

 <b>HYUNDAI</b> <b>Technical Service Bulletin</b>	GROUP <b>CAMPAIGN</b>	NUMBER <b>18-01-032-2</b>
	DATE <b>DECEMBER 2018</b>	MODEL(S) <b>SONATA (LF) SANTA FE SPORT (AN)</b>
<b>SUBJECT:</b> SONATA / SANTA FE SPORT ENGINE DTC P1326 - WIRING INSPECTION / INSTALLATION AND ENGINE REPLACEMENT (SERVICE CAMPAIGN T3G)		

This TSB supersedes TSB# 18-01-032-1 and modifies the Part Information table.

**\* 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.

**Description:** Certain 2015MY Sonata and Santa Fe Sport 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  
 Certain 2015 MY Santa Fe Sport (AN) 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	
Pin Release Tool	 WRK0010P2R from WRK II <b>OR</b>  WRKA40RT04 / G0KHNWR104 from WRK III	These tools are included in Wire Harness Repair Kit II and III provided to dealers.

**Part Information:**

Model	MY	Part Name	Part Number / Figure	Qty	Note
Sonata (LF)	15MY	Wiring harness-knock sensor kit	 91400-C2000QQH	1	Order the required parts based on the vehicle inspection results.  PA Approval is required for engine replacement.  Refer to page 4.
		Engine Assembly-Sub (long block)	 2.4L: 21101-2GK31QQH 2.0T: 21101-2GK32QQH	1	
		Service Kit 1	2.4L: 21111-2GK51QQH 2.0T: 21111-2GK52QQH	1	
		Service Kit 2	2.4L: 21111-2GK71QQH 2.0T: 21111-2GK72QQH	1	
Santa Fe Sport (AN)	15MY	Wiring harness-knock sensor kit	91400-C2100QQH	1	
		Engine Assembly-Sub (long block)	2.4L: 21101-2GK02QQHRM 2.0T: 21101-2GK04QQHRM	1	
		Service Kit 1	2.4L: 21111-2GK50QQH 2.0T: 21111-2GK60QQH	1	
		Service Kit 2	2.4L: 21111-2GK70QQH 2.0T: 21111-2GK80QQH	1	
		Oil cooler pipe & hose assy	2.4L: 25470-2G050QQH 2.0T: 25470-2G650QQH	1	

**Note:** 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
Santa Fe Sport (AN) 2.4L / 2.0T	8P1326R7	WIRING INSPECTION AND WIRING INSTALLATION	0.5 M/H	21101- 2GK02QQH	Q75	ZZ1
Santa Fe Sport (AN) 2.4L (FWD)	8P1326R8	WIRING INSPECTION AND ENGINE REPLACEMENT	8.5 M/H	21101- 2GK02QQH	Q75	ZZ1
Santa Fe Sport (AN) 2.4L (AWD)	8P1326A0	WIRING INSPECTION AND ENGINE REPLACEMENT	8.7 M/H	21101- 2GK02QQH	Q75	ZZ1
Santa Fe Sport (AN) 2.0T (FWD)	8P1326R9	WIRING INSPECTION AND ENGINE REPLACEMENT	8.9 M/H	21101- 2GK02QQH	Q75	ZZ1
Santa Fe Sport (AN) 2.0T (AWD)	8P1326A1	WIRING INSPECTION AND ENGINE REPLACEMENT	9.1 M/H	21101- 2GK02QQH	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 for engine replacement. See page 4.

**Wiring Signal Interference Inspection:**

1. Check for DTCs and perform the appropriate diagnostic service. All DTCs other than P1326 should be resolved before performing the wiring inspection.
2. Warm the engine until the engine oil temperature is 176° F (80° C) or greater.
3. 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 or the 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.

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

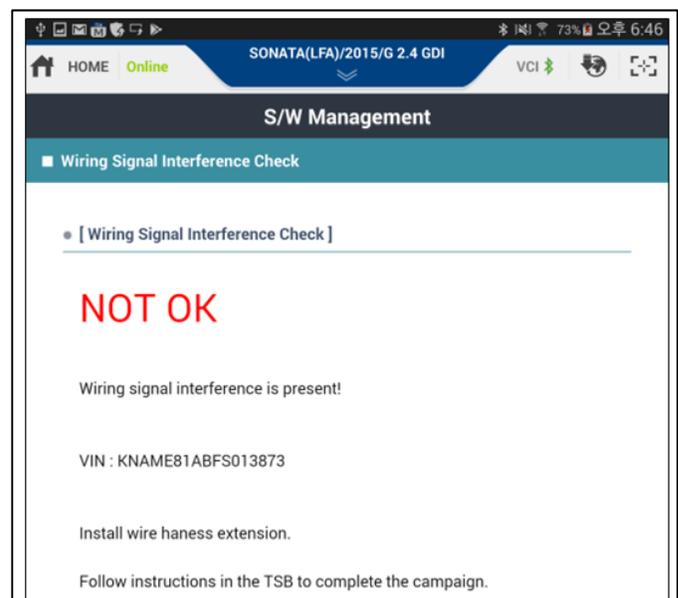
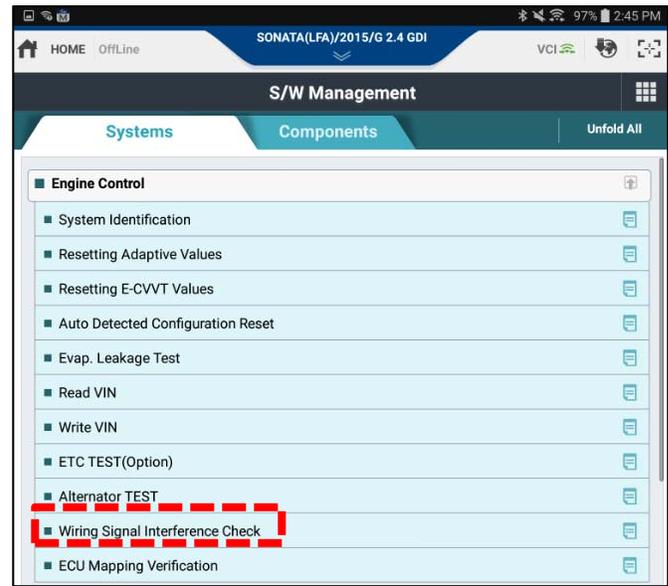
**If the inspection result is OK:**

- Submit a PA request for engine replacement with attachments of:
  - 1) Inspection results screen showing an OK result
  - 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.



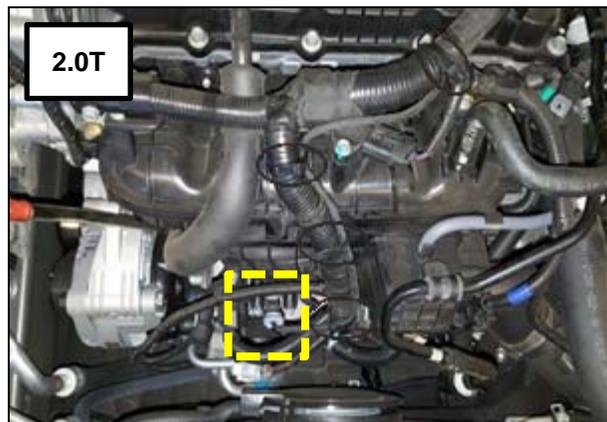
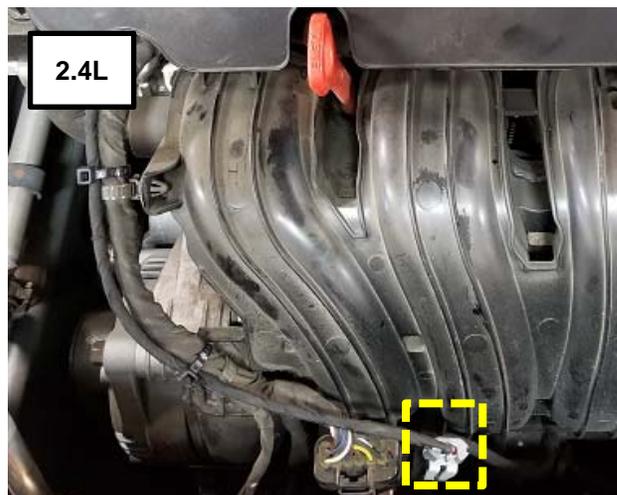
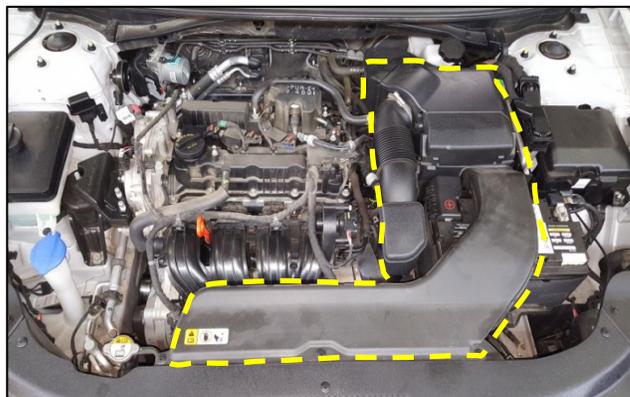
**Wire Harness Extension Installation:**

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.



**NOTICE**

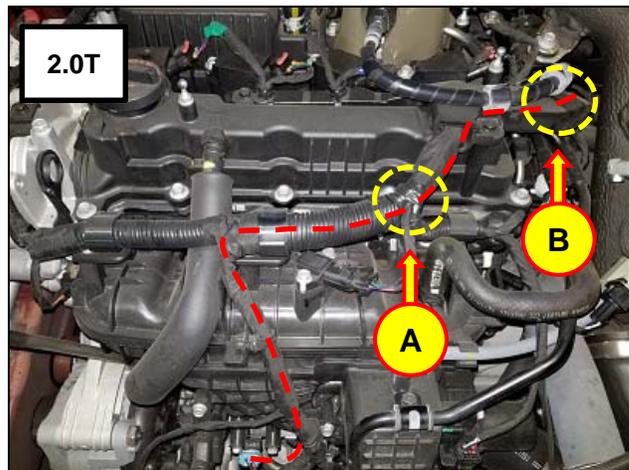
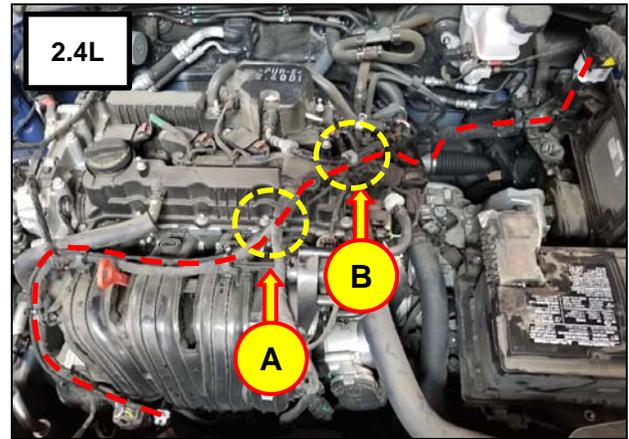
15MY Sonata (LF) vehicle is pictured for reference. Routing of the harness on other models is similar.

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

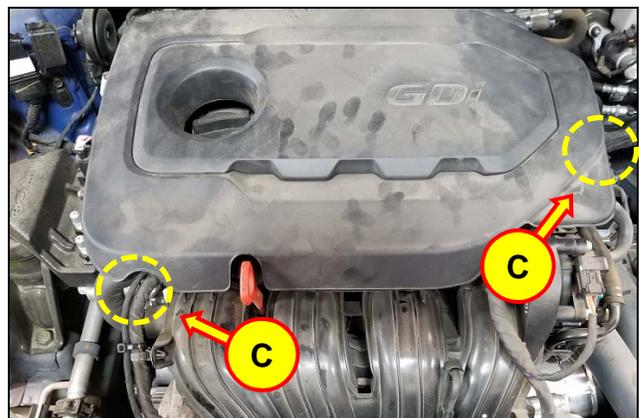
Ensure the new wire harness extension is:

- 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 along the existing control wire harness with zip ties and existing clips.

5. Reinstall the engine cover and ensure the new wire harness extension does not contact the engine cover at (C) and any other areas.



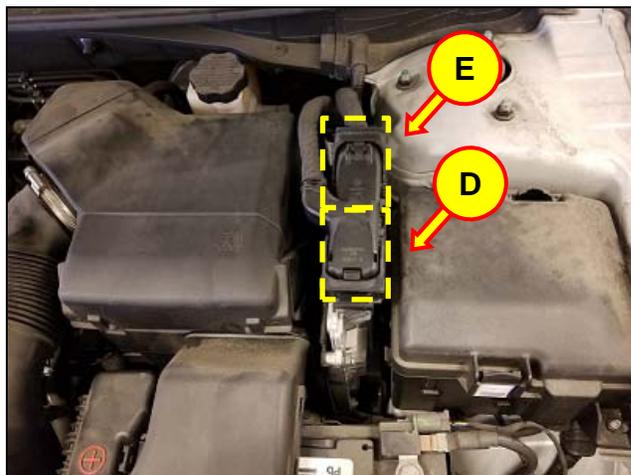
6. Remove the ECM connector(s) and top cover:

**For 15MY Sonata (LF):**

Remove ECM connector (D) to release ECM connector (E). Then remove ECM connector (E) and top cover by pressing on the tabs (F) using a flat head screwdriver.

**For 15MY Santa Fe Sport (AN):**

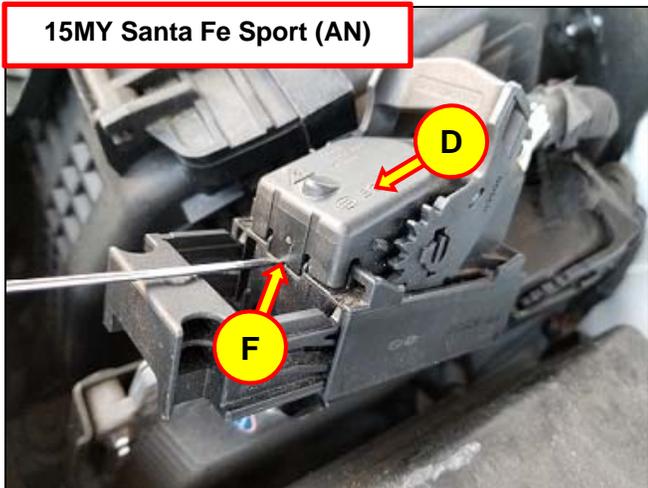
Remove ECM connector (D) and top cover by gently prying on tab (F) using a flat head screwdriver.



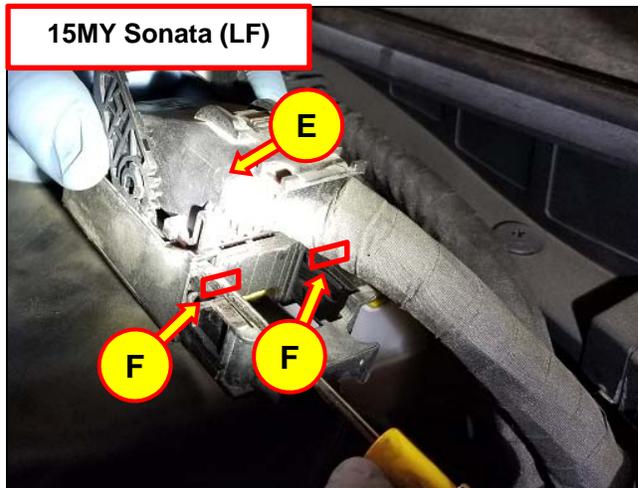
**⚠ CAUTION**

**DO NOT use brute force when removing the ECM connector cover. The cover comes off with minimal force when using the release tab(s) (F).**

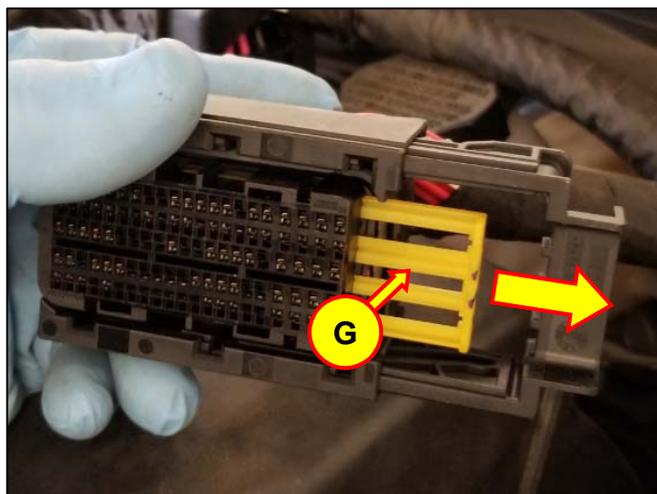
**15MY Santa Fe Sport (AN)**



**15MY Sonata (LF)**



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



8. Locate the (3) knock sensor pins on the ECM connector.

**15MY Santa Fe Sport (AN)**

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	6	5
57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	4	3
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	2	1
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7		

- PIN 44 - Black/Orange - shield ground
- PIN 45 - White - knock sensor ground
- PIN 62 - Green - knock sensor interface

**15MY Sonata (LF)**

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

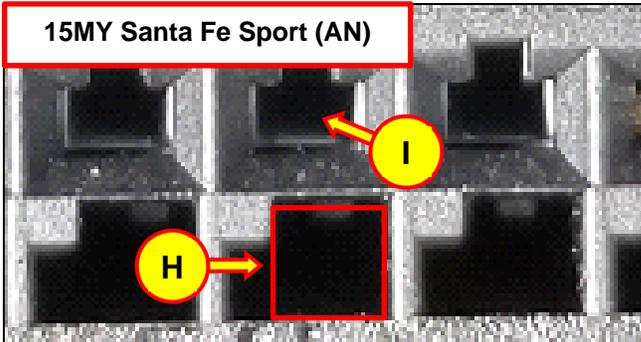
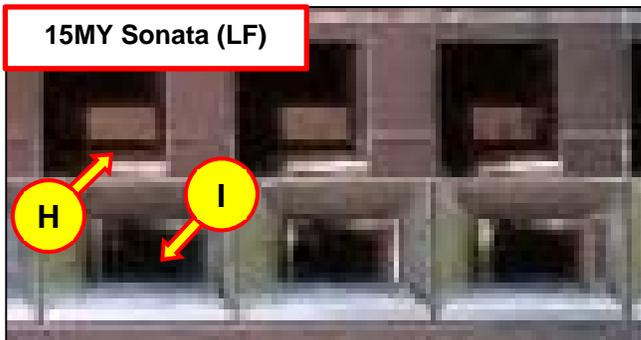
- PIN 63 - Red – knock sensor interface
- PIN 62 - Black – knock sensor ground
- PIN 61 - Black – shield ground

9. Carefully remove the 3 pins for the knock sensor from the ECM connector using the SST. Insert the SST perpendicular (90°) to the surface of the connector at (H) to release each pin (I) and gently pull the wire to remove each pin from the connector.

**NOTICE**

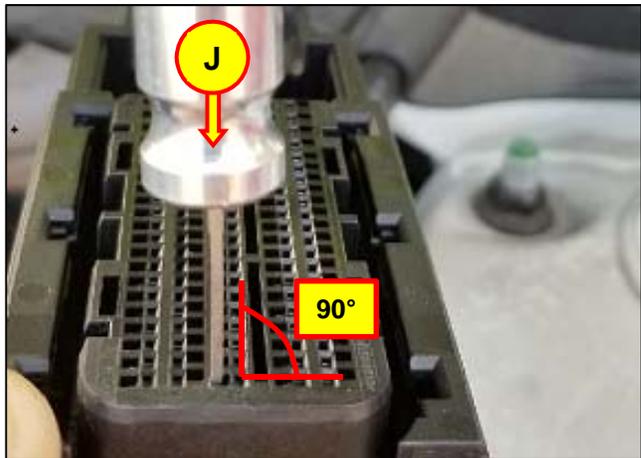
Note the orientation of each pin in the connector. The new pins will be installed in the same orientation in the next step.

The vehicle’s factory wire color(s) may not match the wire color(s) of the new wire harness extension.



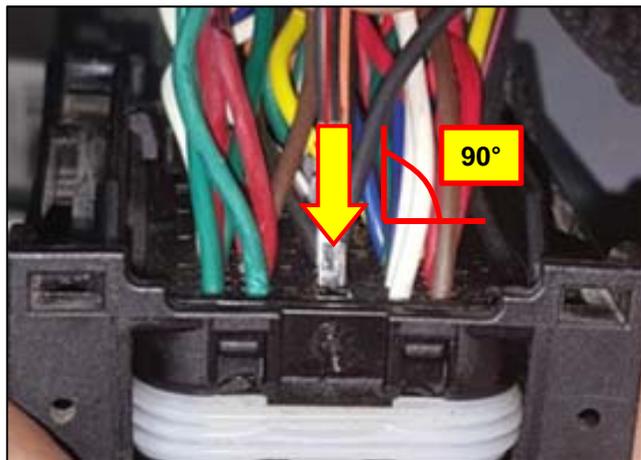
**CAUTION**

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



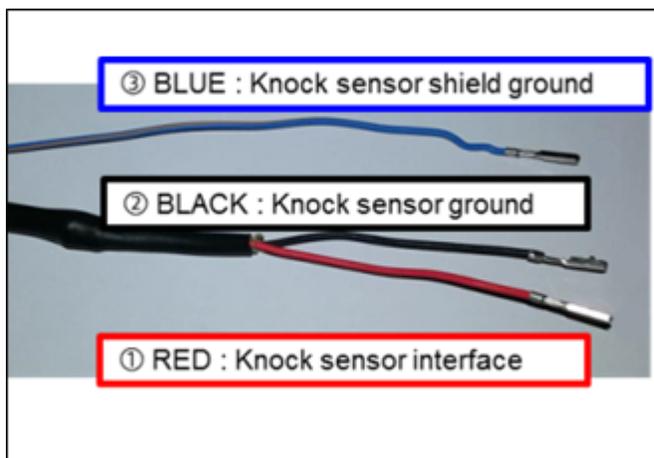
10. Insert each of the 3 pins from the new wire harness extension into the ECM connector until fully seated. A slight click sensation and sound indicates the terminal is fully seated.

- Red – knock sensor interface
- Black – knock sensor ground
- Blue – shield ground



**NOTICE**

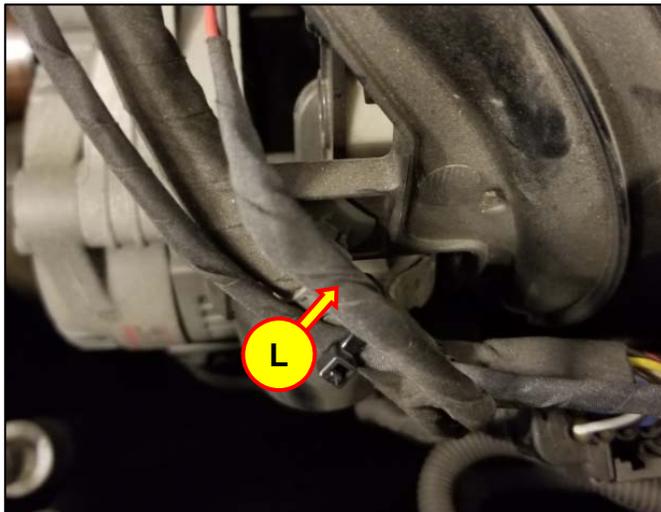
Ensure the new pins are installed in the same orientation as they were removed.



11. Cut off and discard the (3) original terminals from the ECM connector and fold the original wires (K) 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.



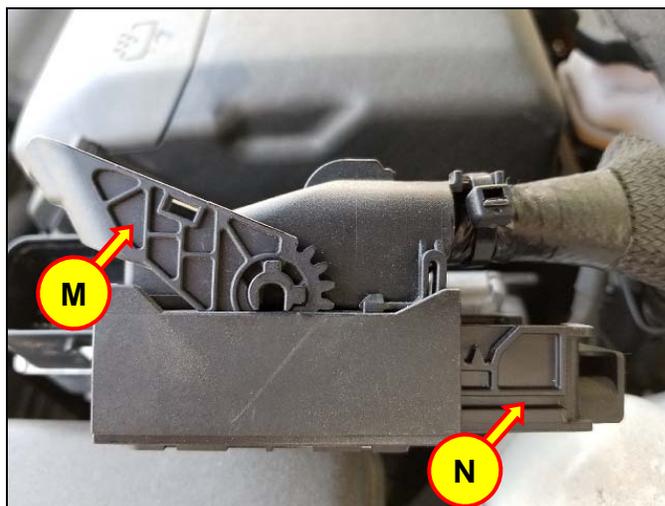
12. Cut off and discard the original knock sensor connector and fold the (2) original wires (L) from the original knock sensor connector back onto the original engine control wire harness and secure with tape.



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 (M) and slider (N) and slightly move slider (N) as necessary until the cover easily snaps onto the connector.



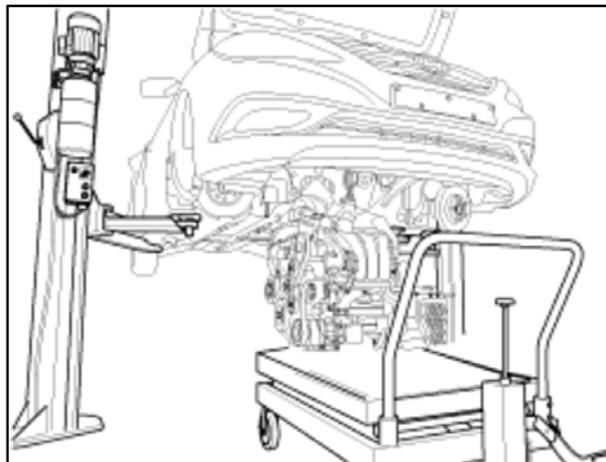
14. Clear DTC P1326. Then check for other DTCs and perform the appropriate diagnostic service. Ensure no warning lights are present to complete the procedure.

**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**



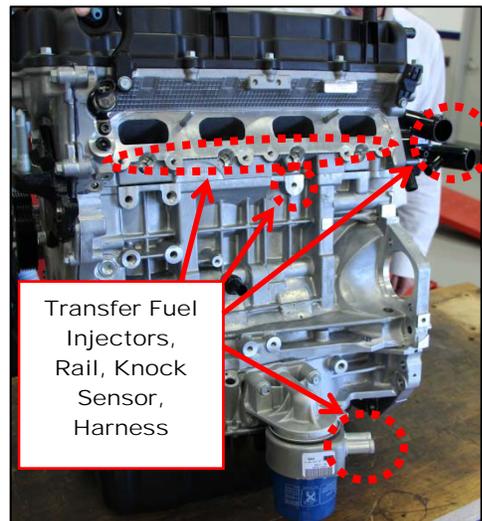
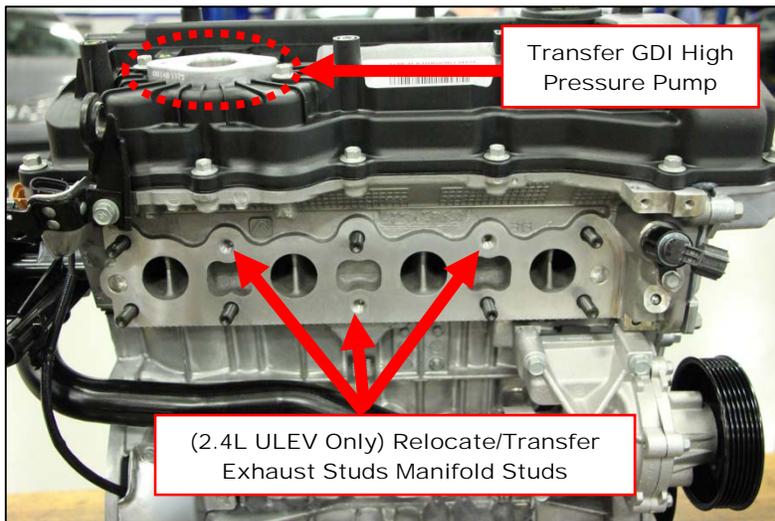
**NOTICE**

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.

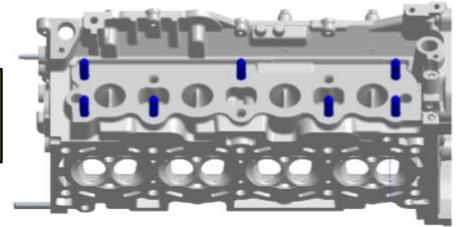
**NOTICE**

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**

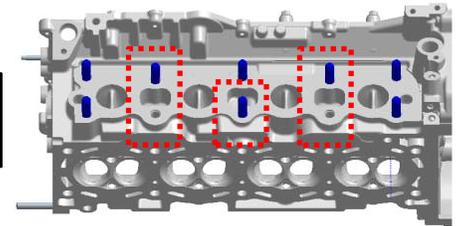


**Exhaust Stud Position Relocation Information**

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.

### 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.

8. Install the new oil cooler hoses if applicable. Then reconnect and reinstall the engine front harness.

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.

**NOTICE**

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

13. 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.**