



GROUP	MODEL
Safety Recall Campaign	2017-2018MY Optima (JF P/HEV) w/Nu 2.0L GDI HEV
NUMBER	DATE
SC218 (Rev 1, 01/24/2022)	November 2021

SAFETY RECALL CAMPAIGN

SUBJECT:

ENGINE INSPECTION/REPLACEMENT AND KSDS S/W INSTALLATION (SC218)

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 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 2017-2018MY Optima (JF P/HEV) equipped with Nu 2.0L GDI ULEV/SULEV engine, produced from June 27, 2016 through April 27, 2018. 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.

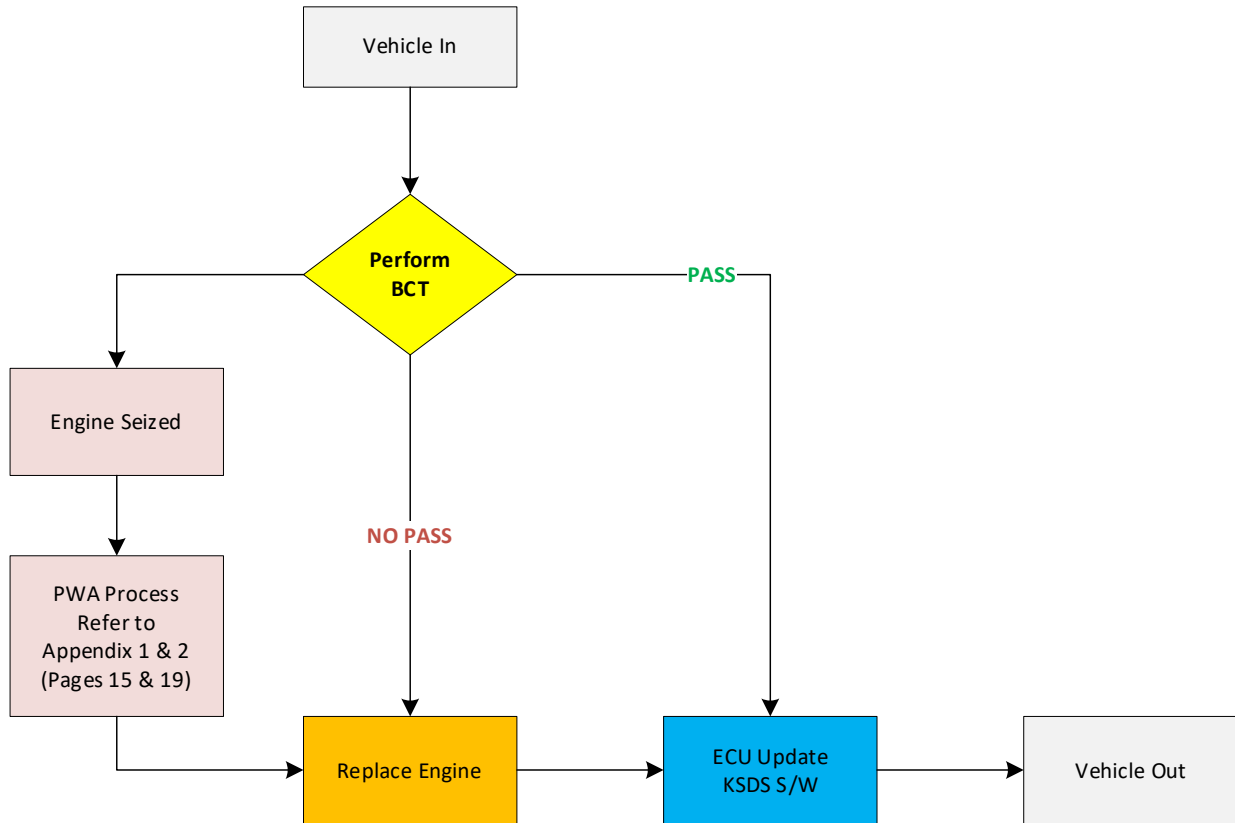
NOTICE

To assure complete customer satisfaction, always remember to refer to WebDCS 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.

ⓘ 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

571. JF HEV/PHEV NU 2.0GDI Knock Sensor Detection System (KSDS) ECU UPGRADE (17~18MY)*

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 #571

Model	EM	TM	IMMO 	ECU P/No.	ROM ID	
					Previous	New
JF HEV (17MY)	Nu 2.0L GDI	AT	Yes	39161 2EJBO	JF7UPHMS673A JF7UPHMS690A JF7UPHMS6A0A	JF7UPHMF6A2K
JF HEV (18MY)				39161 2EJB1	JF8UPHMS6D0A JF8UPHMS6D1A	JF7SPPMF6C2K
JF PHEV (17MY)				39161 2EJHO	JF7SPPMS6A0A JF7SPPMS6C0A	JF8UPHMF6D5K
JF PHEV (18MY)				39161 2EJH1	JF8SPPMS6D0A JF8SPPMS6D1A	JF8SPPMF6D5K

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

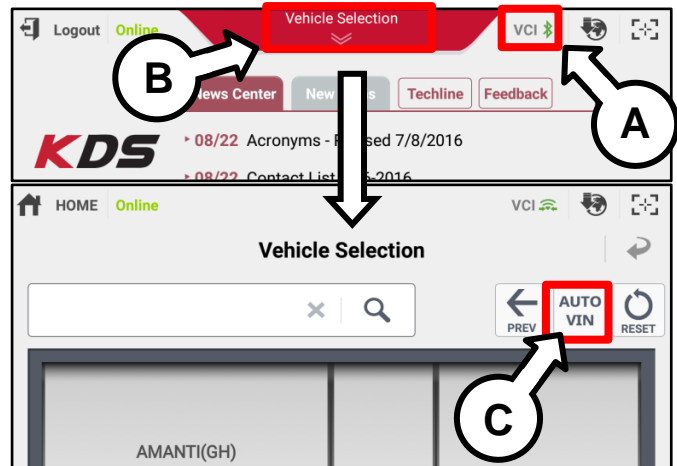
The ECU upgrade function on KDS operates wirelessly. It is not necessary to perform the upgrade via USB cable.



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.



4. Select 'ECU Upgrade'.

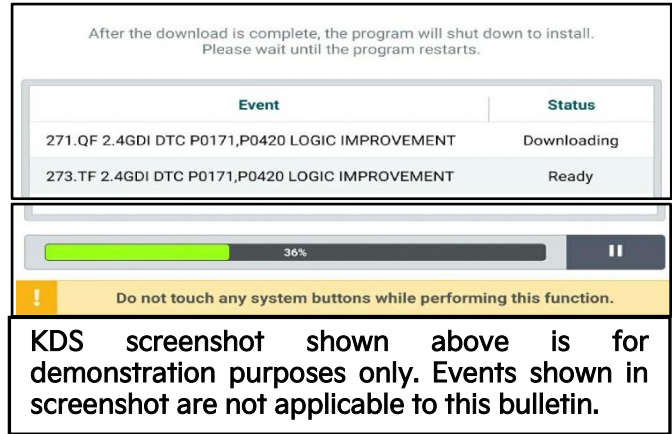


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- The KDS will check the server for recently uploaded Events and then automatically download Upgrade Event #571.

NOTICE

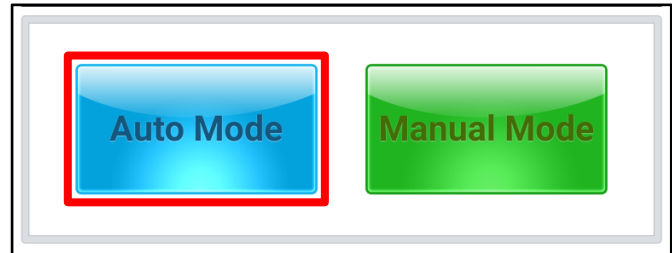
The vehicle must be identified in Vehicle Selection to download an Event for that vehicle.



- Select Auto Mode.

CAUTION

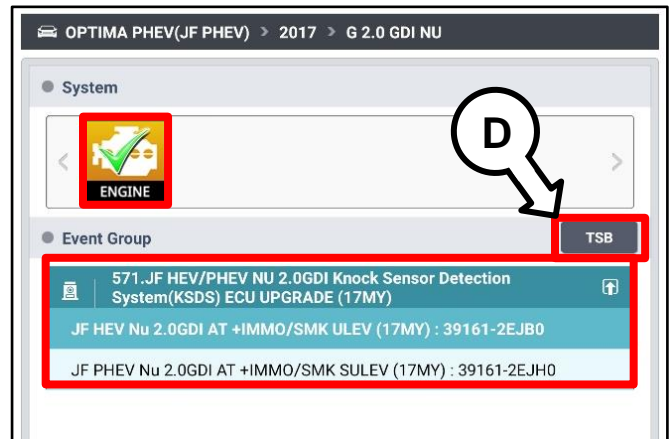
Do NOT attempt to perform a Manual Mode upgrade UNLESS Auto Mode fails. Always follow the instructions given on the KDS in either Auto or Manual mode.



- Select the ENGINE system under the System selection menu.

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

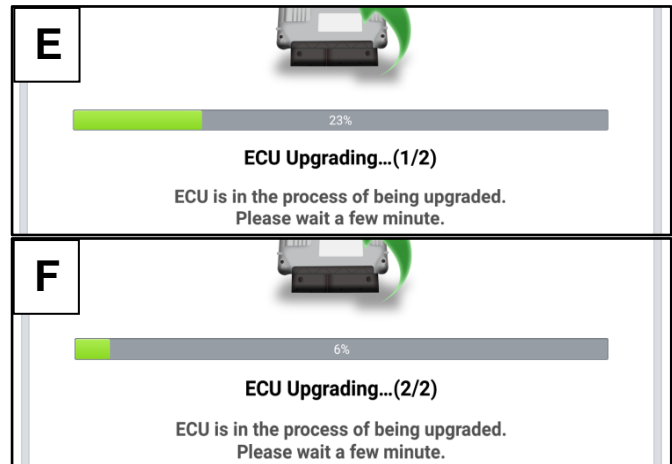
Select Upgrade Event #571 and select 'Upgrade' to continue.



- 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.



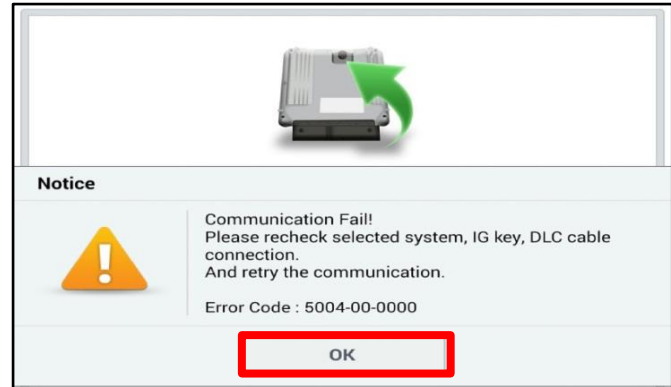
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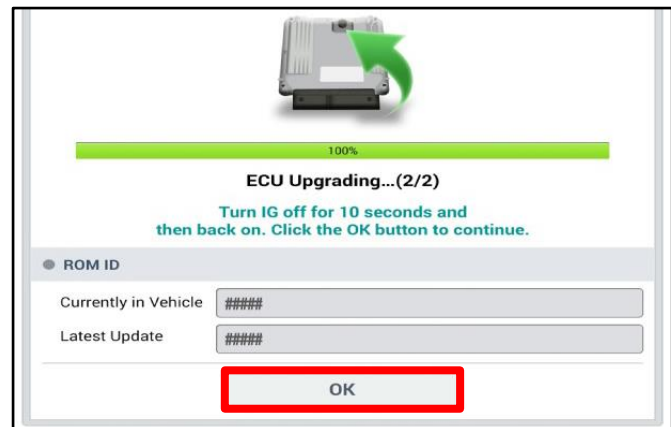
9. If a "Communication Fail" screen appears, verify that the VCI-II and KDS are communicating properly. Select 'OK' and restart the from step 4.

NOTICE

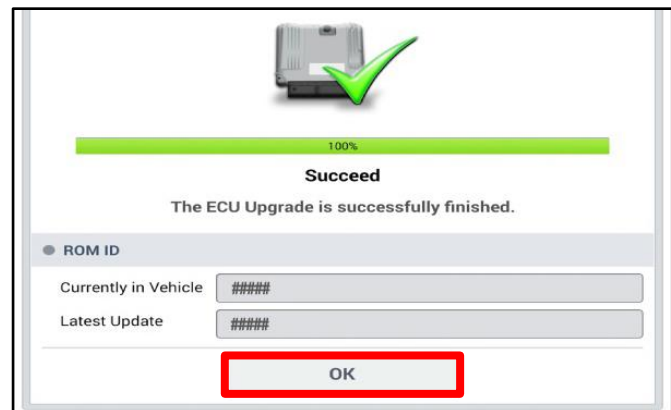
If an error notice continues to appear or if the upgrade cannot be performed, DO NOT disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.



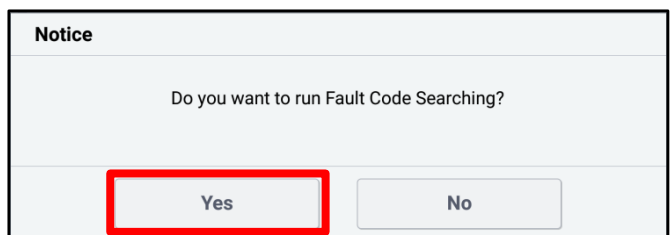
10. When instructed on the KDS, turn the ignition OFF for ten (10) seconds then back on. Select 'OK' to continue.



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
JF HEV Nu 2.OGDI AT +IMMO/SMK ULEV (17MY): 39161-2EJBO	3916
JF PHEV Nu 2.OGDI AT +IMMO/SMK SULEV (17MY): 39161-2EJHO	1619
JF HEV Nu 2.OGDI AT +IMMO/SMK ULEV (18MY): 39161-2EJB1	6121
JF PHEV Nu 2.OGDI AT +IMMO/SMK SULEV (18MY): 39161-2EJH1	1216

1. Within the ECU Upgrade screen displayed, select **Manual Mode**.
2. Select the ENGINE system under the System selection menu. Select **Upgrade Event #571** 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 Transmission (Transaxle) Assembly → Sub & Long Engine Assembly → Repair procedures" chapter in the applicable Shop Manual on KGIS.

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



Note: 1.6L Gamma Engine images shown for reference only.

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).**

NOTICE

Refer to [TSB ENG083](#) for gasoline direct injection (GDI) specific information, including related warnings and cautions for handling high fuel pressure system components and combustion seals must be compressed after installation and before attempting to install into the cylinder head. Use SST 09353 2B000.

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.


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AFFECTED VEHICLE RANGE:

Model	Production Date Range
Optima (JF HEV)	June 27, 2016 to April 27, 2018
Optima (JF PHEV)	


REQUIRED TOOL:

Tool Name	Tool Part No.	Figure	Comments
Torque Wrench Socket	09314 3Q100		Refer to TSB ENG083 for detailed usage instructions
Injector Combustion Seal Ring Installer	09353 2B000		
Click-Type or Electronic Torque Wrench	N/A		Locally Sourced
Bearing Clearance Tester Kit	KQ231 2T110QQK		<p>Auto-shipped to Dealers</p> <p>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>



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REQUIRED PARTS:

Part Name	MY	Model	Part Number	Figure
			Nu 2.0L GDI	
Engine Long Block	17-18MY	JF P/HEV	21101 2EG20FFF	

Service Kits (Nu 2.0L GDI):

Models	Part Name	Engine	Part Number	Figure
JF P/HEV	Service Kit*	2.0L GDI	21111-2EGA3FFF	
	Fuel Tube		35305 2E600FFF	
	Bolt		21891 3R000	2 EA
	Bolt		21991 3R000	1 EA
	Nut		51759 F6000	3 EA

Service Kit* Includes	ROD ASSY-OIL LEVEL	26611 2E022	1 EA
	GASKET-EXMANI	28521 2E000	1 EA
	GASKET-INMANI	28313 2E000	4 EA
	COMBUSTION SEAL(INJECTOR)	35312 2E613	4 EA
	BACK-UP RING(INJECTOR)	35312 2E611	4 EA
	O-RING (INJECTOR)	35312 2E610	4 EA
	CLIP-INJECTOR	35309 2E610	4 EA
	WASHER SEAL-INJECTOR	35313 2E610	4 EA
	O-RING (HIGH PRESSURE PUMP)	35322 2GTA0	1 EA
	BOLT (HIGH PRESSURE PUMP)	11405 06206K	2 EA
	GASKET (FRT MUFFLER)	28751 2B300	1 EA
	NUT (FRT MUFFLER)	13183 12000	2 EA
	KNOCK SENSOR	39250 2E000	1 EA
	BOLT-FLANGE	11403 08306K	1 EA
	GASKET-EGR PIPE, A1	28491 2E920	1 EA
	GASKET-EGR PIPE, B	28492 2E900	1 EA
	O-RING WTC ASSY	25623 2E000	1 EA
	GASKET-WATER PUMP, UPPER	25123 2E270	1 EA
	GASKET-WATER PUMP, LOWER	25124 2E270	1 EA
	BOLT-SEAL (8X26)	25125 2E270	5 EA
BOLT-FLANGE	25456 2E000	2 EA	
BOLT-FLANGE	11403 06207S	4 EA	

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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.
JF HEV/ PHEV	R	23060 2E003	0	BCT (Pass) + S/W	211158R0	0.8 M/H	N/A	0
				BCT (No Pass) +Engine Replacement + S/W	211158R1	8.9 M/H	21101 2EG20FFF 35305 2E600FFF 21111 2EGA3FFF	1
				Engine Seized/ Unable to Perform BCT +Engine Replacement + S/W	211158R2	8.4 M/H		

NOTE: Refer to [Warranty Bulletin 2021-22](#) for details regarding coolant and substitute transportation reimbursement requirements.

NOTICE

VIN inquiry data for this repair is provided for tracking purposes only. Kia retailers should reference [SC218](#) when accessing the WebDCS system.

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**ENGINE INSPECTION/REPLACEMENT
AND KSDS S/W INSTALLATION (SC218)****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 vehicle and move in towards the dash VIN tag.



2. Show the removed spark plugs.



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



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



5. Show the engine being cranked and torque specification exceeding 94 lb.ft. torque.




6. Submit video with Techline PWA case.

Appendix 2

(Video Capture & Upload)

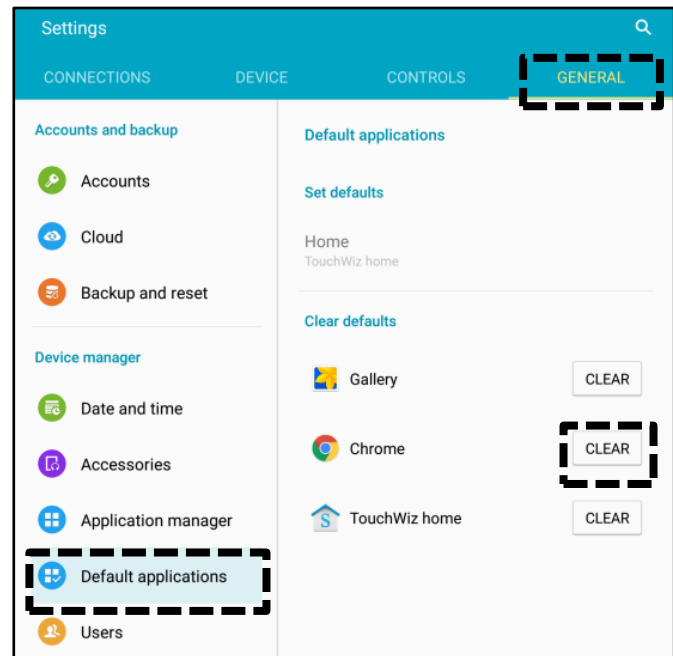
Note: Additional information required to open a Techline case including but not limited to screenshot of the stored DTC(s), ROM ID and Bearing Clearance Test (BCT) results.

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™.

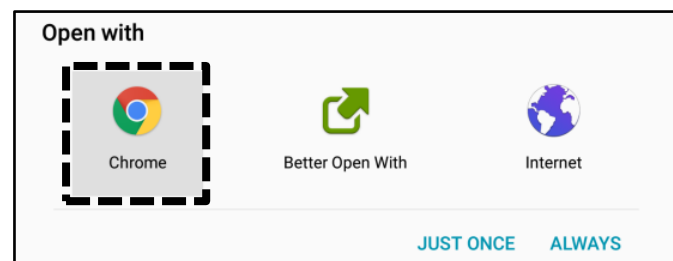
For KDS Tab 10.1 Tablets:

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".

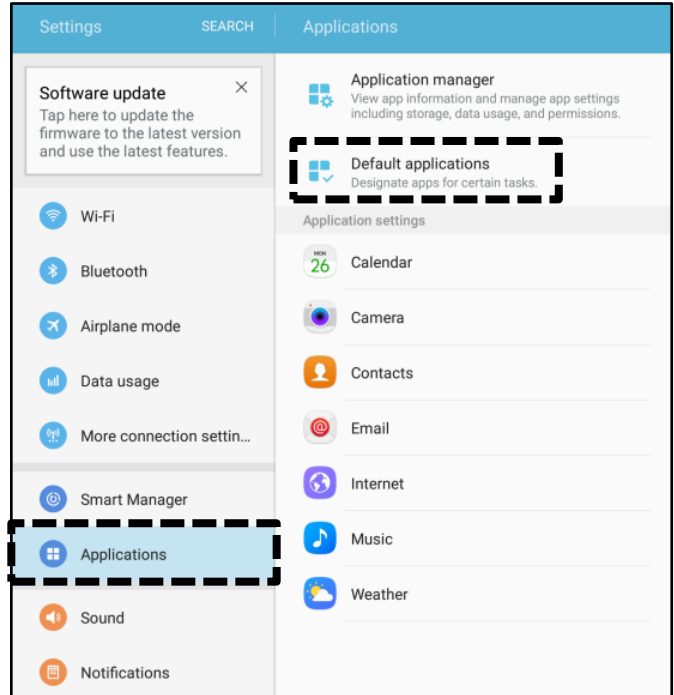


SUBJECT:

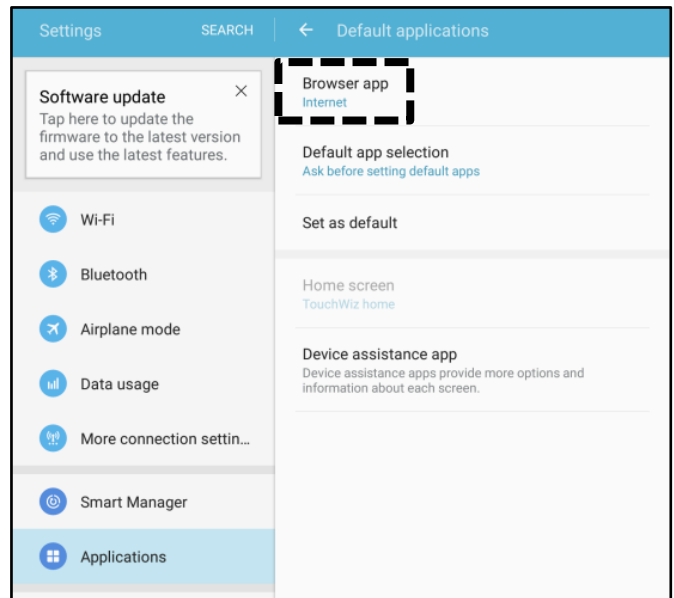
ENGINE INSPECTION/REPLACEMENT AND KSDS S/W INSTALLATION (SC218)

For KDS Tab S2 Tablets:

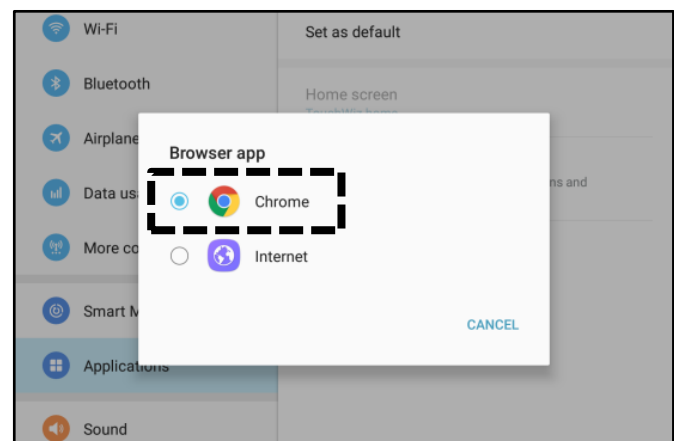
1. Select "Settings" from the App Screen.
2. Select "Applications".
3. Select "Default Applications".



4. Select "Browser app".



5. Ensure "Chrome" is selected.



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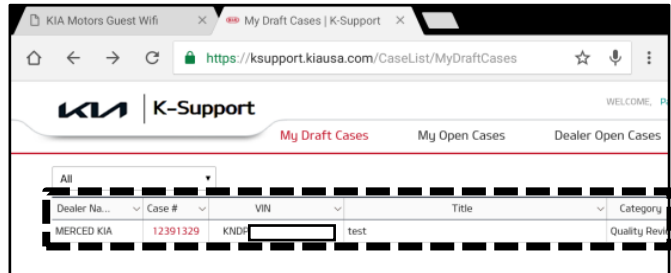
Attaching Video to a Techline Case:

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

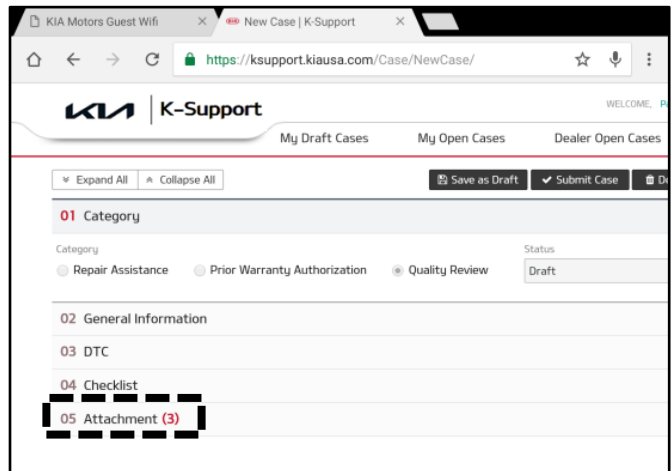
<https://ksupport.kiausa.com>



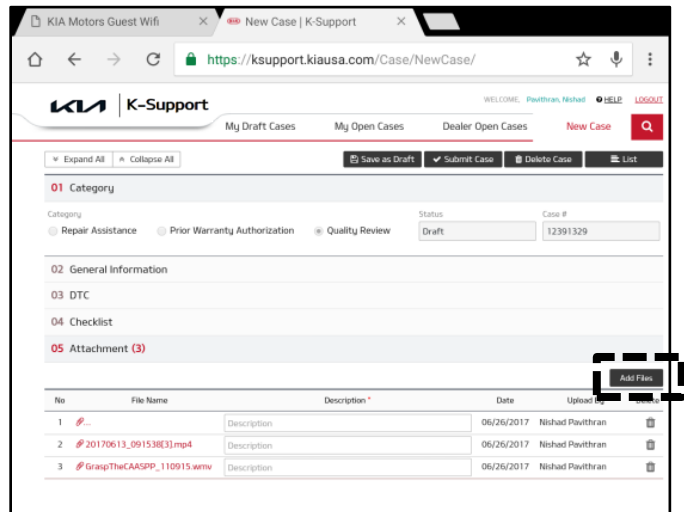
2. Open your existing Techline case for the vehicle requiring a video capture by selecting the case number.



3. Select “Attachment”.

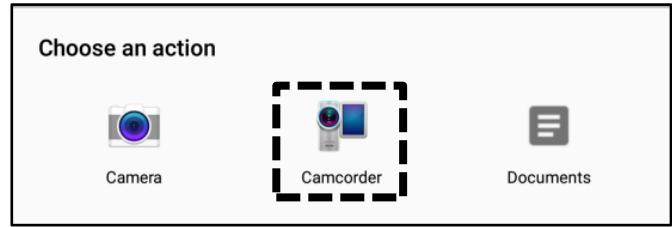


4. Select “Add Files”.



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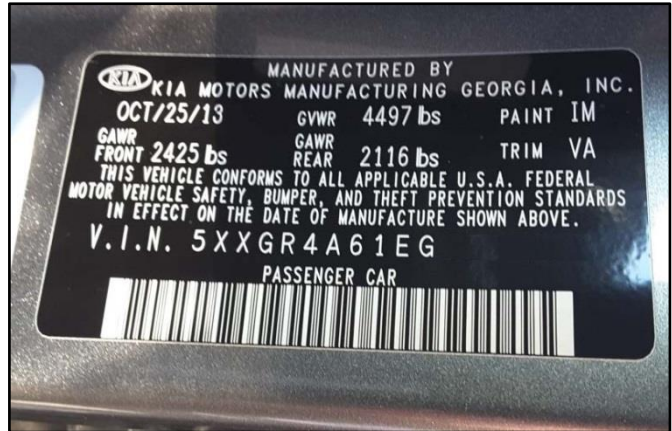
- Select "Camcorder" and the video camera will open.



- 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.



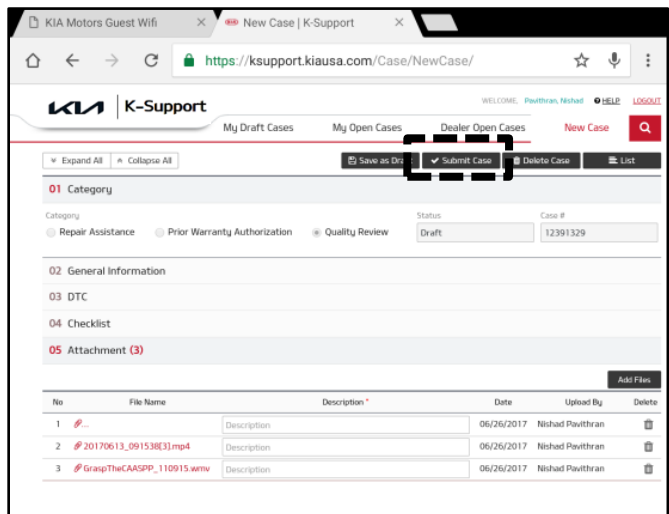
*** NOTICE**

NOTE: 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".



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

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

