■SYSTEM CONTROL

1. General

The cruise control system has the following functions:

Function	Outline	
Constant Speed Control	1AZ-FE and 2AZ-FE Engines	The engine ECU compares the actual vehicle speed and the set speed. If the vehicle speed is higher than the set speed, the engine ECU activates the throttle control motor in the throttle closing direction. If the vehicle speed is lower than the set speed, the engine ECU activates the throttle motor in the throttle opening direction.
	2AD-FTV and 2AD-FHV Engines	The engine ECU compares the actual vehicle speed and the set speed. If the vehicle speed is higher than the set speed, the engine ECU decreases the injection volume by regulating the four injectors via the EDU. If the vehicle speed is lower than the set speed, the engine ECU increases the injection volume by regulating the four injectors via the EDU.
Set Control	When the MAIN switch is turned on and the cruise control switch is pressed to the SET/– side and released, the engine ECU stores the vehicle speed in the memory and continues to control the vehicle at the speed.	
Coast Control	1AZ-FE and 2AZ-FE Engines	When the cruise control switch is kept pushed to the SET/–side while running in the cruise control mode, the throttle control motor is energized in the throttle closing direction, and the vehicle keeps decelerating. The engine ECU stores the vehicle speed when the cruise control switch is released. From then on, the engine ECU controls the vehicle speed at that speed constantly.
	2AD-FTV and 2AD-FHV Engines	When the cruise control switch is kept pushed to the SET/–side while the vehicle is running in the cruise control mode, the engine ECU decreases the injection volume by regulating the four injectors via the EDU. As the vehicle continues to decelerate, the engine ECU stores the vehicle speed at the time the cruise control switch is released. From then on, the engine ECU continues to control the vehicle at that speed.
	In addition to the abovementioned coast control, the skid control ECU applies slight braking of approximately 0.1G upon receiving a deceleration request from the engine ECU, in order to quickly decelerate the vehicle to the set speed. (Only for Models with VSC System)	
Tap-down Control	When the difference between the actual vehicle speed and the set speed is less than 5 km/h (3 mph), the set speed can be lowered approx. 1.6 km/h (1 mph) each time by operating the SET/–switch quickly within approx. 0.6 seconds.	
Accelerator Control	1AZ-FE and 2AZ-FE Engines	When the cruise control switch is kept pushed to the RES/+ side while running in the cruise control mode, the throttle control motor is energized in the throttle opening direction. The vehicle keeps accelerating and the engine ECU stores the vehicle speed when the cruise control switch is released. From then on, the engine ECU controls the vehicle speed at that speed constantly
	2AD-FTV and 2AD-FHV Engines	When the cruise control switch is kept pushed to the RES/+ side while the vehicle is running in the cruise control mode, the engine ECU increases the injection volume by regulating the four injectors via the EDU. As the vehicle continues to accelerate, engine ECU stores the vehicle speed at the time the cruise control switch is released. From then on, the engine ECU continues to control the vehicle at that speed.
Tap-up Control	When the difference between the actual vehicle speed and the set speed is less than 5 km/h (3 mph), the set speed can be increased approx 1.6 km/h (1 mph) each time by operating the RES/+ switch quickly within approx 0.6 seconds.	

Low Speed Limit Control	The low speed limit is the lowest speed that cruise control can be set and is designed at approx. 40 km/h (25 mph). The cruise control cannot be set below that speed. If the vehicle speed drops below that speed while running in the cruise control mode, the cruise control is cancelled automatically but the set speed in the memory is maintained.
High Speed Limit Control	The high speed limit is the highest speed that cruise control can be set and is designed at approx. 200 km/h (124 mph). ● The cruise control cannot be set if the vehicle speed exceeds the high speed limit. ● The vehicle will not accelerate when the RES/+ switch is operated if the vehicle speed exceeds the high speed limit.
Manual Cancel Control	If any of the following signals is sent to the engine ECU while the vehicle is running in the cruise control mode, the cruise control mode is cancelled accordingly. ● Stop light switch ON signal (Depress the brake pedal) ● Clutch switch OFF signal (Depress the clutch pedal/for Manual Transaxle Models) ● CANCEL switch ON signal ● MAIN switch OFF signal
Resume Control	After the cruise control mode is cancelled by any of the cancel switches, the mode can be resumed and controlled at the set speed by operating the cruise control switch in the RES/+ direction when the vehicle speed returns above the low speed limit [approx. 40 km/h (25 mph)].
Automatic Transmission Control	When the vehicle is cruising uphill, there is a case where the overdrive function turns off depending on the ECT (Electronic Control Transmission) control. After that the engine ECU judges the end of cruising up from the throttle valve angle, the overdrive function will turn on again. There is a case where the overdrive function turns off during ACC or RES switch control.
Automatic Cancel Control	When any of the following conditions occurs during cruise control driving, the set speed in the memory is cleared to cancel the cruise control mode. Furthermore, the cruise MAIN indicator light blinks until the MAIN switch is turned off, and the operation of the cruise control is disabled until the MAIN switch is turned on again. ● Stop light switch open or short circuit ● The vehicle speed signal abnormal ● ETCS-i malfunction (for 1AZ-FE and 2AZ-FE engines) ● Common-rail type diesel EFI system malfunction (for 2AD-FTV and 2AD-FHV engines) ● VSC malfunction (for the models with the coast brake function) ● VSC communication malfunction (for the models with the coast brake function)
	When any of the following conditions occurs during the cruise control driving, the set speed in the memory is cleared to cancel the cruise control mode. Furthermore, the cruise MAIN indicator light blinks until the MAIN switch is turned off, and the operation of the cruise control is disabled until the ignition switch is turned off again. ● Stop light switch input signal abnormal ● Cancel circuit malfunction
	When any of the following conditions occurs during the cruise control driving, the cruise control mode is cancelled. Cruise control can be resumed at the set speed by operating the SET or RESUME switch providing that the vehicle speed is above the lower speed limit [approx. 40 km/h (25 mph)]. ● The vehicle speed falls below the low speed limit [approx. 40 km/h (25 mph)]. (The set speed in the memory is maintained.) ● The vehicle speed drops more than 16 km/h (10 mph) below the set speed as uphill driving. (The set speed in the memory is cleared.)
Other Cancellation Items	While the vehicle is being driven under cruise control, cruise control will be canceled if the VSC is activated. (The set speed in the memory is maintained.)

2. Diagnosis

If a malfunction occurs in the cruise control system, during cruise control the engine ECU actuates the automatic cancel control and blinks the cruise MAIN indicator light to inform the driver of a malfunction. At this time, the engine ECU memorizes the malfunction in the form of 5-digit and 2-digit DTCs (Diagnostic Trouble Codes).

- The 5-digit DTCs can be read by connecting an intelligent tester II to the DLC3.
- The 2-digit DTCs are output to the cruise MAIN indicator light when the TC and CG terminals of the DLC3 are connected through the use of the SST (09843-18040). Thus, these DTCs can be obtained by counting the number of blinks of the cruise MAIN indicator light.