| | GROUP | MODEL |
|---|---|---|
| | **Emissions Service Campaign** | **2019-2021 Multiple Models with IVT** |
| | NUMBER | DATE |
| | **SC199 (Rev 4, 06/12/2023)** | **December 2020** |

# VOLUNTARY EMISSIONS SERVICE CAMPAIGN

SUBJECT:

## IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT (SC199)

**✶ NOTICE**

**This bulletin has been revised to include additional information. New/revised sections of this bulletin are indicated by a black bar in the margin area.**

**(This bulletin was previously referred as 'SA424' or 'ELE 200'.)**

This bulletin provides the procedure to update the Transmission Control Module (TCM) software logic and, if necessary, replace the Intelligent Variable Transmission (IVT) on certain 2019-2021MY vehicles listed in the chart below. The affected vehicles may exhibit the illumination of MIL with the DTC(s) listed below in addition to a lack of acceleration or delay in accelerating due to transmission slippage. To correct this concern, apply the improved software logic to the CVT system using the KDS ECU Upgrade function as described in this bulletin and, if necessary, replace the IVT assembly. For confirmation that the latest reflash has been applied to a vehicle you are working on, verify the ROM ID using the table on page 4. Before conducting the procedure, verify the vehicle is included in the list of affected VINs.

**DTC(s):**
**P0730 – Incorrect Gear Ratio**
**P0731 – Gear 1 Incorrect Ratio**
**P0741 – Torque Converter Clutch Circuit Performance or Stuck Off**
**P0867 – Transmission fluid pressure**

| MY | Model | Production Date |
|---|---|---|
| 2019-2020 | Forte (BDm) | 07/09/18 – 04/02/20 |
| 2020-2021 | Soul (SK3) | 11/24/18 – 04/17/20 |
| 2021 | Seltos (SP2) | 11/20/19 – 04/10/20 |

**✶ NOTICE**

**To assure complete customer satisfaction, always remember to refer to KDealer+ Warranty Coverage (validation) Inquiry Screen (Service → Warranty Coverage → Warranty Coverage Inquiry) for a list of any additional campaigns that may need to be performed on the vehicle before returning it to the customer.**

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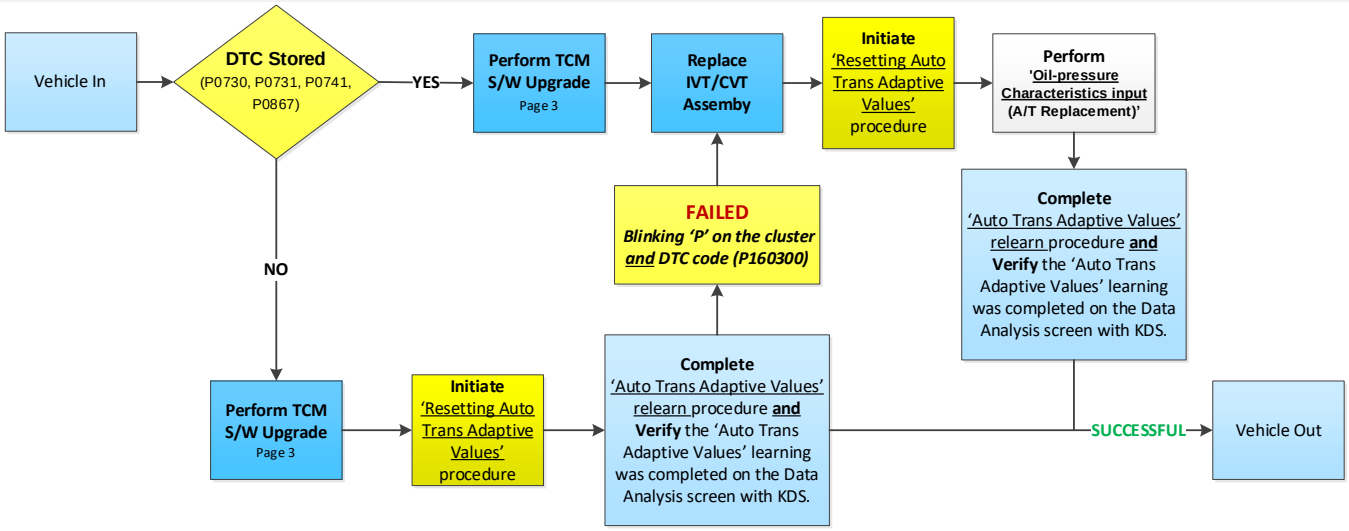
## Flowchart:




## Vehicle In DTC(s):

- **P0730 – Incorrect Gear Ratio**
- **P0731 – Gear 1 Incorrect Ratio**
- **P0741 – Torque Converter Clutch Circuit Performance or Stuck Off**
- **P0867 – Transmission fluid pressure**

## After completing 'Resetting Auto Trans Adaptive Values' on the KDS:

- **P160300 – P-Learning Fail (CVT System)**

**ⓘ IMPORTANT**

**When replacing the IVT/CVT assembly, carefully follow the installation procedure outlined on KGIS to complete the Auto Trans Adaptive Values learning procedure. Performing the 'Oil-pressure Characteristics Input', refer to the IMPORTANT and NOTICE boxes on page 10. The adaptive values learning procedure may require that the engine be shut OFF/ON multiple times until the values are fully learned; start the vehicle, confirm the vehicle is idling in 'Park' without accelerator or brake input and verify the 'CVT Learning – P Range' Current Data reads 'ON'.**

**A Vehicle Diagnosis Number (VDN) must be created with at least one of the five (5) DTCs listed above, prior to IVT replacement. If a VDN is not created, Parts Ordering and Warranty claim submission issues WILL occur.**

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## ECU Upgrade Procedure:

To correct this condition, the ECU should be reprogrammed using the KDS download, as described in this bulletin.

| Upgrade Event Name |
|---|
| **494. BD/BDM NU 2.0MPI ATK CVT/IVT DRIVING PERFORMANCE IMPROVEMENT** |
| **495. SK3 NU 2.0MPI ATK CVT/IVT DRIVING PERFORMANCE IMPROVEMENT** |
| **496. SP2 NU 2.0MPI ATK CVT/IVT DRIVING PERFORMANCE IMPROVEMENT** |

### ✶ NOTICE

- **A fully charged battery is necessary before ECU upgrade can take place. It is recommended that a battery charger is used in ECU mode during reflashing or the use of a fully charged jump starter box connected to the battery.**
- **DO NOT connect any other battery charger to the vehicle during ECU upgrade.**
- **Ensure the KDS or GDS is sufficiently charged prior to reflash.**
- **All ECU upgrades must be done with the ignition key in the 'ON' position.**
- **Be careful not to disconnect the VCI-II connected to the vehicle during the ECU upgrade procedure.**
- **DO NOT start the engine during ECU upgrade.**
- **Do NOT turn the ignition key 'OFF' or interrupt the power supply during ECU upgrade.**
- **When the ECU upgrade is completed, turn the ignition 'OFF' and wait 10 seconds before starting the engine.**
- **ONLY use approved ECU upgrade software designated for the correct model and model year.**

### ✶ NOTICE

**Before attempting an ECU upgrade on any Kia model, make sure to first determine whether the particular model is equipped with an immobilizer security system. Failure to follow proper procedures may cause the PCM to become inoperative after the upgrade and any claims associated with this repair may be subject to chargeback.**

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## * NOTICE

**It is recommended to ALWAYS check the Electronic Parts Catalog (EPC) to locate the ECU Part Number respective to Auto/Manual Mode ROM IDs. DO NOT reference the parts label affixed to the ECU.**

### ROM ID INFORMATION TABLE:

**Upgrade Event #494 (BDm), #495 (SK3) and #496 (SP2).**

| Model | EM | TM | IMMO | ECU P/No. | ROM ID | |
|---|---|---|---|---|---|---|
| | | | | | Previous | New |
| Forte (BDm) | Nu 2.0L MPI Atkinson | CVT/IVT | Yes | 39171 2ECA0<br>39171 2ECA1<br>39171 2ECB0<br>39171 2ECB1<br>39171 2ECD0<br>39171 2ECD1<br>39171 2ECD2<br>39171 2ECE0<br>39171 2ECE1<br>39171 2ECE2<br>39173 2ECA0<br>39173 2ECA1<br>39173 2ECB0<br>39173 2ECB1<br>39173 2ECD0<br>39173 2ECD1<br>39173 2ECD2<br>39173 2ECE0<br>39173 2ECE1<br>39173 2ECE2 | CBD0N20NS0<br>CBD0N20NS1<br>CBD0N20NS2<br>CBD0N20NS3<br>CBD0N20NS4<br>CBD0N20NS5<br>CBD0N20NS6<br>CBD0N20NS7<br>CBD0N20NS8 | CBD0N20NS9 |
| Soul (SK3) | | CVT/IVT | | 39171 2ELA0<br>39171 2ELA2<br>39171 2ELB0<br>39171 2ELC0<br>39171 2ELC1<br>39171 2ELC2<br>39173 2ELB0<br>39173 2ELC0<br>39173 2ELC1<br>39173 2ELC2 | CSK0N20NS0<br>CSK0N20NS1<br>CSK0N20NS2<br>CSK0N20NS3<br>CSK0N20NS4<br>CSK0N20NS5 | CSK0N20NS6 |
| Seltos (SP2) (2WD) | | CVT/IVT | | 39171 2EPT0<br>39171 2EPT2<br>39173 2EPT0<br>39173 2EPT2 | CSP2N20NS0<br>CSP2N20NS1<br>CSP2N20NS2<br>CSP2N20NS3<br>CSP2N20NS4 | CSP2N20NS5 |
| Seltos (SP2) (4WD) | | | | 39171 2EPV0<br>39171 2EPV2<br>39173 2EPV0<br>39173 2EPV2 | CSP4N20NS0<br>CSP4N20NS1<br>CSP4N20NS2<br>CSP4N20NS3<br>CSP4N20NS4 | CSP4N20NS5 |

***To verify the vehicle is affected, be sure to check the Calibration Identification of the vehicle's ECM ROM ID and reference the Information Table as necessary.***

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## ✶ NOTICE

**Prior to performing the ECU upgrade, be sure to check that the KDS is fully charged.**

1. Connect the VCI-II to the OBD-II connector, located under the driver's side of the instrument panel.

### ✶ NOTICE

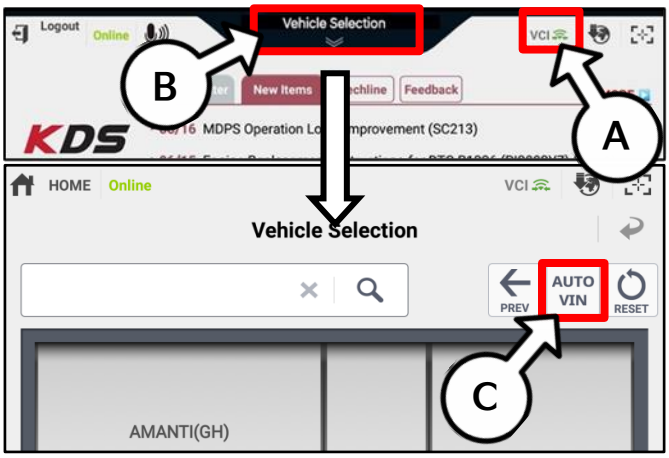
**The ECU upgrade function on KDS operates wirelessly. It is not necessary to perform the upgrade via USB cable.**

2. With the ignition ON, turn ON the KDS tablet. Select **KDS** from the home screen.

3. Confirm communication with VCI (A) and then configure the vehicle (B) using the **AUTO VIN** (C) feature.

### ✶ NOTICE

**Be sure to perform DTC scan prior to initializing software upgrade.**




4. Select **ECU Upgrade**.

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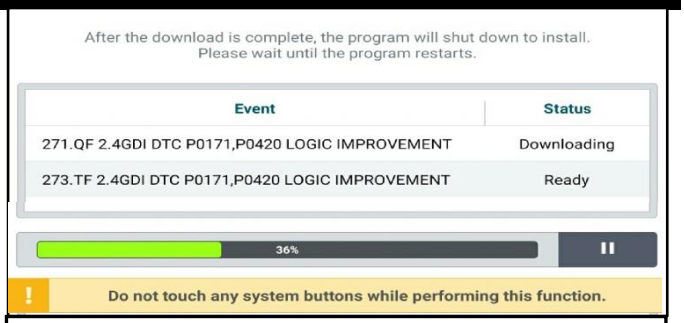
5. The KDS will check the server for recently uploaded Events and then automatically download **Upgrade Event #494 (BDm), #495 (SK3) or #496 (SP2).**

**★ NOTICE**

**The vehicle must be identified in Vehicle Selection to download an Event for that vehicle.**

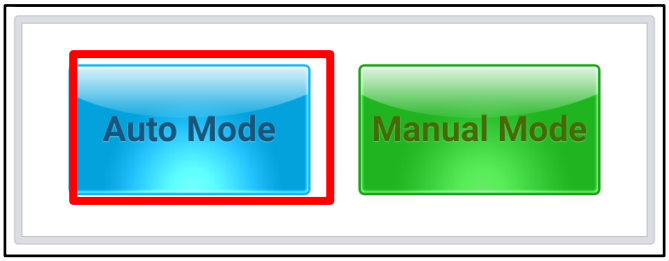



**KDS screenshot shown above is for demonstration purposes only. Events shown in screenshot are not applicable to this bulletin.**

6. Select **Auto Mode**.

**⚠ CAUTION**

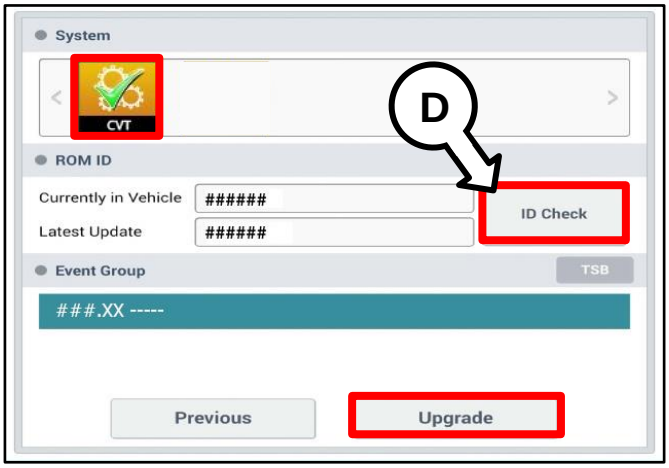
**Do NOT attempt to perform a Manual Mode upgrade <u>UNLESS Auto Mode fails</u>. Always follow the instructions given on the KDS in either Auto or Manual mode.**




7. Select the **CVT** system under the System selection menu.

Touch **ID Check** (D) and confirm that the latest update is available.

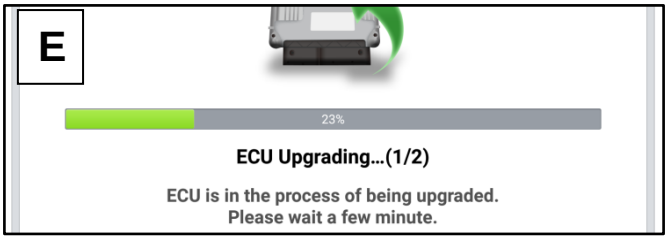
Select **Upgrade Event #494 (BDm), #495 (SK3) or #496 (SP2)** and select **Upgrade** to continue.

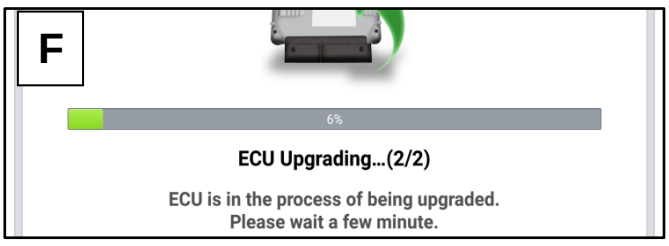



8. The ECU upgrade will begin and the progress of the upgrade will appear on the bar graph. Upgrade part (1/2) (E) will download the upgrade event to the VCI-II. Upgrade part (2/2) (F) will upgrade the ECU.

**⚠ CAUTION**

**Do not touch the system buttons (like 'Back', 'Home', 'etc.') while performing ECU Upgrade.**



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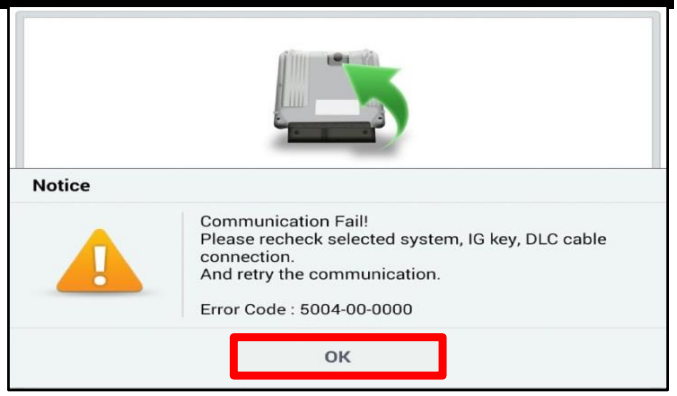
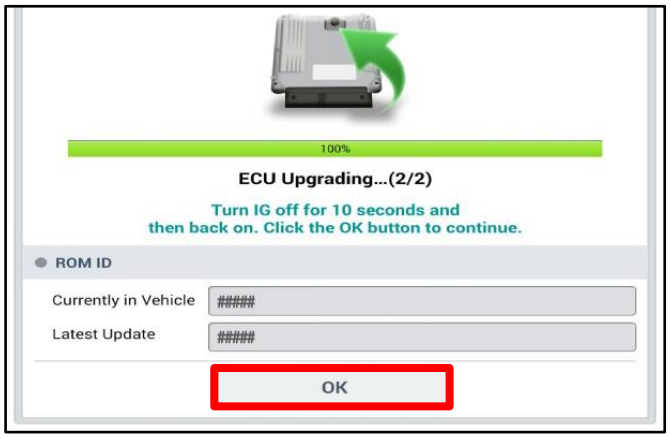
9. If a "Communication Fail" screen appears, verify that the VCI-II and KDS are communicating properly. Touch **OK** and restart the procedure from step 4.



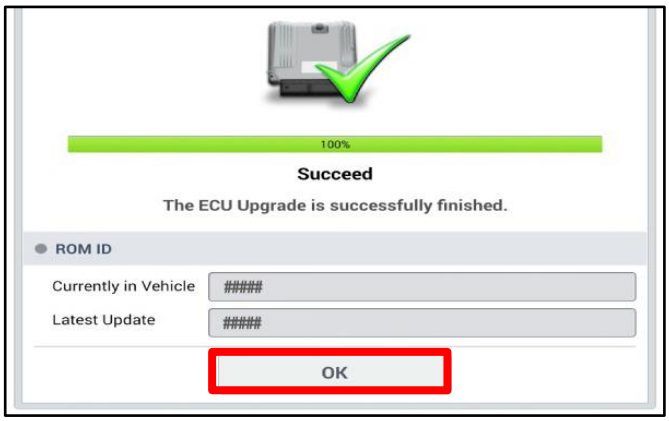

**✶ NOTICE**

**If an error notice continues to appear or if the upgrade cannot be performed, DO NOT disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.**

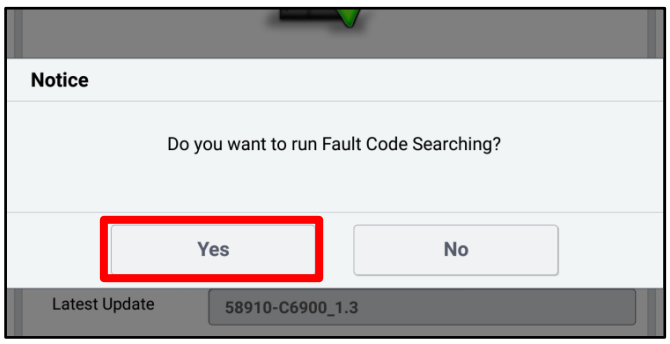
10. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Touch **OK** to continue.




11. Once the upgrade is complete, touch **OK** to finalize the procedure.




12. When prompted, select **YES** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.



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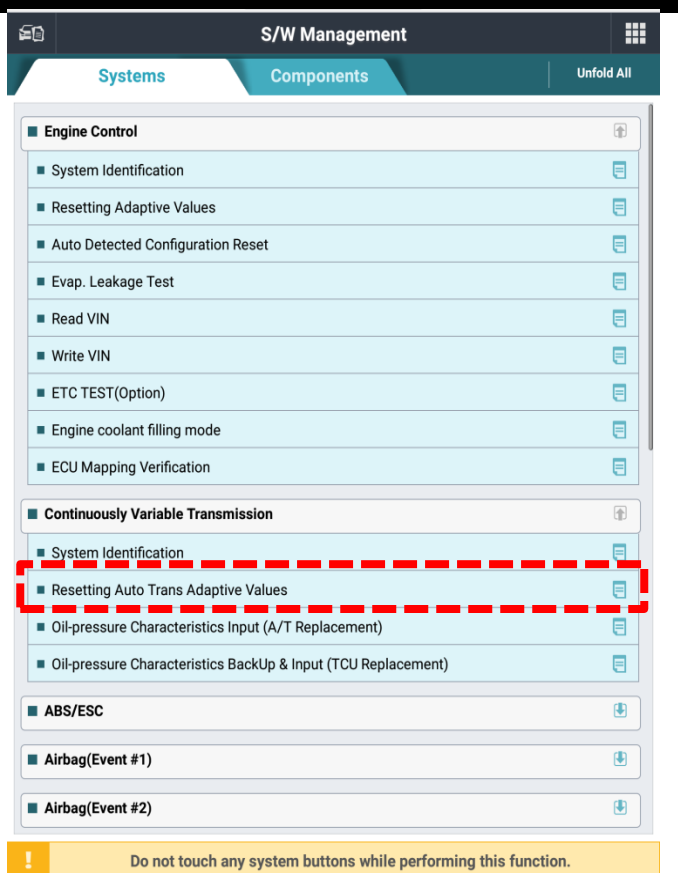
13. **Initiate** the **'Resetting Auto Trans Adaptive Values'** procedure with KDS.

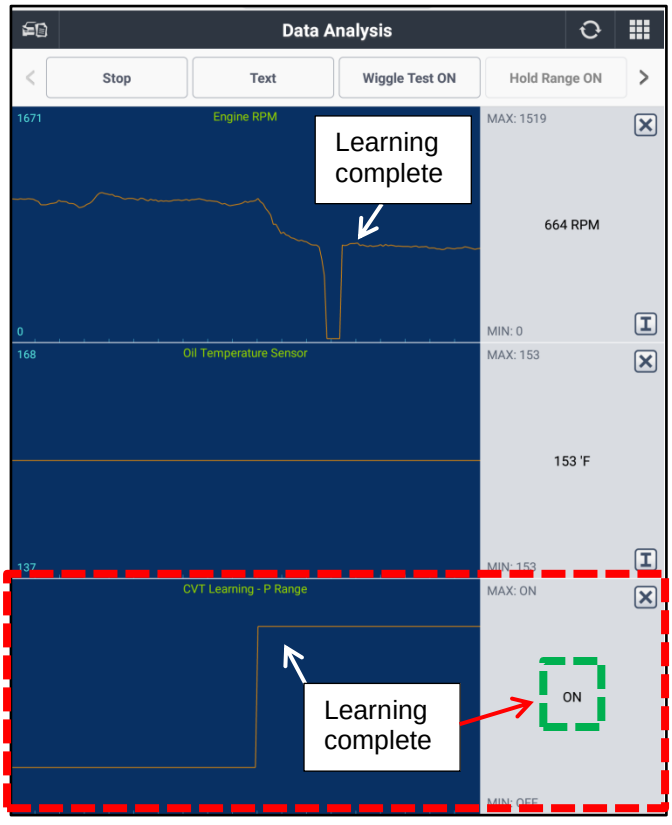
14. **Complete** the **'Auto Trans Adaptive Values'** relearn procedure.

    **Note**: For additional information regarding TCM Adaptive Values Learning, refer to the "IVT → IVT Control Systems → Repair procedures" chapter in the applicable Shop Manual on KGIS.




15. On the KDS home menu, enter the CVT module 'Data Analysis' screen and **verify** the 'Auto Trans Adaptive Values' learning was completed on the Data Analysis screen with KDS.

    **Note: The adaptive values learning procedure may require that the engine be shut OFF/ON multiple times until the values are fully learned; start the vehicle, confirm the vehicle is idling in 'Park' without accelerator or brake input and verify the 'CVT Learning – P Range' Current Data reads 'ON'.**




16. Start the engine to confirm proper operation of the vehicle.

17. If MIL with DTC P160300 is present **after** verifying and completing the 'Resetting Auto Trans Adaptive Values' procedure, then proceed to replace the IVT outlined on page 10.

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## Manual Upgrade Procedure:

**★ NOTICE**

**The manual upgrade should ONLY be performed if the automatic upgrade fails.**

**If the automatic upgrade fails, turn the ignition OFF for about 10 seconds then place it back in the ON position to reset the control unit BEFORE performing manual upgrade.**

**See table below for Manual Mode passwords.**

**Manual Mode ECU Upgrade Passwords**

| Menu | Password |
|---|---|
| BD/BDM NU 2.0MPI ATK CVT/IVT : 39171/3-2ECA0/A1/B0/B1/D0/D1/D2/E0/E1/E2 | 9171 |
| SK3 NU 2.0MPI ATK CVT/IVT : 39171/3-2ELA0/A2/B0/C0/C1/C2 | 3201 |
| SP2 NU 2.0MPI ATK CVT/IVT (2WD) : 39171/3-2EPT0/T2 | 1320 |
| SP2 NU 2.0MPI ATK CVT/IVT (4WD) : 39171/3-2EPV0/T2 | 1321 |

1. Within the ECU Upgrade screen displayed, select **Manual Mode**.

2. Select the **CVT** system under the System selection menu. Select **Upgrade Event #494 (BDm), #495 (SK3) or #496 (SP2)** and select **Upgrade** to continue.

3. Select the appropriate control unit part number with reference to the ROM ID Information Table on page 3, and select **OK**.

4. Enter the appropriate password from the Manual Mode password table above and select **OK**.

5. The upgrade will begin and the progress of the upgrade will appear on the bar graph.

6. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Touch **OK** to continue.

7. Once the upgrade is complete, touch **OK** to finalize the procedure.

8. When prompted, select **YES** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.

9. Start the engine to confirm proper operation of the vehicle.

Printed TSB copy is for reference only; information may be updated at any time. Always refer to KGIS for the latest information.

**SUBJECT:** IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT (SC199)

## Replacement Procedure:

1. Replace the IVT assembly by referring to the "2.0 MPI NU (ATKINSON) → Intelligent Variable Transmission (IVT) System (Continuous Variable Transmission) → Intelligent Variable Transmission → Repair procedures" chapter in the applicable Shop Manual on KGIS.

**★ NOTICE**

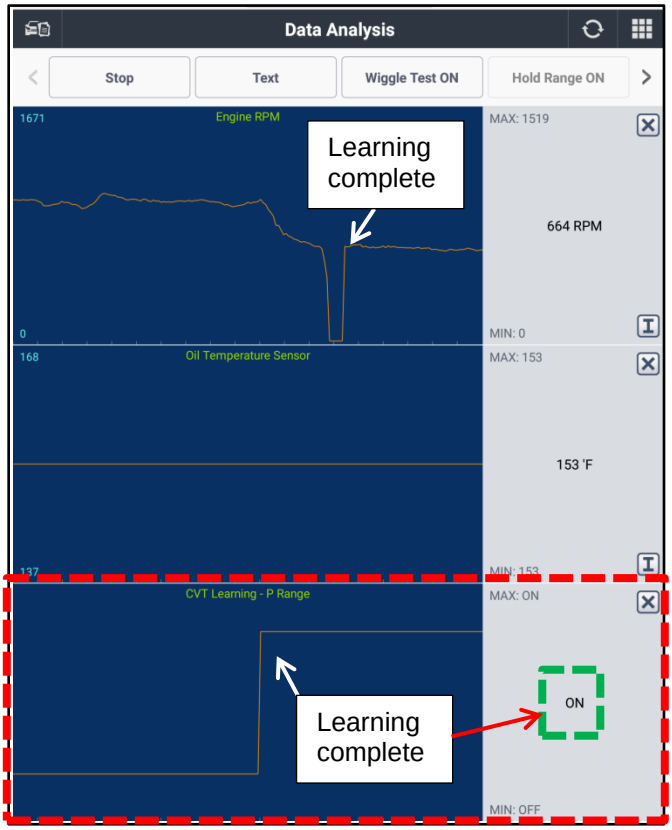
**Driveshaft lock nuts are <u>one time use</u>, replace if removed (2 per vehicle).**

**ⓘ IMPORTANT**

**Transmission cooler requires flushing for Seltos (SP2) and Soul (SK3). Flushing for Forte (BDm) is not required as it features a cooler/heater system.**

**ⓘ IMPORTANT**

1. **First <u>initiate</u> the 'Resetting Auto Trans Adaptive Values' procedure on the KDS.**
2. **Then, perform the 'Oil-pressure Characteristics input (A/T Replacement)' procedure on the KDS, select 'OK'.**
3. **<u>Complete</u> the 'Auto Trans Adaptive Values' relearn procedure.**
4. **<u>On the KDS home menu</u>, enter the CVT module 'Data Analysis' screen and confirm the Adaptive Values have learned*.**




**★ NOTICE**

**<u>Note</u>: The adaptive values learning procedure may require that <u>the engine be shut OFF/ON multiple times</u> until the values are fully learned; start the vehicle, confirm the vehicle is idling in 'Park' without accelerator or brake input and verify the 'CVT Learning – P Range' Current Data reads 'ON'.**

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**ATTENTION: THE PROOF OF CORRECTION CARD AND CAMPAIGN COMPLETION STICKER ARE RESTRICTED ONLY TO DEALERS IN THE FOLLOWING STATES:**
California, Connecticut, District of Columbia, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington. See Parts Information below to order the Proof of Correction Card and Campaign Completion Label from the PDC.

## VEHICLE EMISSION RECALL - PROOF OF CORRECTION CARD

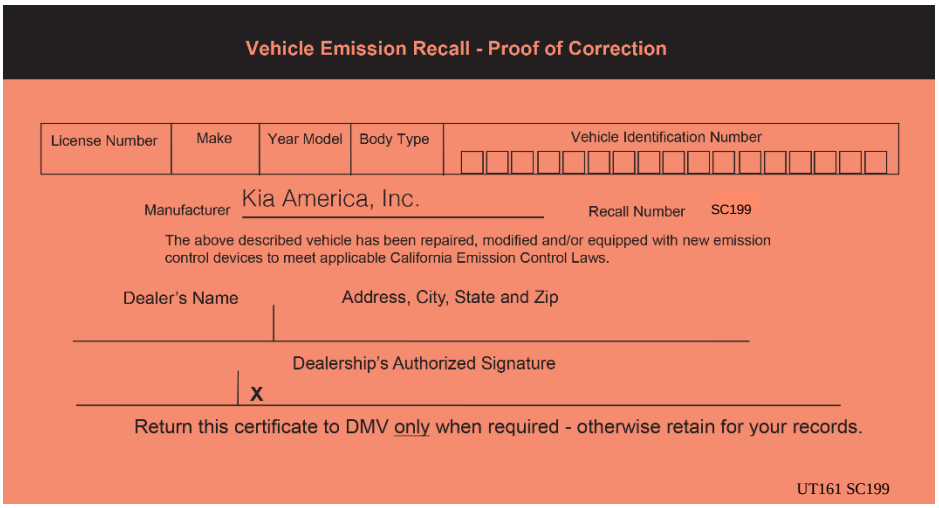
A Vehicle Emission Recall - Proof of Correction card must be filled out for all vehicles registered in California, Connecticut, Maine, Maryland, Massachusetts, New Jersey, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, New York and Delaware. Residents of these states, who own an affected vehicle, will be required to possess a Vehicle Emission Recall - Proof of Correction card as evidence of voluntary service campaign completion, when they apply for vehicle registration renewal.

### WHAT TO DO WITH THE CARD:

The Vehicle Emission Recall - Proof of Correction card must be completed by the Dealership's Service Manager using a permanent ink pen. A fine point pen is recommended. When filling in the information, copy the information directly from the vehicle, not the repair order. **ALL INFORMATION MUST BE PRINTED AND NEAT.**

**NOTE: DO NOT COMPLETE THE CARD UNLESS THE SERVICE CAMPAIGN WORK IS COMPLETED.**

The copy of the card shown below indicates the areas to be filled in. Each area must be filled in. The completed card should be given to the owner of the vehicle upon completion of the Campaign and placement of the **Campaign Completion Label** outlined below.




### FILLING OUT AND APPLYING THE CAMPAIGN COMPLETION LABEL (CA and S.177 STATES ONLY):

The dealer must fill in the Dealer Code and Date information fields on the Campaign Completion Label. Once complete, affix the campaign completion label under the hood of the vehicle, as shown below.

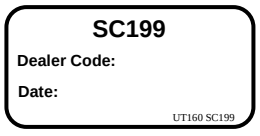
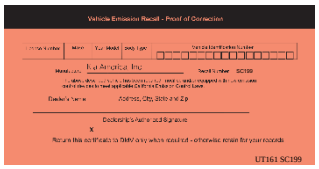
**CA and S.177 States Only**: Apply SC199 Campaign Completion Label onto the body in the area next to the shock tower, as shown. **NOTE: Be sure to clean the mounting surface to ensure proper label adhesion.**

**SUBJECT:** IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT (SC199)

## AFFECTED VEHICLE RANGE:

| Model | Production Date Range |
|---|---|
| Forte (BDm) | July 9, 2018 to April 2, 2020 |
| Soul (SK3) | November 24, 2018 to April 17, 2020 |
| Seltos (SP2) | November 20, 2019 to April 10, 2020 |

## REQUIRED PART:

| Model | Part Name | P/N (Remanufactured) | Figure | Qty. |
|---|---|---|---|---|
| Forte (BDm) | CVT/IVT Assembly | 48000 2H300QQKR | | 1 |
| Soul (SK3) | | 48000 2H351QQKR | | |
| Seltos (SP2) FWD | | 48000 2H353QQKR | | |
| Seltos (SP2) AWD | | 48000 2H751QQKR | | |
| ALL | Driveshaft Lock Nut | 49551-3X000 | | 2 |
| ALL (Except BDm) | Transmission Cooler Flush | UM013 CH060 | | 1 |
| ALL* | IVT Fluid SP-CVT1 | UM018 CH130 | N/A | Up to 7 Qts. |
| ALL | Campaign Completion Label | UT160 SC199 |   | 1 |
| ALL | Vehicle Emission Recall Proof of Correction Card | UT161 SC199 |   | 1 |

*May **NOT** be claimed if a new CVT/IVT assembly was shipped with P/N ending in QQK.

**A Vehicle Diagnosis Number (VDN) must be created with at least one of the five (5) DTCs listed on page 2, prior to IVT replacement. If a VDN is not created, Parts Ordering and Warranty claim submission issues WILL occur.**

**SUBJECT:** IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT (SC199)

WARRANTY INFORMATION:

**N Code: N99 C Code: C99**

| Model | Claim Type | Causal P/N | Qty. | Repair Description | Labor Op Code | Op Time | Replacement P/N | Qty. |
|---|---|---|---|---|---|---|---|---|
| BDm | R | 48000 2H300 | 0 | SC199 DTC Check + TCM S/W Upgrade + TCM Learning (Success) | 200M05R0 | 0.3 M/H | N/A | 0 |
| | | | | DTC Check + IVT Replacement + TCM S/W Upgrade | 200M05R1 | 3.3 M/H | 48000 2H300QQKR ***and*** 49551-3X000 (2 each) ***and*** UM018 CH130 (up to 7qts) | 1 |
| | | | | DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement | 200M05R2 | 3.4 M/H | | |
| SK3 | | 48000 2H351 | 0 | SC199 DTC Check + TCM S/W Upgrade + TCM Learning (Success) | 200034R0 | 0.3 M/H | N/A | 0 |
| | | | | DTC Check + IVT Replacement + TCM S/W Upgrade | 200034R1 | 3.1 M/H | 48000 2H351QQKR UM013 CH060 ***and*** 49551-3X000 (2 each) ***and*** UM018 CH130 (up to 7qts) | 1 |
| | | | | DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement | 200034R2 | 3.2 M/H | | |
| SP2 (FWD) | | 48000 2H353 | 0 | SC199 DTC Check + TCM S/W Upgrade + TCM Learning (Success) | 200034R3 | 0.3 M/H | N/A | 0 |
| | | | | DTC Check + IVT Replacement + TCM S/W Upgrade | 200034R4 | 3.2 M/H | 48000 2H353QQKR UM013 CH060 ***and*** 49551-3X000 (2 each) ***and*** UM018 CH130 (up to 7qts) | 1 |
| | | | | DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement | 200034R5 | 3.3 M/H | | |
| SP2 (AWD) | | 48000 2H751 | 0 | SC199 DTC Check + TCM S/W Upgrade + TCM Learning (Success) | 200034R3 | 0.3 M/H | N/A | 0 |
| | | | | DTC Check + IVT Replacement + TCM S/W Upgrade | 200034R6 | 3.7 M/H | 48000 2H751QQKR UM013 CH060 ***and*** 49551-3X000 (2 each) ***and*** UM018 CH130 (up to 7qts) | 1 |
| | | | | DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement | 200034R7 | 3.8 M/H | | |

**Note: A Vehicle Diagnosis Number (VDN) must be created with at least one of the five (5) DTCs listed on page 2, prior to IVT replacement. If a VDN is not created, Parts Ordering and Warranty claim submission issues WILL occur. Refer to Warranty Bulletin 2020-30 for claim submission procedures.**

NOTE: You may receive a transmission with a part number ending in "QQK" when a part number ending in "QQKR" was ordered. Both part numbers are interchangeable and acceptable in the warranty system.

## ★ NOTICE

**VIN inquiry data for this repair is provided for tracking purposes only. Kia retailers should reference SC199 when accessing the KDealer+ system.**