	GROUP <b>CHA</b>	MODEL <b>2012-2014MY Optima (QF) 2016-2018MY Sorento (UMa)</b>
	NUMBER <b>060 (Rev 5, 07/05/2019)</b>	DATE <b>January 2016</b>
<b>TECHNICAL SERVICE BULLETIN</b>		
<b>SUBJECT: ECU UPGRADE – STEERING LOGIC IMPROVEMENT</b>		

**\* 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 MDPS ECU software upgrade for some 2012-2014MY Optima (QF), produced from August 2, 2010 through July 27, 2014, and 2016-2018MY Sorento (UMa) vehicles, produced from October 27, 2014 through August 22, 2017, which may experience a notchy feel in the steering wheel. To correct this condition, the vehicle should be evaluated using the MDPS Effort Measurement Software detailed in the repair procedure starting on page 2 to determine whether an improved steering logic should be installed in the MDPS ECU, or if the Steering Column and Housing Assembly replacement is required. To determine whether the updated MDPS ECU reflash applies to a vehicle you are working on, or whether it has already been performed, verify ROM ID using the tables in this TSB.



Kia Diagnostic System (KDS)

**File Under: <Chassis>**

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

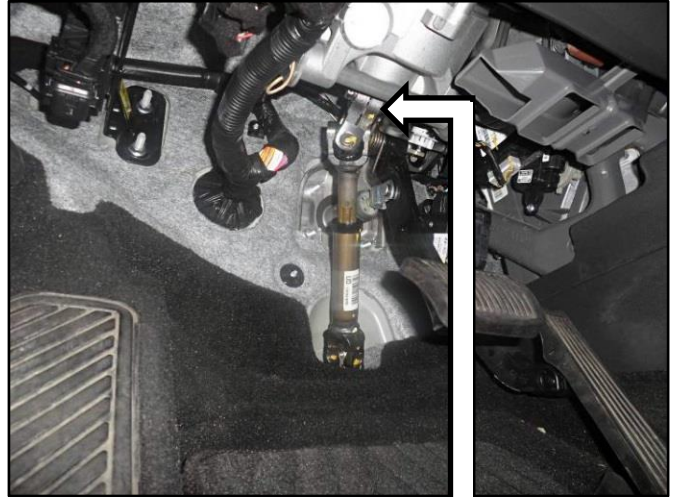
**MDPS Effort Measurement Procedure:**

1. Remove the top bolt from the universal joint. **NOTE: Place a mark across the universal joint to make reinstallation easier.**

**Tightening torque for bolt:  
21.7 – 25.7lb.ft (29.4 – 34.3N.m,  
3.0-3.5 kgfm.)**

**\* NOTICE**

After disconnecting the universal joint, do **NOT** turn the steering wheel more than 270° to prevent damage to the clock spring.



2. Prior to starting the MDPS effort measurement test (page 3), position the steering wheel slightly to the right, as shown, with the Steering Angle Sensor (SAS) in the positive range.

**\* NOTICE**

**NOTE: Attempting to start the steering effort test with the SAS in the negative (-) range will trigger an error message and prevent the test from running.**



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## ECU UPGRADE – STEERING LOGIC IMPROVEMENT

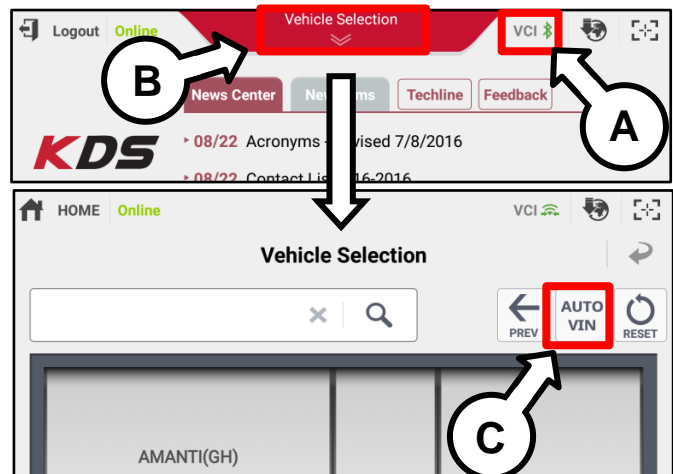
3. Connect the VCI-II to the OBD-II connector, located under the driver's side of the instrument panel.



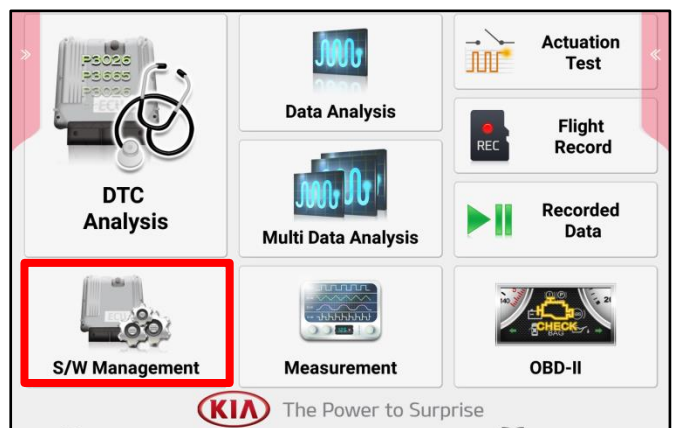
4. With the ignition ON, turn ON the KDS tablet. Select **KDS** from the home screen.



5. Confirm communication with VCI (A) and then configure the vehicle (B) using the **AUTO VIN** (C) feature.

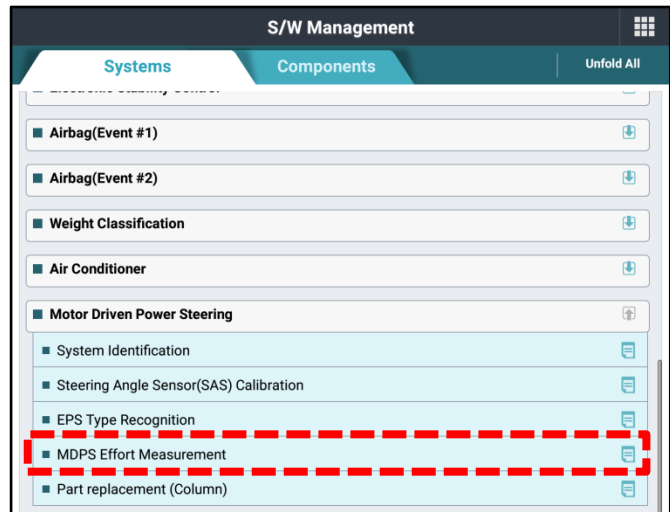


6. Select **S/W Management**.

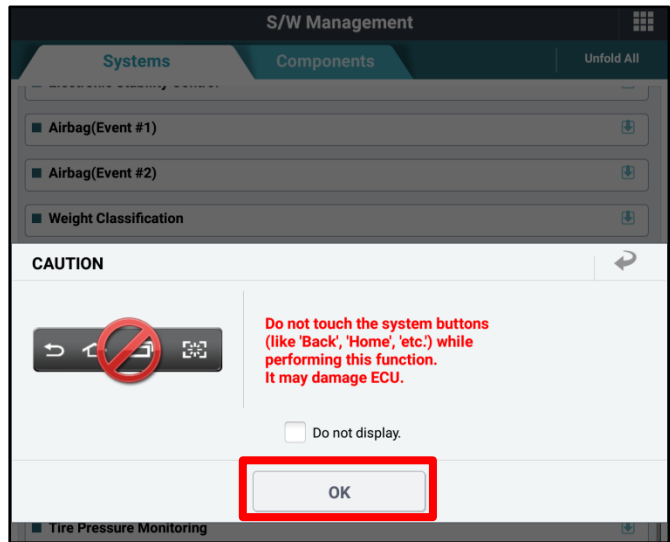


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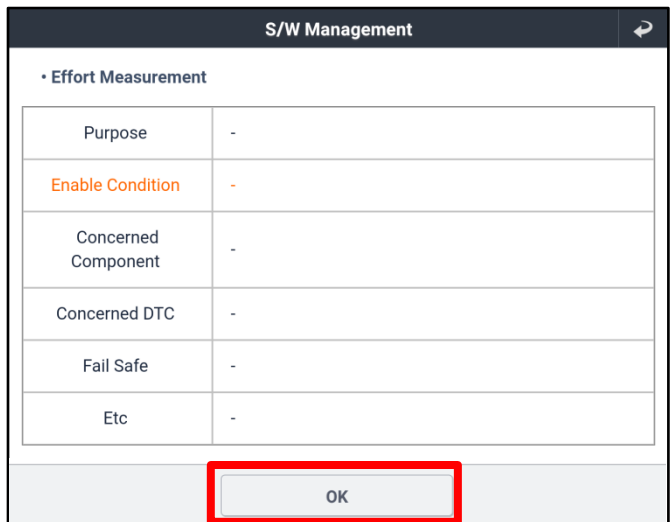
7. Select **Motor Driven Power Steering** → **MDPS Effort Measurement**.



8. Read the Caution message then select **OK** to accept and continue.



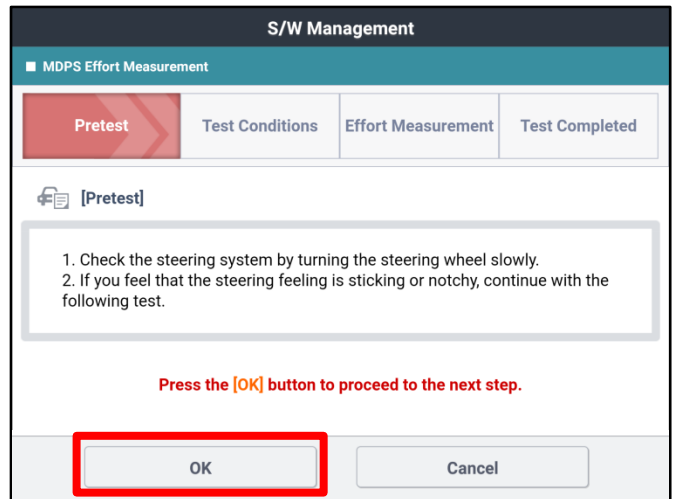
9. Select **OK** to continue.



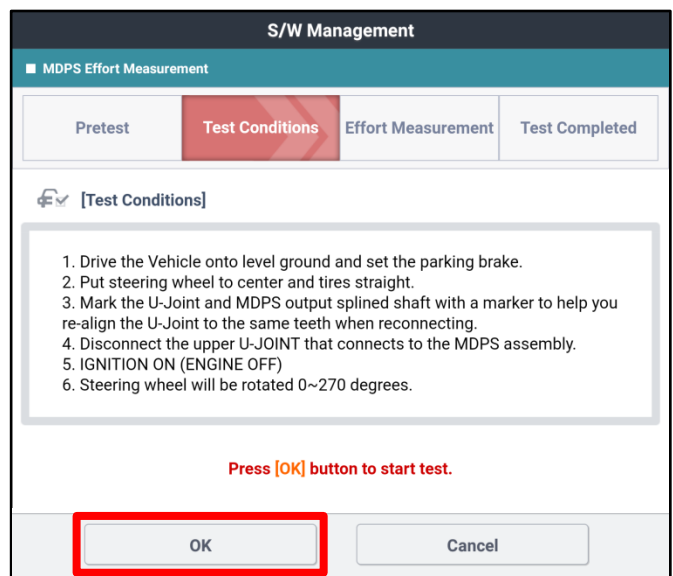
SUBJECT:

ECU UPGRADE – STEERING LOGIC IMPROVEMENT

- 10. Verify the customer’s complaint matches the information on the screen and select **OK**.



- 11. Confirm all test conditions have been performed and select **OK**.

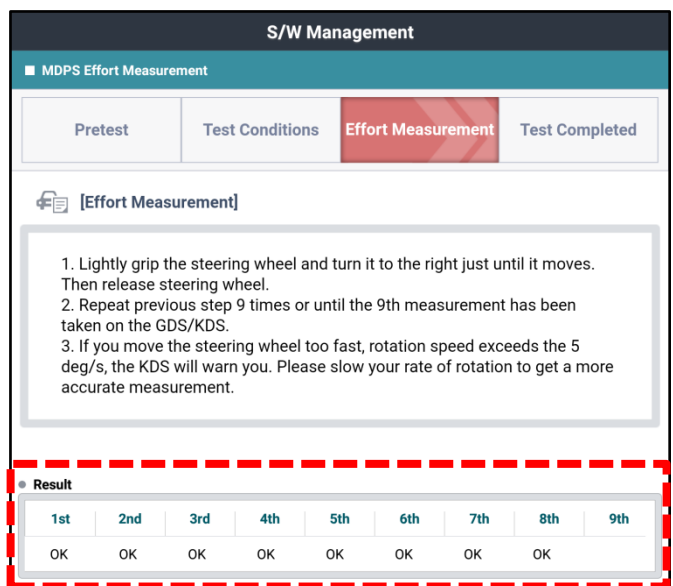


- 12. Perform the MDPS effort measurement test by rotating the steering wheel, slowly, at a speed of 5 Deg/Sec. Repeat the MDPS effort measurement test a total of nine (9) times.

**\* NOTICE**

**If the five (5) Deg/Sec. rotation speed is exceeded, a message, as shown below, will display.**

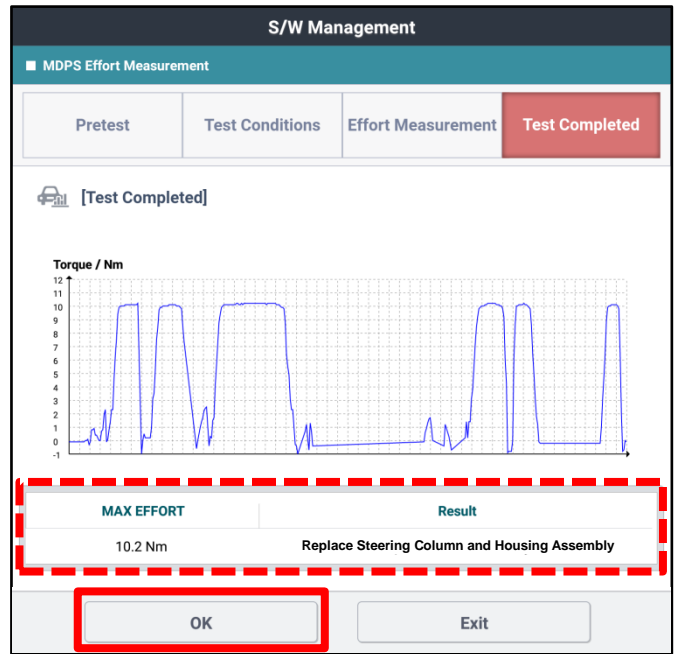
Steering wheel rotation speed is fast.



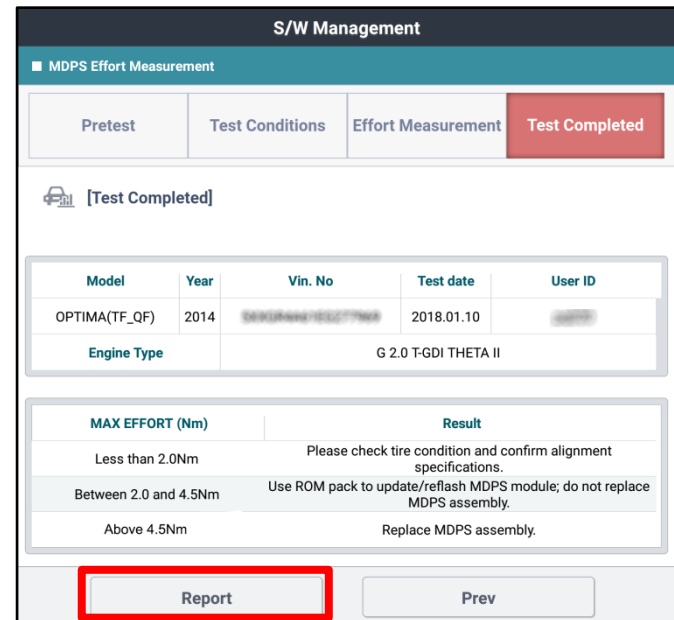


**SUBJECT: ECU UPGRADE – STEERING LOGIC IMPROVEMENT**

13. After performing the MDPS effort measurement test successfully, the results will be displayed along with the appropriate course of action. Select **OK** to continue.



14. Refer to the table below for the correct course of action after the 'Test Completed' screen is displayed. **NOTE: select Report to save the report for future reference.**



Item	Max. Effort	Remedy	Proceed to
Steering Effort Value	0 - 1.5 lb.ft (0 - 2.0 Nm)	No further action is required	N/A
	1.5 - 3.3 lb.ft (2.0 - 4.5 Nm)	ECU Upgrade	Page 7
	3.3 lb.ft (4.5Nm) or higher	Replace Steering Column and Housing Assembly	Page 12

15. If no further action is required, reinstall the universal joint and secure in place using a new bolt. Refer to **step 1** for bolt torque specification and **EPC** for bolt part number needed.

**\* NOTICE**

**Be sure to use alignment mark made in step 1 to align the universal joint with the pinion.**

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**ECU UPGRADE – STEERING LOGIC IMPROVEMENT****ECU Upgrade Procedure (for MDPS Effort Value of 1.5 - 3.3lb.ft/2.0 - 4.5N.m):****★ IMPORTANT**

ECU Upgrade Procedure with Upgrade Event #388 (UMa) can **ONLY** be performed in Manual Mode. Reference the ROM ID table on page 8 and password table on page 11. Performing this upgrade on non-applicable vehicles (equipped with R-MDPS) may result in loss of steering assist and may only be resolved with MDPS assembly replacement.

To correct this condition, the ECU should be reprogrammed using the KDS download, as described in this bulletin.


Upgrade Event Name
258.QF EPS LOGIC IMPROVEMENT 2
*388.UMA EPS STEERING WHEEL STICKING LOGIC IMPROVEMENT

\*Can **ONLY** be performed in Manual Mode

**★ NOTICE**

- A fully charged battery is necessary before ECU upgrade can take place. It is recommended that the Midtronics GR8-1299 system be used in ECU mode during charging. **DO NOT** connect any other battery charger to the vehicle during ECU upgrade.
- All ECU upgrades must be done with the ignition key in the 'ON' position.
- 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 model, year.

**★ NOTICE**

Before attempting an ECU upgrade on any Kia model, make sure to first determine whether the particular 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 #258, #388**

Model	System	ECU P/No.	ROM ID	
			Previous	New
2012-2013MY Optima (QF)	EPS	56300-2T200	4TFA0911	4TFZ1505
		56300-2T210	4TFB1001	
		56300-2T220	4TFC1002	
		56300-2T300	4TFD1003	
		56300-2T320	4TFF1004	
		56300-2T450	4TFF1005	
		56300-2T270	4TFG1007	
		56300-2T280	4TFH1009	
		56300-2T201	4TFJ1009	
		56300-2T211	4TFK1103	
		56300-2T221	4TFL1104	
		56300-2T301	4TFM1104	
		56300-2T321	4TFN1105	
		56300-2T451	4TFO1106	
		56300-2T410	4TFP1107	
		56300-2T510	4TFP1108	
		56300-2T271	4TFQ1109	
		56300-2T281	4TFR1110	
		56300-2T551	4TFS1110	
		56300-2T571	4TFT1111	
2014MY Optima (QF)	EPS	56300-2T305	4TFDA211	4TFDL505
		56300-2T325	4TFDB302	
		56300-2T455	4TFDC304	
		56300-2T415	4TFDD305	
		56300-2T515	4TFDE305	
		56300-2T275	4TFDF306	
		56300-2T285	4TFDG307	
			4TFDH309	
			4TFDJ309	
			4TFDK406	
2016-2018MY Sorento (UMa)	EPS	56310-C5000	4UMDC102	4UMDC109
		56310-C5100	4UMDC103	
			4UMDC104	
			4UMDC105	
			4UMDC106	
			4UMDC107	
			4UMDC108	

**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.**



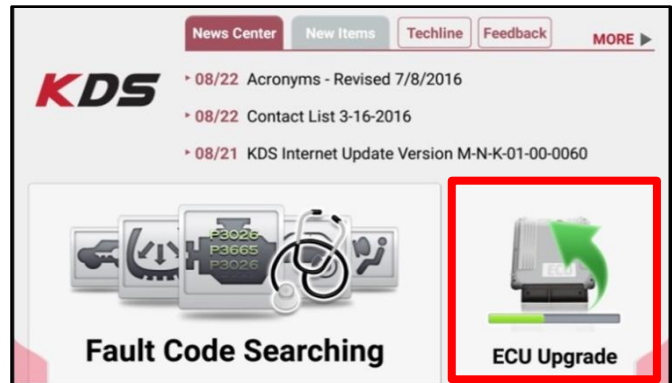
SUBJECT:

ECU UPGRADE – STEERING LOGIC IMPROVEMENT

**\* NOTICE**

Prior to performing the ECU upgrade, be sure to check that the KDS is fully charged.

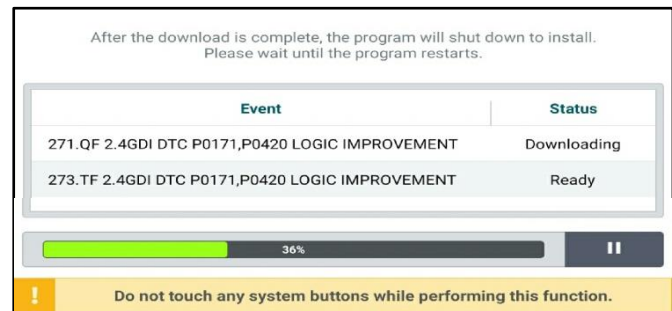
1. With the VCI-II connected to the OBI-II connector, ignition on, and KDS configured with AUTO VIN (steps 3-5 of the MDPS Effort Measurement procedure), select **ECU Upgrade**.



2. The KDS will check the server for recently uploaded Events and then automatically download **Upgrade Event #258**.

**\* NOTICE**

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



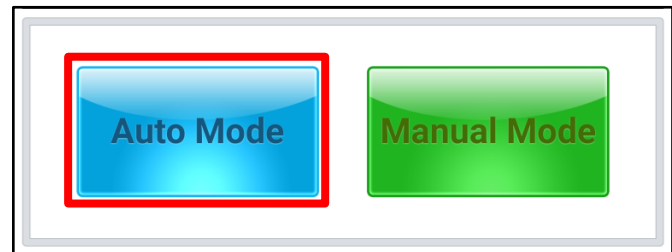
KDS screenshot shown above is for demonstration purposes only. Events shown in screenshot are not applicable to this bulletin.

3. Select **Auto Mode**.



**CAUTION**

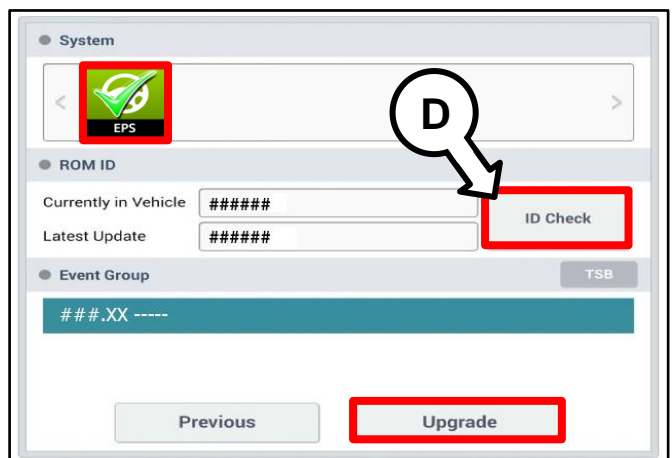
Do NOT attempt to perform a Manual Mode upgrade UNLESS Auto Mode fails. Always follow the instructions given on the KDS in either Auto or Manual mode.



4. Select the **EPS** system under the System selection menu.

Touch **ID Check** (D) and confirm that the latest update is available.

Select **Upgrade Event #258** and select **Upgrade** to continue.



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- 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.')

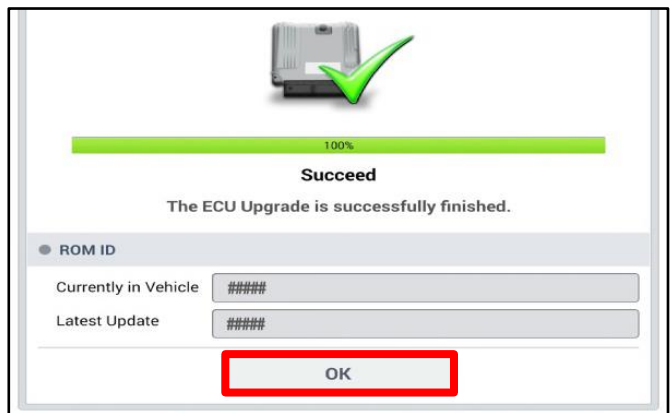
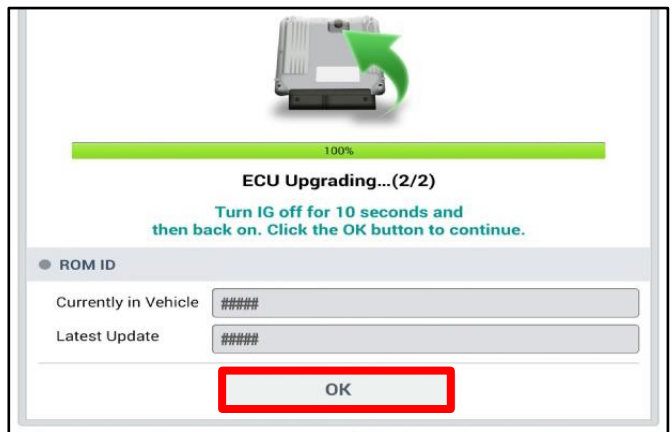
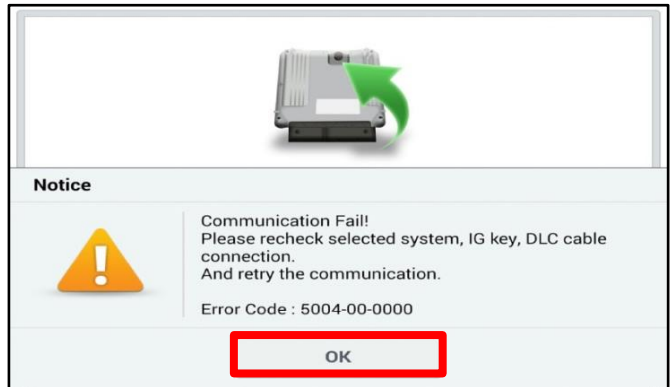
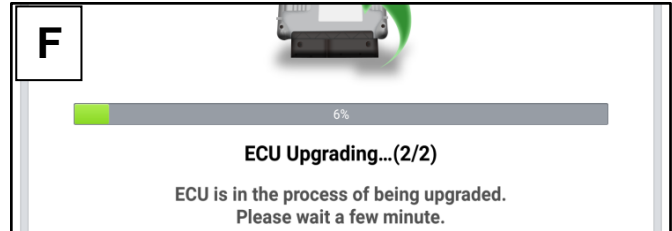
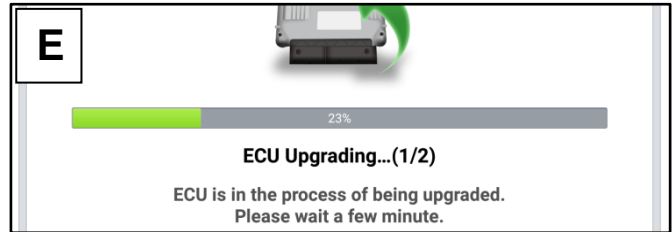
- If a "Communication Fail" screen appears, verify that the VCI-II and KDS are communicating properly. Touch **OK** and restart the procedure from step 4.

**\* NOTICE**

If an error notice continues to appear or if the upgrade cannot be performed, contact Techline or GIT America Help Desk.

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

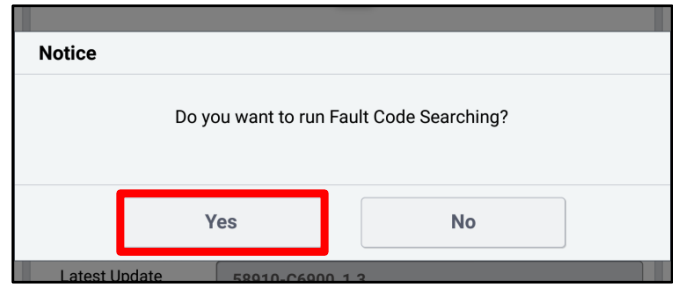
- Once the upgrade is complete, touch **OK** to finalize the procedure.



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## ECU UPGRADE – STEERING LOGIC IMPROVEMENT

9. 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.



10. Start the engine to confirm proper operation of the vehicle.

**Manual Upgrade Procedure:****\* IMPORTANT**

ECU Upgrade Procedure with Upgrade Event #388 (UMa) can **ONLY** be performed in Manual Mode. Reference the ROM ID table on page 8 and password table below. Performing this upgrade on non-applicable vehicles (equipped with R-MDPS) may result in loss of steering assist and may only be resolved with MDPS assembly replacement.

**\* 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.

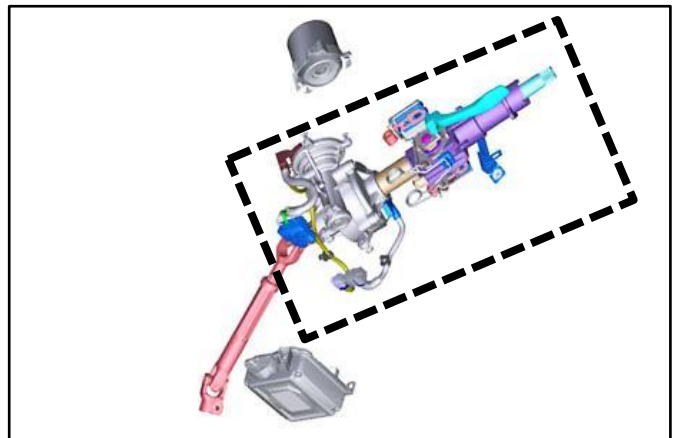
**Manual Mode ECU Upgrade Passwords**

Model	Menu	Password
2012-2013MY QF	QF EPS : 56300-2T200~81/300~21/410~51/510~71	2571
2014MY QF	QF FL EPS : 56300-2T305/325/455/415/515/275/285	2285
2016-2018 UMa	UMA EPS : 56310-C5000/100	5100

1. Within the ECU Upgrade screen displayed, select **Manual Mode**.
2. Select the **EPS** system under the System selection menu. Select **Upgrade Event #258 or #388** and select **Upgrade** to continue.
3. Select the appropriate control unit part number with reference to the ROM ID Information Table on page 8 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. Touch **OK** to continue.
7. Once the upgrade is complete, touch **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.

**Replacement Procedure for Steering Column & Housing: (for MDPS Effort Value greater than 3.3lb.ft/4.5N.m):**

1. Replace the MDPS column and housing by referring to the “Steering System → Motor Driven Power Steering → MDPS Column and Housing → Repair Procedures” chapter in the applicable Shop Manual on KGIS.




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## ECU UPGRADE – STEERING LOGIC IMPROVEMENT

AFFECTED VEHICLE RANGE:

Model	Production Date Range
Optima (QF)	August 2, 2010 through July 27, 2014
Sorento (UMa)	October 27, 2014 through August 22, 2017

REQUIRED PART:

Part Name	Part Number	Figure
MDPS Steering Column and Housing Assembly	Refer to EPC	
Bolt	Refer to EPC	

WARRANTY INFORMATION:

N Code: I3T C Code: ZZ3

Model	Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
Opt. (QF)	W	56310 2T305	0	MDPS Inspection	56300F14	0.4 M/H	N/A	N/A
				MDPS Inspection & ECU Upgrade	56300F12	0.5 M/H	N/A	N/A
				MDPS Inspection, Steering Column & Housing Replacement	56391R00	1.3 M/H	Refer to EPC	1
Sor. (UMa)	W	56310 C5000	0	MDPS Inspection	56310F03	0.4 M/H	N/A	N/A
				MDPS Inspection & ECU Upgrade	56310F01	0.5 M/H	N/A	N/A
				MDPS Inspection, Steering Column & Housing Replacement	56391R00	1.3 M/H	Refer to EPC	1

**NOTE: Only one Op Code can be claimed.**