



GROUP

MODEL

Subsequent Repair Action

2014-2016MY  
Optima (TF HEV)  
w/2.4L MPI

NUMBER

DATE

PI2104Y/Z (Rev 1, 11/07/2024)

July 2023

## SUBSEQUENT REPAIR ACTION

SUBJECT:

ENGINE REPLACEMENT INSTRUCTIONS  
FOR DTC P1326 (PI2104Y/Z)

## 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 related to the Technical Service Bulletin previously published in (PI2104) titled "Knock Sensor Detection System - ECU Logic Improvement" for 2014-2016MY Optima (TF HEV) vehicles equipped with Theta 2.4L MPI engine, produced from December 11, 2013 through July 22, 2015. Specifically, this bulletin provides instructions on which procedures to follow if, after installation of the KSDS, any one of the subject vehicles below return to the dealer with Diagnostic Trouble Code (DTC) P1326 (Knock Signal Range/Performance).

If DTC P1326 is present, first perform the bearing clearance inspection with the Engine Bearing Clearance Tester device (SST KQ231-2T110QQK). This device checks the rod bearing clearance by placing air and vacuum into the cylinder block. Measure the bearing clearance and follow the instructions in this bulletin. Before conducting the procedure, verify the vehicle is included in the list of affected VINs.

A **Vehicle Diagnosis Number (VDN)** must be created with or without DTC P1326, after scanning for DTCs, prior to performing PI2104Y/Z. If a VDN is not created, Warranty claim submission issues WILL occur.

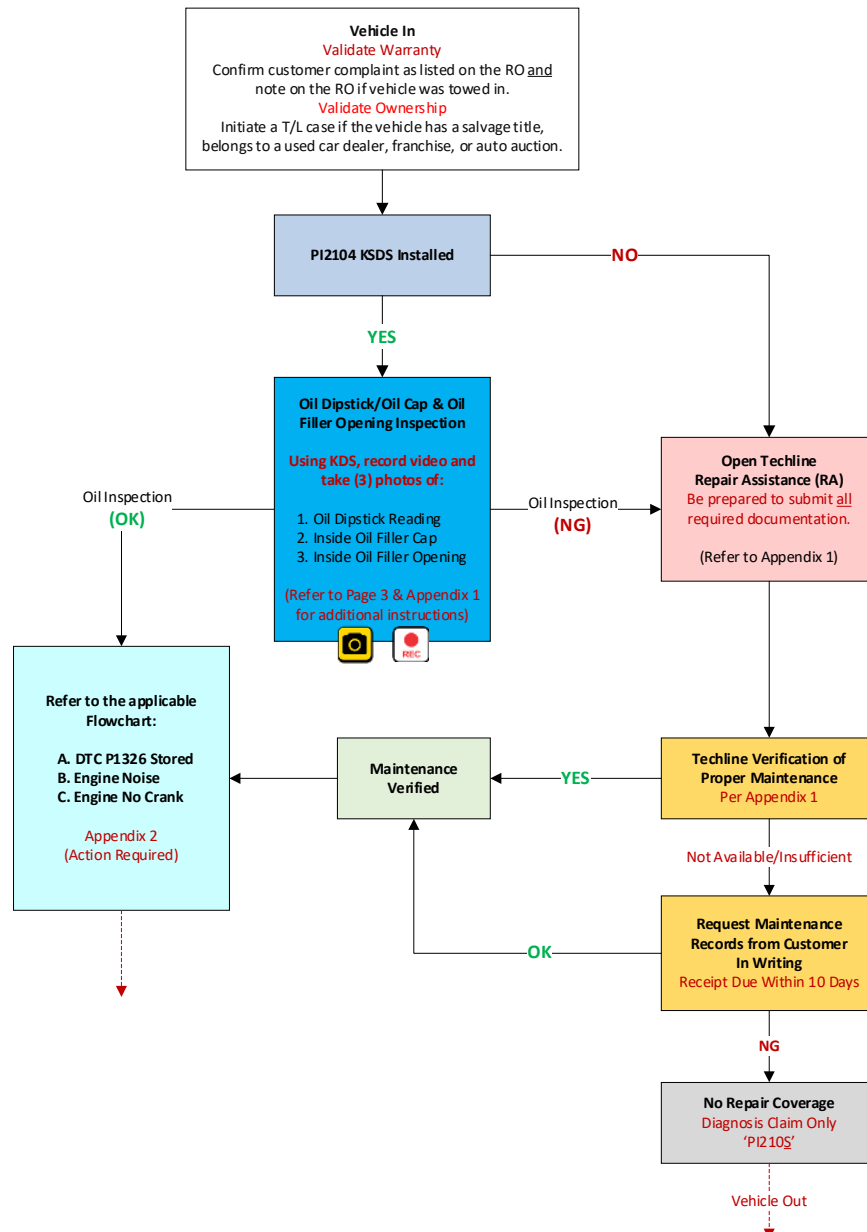
## NOTICE

**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.**

## Main Flowchart:

**❗ IMPORTANT**

Certain limitations may apply to this Subsequent Improvement Campaign coverage. Refer to **Warranty Bulletin 2023-18** for more details. Before starting inspection/repairs related to this publication, vehicle ownership needs to be verified by completing the [Ownership Validation Form](#)



Follow the applicable flowchart upon documenting customer complaint for one (1) of the three (3) following concerns from Main Flowchart:

- A. DTC P1326 Stored... (Page 4)
- B. ENGINE NOISE... (Page 5)
- C. ENGINE, NO CRANK... (Page 6)

SUBJECT:

## ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (P12104Y/Z)

**Oil Condition and Oil Level Inspection: (Main Flowchart)**

1. Start video showing vehicle and move in towards the dash VIN tag.
2. Measure and record oil dip stick level.
3. Note oil dip stick reading on the RO.
4. Take a picture of the oil reading on dipstick.



5. Inspect the inner/bottom of the oil cap and inside oil filler opening.

6. Take a picture of both, the bottom of the oil cap and oil filler opening.



**Record/Note findings:** No oil, oil sludge, varnish, burnt oil smell condition(s) found.

**NOTICE**

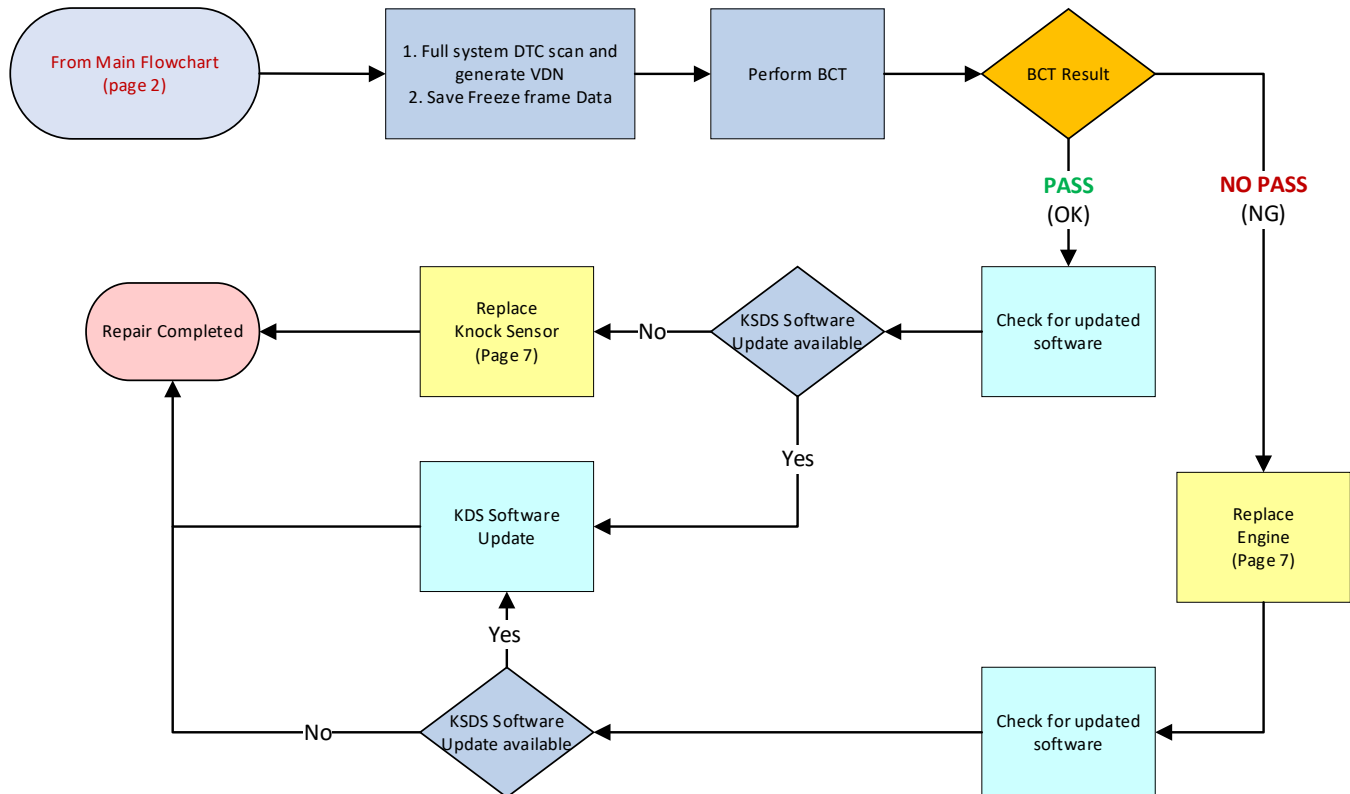
**If NO oil is registered on the dipstick, or oil lacquering, oil sludge and/or oil varnish is present (NG), then the engine is therefore suspect to maintenance neglect. Review of the vehicle's maintenance history is required.**

**If suspect, proceed to the 'Oil Level Measurement' instructions below and submit with the Techline case.**

**Oil Level Measurement: (Main Flowchart → PWA Request) NO OIL READING ON DIPSTICK**

1. Remove oil filler cap, remove oil drain plug and drain oil into the measuring container SST067BUCK and check oil level.
2. Record oil level reading on the RO.
3. Take photo of the drained oil container using KDS and attach to warranty claim PWA request.



**A. DTC P1326 Stored****Create PI2104Y Claim - No Techline PWA Required**

Note: If any concerns arise during/after completing the flow chart(s), open a Techline case online.

**❶ IMPORTANT**

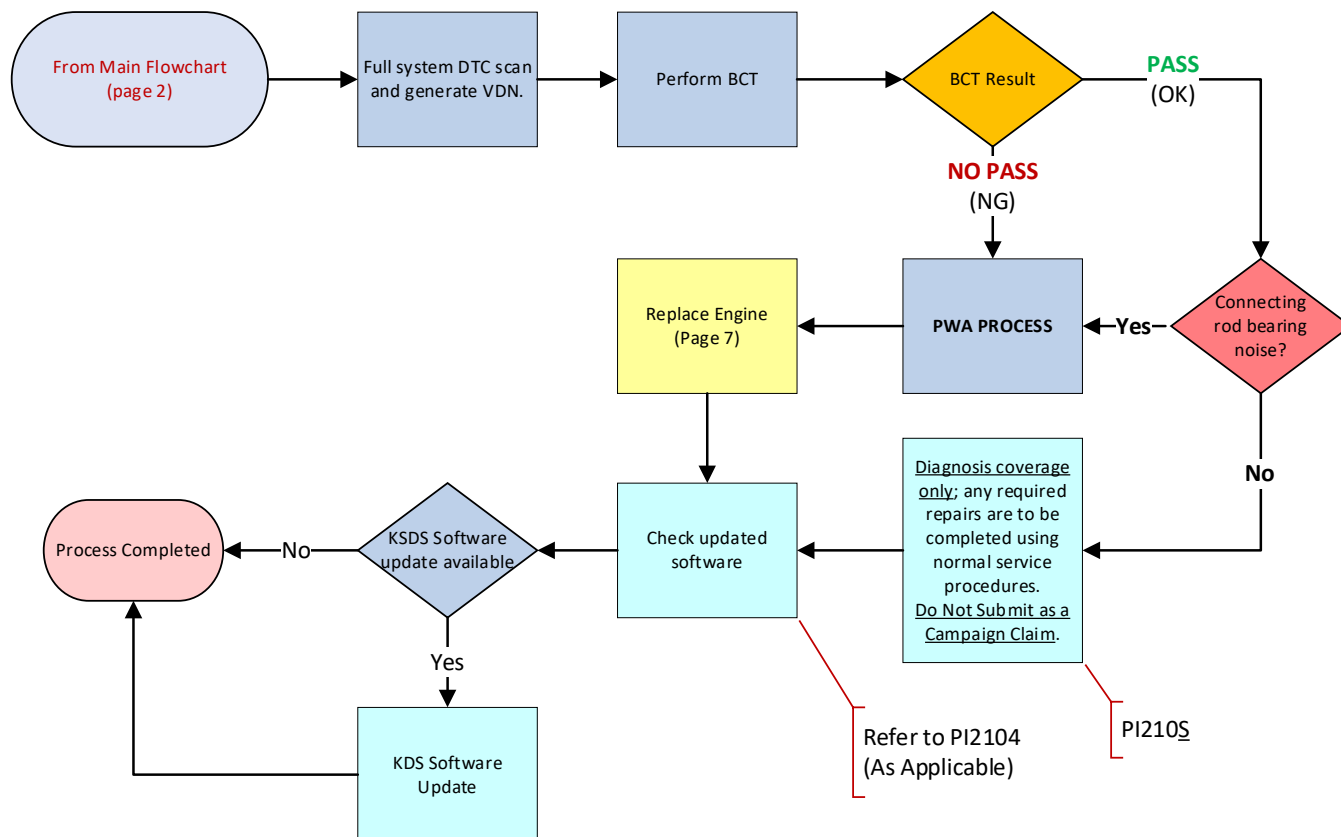
Due to recent updates to KDS, always follow the BCT procedure instructions outlined in KDS. You may also refer to [SST067 for BCT Procedure/Calibration information](#).

SUBJECT:

## ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (PI2104Y/Z)

**B. Engine Noise**

Techline PWA Required; Diagnosis Only Campaign Possible



**Note:** If any concerns arise during/after completing the flow chart(s), open a Techline case online.

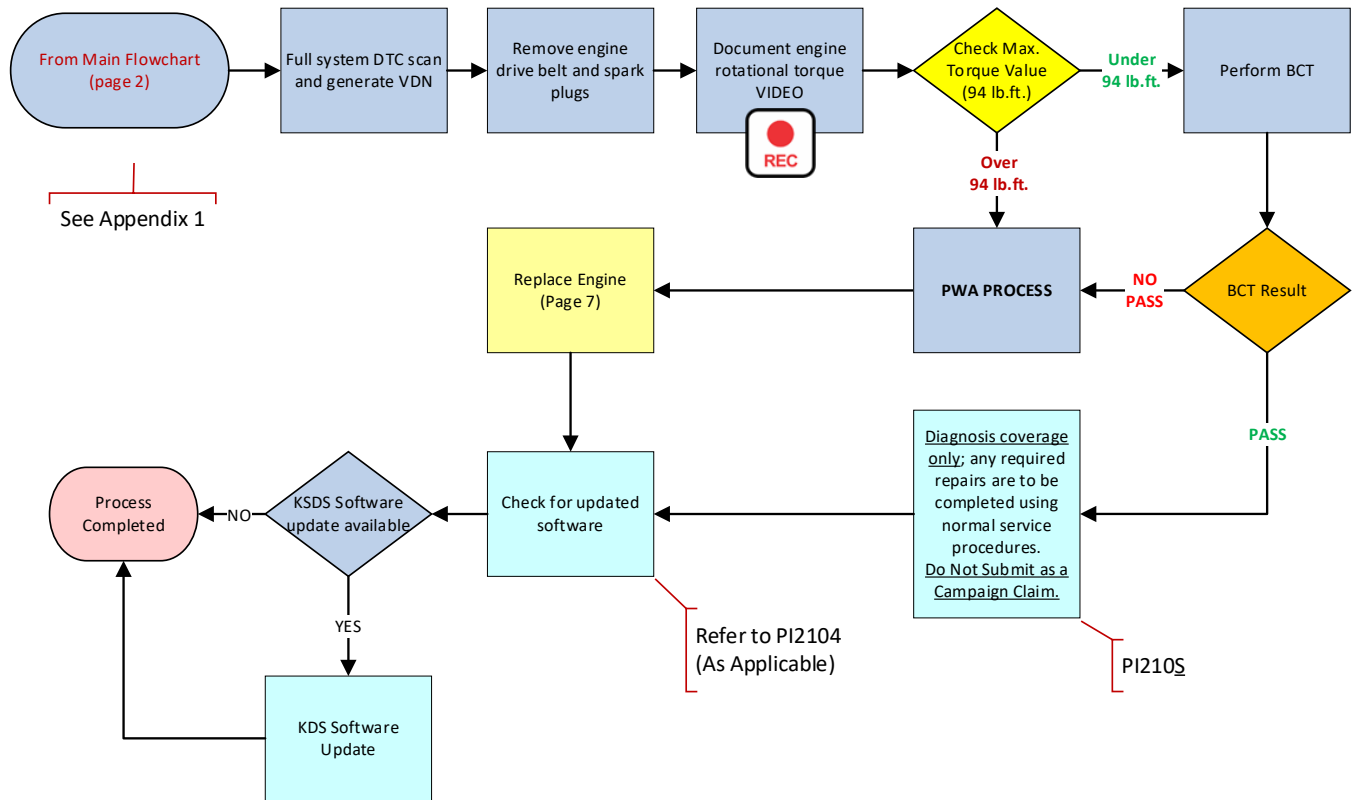
**① IMPORTANT**

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](#).



## C. Engine No Crank

**Techline PWA Required; Diagnosis Only Campaign Possible**



Note: If any concerns arise during/after completing the flow chart(s), open a Techline case online.

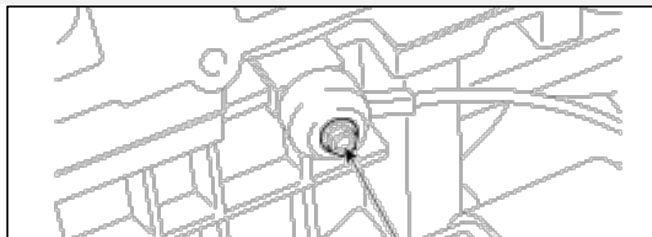
### ❗ IMPORTANT

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](#).

SUBJECT:

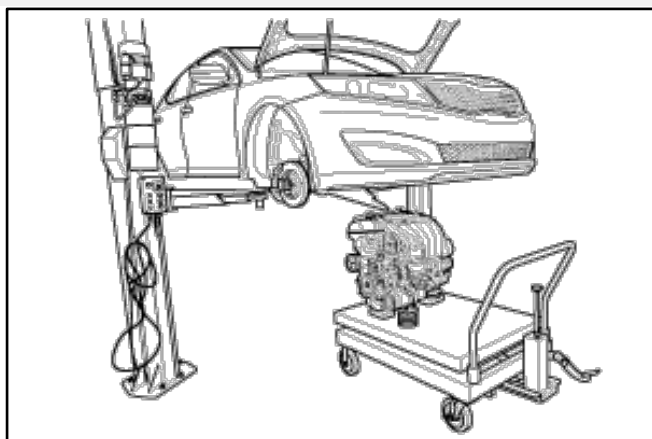
**ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (PI2104Y/Z)****Knock Sensor Replacement Procedure:**

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

**Engine Replacement Procedure:**

1. Replace the engine assembly by referring to the "Engine Mechanical System → Engine and Transaxle Assembly → Engine and transaxle Assembly → Repair procedures - Revised" 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).**
5. 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.
6. Confirm that the Rom ID is up-to-date. If not, reflash the ECU to the latest ROM ID available. Refer to PI2104 - Knock Sensor Detection System ECU Logic Improvement.
  7. 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.**



SUBJECT:

**ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (PI2104Y/Z)****AFFECTED VEHICLE RANGE:**

| Model           | Production Date Range              |
|-----------------|------------------------------------|
| Optima (TF HEV) | December 11, 2013 to July 22, 2015 |

**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</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> |

**REQUIRED PARTS:**

| Part Name         | MY      | Model  | Part Number    | Figure                                                                                |
|-------------------|---------|--------|----------------|---------------------------------------------------------------------------------------|
|                   |         |        | Theta 2.4L MPI |                                                                                       |
| Engine Long Block | 14-16MY | TF HEV | 21101 2G407FFF |  |

**Service Kit (Theta 2.4L MPI):**

| Models          | Part Name     | Engine   | Part Number    | Figure                                                                                |
|-----------------|---------------|----------|----------------|---------------------------------------------------------------------------------------|
| Optima (TF HEV) | Service Kit   | 2.4L MPI | 21111 2G4S3FFF |  |
|                 | Flywheel Bolt |          | 23231 25200FFF | *Do Not reuse bolts. (Qty. 7)                                                         |
|                 | Knock Sensor  |          | 39250 2C500    | Only order replacement knock sensor if directed by the flowchart.                     |

SUBJECT:

## ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (PI2104Y/Z)

## WARRANTY CLAIM INFORMATION FOR:

PI2104 **Y1**, PI2104 **Z1** and PI210**S** (DIAGNOSIS ONLY CLAIMS):**IMPORTANT**

**REFER TO WARRANTY BULLETIN 2023-18** (PI2104Y, Z OR PI210S) FOR MODEL-SPECIFIC LABOR OPERATIONS AND TIMES, AS WELL AS SPECIFIC CLAIM SUBMISSION PROCEDURES. **NOTE:** SEE APPENDIX 1 & 2 FOR ADDITIONAL TECHLINE PWA INFORMATION REQUIRED.

| Flow Chart Symptom #A                                          | Diagnostics                                                             | Repairs                                                                                                                                  |
|----------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PI2104Y</b><br>DTC P1326<br>(No TL PWA Required)            | BCT <b>Pass</b>                                                         | R&R Knock Sensor                                                                                                                         |
|                                                                |                                                                         | ECU Upgrade                                                                                                                              |
|                                                                | BCT <b>No Pass</b>                                                      | Engine R&R                                                                                                                               |
|                                                                |                                                                         | Engine R&R + ECU Software Update                                                                                                         |
| Flow Chart Symptom #B                                          | Diagnostics                                                             | Repairs                                                                                                                                  |
| <b>PI2104Z</b><br>Engine Noise<br>(TL PWA <u>Required</u> )    | Check Oil + BCT <b>Pass</b>                                             | <b>Inspection + Noise Check (N) (PI210S Claim)</b><br>Repairs under normal warranty coverage MAY apply.<br>Separate TL PWA case required |
|                                                                |                                                                         | Noise Check + TL PWA + Engine R&R                                                                                                        |
|                                                                |                                                                         | Noise Check + TL PWA + Engine R&R<br>+ ECU Software Update                                                                               |
|                                                                | Check Oil + BCT<br><b>No Pass</b>                                       | Engine R&R with TL PWA                                                                                                                   |
|                                                                |                                                                         | Engine R&R with TL PWA + ECU Software Update                                                                                             |
|                                                                |                                                                         |                                                                                                                                          |
| Flow Chart Symptom #C                                          | Diagnostics                                                             | Repairs                                                                                                                                  |
| <b>PI2104Z</b><br>Engine No Crank<br>(TL PWA <u>Required</u> ) | Check Oil Amount +<br>Check Crank Rotation<br>(+ 94lb.ft)               | <b>Inspection Only (PI210S Claim)</b> - Repairs under normal warranty coverage MAY apply - separate TL PWA case required)                |
|                                                                | Check Oil Amount +<br>Crank Rotation (- 94lb.ft)<br>+ BCT <b>Pass</b>   | <b>Diagnosis Only (PI210S Claim)</b> - Repairs under normal warranty coverage MAY apply - separate TL PWA case required)                 |
|                                                                | Check Oil Amount +<br>Crank Rotation (-94lb.ft)<br>+ BCT <b>No Pass</b> | Engine R&R with TL PWA                                                                                                                   |
|                                                                |                                                                         | Engine R&R + ECU Software Update with TL PWA                                                                                             |
|                                                                | Check Oil Amount +<br>Crank Rotation (+94lb.ft)<br>(No BCT)             | Engine R&R with TL PWA                                                                                                                   |
|                                                                |                                                                         | Engine R&R + ECU Software Update with TL PWA                                                                                             |
|                                                                |                                                                         |                                                                                                                                          |
|                                                                |                                                                         |                                                                                                                                          |

**Note:** Photo requirement for Warranty Claim submission as outlined in TSB PI2104: Separate photos of the oil dipstick reading, oil filler cap, oil filter opening must be attached to the claim using Warranty Claim Attachment type 'XX - Other'. Failure to provide the required photos may result in claim rejection or chargeback. Refer to **Warranty Bulletin 2023-18** for details regarding coolant and substitute transportation reimbursement requirements.

## Appendix 1 (Techline Prior Work Authorization)

| Inspection Type                                                                                                                                                                                                  | Findings                                                                                                                                                         | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Oil Dipstick</b><br><b>Oil Filler Cap</b><br><b>Oil Filler Opening</b><br><br><b>Note:</b> Using KDS, take (3) photos:<br>1. Oil Dipstick Reading<br>2. Inside Oil Filler Cap<br>3. Inside Oil Filler Opening | <b>Suspect Exceptional Neglect (NG)</b><br><br><ul style="list-style-type: none"> <li>Physical inspection of engine shows oil sludge/buildup/varnish.</li> </ul> | <ol style="list-style-type: none"> <li><b>Perform Oil Level Measurement</b><br/>Dealers are to empty crankcase oil into a measuring container and record findings.<br/><b>Note:</b> Take a photo of the oil level using KDS.</li> <li><b>Request Maintenance Records:</b><br/><br/><u>Customers may be required to provide Maintenance Records in the absence of sufficient CP/Carfax data.</u><br/>Customers have 5 business days to respond to dealer's request for maintenance records (or to confirm that they are gathering records and/or need additional time), in which case customers will be permitted an additional 5 business days (10 days total) to produce records <u>or</u> confirm they do not have records to provide.</li> </ol> |
|                                                                                                                                                                                                                  | Oil level & Oil condition (OK)                                                                                                                                   | <b>KSDS Installed <u>or</u> DTC P1326 Stored?</b><br><b>Applicable Flowchart A, B or C.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Note:** Customers who perform their own maintenance may provide a service record log along with receipts for the purchase of oil filter and engine oil.

| Maintenance Record Request                                                                                                                                                          | Maintenance Record Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Action                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Kia is required to verify Oil change records from dealers, Carfax (or similar reputable 3<sup>rd</sup>. parties) but may also request maintenance records from the customer.</b> | <ul style="list-style-type: none"> <li>One oil change gap of greater than 14 months and/or 10,500 miles.</li> <li>Previous diagnosis of excessive oil consumption issues but the customer did not obtain a repair to address such issues within 30 days or 1,000 miles (whichever comes first), subsequent after a completed oil consumption testing and confirmed diagnosis.</li> <li>No "Exceptional Neglect" can apply to otherwise eligible engine failures that occur within a Class Vehicle's first 15,000 miles.</li> </ul> | <b>Exceptional Neglect Determined.</b><br><br>Any repairs performed are the customer's responsibility or insurable extended warranty plan.<br><br><b>Diagnosis Coverage Only.</b> |
|                                                                                                                                                                                     | Maintenance Records Provided                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Repair Assistance (RA)</b>                                                                                                                                                     |

SUBJECT:

**ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (PI2104Y/Z)****Appendix 2 Techline Prior Work Authorization (PWA)**

| Scenario    | Description                                                  | Action Required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flowchart A | DTC P1326 Stored                                             | No TL PWA required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Flowchart B | Engine Noise                                                 | <b>TL PWA required for all dealers - Video of condition</b><br>Video requirement examples below are for illustration purposes, individual requirements will vary based upon the condition reported: <ul style="list-style-type: none"> <li>• Video should be continuous and show the VIN (most convenient VIN plate) and pan to show the engine condition.</li> <li>• For engine seizures, attempt to turn over engine with torque wrench in video and exceeding 94 lb.ft.</li> <li>• For hole in engine block, show hole in video</li> <li>• For severe engine noise demonstrate severity of the noise without over accelerating (to RPM redline) the engine in video (<b>Refer to Appendix 3</b>)</li> </ul> |
| Flowchart C | Engine Seized<br>Bearing Clearance Test<br><u>or</u> No Test |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

**Note:** Additional information may be requested by the Techline agent, including but not limited to screenshot of the stored DTC(s), ROM ID and Bearing Clearance Test (BCT) results.

**NOTICE**

VIN inquiry data for this repair is provided for tracking purposes only. Kia retailers should reference PI2104 when accessing the KDealer+ system.



**Video Instructions for Seized Engine Inspection: (Flowchart C)**

**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.

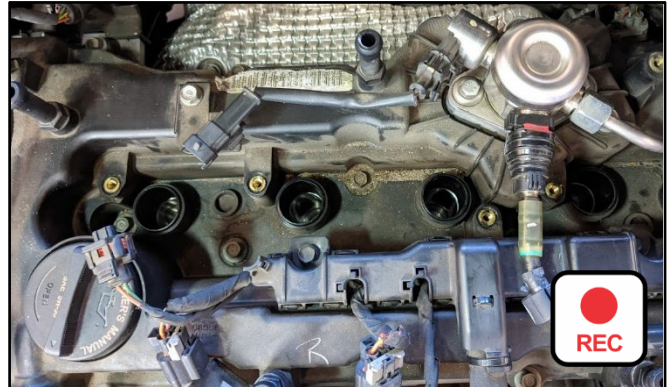


**Note:** Continue filming video until step 7.

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.



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



7. Submit video with Techline PWA case.

## Appendix 3 (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:

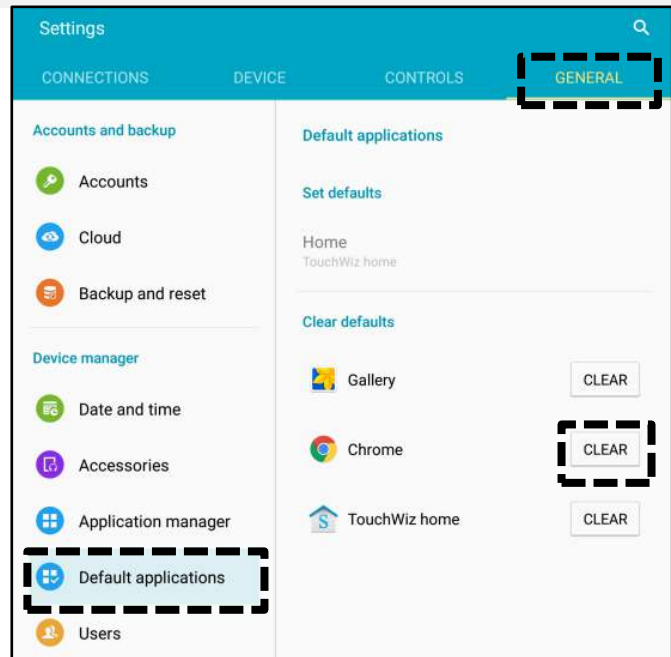
1. Select "Settings" from the App Screen.

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

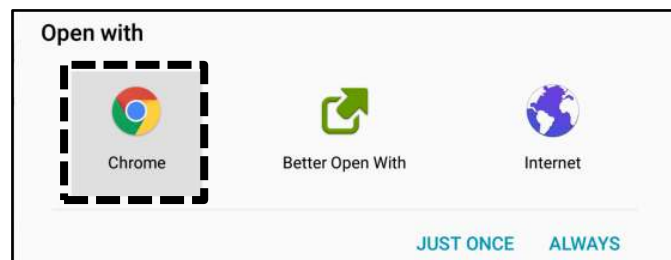
3. Select "Default Applications".

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

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

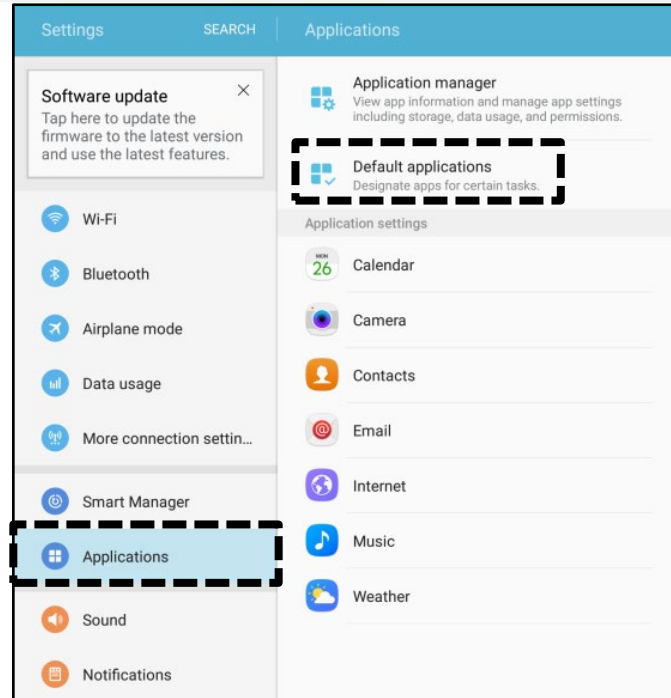


5. When opening the Techline portal, select "Chrome" and select Always".

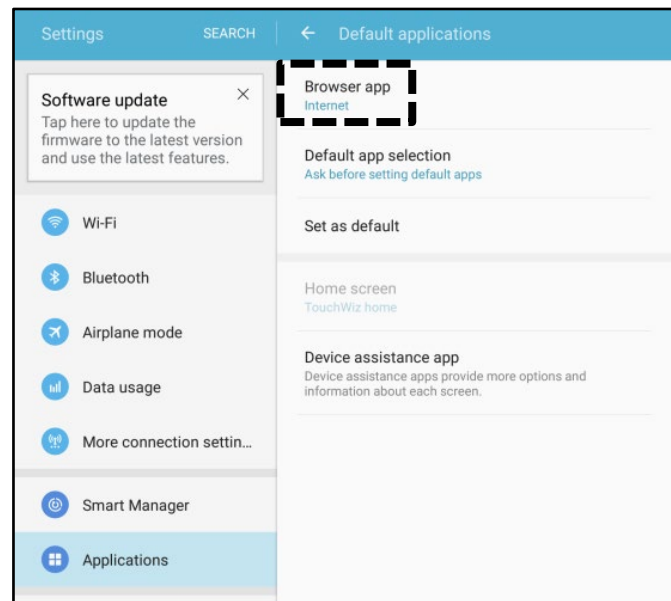


**For KDS Tab S2 Tablets:**

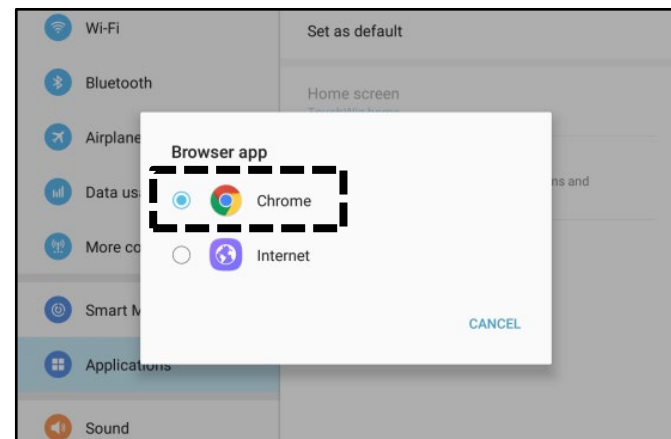
1. Select "Settings" from the App Screen.
2. Select "Applications".
3. Select "Default Applications".



4. Select "Browser app".



5. Ensure "Chrome" is selected.



SUBJECT:

**ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (P12104Y/Z)****Attaching Video to a Techline Case:**

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

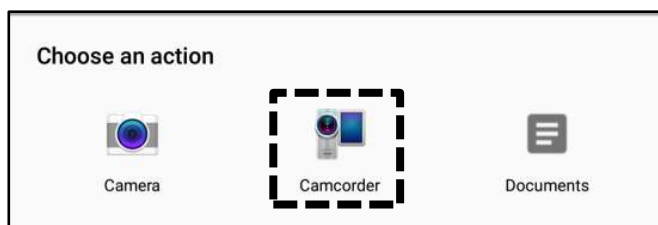
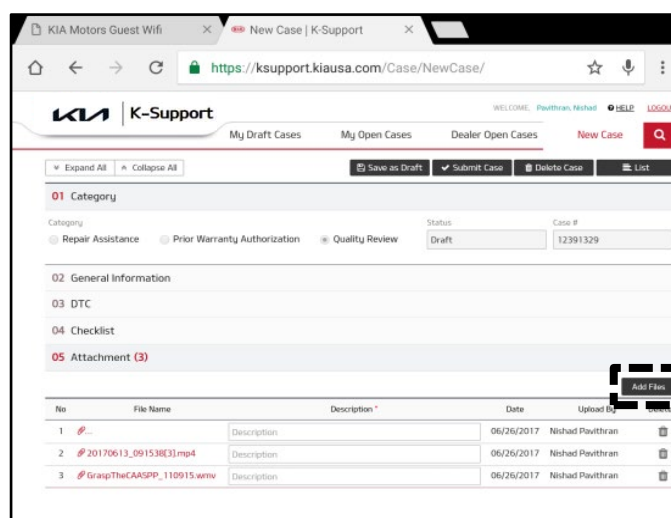
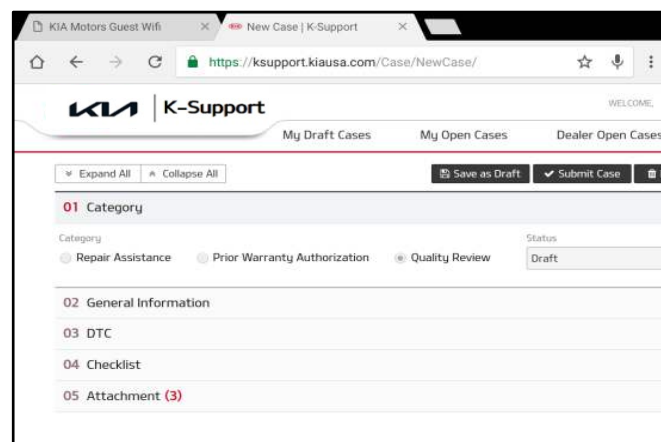
<https://ksupport.kiausa.com>

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.



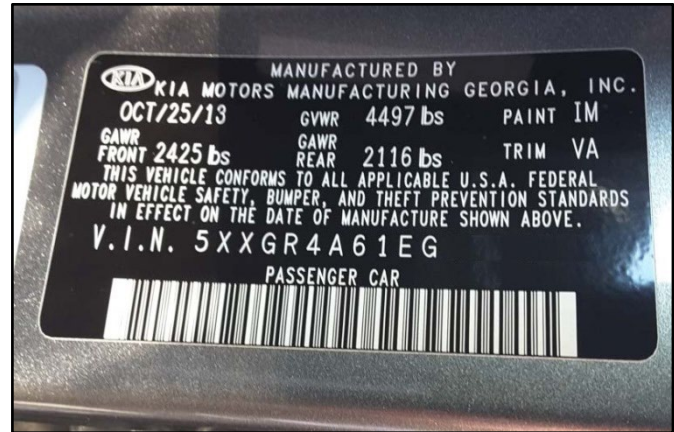
SUBJECT:

**ENGINE REPLACEMENT INSTRUCTIONS FOR DTC P1326 (PI2104Y/Z)**

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

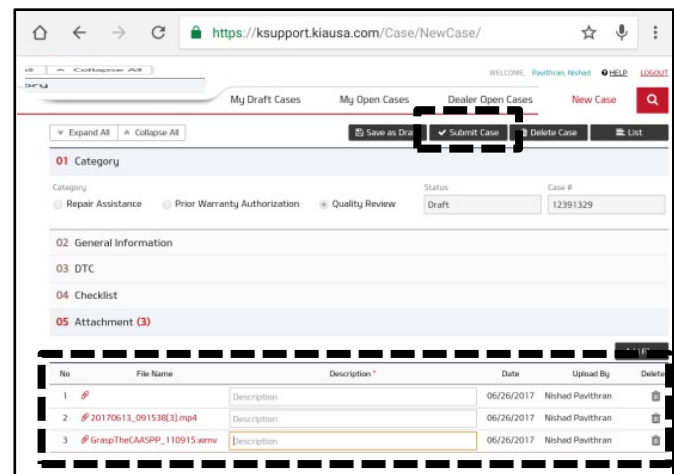
Without stopping the recording, capture the area of the vehicle displaying the issue. i.e.;

- 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".



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

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

