
GROUP 17b

AUTO-CRUISE CONTROL SYSTEM

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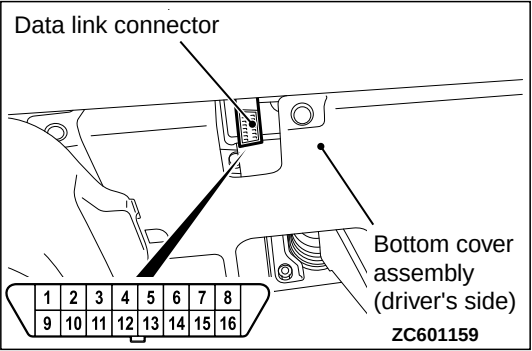
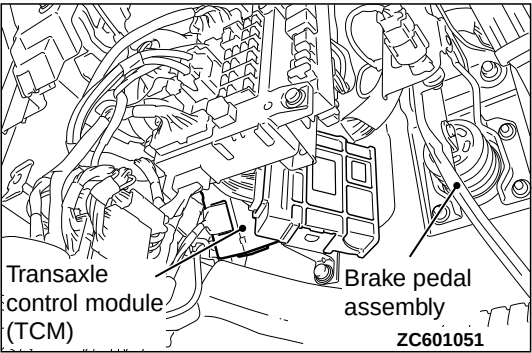
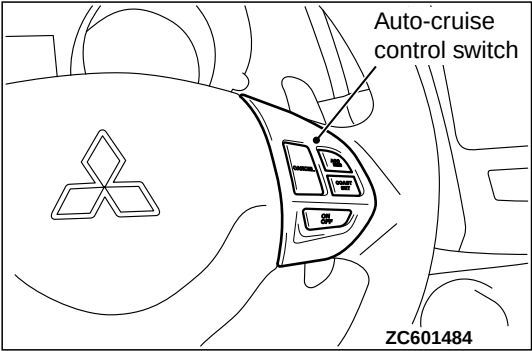
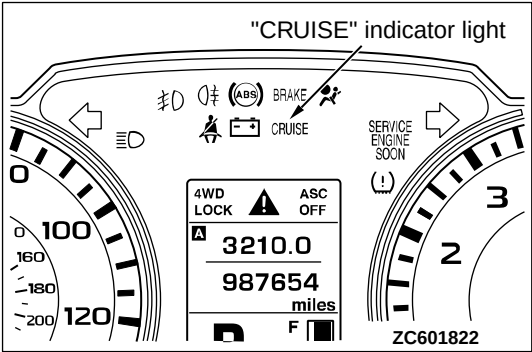
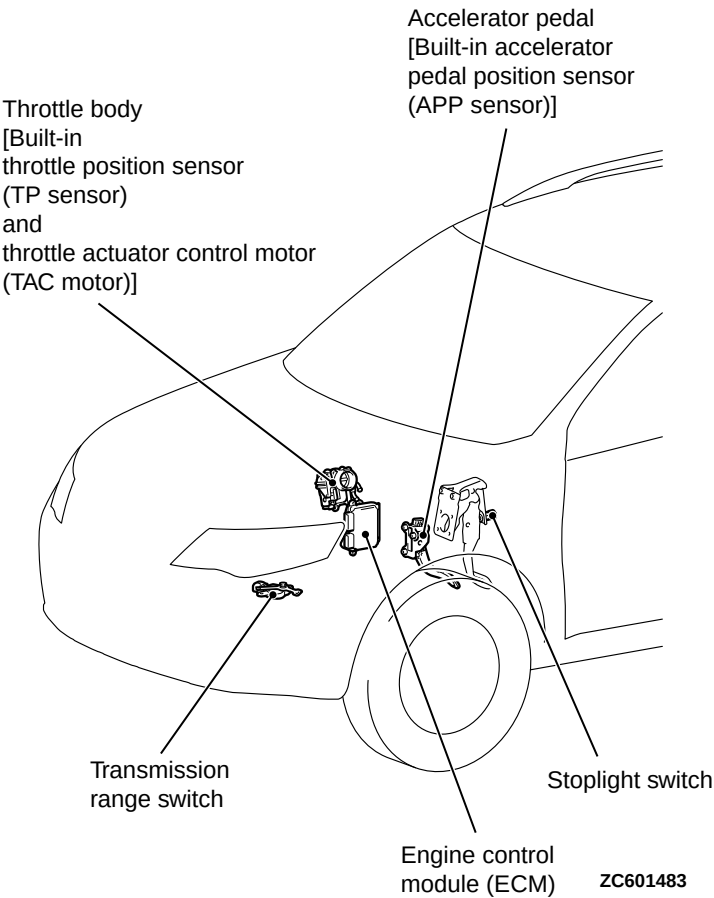
GENERAL INFORMATION

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By using the auto-cruise control, the driver can drive at preferred speeds in a range of approximately 40 to 160 km/h (25 to 100 mph) without depressing the accelerator pedal.

For this auto-cruise control system, in conjunction with the electronic throttle valve control system, the engine control module (ECM) electronically controls the throttle valve.

CONSTRUCTION DIAGRAM



ZC6014850000

COMPONENTS AND FUNCTIONS

Component		Function
Accelerator pedal position sensor (APP sensor)		Informs the ECM of the accelerator pedal depression.
"CRUISE" indicator light		The light is included in the combination meter and illuminates when the "ON OFF" switch is pressed (auto-cruise control system: ON).
Auto-cruise control switch	"ON OFF" switch	Power switch for auto-cruise control system.
	"ACC RES" switch	Vehicle speed is set with the "ACC RES" switch and "COAST SET" switch.
	"COAST SET" switch	
	"CANCEL" switch	Cancels the cruise speed setting.
Cancel system	Stoplight switch	- Because the constant speed driving is canceled by the brake operation, it detects the brake pedal status. - As for the stoplight switch, two built-in switches, the stoplight switch which is also used for the stoplight illumination and the brake switch which is used exclusively for the auto-cruise control, are integrated, and thus the reliability is enhanced.
	Transmission range switch	Because the constant speed driving is cancelled by the selector lever operation, it detects the "N" position.
Data link connector		If the M.U.T.-III scan tool is connected, the input check code from the ECM can be read.
Engine control module (ECM)		- Based on the input signal from each sensor and switch, it outputs the throttle opening instruction signal to the throttle actuator control motor (TAC motor). - Based on the input signal from each sensor and switch, it outputs the transaxle control signal to the TCM. - Based on the output shaft speed sensor signal from the TCM, it calculates the vehicle speed. - Outputs the ON/OFF signals of "CRUISE" indicator light and auto-cruise control system. - The diagnostic trouble code signal is sent to the "CRUISE" indicator light. - The input check code are sent to the data link connector.
Throttle actuator control motor (TAC motor)		The throttle valve opens and closes in response to the throttle angle control signal from the ECM.
Throttle position sensor (TP sensor)		Informs the ECM of the throttle valve opening angle.
Transaxle control module (TCM)		- Based on the transaxle control signal from the ECM, it controls the transaxle. - Outputs the signal from the transaxle output shaft speed sensor to the ECU.

CONSTRUCTION AND OPERATION

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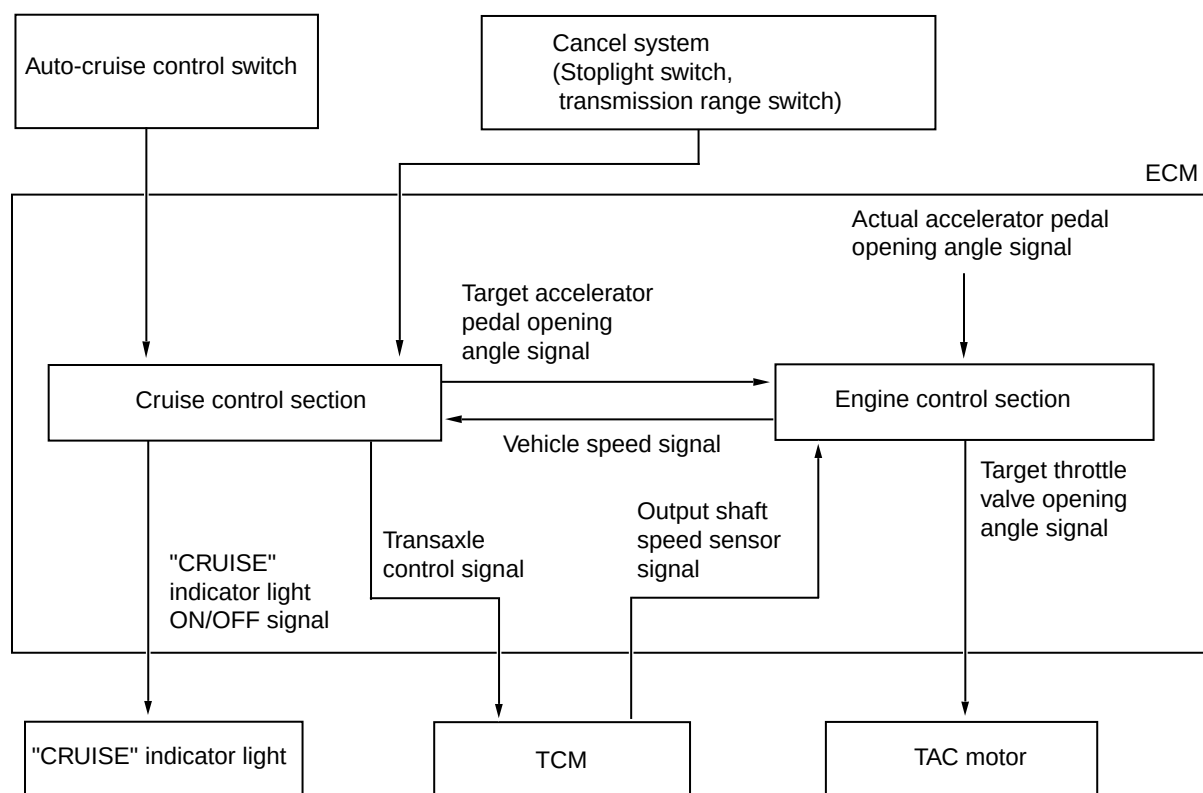
SYSTEM OUTLINE

The ECM calculates the auto-cruise control system operation status when the control section of the auto-cruise control system inside the ECM receives the input signals of the auto-cruise control switch, vehicle speed, and cancel system (stoplight switch and transmission range switch). To the engine control section it sends the target accelerator angle value for

auto-cruise control system; to the TCM it issues a command to transaxle control; and to the gauge it issues an ON/OFF command for the "CRUISE" indicator light.

In the engine control section, the target throttle angle value is calculated from the target acceleration value for auto-cruise control system and the actual accelerator angle value, and the vehicle speed is controlled by applying the TAC motor.

BLOCK DIAGRAM



ZC6014860000

SYSTEM FUNCTIONS

Set function

1. During driving with the vehicle speed range from approximately 40 to 160 km/h (25 to 100 mph), press the "COAST SET" switch, and then release the hand from the "COAST SET" switch.
2. The vehicle speed of when the "COAST SET" switch is released is memorized. Thereafter, the constant speed driving is performed at that vehicle speed.
3. When the "COAST SET" switch is operated during the driving with the vehicle speed of approximately

160 km/h (100 mph) or more, the constant speed driving will not be performed.

Coast function

1. When the "COAST SET" switch is continued to be pressed for 0.5 seconds or longer during constant speed driving, the throttle valve becomes fully closed while the switch is pressed, and the vehicle is decelerated.

2. When the "COAST SET" switch is released, the vehicle speed of that time is newly memorized. Thereafter, the constant speed driving is performed at that vehicle speed.
3. Also when the "COAST SET" switch is pressed for less than 0.5 seconds, the vehicle is decelerated 1.6 km/h (1 mph) from the vehicle speed of constant speed driving, and the decelerated vehicle speed is newly memorized. Thereafter, the constant speed driving is performed at that vehicle speed.
4. When the "COAST SET" switch is continued to be pressed and the vehicle speed is decelerated to approximately 40 km/h (25 mph) or less, the set function and coast function are cancelled, and then the constant speed driving is cancelled.

Resume function

1. When the "CANCEL" switch is pressed or the brake pedal is depressed during the constant speed driving, it cancels the constant speed driving.
2. Subsequently, when the "ACC RES" switch is pressed during the driving with the vehicle speed of approximately 40 km/h (25 mph) or more, the constant speed driving is performed with the vehicle speed memorized at the last cancellation of constant speed driving.

Accel function

1. When the "ACC RES" switch is continued to be pressed for 0.5 seconds or more during constant driving, it accelerates the vehicle with specified acceleration while the switch is pressed.
2. Then, when the "ACC RES" switch is released, the vehicle speed of that time is newly memorized. Thereafter, the constant speed driving is performed at that vehicle speed.
3. Also, when the "ACC RES" switch is pressed for less than 0.5 seconds, the vehicle is accelerated 1.6 km/h (1 mph) from the vehicle speed of constant speed driving, and the accelerated vehicle speed is newly memorized. Thereafter, the constant speed driving is performed at that vehicle speed.
4. It is possible to keep pressing the "ACC RES" switch until the vehicle speed is accelerated to approximately 160 km/h (100 mph) or above. However, after the "ACC RES" switch is released, the vehicle speed of approximately 160 km/h (100 mph) becomes the newly memorized vehicle speed. Thereafter, the constant speed driving is performed at that speed.

Cancel function

When any of the following conditions is satisfied, the constant speed driving will be cancelled.

- The auto-cruise control system is stopped by the pressing of the "ON OFF" switch.
- The "CANCEL" switch is pressed.
- The brake pedal is depressed.
- The select lever is shifted to the "N" position.
- The vehicle speed becomes 40 km/h (25 mph) or less.
- The vehicle speed is reduced 15 km/h (9 mph) or more from the speed at which the constant speed driving was started.
- An abnormality occurs to the vehicle speed signal.
- The ASC is operated.
- The engine coolant temperature becomes abnormally high.
- The A/T fluid temperature becomes abnormally high.
- An abnormality occurs to the ECM.

Fail-safe function

When any of the following conditions is satisfied, the auto-cruise control system function is stopped until the system returns to normal. Also, when any of the conditions is satisfied during the constant speed driving, the constant speed driving is cancelled immediately.

- An abnormality occurs to the auto-cruise control switch.
- An abnormality occurs to the stoplight switch.

When any of the following conditions is satisfied, stop the vehicle once and turn the ignition switch to "LOCK" (OFF). Otherwise, even when the system returns to normal, the auto-cruise control system function will continue to be stopped. Also, when any of the conditions is satisfied during the constant speed driving, the constant speed driving is cancelled immediately.

- ECM abnormality
- TP sensor abnormality
- APP sensor abnormality

Diagnosis function

- The diagnostic trouble code check is possible with the "CRUISE" indicator light.

- To facilitate the system check, check the service data output with the M.U.T.-III.

NOTE: For diagnostic items, service data output items, and check method, refer to the Service Manual.