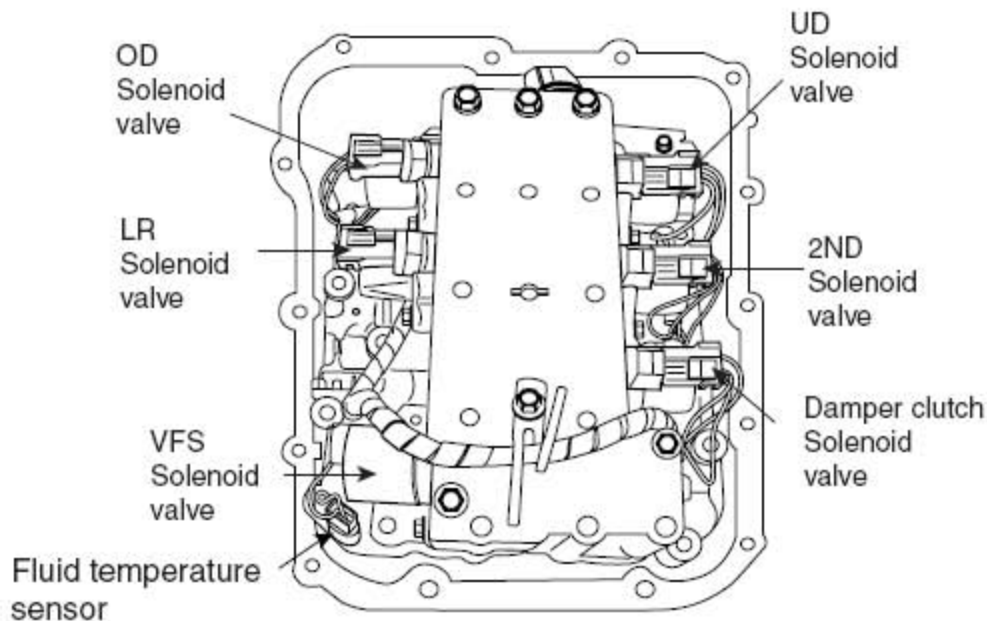


## P0748 PRESSURE CONTROL SOLENOID VALVE

### A - ELECTRICAL

#### COMPONENT LOCATION



#### GENERAL DESCRIPTION

Variable Faced Solenoid (Linear Solenoid) : With the duty control which uses higher frequency(600Hz), instead of the existing PWM type which adapts low frequency(60Hz) to control, spool valve can be controlled precisely.

In PWM control, the amount of oil flow is determined by the duration of "ON" signal among continuously repeated ON/OFF signals. In VFS, the amount is decided by how widely spool valve open the passage of going through.

#### DTC DESCRIPTION

The PCM/TCM checks the Damper Clutch Control Signal by monitoring the feedback signal from the solenoid valve drive circuit. If an unexpected signal is monitored (for example, high voltage is detected when low voltage is expected, or low voltage is detected when high voltage is expected) the PCM/TCM judges that DCCSV circuit is malfunctioning and sets this code.

## DTC DETECTING CONDITION

Item	Detecting Condition	Possible cause
<b>DTC Strategy</b>	• Check voltage range	• Open or short in circuit
<b>Enable Conditions</b>	<ul style="list-style-type: none"> <li>• 16V &gt; Voltage Battery &gt; 11V</li> <li>• In gear state(no gear shifting) 500msec is passed from turn on the relay</li> <li>• A/T Relay = ON</li> <li>• Engine state = RUN</li> </ul>	<ul style="list-style-type: none"> <li>• Faulty VFS SOLENOID VALVE</li> <li>• Faulty PCM/TCM</li> </ul>
<b>Threshold value</b>	• Out of available voltage range	
<b>Diagnostic Time</b>	• More than 2 seconds	
<b>Fail Safe</b>	• Locked in 3rd gear.(Control relay off)	

## SPECIFICATION

Solenoid Valve for Pressure Control

- 1). Sensor type : Normal open 3-way
- 2). Operating temperature : -22~266 F(-30 C~ 130 C)
- 3). Frequency :
  - A)LR, 2ND, UD, OD, RED : 61.27Hz (at the ATF temp. -20 C above)
  - B) DCC : 30.64Hz
  - KM series : 35Hz
- 4). Internal resistance :
  - A) 2.7~3.4Ω (68 F or 20 C)
  - B) 4.35±0.35Ω (68 F or 20 C) - VFS
- 5). Surge voltage : 56 V(except VFS)

## SIGNAL WAVEFORM

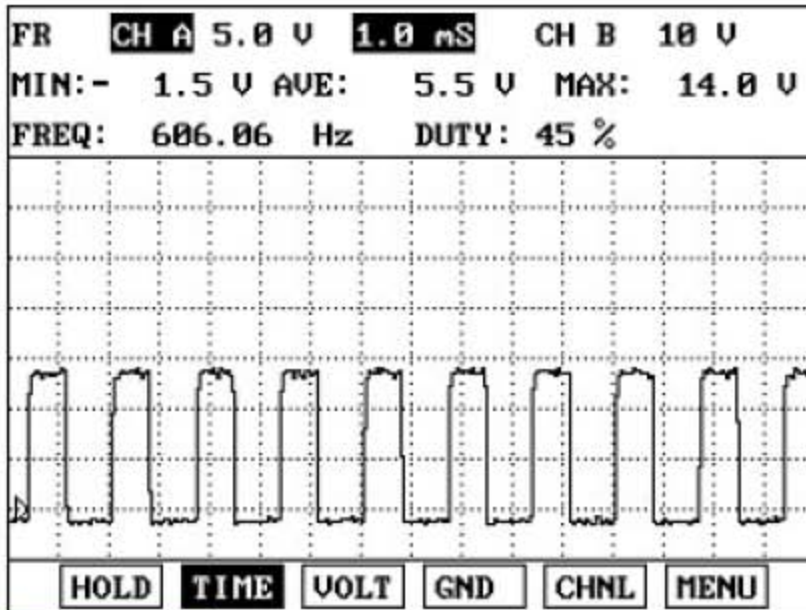


FIG.1)

FIG.1) : Wave form of "VFS"

## MONITOR SCANTOOL DATA

- 1). Connect scantool to data link connector(DLC).
- 2). Engine "ON".
- 3). Monitor the "PRESS CONTROL SOL. VALVE" parameter on the scantool.
- 4). Shift gear at each position.

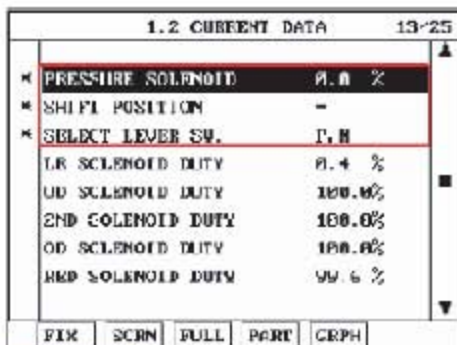


FIG.1)

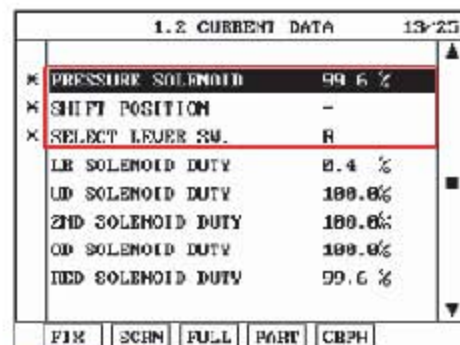


FIG.2)

1.2 CURRENT DATA		13/25
×	PRESSURE SOLENOID	99.6 %
×	SHIFT POSITION	1ST GEAR
×	SELECT LEVER SW.	D
	LR SOLENOID DUTY	0.4 %
	LD SOLENOID DUTY	0.4 %
	2ND SOLENOID DUTY	100.0%
	CD SOLENOID DUTY	100.0%
	FED SOLENOID DUTY	99.6 %

FIG.3)

1.2 CURRENT DATA		13/25
×	PRESSURE SOLENOID	35.3 %
×	SHIFT POSITION	2ND GEAR
×	SELECT LEVER SW.	D
	LR SOLENOID DUTY	100.0%
	UD SOLENOID DUTY	0.4 %
	2ND SOLENOID DUTY	0.4 %
	OD SOLENOID DUTY	100.0%
	FED SOLENOID DUTY	99.6 %

FIG.4)

1.2 CURRENT DATA		13/25
×	PRESSURE SOLENOID	35.3 %
×	SHIFT POSITION	3RD GEAR
×	SELECT LEVER SW.	D
	LR SOLENOID DUTY	100.0%
	UD SOLENOID DUTY	0.4 %
	2ND SOLENOID DUTY	100.0%
	OD SOLENOID DUTY	0.4 %
	FED SOLENOID DUTY	99.6 %

FIG.5)

1.2 CURRENT DATA		13/25
×	PRESSURE SOLENOID	35.3 %
×	SHIFT POSITION	4TH GEAR
×	SELECT LEVER SW.	D
	LR SOLENOID DUTY	100.0%
	UD SOLENOID DUTY	100.0%
	2ND SOLENOID DUTY	0.4 %
	OD SOLENOID DUTY	0.4 %
	FED SOLENOID DUTY	99.6 %

FIG.6)

1.2 CURRENT DATA		13/25
×	PRESSURE SOLENOID	35.3 %
×	SHIFT POSITION	5TH GEAR
×	SELECT LEVER SW.	D
	LR SOLENOID DUTY	0.4 %
	UD SOLENOID DUTY	100.0%
	2ND SOLENOID DUTY	0.4 %
	CD SOLENOID DUTY	0.4 %
	FED SOLENOID DUTY	0.0 %

FIG.7)

FIG. 1) P,N

FIG. 2) 'R'

FIG. 3) 'D 1st' gear

FIG. 4) '2nd' gear

FIG. 5) '3rd' gear

FIG. 6) '4th' gear

FIG. 7) '5th' gear

5). Does "PRESS CONTROL SOL DUTY " follow the reference data?

**YES**

- ▶ Fault is intermittent caused by poor contact in the sensor's and/or TCM(PCM)'s connector or was repaired and TCM(PCM) memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration or damage. Repair or replace as necessary and go to "Verification of vehicle repair" procedure.

**NO**

- ▶ Go to "Terminal & connector inspection " procedure.

## TERMINAL & CONNECTOR INSPECTION

- 1). Many malfunctions in the electrical system are caused by poor harness and terminals. Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
- 2). Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
- 3). Has a problem been found?

### YES

- ▶ Repair as necessary and then go to "Verification of vehicle repair" procedure.

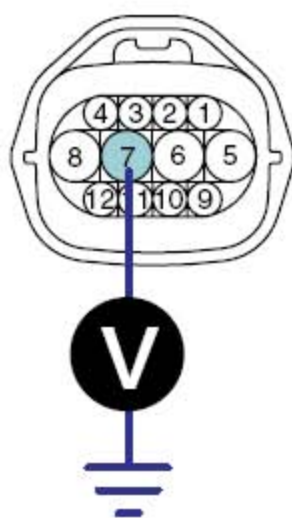
### NO

- ▶ Go to "Power supply circuit inspection" procedure.

## POWER SUPPLY CIRCUIT INSPECTION

- 1). Disconnect "A/T SOLENOID VALVE" connector.
- 2). Measure voltage between terminal "7" of the sensor harness connector and chassis ground.
- 3). Measure voltage of VFS solenoid valve.

**Specification:** Approx.12V



**C09**

3. UD solenoid valve
4. 2ND solenoid valve
5. A/T battery
6. A/T battery
- 7. A/T battery**
8. VF solenoid valve
9. DCC solenoid valve
11. LR solenoid valve
12. OD solenoid valve

- 4). Is voltage within specifications?

### YES

- ▶ Go to "Signal circuit inspection" procedure.

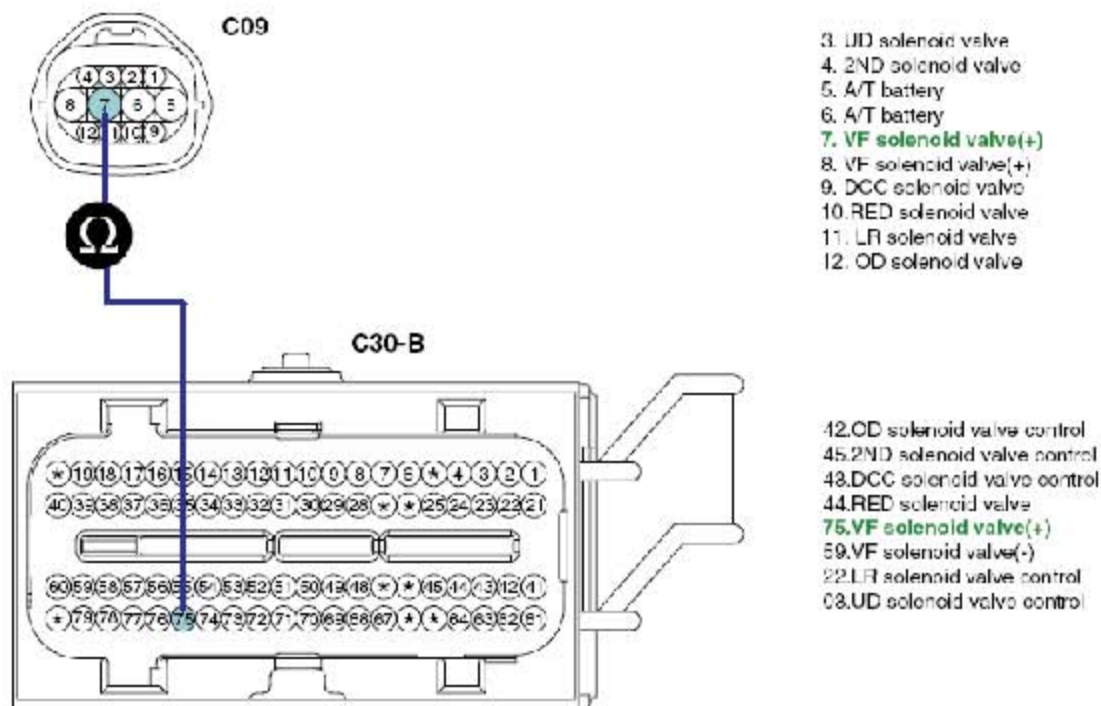
### NO

- ▶ Check that A/T-20A fuse in engine room junction is installed or not blown.
- ▶ Check for open in harness. Repair as necessary and go to "Verification of vehicle repair" procedure.

## SIGNAL CIRCUIT INSPECTION

- 1). Check signal circuit open inspection.
  - A) Ignition "OFF".
  - B) Disconnect "AT SOLENOID VALVE" connector and "PCM/TCM" connector.
  - C) Measure resistance between terminal "7" of the ATM SOLENOID VALVE harness connector and terminal "75" of the TCM/PCM harness connector.

**Specification:** approx. 0  $\Omega$



- D) Is resistance within specifications?

### YES

- ▶ Go to "Check signal circuit short inspection" procedure.

### NO

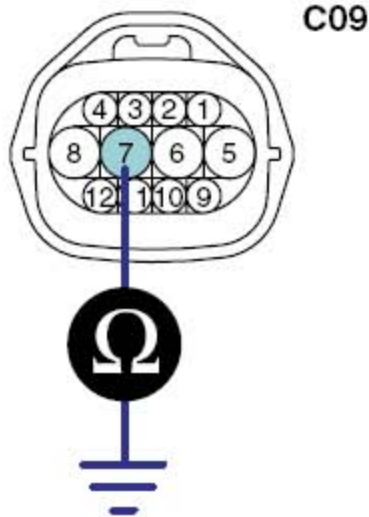
- ▶ Check for open in harness. Repair as necessary and go to "Verification of vehicle repair" procedure.

- 2). Check signal circuit short inspection

- A) Ignition "OFF".
- B) Disconnect "AT SOLENOID VALVE" connector and "PCM/TCM" connector.

- C) Measure resistance between terminal "7" of the ATM SOLENOID VALVE harness and chassis ground.

**Specification:** Infinite



3. UD solenoid valve
4. 2ND solenoid valve
5. A/T battery
6. A/T battery
7. VF solenoid valve(-)
8. VF solenoid valve(+)
9. DCC solenoid valve
10. RED solenoid valve
11. LR solenoid valve
12. OD solenoid valve

- D) Is resistance within specifications?

**YES**

- ▶ Go to "Component inspection" procedure.

**NO**

- ▶ Check for short to ground in harness. Repair as necessary and go to "Verification of vehicle repair" procedure.

## COMPONENT INSPECTION

- 1). CHECK SOLENOID VALVE
  - A) Ignition "OFF".
  - B) Disconnect "A/T SOLENOID VALVE" connector.
  - C) Measure resistance between terminal "7" and terminal "8" of the ATM SOLENOID VALVE harness connector.

**Specification:** Approximately  $4.35 \pm 0.35 \Omega$  [20 C(68 F)]



D) Is resistance within specifications?

**YES**

- ▶ Go to "CHECK OIL PRESSURE" as below.

**NO**

- ▶ Replace "PRESS CONTROL SOL VALVE(VFS)" as necessary and go to "Verification of vehicle repair" procedure.

2). CHECK PCM/TCM

- A) Connect scantool to data link connector(DLC).
- B) Ignition "ON" & Engine "OFF".
- C) Select A/T solenoid valve actuator test and operate actuator test.
- D) Can you hear operating sound for "PRESS CONTROL SOL VALVE(VFS)" Actuator testing function?

**YES**

- ▶ Go to "Verification of vehicle repair" procedure.

**NO**

- ▶ Replace PCM/TCM as necessary and go to "Verification of vehicle repair" procedure.

## ACTUATOR TEST CONDITION

- 1). IG SWITCH ON
- 2). TRANSAXLE RANGE SWITCH is normal
- 3). P RANGE
- 4). Vehicle Speed 0mph(0km/h)
- 5). Throttle position sensor < 1V
- 6). IDLE SWITCH ON
- 7). ENGINE RPM 0



## VERIFICATION OF VEHICLE REPAIR

After a repair, it is essential to verify that the fault has been corrected.

- 1). Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
- 2). Using a scantool, Clear DTC.
- 3). Operate the vehicle within DTC Enable conditions in general information.
- 4). Are any DTCs present ?

### **YES**

- ▶ Go to the applicable troubleshooting procedure.

### **NO**

- ▶ System performing to specification at this time.