



GROUP
ELE

MODEL
2019-2021
Multiple Models
with IVT

NUMBER
200 (Rev 2, 07/23/2020)

DATE
June 2020

TECHNICAL SERVICE BULLETIN

SUBJECT:

**SERVICE ACTION: IVT SOFTWARE LOGIC
IMPROVEMENT AND/OR IVT REPLACEMENT (SA424)**

* 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 provides the procedure to improve the Transmission Control Module (TCM) logic and if necessary, replace the Intelligent Variable Transmission (IVT) on 2019-2021MY vehicles which may exhibit a MIL with the DTC(s) listed below. The production ranges of the vehicles within the scope of this bulletin are listed in the table below. To correct this concern, apply the improved logic to the CVT system using the KDS ECU Upgrade function as described in this bulletin and/or 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)	7/9/18 – 4/2/20
2020-2021	Soul (SK3)	11/24/18 – 4/17/20
2021	Seltos (SP2)	11/20/19 – 4/10/20

* NOTICE

A Service Action is a repair program without customer notification that is performed during the warranty period. Any dealer requesting to perform this repair outside the warranty period will require DPSM approval.

Repair status for a VIN is provided on WebDCS (Service → Warranty Coverage → Warranty Coverage Inquiry → Campaign Information). Not completed Recall / Service Action reports are available on WebDCS (Consumer Affairs → Not Completed Recall → Recall VIN → Select Report), which includes a list of affected vehicles.

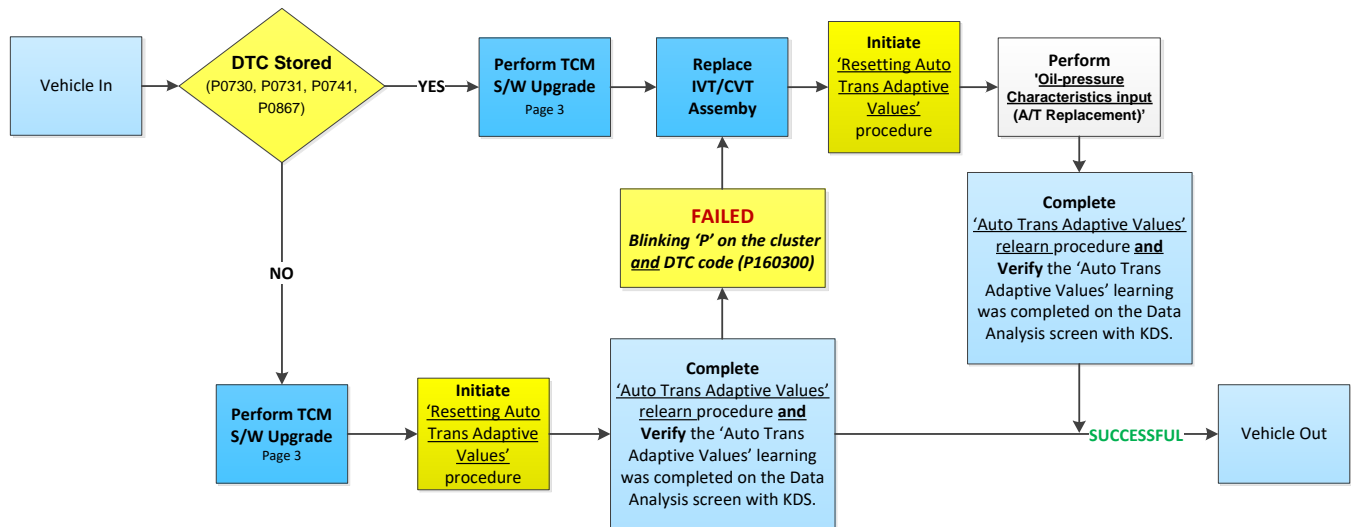
This issue number is SA424.

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

Circulate To: General Manager Service Manager Parts Manager
 Service Advisors Technicians Body Shop Manager Fleet Repair

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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. 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/I VT	Yes	39171-2ECA0 39171-2ECB0 39171-2ECD0 39171-2ECD1 39171-2ECE0 39171-2ECE1 39173-2ECA0 39173-2ECB0 39173-2ECD0 39173-2ECD1 39173-2ECE0 39173-2ECE1	CBD0N20NS0 CBD0N20NS1 CBD0N20NS2 CBD0N20NS3 CBD0N20NS4 CBD0N20NS5 CBD0N20NS6 CBD0N20NS7	CBD0N20NS8
Soul (SK3)		CVT/I VT		39171-2ELC0 39173-2ELC0 39171-2ELC1 39173-2ELC1	CSK0N20NS0 CSK0N20NS1 CSK0N20NS2 CSK0N20NS3 CSK0N20NS4	CSK0N20NS5
Seltos (SP2)		CVT/I VT		39171-2EPT0 39173-2EPT0	CSP2N20NS0 CSP2N20NS1 CSP2N20NS2	CSP2N20NS3
	39171-2EPV0 39173-2EPV0		CSP4N20NS0 CSP4N20NS1 CSP4N20NS2	CSP4N20NS3		

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.



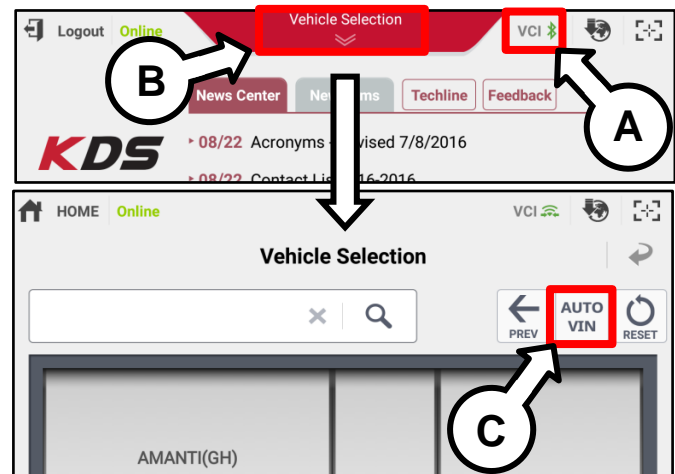
2. With the ignition ON, turn ON the KDS tablet. Select **KDS** from the home screen.



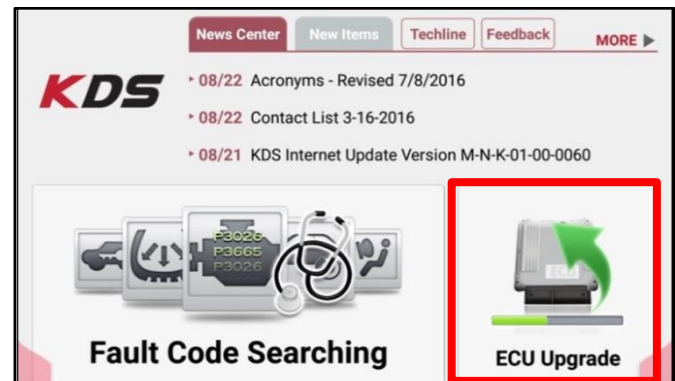
3. Confirm communication with VCI (A) and then configure the vehicle (B) using the **AUTO VIN** (C) feature.

*** NOTICE**

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



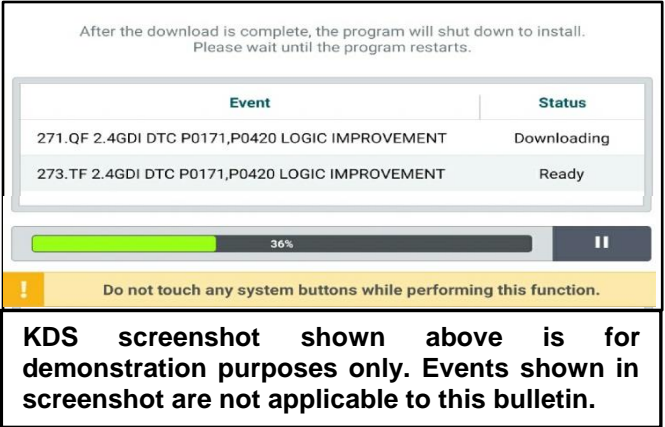
4. Select **ECU Upgrade**.



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- 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.



- Select **Auto Mode**.

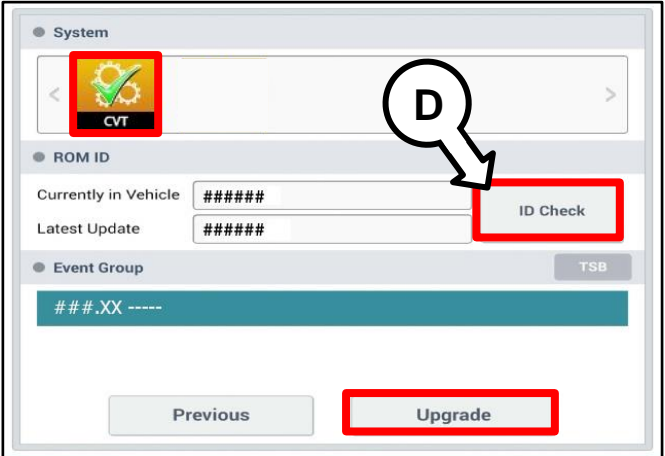
CAUTION
 Do NOT attempt to perform a Manual Mode upgrade UNLESS Auto Mode fails. Always follow the instructions given on the KDS in either Auto or Manual mode.



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

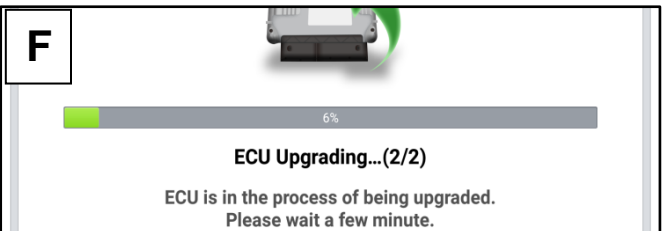
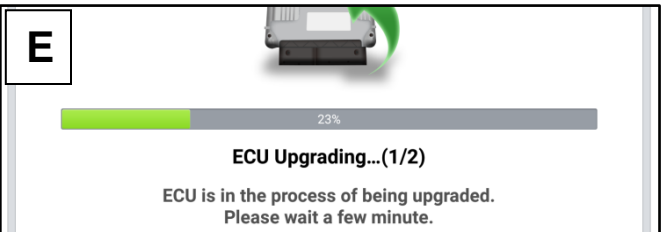
Touch **ID Check** (D) and confirm that the latest update is available.

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



- 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.



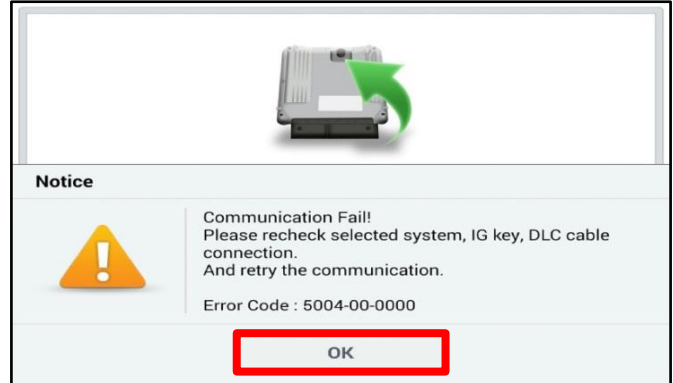
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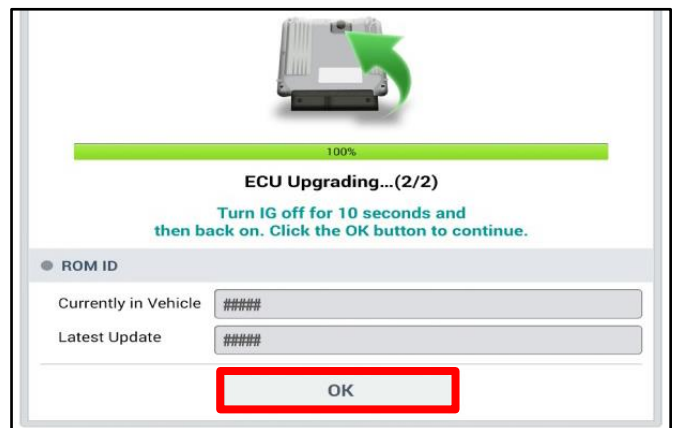
9. If a “Communication Fail” screen appears, verify that the VCI-II and KDS are communicating properly. Touch **OK** and restart the procedure from step 4.

* NOTICE

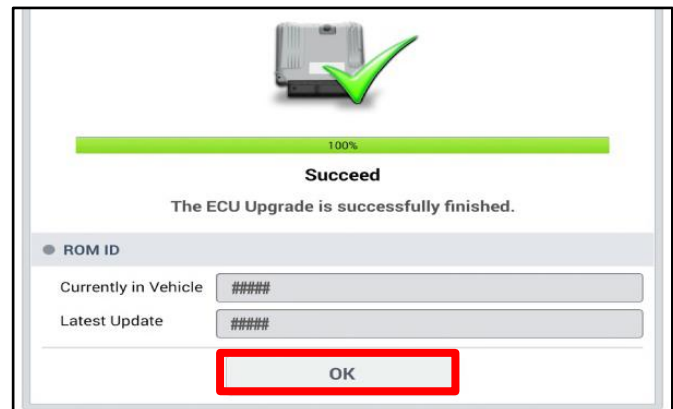
If an error notice continues to appear or if the upgrade cannot be performed, DO NOT disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.



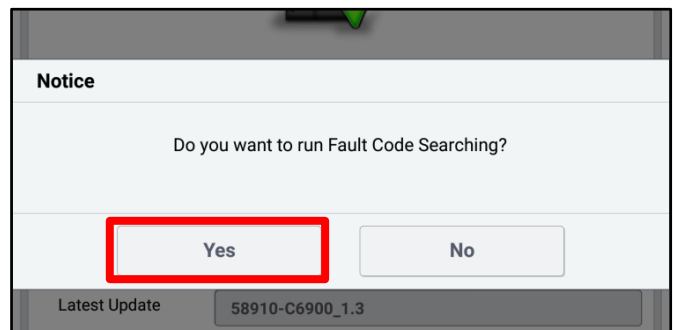
10. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Touch **OK** to continue.



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



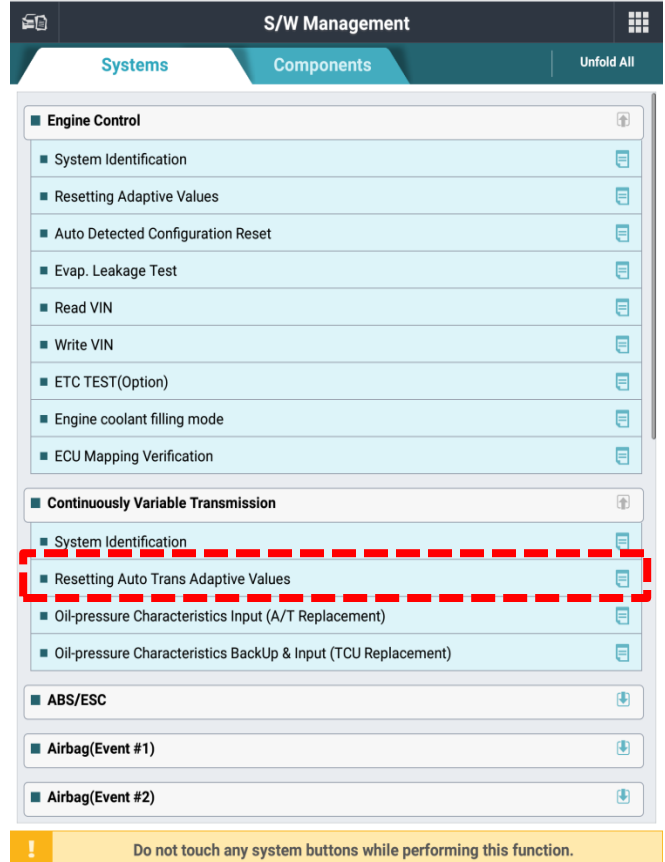
12. When prompted, select **YES** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.



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- 13. **Initiate** the ‘Resetting Auto Trans Adaptive Values’ procedure with KDS.
- 14. **Complete** the ‘Auto Trans Adaptive Values’ relearn procedure.

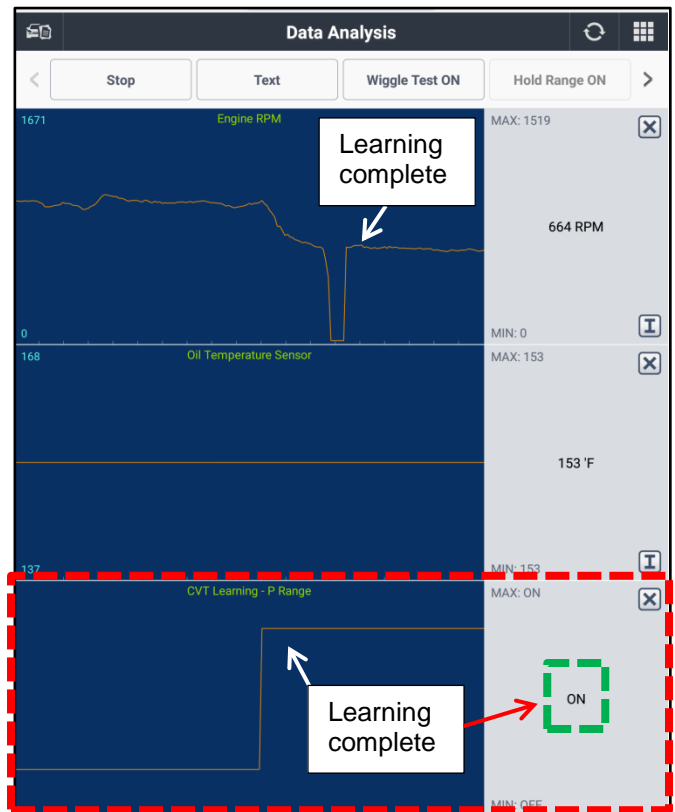
Note: For additional information regarding TCM Adaptive Values Learning, refer to the “IVT → IVT Control Systems → Repair procedures” chapter in the applicable Shop Manual on KGIS.



- 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
BDM NU 2.0MPI ATK CVT/IVT : 39171/3-2ECA0/B0/D0/D1/E0/E1	9171
SK3 NU 2.0MPI ATK CVT/IVT : 39171/3-2ELC0/C1	3201
SP2 NU 2.0MPI ATK CVT/IVT (2WD) : 39171/3-2EPT0	1320
SP2 NU 2.0MPI ATK CVT/IVT (4WD) : 39171/3-2EPV0	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.



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.

❗ 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 initiate 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. Complete the ‘Auto Trans Adaptive Values’ relearn procedure.
4. On the KDS home menu, enter the CVT module ‘Data Analysis’ screen and confirm the Adaptive Values have learned*.



★ NOTICE

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’.

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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 (Except BDm)	Transmission Cooler Flush	UM013 CH060		1
ALL*	IVT Fluid SP-CVT1	UM018 CH130	N/A	Up to 7 Qts.

*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.



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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	V	48000 2H300	0	SA(424) 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	1
				DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	200M05R2	3.4 M/H		
SK3	V	48000 2H351	0	SA(424) 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	1
				DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	200034R2	3.2 M/H		
SP2 (FWD)	V	48000 2H353	0	SA(424) 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	1
				DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	200034R5	3.3 M/H		
SP2 (AWD)	V	48000 2H751	0	SA(424) 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	1
				DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	200034R7	3.8 M/H		

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. If necessary, use sublet code 'X1' for UM018-CH130 SP-CVT1 fluid (up to 7qts.) for a \$68.25 total reimbursement cost. Use sublet code 'X2' for rental expense reimbursement (up to 5 days maximum) for transmission replacement labor codes only.

* NOTICE

VIN inquiry data for this repair is provided for tracking purposes only. Kia retailers should reference **SA424** when accessing the WebDCS system.