



GROUP
TRA

MODEL
2020MY
Rio (SC) w/IVT

NUMBER
097

DATE
May 2021

TECHNICAL SERVICE BULLETIN

SUBJECT: **SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT
AND/OR IVT/CVT REPLACEMENT (SA476)**

This bulletin provides the procedure to improve the software logic of the IVT (Intelligent Variable Transmission)/CVT (Continuous Variable Transmission) on some 2020MY Rio (SC) vehicles produced from July 1, 2019 through August 10, 2020 equipped with IVT/CVT, which may exhibit an MIL with DTCs. The affected vehicles may exhibit the illumination of the MIL with DTC(s) listed below in addition to lack of acceleration or delay in accelerating due to transmission slippage. To correct this concern, apply the improved logic to the IVT/CVT system using the KDS ECU Upgrade function as described in this bulletin, and, if necessary, replace the IVT/CVT. 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 3 of this bulletin. Before conducting the procedure, verify that the vehicle is included in the list of affected VINs.

Potential 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

Follow the Flowchart and ‘Main Procedure’ instructions outlined on page 2.

★ 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.

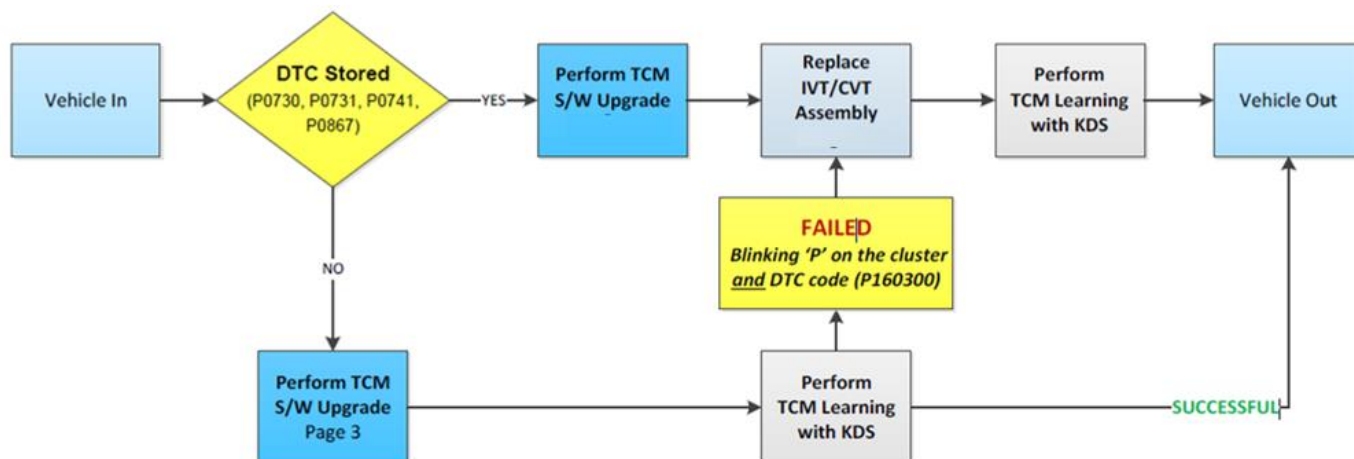
This issue number is SA476.

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

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

Flowchart:



Main Procedure:

- 1) Using the KDS (connected to the internet to create and transmit a VDN*), perform a Fault Code Search and confirm DTC P0730, P0731, P0741 or P0867 is/are stored (Active, History or Pending). Follow the flow chart above and perform the necessary procedure(s).
- 2) If one of the four DTCs (P0730, P0731, P0741, P0867) applies during the DTC Check, upgrade the TCM S/W and replace the IVT/CVT.
- 3) Replace the IVT/CVT according to the applicable Shop Manual on KGIS.
- 4) Then perform the IVT/CVT resetting auto T/A values, oil-pressure characteristics input, TCM adaptive values learning procedure.
- 5) If DTCs P0730, P0731, P0741, and P0867 do not come back, upgrade the TCM S/W and perform TCM adaptive values learning procedure. If successful, complete the service. If not, and TCM Learning fails, 'P' will be blinking on instrument cluster and DTC code P160300 will set. Then replace the IVT/CVT and do TCM Learning again.

***Note:** 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.

❗ IMPORTANT

When replacing the IVT/CVT assembly, carefully follow the installation procedure outlined on KGIS to complete the Auto Trans Adaptive Values learning procedure. After IVT/CVT replacement, complete 'Oil-pressure Characteristics Input', and 'TCM Adaptive Values Learning'.

SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

ECU Upgrade Procedure:

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

Upgrade Event Name

539. SC GAMMA2 1.6MPI IVT/CVT DRIVING PERFORMANCE IMPROVEMENT

★ NOTICE

- Confirm a **fully charged battery with 12.3 volts or higher is necessary or the use of a fully charged jump starter box connected to the battery.**
- **Ensure the KDS GDS is sufficiently charged at 60% or higher prior to reflash.**
- All ECU upgrades must be done with the ignition key in the 'ON' position unless otherwise stated.
- 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 #539

Model	SYS	ENG	ECU P/No.	ROM ID	
				Previous	New
SC	IVT/CVT	Gamma 1.6L MPI	39100 2M007 39100 2M008	CSC0M16NS0	CSC0M16NS1

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.



SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

* 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

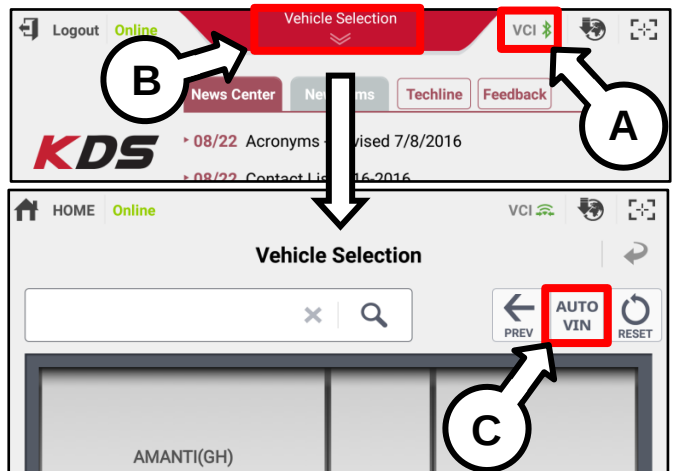
The ECU upgrade function on KDS operates wirelessly. It is not necessary to perform the upgrade via USB cable.



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



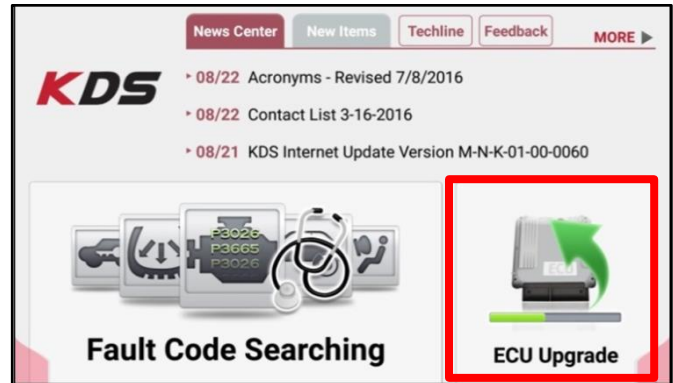
3. Confirm communication with VCI (A) and then configure the vehicle (B) using the **AUTO VIN** (C) feature.



SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

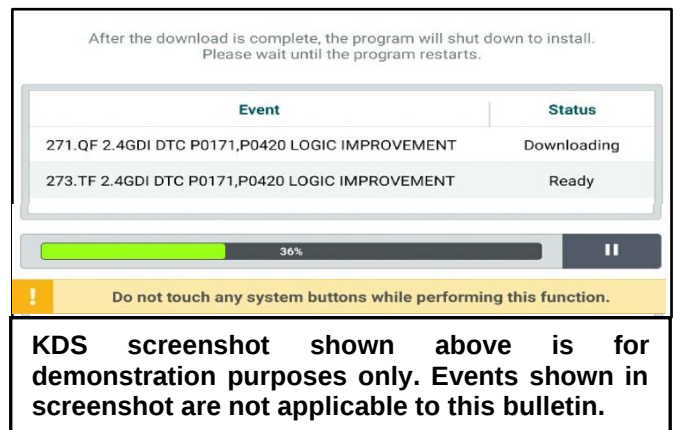
4. Select **ECU Upgrade**.



5. The KDS will check the server for recently uploaded Events and then automatically download **Upgrade Event #539**.

* NOTICE

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

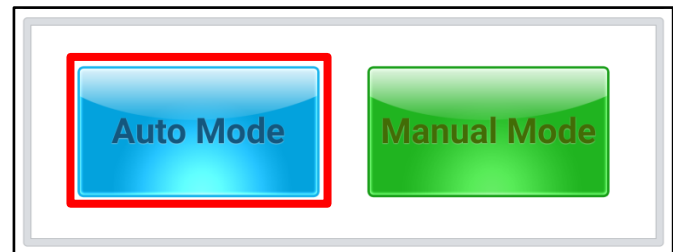


6. Select **Auto Mode**.



CAUTION

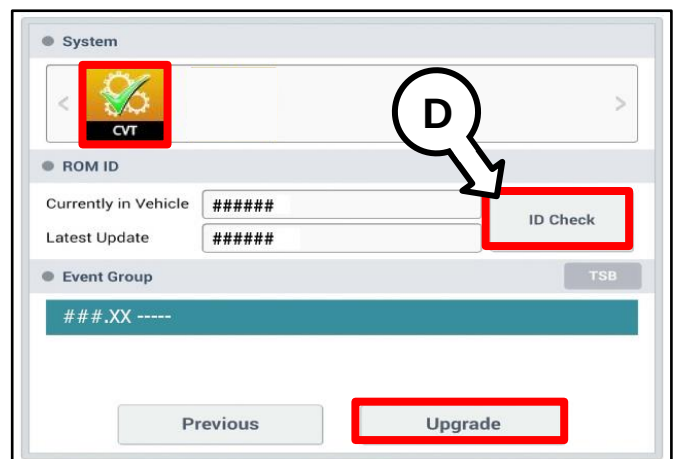
Do NOT attempt to perform a Manual Mode upgrade UNLESS Auto Mode fails. Always follow the instructions given on the KDS in either Auto or Manual mode.



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 #539** and select **Upgrade** to continue.



SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

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.

E



ECU Upgrading...(1/2)

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

F



ECU Upgrading...(2/2)

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

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.

Notice



Communication Fail!
Please recheck selected system, IG key, DLC cable connection.
And retry the communication.

Error Code : 5004-00-0000

OK

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



ECU Upgrading...(2/2)

Turn IG off for 10 seconds and then back on. Click the OK button to continue.

ROM ID

Currently in Vehicle #####

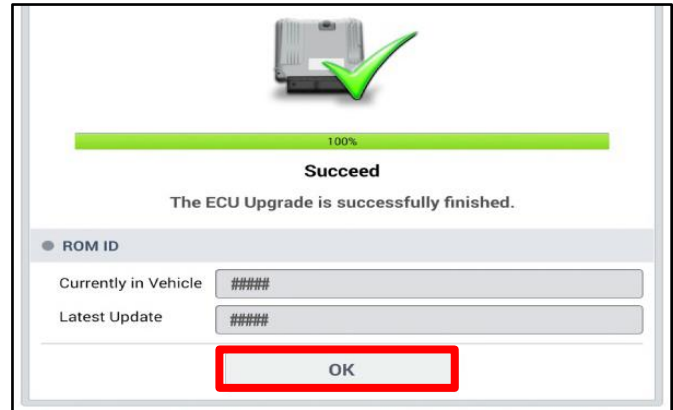
Latest Update #####

OK

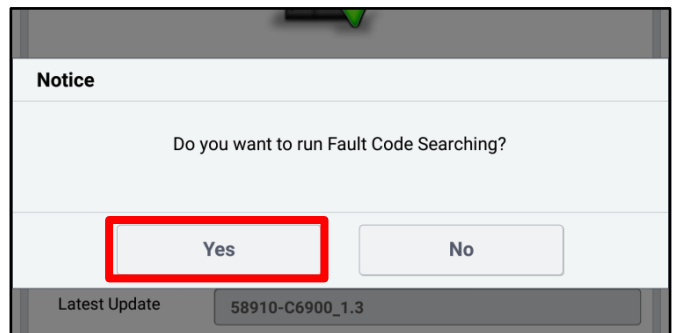
SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

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

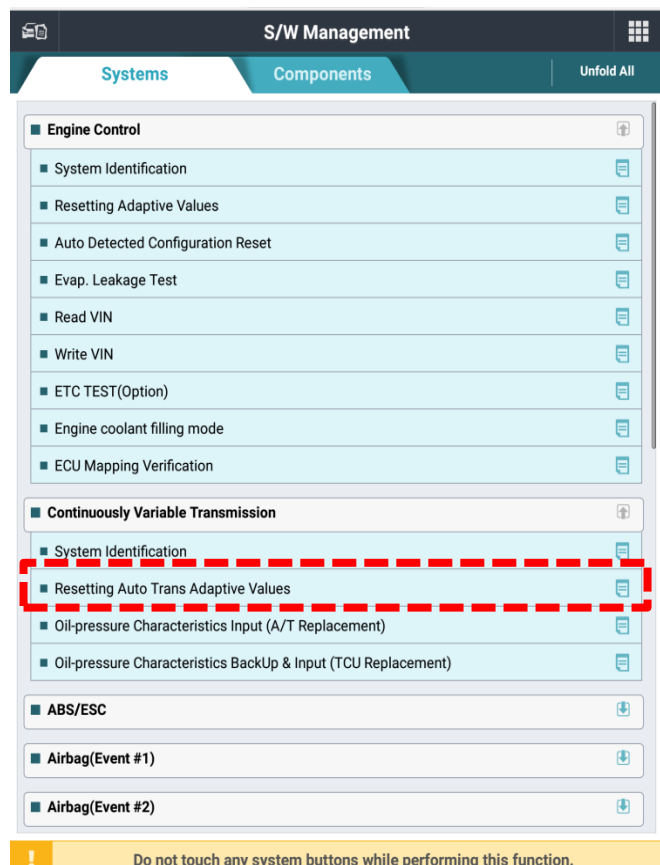


13. When prompted, select **YES** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.



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 System → Repair procedures" chapter in the applicable Shop Manual on KGIS.



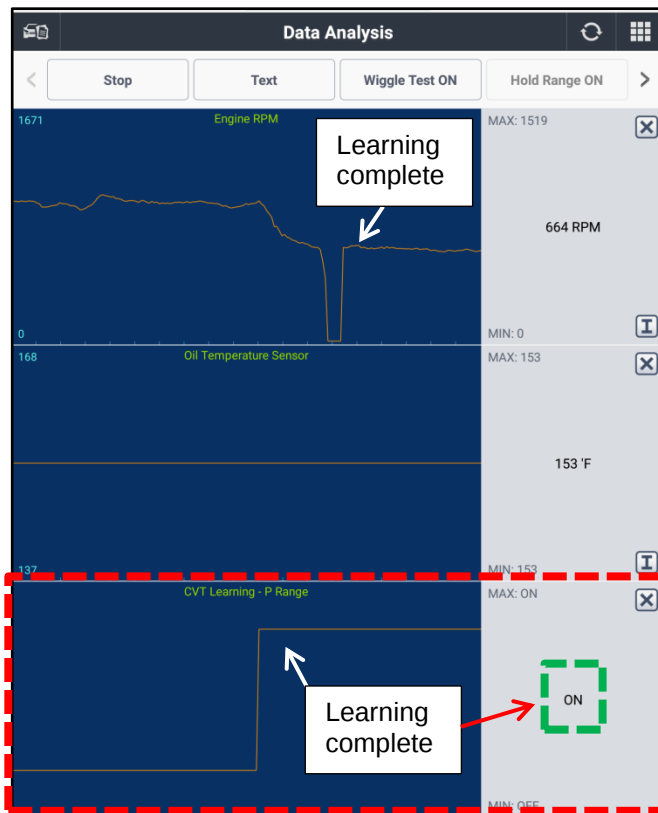
SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

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 as outlined below.

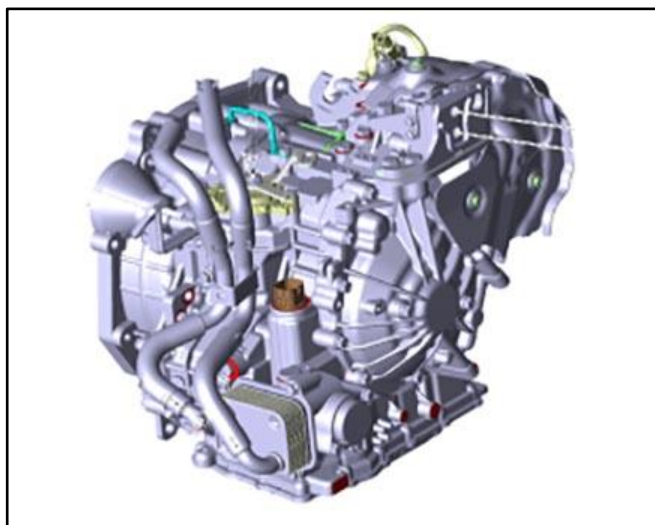


IVT/CVT Replacement Procedure:

1. Replace the IVT/CVT by referring to the "Intelligent Variable Transmission (IVT) System (Continuously Variable Transmission) → Intelligent Variable Transmission (IVT) → Repair Procedures" chapter in the applicable shop manual on KGIS.

❗ IMPORTANT

After IVT Replacement, complete 'Oil-Pressure Characteristics Input' & 'TCM adaptive values learning'.



SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT AND/OR IVT/CVT REPLACEMENT (SA476)

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
SC Gamma2 1.6MPI IVT : 39100-2M007/08	0708

1. Within the ECU Upgrade screen displayed, select **Manual Mode**.
2. Select the **CVT** system under the System selection menu. Select **Upgrade Event #539** 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. Perform TCM Learning adjustment by referring to the “Automatic Transmission System → Automatic Transmission Control System → Repair procedures” chapter in the applicable Shop Manual on KGIS.
9. 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.
10. Start the engine to confirm proper operation of the vehicle.



SUBJECT:

SERVICE ACTION: IVT/CVT SW LOGIC IMPROVEMENT
AND/OR IVT/CVT REPLACEMENT (SA476)

AFFECTED VEHICLE RANGE:

Model	Production Date Range
Rio (SC)	July 1, 2019 to August 10, 2020

REQUIRED PART:

Part Name	Part Number		Figure	Qty.
	New	Remanufactured		
IVT/CVT Assembly	48000 2H001QQK	48000 2H001QQKR		1
IVT Fluid SP-CVT1*	UM018 CH130	N/A	N/A	Up to 7 Qts.

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

WARRANTY INFORMATION:

N Code: N99 C Code: C99

Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
V	48000 2H001	0	(SA476) DTC Check + TCM S/W Upgrade + TCM Learning (Success)	210M04R0	0.3 M/H	N/A	0
			(SA476) DTC Check + IVT Replacement + TCM S/W Upgrade	210M04R1	3.2 M/H	48000 2H001QQKR	1
			(SA476) DTC Check + TCM S/W Upgrade + TCM Learning (Fail) + IVT Replacement	210M04R2	3.3 M/H	UM018 CH130* (Only if Reman QQKR was shipped)	7

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 \$68.25 total reimbursement cost. When necessary, manually enter sublet code 'X2' for rental/rideshare reimbursement for up to five (5) days maximum, and attach supporting documentation for IVT replacement.

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 **SA476** when accessing the WebDCS system.