



GROUP ENG	MODEL 2017MY Optima (JF HEV/PHEV)
NUMBER 166	DATE April 2017

TECHNICAL SERVICE BULLETIN

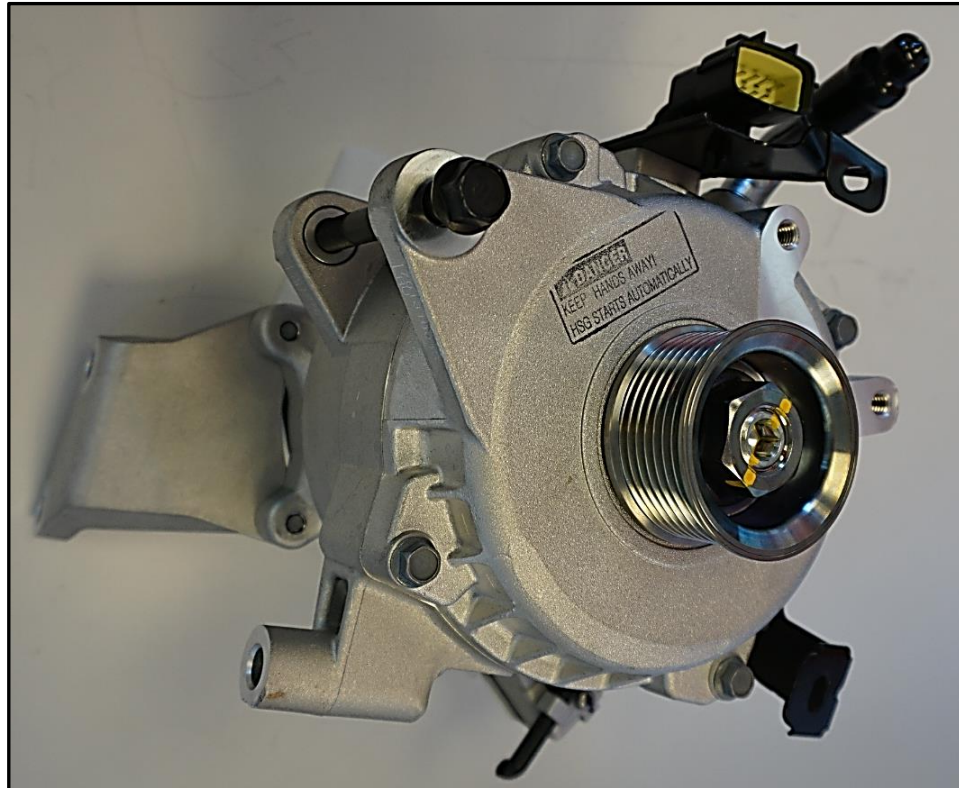
SUBJECT: SERVICE ACTION: HYBRID STARTER GENERATOR (HSG)
PULLEY NUT INSPECTION AND/OR HSG REPLACEMENT (SA289)

This bulletin provides the procedure to inspect the Hybrid Starter Generator (HSG) pulley nut and, if necessary, replace the HSG assembly on certain Optima JF HEV/PHEV vehicles with a production range from May 31, 2016 to November 22, 2016, which may exhibit a loose pulley nut.

* NOTICE

Before conducting this procedure, verify that the vehicle is included in the list of affected VINs.

For further information and/or additional details about the service procedures, refer to the applicable Workshop Manual.



File Under: <Engine>

Circulate To: General Manager Service Manager Parts Manager
 Service Advisors Technicians Body Shop Manager Fleet Repair

**SUBJECT: SERVICE ACTION: HYBRID STARTER GENERATOR (HSG)
PULLEY NUT INSPECTION AND/OR HSG REPLACEMENT (SA289)**

*** NOTICE**

A Service Action is a repair program without customer notification that is performed during the warranty period. Any dealer requesting to perform this repair outside the warranty period will require DPSM approval.

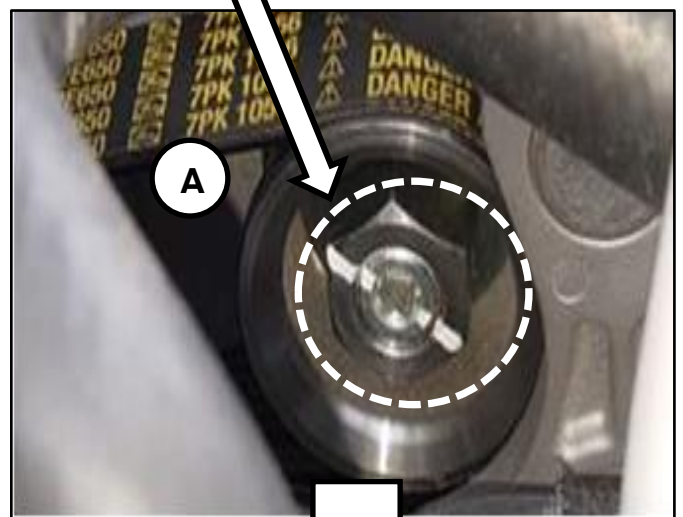
Repair status for a VIN is provided on WebDCS (Service → Warranty Coverage → Warranty Coverage Inquiry → Campaign Information). Not completed Recall / Service Action reports are available on WebDCS (Consumer Affairs → Not Completed Recall → Recall VIN → Select Report), which includes a list of affected vehicles.

This issue number is SA289.

Inspection Procedure:

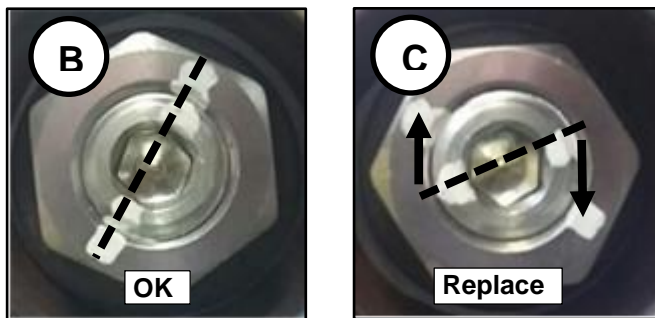
Check the vehicle odometer mileage.

- If the mileage is less than **6,500 miles**, replace the HSG assembly, regardless of the paint mark on the HSG pulley (A). (Refer to the [“Replacement Procedure”](#) on page 3.)



SUBJECT: SERVICE ACTION: HYBRID STARTER GENERATOR (HSG) PULLEY NUT INSPECTION AND/OR HSG REPLACEMENT (SA289)

- If the mileage is more than 6,500 miles,
 - If the paint mark is aligned (B), no further action is required, or
 - If the paint mark is **not** 100% aligned (C), replace the HSG assembly. (Refer to the [“Replacement Procedure”](#) below.)



Inspection criteria if vehicle odometer is over 6,500 miles

Replacement Procedure:

⚠ DANGER

When performing this procedure, follow all EV battery safety procedures found in the “Service Materials>>Service Info>>Hybrid Control System>>”General safety Information and Caution” chapter in the Service Manual, and wear all required Personal Protection Equipment (PPE).

1. Before removing the HSG, disconnect the high voltage circuit.

Follow the appropriate procedure below:
(HEV or PHEV)

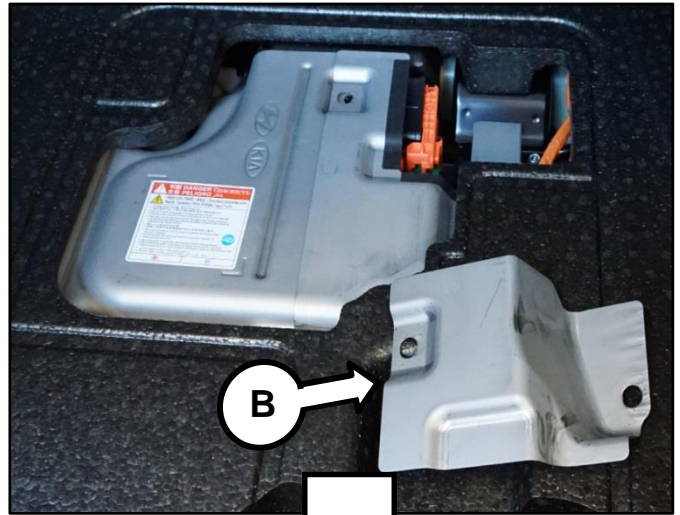
HEV Hybrid Connector:

- a. Open the trunk.
- b. Lift the trunk floor cover.
- c. Remove the two (2) bolts (A) on the connector cover.



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d. Remove the cover (B).



e. Disconnect the high voltage circuit.



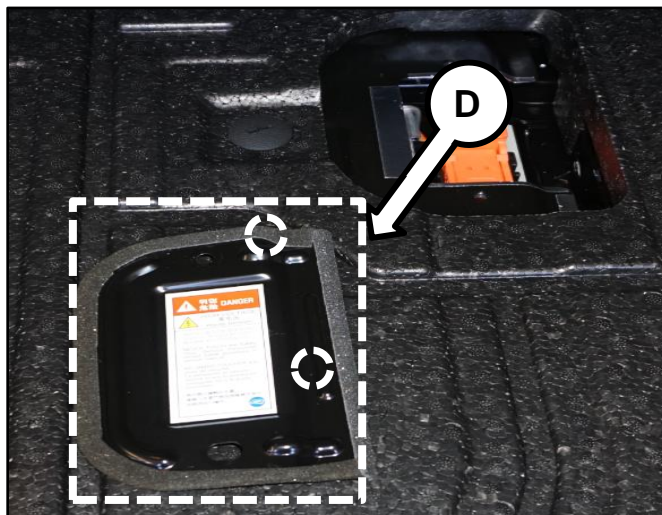
PHEV Hybrid Connector:

- a. Open the trunk.
- b. Lift the trunk floor cover.
- c. Remove the two (2) bolts (C) on the connector cover.



SUBJECT: SERVICE ACTION: HYBRID STARTER GENERATOR (HSG)
PULLEY NUT INSPECTION AND/OR HSG REPLACEMENT (SA289)

d. Remove the cover (D).



d. Disconnect the high voltage circuit.



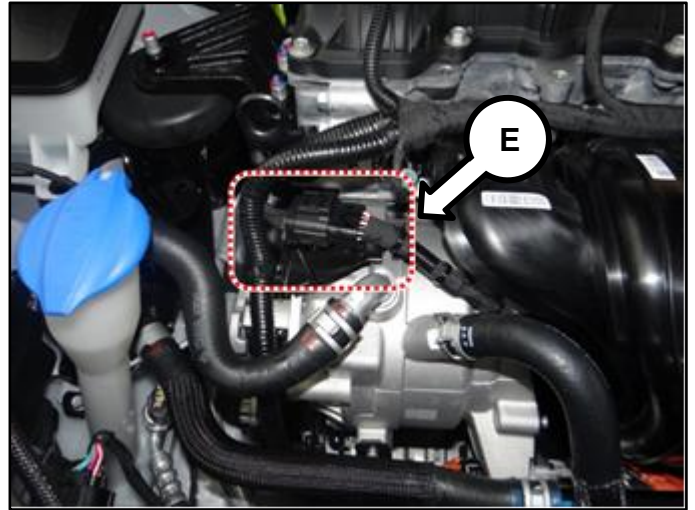
2. Drain the coolant from the hybrid cooling system.

(Refer to the “Hybrid Motor System → Hybrid Motor Assy → Hybrid Starter Generator (HSG) Repair procedures” chapter in the applicable Work Shop Manual.

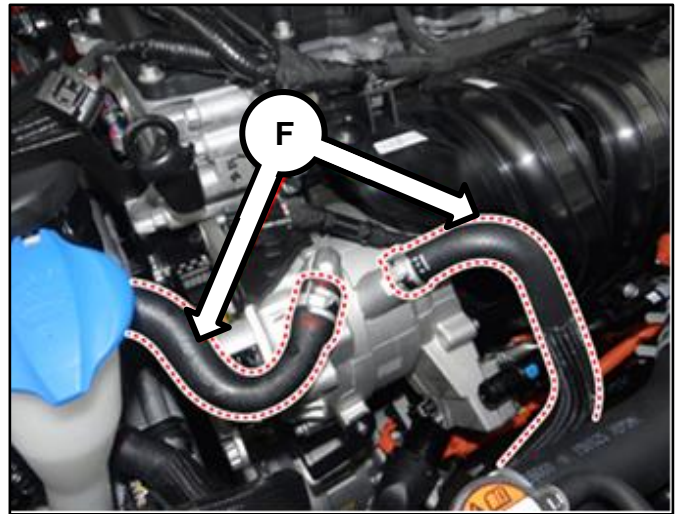
3. Remove the drive belt.

**SUBJECT: SERVICE ACTION: HYBRID STARTER GENERATOR (HSG)
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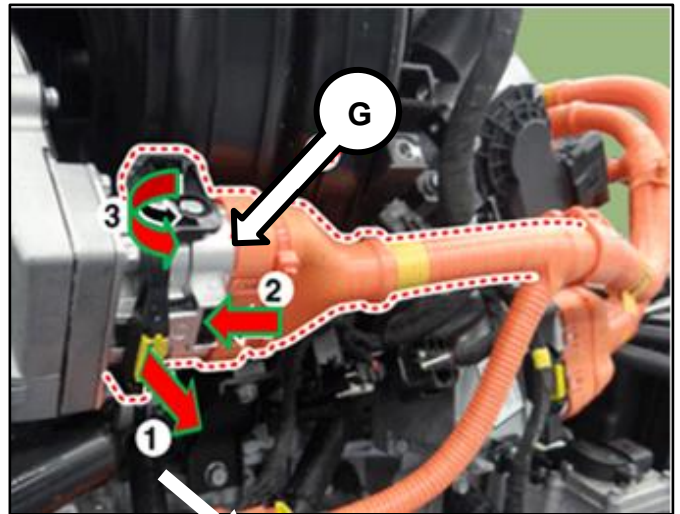
- 4. Disconnect the HSG connector (E) and remove the wiring from the bracket.



- 5. Remove the coolant hoses (F) from the HSG.



- 6. Disconnect the HSG high voltage cable connector (G).



SUBJECT: SERVICE ACTION: HYBRID STARTER GENERATOR (HSG)
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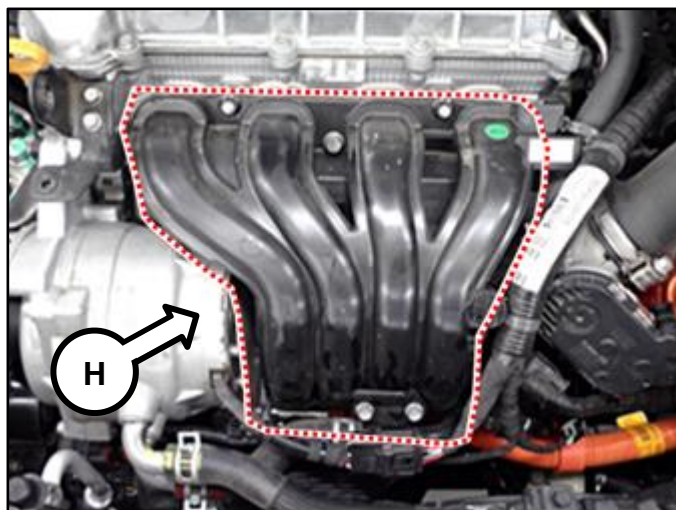
7. Remove the intake manifold (H).
(Refer to Engine Mechanical System – “Intake Manifold”).

Tightening Torque:

13.7 ~ 17.4lb-ft (18.6 ~ 23.5N.m, 1.9 ~ 2.4gf.m)

★ NOTICE

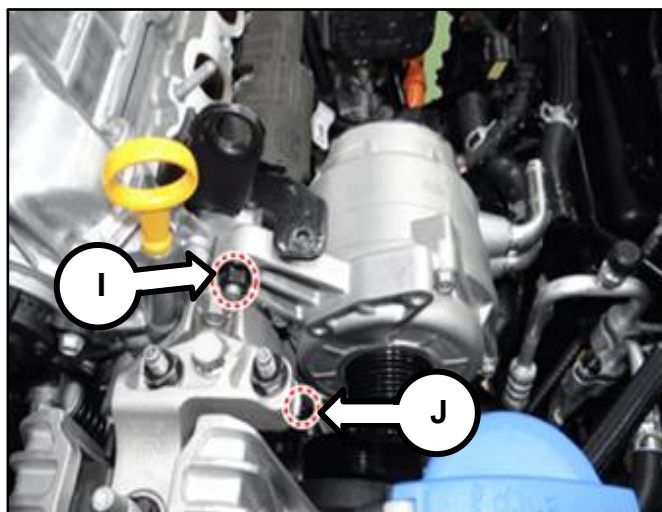
- The four (4) intake manifold gaskets will be replaced.
- The EGR and throttle body gaskets will be reused.



8. Remove the HSG mounting nut (I) and bolt (J).

Tightening Torque:

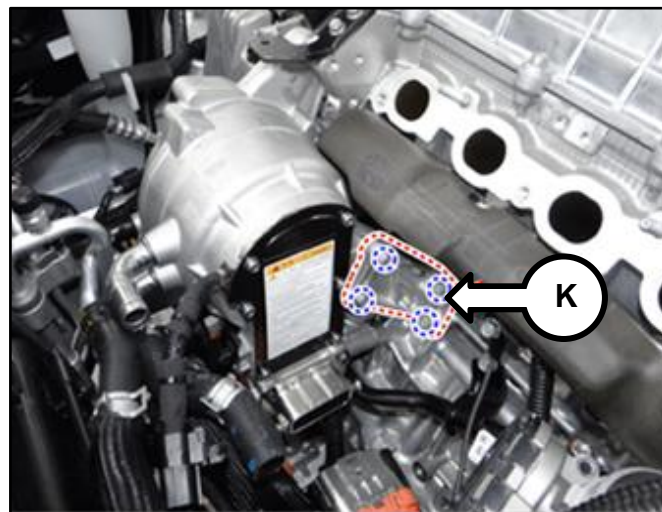
32.5 ~ 39.8lb-ft (44.1 ~ 53.9N.m, 4.5 ~ 5.5gf.m)



9. Remove the HSG after removing the HSG bracket (K).

Tightening Torque:

32.5 ~ 39.8lb-ft (44.1 ~ 53.9N.m, 4.5 ~ 5.5gf.m)



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- 10. Install the new HSG.
- 11. Re-assemble all the other parts in the reverse order of removal.
- 12. Reconnect the high voltage circuit.
- 13. Refill the hybrid cooling system with coolant and bleed the air from the hybrid cooling system using the KDS.

(Refer to Hybrid Motor Cooling System – “Coolant.”)

*** NOTICE**

Visually verify that the coolant is circulating in the HPCU reservoir.

S/W Management	
• Electronic Water Pump Operation	
Purpose	To bleed air and circulate the water after repair work is done on HSG/HPCU or Electric Water Pump(EWP).
Enable Condition	1.Engine Off 2.Ignition Switch On 3.NO DTC
Concerned Component	Motor Control Unit(MCU), Electric Water Pump(EWP)
Concerned DTC	-
Fail Safe	-
Etc	-

- 14. Perform the engine clutch/motor resolver adaptation using the KDS.

S/W Management	
• Motor/HSG Resolver Calibration	
Purpose	To calibrate resolver offset after replace Motor Control Unit(MCU), Motor, Rear plate or HSG.
Enable Condition	1.Gear Lever Position "P" 2.Ready Lamp "ON" 3.SOC : 30~80% 4.NO DTC
Concerned Component	Motor Control Unit(MCU), Resolver
Concerned DTC	P0C17
Fail Safe	Warning Lamp On
Etc	- Resolver that installed on Motor and HSG senses rotor position. - MCU uses signals from Resolver to control motor and HSG more precisely. - DTC P1C56 is stored in case of resolver calibration failure.

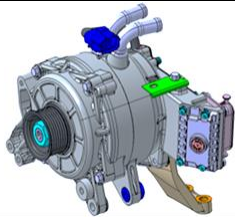
- 15. Confirm proper HSG operation by running the engine and checking for DTCs.

AFFECTED VEHICLE RANGE:

Model	Production Date Range
Optima (JF HEV/PHEV)	May 31, 2016 to November 22, 2016

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REQUIRED PARTS:

Part Name	Part Number	Figure	Qty.
HSG Assembly	37390 2E960QQK		1
Intake Manifold Gasket	28313 2E000QQK	N/A	4

WARRANTY INFORMATION:

Claim Type	Causal P/N	Qty.	N Code	C Code	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
V	37390 2E960	0	N99	C99	HSG Pulley Nut Inspection	160144R0	0.2 M/H	N/A	0
		0			HSG Pulley Nut Inspection and HSG Assembly Replacement	160144R1	2.1 M/H	37390-2E960QQK	1
					28313 2E000QQK			4	