 HYUNDAI NEW THINKING. NEW POSSIBILITIES. Technical Service Bulletin	GROUP	NUMBER
	AUTOMATIC TRANSMISSION	13-AT-012-1
	DATE	MODEL
	SEPTEMBER 2013	Tucson (LM), Santa Fe (CM/AN/NC), Sonata (YF), Elantra (UD/MD/GD/JK), Accent (RB), Azera (TG/HG), Veloster Turbo (FS)
SUBJECT:	AUTOMATIC TRANSAXLE (6-SPEED) OIL TEMPERATURE SENSOR DTC P0711, P0712 & P0713	

This TSB supersedes bulletin 13-AT-012 to add Op Codes.

Description: Do not replace the transaxle for the DTC listed below. Instead, follow the repair procedure and replace the related part.

Applicable Vehicles:	Model Years	Model
	2010 ~	Tucson (LM) & Santa Fe (CM)
	2011 ~	Sonata (YF/HEV), Elantra (UD/MD) & Azera (TG)
	2012 ~	Accent (RB), Azera (HG)
	2013~	Veloster Turbo (FS), Elantra Coupe (JK), Elantra GT (GD) and Santa Fe (AN/NC)



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:

*** NOTE**

The oil temperature sensor has been integrated with the internal harness from early March, 2013. The oil temperature sensor is not available separately for these models.

	Previous (separate parts)	New (integrated parts)
Oil temperature sensor and internal harness		

MODEL	ENGINE	OIL TEMPERATURE SENSOR	HARNESS	PLASTIC OIL PAN GASKET
2010~ Tucson (LM)	2.0L/2.4L	46386-3B000	46307-3B***	45283-3B810
2010~12 Santa Fe (CM)	2.4L	46386-3B000	46307-3B***	45282-26100
2010~12 Santa Fe (CM)	3.5L	46386-3B000	46307-3B***	45283-3B010
2013~ Santa Fe (AN)	2.0L	Integral with harness	46307-3B***	45283-3B010
2013~ Santa Fe (AN)	2.4L	Integral with harness	46307-3B***	45283-3B810
2013~ Santa Fe (NC)	3.3L	Integral with harness	46307-3B***	45283-3B010
2011~ Elantra (MD/UD)	1.8L	46386-3B000	46307-3B***	45282-26100
2011~ Sonata Turbo (YF)	2.0L	46386-3B000	46307-3B***	45283-3B010
2011~ Sonata (YF)	2.4L	46386-3B000	46307-3B***	45283-3B810
2011~ Sonata HEV (YF HEV)	2.4L	46386-3B000	46307-3B***	45283-3D100
2011 Azera (TG)	3.3L/3.8L	46386-3B000	46307-3B***	45283-3B010
2012~ Azera (HG)	3.3L	46386-3B000	46307-3B***	45283-3B010
2012~ Accent (RB)	1.6L	46386-3B000	46307-3B***	45282-26100
2013~ Veloster Turbo (FS)	1.6L	46386-3B000	46307-3B***	45283-3B810
2013~ Elantra Coupe (JK)	1.8L	46386-3B000	46307-3B***	45282-26100
2013~ Elantra GT (GD)	1.8L	46386-3B000	46307-3B***	45282-26100

WARRANTY INFORMATION – REPLACE OIL TEMPERATURE SENSOR AND HARNESS (SEPARATE):

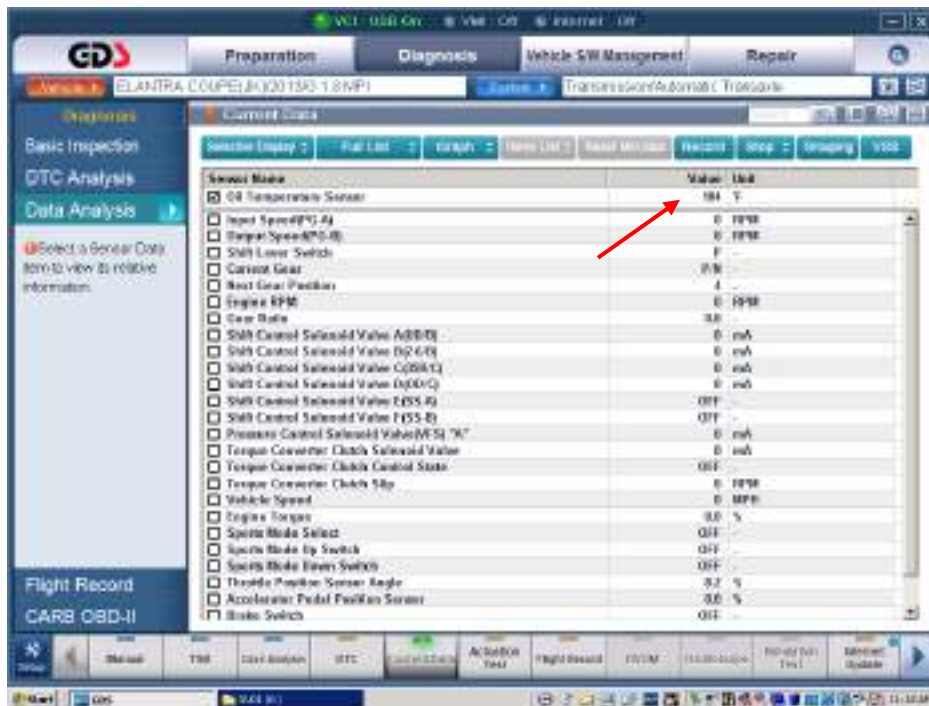
MODEL	OP CODE	OPERATION	OP TIME	CAUSAL PART	NATURE CODE	CAUSE CODE
2010~ Tucson (LM)	46307R00	Replace valve body harness and oil temperature sensor	1.5	46307-xxxxx (See Parts Catalog)	N69	C15
2010~ Santa Fe (CM)			1.9			
2013~ Santa Fe (AN)			1.9			
2013~ Santa Fe (NC)			1.9			
2011~ Elantra (MD/UD)			1.5			
2011~ Sonata (YF)			1.5			
2011~ Sonata (YF HEV)			1.5			
2011 Azera (TG)			1.9			
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			
ALL	46307RQ0	GDS Operation	0.3			

WARRANTY INFORMATION – REPLACE HARNESS WITH INTEGRATED OIL TEMPERATURE SENSOR:

MODEL	OP CODE	OPERATION	OP TIME	CAUSAL PART	NATURE CODE	CAUSE CODE
2010~ Tucson (LM)	46308R00	Replace valve body harness with integrated oil temperature sensor	1.5	46307-xxxxx (See Parts Catalog)	N69	C15
2013~ Santa Fe (AN)			1.9			
2013~ Santa Fe (NC)			1.9			
2011~ Elantra (MD/UD)			1.5			
2011~ Sonata (YF)			1.5			
2011~ Sonata (YF HEV)			1.5			
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			
ALL	46308RQ0	GDS Operation	0.3			

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.



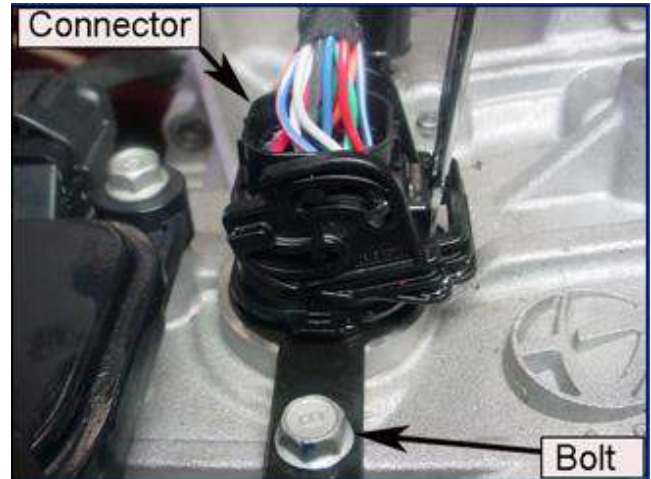
3. If the sensors show:
 - Continuous and changing output while driving, the wiring **currently** has no open/short circuits. Go to Step 5.
 - No output or unchanging output, go to Step 4.
4. Visually check the wiring harness between the PCM and transmission for a damaged wire or short circuit to ground. 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 no damage, go to Step 5.
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 and harness
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.



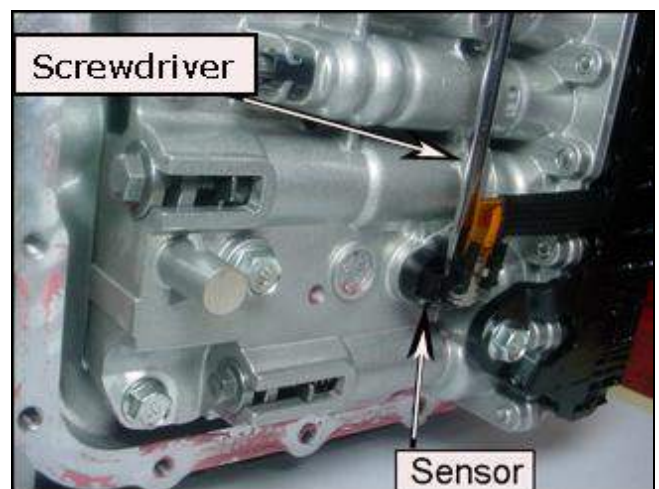
10. Remove the oil pan bolts and remove the pan.

CAUTION

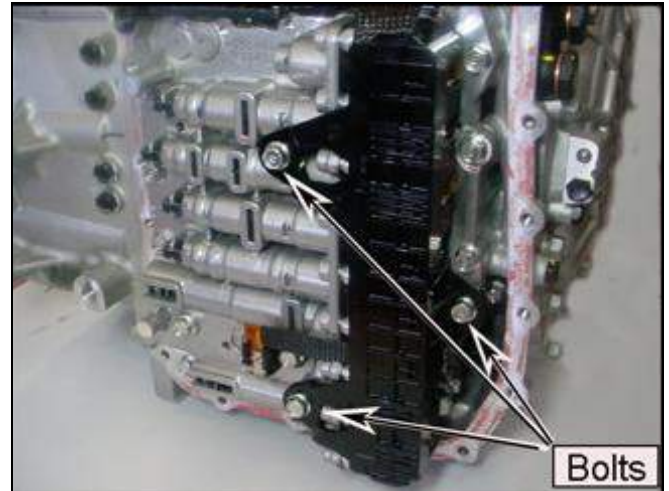
Use rubber hammer to tap the oil pan cover on a corner until the cover is loose.



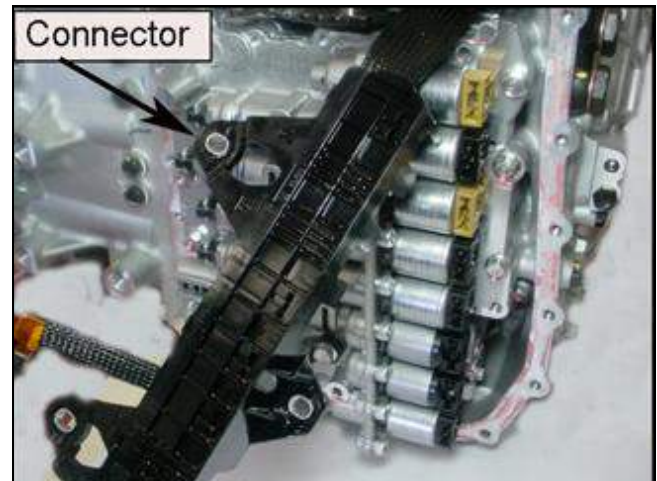
11. Use a small screwdriver to pry the connector from the oil temperature sensor (except for vehicles with integrated temperature sensor and harness).



12. Remove three bolts to the solenoid valve connector.

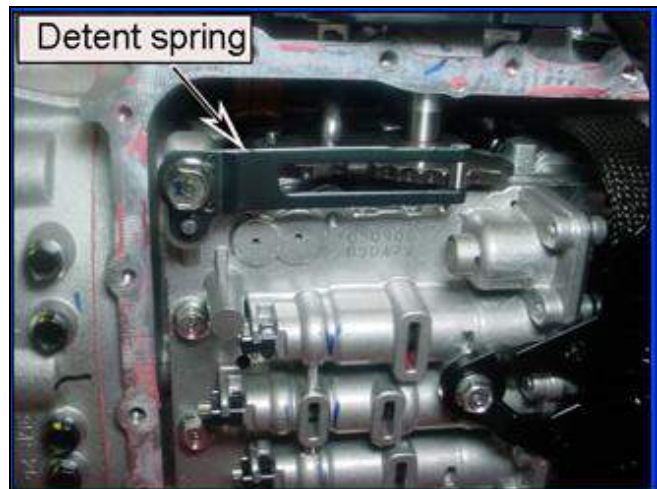


13. Pull the solenoid connector outward and move the connector out of position.

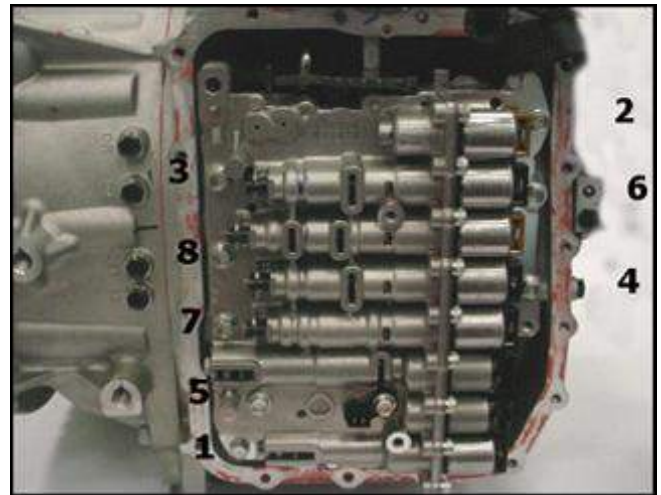


14. Remove the bolt that secures the detent spring and remove the spring.

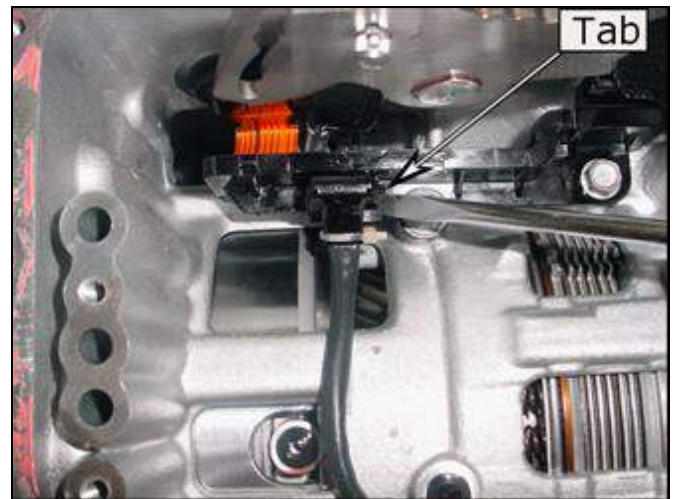
Torque: 8~11 lb.ft (1.2~1.6 kgf.m)



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/output speed sensor.



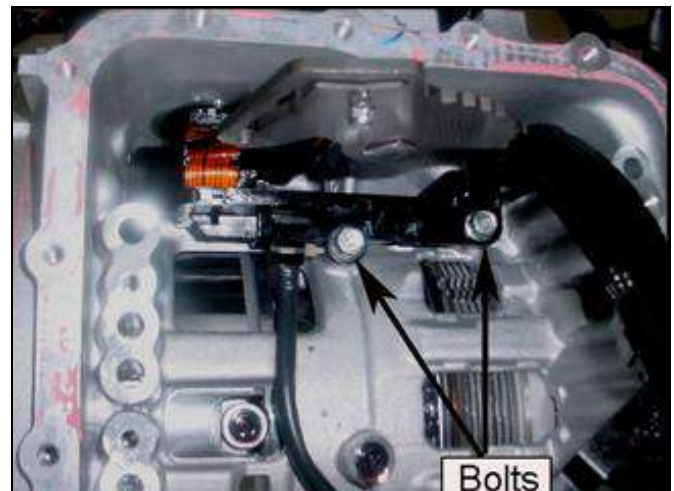
17. Remove two bolts that secure the valve body harness to the case.

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.

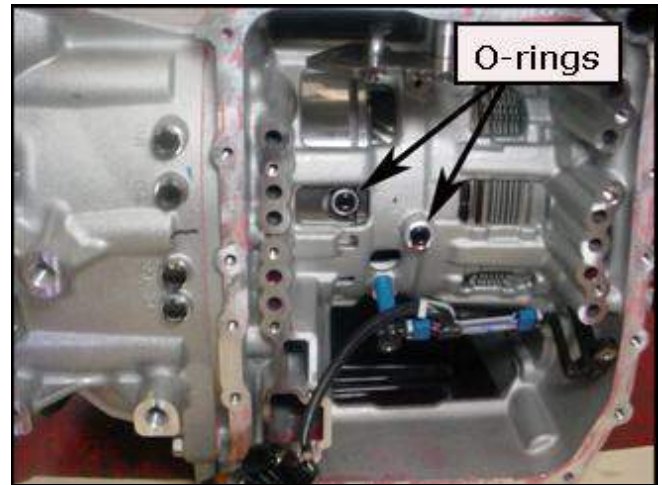
Install the bolts that secure the harness.

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

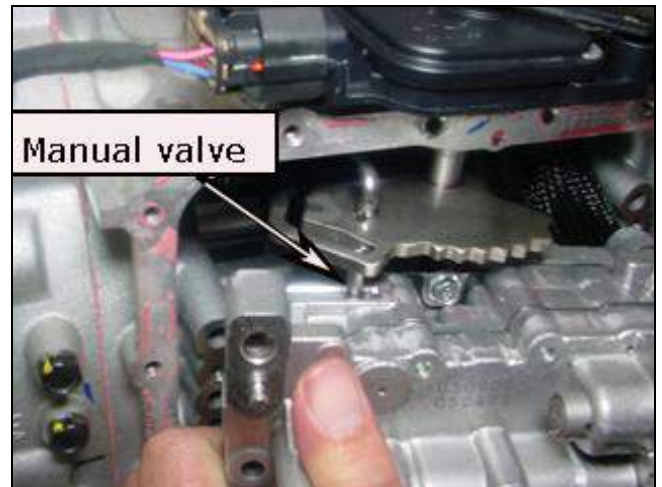


18. Confirm two o-rings are installed correctly in the case.

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

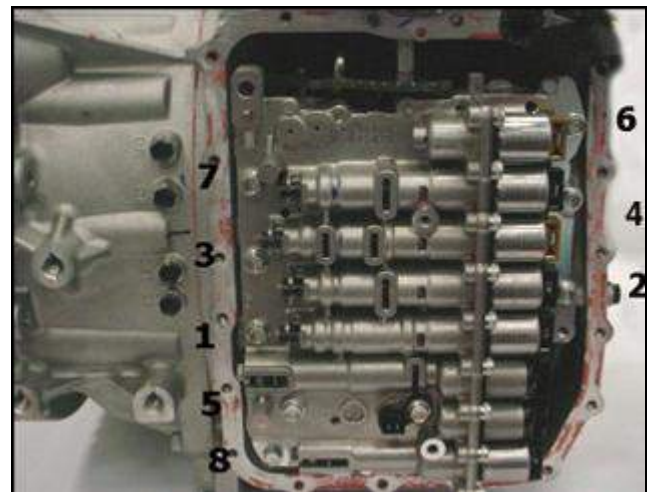


19. Align the manual shaft to the shift lever and install the valve body.



20. Install the valve body bolts and torque the bolts to specification in the order shown.

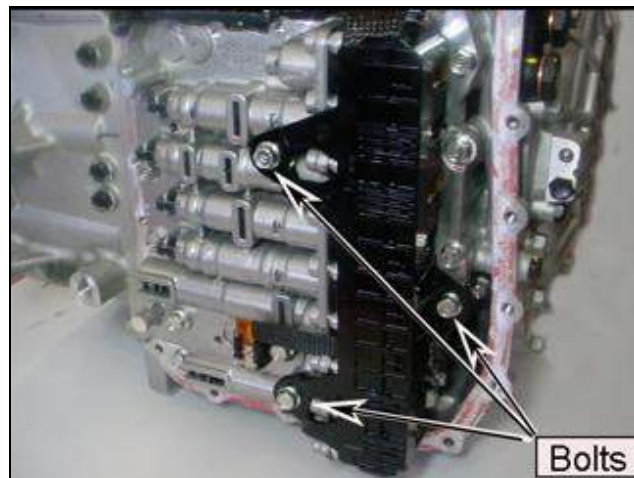
Toque: 6~7 lb.ft (0.9~1.0 kgf.m)



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)



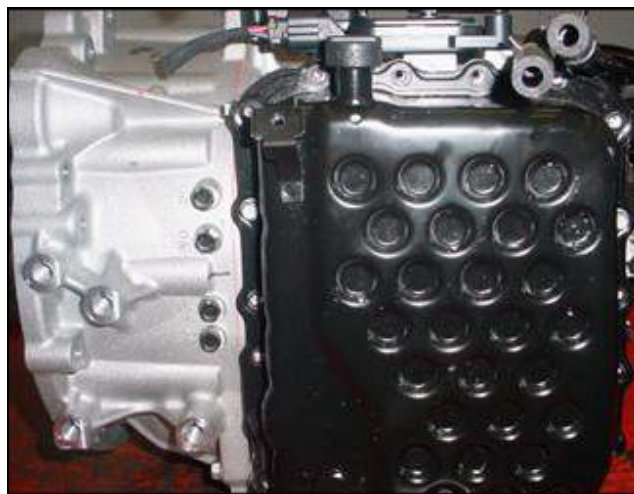
22. **STEEL OIL PAN:**

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 part number list on Page 2.



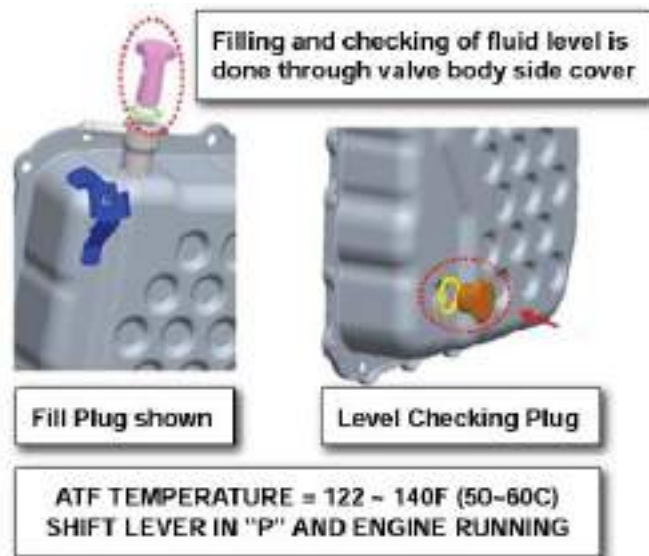
23. Remove the transaxle fill plug.

Use a funnel to add approximately 5~6 quarts of SP4-M 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.



- 24. Attach the GDS and erase all DTC.
- 25. Clear DTC in the BlueLink system per instructions of TSB 12-BE-005-2.
- 26. 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.
 - 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. • 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	

- 27.
 - Attach the GDS and erase all DTC.
 - Drive the vehicle for two drive cycles (two key-on to key-off driving cycles).
 - If the DTC do not occur again, clear the DTC in the BlueLink system per instructions of TSB 12-BE-005-2 and return the vehicle to the customer.