

## CERTAIN 2021 MODEL YEAR F-150 AND MUSTANG MACH-E VEHICLES WITH FORD CO-PILOT360™ ACTIVE 2.0 PREP PACKAGE (INCLUDES FORD BLUECRUISE PREP KIT) - BLUECRUISE MODULE PROGRAMING

### **NEW !** SERVICE PROCEDURE

#### Module Programming

#### **NEW !** 1. Check the vehicle's **State Of Charge Parameter Identification Data (PID)** by performing the following:

- Launch the Ford Diagnostic and Repair System (FDRS) and navigate to toolbox tab > datalogger > BCM and select **BATT SOC PID**.
- Ensure that the **BATT\_SOC PID** reads over 80%. If the PID is less than 80%, fully recharge the vehicle's 12-volt battery using the appropriate Rotunda battery tester and charger.
- Remove the charger from the vehicle and using FDRS, navigate to toolbox tab > BCM > **Reset Battery**.
- Monitor Sensor Learned Values application. Perform the BMS reset.
- Connect the Rotunda battery tester and charger and set it to maintain 12.6 to 13.6 volts. Monitor the voltage real time using the indicator at the bottom right corner of FDRS to ensure that it is within this range.

**NOTE:** Verify that the negative cable of the charger is installed on a chassis or engine ground, and not the 12 volt battery negative terminal to prevent the battery saver mode from activating on the vehicle.

**NOTE:** If the diagnostic software does not load or if the vehicle cannot be identified properly, make sure there is a good internet connection and the Vehicle Communication Module (VCM) is properly connected to the Data Link Connector (DLC).

**NEW ! NOTE:** VCM 3 is recommended for improved data download time.

#### **NEW !** 2. Log into Ford Diagnostic and Repair System (FDRS). Ensure FDRS is updated to the latest version at 31.6.7 or higher.

**NOTE:** A blank 32GB or larger USB flash drive is required for APIM, TCU, Cluster, and GWM software updates. Make sure the USB flash drive being used is formatted correctly. To see the available drives, hold down the Windows icon keyboard key and press the E keyboard key. Right click on the USB flash drive and select Properties. If File System under the General tab is not exFAT, the drive must be formatted. To format the USB flash drive, right click on the USB flash drive, select Format, select exFAT for the File System, and select Default Allocation Size for the Allocation Unit Size. De-selecting Quick Format is not necessary and will result in a lengthier operation.

3. Start a new FDRS session.

**NOTE:** Vehicle information is automatically retrieved by the diagnostic software and a Network Test is run. Vehicle identification data appears on the screen when this is complete.

4. Select **Toolbox** tab.



**NEW !** **STEPS 5 THROUGH 10 WILL BE USED MULTIPLE TIMES DURING STEPS 11 THROUGH 18.**

5. Select **Software Updates** tab to see updates available.
6. Select the module from the Module Programming Sequence section below starting at Step 11.
7. When prompted by the FDRS, connect the USB flash drive to the personal computer (PC).
8. When prompted by the FDRS, safely remove/eject the USB flash drive from the PC, turn the vehicle to Key On Engine Running (KOER), and connect the USB to the media hub to install the software update. The update starts automatically and may take 10 minutes or longer to complete.

**NOTE:** It may take up to 5 minutes for the vehicle to recognize the USB flash drive with software update.

- NEW !** 9. For APIM, TCU, Cluster, and GWM USB software updates when SYNC touchscreen prompts to restart the vehicle:
- *Turn the vehicle OFF.*
  - *Open the driver door.*
  - *Wait ten minutes to allow the vehicle to power down.*
  - *Close the driver's door.*
  - *Turn the vehicle to KOER.*

- NEW !** 10. Leave the USB drive inserted into the vehicle, until the vehicles infotainment display screen states **programming successful**.

**NOTE:** It may take up to 5 minutes before SYNC touchscreen displays Update Successful pop up. After 5 minutes if “Successful” pop up is not shown on SYNC touchscreen, remove the USB and select **YES** on the FDRS “Was the USB Update Successful” prompt (FDRS verifies if the module software update was successfully installed on the module).

- NEW !** **NOTE:** Repeat Steps 5-10 (*while performing Steps 11-18*) until no more software updates are available for modules covered in Steps 11-18.

## MODULE PROGRAMMING SEQUENCE

**NEW ! IMPORTANT NOTE:** Modules need to be programmed in *exactly* the order as listed below (*some are repeated*) unless there is no update available. Module updates will vary per vehicle based on Ford Power-UP over-the-air (OTA) updates previously completed. Some modules may already be at the latest level.

- NEW !** 11. Select **GWM** - Gateway Module (GWM) – software update.
- *See Steps 5-10.*
  - Run application.
  - If no more software updates are available, move to the next module in the sequence.



**NEW ! NOTE:** *If FSA 22B08 is open for this vehicle, perform that field action before proceeding.*

- NEW !** 12. Select **TCU** - Telematics Control Unit (TCU) - software update.
- *See Steps 5-10.*
  - Run application.
  - If error message on SYNC display screen or no activity after 10 minutes.
    - *See TSB 22-2150 - Module Recovery.*
  - Retry TCU software update with same USB drive.

- NEW !** 13. Select **APIM** - Accessory Protocol Interface Module (APIM/SYNC) - software update.
- *See Steps 5-10.*
  - Run application.
  - Follow General Service Bulletin (GSB) 21-7088 - SYNC Programming, USB flash drive method.
  - If error message on SYNC display screen or no activity after 10 minutes.
    - *See TSB 22-2150 - Module Recovery.*
  - Retry APIM software update with same USB drive.

**NEW ! NOTE:** *Step 14 is a required step separate from Step 11. Please follow all steps exactly as written.*

- NEW !** 14. Select **GWM** - Gateway Module (GWM) - software update.
- *See Steps 5-10.*
  - Run application.
  - If no update is available, move to the next module in the sequence.

- NEW !** 15. Select **IPMA** – Image Processing Module A (IPMA) - software update.
- *See Steps 5-10.*
  - Run application
  - Coordinated update of four modules.
  - Select **OK** if conditions are met to continue to next module including; Camera Module Rear (CMR), then Cruise Control Module (CCM) module, and then the Power Steering Control Module (PSCM).
  - Refer to TSB's [22-2121](#) and [22-2109](#).

- NEW !** 16. Select **APIM** - Accessory Protocol Interface Module (APIM) - software update.
- *See Steps 5-10.*
  - Run application.
  - *If no update is available, move to the next module in the sequence.*

- NEW !** 17. Select **GWM** - Gateway Module (GWM) - software update.
- *See Steps 5-10.*
  - Run application.
  - If no update is available, move to the next module in the sequence.

- NEW !** 18. Select **IPC** - Instrument Panel Cluster (IPC) - software update.
- *See Steps 5-10.*
  - Run application.
    - *If IPC module fails to update over USB, FDRS should ask "Did the update install successfully?", select "**NO**".*

**NEW ! NOTE:** *Additional information for step 18 can be found on the following page.*



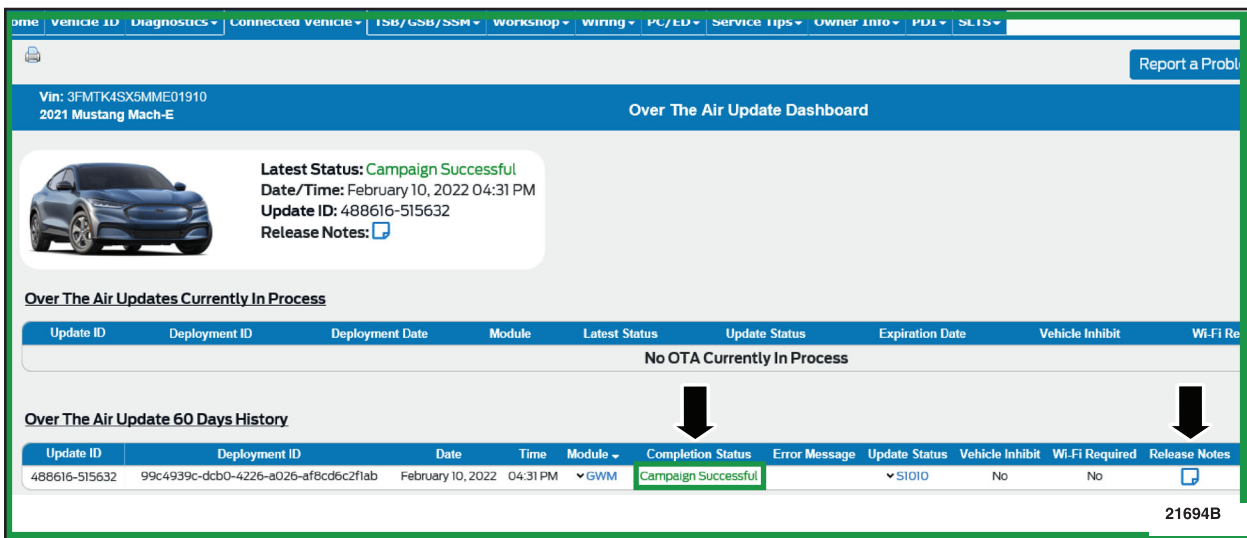
**NEW ! NOTE** (For Step 18. Continued): If software is at the latest level, "Run Application" will not be available.

- Follow FDRS prompts and select: "Try CAN programming process". Reprogram time takes approximately 5 hours using VCM3 (program time is significantly longer with VCM2).
- No tech interaction is needed once programming has started.

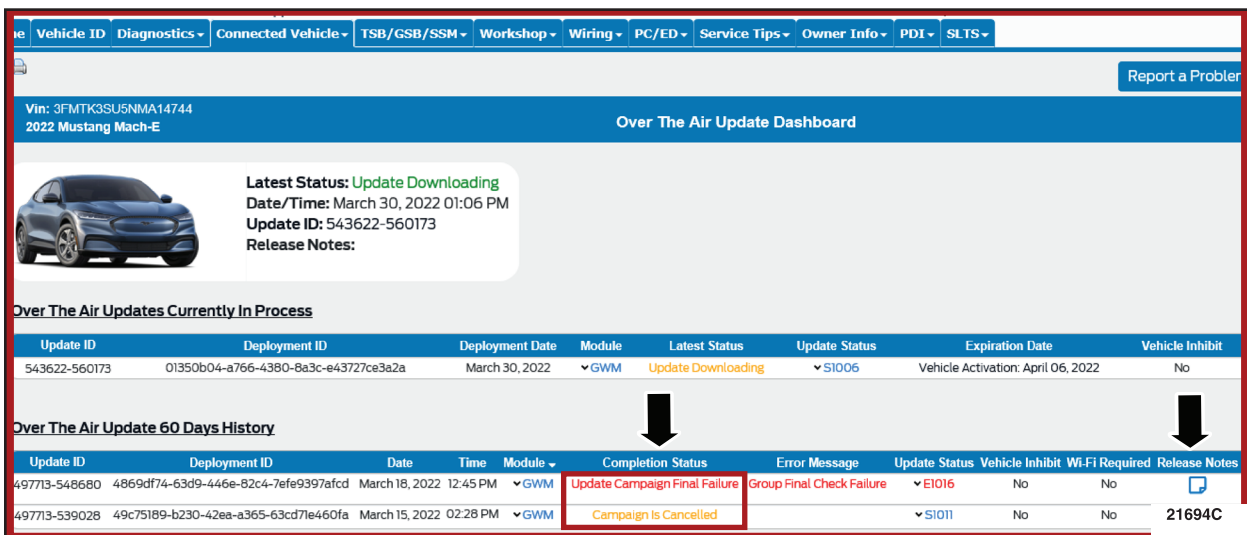
**NEW ! NOTE:** If software is at the latest level, "Run Application" will not be available.

- Verify that an Over The Air (OTA) update was previously installed.
- Log into Professional Technician System (PTS) > Connected Vehicle tab > OTA Dashboard. Click on **Release Notes** to confirm what was included in the OTA update.
- If "Campaign Successful" – continue to the next step.
- If "Failed" or "Canceled" - Refer to "If IPC module fails to update" above. See Figures 1 and 2.

**NEW ! NOTE:** Mach-E shown, F-150 similar.



**FIGURE 1**



**FIGURE 2**



**NEW !** 19. Mach-E vehicles **ONLY. Not required for F-150.**

- Does FSA 21P22 need to be performed?  
YES - Perform FSA 21P22 then proceed to Step 20.  
NO - Proceed to Step 20.

**NEW !** 20. Select **GWM** - Gateway Module (GWM) - software update.

- *See Steps 5-10.*
- Run application.
- If no update is available, move to the next module in the sequence.

**NEW !** 21. Select **APIM** - Accessory Protocol Interface Module (APIM / SYNC) - software update.

- *See Steps 5-10.*
- Run application.
- *If no update is available, move to the next Step.*

**NEW !** 22. Mach-E vehicles **ONLY. Not required for F-150.**

- Select Toolbox tab in FDRS.
- Perform two (2) hard resets from FDRS main menu to reset SYNC (Otherwise hands free option will not be visible).
- Select **APIM** – Reset the SYNC module [APIM] / **Download and Run.**

**NEW !** 23. F-150 vehicles.

- *Select Toolbox tab in FDRS.*
- Perform a hard reset from FDRS main menu to reset SYNC (otherwise hands-free option will not be visible).
- *Select **APIM** – Reset the SYNC module [APIM] / **Download and Run.***

**NOTE:** *Technical information continued on the following page.*



**NEW ! NOTE:** Program appropriate vehicle modules before performing diagnostics and clear all DTCs after programming. For DTCs generated after programming, follow normal diagnostic service procedures.

24. Testing BlueCruise to confirm installation (BlueCruise test drive over 0.5 hours is optional).

- Ensure BlueCruise is fully installed and activated by going to SYNC and selecting Adaptive Cruise Control. Ensure Adaptive Cruise Control is turned ON and Lane Centering with Hands-Free is switched ON.
- Ensure availability of BlueCruise operation by going to SYNC and selecting General, then Settings, then About SYNC. Ensure the “Hands-Free Driving Mode available” shows a date in the future.
  - *See Figure 3 below for Mach-E, F-150 similar.*
  - *Figure 3 example shows an expiration date of March 14, 2022 which is past.*
  - *If the expiration date has past, the GWM has not been fully updated. Return to step 11.*
- Determine the nearest hands-free Blue Zone roadway entry ramp locations near your Dealership.
  - *See attachment IV.*
  - *GPS Coordinates can be used with online mapping to provide directions from dealer. Ranked per closest entry point.*
  - *Some dealers may not have a Blue Zone within a reasonable distance but can still test the Hands-On function.*
  - *The Hands-On BlueCruise function can still be tested on any open highway with clearly defined lane markings with a vehicle speed above 40 mph (64kmh).*
- If test drive can be completed within the allocated Labor Time of 0.5 Hours, perform test drive.

**NOTE:** Technical information continued on the following page.

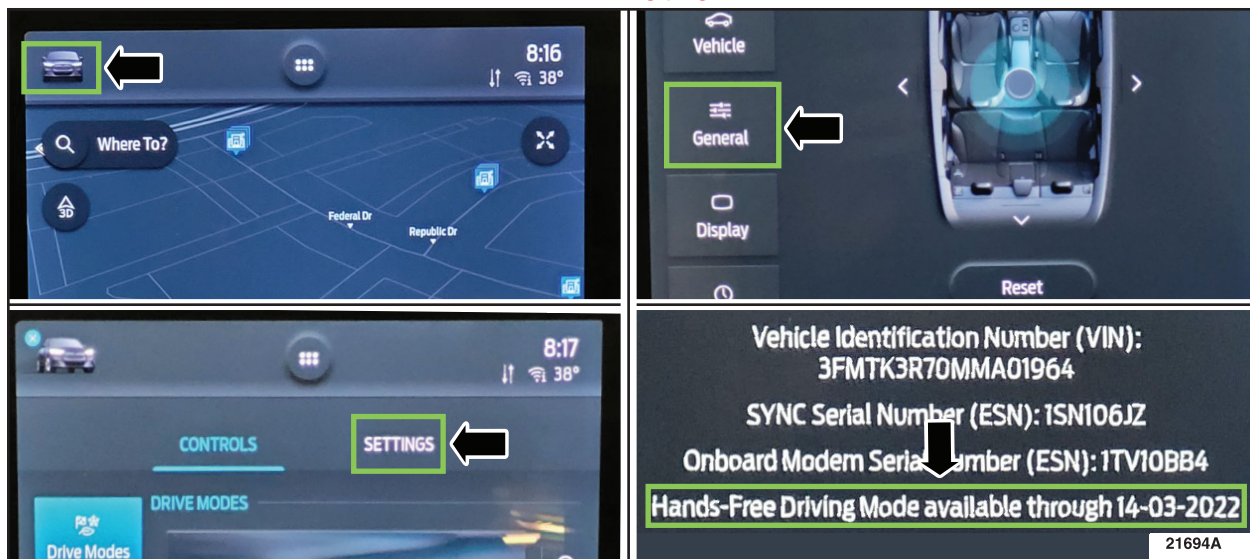


FIGURE 3



## Important Information for Module Programming

**NOTE:** When programming a module, use the following basic checks to ensure programming completes without errors.

- Make sure the 12V battery is fully charged before carrying out the programming steps.
- Connect FDRS/scan tool to a power source.

**NOTE:** A good internet connection is necessary to identify the vehicle and to load the diagnostic software.

- Inspect VCM/VCMM and cables for any damage. Make sure scan tool connections are not interrupted during programming.
- A hardwired connection is strongly recommended.
- Turn off all unnecessary accessories (radio, heated/cooled seats, headlamps, interior lamps, HVAC system, etc.) and close doors. • Disconnect/depower any aftermarket accessories (remote start, alarm, power inverter, CB radio, etc.).
- Follow all scan tool on-screen instructions carefully.
- Disable FDRS/scan tool sleep mode, screensaver, hibernation modes.
- Create all sessions key-on-engine-off (KOEO). Starting the vehicle before creating a session will cause errors within the programming inhale process.

## Recovering a module when programming has resulted in a blank module

- Disconnect the VCMII or VCMM from the data link connector (DLC) and your PC.
- After ten seconds, reconnect the VCMII/VCMM to the DLC and the PC. Launch FDRS. The VCMII/VCMM icon should turn green in the bottom right corner of the screen. If it does not, troubleshoot the FDRS to VCM connection.
- If you are using the same FDRS as the initial programming attempt, select the appropriate VIN from the Vehicle Identification menu. If you are using a different FDRS, select “Read VIN from Vehicle” and proceed through the Network Test.
- In the Toolbox menu, navigate to the failed module and Download/Run Programmable Module Installation (PMI). Follow the on-screen prompts. When asked if the original module is installed, select “No” and continue through the installation application.
- Once programming has completed, a screen may list additional steps required to complete the programming process. Make sure all applicable steps are followed in order.

