



GROUP	MODEL
TRA	2019-2021MY Multiple Models w/IVT
NUMBER	DATE
102	April 2022

TECHNICAL SERVICE BULLETIN

IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT

SUBJECT:

This bulletin provides the procedure to update the Transmission Control Module (TCM) software logic and, if necessary, replace the Intelligent Variable Transmission (IVT) assembly on certain 2019-2021MY model vehicles listed in the chart below, which may exhibit an MIL ON with the DTC(s) listed below and a lack/delay in acceleration due to transmission slippage. To correct this concern, if necessary, apply the improved software logic to the CVT system using the KDS ECU Upgrade function as described in this bulletin and 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.

Description of DTC(s):

P0730 - Incorrect Gear Ratio

P0731 - Gear 1 Incorrect Ratio

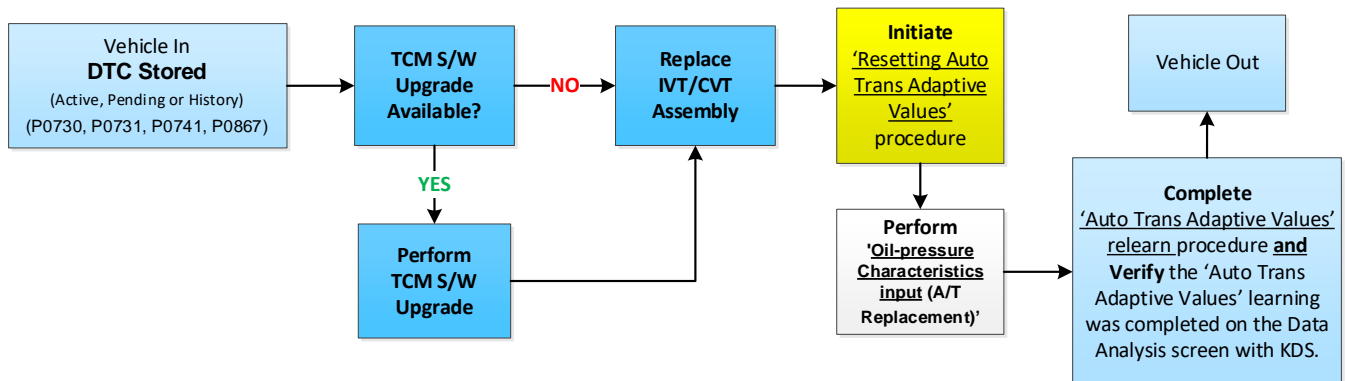
P0741 - Torque Converter Clutch Circuit Performance or Stuck Off

P0867 - Transmission fluid pressure

MY	Model	Production Date
2019-2021	Forte (BDm)	07/09/18 - 10/21/21
2020-2021	Soul (SK3)	11/15/18 - 03/21/21
2021	Seltos (SP2)	11/20/19 - 03/21/21

NOTICE

If the vehicle previously had a TCM software upgrade or IVT replaced, confirm all procedures have been followed correctly as noted in the Flowchart on page 2.

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

❗ 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.

SUBJECT:

IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT

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

- Confirm a fully charged battery (12.3 volts or higher is necessary) is used or utilize a fully charged jump starter box connected to the battery.
- **Ensure the KDS is sufficiently charged at 60% or higher prior to reflash.**
- All ECU upgrades must be performed with the ignition set to the 'ON' position unless otherwise stated.
- **Damaged VCI II units should not be used and promptly replaced.**
- 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 application.


 IMPORTANT

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.


 NOTICE

Before attempting an ECU upgrade on any Kia model, make sure to first determine whether the applicable 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.


ROM ID INFORMATION TABLE:**Upgrade Event #494 (BDm)**

Model	EM	TM	IMMO 	ECU P/No.	ROM ID	
					Previous	New
Forte (BDm)	Nu 2.0L MPI Atkinson	CVT/IVT	Yes	39171 2ECA0 39171 2ECA1 39171 2ECB0 39171 2ECB1 39171 2ECD0 39171 2ECD1 39171 2ECD2 39171 2ECE0 39171 2ECE1 39171 2ECE2 39173 2ECA0 39173 2ECA1 39173 2ECB0 39173 2ECB1 39173 2ECD0 39173 2ECD1 39173 2ECD2 39173 2ECE0 39173 2ECE1 39173 2ECE2	CBDON20NS0 CBDON20NS1 CBDON20NS2 CBDON20NS3 CBDON20NS4 CBDON20NS5 CBDON20NS6 CBDON20NS7 CBDON20NS8	CBDON20NS9

Upgrade Event #495 (SK3)

Model	EM	TM	IMMO 	ECU P/No.	ROM ID	
					Previous	New
Soul (SK3)	Nu 2.0L MPI Atkinson	CVT/IVT	Yes	39171 2ELA0 39171 2ELA2 39171 2ELB0 39171 2ELC0 39171 2ELC1 39171 2ELC2 39173 2ELB0 39173 2ELC0 39173 2ELC1 39173 2ELC2	CSKON20NS0 CSKON20NS1 CSKON20NS2 CSKON20NS3 CSKON20NS4 CSKON20NS5	CSKON20NS6

Upgrade Event #496 (SP2)

Model	EM	TM	IMMO 	ECU P/No.	ROM ID	
					Previous	New
Seltos (SP2) (2WD)	Nu 2.0L MPI Atkinson	CVT/IVT	Yes	39171 2EPT0 39171 2EPT2 39173 2EPT0 39173 2EPT2	CSP2N20NS0 CSP2N20NS1 CSP2N20NS2 CSP2N20NS3 CSP2N20NS4	CSP2N20NS5
Seltos (SP2) (4WD)				39171 2EPV0 39171 2EPV2 39173 2EPV0 39173 2EPV2	CSP4N20NS0 CSP4N20NS1 CSP4N20NS2 CSP4N20NS3 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.

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

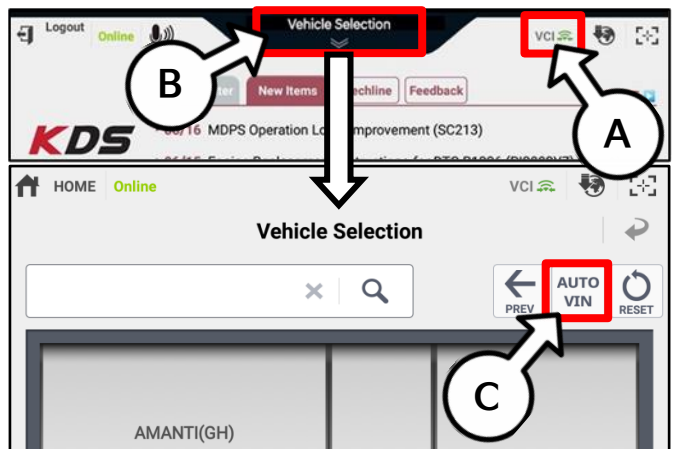
The ECU upgrade function on KDS operates wirelessly. It is not necessary to perform the upgrade via USB cable.



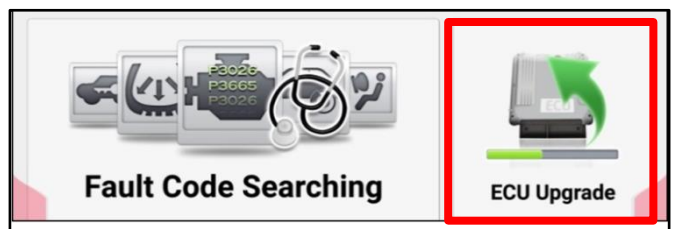
2. With the ignition ON, turn ON the KDS tablet. Select 'KDS' from the home screen.



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



4. Select 'ECU Upgrade'.



SUBJECT: IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT

- 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.

After the download is complete, the program will shut down to install. Please wait until the program restarts.

Event	Status
271.QF 2.4GDI DTC P0171,P0420 LOGIC IMPROVEMENT	Downloading
273.TF 2.4GDI DTC P0171,P0420 LOGIC IMPROVEMENT	Ready

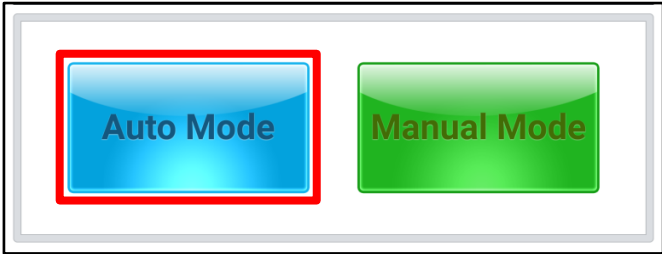
36%

Do not touch any system buttons while performing this function.

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

- 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.

System

CVT

ROM ID

Currently in Vehicle: #####

Latest Update: #####

ID Check (D)

Event Group: ###.XX -----

TSB

Previous Upgrade

- 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.

E

23%

ECU Upgrading...(1/2)

ECU is in the process of being upgraded. Please wait a few minute.

F

6%

ECU Upgrading...(2/2)

ECU is in the process of being upgraded. Please wait a few minute.



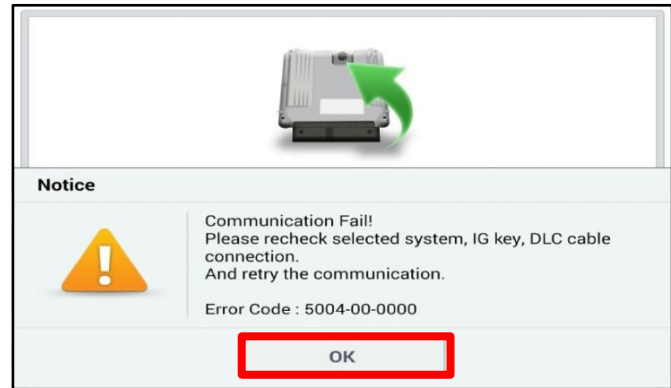
SUBJECT:

IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT

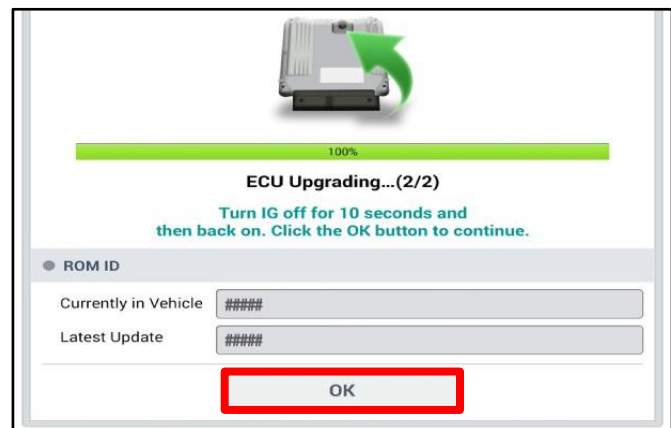
9. If a "Communication Fail" screen appears, verify that the VCI-II and KDS are communicating properly. Select 'OK' and restart the procedure from step 4.

 **NOTICE**

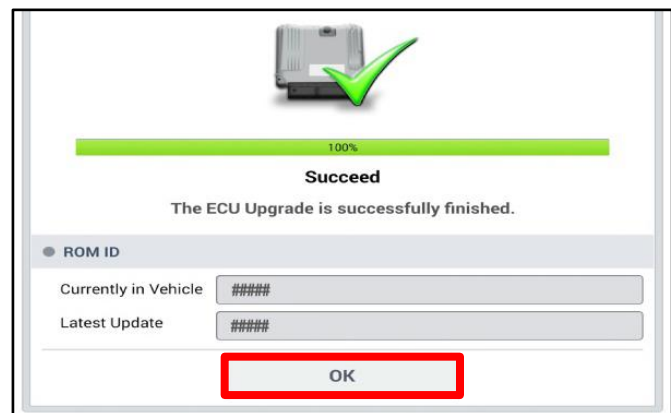
If an error notice continues to appear or if the upgrade cannot be performed, DO NOT disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.



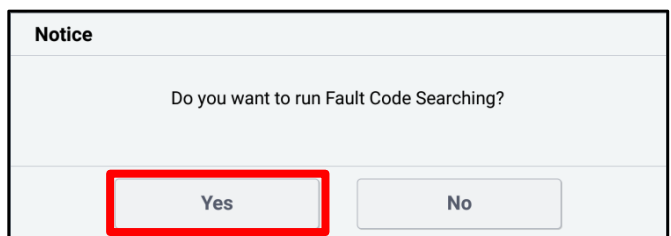
10. When instructed on the KDS, turn the ignition OFF for ten (10) seconds then back on. Select 'OK' to continue.



11. Once the upgrade is complete, select 'OK' to finalize the procedure.



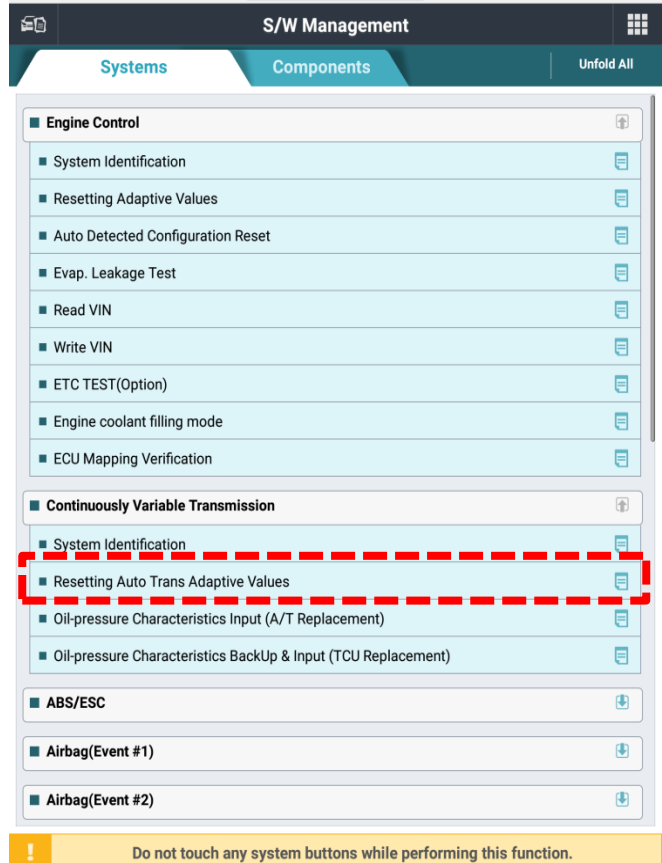
12. When prompted, select 'YES' to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.



SUBJECT: **IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT**

13. Initiate the 'Resetting Auto Trans Adaptive Values' procedure with KDS.
14. Complete the 'Auto Trans Adaptive Values' relearn procedure.

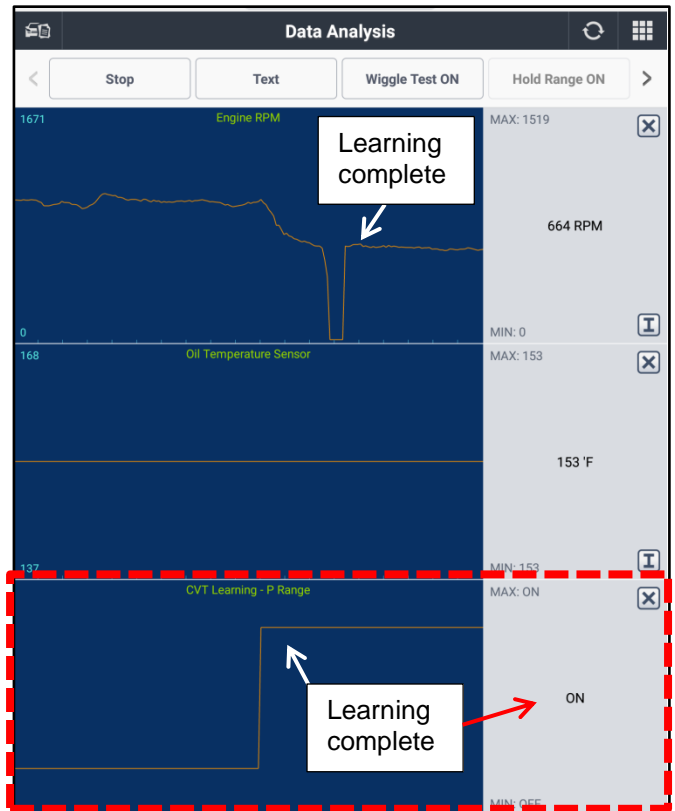
Note: For additional information regarding TCM Adaptive Values Learning, refer to the "IVT → IVT Control Systems → Repair procedures" chapter in the applicable Shop Manual on KGIS.



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.



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. Select **OK**.
7. Once the upgrade is complete, select **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.

IVT Replacement Procedure:

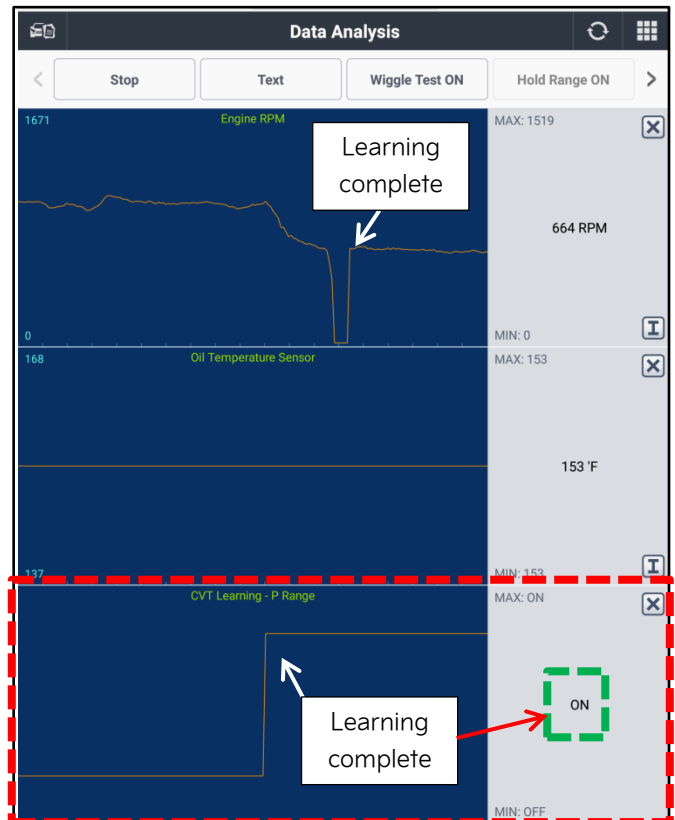
1. Replace the IVT assembly by referring to the "2.0 MPI NU (ATKINSON) → Intelligent Variable Transmission (IVT) System (Continuous Variable Transmission) → Intelligent Variable Transmission → Repair procedures" chapter in the applicable Shop Manual on KGIS.

ⓘ 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. **Conditions: IG "ON", gear in "P", brake "OFF", IVTF temperature 86°F-176°F.**
4. On the KDS home menu, enter the CVT module 'Data Analysis' screen and confirm the Adaptive Values have learned*.

**📄 NOTICE**

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'.

SUBJECT:

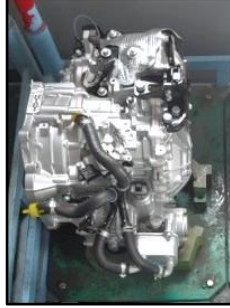

IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT**AFFECTED VEHICLE RANGE:**

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

REQUIRED TOOL:

Tool Name	Figure	Comments
KDS		Kia Diagnostic System

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.



SUBJECT:

IVT SOFTWARE LOGIC IMPROVEMENT AND/OR IVT REPLACEMENT

WARRANTY INFORMATION:

N Code: D34 C Code: ZZ3

Model	Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
BDm	W	48000 2H300	0	DTC Check + IVT Replacement	48000F09	3.2 M/H	48000 2H300QQKR	1
				DTC Check + TCM S/W Upgrade + TCM Learning (Success) + IVT Replacement	48000F00	3.3 M/H		
				DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	48000F05	3.4 M/H		
SK3		48000 2H351	0	DTC Check + IVT Replacement	48000F10	3.0 M/H	48000 2H351QQKR UM013 CH060	1
				DTC Check + TCM S/W Upgrade + TCM Learning (Success) + IVT Replacement	48000F01	3.1 M/H		
				DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	48000F06	3.2 M/H		
SP2 (FWD)		48000 2H353	0	DTC Check + IVT Replacement	48000F11	3.1 M/H	48000 2H353QQKR UM013 CH060	1
				DTC Check + TCM S/W Upgrade + TCM Learning (Success) + IVT Replacement	48000F02	3.2 M/H		
				DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	48000F07	3.3 M/H		
SP2 (AWD)	48000 2H751	0	DTC Check + IVT Replacement	48000F12	3.6 M/H	48000 2H751QQKR UM013 CH060	1	
			DTC Check + TCM S/W Upgrade + TCM Learning (Success) + IVT Replacement	48000F03	3.7 M/H			
			DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	48000F08	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. Use sublet code 'X1' and manually enter the reimbursement expense for UM018 CH130 SP-CVT1 fluid (up to 7qts.) for a total reimbursement cost of \$81.90. 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.

