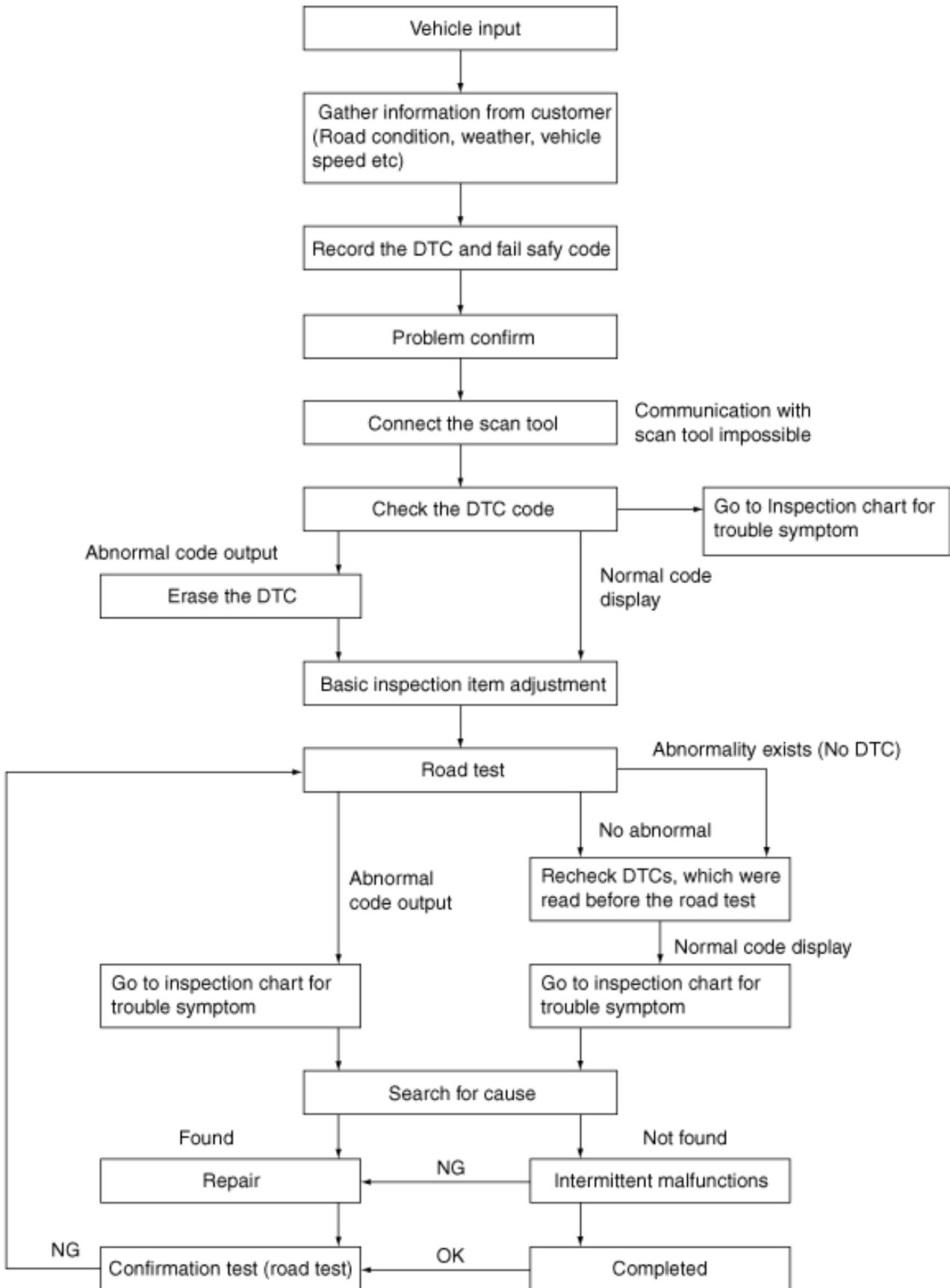


AUTOMATIC TRANSAXLE (F4A42)

TROUBLESHOOTING (A/T)



DIAGNOSIS FUNCTION

1. Connect the Hi Scan Pro to the connector for diagnosis.
2. Read the output diagnostic trouble codes. Then follow the remedy procedures according to the "DIAGNOSTIC TROUBLE CODE DESCRIPTION" on the following pages.

NOTE

- A maximum of 8 diagnostic trouble codes (in the sequence of occurrence) can be stored in the Random Access Memory (RAM) incorporated within the control module.
- The same diagnostic trouble code can be stored one time only
- If the number of stored diagnostic trouble codes or diagnostic trouble patterns exceeds 8, already stored diagnostic trouble codes will be erased in sequence, beginning with the oldest.
- Do not disconnect the battery until all diagnostic trouble codes or diagnostic trouble patterns have been read out, because all stored diagnostic trouble codes or diagnostic trouble patterns will be cancelled when the battery is disconnected.

3. If the fail-safe system is activated and the transaxle is locked in third gear, the diagnostic trouble code in the fail-safe code description will be stored in the RAM. Three of these diagnostic trouble codes can be stored.
4. The cancellation will occur if, with the transaxle locked in third gear, the ignition key is turned to the OFF position, but the diagnostic trouble code is stored in the RAM.
5. Memorization.
 - A. Up to 8 diagnosis items and 3 fail-safe items can be memorized.
 - B. If the memory capacity is exceeded, diagnosis and fail-safe items in the memory are overwritten, starting with the oldest.
 - C. No code can be memorized more than once.
6. Diagnosis Code Deletion
 - (1) Automatic Deletion.
All diagnosis codes are deleted from memory the 200th time the ATF temperature reaches 50°C after memorization of the most recent diagnosis code.
 - (2) Forced Deletion.
Memorized diagnosis codes can be deleted using the scan-tool, provided the following conditions are satisfied :
 - A. The ignition switch is ON.
 - B. There is no detection pulse from the crank angle sensor.
 - C. There is no detection pulse from the output shaft speed sensor.
 - D. There is no detection pulse from the vehicle speed sensor.
 - E. The fail-safe function is not operational.

ROAD TEST

No.	Condition	Operation	Judgment value	Check item
1	Ignition switch : OFF	Ignition switch (1) ON	Battery voltage (mV)	Control relay
	<ul style="list-style-type: none"> • Ignition switch : ON • Engine : Stopped • Selector lever position : P 	Selector lever position (1) P, (2) R, (3) N, (4) D	(1) P, (2) R, (3) N, (4) D	Transaxle range switch

2		Accelerator pedal (1) Released (2) Half depressed (3) Depressed	(1) 400~1,000 mV (2) Gradually rises from (1) (3) 4,500~5,000 mV	Throttle position sensor
		Brake pedal (1) Depressed (2) Released	(1) ON (2) OFF	Brake switch
3	•Ignition switch : ST •Engine : Stopped	Starting test with lever P or N range	Starting should be possible	Starting possible or impossible
4	Warming up	Drive for 15 minutes or more so that the automatic fluid temperature becomes 70~90°C	Gradually rises to 70~90°C	Oil temperature sensor
5	•Engine : Idling •Selector lever position : N	A/C switch (1) ON (2) OFF	(1) ON (2) OFF	Triple pressure switch
		Accelerator pedal (1) Released (2) Half depressed	(1) ON (2) OFF	Idle position switch
			(1) 600~900 rpm (2) Gradually rises from (1)	
			(1) Data changes	Communication with engine-ECU
	Selector lever position (1) N→D (2) N→R	Should be no abnormal shifting shocks Time lag should be within 2 seconds	Malfunction when starting	
6	Selector lever position : N (Carry out on a flat and straight road)	Selector lever position and vehicle speed 1. Idling in 1st gear (Vehicle stopped) 2. Driving at constant speed of 20 km/h in 1st gear 3. Driving at constant speed of 30 km/h in 2nd gear 4. Driving at 50 km/h in 3rd gear with accelerator fully closed	(2) 1st, (4) 3rd, (3) 2nd, (5) 4th	Shift condition
			(2) 0%, (4) 100%, (3) 100%, (5) 100%	Low and reverse solenoid valve
			(2) 0%, (4) 0%, (3) 0%	Underdrive solenoid valve
			(1) 100%, (2) 0%, (3) 100%	Second solenoid valve
			(2) 100%, (3) 100%, (4) 0%	Overdrive solenoid valve
			(1) 0km/h (4) 50km/h	Vehicle speed sensor

		5. Driving at constant speed of 50 km/h in 4th gear	(4) 1,800 ~ 2,100rpm	Input shaft speed sensor
			(4) 1,800 ~ 2,100rpm	Output shaft speed sensor
7	Selector lever position : D (Carry out on a flat and straight road)	1. Accelerate to 4th gear at a throttle position sensor output of 1.5V (accelerator opening angle of 30 %). 2. Gently decelerate to a standstill. 3. Accelerate to 4th gear at a throttle position sensor output of 2.5 V (accelerator opening angle of 50%). 4. While driving at 60 km/h in 4th gear, shift down to 3rd gear. 5. While driving at 40 km/h in 3rd gear, shift down to 2nd gear. 6. While driving at 20 km/h in 2nd gear, shift down to 1st gear.	For (1), (2) and (3), the reading should be the same as the specified output shaft torque, and no abnormal shocks should occur. For (4), (5) and (6), downshifting should occur immediately after the shifting operation is made.	Malfunction when shifting
				Displaced shift points
				Does not shift
				Does not shift from 1 to 2 or 2 to 1
				Does not shift from 2 to 3 or 3 to 2
				Does not shift from 3 to 4 or 4 to 3
8	Selector lever position : N (Carry out on a flat and straight road)	Move selector lever to R range drive at constant speed of 10km/h	The ratio between input and output shaft speed sensor data should be the same as the gear ratio when reversing.	Does not shift

ELEMENTS IN USE IN EACH GEAR

Operating element		Underdrive clutch (UD)	Reverse clutch (REV)	Overdrive clutch (OD)	Low-and reverse brake (LR)	Second brake (2nd)	One way clutch (OWC)
Selector lever position							
P	Parking	-	-	-	O	-	-
R	Reverse	-	O	-	O	-	-
N	Neutral	-	-	-	O	-	-
D	1st	O	-	-	O	-	O
	2nd	O	-	-	-	O	-
	3rd	O	-	O	-	-	-

	4th	-	-	O	-	O	-
3	1st	O	-	-	O	-	O
	2nd	O	-	-	-	O	-
	3rd	O	-	O	-	-	-
2	1st	O	-	-	O	-	O
	2nd	O	-	-	-	O	-
1	1st	O	-	-	O	-	O

OPERATING ELEMENTS AND THEIR FUNCTION

Operating element	Code	Function
Underdrive clutch	UD	Connects input shaft and underdrive sun gear
Reverse clutch	REV	Connects input shaft and reverse sun gear
Overdrive clutch	OD	Connects input shaft and overdrive planetary carrier
Low-and-reverse brake	LR	Locks low-and-reverse annulus gear and overdrive planetary carrier
Second brake	2ND	Locks reverse sun gear