CRUISE CONTROL SYSTEM

■ DESCRIPTION

- The cruise control indicators have been changed or added on the models with cruise control system.
- The dynamic radar cruise control system is newly available as optional equipment.

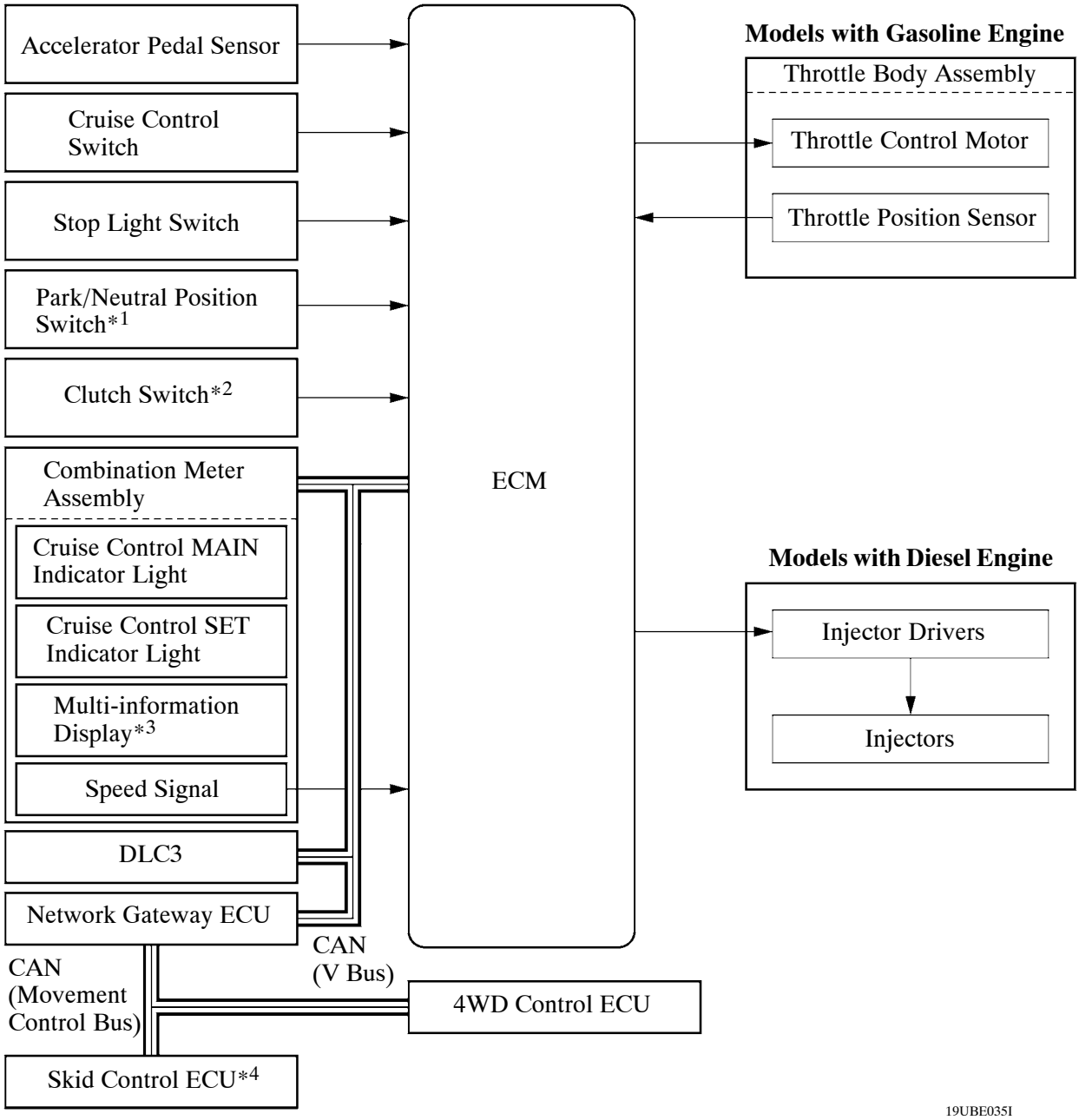
■ CRUISE CONTROL SYSTEM

1. General

The following items have been changed or added on the models with cruise control system:

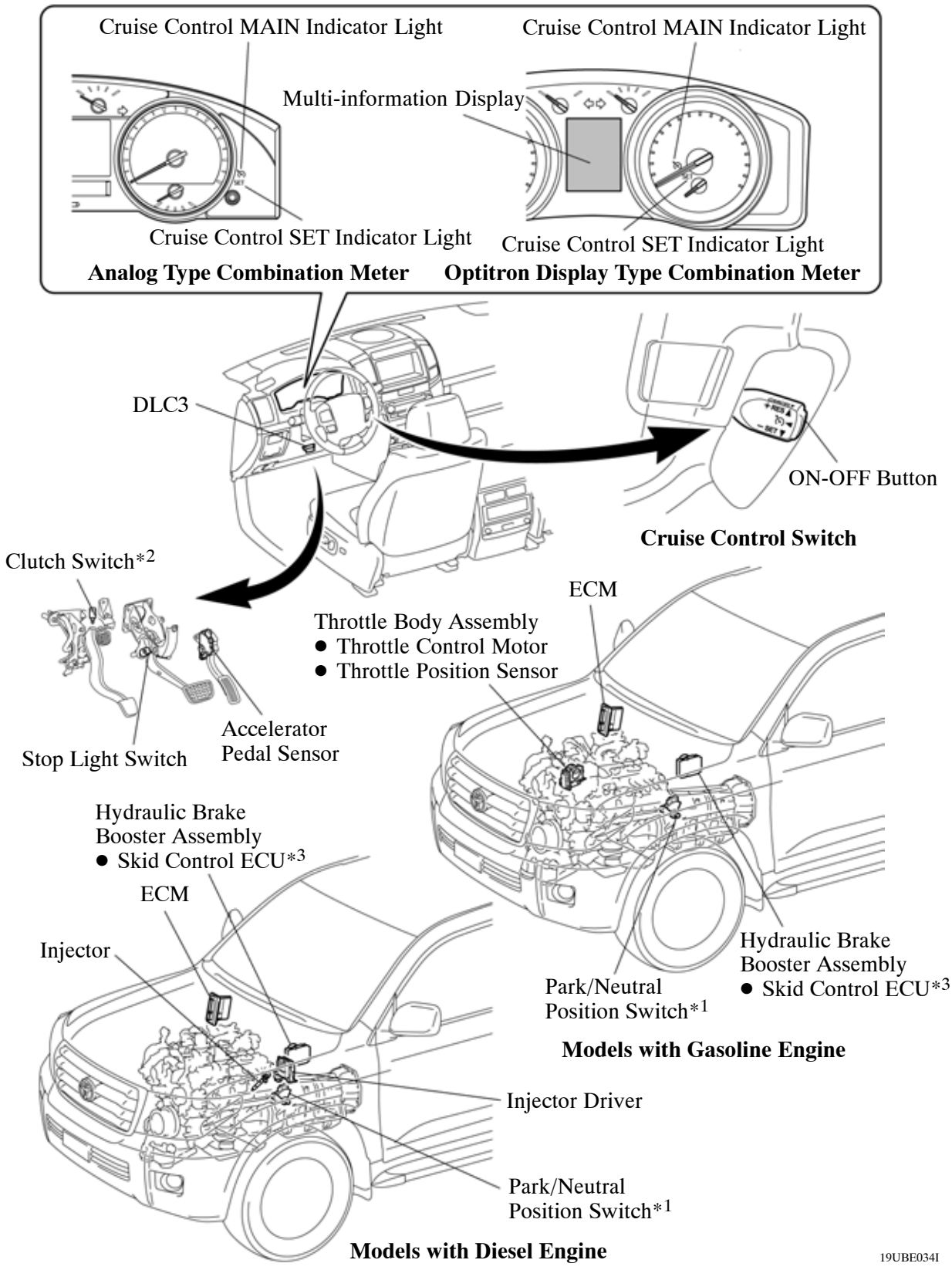
- The cruise control main indicator light has been changed from text type to symbol mark type.
- The cruise control SET indicator light has been added.
- On models with the Optitron display type combination meter, the warning operation which is displayed on the multi-information display has been added.
- In accordance with the addition of the cruise control SET indicator light, the cruise control system control has been partly changed.

▶ System Diagram ◀



*1: Models with automatic transmission
*2: Models with manual transmission
*3: Models with Optitron display type combination meter
*4: Models with VSC system

2. Layout of Main Components



*1: Models with automatic transmission
*2: Models with manual transmission
*3: Models with VSC system

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3. System Control

The cruise control has the following control:

Control	Outline	
Constant Speed Control	Gasoline Engine	The ECM compares the actual vehicle speed and the set speed. If the vehicle speed is higher than the set speed, the ECM activates the throttle control motor in the throttle closing direction. If the vehicle speed is lower than the set speed, the ECM activates the throttle control motor in the throttle opening direction.
	Diesel Engine	The ECM compares the actual vehicle speed and the set speed. If the vehicle speed is higher than the set speed, the ECM decreases the injection volume by regulating the injectors via the injector drivers. If the vehicle speed is lower than the set speed, the ECM increases the injection volume by regulating the injectors via the injector drivers.
Set Control	When this system fulfills the following conditions, and the cruise control switch is moved to the –SET side and released, the ECM stores the vehicle speed and illuminates the cruise control SET indicator light on the combination meter assembly and maintains the vehicle constantly at that speed. ● ON-OFF button on the cruise control switch is pressed. ● The vehicle is running at a vehicle speed of approx. 40 km/h (25 mph) or more.	
Low Speed Limit Control	The low speed limit is approx. 40 km/h (25 mph). If the vehicle speed drops below that speed while running in the cruise control, the cruise control will be canceled automatically. However, the set speed in the memory is kept.	
High Speed Limit Control	The high speed limit is a highest speed that cruise control mode can be set and is designed at approx. 200 km/h (125 mph). ● The cruise control mode 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.	
COAST (–) Switch Control	While the cruise control switch is held to the –SET side, the vehicle speed and the set vehicle speed change as follows: ● The vehicle decelerates constantly. ● The set vehicle speed changes to the speed as which the switch is released.	
Tap Down Control	When the cruise control switch is pushed momentarily (approx. 0.6 seconds) to the –SET side, the vehicle speed and the vehicle setting speed change as follows: ● The vehicle will decelerate in increments of approx. 1.6 km/h (1 mph) for each time the switch is pressed. ● However, if the difference between the actual vehicle speed and the vehicle setting speed is greater than 5 km/h (3 mph), the vehicle setting speed will change to the speed at which the vehicle was being driven at the time the switch was released.	
ACC (+) Switch Control	When the cruise control switch is pushed to the +RES side and held, the vehicle speed and the vehicle setting speed change as follows: ● The vehicle accelerates constantly. ● The set vehicle speed changes to the speed as which the switch is released.	
Tap Up Control	When the cruise control switch is pushed momentarily (approx. 0.6 seconds) to the + RES side, the vehicle speed and the vehicle setting speed change as follows: ● The vehicle accelerates in increments of approx. 1.6 km/h (1 mph) for each time the switch is pressed. ● However, if the difference between the actual vehicle speed and the vehicle setting speed is greater than 5 km/h (3 mph), the vehicle setting speed does not change.	

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Control	Outline
RES Switch Control	If the cruise control is canceled for any reason other than a malfunction (except cancellation by operating the ON-OFF button on the cruise control switch) and the vehicle speed is more than the low speed limit, the vehicle is returned to the speed set before the cancellation of cruise operation by moving the cruise control switch to the +RES side. The cruise control mode can be resumed even if the vehicle speed drops below the low speed limit, because the speed in the memory has not been cleared.
Shift Down Control*1	When the vehicle is cruising uphill, shift down control may be performed by the Electronic Control Transmission (ECT). If the gear has been shifted down, it will be shifted back up after a short time after the ECM judges that the upward slope has finished.
Manual Cancel Control	If any of the following signals is sent to the ECM, the cruise control is canceled accordingly. However, the set speed remains in the memory. ● Stop light switch on signal (the brake pedal is depressed.) ● Shift lever is shifted from D to N.*1 ● 1st, 2nd or 3rd range is selected in S mode position.*1 ● Clutch switch OFF signal (the clutch pedal is depressed.)*2 ● CANCEL switch on signal (the cruise control switch moved to CANCEL side.) ● Cruise control switch (ON-OFF button) off signal (the set speed in the memory is cleared.)
Automatic Cancel Control	When any of the following conditions occur during cruise control driving, the speed that is set in the memory is cleared and the cruise control is canceled: ● Stop light switch open or short circuit ● Vehicle speed signal malfunction Furthermore, the cruise control main indicator light will turn off*3 or change color*4 (green to yellow) until the ON-OFF button on the cruise control switch is used to turn the system off, and the operation of the cruise control will be disabled until the ON-OFF button is turned on again. At this moment, [CHECK CRUISE CONTROL SYSTEM] is displayed on the multi-information display on models with Optitron display type combination meter.
	When any of the following conditions occur during cruise control driving, the speed that is set in the memory is cleared and the cruise control is canceled. ● Throttle body assembly malfunction (models with gasoline engine). ● Fuel injector malfunction (models with diesel engine). Furthermore, the cruise control main indicator light will turn off until the ON-OFF button on the cruise control switch is used to turn the system off, and the operation of the cruise control will be disabled until the ON-OFF button is turned on again.
	When any of the following conditions occur during cruise control driving, the speed that is set in the memory is cleared and the cruise control is canceled: ● Stop light switch input signal is abnormal. ● Cancel circuit is malfunctioning. ● ECM circuit is malfunctioning (on models with 1VD-FTV engine). Furthermore, the cruise MAIN indicator light will turn off*3 or change color*4 (green to yellow) until the ON-OFF button on the cruise control switch is used to turn the system off, and the operation of the cruise control will be disabled until the power source is turned off. At this moment, [CHECK CRUISE CONTROL SYSTEM] is displayed on the multi-information display on models with Optitron display type combination meter.
	When the following condition occurs during cruise control driving, the speed that is set in the memory is cleared and the cruise control is canceled: ● Vehicle speed decreases by approx. 16 km/h (10 mph) or more below the speed at which the cruise control was set.

(Continued)

Control	Outline
Automatic Cancel Control	When the following condition occurs during cruise control driving, the cruise control is canceled. However, the set speed remains in the memory. ● Vehicle speed is below the low speed limit (approx. 40 km/h [25 mph]).
	When the VSC is activated, the cruise control is canceled. However, the set speed remains in the memory.*5
	The switching operation of the center differential lock is not available.

*1: Models with automatic transmission
*2: Models with manual transmission
*3: Models with Optitron display type combination meter
*4: Models with analog type combination meter
*5: Models with VSC system

4. Diagnosis

If a malfunction occurs in the cruise control system during cruise control operation, the ECM actuates the automatic cancel control and turns off the cruise control main indicator light. Then, the multi-information display in the combination meter displays "**CHECK CRUISE CONTROL SYSTEM**" warning message to inform the driver of a malfunction during cruise control. At this time, the ECM memorizes the malfunction in the form of 5-digit and 2-digit Diagnostic Trouble Codes (DTCs).

- The 5-digit DTC can be read by connecting an intelligent tester II to the DLC3.
- For details, see the Repair Manual.