

TECHNET TIMES

HYUNDAI | NEW THINKING.
NEW POSSIBILITIES.

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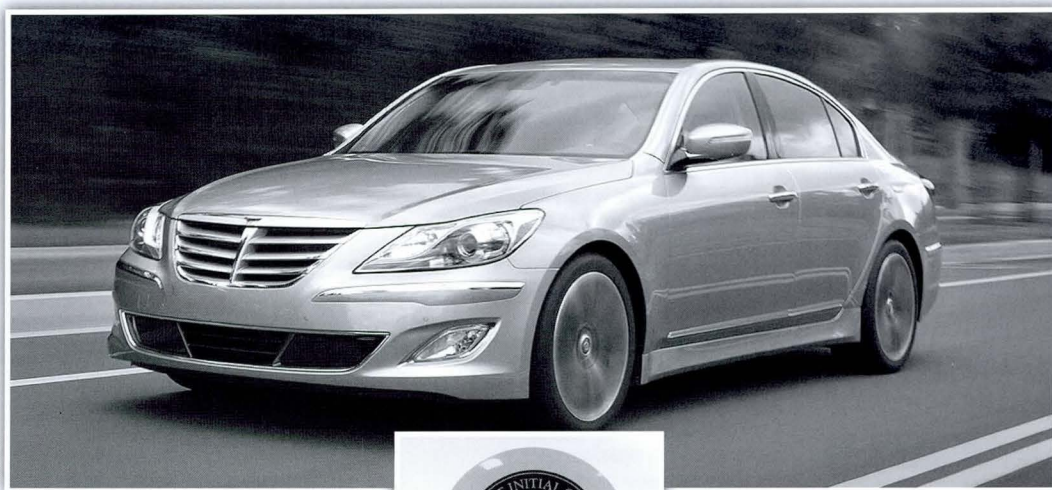
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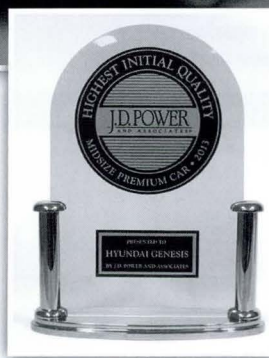
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2013 Genesis Awarded IQS Trophy



The Hyundai Genesis received the trophy for the highest initial quality in the midsize premium car segment. The award comes from the J.D. Power 2013 U.S. Initial Quality StudySM (IQS). The Initial Quality Study, now in its 27th year, serves as the industry benchmark for new-vehicle quality measured at 90 days of ownership. According to the study Hyundai Genesis owners reported fewer problems with their vehicles than any premium midsize car.

"Outperforming all of our competitors in the premium midsize car segment is a reflection of the dedication of all Hyundai team members," said Erwin Raphael, director of engineering and quality, Hyundai Motor America. "Awards like this demonstrate we're succeeding in connecting with our customers through an unprecedented combination of premium performance, technology, safety and quality."



In addition to Genesis's victory, the Hyundai brand substantially reduced problems per 100 vehicles and finished tenth overall, gaining eight rank positions year over year. The Hyundai overall score was 106 problems per 100 vehicles, seven problems fewer than the industry average.

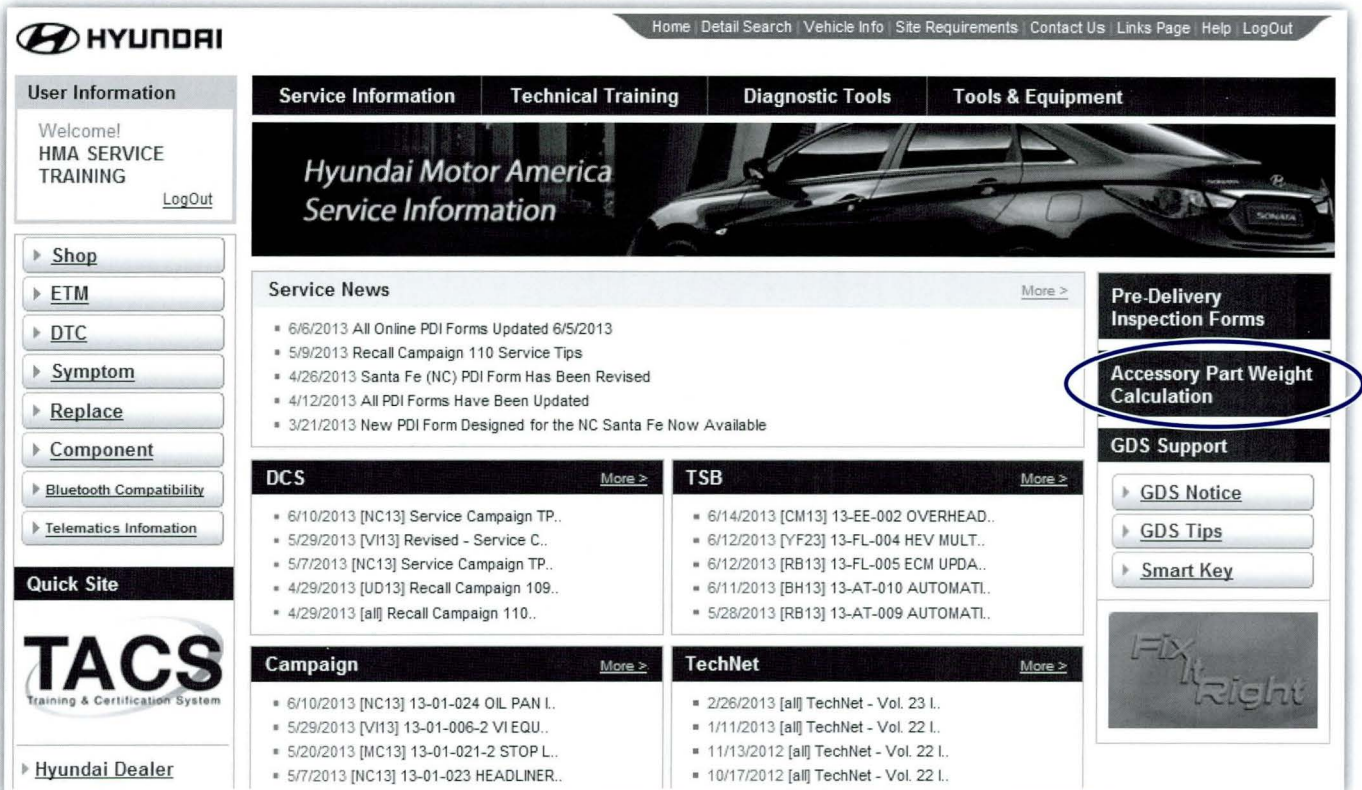
Accent, Sonata and Azera ranked second in their respective segments. The all-new Santa Fe ranked third in its segment.

Hyundai's showing is due in part to thorough Pre-Delivery Inspections performed by Hyundai Technicians. Thanks for your diligence in properly preparing Hyundai vehicles for our customers. Remember, PDI sheets are posted at www.hyundaitechinfo.com under a hot button located on the right side of the welcome screen that appears after login. The current revision date is listed at the top of each form. Compare your forms regularly with those online to ensure you are using the latest versions.

Load Carrying Capacity Reduced Calculator on HyundaiTechInfo.com

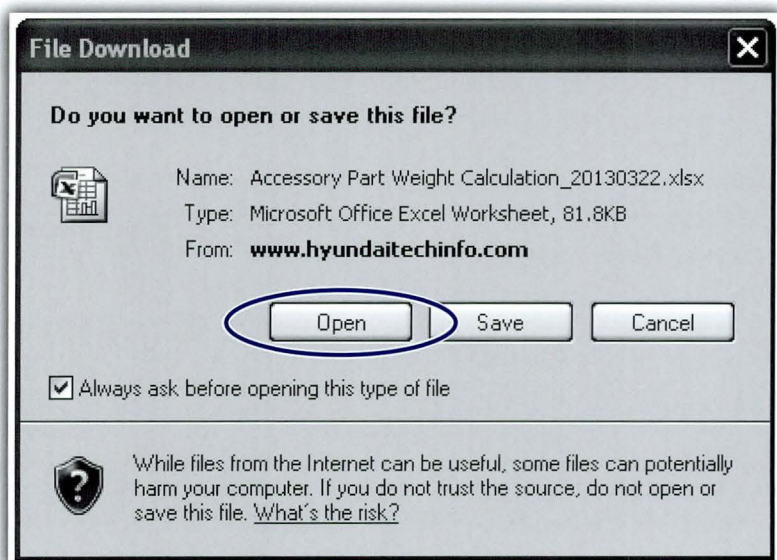
National Highway Traffic Safety Administration regulations require a label that shows the reduction in load carrying capacity from the installation of accessories. The threshold for correcting load capacity information indicated on tire placards occurs when vehicle weight has been increased before retail sale.

This limit is the lesser of 1.5% of the Gross Vehicle Weight Rating or 45.4kg (100 pounds). Dealers must install a label when accessories are installed before or at the time the vehicle is first sold. The label does not need to be installed when accessories are installed at a later time.



When you click the Accessory Part Weight Calculation button you will be prompted by a pop up to determine whether to open an use the calculator or save to your computer. Select the "Open" option. **NOTE:** If you save it to your computer or GDS, you will need to verify that you have the latest parts listing each time you use the calculator.

NOTE: Since the calculator is an Excel spreadsheet, Microsoft Excel™ must be installed and functioning on your computer or GDS. When you click open, the Excel program is launched and the spreadsheet will appear.



3

ETC Throttle Body Cleaning

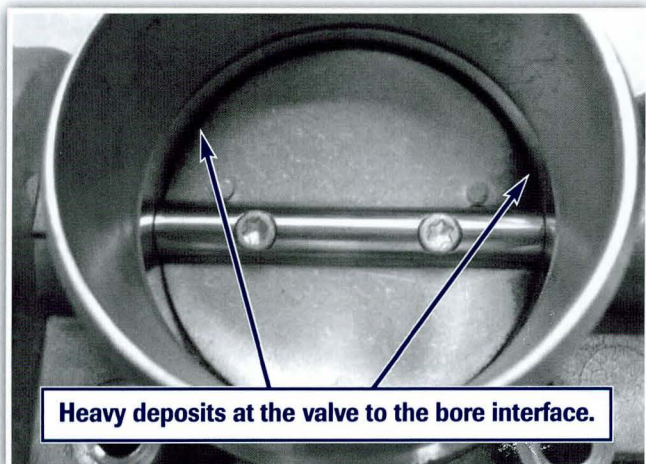
This article provides the procedure to clean the Electronic Throttle Control (ETC) throttle body on the following vehicles:

- Elantra all models: 2011~
- Genesis Coupe 2.0L: 2010~
- Santa Fe 2.4L: 2010-2012
- Santa Fe Sport: 2013~
- Sonata 2.4L: 2006-2010
- Sonata: 2011~
- Tucson: 2010~

This throttle body cleaning procedure should be performed when diagnosing the conditions listed below. Do not replace the ETC throttle body assembly prior to performing this procedure. If a vehicle exhibits any of the listed condition and deposits are found at the valve-to-bore interface inside the ETC throttle body, clean the throttle body using the procedure described in this article.

Any of the following conditions may be caused by throttle body deposits:

- No start (due to throttle valve stuck closed or air flow significantly restricted)
- Rough idle or fluctuating engine speed at idle (due to air flow restricted)
- MIL "On" with DTC P2118 or P2119 occurring along with P2110:
- P2118: Throttle Actuator Control Motor Current Range/Performance
- P2119: Throttle Actuator Control Throttle Motor Current Range/Performance
- P2110: Throttle Actuator Control System-Forced Limited Power

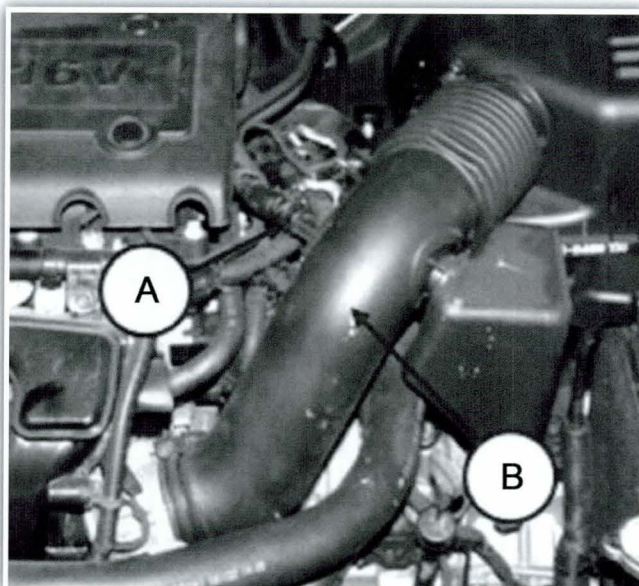


INSPECTION PROCEDURE:

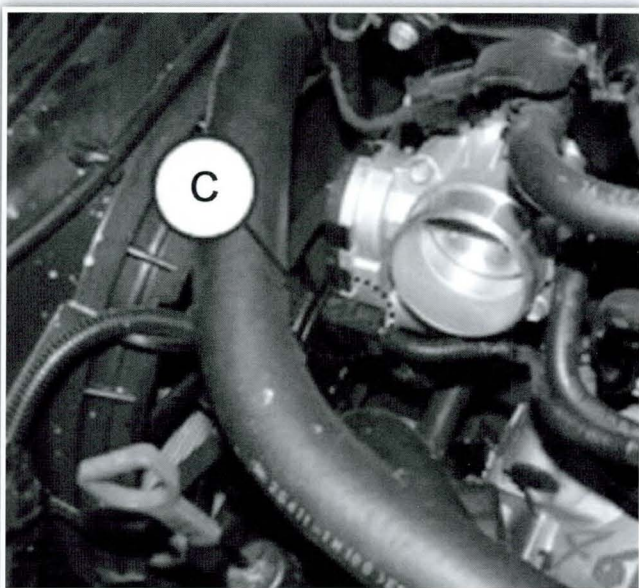
Sonata 2.4L shown for example only

1. Turn the ignition OFF.

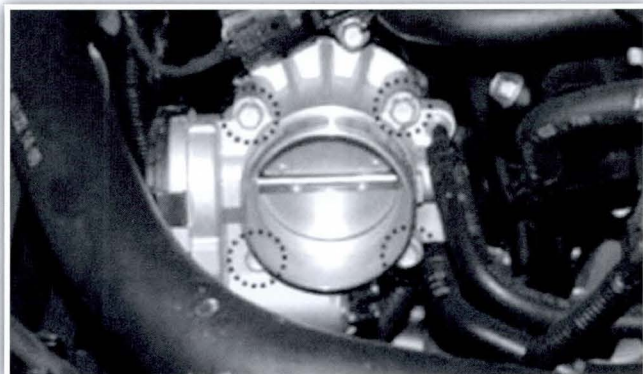
Remove the breather hose (A) and the air intake hose (B) to gain access to the ETC throttle body.



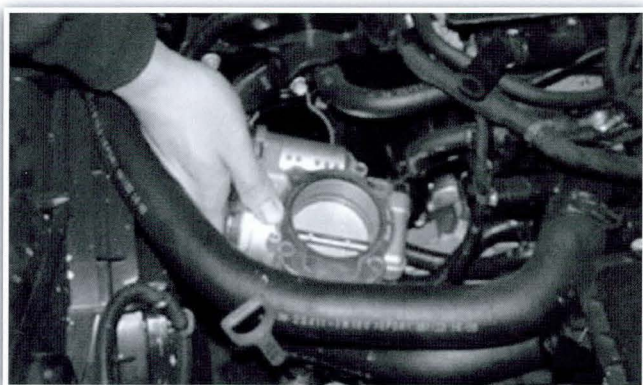
2. Disconnect the ETC connector (C) from the throttle body.



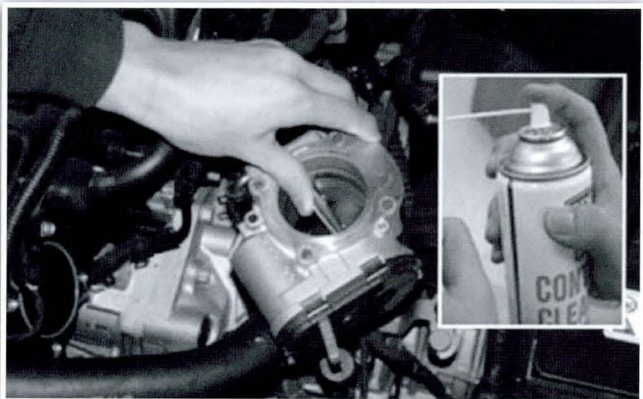
3. Remove the 4 ETC throttle body mounting bolts and then pull out the ETC throttle body away from the intake manifold.



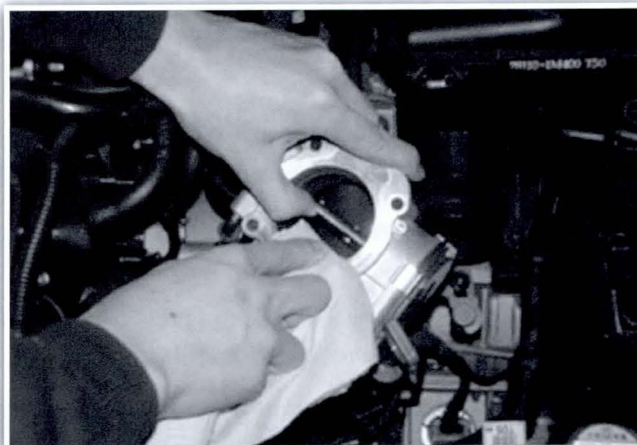
NOTE: Do not disconnect the coolant hose from the ETC throttle body. It is not necessary to remove the ETC throttle body completely from the vehicle for cleaning.



4. Spray a carbon cleaner or throttle body cleaning solution on the throttle valve and bore areas where deposits have accumulated. Wipe off the deposits with a clean and soft shop towel (as shown in the pictures).



NOTE: Do not use excessive force to open the throttle valve. Be careful not to scratch the throttle valve and bore area during cleaning.



5. Reinstall all the removed parts in reverse order of removal after completing the ETC throttle body cleaning.

NOTE: If the ETC gasket has been damaged or contaminated by foreign substances; it must be replaced with a new one.

Torque the throttle body bolts to the following specifications:

MODEL	TORQUE (lb.ft)	TORQUE (N.m)
Elantra (UD/MD/GD/JK): 2011 ~	5.8 ~ 8.7	7.8 ~ 11.8
Genesis Coupe (BK) 2.0L: 2010 ~	7.2 ~ 8.7	9.8 ~ 11.8
Santa Fe (CM) 2.4L: 2010 - 2012	5.8 ~ 8.7	7.8 ~ 11.8
Santa Fe Sport (AN) 2.0L: 2013 ~	5.8 ~ 7.2	7.8 ~ 9.8
Santa Fe Sport (AN) 2.4L: 2013 ~	7.2 ~ 8.7	9.8 ~ 11.8
Sonata (NF) 2.4L: 2006 - 2010	5.8 ~ 7.2	7.8 ~ 9.8
Sonata (YF): 2011 ~	7.2 ~ 8.7	9.8 ~ 11.8
Tucson (LM): 2010 ~	5.8 ~ 8.7	7.8 ~ 11.8

6. Without starting the engine, turn the ignition ON (Turn the ignition key to ON position or press the Start-Stop Button two times without depressing the brake pedal) for at least 10 seconds and then turn OFF for at least 10 seconds. This procedure allows the ECM to automatically learn the throttle valve position.

The following Throttle Position Learning Enable Conditions must exist for learning to take place:

- Battery voltage > 10V
- Engine coolant temperature > 41.5F (5.3C)

7. Start the engine to confirm proper operation.

Check for any Diagnostic Trouble Code(s) and erase if any.

AUTOMATIC TRANSAXLE (6-SPEED) OIL TEMPERATURE SENSOR DTC P0711, P0712 & P0713

This article supersedes bulletin 12-AT-021 to include the 2013 Santa Fe.

DESCRIPTION:

Do not replace the transaxle for the DTC listed below. Instead, follow the repair procedure and replace the related part. Follow the inspection procedure described below.

	MODEL YEARS	MODEL
APPLICABLE VEHICLES:	2010 ~	Tucson (LM) & Santa Fe (CM/AN)
	2011 ~	Sonata (YF)/HEV, Elantra (UD/MD) & Azera (TG)
	2012 ~	Accent (RB), Azera (HG)
	2013~	Veloster Turbo (FS), Elantra Coupe (JK) & Elantra GT (GD)

DTC LIST:

DTC	DESCRIPTION
P0711	Transmission Fluid Temperature Sensor - Rationality check
P0712	Transmission Fluid Temperature Sensor - Circuit Low Input
P0713	Transmission Fluid Temperature Sensor - Circuit High Input

PARTS INFORMATION:

MODEL	ENGINE	OIL TEMPERATURE SENSOR	HARNESS	PLASTIC OIL PAN GASKET
2010~ Tucson (LM)	2.0L	46386-3B000	46307-3B620	45283-3B810
2010~ Tucson (LM)	2.4L	46386-3B000	46307-3B620	45283-3B810
2010~ Santa Fe (CM)	2.4L	46386-3B000	46307-3B620	45282-26100
2010~ Santa Fe (CM)	3.5L	46386-3B000	46307-3B020	45283-3B010
2013~ Santa Fe (AN)	2.0L	46386-3B000	46307-3B020	45283-3B010
2013~ Santa Fe (AN)	2.4L	46386-3B000	46307-3B620	45283-3B810
2011~ Elantra (MD/UD)	1.8L	46386-3B000	46307-3B620	45282-26100
2011~ Sonata Turbo (YF)	2.0L	46386-3B000	46307-3B020	45283-3B010
2011~ Sonata (YF)	2.4L	46386-3B000	46307-3B620	45283-3B810
2011~ Sonata HEV (YF HEV)	2.4L	46386-3B000	46307-3B620	45283-3D100
2011 Azera (TG)	3.3L/3.8L	46386-3B000	46307-3B020	45283-3B010
2012~ Azera (HG)	3.3L	46386-3B000	46307-3B020	45283-3B010
2012~ Accent (RB)	1.6L	46386-3B000	46307-3B620	45282-26100
2013~ Veloster Turbo (FS)	1.6L	46386-3B000	46307-3B620	45283-3B810
2013~ Elantra Coupe (JK)	1.8L	46386-3B000	46307-3B620	45282-26100
2013~ Elantra GT (GD)	1.8L	46386-3B000	46307-3B020	45282-26100

WARRANTY INFORMATION – REPLACE OIL TEMPERATURE SENSOR ONLY:

MODEL	OP CODE	OPERATION	OP TIME	CAUSAL PART	NATURE CODE	CAUSE CODE
2010~ Tucson (LM)	46386R00	Replace oil temperature sensor	1.2	46386-3B000	N69	C15
2010~ Santa Fe (CM)			1.9			
2013~ Santa Fe (AN)			1.2			
2011~ Elantra (MD/UD)			1.3			
2011~ Sonata (YF)			1.3			
2011 Azera (TG)			1.9			
2012~ Azera (HG)			1.3			
2012~ Accent (RB)			1.0			
2013~ Veloster Turbo (FS)			1.3			
2013~ Elantra Coupe (JK)			1.3			
2013~ Elantra GT (GD)			1.3			
2011~ Sonata (YF HEV)			1.3			
	Additional	46386RH1	1.4			
All	46386RQ0	GDS	0.3			

WARRANTY INFORMATION – REPLACE OIL TEMPERATURE SENSOR AND HARNESS:

MODEL	OP CODE	OPERATION	OP TIME	CAUSAL PART	NATURE CODE	CAUSE CODE
2010~ Tucson (LM)	46307R00	Replace oil temperature sensor and harness	1.5	46386-3B000	N69	C15
2010~ Santa Fe (CM)			1.8			
2013~ Santa Fe (AN)			1.8			
2011~ Elantra (MD/UD)			1.5			
2011~ Sonata (YF)			1.5			
2011 Azera (TG)			1.8			
2012~ Azera (HG)			1.6			
2012~ Accent (RB)			1.3			
2013~ Veloster Turbo (FS)			1.5			
2013~ Elantra Coupe (JK)			1.5			
2013~ Elantra GT (GD)			1.5			
2011~ Sonata (YF HEV)			1.5			

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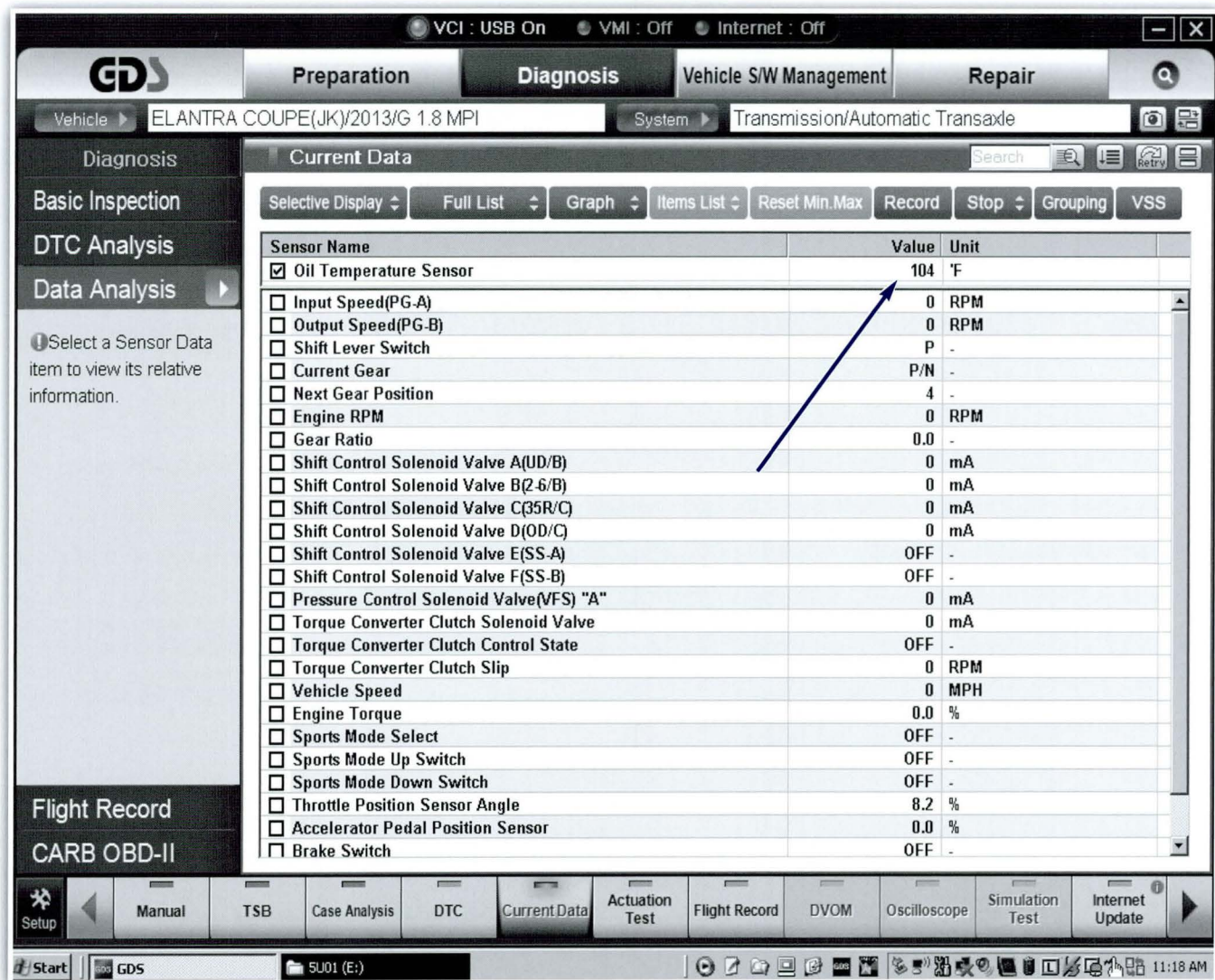
Fix-It-Right

Automatic Transaxle (6-Speed) Oil Temperature Sensor

continued from page 9

SERVICE PROCEDURE:

1. Using a GDS, check for DTC in the “Automatic Transaxle” menu. Record the DTC and description. Delete the DTC.
2. From the GDS, select the following parameters.
Drive the vehicle and monitor the sensors.
 - Vehicle and A/T menu.
 - “Current Data”
 - Oil temperature sensor.
3. If the sensors show:
 - Continuous and changing output while driving, the wiring currently has no open/short circuits. Go to Step 6.
 - No output or unchanging output, go to Step 4.
4. Visually check the wiring harness between the PCM and transmission for a damaged wire or short circuit to ground. Check for a damaged pin or pin not fully inserted into the connector.
 - If damage exists, repair or replace the ECM control harness and drive the vehicle to confirm the repair.
 - If not, go to Step 5.



GDS VCI : USB On VMI : Off Internet : Off

Preparation **Diagnosis** **Vehicle S/W Management** **Repair**

Vehicle ▶ ELANTRA COUPE(JK)/2013/G 1.8 MPI System ▶ Transmission/Automatic Transaxle

Diagnosis

Basic Inspection
DTC Analysis
Data Analysis ▶

! Select a Sensor Data item to view its relative information.

Flight Record
CARB OBD-II

Current Data

Selective Display ▾ Full List ▾ Graph ▾ Items List ▾ Reset Min.Max Record Stop ▾ Grouping VSS

Sensor Name	Value	Unit
<input checked="" type="checkbox"/> Oil Temperature Sensor	104	°F
<input type="checkbox"/> Input Speed(PG-A)	0	RPM
<input type="checkbox"/> Output Speed(PG-B)	0	RPM
<input type="checkbox"/> Shift Lever Switch	P	-
<input type="checkbox"/> Current Gear	P/N	-
<input type="checkbox"/> Next Gear Position	4	-
<input type="checkbox"/> Engine RPM	0	RPM
<input type="checkbox"/> Gear Ratio	0.0	-
<input type="checkbox"/> Shift Control Solenoid Valve A(UD/B)	0	mA
<input type="checkbox"/> Shift Control Solenoid Valve B(2-6/B)	0	mA
<input type="checkbox"/> Shift Control Solenoid Valve C(35R/C)	0	mA
<input type="checkbox"/> Shift Control Solenoid Valve D(OD/C)	0	mA
<input type="checkbox"/> Shift Control Solenoid Valve E(SS-A)	OFF	-
<input type="checkbox"/> Shift Control Solenoid Valve F(SS-B)	OFF	-
<input type="checkbox"/> Pressure Control Solenoid Valve(VFS) "A"	0	mA
<input type="checkbox"/> Torque Converter Clutch Solenoid Valve	0	mA
<input type="checkbox"/> Torque Converter Clutch Control State	OFF	-
<input type="checkbox"/> Torque Converter Clutch Slip	0	RPM
<input type="checkbox"/> Vehicle Speed	0	MPH
<input type="checkbox"/> Engine Torque	0.0	%
<input type="checkbox"/> Sports Mode Select	OFF	-
<input type="checkbox"/> Sports Mode Up Switch	OFF	-
<input type="checkbox"/> Sports Mode Down Switch	OFF	-
<input type="checkbox"/> Throttle Position Sensor Angle	8.2	%
<input type="checkbox"/> Accelerator Pedal Position Sensor	0.0	%
<input type="checkbox"/> Brake Switch	OFF	-

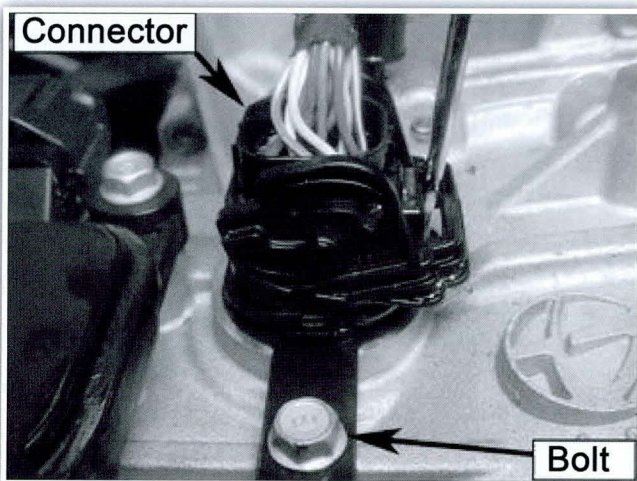
Setup Manual TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscilloscope Simulation Test Internet Update

Start GDS SU01 (E:) 11:18 AM

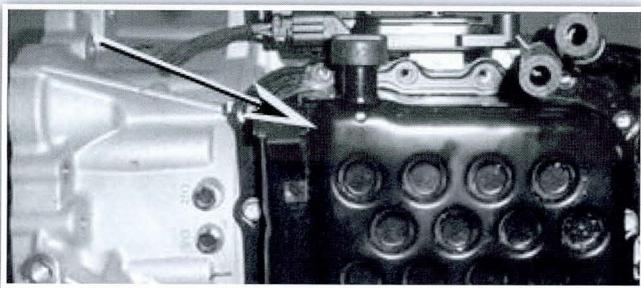
5. Refer to the DTC recorded in Step 1 and follow the repair procedure shown below:

DTC		REPAIR PROCEDURE
P0711	Transmission Fluid Temperature Sensor - Rationality check	Go to Step 6 and replace the oil temperature sensor
P0712	Transmission Fluid Temperature Sensor - Circuit Low Input	
P0713	Transmission Fluid Temperature Sensor - Circuit High Input	

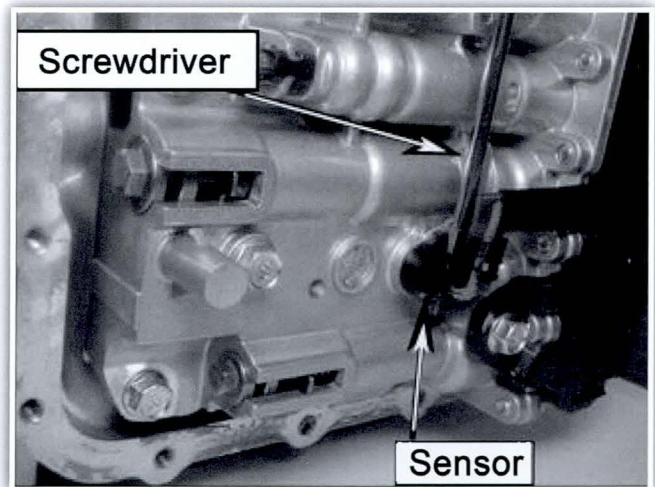
6. Remove the battery and battery tray.
 7. Remove the undercover below the transmission.
 8. Drain the radiator and remove the lower radiator hose from the radiator. Drain the ATF.
 9. Use a screwdriver to release the tab and remove the solenoid connector on top of the case.
 Remove the bolt that secures the connector and push the connector into the transmission.
 Disconnect the vent hose at the top of the oil pan.



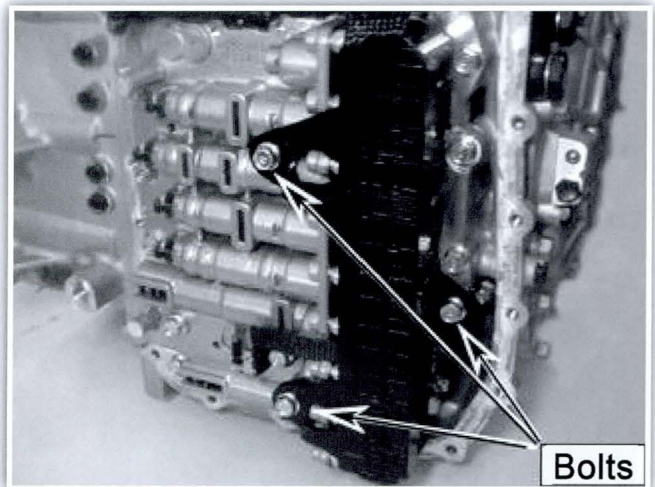
10. Remove the oil pan bolts and remove the pan.
CAUTION: Use rubber hammer to tap the oil pan cover on a corner until the cover is loose.



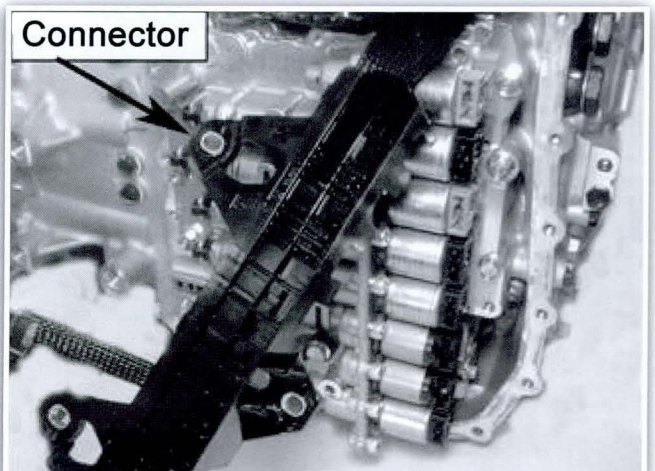
11. Use a small screwdriver to pry the connector from the oil temperature sensor.



12. Remove three bolts to the solenoid valve connector.



13. Pull the solenoid connector outward and move the connector out of position.



continued on page 10

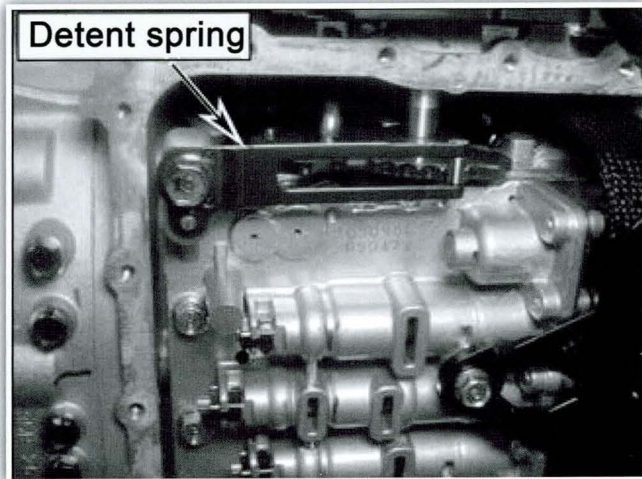
Fix-It-Right

Automatic Transaxle (6-Speed) Oil Temperature Sensor

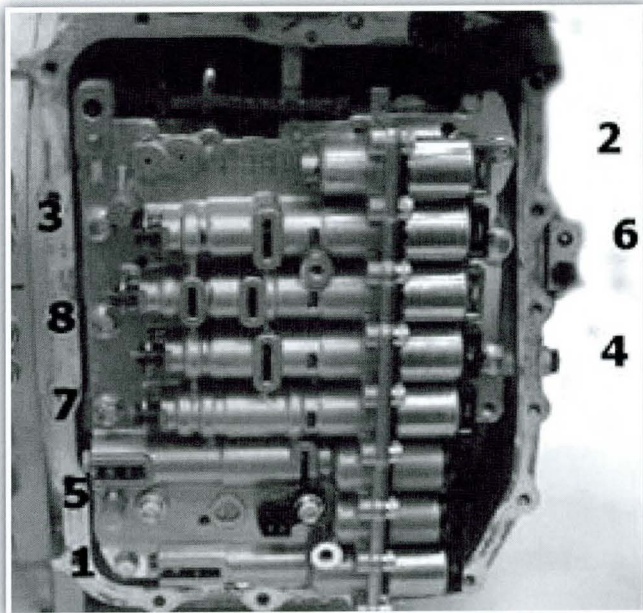
continued from page 9

- 14.** Remove the bolt that secures the detent spring and remove the spring.

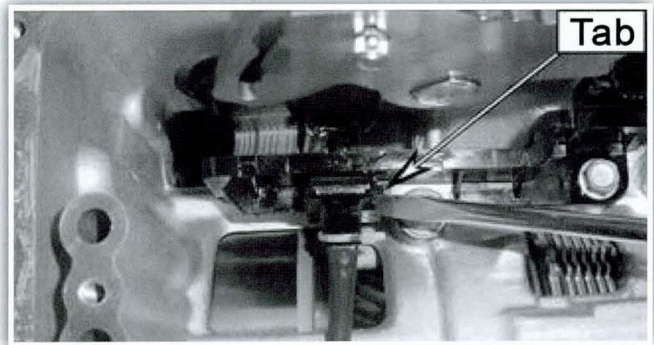
Torque: 8~11 lb.ft (1.2~1.6 kgf.m)



- 15.** Remove 8 bolts in the order shown and remove the valve body.



- 16.** Use a screwdriver to depress the locking tab and pull outward on the connector to the input and output speed sensor.



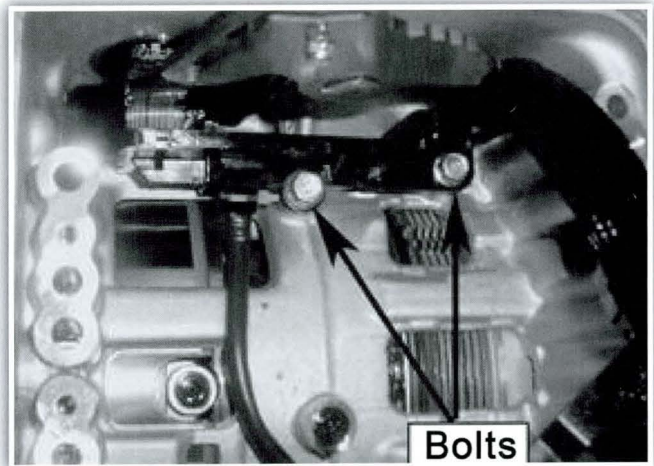
- 17.** Remove two bolts that secure the valve body harness to the case.

Pull the connector downward out of the case.

Install a new harness and insert the connector into the case. Attach the retainer and bolt on top of the case as shown in Step 9.

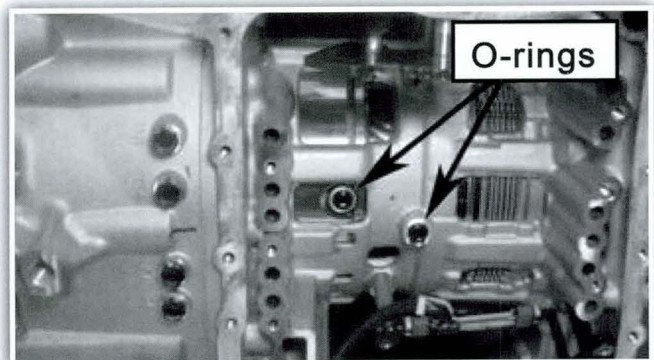
Install the bolts that secure the harness.

Torque: 6~7 lb.ft (0.9~1.0 kgf.m)

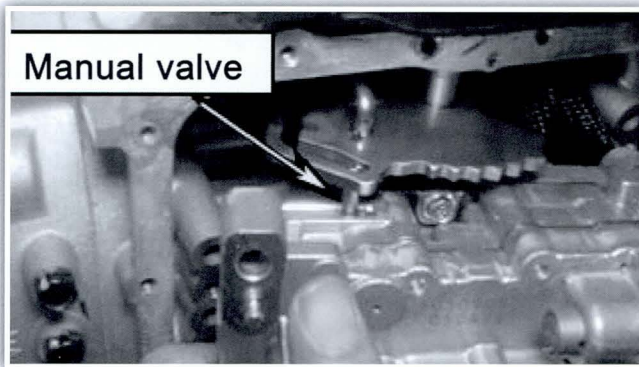


- 18.** Confirm the O-rings are installed correctly in the case.

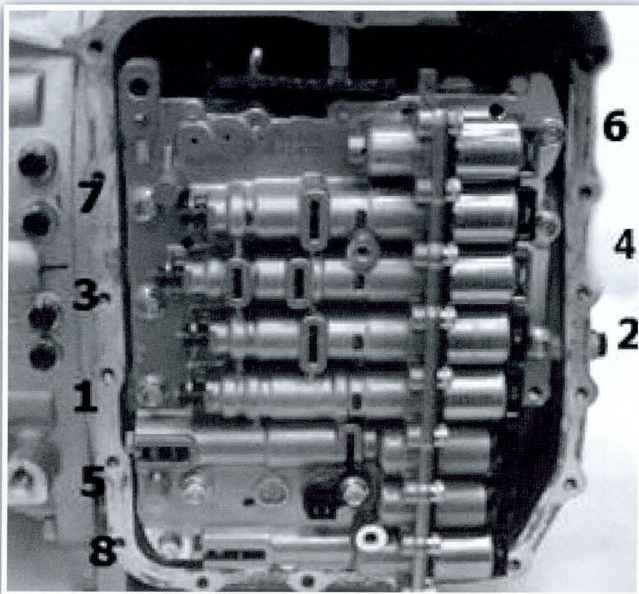
Reconnect the input and output speed sensor connector to the harness.



- 19.** Align the manual shaft to the shift lever and install the valve body.



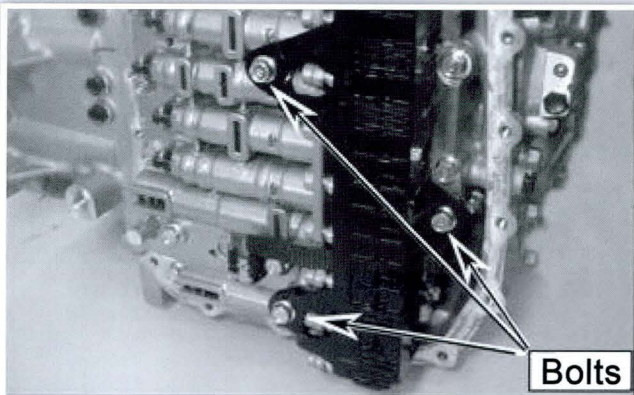
- 20.** Install the valve body bolts and torque the bolts to specification in the order shown.
Torque: 6~7 lb.ft (0.9~1.0 kgf.m)



- 21.** Reconnect the solenoid harness to the solenoids and oil temperature sensor.

Install the bolts to the solenoid harness connector and torque to specification.

Torque: 6~7 lb.ft (0.9~1.0 kgf.m)



22. STEEL OIL PAN:

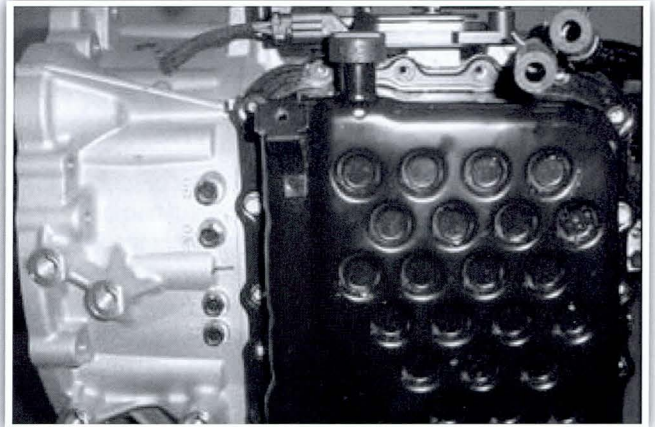
Apply Permatex Ultra Gray Sealer or Hyundai Ultra Gray Gasket Sealer, P/N 00232-19039, to the oil pan and reinstall the pan.

PLASTIC OIL PAN:

Install a new gasket to the oil pan, reinstall the pan and tighten the bolts to specification.

Torque: 6~7 lb.ft (0.9~1.0 kgf.m)

See list on Page 2.



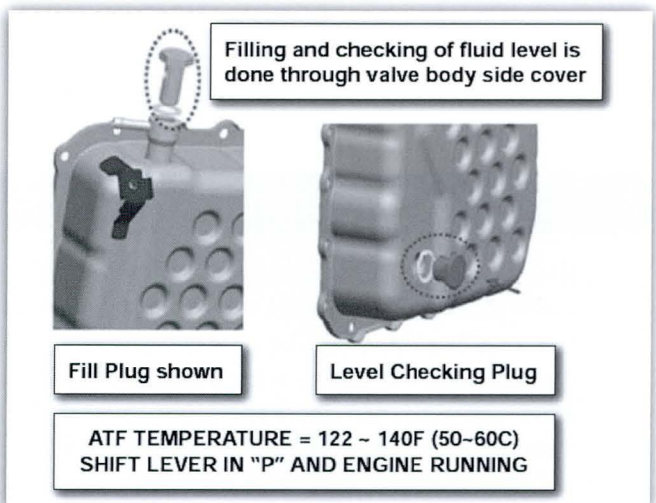
- 23.** Remove the transaxle fill plug.

Use a funnel to add approximately 5~6 quarts of SPH-IV ATF through the fill plug opening. Reinstall the fill plug.

Attach the GDS to the DLC and select vehicle, A/T menu, Current Data and "Oil Temperature Sensor".

Start the engine and shift to Park. When the ATF is 122°F~140°F (50~60°C), remove the level checking plug. The level is correct when oil flows out of the level checking plug in a thin steady stream.

Collect and dispose of any excess fluid in accordance with local regulations.



continued on page 12

Fix-It-Right

Automatic Transaxle (6-Speed) Oil Temperature Sensor

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24. Clear the codes and test drive the vehicle for two drive cycles (two key-on to key-off driving cycles).

25.

- If the DTC do not occur again, return the vehicle to the customer.
- If the DTC return, perform the following repairs:

DTC		REPAIR PROCEDURE
P0711	Transmission Fluid Temperature Sensor - Rationality check	<ul style="list-style-type: none">• Repair or replace the control harness between the PCM and the transmission.• Test drive the vehicle for two drive cycles. If the DTC return again, replace the PCM.
P0712	Transmission Fluid Temperature Sensor - Circuit Low Input	
P0713	Transmission Fluid Temperature Sensor - Circuit High Input	

26. Clear the codes and test drive the vehicle for two drive cycles (two key-on to key-off driving cycles). If the DTC do not occur again, return the vehicle to the customer.

TechNet *Tips*

ATF SPH-IV Discontinued; Introducing New ATF SP4-M

Effective June 26, 2013 ATF SPH-IV, part number 00232-19045, will be discontinued. SPH-IV will no longer be available for order after 6/26/2013. The new replacement product is SP4-M and the part number is 00232-19057. SP4-M is a new ATF that replaces SPH-IV and is backwards compatible with SPH-IV.

TECHNET TIDBIT

Hyundai's Veteran Employment Transition (VET) Program offers transitioning veterans and reservists a chance to participate in Hyundai Technical training online and in the classroom when space allows. Tell your veteran friends about Hyundai's VET Program and give them the opportunity to possibly transition to a Hyundai Dealership. Have them register at Hyundaicareers.com and indicate "Military" when prompted.

TechNet Times

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TechNet Times is published monthly by Hyundai Motor America's National Service Training & Support Department for Hyundai Dealership Technicians. The subjects covered in this publication are often one of a kind items, but they may help you to solve similar incidents. In all cases, the diagnostic procedures recommended in the Shop Manuals should always be performed first.

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