



Technical Service Bulletin

GROUP CAMPAIGN	NUMBER 18-01-032
DATE OCTOBER 2018	MODEL(S) SONATA (LF)

SUBJECT: SONATA ENGINE DTC P1326 - WIRING INSPECTION /
INSTALLATION AND ENGINE REPLACEMENT
(SERVICE CAMPAIGN T3G)

★ IMPORTANT

*** Retail Vehicles ***

Dealers must perform this Campaign on all affected vehicles whenever an affected vehicle is in the shop for any maintenance or repair.

When a vehicle arrives at the Service Department, access Hyundai Motor America's "Warranty Vehicle Information" screen via WEBDCS to identify open Campaigns.



Description: Certain 2015MY Sonata vehicles with 2.0L Turbo and 2.4L engines may experience the Check Engine warning lamp illuminated with DTC P1326. Follow the procedure to inspect the vehicle and install a wire harness extension or replacement engine based on the inspection results.

Applicable Vehicles: Certain 2015 MY Sonata (LF) vehicles with 2.0L Turbo and 2.4L engines

SST Information:

Part Name	Part Number / Figure	Note
Torque Wrench Socket	09314-3Q100	Only needed if engine replacement is required.
Injector Combustion Seal Ring Installer	09353-2B000	Refer to TSB 10-FL-019 for the detailed usage instructions
Pin Release Tool	 WRK0010P2R from WRK II OR  WRKA40RT04 from WRK III	These tools are included in Wire Harness Repair Kit II and III provided to dealers.

Part Information:

Part Name	Part Number / Figure	Qty	Note
Wiring harness-knock sensor kit	 91400-C2000QQH	1	Order based on inspection results. Refer to page 3. Kit includes wire harness, tape, and zip ties
Engine Assembly-Sub	 2.4L: 21101-2GK31QQH 2.0T: 21101-2GK32QQH	1	Order based on inspection results. Refer to page 3. (PA Approval Required)
Service Kit 1	2.4L: 21111-2GK51QQH 2.0T: 21111-2GK52QQH	1	
Service Kit 2	2.4L: 21111-2GK71QQH 2.0T: 21111-2GK72QQH	1	

Notes:

- 1) Order the required parts based on the vehicle inspection results.
- 2) Replacement engines are VIN-specific and should only be installed in the vehicle they were ordered for.

Warranty Information:

Model/Engine	Op. Code	Operation	Op. Time	Causal Part No.	Nature Code	Cause Code
Sonata (LF) 2.4L / 2.0T	8P1326R1	WIRING INSPECTION AND WIRING INSTALLATION	0.5 M/H	21101-2GK31QQH	Q75	ZZ1
Sonata (LF) 2.4L	8P1326R2	WIRING INSPECTION AND ENGINE REPLACEMENT	8.5 M/H	21101-2GK31QQH	Q75	ZZ1
Sonata (LF) 2.0T	8P1326R3	WIRING INSPECTION AND ENGINE REPLACEMENT	9.3 M/H	21101-2GK32QQH	Q75	ZZ1

Notes:

- 1) Submit Claim on Campaign Claim Entry Screen
- 2) If a part is found in need of replacement while performing this campaign and the affected part is still under warranty, submit a separate claim using the same Repair Order. If the affected part(s) are out of warranty, request a Prior Authorization # for goodwill consideration prior to completing the Campaign.
- 3) PA Approval required for OP Codes 8P1326R2 and 8P1326R3. See page 3.

Wiring Signal Interference Inspection:

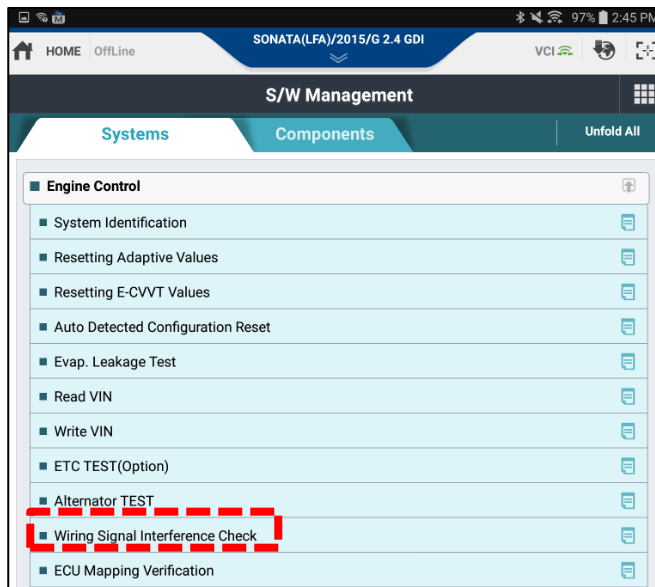
1. Warm the engine until the engine oil temperature is 176° F (80° C) or greater.

2. From the GDS main screen, navigate to **S/W Management > Engine Control** and select **Wiring Signal Interference Check**.

NOTICE

If the engine is seized or knocking and the wiring signal interference inspection cannot be completed:

- Submit a PA request for engine replacement with a GDS screenshot showing the VIN # and DTC P1326. When approved, replace the engine with service kits.
- Perform the wiring inspection after engine replacement.



3. Follow the prompts on the GDS to complete the inspection. At the conclusion of the inspection, take a screenshot of the results screen.

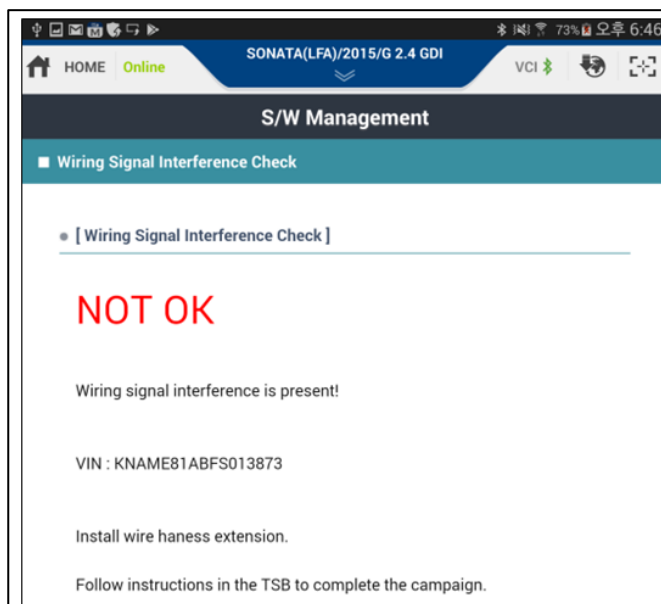
If the inspection result is OK:

- Submit a PA request for engine replacement with attachments of:
 - 1) Inspection results screen
 - 2) GDS screenshot showing the VIN # and DTC P1326
- When approved, replace the engine with service kits.

Note: If the engine was just replaced due to inability to perform the wiring signal inspection (engine seized/knocking), no further action is required.

If the inspection result is NOT OK:

- Install the new wire harness extension kit.



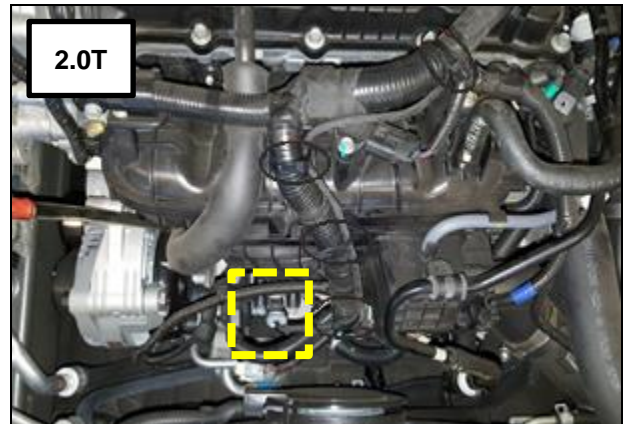
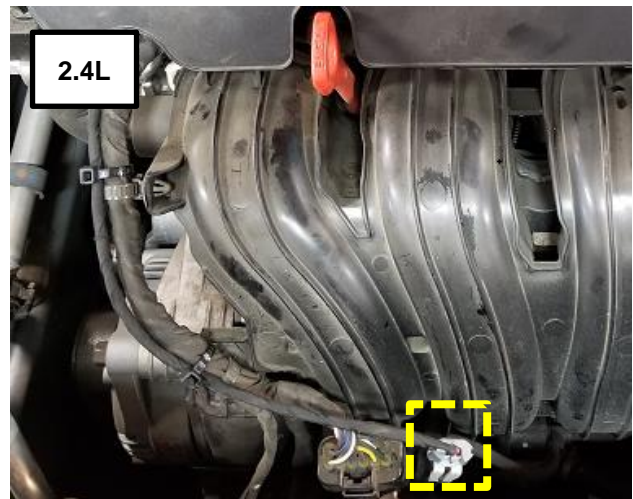
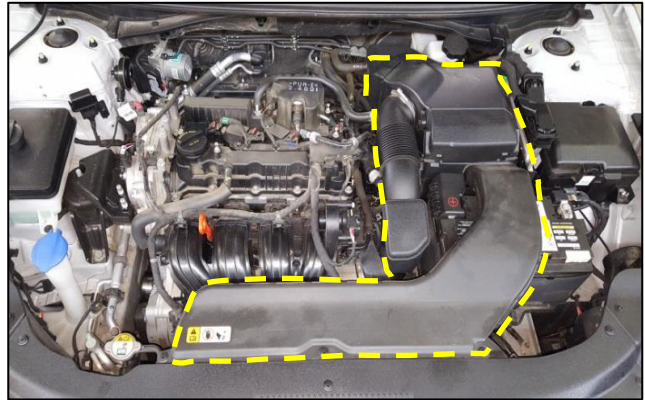
Wire Harness Extension Installation:

1. Remove the engine cover, air cleaner assembly, and negative battery terminal. Record vehicle's audio presets.

NOTICE

Proceed with wire harness extension installation **ONLY** if deemed necessary by the wiring signal inspection above.

2. Disconnect the knock sensor connector and connect the connector from the new wire harness extension.

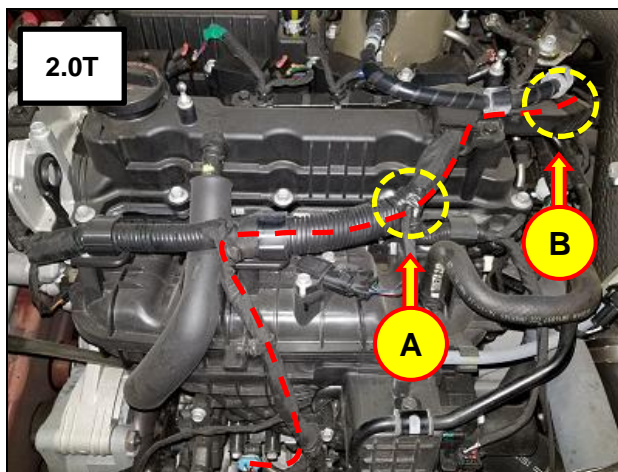
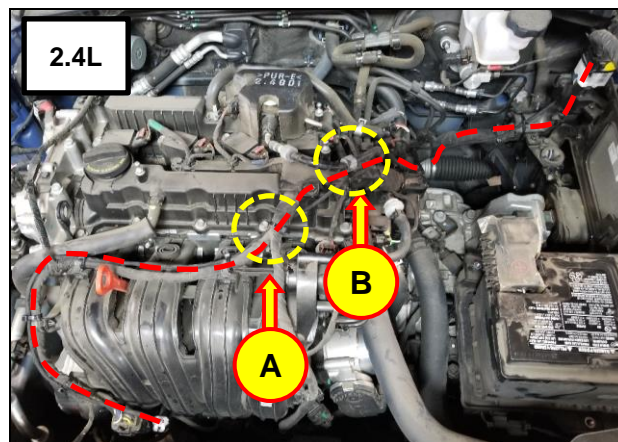


3. Route the new wire harness extension from the knock sensor connector to the engine ECM along the existing path of the engine control wire harness.

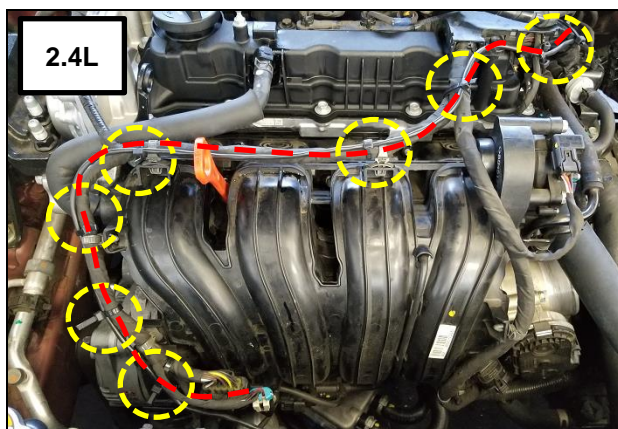
NOTICE

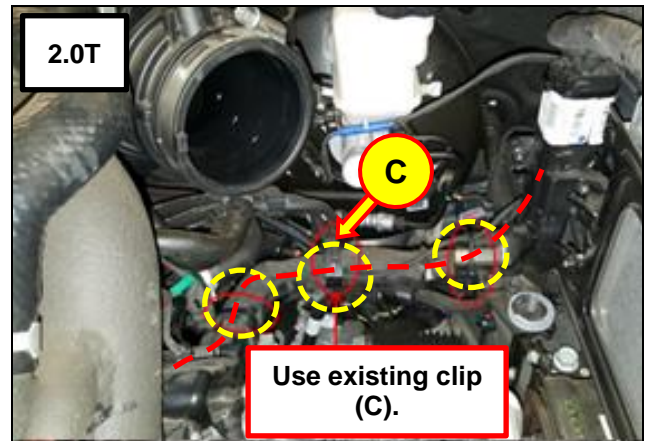
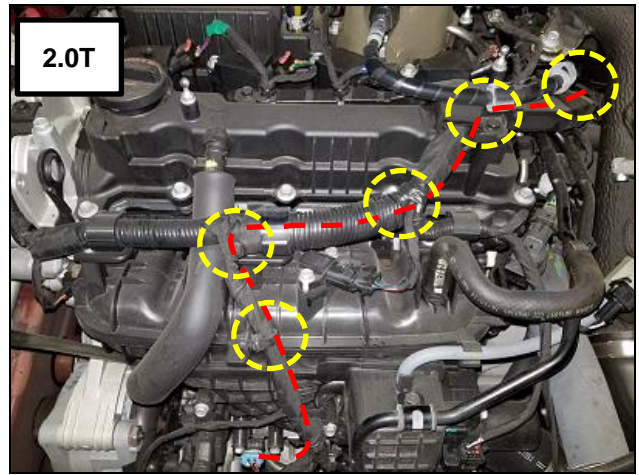
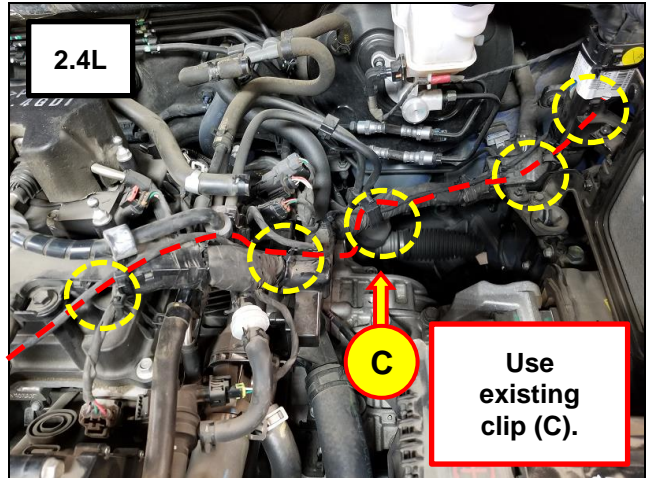
Ensure the new wire harness extension is:

- Underneath the original engine control wire harness at (A).
- On top the original engine control wire harness plastic protector at (B).



4. Secure the new wire harness extension with zip ties and the existing control wire harness clip (C) as shown on the following page.

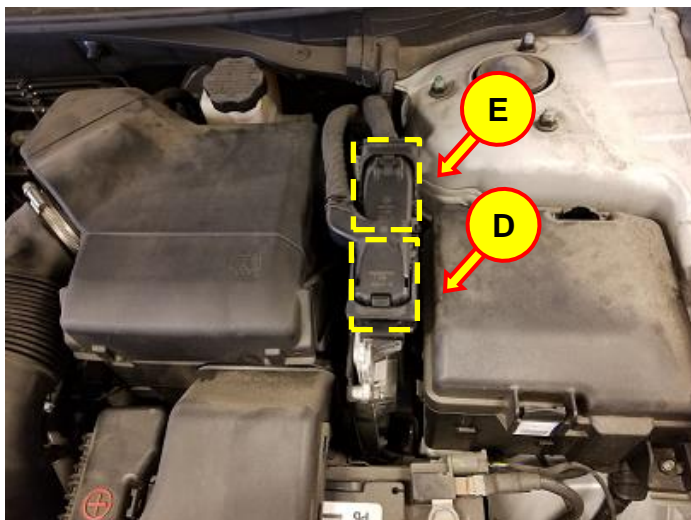




5. Reinstall engine cover and ensure the new wire harness extension does not contact the engine cover at the 2 locations shown.



6. Remove ECM connector (D). Then remove ECM connector (E).



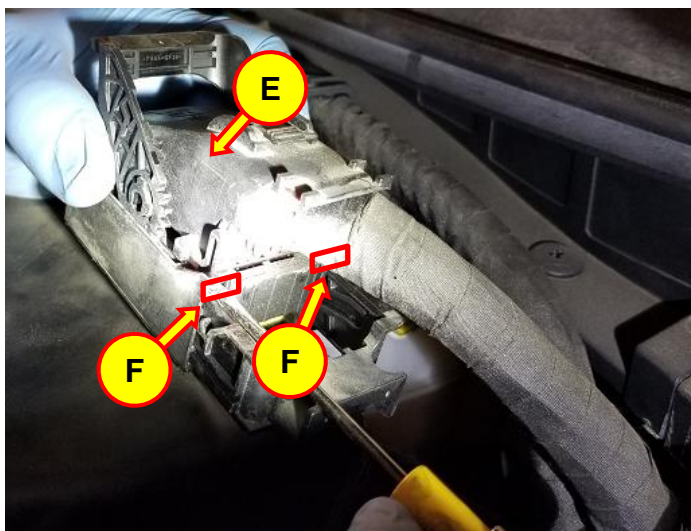
7. Remove the top cover of connector (E) by pressing on the 2 tabs (F) on each side of the connector using a flat head screwdriver.

NOTICE

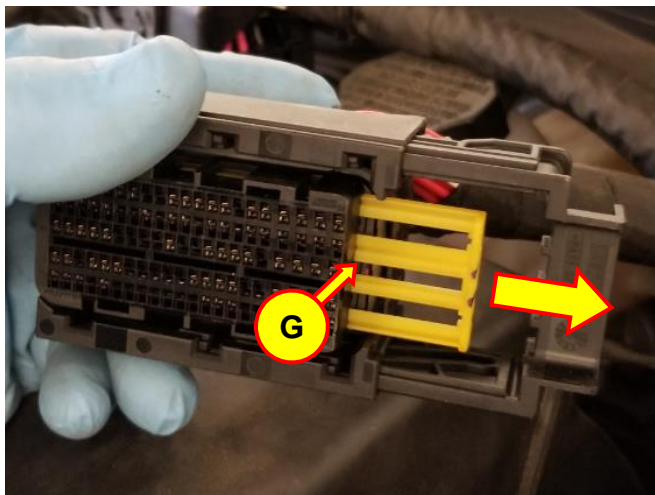
Of the two ECM connectors, connector (E) is the connector closest to the firewall.

CAUTION

DO NOT use brute force when removing the ECM connector cover. The cover comes off with minimal force when the 2 tabs (F) are depressed.



8. Fully remove the connector retaining clip from the connector by gently prying at (G) using a small flat head screwdriver.



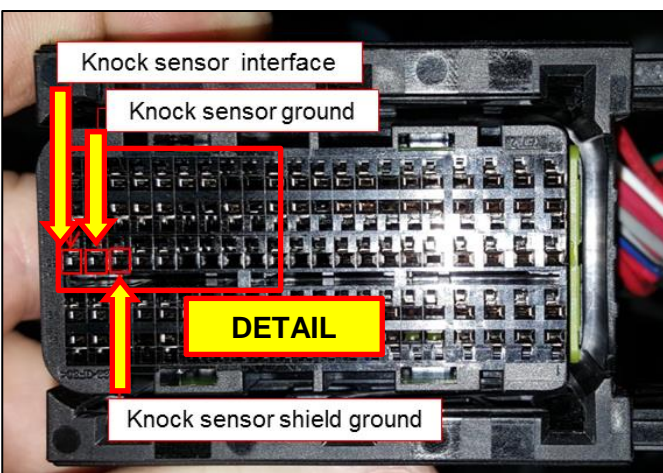
9. Carefully remove the following 3 pins for the knock sensor from the ECM connector using the SST. Insert the SST into the connector and separate the tabs (H) as shown to release each pin and gently pull the wire to remove each pin from the connector.

- PIN 63 - Red – knock sensor interface
- **PIN 63 is identified on the connector.**
- PIN 62 - Black – knock sensor ground
- PIN 61 - Black – shield ground

104	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

NOTICE

Note the orientation of each pin in the connector. The new pins will be installed in the same orientation in the next step.

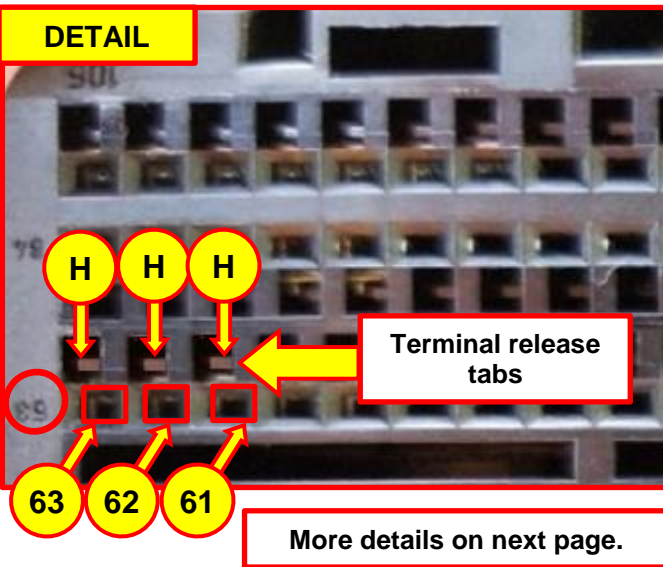


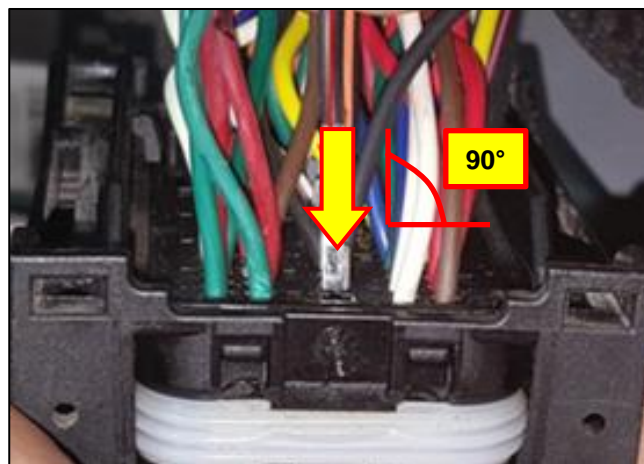
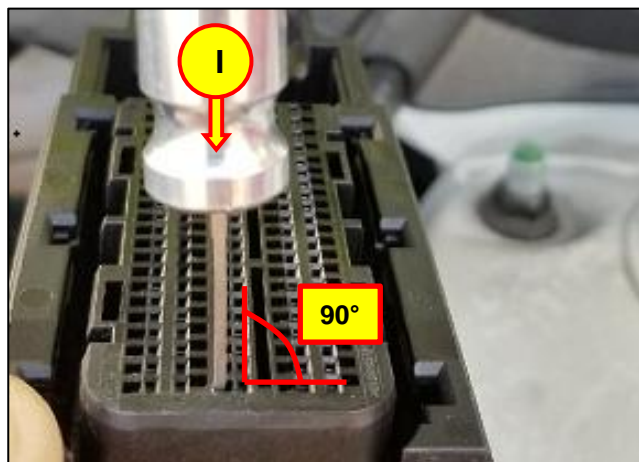
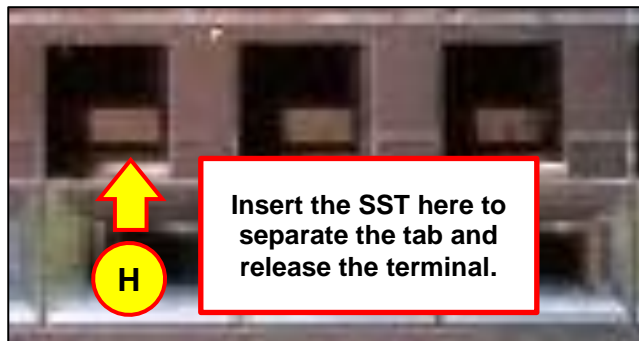
CAUTION

Take caution when removing the pins from the ECM connector. Slowly insert the SST perpendicular (I) to the surface of the connector to release the pins. Do not pry using the SST.

NOTICE

Note PIN 61 shield ground wire is blue in the new wire harness extension.





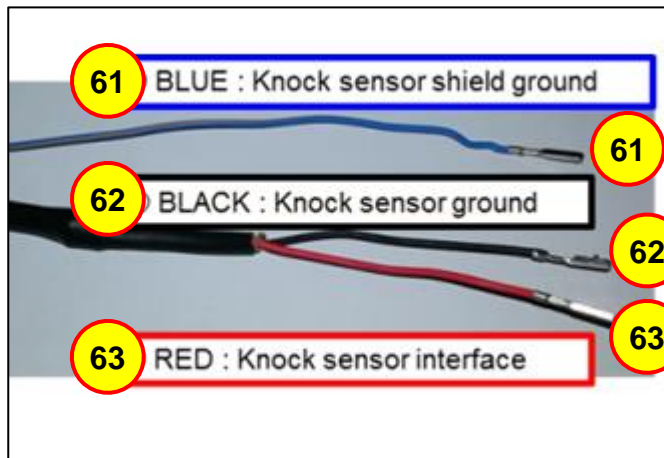
10. Insert each of the 3 pins from the new wire harness extension into the ECM connector until fully seated. A slight click sensation and noise indicates the terminal is fully seated.

- PIN 63 - Red – knock sensor interface
- PIN 62 - Black – knock sensor ground
- PIN 61 - Blue – shield ground

105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85
84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

NOTICE

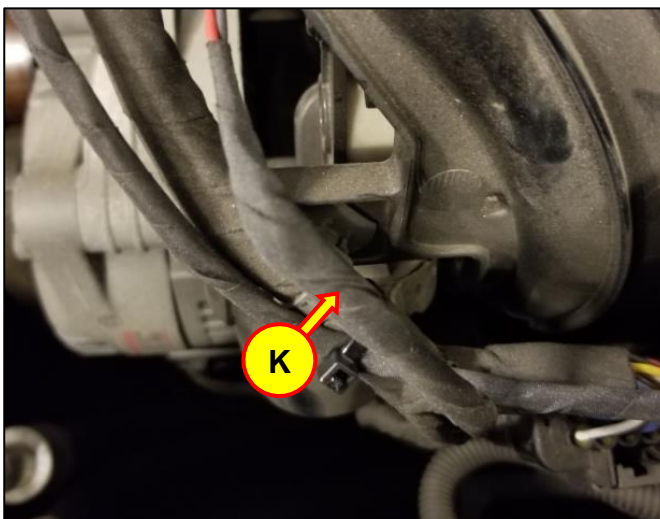
Ensure the new pins are installed in the same orientation as they were removed.



11. Cut off and discard the (3) original terminals from the ECM connector and fold the original wires (J) back onto the original engine control wire harness and secure with tape. Secure any excess wire from the new wire harness extension onto the original engine control wire harness with tape.



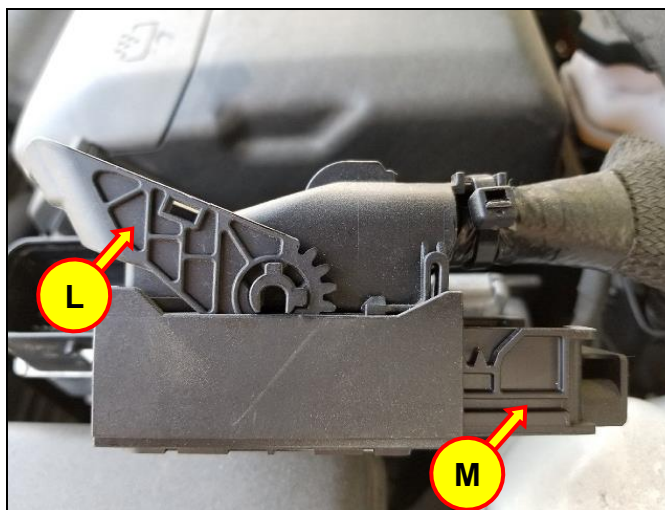
12. Cut off and discard the original knock sensor connector and fold the (2) original wires (K) from the original knock sensor connector back onto the original engine control wire harness and secure with tape.



13. Reinstall all removed parts in reverse order of removal. Restore audio presets.

⚠ CAUTION

DO NOT use brute force when reinstalling the ECM connector cover. The cover will easily snap onto the connector with minimal force when properly aligned. Refer to original orientation of the lever (L) and slider (M).



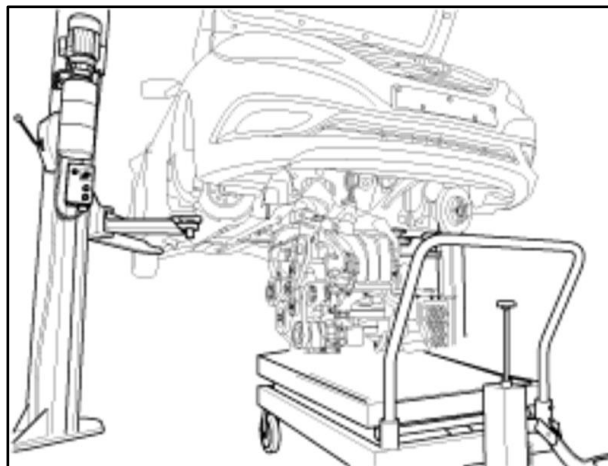
14. Clear DTC P1326. Then check for other DTCs and perform the appropriate diagnostic service. Ensure no warning lights are present to complete the procedure.

Engine Replacement:

1. **If DTC P1326 is detected and the wiring signal interference inspection indicates engine replacement is required**, replace the Sub Engine Assembly (long block).
2. Follow the published Service Information from the applicable **Shop Manual** to remove the Sub Engine Assembly from the vehicle.

Shop Manual Section Location:

Engine Mechanical >
Engine And Transaxle Assembly >
Engine And Transaxle Assembly >
Repair Procedures



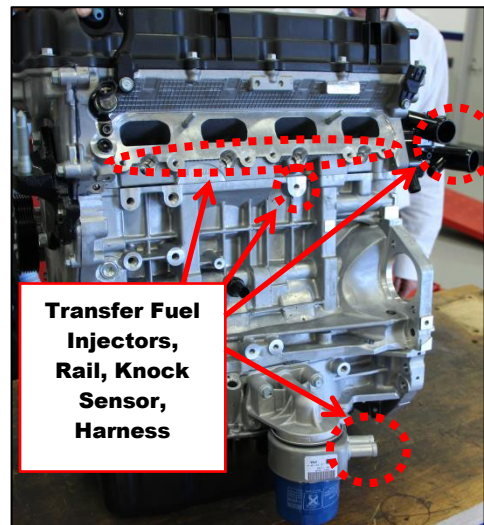
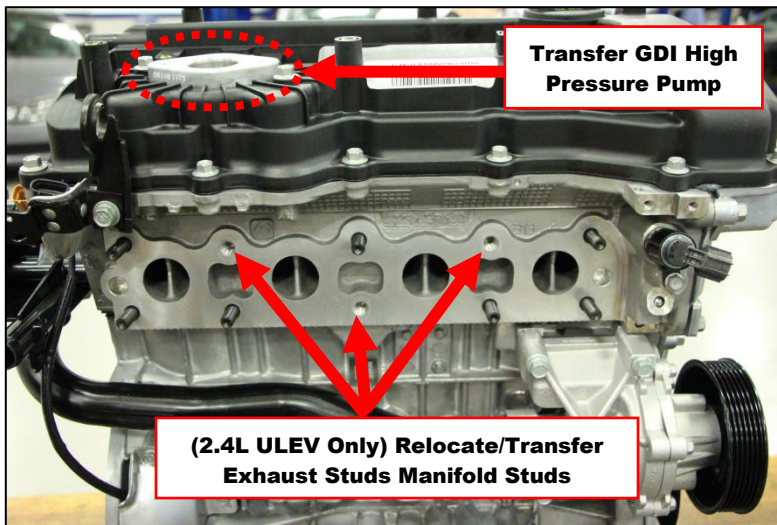
NOTICE

Record the audio station presets (XM, AM, FM, etc) prior to disconnecting the battery.

3. Replacement engines must be prepared prior to installation. Some components from the existing engine must be transferred to the new engine.

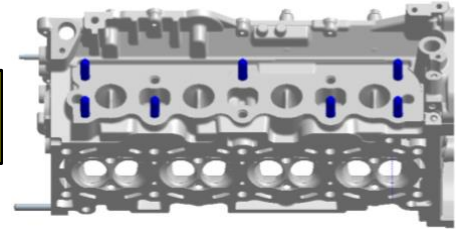
NOTICE

Be careful to preserve the vehicle's original parts for reinstallation on the replacement engine.



4. **For 2.4L with ULEV / FED emissions only**
2.4L replacement engines are produced with the exhaust manifold studs configured for SULEV / CAL emissions package.

**SULEV /
CAL Spec**

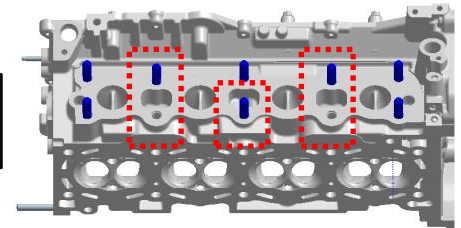


Exhaust Stud Position Relocation Information

Two exhaust studs must be relocated on the new engine and 1 exhaust stud must be transferred from the old engine.

- Use a commercially available stud removal tool or use the double-nut technique to complete this step.

**ULEV /
FED Spec**



5. Remove and reinstall the engine knock sensor from the old engine to the new engine.

Knock Sensor Fastener
Tightening torque: 21Nm (15.5lb-ft)



NOTICE

Install new drive plate/flywheel bolts if new ones are included with the replacement engine.

6. **For replacement engines packaged with new drive plate/flywheel bolts only**

If the QQH replacement engine was packaged with new bolts, install the drive plate/flywheel on the QQH replacement engine using the new bolts (QTY 7).

Tightening torque : 111.7 ~ 127.5 Nm
(86.8 ~ 94.1 lb-ft)

If the QQH replacement engine was not packaged with new bolts, reuse the old bolts when installing the drive plate/flywheel. Do not order new bolts.



**Install new drive plate/flywheel bolts
(ONLY if new bolts are included with the
replacement engine)**

7. Follow the published procedure outlined in **TSB 10-FL-019** to remove and reinstall the following GDI high pressure fuel system components from the existing engine to the new engine:

- GDI High Pressure Pump
- Fuel Injectors (4)
- Fuel Delivery (Rail) Pipe

The corresponding Service Kits will supply the required new parts per TSB 10-FL-019 to complete the transfer of the above existing parts.

8. Reconnect and reinstall the engine front harness.

⚠ CAUTION

Follow TSB 10-FL-019 carefully and replace the following newly supplied parts from the Service Kits:

- Mounting flange O-ring (for High Pressure Pump)
- O-rings, Backup Rings, Washer Seals, Combustion Seal Rings, and clips (for Fuel Injectors)
- Fuel Pipe (between High Pressure Pump and Delivery Pipe)

In addition, the Service Kits include (1) Exhaust Pipe Gasket. Install this new gasket when attaching the front and center muffler assemblies together during the engine installation.



9. Follow the published Service Information from the applicable **Shop Manual** to reinstall the Sub Engine Assembly.

Shop Manual Section Location:

Engine Mechanical >
Engine And Transaxle Assembly >
Engine And Transaxle Assembly >
Repair Procedures

NOTICE

Be sure to replace the following newly supplied parts from the Service Kit:

- Oil Level Rod & Oil Level Guide Assy.
- Intake Manifold Gaskets (4)
- Exhaust Manifold Gasket
- Fuel Tube Assembly
- (2.0T Only) Turbo Oil Feed Hose & Pipe
- (2.0T Only) Turbo Oil Drain Gasket (2)
- (2.0T Only) Oil Drain Gasket
- (2.0T Only) Gasket (2)

NOTICE

If the torque converter has moved from the fully inserted position, carefully push inward and rotate the torque converter until the converter is recessed approximately 9/16 - 5/8" (14 -16 mm) into the transaxle case when reinstalling the automatic transaxle.



10. Connect the (2) oil coolant hoses between the oil cooler and the water temperature control assembly.
- Fill the cooling system with 50/50 ~ 70/30 (Water/Anti-Freeze) coolant mixture.
11. Use Quaker State 5W-30 engine oil or other brand if not available (conventional, synthetic blend, or full synthetic type with API SM / ILSAC GF-4 or higher service grade) to fill the engine crankcase.
- Add 6.0 quarts for the initial dry fill of the engine.
 - With the fuel system disabled temporarily, crank the engine for several seconds to prime the lubrication system prior to starting the engine.
12. Start the engine to warm it up and begin the cooling system air bleeding process.
- Check for any leaks during this time.
 - After the engine has warmed up to normal operating temperature, turn the engine off, wait a few minutes, and then adjust the engine oil level to near the "F" mark as shown in the picture.
13. Perform the Wiring Signal Interference Inspection outlined above if it could not be performed before the engine replacement.

Optimum Engine Oil Fill Level



NOTICE

Perform the Wiring Signal Interference Inspection outlined above if it could not be performed before the engine replacement.

14. When all fluids have been fully filled and all work quality checks are completed:
- Set the customer's audio station presets.
 - Relearn the Steering Angle Sensor using the GDS.
 - Reset the engine adaptive values using the GDS.
 - Clear DTC P1326. Then check for other DTCs and perform the appropriate diagnostic service. Ensure no warning lights are present.
 - Perform a short road test to confirm normal vehicle drivability.

NOTICE

DO NOT damage the short block casting / starter motor mounting tab.

Engine blocks for vehicles affected by this TSB should not be damaged.