



GROUP	MODEL
CHA	Multiple Models Listed
NUMBER	DATE
114	March 2022

## TECHNICAL SERVICE BULLETIN

SUBJECT:

### MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

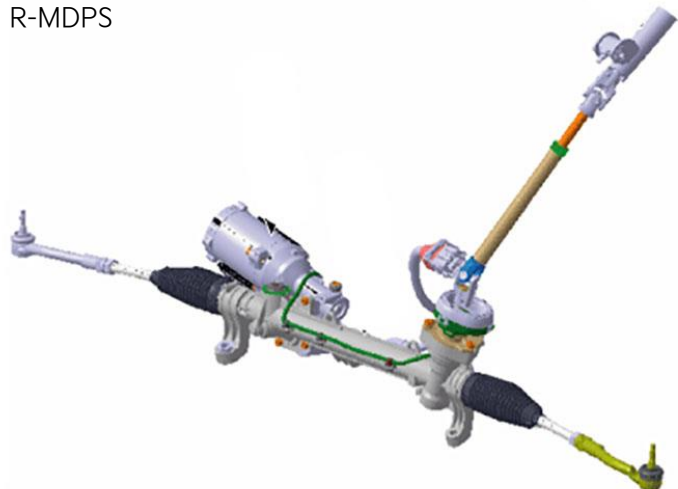
This bulletin provides information regarding the diagnosis of Motor Driven Power Steering (MDPS), also known as Electronic Power Steering (EPS), and parts replacement associated with the 'Warranty Extension Program' (WTY023) on 2016-2017MY Optima (JF/JFa), 2017MY Optima HEV/PHEV (JF P/HEV), 2016-2017MY Sorento (UMa) vehicles produced in the ranges listed below. The affected vehicles may exhibit the MDPS (also known as EPS) warning lamp 'ON'. The warranty coverage for repairs related to the MDPS unit due to illumination of the MDPS warning lamp has been extended to 15 years/150,000 miles, whichever comes first, starting from the date the vehicle was first put into service. Follow the procedure outlined in this publication to diagnose the MDPS failure code, and if necessary, replace the parts indicated after diagnosis.

Model	Production Date Range
Optima (JFa)	August 28, 2015 through May 2, 2017
Optima (JF)	February 2, 2016 through April 26, 2017
Optima HEV/PHEV (JF P/HEV)	June 27, 2016 through July 6, 2017
Sorento (UMa)	October 27, 2014 through April 13, 2017

C-MDPS



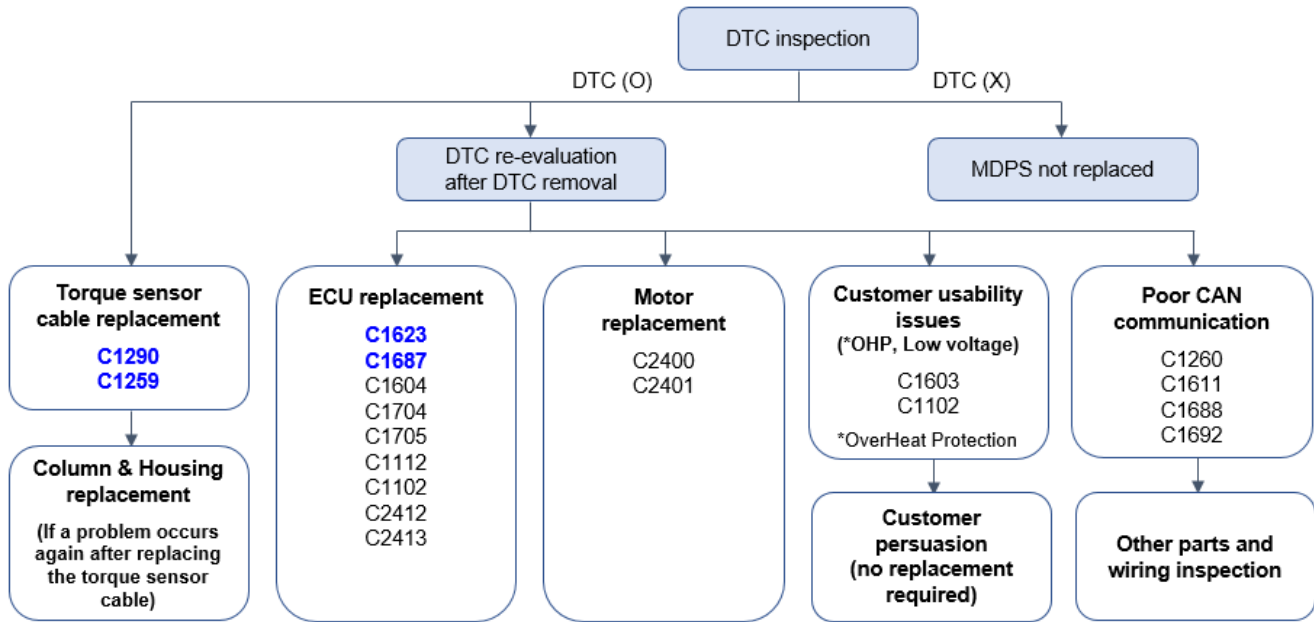
R-MDPS



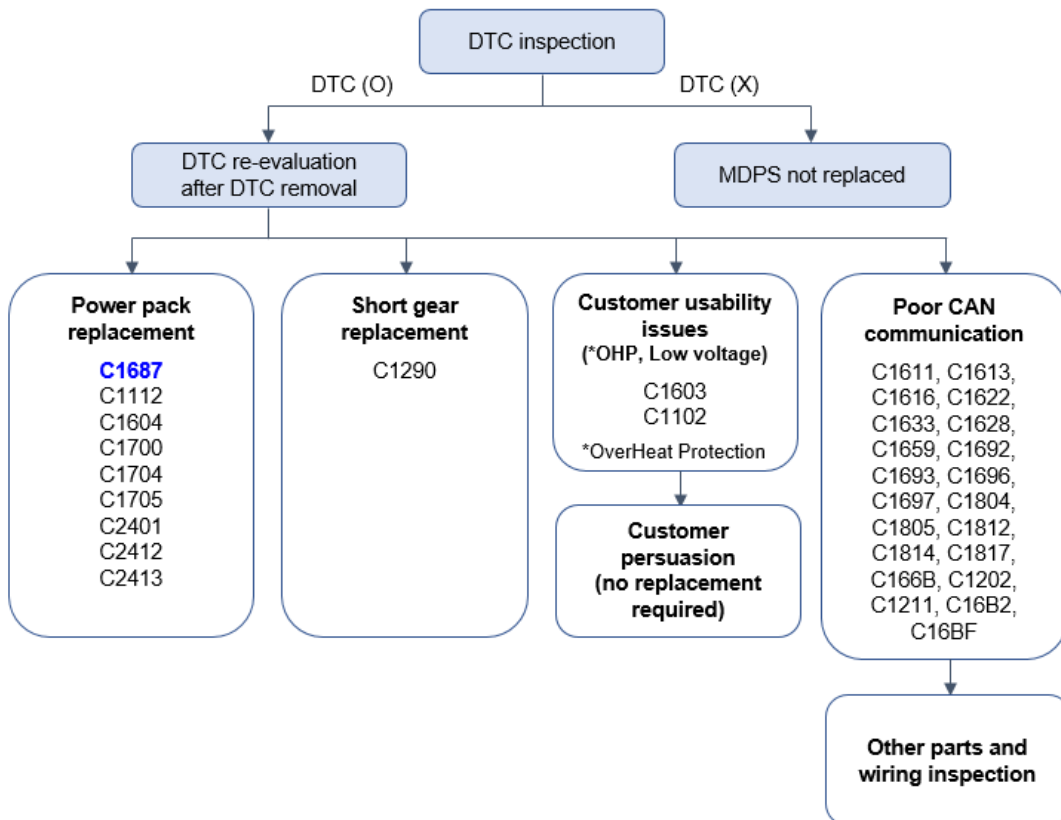
**MDPS WARNING LAMP DIAGNOSTIC INSPECTION  
& SINGLE PARTS REPLACEMENT**

**Flowcharts:**

**C-MDPS Warning Lamp Repair Flowchart**



**R-MDPS Warning Lamp Repair Flowchart**



SUBJECT:

## MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

### Diagnostic Procedure:

#### NOTICE

- Always refer to the applicable model shop manual for detailed information regarding the failure code diagnosis and component replacement procedures.
- Some failure codes may be found in systems other than EPS (electric power steering) in KDS. They may be found in the Brake/ABS/ESC system. Check all systems for the failure codes.

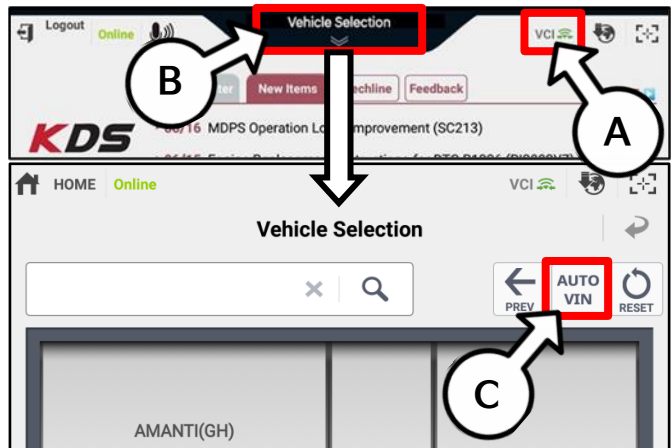
1. Connect the VCI-II to the OBD-II connector, located under the driver's side of the instrument panel.



2. With the ignition ON, turn ON the KDS tablet. Select 'KDS' from the home screen.

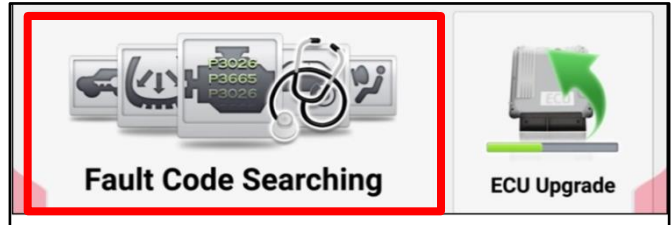


3. Confirm communication with VCI (A) and then configure the vehicle (B) using the 'AUTO VIN' (C) feature.



**MDPS WARNING LAMP DIAGNOSTIC INSPECTION  
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4. Select 'Fault Code Searching'.







5. Select the EPS system under the System selection menu.



6a. Check the Diagnostic Trouble Codes (DTCs) for C-MDPS.

**Note:** One or more of the DTCs listed on the left must be set before completing action listed.

**C-MPDS:**

DTC	Action	Comments
C1290 C1259	Replace Torque Sensor Cable. 	Refer to pages 6-8 in this TSB. <b>Note:</b> If code appears again after replacement, then replace the <u>Steering Column and Housing</u> .
C1290 C1259	Replace Steering Column & Housing. 	Refer to pages 9-11 in this TSB. <b>Only replace</b> if DTC C1290 and/or C1259 appear again after Torque Sensor Cable replacement.
C1623 C1687 C1604 C1704 C1705 C1112 C1102 C2412 C2413	Replace MDPS ECU. 	Refer to page 12 in this TSB.
C2400 C2401	Replace MDPS Motor. 	Refer to page 13 in this TSB.
C1603 C1102	DO NOT replace any parts.	Customer usability issues: Overheating protection, low voltage. <b>Explain to customer that no part replacement is needed.</b>
C1260 C1611 C1688 C1692	Inspect other parts and wirings.	Refer to KGIS for further diagnosis.
None	No parts replacement necessary.	



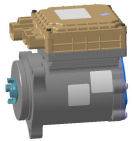

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6b. Check the Diagnostic Trouble Codes (DTCs) for R-MDPS.

**Note:** One or more of the DTCs listed on the left must be set before completing action listed.

### R-MPDS:

DTC	Action	Comments
C1687 C1112 C1604 C1700 C1704 C1705 C2401 C2412 C2413	Replace Power Pack. 	Refer to page 14 in this TSB.
C1290	Replace Short Gear. 	Refer to page 15 in this TSB.
C1603 C1102	DO NOT replace any parts.	Customer usability issues: Overheating protection, low voltage. <span style="color: red;">Explain to customer that no part replacement is needed.</span>
C1611 C1613 C1616 C1622 C1633 C1628 C1659 C1692 C1693 C1696 C1697 C1804 C1805 C1812 C1814 C1817 C166B C1202 C1211 C16B2 C16BF	Inspect other parts and wirings.	Refer to KGIS for further diagnosis.
None	No parts replacement necessary.	

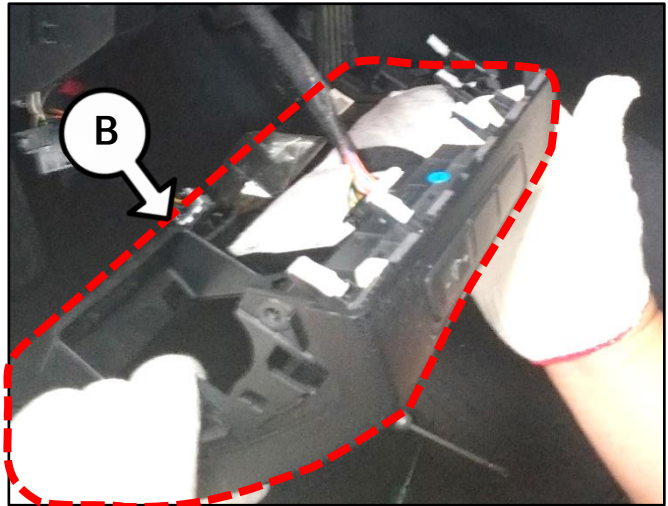
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**C-MDPS Torque Sensor Cable Replacement Procedure:**

1. Remove the driver's side (LH) crash pad side cover (A) by referring to the "Body (Interior and Exterior → Crash Pad → Crash Pad Side Cover → Repair procedures" chapter in the applicable Shop Manual on KGIS.



2. Remove the crash pad lower panel (B) by referring to the "Body (Interior and Exterior → Crash Pad → Crash Pad Lower Panel → Repair procedures" chapter in the applicable Shop Manual on KGIS.



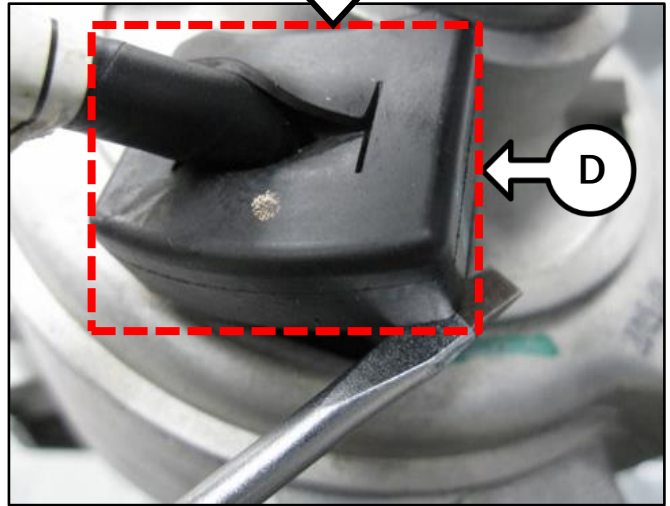
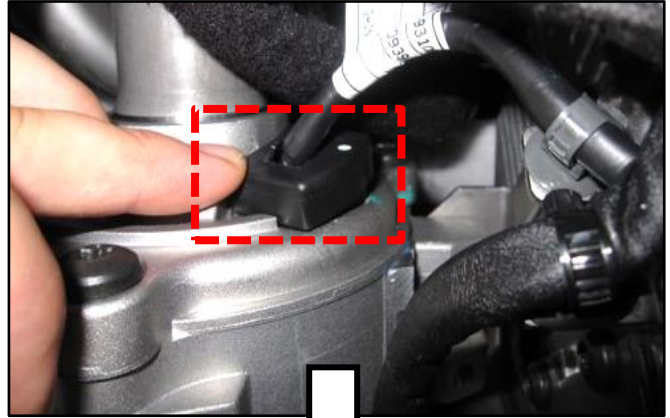
3. Remove the knee airbag assembly by referring to the "Restraint → Airbag Module → Knee Airbag (KAB) Module → Repair procedures" chapter in the applicable Shop Manual on KGIS.



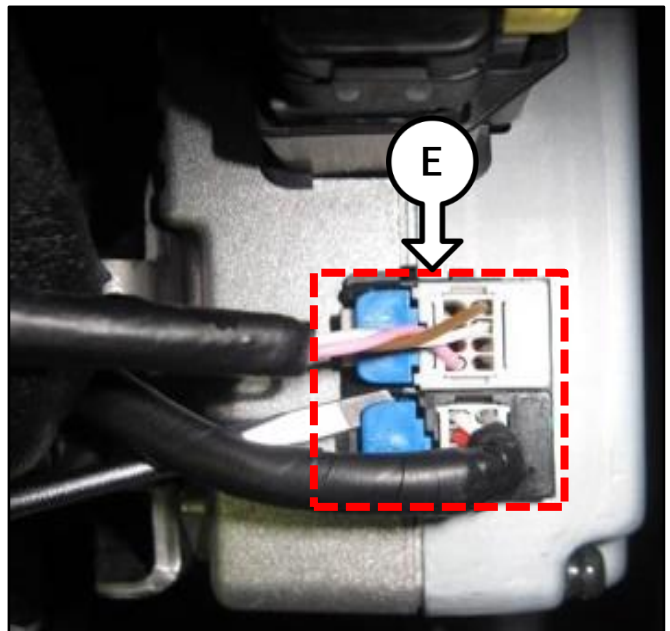
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4. Remove the cable protection packing (D) on the torque sensor side.

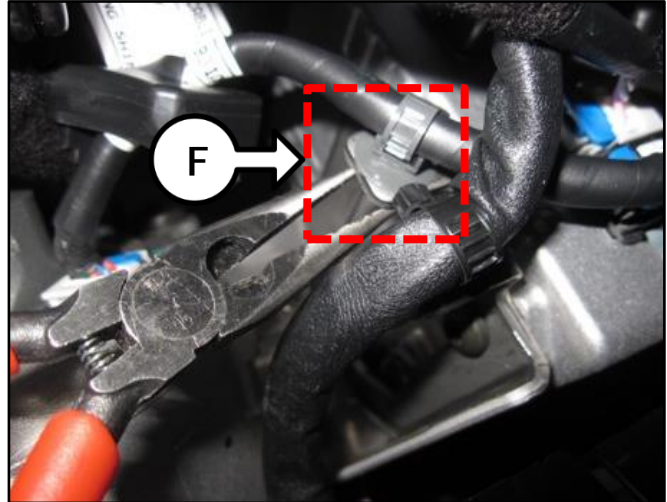


5. Remove the ECU side connector double lock and connector (E) using a flat-blade screwdriver as shown.



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6. Remove the torque sensor cable attaching clip (F) using needle-nose pliers.



7. Remove the torque sensor cable and replace it with a new one.



8. Reinstall all parts in reverse order of removal.
9. Conduct diagnosis after installation.
  - If diagnosis is normal, and no DTC is found, repair is complete.
  - **If DTC C1290 or C1259 set again, or the MDPS warning lamp reappears, proceed to "C-MDPS Steering Column and Housing replacement".**





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## MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

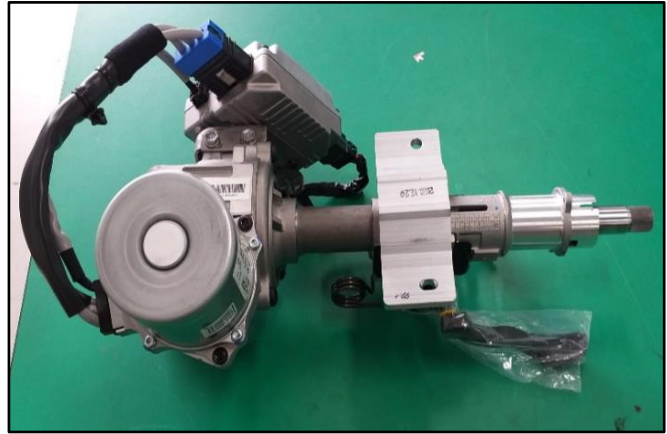
### C-MDPS Steering Column & Housing Replacement Procedure:

1. Remove the C-MDPS assembly by referring to the "Steering System → Motor Driven Power Steering → MDPS Column and Housing → Repair procedures" chapter in the applicable Shop Manual on KGIS.

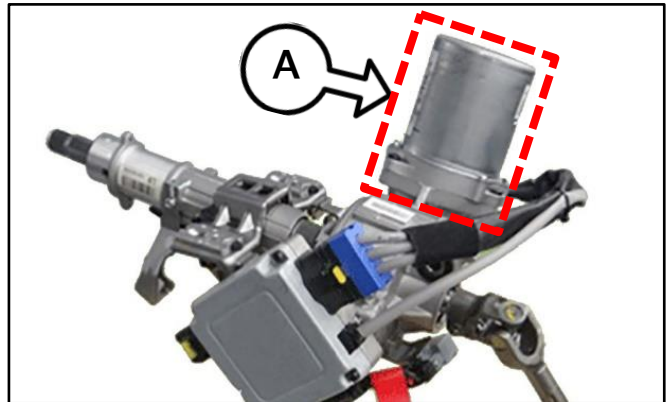
#### ! CAUTION

##### When removing the MDPS:

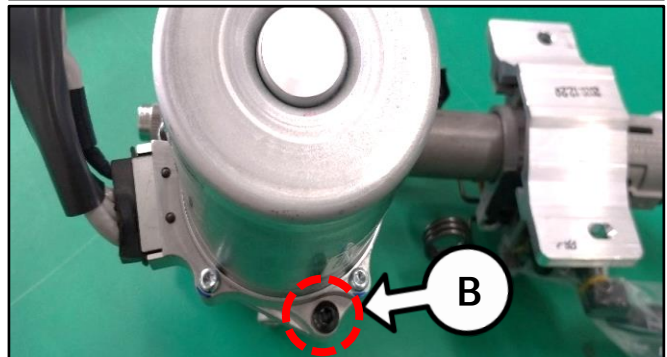
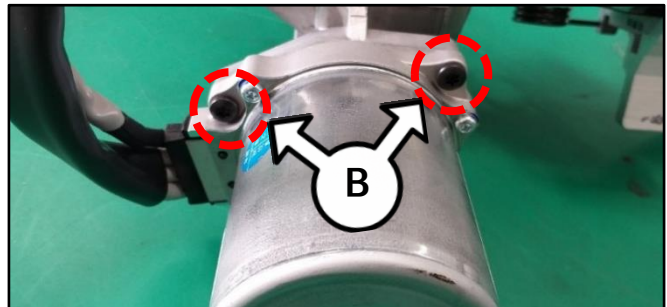
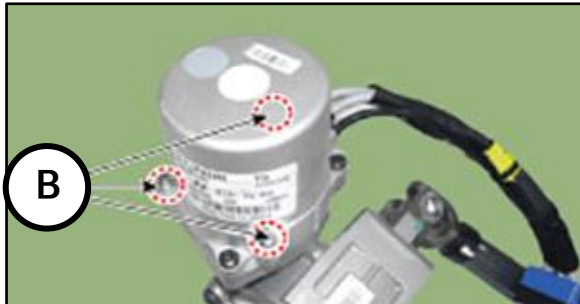
- Be careful not to damage the wiring.
- Do not let foreign substances enter the housing assembly.



- 2a. Remove the MDPS motor assembly (A) by referring to the "Steering System → Motor Driven Power Steering → MDPS Motor → Repair procedures" chapter in the applicable Shop Manual on KGIS.



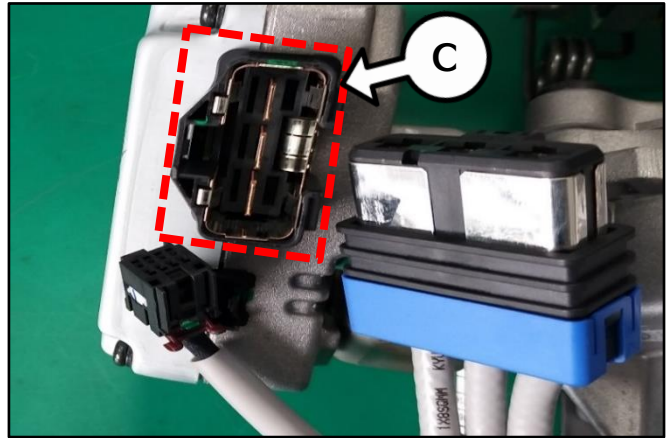
- 2b. Remove the three (3) mounting screws (B).



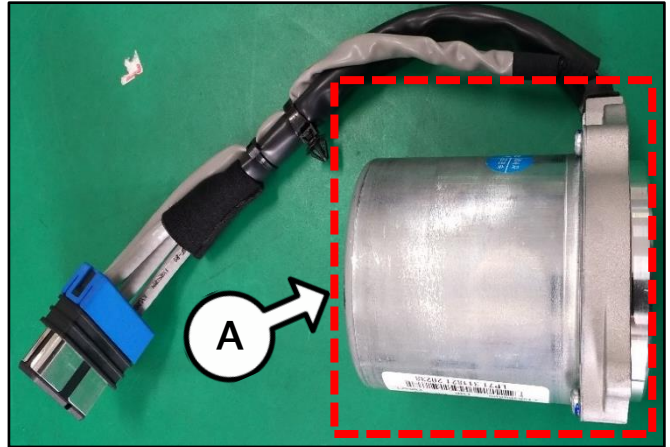
Tightening torque for Screws:  
70.8 - 105.6 lb.in (8.0 - 12.0 N.m)

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2c. Remove the MDPS ECU connector (C).



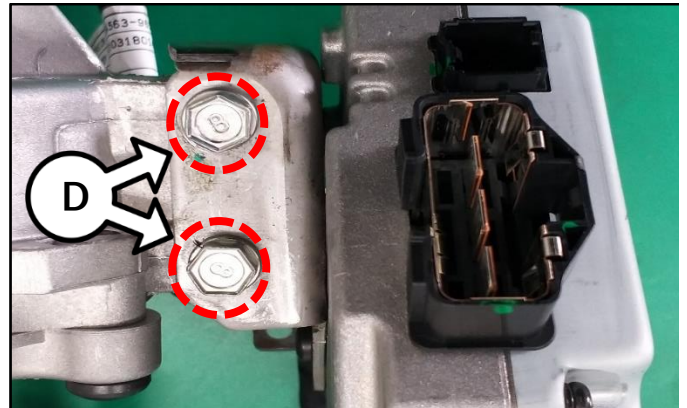
2d. Remove the MDPS motor assembly (A).




3. Remove the MDPS ECU mounting bolts (D).



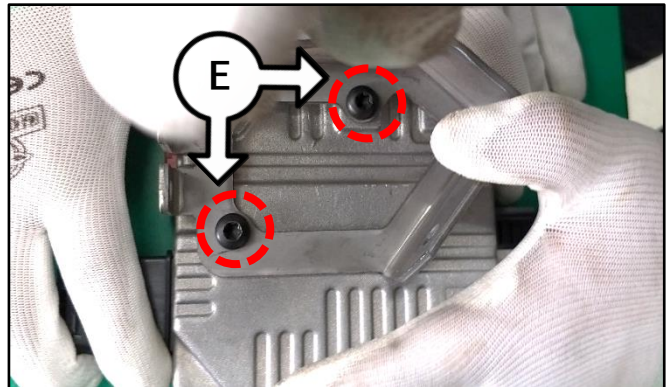
**Tightening torque for Bolts:**  
14.8 - 17.7 lb.ft (20.0 - 24.0 N.m)



4. Remove the screws (E) attaching the MDPS ECU bracket.



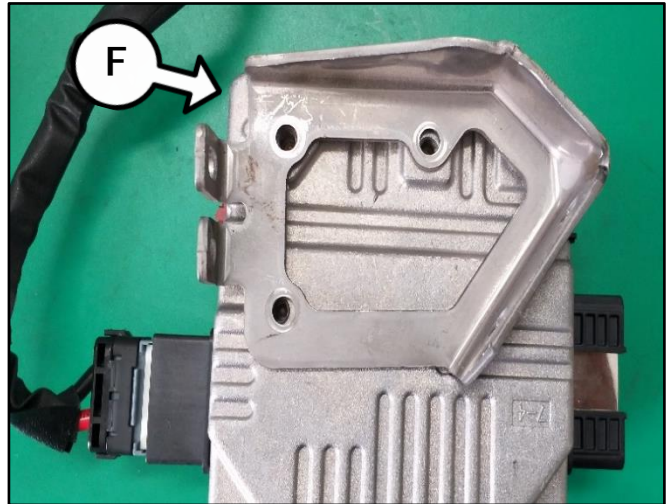
**Tightening torque for Screws:**  
70.8 - 88.8 lb.in (8.0 - 10.0 N.m)



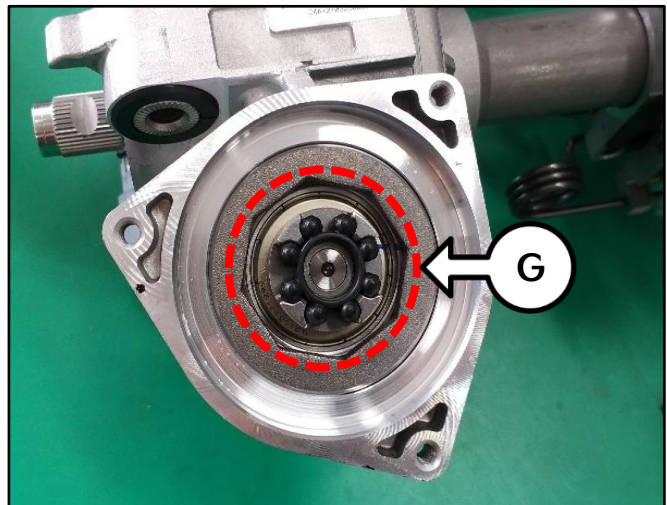
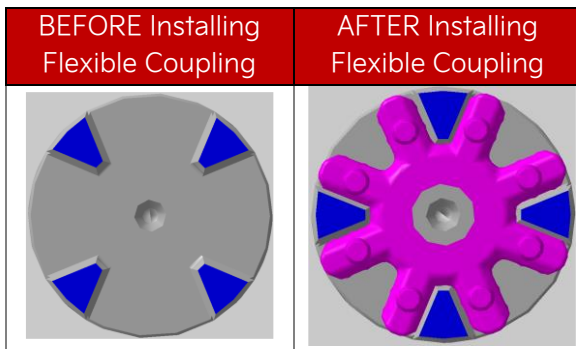
SUBJECT:

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- Remove the MDPS ECU (F).



- Install the coupling (G) by removing it from the existing removed housing, then install onto the new housing.



- After attaching the removed motor, ECU, and coupling to the prepared new column housing, install in reverse order of removal.



## MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

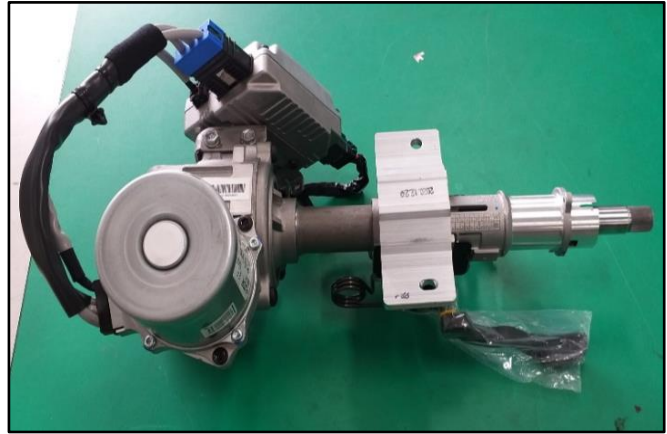
### C-MDPS ECU Replacement Procedure:

1. Remove the C-MDPS assembly by referring to the "Steering System → Motor Driven Power Steering → MDPS Column and Housing → Repair procedures" chapter in the applicable Shop Manual on KGIS.

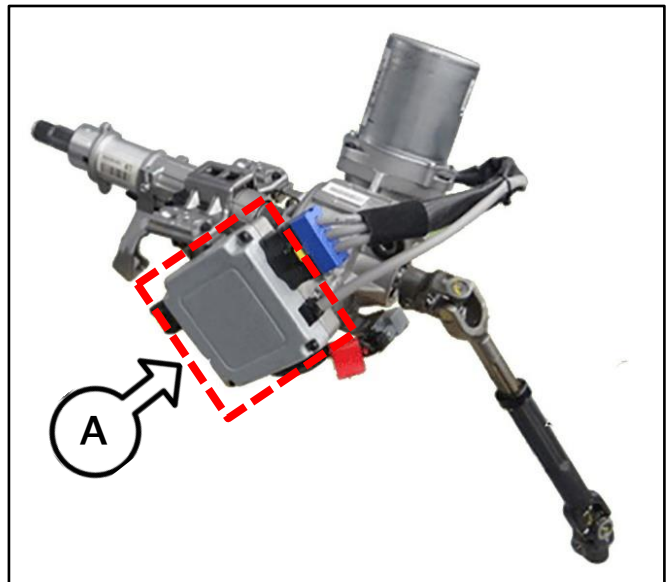
**⚠ CAUTION**

**When removing the MDPS:**

- Be careful not to damage the wiring.
- Do not let foreign substances enter the housing assembly.



2. Replace the MDPS ECU (A) by referring to the "Steering System → Motor Driven Power Steering → MDPS Control Unit → Repair procedures" chapter in the applicable Shop Manual on KGIS.



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## MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

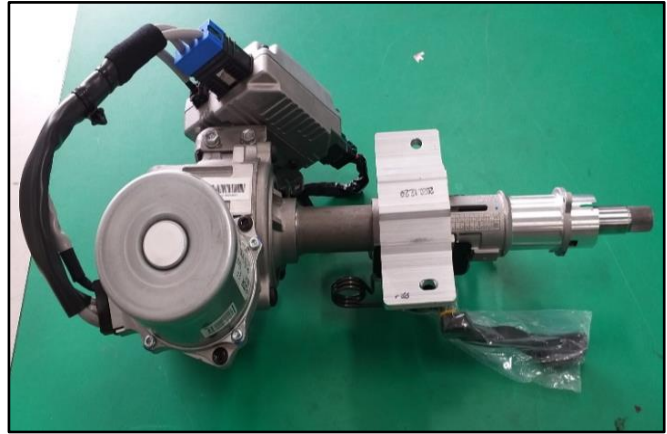
### C-MDPS Motor Assembly Replacement Procedure:

1. Remove the C-MDPS assembly by referring to the "Steering System → Motor Driven Power Steering → MDPS Column and Housing → Repair procedures" chapter in the applicable Shop Manual on KGIS.

#### **CAUTION**

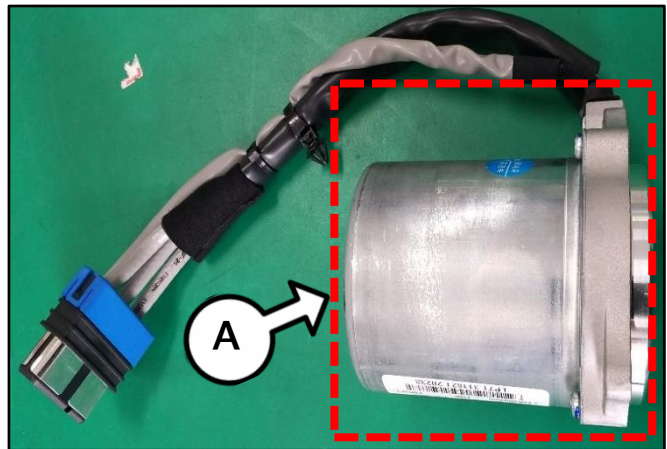
##### When removing the MDPS:

- Be careful not to damage the wiring.
- Do not let foreign substances enter the housing assembly.

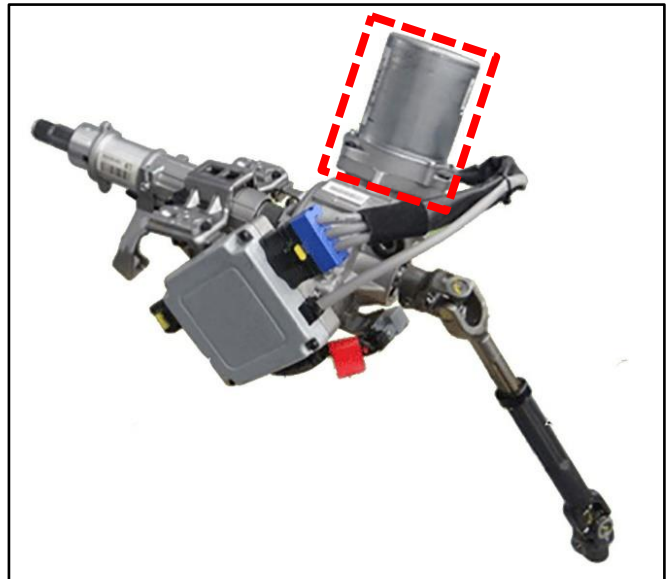


2. Remove the MDPS Motor assembly (A) by referring to the "Steering System → Motor Driven Power Steering → MDPS Motor → Repair procedures" chapter in the applicable Shop Manual on KGIS.

**Note:** Also refer to steps 2a - 2d in the "C-MDPS Steering Column & Housing Replacement Procedure" in this TSB.

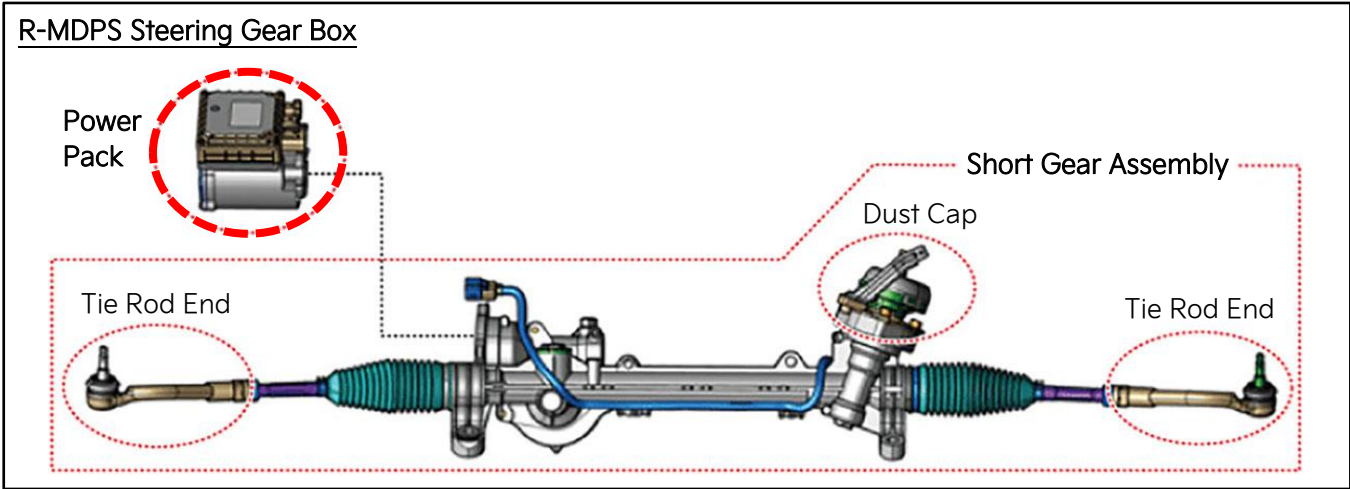


3. Install the new MDPS Motor assembly in the reverse order of removal.




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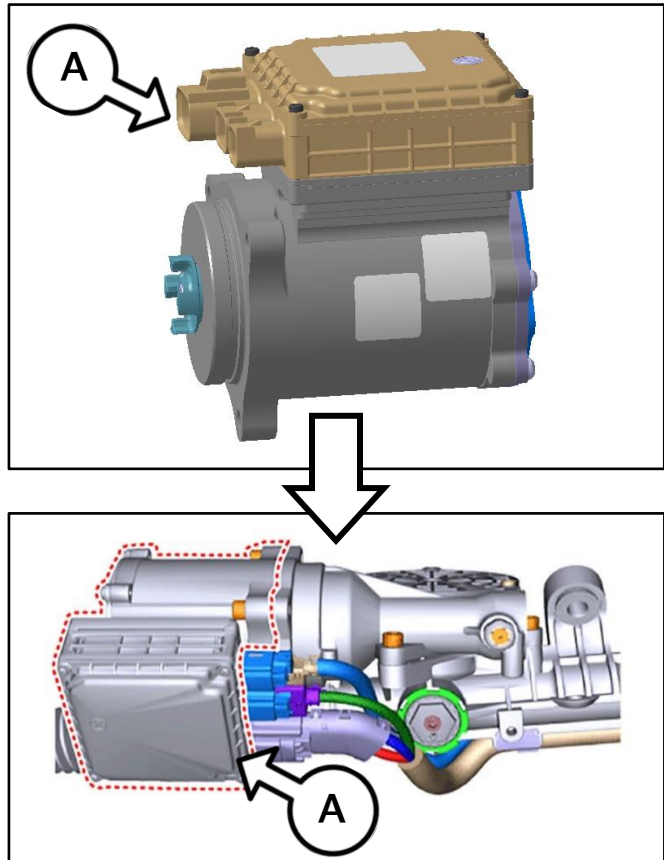
**R-MDPS Power Pack Replacement Procedure:**



1. Replace the R-MDPS Power Pack (A) by referring to the "Steering System → Motor Driven Power Steering → Steering Gear Box → Repair procedures" chapter in the applicable Shop Manual on KGIS.



**Tightening torque for Bolts:**  
14.5 - 17.4 lb.ft (19.6 - 23.5 N.m)



**NOTICE**

Refer to the applicable shop manual on KGIS to initialize operations after replacement.

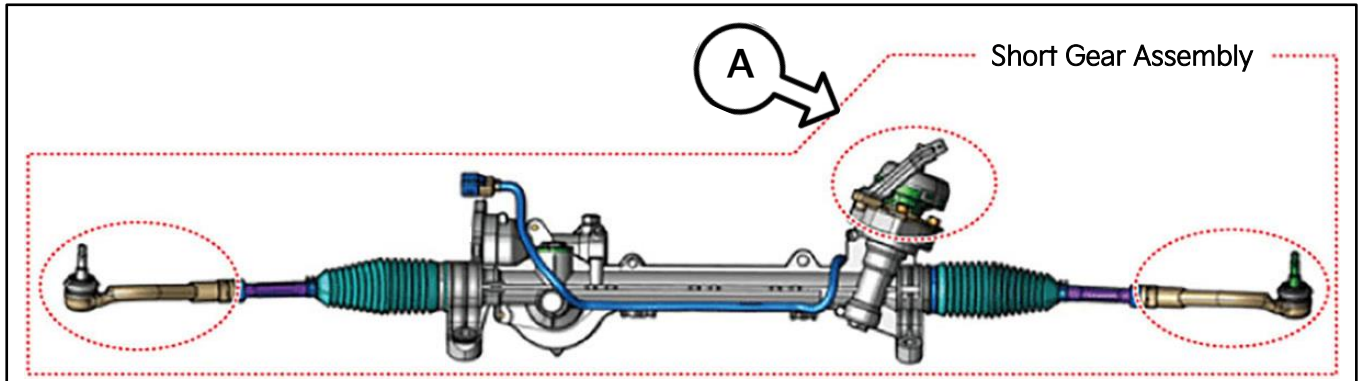


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### R-MDPS Short Gear Assembly Replacement Procedure:

1. Replace the R-MDPS Short Gear Assembly (A) by referring to the "Steering System → Motor Driven Power Steering → Steering Gear Box → Repair procedures" chapter in the applicable Shop Manual on KGIS.



#### NOTICE

Refer to the applicable shop manual on KGIS to initialize operations after replacement.

#### NOTICE

R-MDPS is a dual pinion type, not a belt type, so there is no need for a procedure such as adjusting tension.

## MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

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**AFFECTED VEHICLE RANGE:**

Model	Production Date Range
Optima (JFa)	August 28, 2015 to May 2, 2017
Optima (JF)	February 2, 2016 through April 26, 2017
Optima HEV/PHEV (JF P/HEV)	June 27, 2016 through July 6, 2017
Sorento (UMa)	October 27, 2014 to April 13, 2017

**REQUIRED TOOL:**

Tool Name	Figure	Comments
KDS		Kia Diagnostic System

**REQUIRED PART:**

Part Name	Part Number		Figure	Qty.	Comments
	JFa, JF, JF P/HEV	UMa			
Torque Sensor Cable	56397 C1100FFF	56397 C5000FFF		1	C-MDPS Type
C-MDPS ECU	JFa: 56340 D5500	56340 C5000		1	
	JF: 56340 D4500				
	JF P/HEV: 56340 A8500				
C-MDPS Motor	56330 D4500	56330 C5000		1	
Steering Column & Housing Assembly	56390 D4500 (w/out smart key)	56390 C5000 (w/out smart key)		1	
	56390 D4700 (w/smart key)	56390 C5100 (w/smart key)			
Short Gear Assembly	57770 D5000	<b>2WD:</b> 57770 C5001		1	R-MDPS Type
		<b>4WD:</b> 57770 C5101			
Power Pack	56320 D5000	56320 C5500		1	

**Note:** DO NOT order any parts unless needed/required.



SUBJECT:

## MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

### WARRANTY INFORMATION:

**N Code: I3A C Code: ZZ3**

### C-MDPS:

Model	Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
JFa		56390 D4700	0	C-MDPS Diagnostic Inspection	212A20IO	0.3 M/H	N/A	0
JF, JF P/HEV					212116RO			
UMa		56390 C5000			212A20IO			
JFa		56390 D4700	0	C-MDPS Diagnostic Inspection + Torque Sensor Cable Replacement	212A20R0	0.5 M/H	56397 C1100FFF	1
JF, JF P/HEV					212116R1		56397 C5000FFF	
UMa		56390 C5000			212A20R0			
JFa	W	56390 D4500 (w/out smart key) <u>Or</u> 56390 D4700 (w/smart key)	1	C-MDPS Diagnostic Inspection + Column & Housing Replacement	212A20R1	1.7 M/H	N/A	0
JF, JF P/HEV		56390 C5000 (w/out smart key) <u>Or</u> 56390 C5100 (w/smart key)			212116R2			
UMa		56390 C5000 (w/out smart key) <u>Or</u> 56390 C5100 (w/smart key)			212A20R1			
JFa		56340 D5500	1	C-MDPS Diagnostic Inspection + C-MDPS ECU Replacement	212A20R2	1.1 M/H	N/A	0
JF		56340 D4500			212116R3			
JF P/HEV		56340 A8500			212A20R2			
UMa		56340 C5000			212A20R2			
JFa		56330 D4500	1	C-MDPS Diagnostic Inspection + C-MDPS Motor Replacement	212A20R3	1.2 M/H	N/A	0
JF					212116R4			
JF P/HEV					212A20R3			
UMa		56330 C5000			212A20R3			



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## MDPS WARNING LAMP DIAGNOSTIC INSPECTION & SINGLE PARTS REPLACEMENT

### R-MDPS:

Model	Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.																
JFa	W	56390 D4500	0	R-MDPS Diagnostic Inspection	212A20I1	0.2 M/H*	N/A	0																
UMa		56390 C5000							JFa	57770 D5000	1	R-MDPS Diagnostic Inspection + Steering Short Gear Assembly Replacement + Toe-In Adjust	212A20R4	1.9 M/H	N/A	0	UMa (2WD)	57770 C5001	UMa (4WD)	57770 C5101	JFa	56320 D5000	1	R-MDPS Diagnostic Inspection + Steering Power Pack Replacement + Toe-In Adjust
JFa		57770 D5000	1	R-MDPS Diagnostic Inspection + Steering Short Gear Assembly Replacement + Toe-In Adjust	212A20R4	1.9 M/H	N/A	0																
UMa (2WD)		57770 C5001							UMa (4WD)	57770 C5101							JFa	56320 D5000	1	R-MDPS Diagnostic Inspection + Steering Power Pack Replacement + Toe-In Adjust	212A20R5	1.9 M/H	N/A	0
UMa (4WD)		57770 C5101							JFa	56320 D5000	1	R-MDPS Diagnostic Inspection + Steering Power Pack Replacement + Toe-In Adjust	212A20R5	1.9 M/H	N/A	0	UMa	56320 C5500						
JFa		56320 D5000	1	R-MDPS Diagnostic Inspection + Steering Power Pack Replacement + Toe-In Adjust	212A20R5	1.9 M/H	N/A	0																
UMa		56320 C5500																						

\*Note: Op Time for "C-MDPS Diagnostic Inspection" is higher than that for "R-MDPS Diagnostic Inspection" because more time is required to inspect for DTCs on C-MDPS.

