



GROUP	MODEL
Safety Recall Campaign	2011MY Sorento (XMA) w/Theta II 2.4L MPI
NUMBER	DATE
SC291	February 2024

SAFETY RECALL CAMPAIGN

Subject:

ENGINE INSPECTION/REPLACEMENT AND KSDS S/W INSTALLATION (SC291)

This bulletin provides information to perform the Bearing Clearing Test (BCT) and, if necessary, replace the engine, and to update the Engine Control Unit (ECU) to install the Knock Sensor Detection System (KSDS) software on certain 2011MY Sorento (XMA) equipped with Theta II 2.4L MPI engine, produced from October 24, 2009 through June 24, 2011. Follow the flowchart on page 2 to perform the BCT and install the KSDS software. In some cases, engine long block replacement may be required if the BCT results in a "No Pass" or "Unable to Perform" (ex. seized engine).

The KSDS detects vibrations indicating the onset of excessive connecting rod bearing wear. It is designed to alert the driver at an early stage of bearing wear before the occurrence of severe engine damage, including engine failure. If vibrations caused by bearing wear start to occur, the Malfunction Indicator Lamp (MIL) will blink continuously, and the vehicle will be placed in Limp Home Mode. This will reduce further damage to the engine and ensure that the vehicle occupants are not exposed to the risk of a more severe engine failure. At that time, Diagnostic Trouble Code ("DTC") P1326, specific to the KSDS, will be recorded in the ECU. The vehicle can continue to be operated for a limited time in Limp Home Mode, but it will accelerate slowly and have a reduced maximum speed. Also, engine RPMs will be limited to approximately 1800-2000 RPM. Kia is requesting the completion of this bulletin on all affected vehicles. Before conducting the procedure, verify the vehicle is included in the list of affected VINs. Also, please have your KDS connected to the internet regularly to get the latest software updates available.

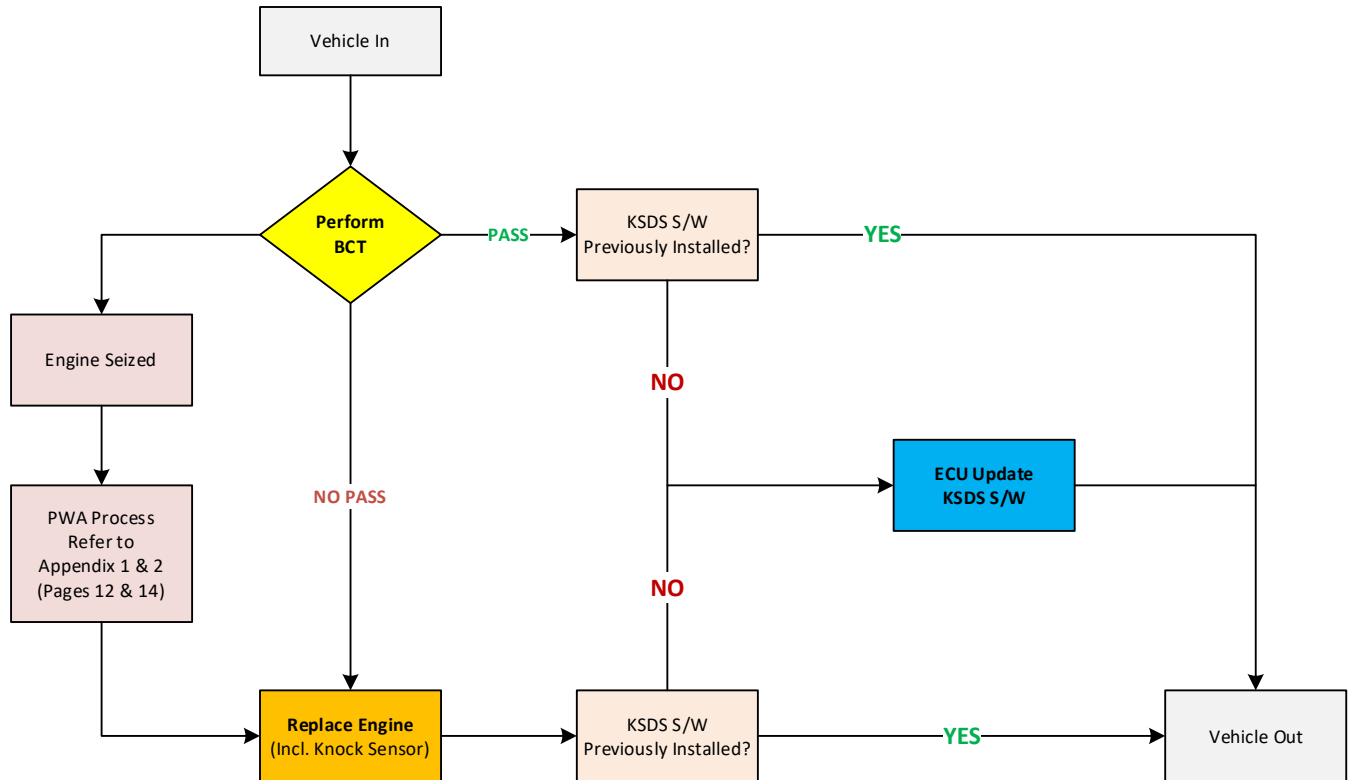
NOTICE

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:

Follow the flowchart below and refer to SST067 for BCT procedure. Be sure to apply the ECU Update (KSDS Software) after BCT or engine replacement.



Note: If any concerns arise during/after completing the flowchart, open a Techline case online.

① IMPORTANT

Due to recent updates to KDS, always follow the BCT procedure instructions outlined in KDS. You may also refer to [SST067 for BCT Procedure/Calibration information](#).



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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

512. XMA THETA 2.4MPI Knock Sensor Detection System (KSDS) ECU UPGRADE (11MY)

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.

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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 #512

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.

Model	ENG	TRA	IMMO 	ECU P/No.	ROM ID	
					Previous	New
XMa (11MY)	Theta II 2.4L MPI	AT	Yes	39103 2G120	MBC4MK4A MBC4MK5A MBC4ML0A MBC4ML0B MBC4ML0C MBC4MQ0A	MBC4MQKA
			No	39103 2G130	MBC4RK4A MBC4RK5A MBC4RL0A MBC4RL0B MBC4RL0C MBC4RQ0A	MBC4RQKA
		MT	Yes	39113 2G120	MBC4MK4A MBC4MK5A MBC4ML0A MBC4ML0B MBC4ML0C MBC4MQ0A	MBC4MQ1K
			No	39113 2G130	MBC4RK4A MBC4RK5A MBC4RL0A MBC4RL0B MBC4RL0C MBC4RQ0A	MBC4RQ1K

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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

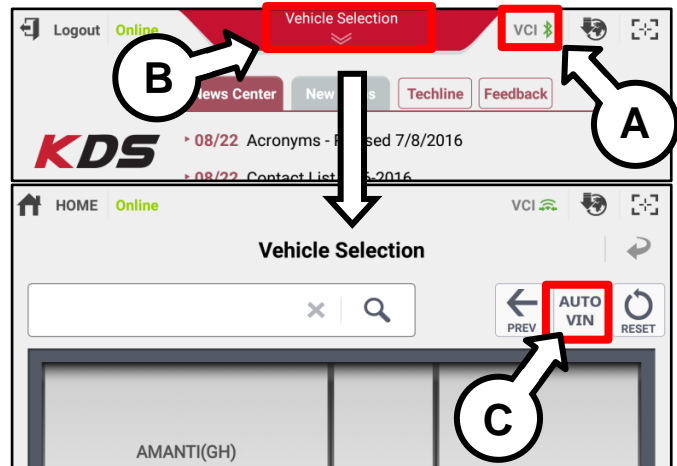
The ECU upgrade function on KDS operates wirelessly. It is not necessary to perform the upgrade via USB cable.



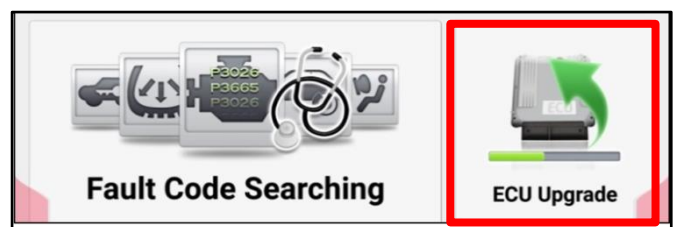
2. With the ignition ON, turn ON the KDS tablet. Select 'KDS' from the home screen.



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



4. Select 'ECU Upgrade'.

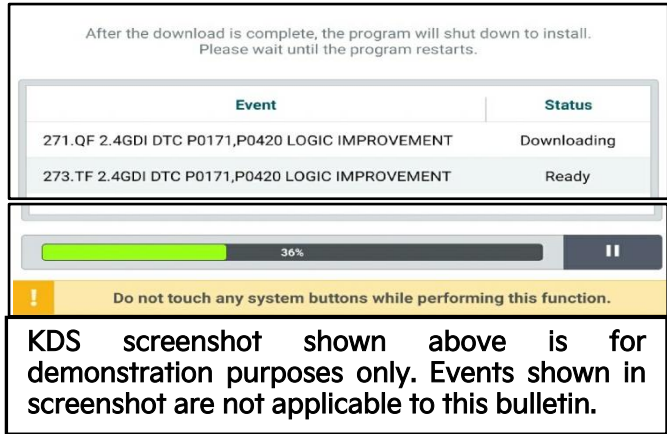


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- The KDS will check the server for recently uploaded Events and then automatically download Upgrade Event #512.

NOTICE

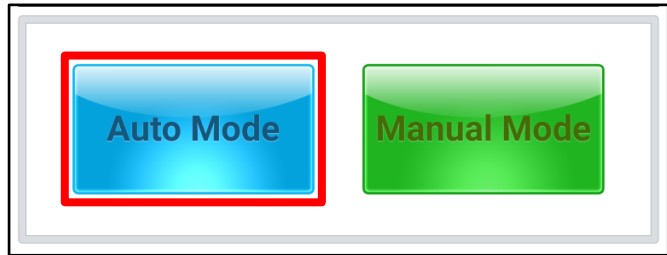
The vehicle must be identified in Vehicle Selection to download an Event for that vehicle.



- Select Auto Mode.

CAUTION

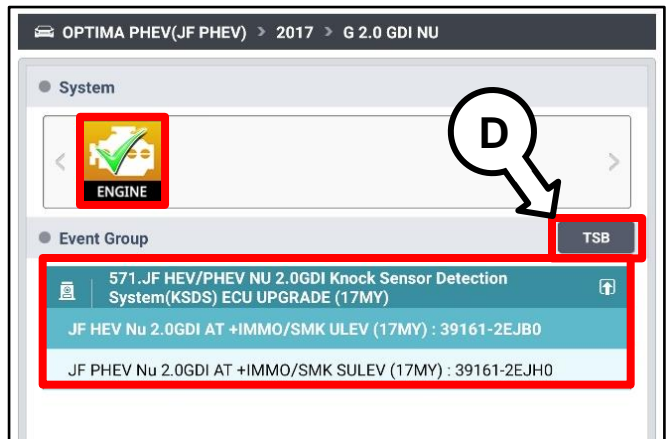
Do NOT attempt to perform a Manual Mode upgrade UNLESS Auto Mode fails. Always follow the instructions given on the KDS in either Auto or Manual mode.



- Select the ENGINE system under the System selection menu.

Touch TSB (D) and confirm that the latest update is available for the applicable model.

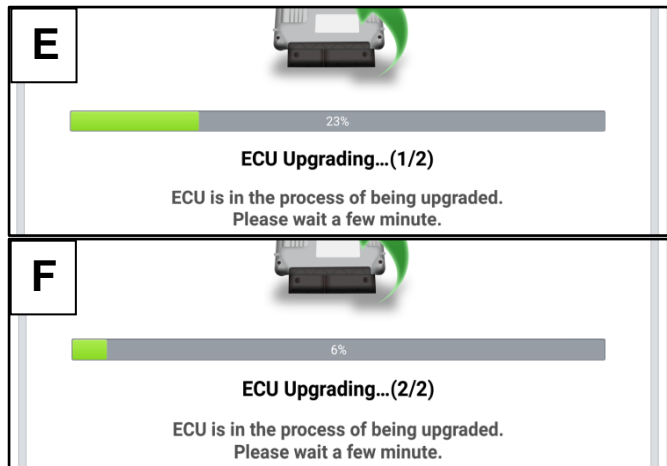
Select Upgrade Event #512 and select 'Upgrade' to continue.



- 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.



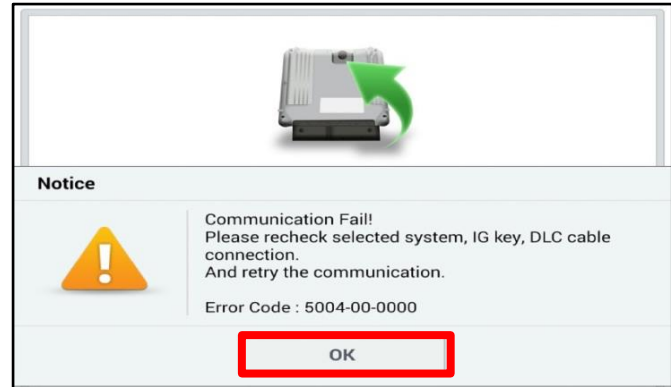
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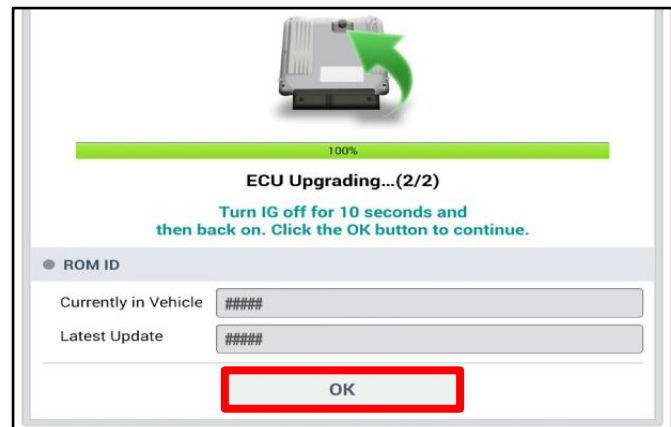
9. If a "Communication Fail" screen appears, verify that the VCI-II and KDS are communicating properly. Select 'OK' and restart the from step 4.

NOTICE

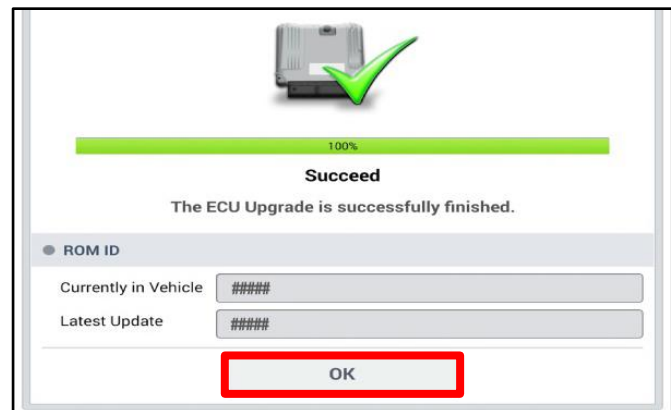
If an error notice continues to appear or if the upgrade cannot be performed, DO NOT disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.



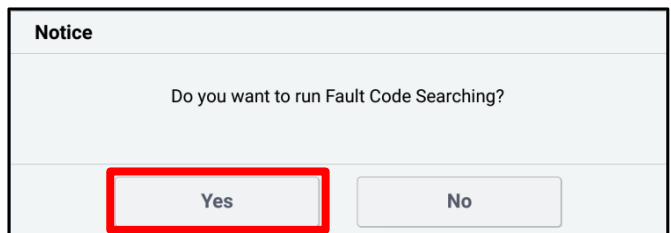
10. When instructed on the KDS, turn the ignition OFF for ten (10) seconds then back on. Select 'OK' to continue.



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.



13. Start the engine to confirm normal 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
XMA THETA 2.4MPI AT ULEV -IMMO (11MY): 39103-2G120	1201
XMA THETA 2.4MPI AT ULEV +IMMO (11MY): 39103-2G130	1202
XMA THETA 2.4MPI MT ULEV -IMMO (11MY): 39113-2G120	1203
XMA THETA 2.4MPI MT ULEV +IMMO (11MY): 39113-2G130	1204

1. Within the ECU Upgrade screen displayed, select **Manual Mode**.
2. Select the ENGINE system under the System selection menu. Select **Upgrade Event #512** 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.

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Engine Replacement Procedure:

1. Replace the engine assembly by referring to the "Engine Mechanical System → Engine And Transaxle Assembly → Engine Assembly → Repair procedures" chapter in the applicable Shop Manual on KGIS.

Refer to [TSB ENG190](#) for information regarding engine replacement practices.



2. After removal of the engine from the vehicle, remove all components that will need to be transferred by referring to the applicable Shop Manual on KGIS.
3. **Install all removed components from the old engine block onto the new engine block utilizing all parts from Service Kit(s).**
4. Reinstall the assembled engine and transmission/transaxle into the vehicle.

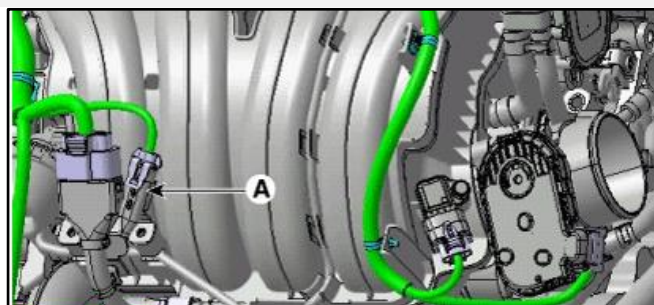
Be sure to:

- Fill crankcase with 5W-30 oil (refer to KGIS for oil fill level requirements)
 - Recommended Product: QUARTZ 9000 FUTURE FGC 5W-30 **Full Synthetic** SN PLUS, QUARTZ 9000 FUTURE XT 5W30 **Full Synthetic** SN PLUS, Mobil Super Synthetic 5W30 or above.
If not available, use other brand 5W30 and **Full Synthetic** type with API SN/SN+/SP, ILSAC GF4/GF5 or higher service grade.
 - Fill and bleed the cooling system with 50/50 coolant or mixture appropriate for area.
 - Pressurize the fuel system before starting the vehicle.
 - Reset engine adaptive values and perform steering angle sensor calibration.
5. Confirm that the Rom ID is up-to-date. If not, reflash the ECU to the latest ROM ID available.
 6. Verify proper operation of the vehicle with road test, and **with the engine ON (running), erase any stored DTCs** (e.g., EPS, ESC, and TPMS) that may have been set by this procedure. Verify no leaks exist and ensure engine oil and coolant are at their proper level.

If any DTCs are still active, follow any related diagnosis and repair as needed.

Knock Sensor Replacement Procedure:

1. Replace the knock sensor (A) by referring to the "Engine Control / Fuel System → Engine Control System → Knock Sensor (KS) → Repair Procedures" chapter in the applicable Shop Manual on KGIS.




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AFFECTED VEHICLE RANGE:

Model	Production Date Range
Sorento (XMa)	October 24, 2009 to June 24, 2011


REQUIRED TOOL:

Tool Name	Tool Part No.	Figure	Comments
Click-Type or Electronic Torque Wrench	N/A		Locally Sourced
Bearing Clearance Tester Kit	KQ231 2T110QQK		<p>Auto-shipped to Dealers For troubleshooting assistance contact the GITA Support Line at: (888) 542-4371.</p> <p>For replacement parts, contact Snap-On Tools at: (888) 542-1011.</p>

REQUIRED PARTS:

Part Name	MY	Model	Part Number	Figure
			Theta II 2.4L MPI	
Engine Long Block	11MY	XMa	21101 2G404FFF	

Service Kits:

Models	Part Name	Engine	Part Number	Figure
XMa	Service Kit	Theta II 2.4L MPI	21111 2G4S2FFF	
	Flywheel Bolt		23231 25200FFF	M/T *Do Not reuse bolts. (Qty. 7)
			23311 25050	A/T *Do Not reuse bolts. (Qty. 7)
	O-Ring		47354 39300	Optional(4WD): only if damaged.

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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.
XMa (11MY) Theta II 2.4L MPI (2WD)	R	23060 2G401	0	BCT (PASS) (No SW Upgrade)	241A07N0	0.6 M/H	N/A	0
				BCT (PASS) + KSDS SW Upgrade	241A07R0	0.8 M/H		
				BCT (NO PASS) + Engine Replacement (No SW Upgrade)	241A07N1	5.4 M/H	21101 2G404FFF and 21111 2G4S2FFF and 23231 25200FFF or 23311 25050 (Requires Qty.7)	1
				BCT (NO PASS) + Engine Replacement + KSDS SW Upgrade	241A07R1	5.6 M/H		
				NO BCT (Engine Seized) + TL PWA for Engine R&R (No SW Upgrade)	241A07N2	6.0 M/H		
				NO BCT (Engine Seized) + TL PWA for Engine R&R + KSDS SW Upgrade	241A07R2	6.2 M/H		
XMa (11MY) Theta II 2.4L MPI (4WD)	R	23060 2G401	0	BCT (PASS) (No SW Upgrade)	241A07N0	0.6 M/H	N/A	0
				BCT (PASS) + KSDS SW Upgrade	241A07R0	0.8 M/H		
				BCT (NO PASS) + Engine Replacement (No SW Upgrade)	241A07N3	5.8 M/H	21101 2G404FFF and 21111 2G4S2FFF and 23231 25200FFF or 23311 25050 (Requires Qty.7) Optional: 47354 39300	1
				BCT (NO PASS) + Engine Replacement + KSDS SW Upgrade	241A07R3	6.0 M/H		
				NO BCT (Engine Seized) + TL PWA for Engine R&R (No SW Upgrade)	241A07N4	6.4 M/H		
				NO BCT (Engine Seized) + TL PWA for Engine R&R + KSDS SW Upgrade	241A07R4	6.6 M/H		

Note: Refer to [Warranty Bulletin 2024-05](#) for claim submission procedures. When necessary, manually enter sublet code 'X2' for reimbursement of one roundtrip rideshare expense or up to three (3) days of rental.

NOTICE

VIN inquiry data for this repair is provided for tracking purposes only. Kia retailers should reference [SC291](#) when accessing the KDealer+ system.



Appendix 1

(Techline Prior Work Authorization)

Video Instructions for Seized Engine Inspection:

Prepare the vehicle prior to the video by removing the spark plugs and drive belt as well as setting the torque wrench to 94 lb.ft.

1. Start video showing the vehicle being worked on and move the camera in towards the dash VIN tag.

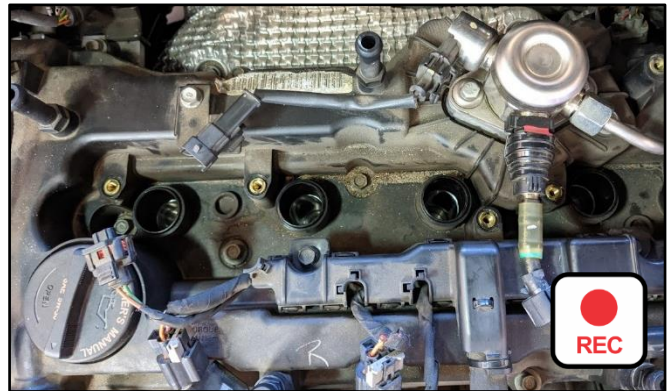
Note: Continue filming video until step 7.



2. Show the removed spark plugs.



3. Show the empty spark plug holes from the engine.



5. Show the removed drive belt and attached torque wrench to crank bolt.




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Appendix 2 (Video Capture & Upload)

Note: Additional information required to open a Techline case including but not limited to screenshot of the stored DTC(s), ROM ID and Bearing Clearance Test (BCT) results.

The Chrome™  browser should be used to access the Techline portal. Follow the steps below to clear the default browser if it is other than Chrome™.

For KDS Tab 10.1 Tablets:

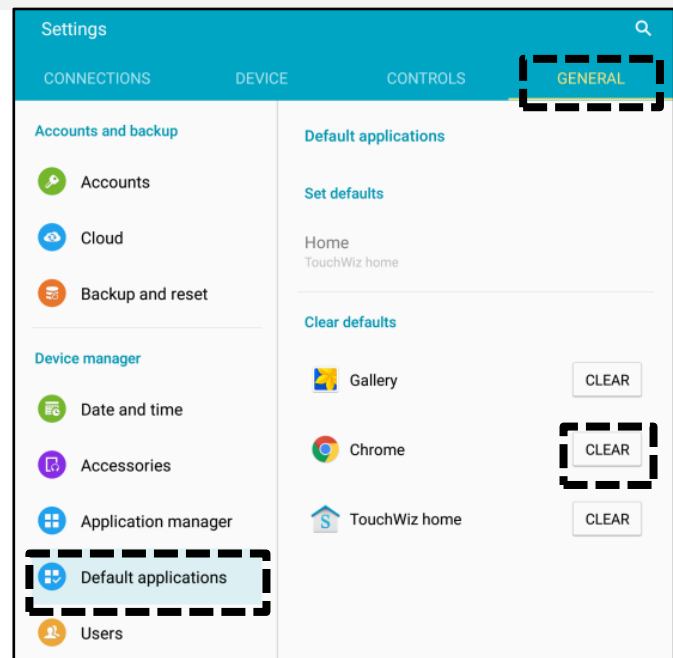
1. Select "Settings" from the App Screen.

2. Select the "General" tab at the top.

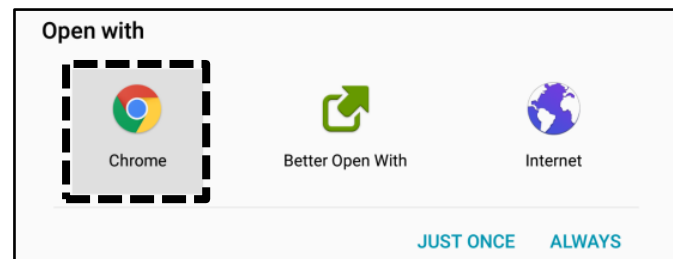
3. Select "Default Applications".

4. If "Internet" is the default browser, select the CLEAR button.

If "Chrome" is the default browser, further action is not required.



5. When opening the Techline portal, select "Chrome" and select Always".



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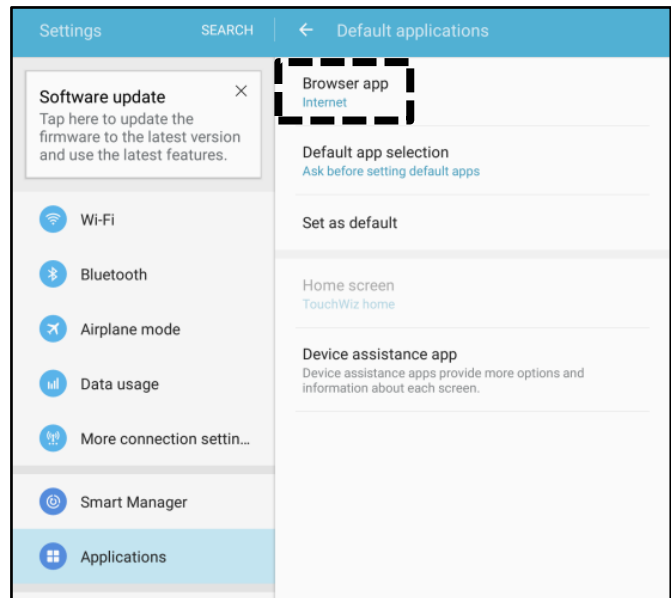
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For KDS Tab S2 Tablets:

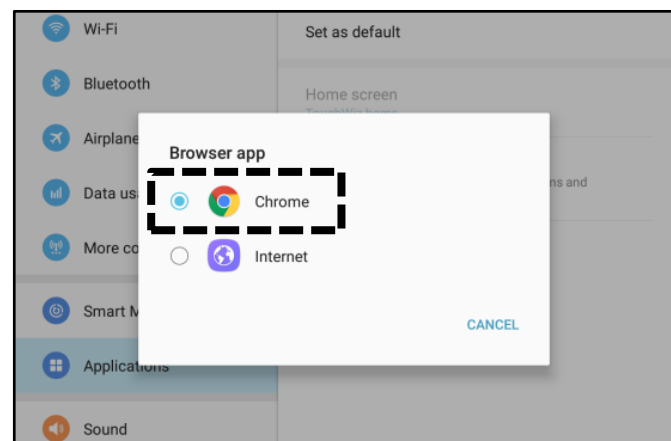
1. Select "Settings" from the App Screen.
2. Select "Applications".
3. Select "Default Applications".



4. Select "Browser app".



5. Ensure "Chrome" is selected.



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Attaching Video to a Techline Case:

1. Open K-Support in the device Chrome™ browser or select the “Techline” button on KDS home page.

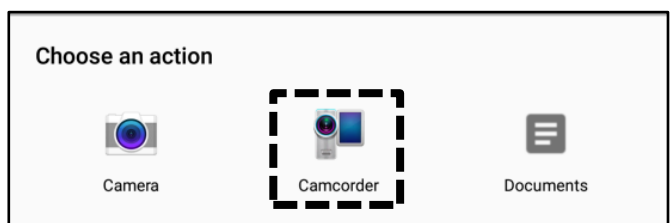
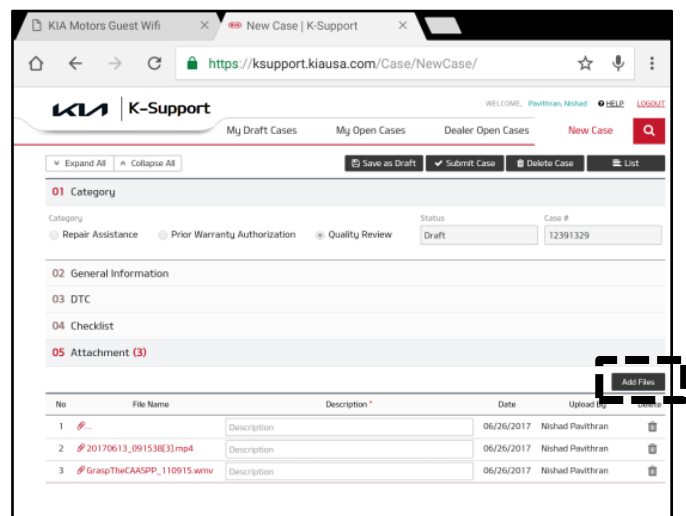
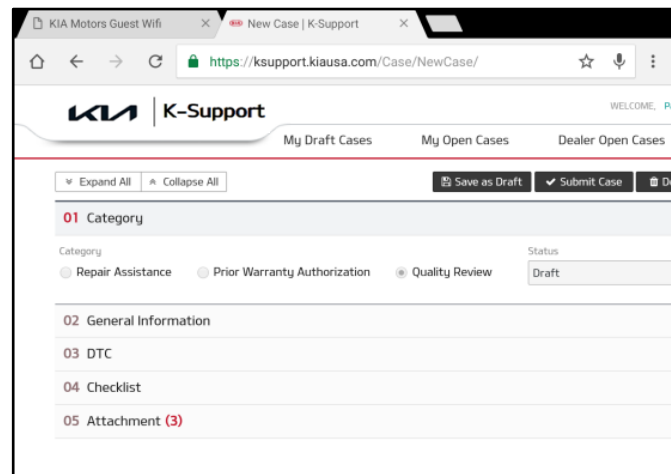
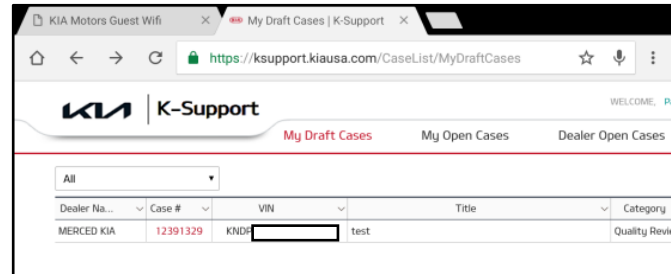
<https://ksupport.kiausa.com>

2. Open your existing Techline case for the vehicle requiring a video capture by selecting the case number.

3. Select “Attachment”.

4. Select “Add Files”.

5. Select “Camcorder” and the video camera will open.

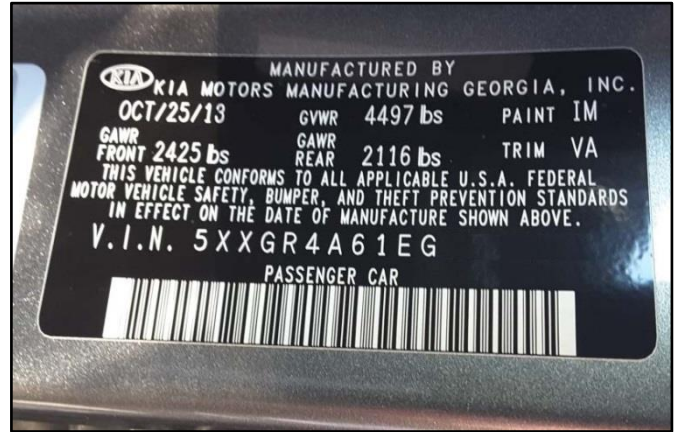


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- Start by recording the VIN. Ensure sun glare is not reflecting off windows or other objects.

Without stopping the recording, capture the area of the vehicle displaying the issue. i.e.;

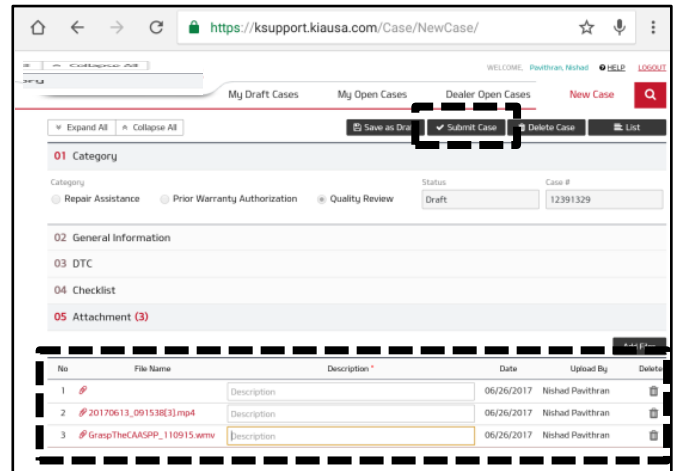
- Engine Noise - record the engine.
- Hole In Block - record the side of the engine with the damage.
- Seized Engine - record a technician trying to turn the engine over with a torque wrench.



NOTICE

Ensure the video size is set to "Limit to email". Only record the VIN and the engine exhibiting the concern. Any additional information will increase the size of the video and make it difficult to upload or download.

- Stop the video when you captured what is needed. Select "OK" to use this capture or "RETRY" to capture the video again.
- Ensure a description of the recording. For example, engine knock or smoke from exhaust.
- Select "Submit Case".



- Select "Yes" when the confirmation message below appears.

Note: Selecting anything other than "Yes" will not save the video capture.

