notification letters to dealers to the agency when available.

How Remedy Component Differs from Recalled Component : The updated BEC (NK48-10C666-AC, NK48-10C666-BC, LK98-10C666-AD) design has flat contact surfaces and the groove on the movable contactor surface is removed.

Identify How/When Recall Condition was Corrected in Production : The updated BEC hardware design was introduced into production on May 25, 2022.

## Recall Schedule :

Description of Recall Schedule : Notification to dealers is expected to occur on October 16, 2023. Mailing of owner notification letters is expected to begin October 30, 2023 and is expected to be completed by November 10, 2023.

Planned Dealer Notification Date : OCT 16, 2023 - OCT 16, 2023

Planned Owner Notification Date : OCT 30, 2023 - NOV 10, 2023

\* NR - Not Reported

## **23S56 - Certain 2021-22 model Ford Mustang Mach-E vehicles – High Voltage Battery Main Contactor Failure**

### **Chronology of Defect: Submitted 13-Oct 2023**

On **June 3, 2022**, Ford's Field Review Committee (FRC) approved a Field Service Action (FSA) 22S41 to address potential high voltage battery main contactor over-heating concerns on certain 2021-2022 Mustang Mach-E vehicles. The service fix for 22S41 is for dealers to update Secondary On-Board Diagnostic Control Module (SOBDMC) and the Battery Energy Control Module (BECM) software. The updated SOBDMC software monitors contactor temperature and intelligently reduces battery power to prevent further damage to the contactor. The updated BECM software monitors contactor resistance to identify a damaged contactor and will issue a diagnostic trouble code (DTC) and reduce vehicle power to prevent further damage.

At the time of this FSA approval, Ford's Critical Concern Review Group (CCRG) and Electrical Propulsion Engineering (EPE) teams judged the BECM and SOBDMC software updates to be an acceptable method of preventing the safety risk associated with a loss of motive power. The software update addressed the risk of loss of motive power by monitoring contactor resistance. Customers would receive a warning (described above) when resistance was measured higher than the threshold. In addition to this warning, the software would reduce power to prevent further damage to the contactors and address the risk of loss of motive power. The customer would still be able to accelerate to highway speeds safely with this power derate. This approach was also reviewed with the National Highway Traffic Safety Administration (NHTSA) at this time.

### **August - October 2023:**

On **August 17, 2023**, National Highway Traffic Safety Administration (NHTSA) informed Ford that they had opened a Recall Query to assess the remedy of FSA 22S41. Specifically, for vehicles that alleged a loss of motive power after the completion of 22S41. Ford opened an investigation in CCRG to manage the Recall Query response to NHTSA.

In reviewing updated field data as part of Ford's ongoing monitor of recall effectiveness, CCRG and EPE reassessed their previous recommendations. Based on the new assessment, Extended Range and GT will receive a replacement Bussed Electrical Center (BEC) also referred to as the High Voltage Battery Junction Box (HVBJB).

The CCRG is not recommending any additional action on the Standard Range variants previously included in 22S41 because the Standard Range variation will see much less power at the contactors and has a much lower probability of latent contactor damage. Field data received after the completion of 22S41 shows that the remedy addressed the risk of loss of motive power for the Standard Range variants.

As of **October 4, 2023**, Ford is aware of 107 instances of high voltage contactor over-heating that resulted in a loss of motive power after completion of 22S41. 100 of these instances are on Extended Range or GT variants.

Ford is not aware of any accidents or injuries related to this concern.



The ODI complaints cited above can be viewed at [NHTSA.gov](https://www.nhtsa.gov) under the following ODI identification numbers:  
11472202, 11475350, 11477025, 11479095, 11479421, 11485995, 11493140, 11510437, 11511316, 11517977,  
11525550, 11526050.

# Part 573 Safety Recall Report

# 22V-412

**Manufacturer Name :** Ford Motor Company**Submission Date :** JUN 10, 2022**NHTSA Recall No. :** 22V-412**Manufacturer Recall No. :** 22S41**Manufacturer Information :**

Manufacturer Name : Ford Motor Company

Address : 330 Town Center Drive

Suite 500 Dearborn MI 48126-2738

Company phone : 1-866-436-7332

**Population :**

Number of potentially involved : 48,924

Estimated percentage with defect : 100 %

**Vehicle Information :**

Vehicle 1 : 2021-2022 Ford Mustang Mach-E

Vehicle Type : LIGHT VEHICLES

Body Style : ALL

Power Train : NR

**Descriptive Information :** The recalled Secondary On-Board Diagnostic Control Module (SOBDMC) and the Battery Energy Control Module (BECM) software were introduced into production on 05/27/2020 and was taken out of production on 05/24/2022.

These vehicles are not produced in VIN order. Information as to the applicability of this action to specific vehicles can best be obtained by either calling Ford's toll-free line (1-866-436-7332) or by contacting a local Ford or Lincoln dealer who can obtain specific information regarding the vehicles from the Ford On-line Automotive Service Information System (OASIS) database.

Production Dates : MAY 27, 2020 - MAY 24, 2022

VIN Range 1 : Begin :

NR

End : NR

 Not sequential**Description of Defect :**

**Description of the Defect :** Direct Current ("DC") fast charging and repeated wide open pedal events can cause the high voltage battery main contactors to overheat. Overheating may lead to arcing and deformation of the electrical contact surfaces, which can result in a contactor that remains open or a contactor that welds closed.

FMVSS 1 : NR

FMVSS 2 : NR

**Description of the Safety Risk :** An overheated contactor that opens while driving can result in a loss of motive power, which can increase the risk of an accident.

**Description of the Cause :** The design and part-to-part variation of the high voltage battery main



**Identification of Any Warning that can Occur :** contactor is not robust to the heat generated during DC fast charging and multiple wide open pedal events.  
If the contactor opens while driving, a powertrain malfunction warning light will be illuminated and the vehicle will display "Stop Safely Now" in the cluster when the vehicle experiences an immediate loss of motive power. Should the contactors weld closed while driving, a powertrain malfunction warning light will be illuminated on the next drive cycle, along with a no start condition.

## Involved Components :

**Component Name 1 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R19 – 3P AWD

**Component Part Number :** LJ98-14G069-FR

**Component Name 2 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R19 – 3P RWD

**Component Part Number :** LJ98-14G069-ER

**Component Name 3 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R19 – 4P AWD

**Component Part Number :** LJ98-14G069-DR

**Component Name 4 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R19 – 4P RWD

**Component Part Number :** LJ98-14G069-CR

**Component Name 5 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R30 – 3P AWD

**Component Part Number :** LJ98-14G069-FS

**Component Name 6 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R30 – 3P RWD

**Component Part Number :** LJ98-14G069-ES

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**Component Name 7 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R30 – 4P AWD

**Component Part Number :** LJ98-14G069-DS

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**Component Name 8 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R30 – 4P RWD

**Component Part Number :** LJ98-14G069-CS

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**Component Name 9 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R31/R32 – 3P AWD

**Component Part Number :** LJ98-14G069-FT

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**Component Name 10 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R31/R32 – 3P RWD

**Component Part Number :** LJ98-14G069-ET

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**Component Name 11 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R31/R32 – 4P AWD

**Component Part Number :** LJ98-14G069-DT

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**Component Name 12 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R31/R32 – 4P RWD

**Component Part Number :** LJ98-14G069-CT

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Component Name 13 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R33 – 3P AWD

Component Part Number : LJ98-14G069-FU

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Component Name 14 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R33 – 3P RWD

Component Part Number : LJ98-14G069-EU

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Component Name 15 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R33 – 4P AWD

Component Part Number : LJ98-14G069-DU

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Component Name 16 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R33 – 4P RWD

Component Part Number : LJ98-14G069-CU

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Component Name 17 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R41 – 3P AWD

Component Part Number : LJ98-14G069-AXB

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Component Name 18 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R41 – 3P RWD

Component Part Number : LJ98-14G069-AZB

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Component Name 19 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R41 – 4P AWD

Component Part Number : LJ98-14G069-BBB

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Component Name 20 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R41 – 4P RWD

Component Part Number : LJ98-14G069-BDB

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Component Name 21 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R42/R43 – 3P AWD

Component Part Number : LJ98-14G069-AXC

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Component Name 22 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R42/R43 – 3P RWD

Component Part Number : LJ98-14G069-AZC

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Component Name 23 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R42/R43 – 4P AWD

Component Part Number : LJ98-14G069-BBC

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Component Name 24 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R42/R43 – 4P RWD

Component Part Number : LJ98-14G069-BDC

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Component Name 25 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R44 – 3P AWD

Component Part Number : LJ98-14G069-AXD

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Component Name 26 : Secondary On-Board Diagnostic Control Module Softw

Component Description : R44 – 3P RWD

Component Part Number : LJ98-14G069-AZD

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**Component Name 27 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 – 4P AWD

**Component Part Number :** LJ98-14G069-BDD

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**Component Name 28 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 – 4P RWD

**Component Part Number :** LJ98-14G069-BDD

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**Component Name 29 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR1 – 3P AWD

**Component Part Number :** LJ98-14G069-AXE

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**Component Name 30 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR1 – 3P RWD

**Component Part Number :** LJ98-14G069-AZE

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**Component Name 31 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR1 – 4P AWD

**Component Part Number :** LJ98-14G069-BBE

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**Component Name 32 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR1 – 4P RWD

**Component Part Number :** LJ98-14G069-BDE

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**Component Name 33 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR2/SR3 – 3P AWD

**Component Part Number :** LJ98-14G069-AXF

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**Component Name 34 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR2/SR3 – 3P RWD

**Component Part Number :** LJ98-14G069-AZF

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**Component Name 35 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR2/SR3 – 4P AWD

**Component Part Number :** LJ98-14G069-BBF

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**Component Name 36 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR2/SR3 – 4P RWD

**Component Part Number :** LJ98-14G069-BDF

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**Component Name 37 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR4 – 3P AWD

**Component Part Number :** LJ98-14G069-AXG

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**Component Name 38 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR4 – 3P RWD

**Component Part Number :** LJ98-14G069-AZG

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**Component Name 39 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR4 – 4P AWD

**Component Part Number :** LJ98-14G069-BBG

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**Component Name 40 :** Secondary On-Board Diagnostic Control Module Softw

**Component Description :** R44 SR4 – 4P RWD

**Component Part Number :** LJ98-14G069-BDG

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Component Name 41 : Battery Energy Control Module Software

Component Description : R19/R30 – 3P

Component Part Number : LJ98-14C197-AF

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Component Name 42 : Battery Energy Control Module Software

Component Description : R19/R30 – 4P

Component Part Number : LJ98-14C197-BF

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Component Name 43 : Battery Energy Control Module Software

Component Description : R31/R32/R33 – 3P

Component Part Number : LJ98-14C197-AG

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Component Name 44 : Battery Energy Control Module Software

Component Description : R31/R32/R33 – 4P

Component Part Number : LJ98-14C197-BG

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Component Name 45 : Battery Energy Control Module Software

Component Description : R41/R42 – 3P

Component Part Number : LJ98-14C197-AH

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Component Name 46 : Battery Energy Control Module Software

Component Description : R41/R42 – 4P

Component Part Number : LJ98-14C197-BH

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Component Name 47 : Battery Energy Control Module Software

Component Description : R43/R44 – 3P

Component Part Number : NJ98-14C197-AA

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Component Name 48 : Battery Energy Control Module Software

Component Description : R43/R44 – 4P

Component Part Number : NJ98-14C197-BA

Component Name 49 : Battery Energy Control Module Software

Component Description : R44 SR1/SR2/SR3/SR4 – 3P

Component Part Number : NJ98-14C197-AB

Component Name 50 : Battery Energy Control Module Software

Component Description : R44 SR1/SR2/SR3/SR4 – 4P

Component Part Number : NJ98-14C197-BB

## Supplier Identification :

### Component Manufacturer

Name : Ford Motor Company

Address : One American Road  
Dearborn Michigan 48126

Country : United States

## Chronology :

On April 12, 2022, an issue pertaining to high voltage battery main contactor overheating was brought to Ford's Critical Concern Review Group for review.

In April and May of 2022, Ford investigated warranty claims to quantify performance differences between vehicle variants. Ford conducted a read-across of other vehicle lines utilizing high voltage battery contactors.

Between July 13, 2021 and May 31, 2022, there have been 286 warranty claims in North America related to an open or welded contactor. Ford is aware of one VOQ alleging a no-start and listing DTCs related to this concern.

On June 3, 2022, Ford's Field Review Committee reviewed the concern and approved a field action.

Ford is not aware of any reports of accident or injury related to this condition.



## Description of Remedy :

Description of Remedy Program : The remedy for this program is a Secondary On-Board Diagnostic Control Module (SOBDMC) and Battery Energy Control Module (BECM) software update. Ford is anticipated to begin Over-The-Air (OTA) deployment to update the SOBDMC an BECM software for affected vehicles in July 2022. Alternatively, owners will have the option to take their vehicle to a Ford or Lincoln dealer to complete the software update. There will be no charge for this service.

Ford provided the general reimbursement plan for the cost of remedies paid for by vehicle owners prior to notification of a safety recall in May 2021. The ending date for reimbursement eligibility is estimated to be January 31, 2023

Ford will forward a copy of the notification letters to dealers to the agency when available.

How Remedy Component Differs from Recalled Component : The updated SOBDMC software (LJ98-14G069-AXG, LJ98-14G069-AZG, LJ98-14G069-BBG, LJ98-14G069-BDG) will monitor contactor temperature and intelligently reduce battery power to prevent damage to the contactor. The updated BECM software (NJ98-14C197-AE, NJ98-14C197-BD) will monitor contactor resistance to identify an overheated contactor and reduce vehicle power to prevent further damage.

Identify How/When Recall Condition was Corrected in Production : The updated SOBDMC software and BECM software was introduced into production on May 25, 2022.

## Recall Schedule :

Description of Recall Schedule : Notification to dealers is expected to occur on June 13, 2022. Mailing of owner notification letters is expected to begin July 18, 2022 and is expected to be completed by July 22, 2022.

Planned Dealer Notification Date : JUN 13, 2022 - JUN 13, 2022

Planned Owner Notification Date : JUL 18, 2022 - JUL 22, 2022

\* NR - Not Reported