



**INSPECTION CHART FOR DIAGNOSTIC TROUBLE CODES (F4A42)**

DTC No	Diagnosis items		Possible cause
P0712	Fluid temperature sensor	Short to ground	OTS output voltage < 0.07V for 1 second
P0713		Open/short to battery	OTS output voltage ≥ 4.59V for 1 second
P0715	Input shaft speed sensor	Open /short to battery /short to ground	No input shaft speed sensor output pulse detected at vehicle speed of ≥ 30 km/h
P0720	Output shaft speed sensor	Open /short to battery /short to ground	At vehicle speed of ≥ 30km/h, vehicle speed calculated base on the output shaft speed sensor is lower than 50% of vehicle speed.
P0703	Brake switch	Open /short to battery	2.24V < input voltage < 2.76V for 5 minutes continuously or brake switch is ON for 5 minutes continuously, output shaft speed ≥ 240rpm
P0750	LR solenoid valve	Short to ground/open /short to battery	With relay voltage > 10V, open or short circuit is continuously for 320msec
P0755	UD solenoid valve		
P0760	2nd solenoid valve		
P0765	OD solenoid valve		
P0743	DCC solenoid val		
P0731	Synchronous error	1st	After gear shift, Input shaft speed - (Output shaft speed x each gear ratio) ≥ 200rpm
P0732		2nd	
P0733		3rd	
P0734		4th	
P0736		Reverse	
P1604	CAN	No ID from ECU	No message from EMS for
P1603		CAN communication BUS OFF	CAN message transfer error for
P0741	DCC	Abnormal system	Detect 4 times the lockup clutch control duty = 100% for 4 seconds
P0742		Stuck ON	Torque converter slip rpm ≤ 5rpm is continue for 10 seconds consecutively

P0885	A/T control relay	Short to ground/open	After ignition ON, A/T control relay voltage < 7V or ≥ 24.5V
P0707	Transaxle range switch	Short to ground/open	No signal is continuous for > 30 seconds
P0708		Short to battery/short to between switches	Above 2 kinds signals are continuous for 30 seconds

## DIAGNOSTIC TROUBLE CODE DESCRIPTION

DTC No.	Diagnosis item		Suspect area	Remedy (See page)
P0713	<b>Fluid temperature sensor system</b> If the fluid temperature sensor output voltage is 4.59 V or more even after driving for 1 second, it is judged that there is an open or a short to battery in the fluid temperature sensor and diagnosis code P0713 is set.	Open/short to battery	<ul style="list-style-type: none"> <li>•Malfunction of the fluid temperature sensor</li> <li>•Malfunction of connector</li> <li>•Malfunction of the PCM</li> </ul>	TR-32
P0712	<b>Fluid temperature sensor system</b> If the fluid temperature sensor output voltage is 0.07 V or less even after driving for 1 second, it is judged that there is a short to ground in the fluid temperature sensor and diagnosis code P0712 is set.	Short to ground		TR-32
P0715	<b>Input shaft speed sensor system</b> If no output pulse is detected from the input shaft speed sensor for 1 second or more while driving in 3rd or 4th gear at a speed of 30 km/h or more, there is judged to be an open circuit or a short circuit in the input shaft speed sensor and diagnosis code P0715 is set.	Open/short to battery/short to ground	<ul style="list-style-type: none"> <li>•Malfunction of the input shaft speed sensor</li> <li>•Malfunction of the underdrive clutch retainer</li> <li>•Malfunction of connector</li> <li>•Malfunction of the PCM</li> </ul>	TR-36

<p>P0720</p>	<p><b>Output shaft speed sensor system</b> If the output from the output shaft speed sensor is continuously 50% lower than the vehicle speed for 1 second or more while driving in 3rd or 4th gear at a speed of 30 km/h or more, there is judged to be an open circuit or a short circuit in the output shaft speed sensor and diagnosis code P0720 is set.</p>	<p>Open/short to battery/short to ground</p>	<ul style="list-style-type: none"><li>•Malfunction of the outputs speed sensor</li><li>•Malfunction of connector</li><li>•Malfunction of the PCM</li><li>•Malfunction of the transfer drive gear or driven gear</li></ul>	<p>TR-39</p>
<p>P0703</p>	<p><b>Brake switch system</b> If the brake switch is ON for 5 minutes or more while driving, it is judged that there is an open or a short to battery in the brake switch and diagnosis code P0703 is set.</p>	<p>Open/short to battery</p>	<ul style="list-style-type: none"><li>•Malfunction of the brake switch</li><li>•Malfunction of connector</li><li>•Malfunction of the PCM</li></ul>	<p>TR-42</p>
<p>P0750</p>	<p><b>Low and reverse solenoid valve system</b> If the resistance value for a solenoid valve is too large or too small, it is judged that there is a short circuit or an open circuit in the solenoid valve and the respective diagnosis code P0750 is set. The transmission is locked into 3rd gear as a fail-safe measure.</p>	<p>Open/short to battery/short to ground</p>	<ul style="list-style-type: none"><li>•Malfunction of solenoid valve</li><li>•Malfunction of connector</li><li>•Malfunction of the PCM</li></ul>	<p>TR-45</p>

P0755	<b>Underdrive solenoid valve system</b> If the resistance value for a solenoid valve is too large or too small, it is judged that there is a short circuit or an open circuit in the solenoid valve and the respective diagnosis code P0755 is set. The transmission is locked into 3rd gear as a fail-safe measure.		TR-48
P0760	<b>Second solenoid valve system</b> If the resistance value for a solenoid valve is too large or too small, it is judged that there is a short circuit or an open circuit in the solenoid valve and the respective diagnosis code P0760 is set. The transmission is locked into 3rd gear as a fail-safe measure.		TR-51
P0765	<b>Overdrive solenoid valve system</b> If the resistance value for a solenoid valve is too large or too small, it is judged that there is a short circuit or an open circuit in the solenoid valve and the respective diagnosis code P0765 is set. The transmission is locked into 3rd gear as a fail-safe measure.		TR-54

<p>P0743</p>	<p><b>Damper clutch control solenoid valve system</b>                  If the resistance value for a solenoid valve is too large or too small, it is judged that there is a short circuit or an open circuit in the solenoid valve and the respective diagnosis code P0743 is set. The transmission is locked into 3rd gear as a fail-safe measure.</p>	<p>Open/short to battery/short to ground</p>	<ul style="list-style-type: none"> <li>•Malfunction of the DCC solenoid valve</li> <li>•Malfunction of connector</li> <li>•Malfunction of the PCM</li> </ul>	<p>TR-57</p>
<p>P0731</p>	<p><b>1st gear synchronous error</b>                  If the output from the output shaft speed sensor multiplied by the 1st gear ratio is not the same as the output from the input shaft speed sensor after the shift to 1st gear has been completed, diagnosis code P0731 is set. If diagnosis code P0731 is set four times, the transmission is locked into 3rd gear as a fail-safe measure.</p>	<ul style="list-style-type: none"> <li>•Malfunction of the input shaft speed sensor</li> <li>•Malfunction of the output shaft speed sensor</li> <li>•Malfunction of the underdrive clutch retainer</li> <li>•Malfunction of the transfer drive gear or driven gear</li> <li>•Malfunction of the low and reverse brake system</li> <li>•Malfunction of the underdrive clutch system</li> <li>•Noise generated</li> </ul>	<p>TR-60</p>	
<p>P0732</p>	<p><b>2nd gear synchronous error</b>                  If the output from the output shaft speed sensor multiplied by the 2nd gear ratio is not the same as the output from the input shaft speed sensor after the shift to 3rd gear has been completed, diagnosis code P0732 is set. If diagnosis code P0732 is set four times, the transmission is locked into 3rd gear as a fail-safe measure.</p>	<ul style="list-style-type: none"> <li>•Malfunction of the input shaft speed sensor</li> <li>•Malfunction of the output shaft speed sensor</li> <li>•Malfunction of the underdrive clutch retainer</li> <li>•Malfunction of the transfer drive gear or driven gear</li> <li>•Malfunction of the underdrive clutch system</li> <li>•Malfunction of the overdrive clutch system</li> <li>•Noise generated</li> </ul>	<p>TR-62</p>	

<p>P0733</p>	<p><b>3rd gear synchronous error</b> If the output from the output shaft speed sensor multiplied by the 3rd gear ratio is not the same as the output from the input shaft speed sensor after the shift to 3rd gear has been completed, diagnosis code P0733 is set. If diagnosis code P0733 is set four times, the transmission is locked into 3rd gear as a fail-safe measure.</p>	<ul style="list-style-type: none"><li>•Malfunction of the input shaft speed sensor</li><li>•Malfunction of the output shaft speed sensor</li><li>•Malfunction of the underdrive clutch retainer</li><li>•Malfunction of the transfer drive gear or driven gear</li><li>•Malfunction of the second brake system</li><li>•Malfunction of the overdrive clutch system</li><li>•Noise generated</li></ul>	<p>TR-64</p>
<p>P0734</p>	<p><b>4th gear synchronous error</b> If the output from the output shaft speed sensor multiplied by the 4th gear ratio is not the same as the output from the input shaft speed sensor after the shift to 4th gear has been completed, diagnosis code P0734 is set. If diagnosis code P0734 is set four times, the transmission is locked into 3rd gear as a fail-safe measure.</p>	<ul style="list-style-type: none"><li>•Malfunction of the input shaft speed sensor</li><li>•Malfunction of the output shaft speed sensor</li><li>•Malfunction of the underdrive clutch retainer</li><li>•Malfunction of the transfer drive gear or driven gear</li><li>•Malfunction of the second brake system</li><li>•Malfunction of the overdrive clutch system</li><li>•Noise generated</li></ul>	<p>TR-66</p>
<p>P0736</p>	<p><b>Reverse gear synchronous error</b> If the output from the output shaft speed sensor multiplied by the reverse gear ratio is not the same as the output from the input shaft speed sensor after the shift to reverse gear has been completed, diagnosis code P0736 is set. If diagnosis code P0736 is set four times, the transmission is locked into 3rd gear as a fail-safe measure.</p>	<ul style="list-style-type: none"><li>•Malfunction of the input shaft speed sensor</li><li>•Malfunction of the output shaft speed sensor</li><li>•Malfunction of the underdrive clutch retainer</li><li>•Malfunction of the transfer drive gear or driven gear</li><li>•Malfunction of the low and reverse brake system</li></ul>	<p>TR-68</p>

			<ul style="list-style-type: none"> <li>•Malfunction of the reverse clutch system</li> <li>•Noise generated</li> </ul>	
P1604	<b>No ID from ECU</b> <ul style="list-style-type: none"> <li>•No message from ECU for</li> <li>•Input shaft speed &gt; 1000rpm</li> <li>•500ms passed from relay voltage <math>\geq 10V</math></li> </ul>		<ul style="list-style-type: none"> <li>•PCM Fail</li> </ul>	TR-70
P1603	<b>CAN communication BUS OFF</b> <ul style="list-style-type: none"> <li>•CAN message transfer error for</li> <li>•Input shaft speed &gt; 1000rpm</li> <li>•500mses passed from relay voltage <math>\geq 10V</math></li> </ul>		<ul style="list-style-type: none"> <li>•PCM Fail</li> </ul>	TR-71
P0741	<b>Damper clutch abnormal system</b> <ul style="list-style-type: none"> <li>•Detect 4 times the lockup clutch control duty = 100% for 4 seconds.</li> <li>•When PCM commands lockup.</li> </ul>	Abnormal system	<ul style="list-style-type: none"> <li>•Malfunction of damper clutch</li> <li>•Malfunction of the DCC solenoid valve</li> <li>•Malfunction of connector</li> <li>•Malfunction of the PCM</li> </ul>	TR-72
P0742	<b>Damper clutch stuck ON</b> <ul style="list-style-type: none"> <li>•Torque converter slip rpm <math>\leq 5</math>rpm is continue for 10 seconds consecutively</li> <li>•All the other direct clutches are normal</li> <li>•Driving range (D, 3, 2, L)</li> <li>•TPS voltage &gt; 1.5V</li> <li>•Output shaft speed &gt; 1000rpm</li> <li>•Before "1st Lockup after IG ON"</li> <li>•After "5sec from the last OPEN command"</li> </ul>	Stuck ON	<ul style="list-style-type: none"> <li>•Malfunction of damper clutch</li> <li>•Malfunction of the DCC solenoid valve</li> <li>•Malfunction of connector</li> <li>•Malfunction of the PCM</li> </ul>	TR-75

P0885	<b>A/T control relay system</b> If the A/T control relay voltage is less than 7 V after the ignition switch has been turned ON, it is judged that there is an open circuit or a short-circuit in the A/T control relay ground and diagnosis code P0885 is set. Then the transmission is locked into 3rd gear as a fail-safe measure.	Short to ground/ open	<ul style="list-style-type: none"> <li>•Malfunction of the A/T control relay</li> <li>•Malfunction of connector</li> <li>•Malfunction of the PCM</li> </ul>	TR-78
P0707	<b>Transaxle range switch</b> No signal is continuous for > 30 seconds	Short to ground/ Open circuit	<ul style="list-style-type: none"> <li>•Malfunction of transaxle range switch</li> </ul>	TR-81
P0708	<b>Transaxle range switch</b> Above 2 signals are continuous for > 30 seconds	Short to battery/ short between switches		TR-81

### INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom		Suspect area	Remedy (see page)
<b>Communication with HI-SCAN is not possible</b> If communication with the HI-SCAN is not possible, the cause is probably a defective diagnosis line or the PCM is not functioning.		Malfunction of diagnosis line	TR-84
		Malfunction of connector	
		Malfunction of the PCM	
Driving impossible	<b>Starting impossible</b> Starting is not possible when the selector lever is in "P" or "N" range. In such cases, the cause is probably a defective engine system, torque converter or oil pump.	Malfunction of the engine system	TR-86
		Malfunction of the torque converter	
		Malfunction of the oil pump	
Driving impossible	<b>Does not move forward</b> If the vehicle does not move forward when the selector lever is shifted from "N" to "D" range while the engine is idling, the cause is probably abnormal line pressure or a malfunction of the underdrive clutch or valve body.	Abnormal line pres	TR-87
		Malfunction of the underdrive solenoid valve	
		Malfunction of the underdrive clutch	
		Malfunction of the valve body	
Driving impossible	<b>Does not reverse</b>	Abnormal reverse clutch pressure	TR-88



	<p>If the vehicle does not reverse when the selector lever is shifted from "N" to "R" range while the engine is idling, the cause is probably abnormal pressure in the reverse clutch or low and reverse brake or a malfunction of the reverse clutch, low and reverse brake or valve body.</p>	<p>Abnormal low and reverse brake pressure</p> <p>Malfunction of the low and reverse brake solenoid valve</p> <p>Malfunction of the reverse clutch</p> <p>Malfunction of the low and reverse brake</p> <p>Malfunction of the valve body</p>	
	<p><b>Does not move (forward or reverse)</b> If the vehicle does not move forward or reverse when the selector lever is shifted to any position while the engine is idling, the cause is probably abnormal line pressure or a malfunction of the power train, oil pump or valve body.</p>	<p>Abnormal line pressure</p> <p>Malfunction of power train</p> <p>Malfunction of the oil pump</p> <p>Malfunction of the valve body</p>	<p>TR-89</p>
<p>Malfunction when starting</p>	<p><b>Engine stalling when shifting</b> If the engine stalls when the selector lever is shifted from "N" to "D" or "R" range while the engine is idling, the cause is probably a malfunction of the engine system, damper clutch solenoid valve, valve body or torque converter (damper clutch malfunction).</p> <p><b>Shocks when changing from "N" to "D" and large time lag</b> If abnormal shocks or a time lag of 2 seconds or more occur when the selector lever is shifted from "N" to "D" range while the engine is idling, the cause is probably abnormal underdrive clutch pressure or a malfunction of the underdrive clutch, valve body.</p> <p><b>Shocks when changing from "N" to "R" and large time lag</b> If abnormal shocks or a time lag of 2 seconds or more occur when the selector lever is shifted from "N" to "R" range while the engine is idling, the cause is probably abnormal reverse</p>	<p>Malfunction of the engine system</p> <p>Malfunction of the damper clutch control solenoid valve</p> <p>Malfunction of the valve body</p> <p>Malfunction of the torque converter (Malfunction of the damper clutch)</p> <p>Abnormal underdrive clutch pressure</p> <p>Abnormal low and reverse brake pressure</p> <p>Malfunction of the underdrive solenoid valve</p> <p>Malfunction of the valve body</p> <p>Malfunction of the idle position switch</p> <p>Abnormal reverse clutch pressure</p> <p>Abnormal low and reverse brake pressure</p> <p>Malfunction of the low and reverse solenoid valve</p>	<p>TR-89</p> <p>TR-90</p> <p>TR-92</p>

	<p>clutch pressure or low and reverse brake pressure, or a malfunction of the reverse clutch, low and reverse brake, valve body or idle position switch.</p>	<p>Malfunction of the reverse clutch</p> <p>Malfunction of the low and reverse brake</p> <p>Malfunction of the valve body</p> <p>Malfunction of the idle position switch</p>	
	<p><b>Shocks when changing from "N" to "D", "N" to "R" and large time lag</b> If abnormal shocks or a time lag of 2 seconds or more occur when the selector lever is shifted from "N" to "D" range and from "N" to "R" range while the engine is idling, the cause is probably abnormal line pressure or a malfunction of the oil pump or valve body.</p>	<p>Abnormal line pressure</p> <p>Malfunction of the oil pump</p> <p>Malfunction of the valve body</p>	<p>TR-94</p>
<p>Malfunction when shifting</p>	<p><b>Shocks and running up</b> If shocks occur when driving due to upshifting or downshifting and the transmission speed becomes higher than the engine speed, the cause is probably abnormal line pressure or a malfunction of a solenoid valve, oil pump, valve body, brake or clutch.</p>	<p>Abnormal line pressure</p> <p>Malfunction of each solenoid valve</p> <p>Malfunction of the oil pump</p> <p>Malfunction of the valve body</p> <p>Malfunction of each brake or each clutch</p>	<p>TR-95</p>
<p>Displaced shifting points</p>	<p><b>All points</b> If all shift points are displaced while driving, the cause is probably a malfunction of the output shaft speed sensor, TPS or solenoid valve.</p>	<p>Malfunction of the output shaft speed sensor</p> <p>Malfunction of the throttle position sensor</p> <p>Malfunction of each solenoid valve</p> <p>Abnormal line pressure</p> <p>Malfunction of the valve body</p> <p>Malfunction of the PCM</p>	<p>TR-96</p>
	<p><b>Some points</b> If some of the shift points are displaced while driving, the cause is probably a malfunction of the valve body, or it is related to control and is not an abnormality.</p>	<p>Malfunction of the valve body</p>	<p>TR-98</p>

Does not shift	<b>No diagnosis codes</b> If shifting does not occur while driving and no diagnosis codes are set, the cause is probably a malfunction of the transaxle range switch, or PCM	Malfunction of the transaxle range	TR-98
		Malfunction of the PCM	
Malfunction while driving	<b>Poor a acceleration</b> If acceleration is poor even if downshifting occurs while driving, the cause is probably a malfunction of the engine system, brake or clutch.	Malfunction of the engine system	TR-99
		Malfunction of the brake of clutch	
Malfunction while driving	<b>Vibration</b> If vibration occurs when driving at constant speed or when accelerating and deceleration in top range, the cause is probably abnormal damper clutch pressure or a malfunction of the engine system, damper clutch control solenoid valve, torque converter or valve body.	Abnormal damper clutch pressure	TR-100
		Malfunction of the engine system	
		Malfunction of the damper clutch control solenoid valve	
		Malfunction of the torque converter	
		Malfunction of the valve body	

## TROUBLESHOOTING

Symptom	Suspect area	Remedy (See page)
Vibration, noise	Loose or damaged transaxle and engine mounts	Tighten or replace mounts
	Inadequate shaft end play	Correct end play
	Worn or damaged gears	Replace gear
	Inadequate grade of oil	Replace with specified oil
	Low oil level	Replenish
	Inadequate engine idle speed	Adjust idle speed
Oil leakage	Broken or damaged, oil seal or O-ring	Replace oil seal or O-ring
Hard shift	Faulty control cable	Replace control cable
	Poor contact or wear of synchronizer ring and gear cone	Correct or replace
	Weakened synchronizer spring	Replace synchronizer spring
	Inadequate grade of oil	Replace with specified oil

Jumps out of gear	Worn gear shift fork or broken poppet spring	Replace shift fork or poppet spring
	Synchronizer hub to sleeve spline clearance too large	Replace synchronizer hub and sleeve