VEHICLE GENERAL

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VEHICLE GENERAL

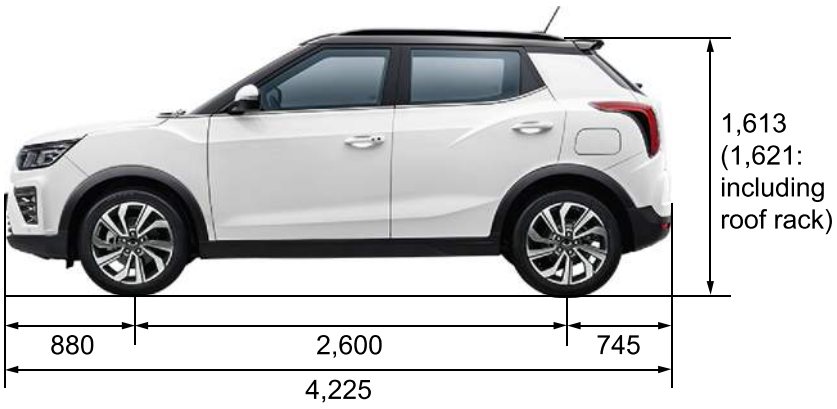
1. SPECIFICATIONS AND IDENTIFICATION

1) Exterior Dimensions

Unit: mm

Top view

Side view

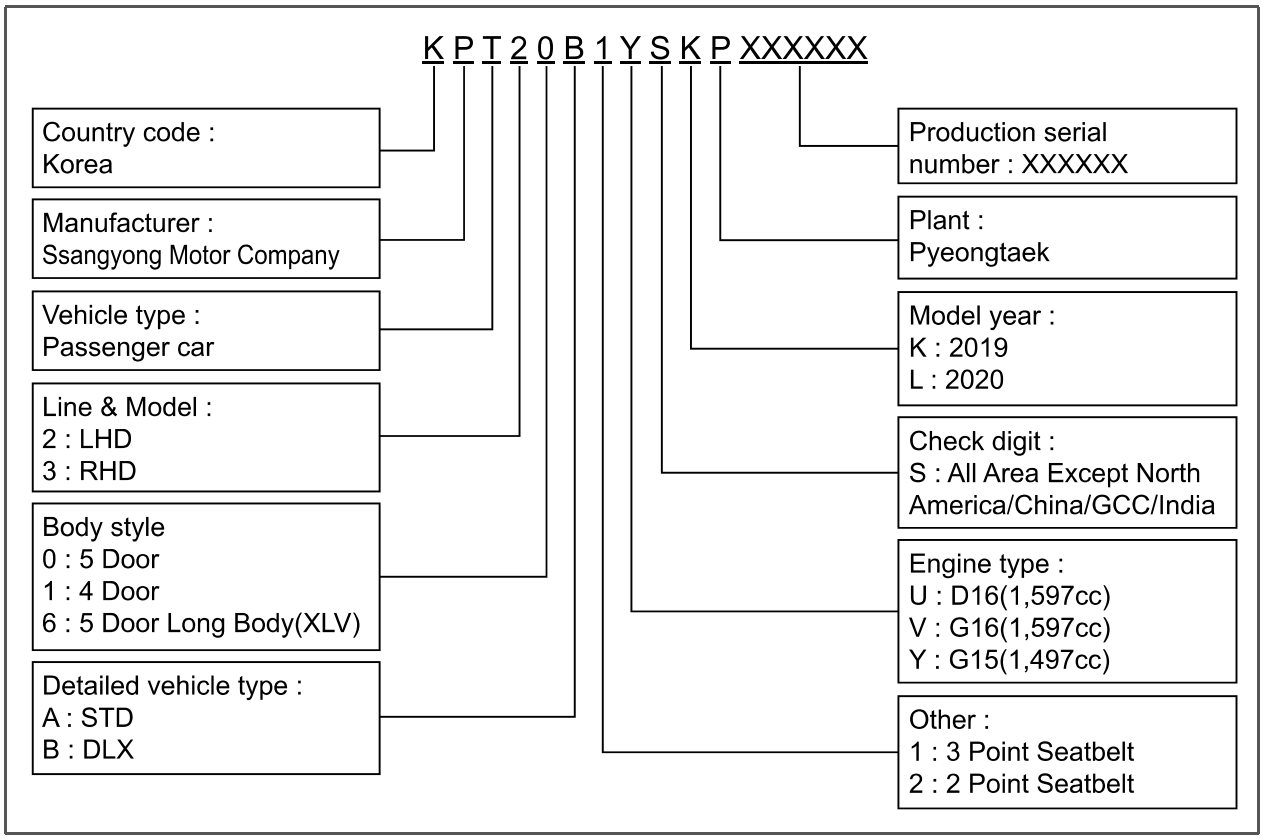


Front view

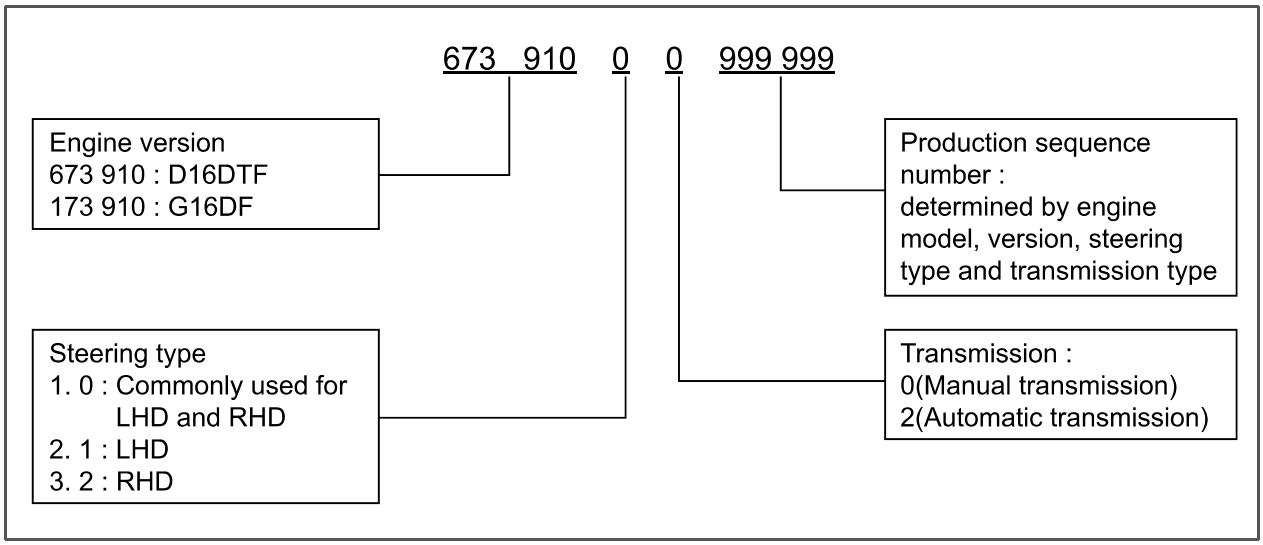
Rear view

Modification basis	
Application basis	
Affected VIN	

▶ Vehicle identification number



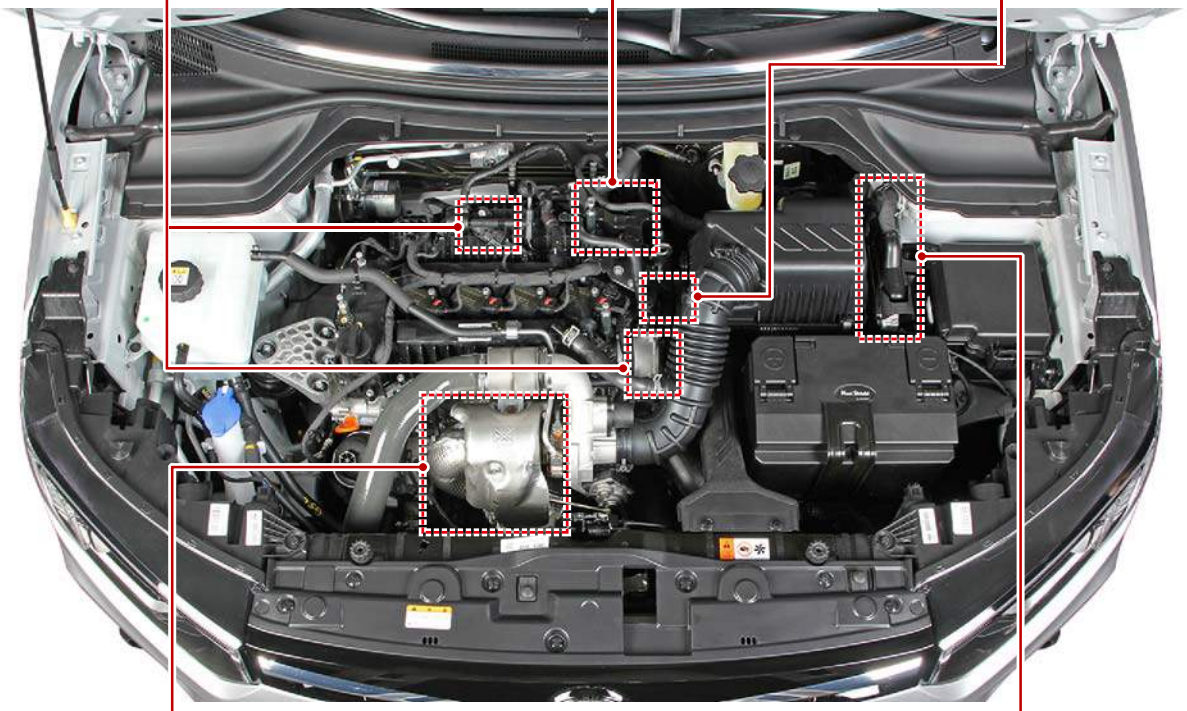
▶ Engine identification number



Modification basis	
Application basis	
Affected VIN	

2. COMPONENTS

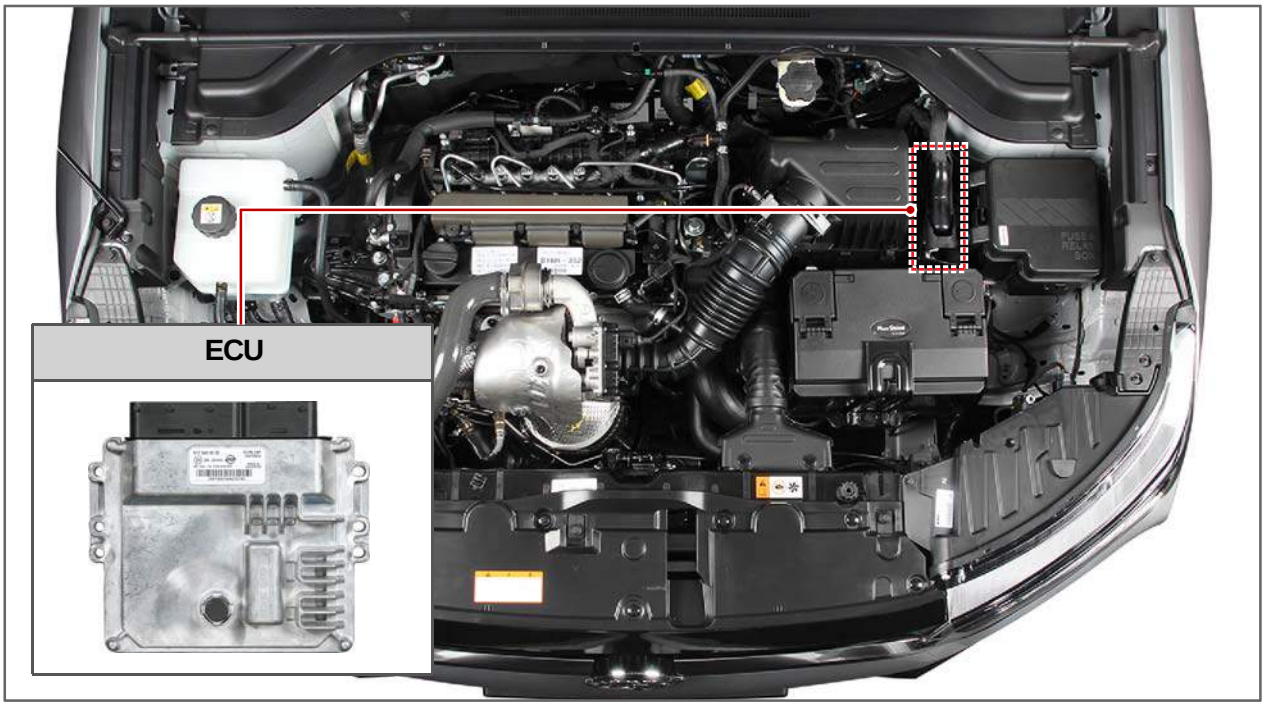
T-MAP sensor	Electric throttle body	Coolant temperature sensor
		



eWGA turbocharger	Accelerator pedal sensor	Engine ECU
		

5. ECU OPERATING

1) Overview & Mounting Location



The engine ECU is a main unit for controlling the ISG system. It receives information from the sensors on the engine and vehicle including the BSC as well as other units, and checks whether the ISG STOP is possible or not. If the conditions are met, it stops the engine.
In addition, in respect to the alternator control, the generating voltage is temporarily reduced during acceleration depending on the driving conditions, and the battery discharge is induced by the reduced voltage, thereby increasing the fuel efficiency and efficiency by lowering the vehicle load. Besides, it increases the generating capacity to charge the battery capacity consumed during deceleration.

2) Voltage Control

Loading condition		Control state	Alternator voltage
Headlamp (LO/HI)		Fixed control	Fixed at 14.7 V
Blower motor	Maximum speed	Fixed control	Fixed at 14.7 V
Rear glass defogger		Fixed control	Fixed at 14.7 V
Wiper	Low speed	Normal control	-
	High speed	Fixed control	Fixed at 14.7 V

Modification basis	
Application basis	
Affected VIN	

18. ACCELERATOR PEDAL MODULE CONTROL

1) Kick Down Switch

This switch prevents loud engine noise and deterioration of fuel efficiency due to increased rpm and slipping on a slippery surface by inhibiting unintentional downshift when rapidly accelerating.

NOTE

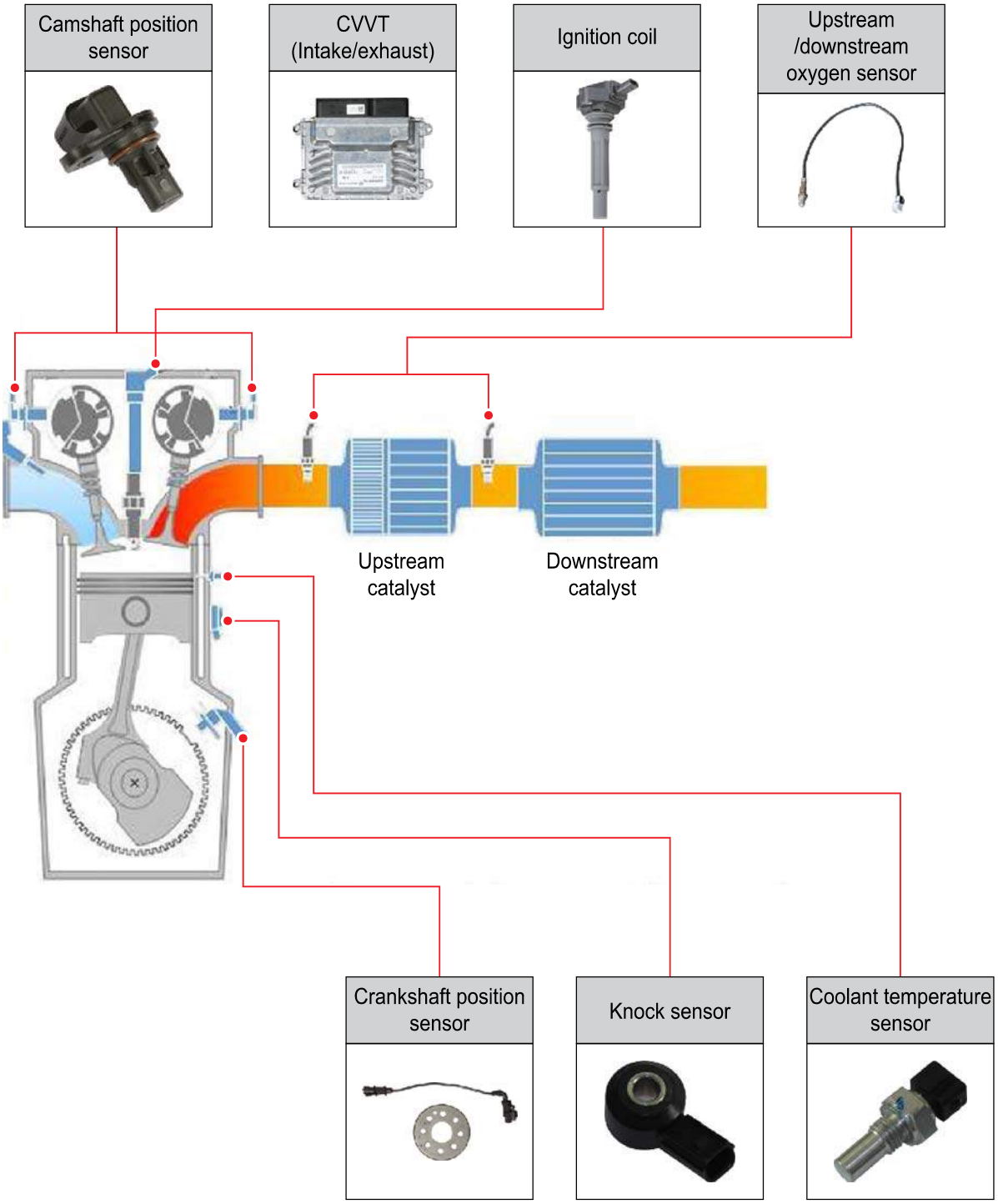
The kick down switch is a dummy switch which is not connected to wirings.

	Accelerator pedal 1	Accelerator pedal 2
Full resistance of potentiometer (IDLE)	1.2 kΩ ± 20%	1.7 kΩ ± 20%
Service check	+ Measure the component resistance. + Depress the pedal with the component removed to check if the resistance changes continuously.	

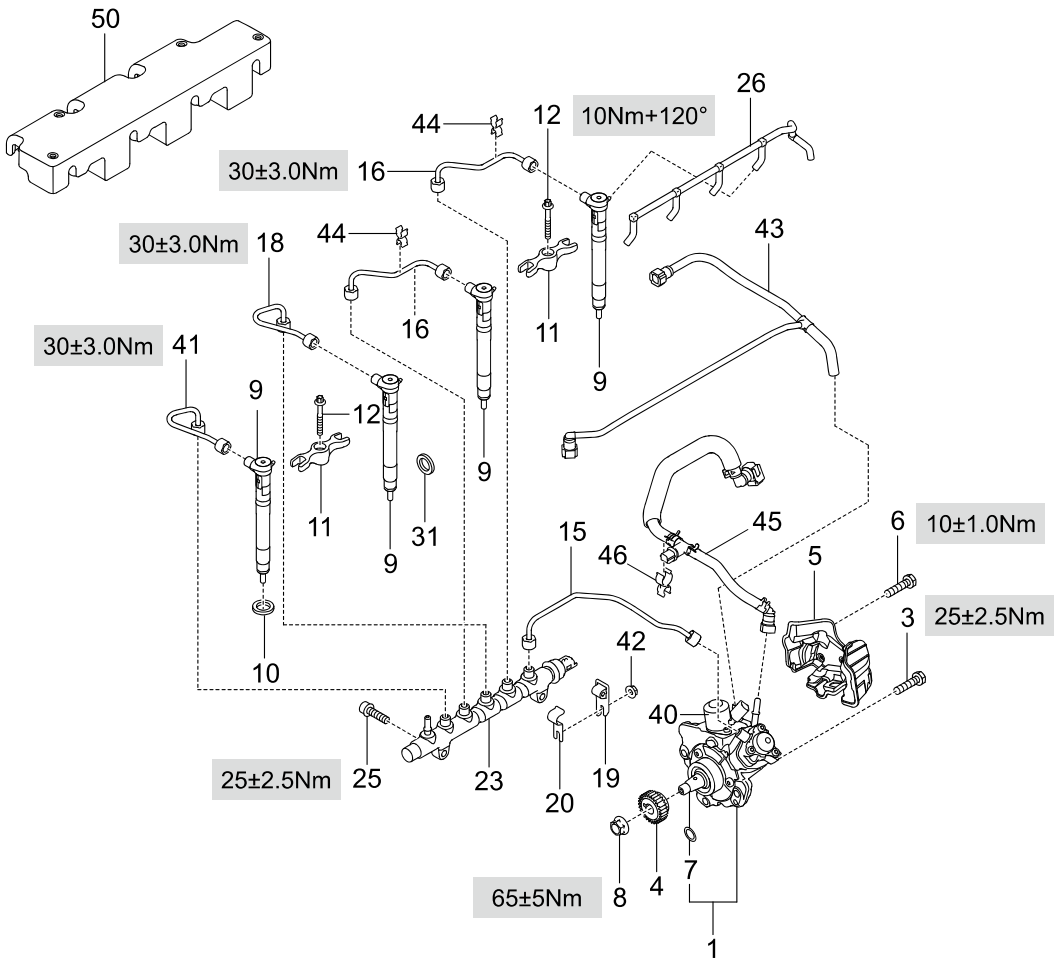
	Pedal position	Specification
Accelerator pedal 1	Idle	1V ± 1%
	Accelerator pedal fully depressed	4.2V ± 2.6%
Accelerator pedal 2	Idle	0.5V ± 0.5%
	Accelerator pedal fully depressed	2.1V ± 1.3%

▶ **Fail-safe in the event of accelerator pedal failure**

If a fault occurs in one of signals No. 1 and No. 2 from the accelerator pedal sensor, the system will use the normal accelerator pedal signal instead of the implausible signal. At this time, the throttle valve opening amount is limited and opening of the throttle valve is carried out slowly with dynamic limiting. When a fault occurs, the engine torque is limited.


Camshaft position sensor
CVVT (Intake/exhaust)
Ignition coil
Upstream /downstream oxygen sensor
Upstream catalyst
Downstream catalyst
Crankshaft position sensor
Knock sensor
Coolant temperature sensor

▶ 1883 COMMON RAIL SYSTEM(D16DTF)



1. PUMP ASSY-FUEL
3. BOLT
4. GEAR-FUEL PUMP
5. COVER-FUEL PUMP
6. BOLT
7. O RING-FUEL PUMP
8. NUT-GEAR MTG
9. INJECTOR ASSY-FUEL
10. WASHER
11. CLAMP-INJECTOR
12. BOLT-INJECTOR
15. PIPE ASSY-FUEL
16. PIPE ASSY-FUEL
18. PIPE ASSY-FUEL
19. BRKT ASSY-FUEL PIPE
20. BRKT-FUEL PIPE UPR
23. RAIL ASSY-FUEL
25. BOLT
26. TUBE ASSY-FUEL RETURN
31. RING-O
40. VALVE-INLET METERING
41. PIPE ASSY-FUEL
42. NUT
43. HOSE & TUBE ASSY-FUEL RETURN
44. HOLDER-TUBE
45. HOSE ASSY-FUEL SUPPLY
46. HOLDER-TUBE
47. CORRUGATED TUBE-FUEL HOSE RR
48. HOLDER KIT-FUEL HOSE
50. INSULATION-INJECTOR

Modification basis	
Application basis	
Affected VIN	

8. SCR DRIVER ALERT SYSTEM

1) Classification

The driver alert system is activated by 5 different factors (urea level, urea dosing, urea dosing system, incorrect urea, SCR efficiency) and is classified into 2 types according to the judgment process.

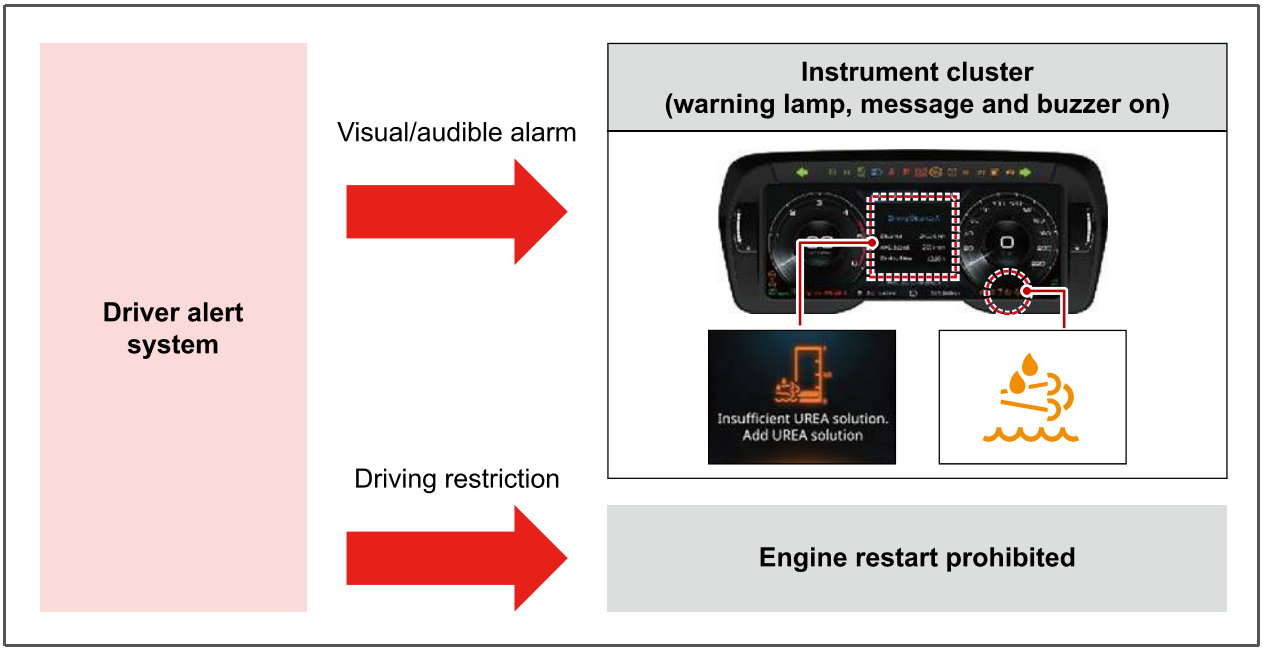
Type 1 (Low urea level)

- Urea level: Depleted urea in tank

Type 2 (SCR system failure)

- Urea dosing: implausible urea consumption
- Urea dosing system: malfunction detected
- Incorrect urea: incorrect urea used
- SCR efficiency: low SCR efficiency

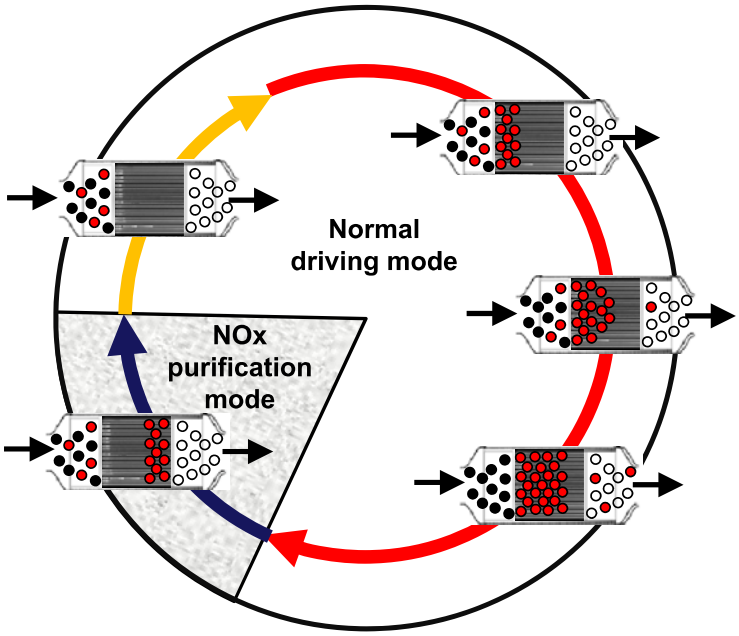
If any abnormality is detected in the above classification, the driving restrictions can be activated as a form of "Impossible to restart engine after a period of time". If driving restrictions are activated, number of times of engine restart or drivable distance can be restricted. (However, engine start by the vehicle control system does not apply, such as ISG (Idle Stop & Go).)
If driving restrictions are activated and the engine can't be restarted, replenish at least 10 liters of urea for automatic initialization for type 1. For type 2, rectify the failure cause and initialize the system using a diagnostic device. (However, drive the vehicle for a certain distance (up to 50 km) to see if the action is appropriate. If the failure recurs, driving restrictions will be reactivated immediately.)



5) LNT System Control

▶ Overview

The LNT (Lean NOx Trap) cleans the CO and HC in the exhaust gas and stores the NOx generated in air fuel ratio lean (normal driving) condition in the LNT catalyst system to reduce the NOx. If the absorbed NOx is saturated, the LNT converts NOx into N_2 by allowing post-injection to achieve rich condition (supplying reductant).
The catalyst consists of Pt, Pd, and Rh with enhanced heat resistant in addition to Ba which is NOx adsorption material.



- Normal driving mode (lean): Oxidization of NOx (absorption)
- NOx reduction mode (rich): Desorption of NOx by post-injection

- Normal driving mode (lean)

Normal driving mode with lean condition leads to higher NOx than CO and HC in all speed ranges. The NOx is adsorbed on the catalyst film containing materials including Pt, Pd, and Ba.

- NOx reduction mode (rich)

In rich condition, post-injection is carried out for reduction of the NOx adsorbed on the LNT.

10. TGS LEVER

1) Overview

The TGS lever changes the automatic transmission gear to the driver's desired driving condition (Park/Reverse/Neutral/Forward). When the TGS lever is in manual mode, the driver can shift gear speed (1st to 6th gear) directly.
Two safety functions have been installed; P Lock function which allows the driver to shift gears only when the brake pedal is depressed with the lever in "P" position and R Lock function which the driver can not shift the lever from "N" position to "R" position. The P lock and R lock functions can be deactivated by pressing the knob button.

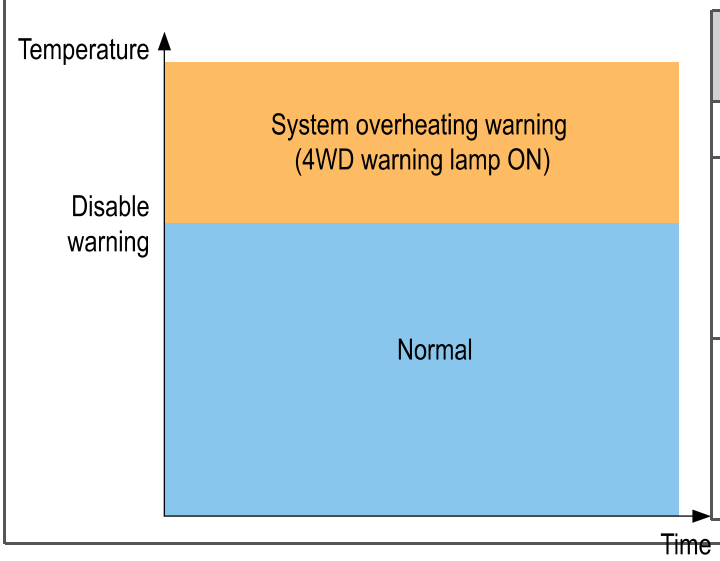
2) Mounting Location & Components

Modification basis	
Application basis	
Affected VIN	

4. MAJOR FUNCTIONS

1) Overheating Protect For E-coupling

The E-coupling control unit calculates the E-coupling's slip (input/output speed), ambient temperature, magnetic coil resistance and etc. to protect the oil and clutch plate from being overheated. If the E-coupling get too hot, the E-coupling control unit reduces the torque to the rear wheels and sets a diagnostic trouble code (DTC).



Overheating reference temperature (℃)		
Initial temperature		25
Oil	Overheating warning	140
	Warning released	115
Clutch plate	Overheating warning	200
	Warning released	160

If the oil temperature in the E-coupling is above 140°C or the temperature of the clutch plate is above 200°C, the warning lamp comes on which indicates the system has been overheated. If the oil temperature drops below 115°C or the clutch plate temperature drops below 160°C, the warning will be released.

2) Parking Brake Logic

If the rear wheels are not rotating correctly while driving with the parking brake applied, the E-coupling control unit calculates the difference between the CAN signals on wheel speed to reduce the torque to the rear wheels.

3) Detecting Tire Out Of Specification

When a tire out of specification such as the spare tire is installed, the E-coupling control unit calculates the difference between the CAN signals on wheel speed to detect that the wrong tire has been installed. At this time, it reduces the torque to the rear wheels and sets a diagnostic trouble code (DTC).

Modification basis	
Application basis	
Affected VIN	

2. COMPONENTS

AUTO light sensor

Headlamp leveling switch

Outside turn signal lamp

Front fog lamp

LED

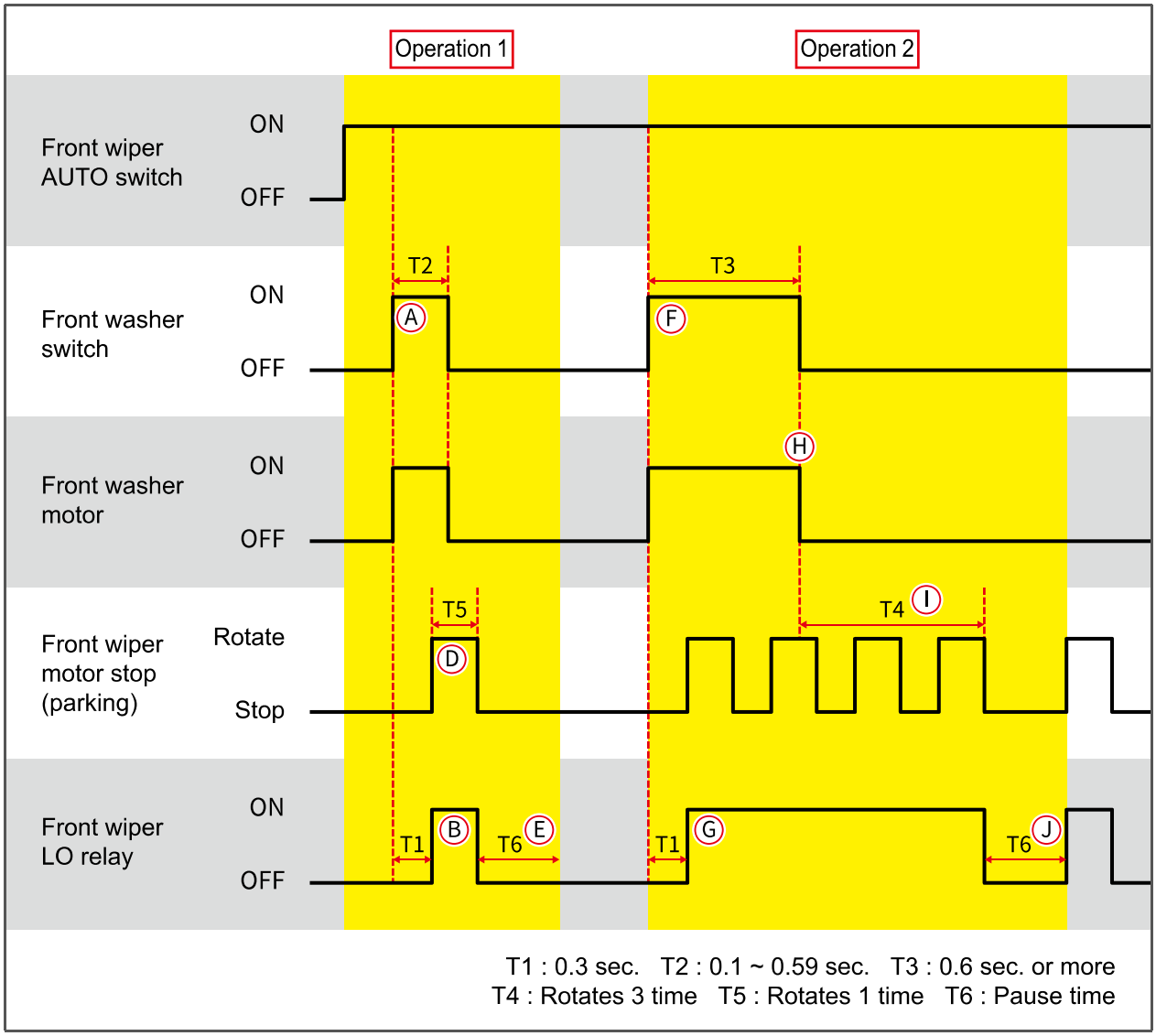
Bulb

Headlamp

LED

Bulb

Modification basis	
Application basis	
Affected VIN	



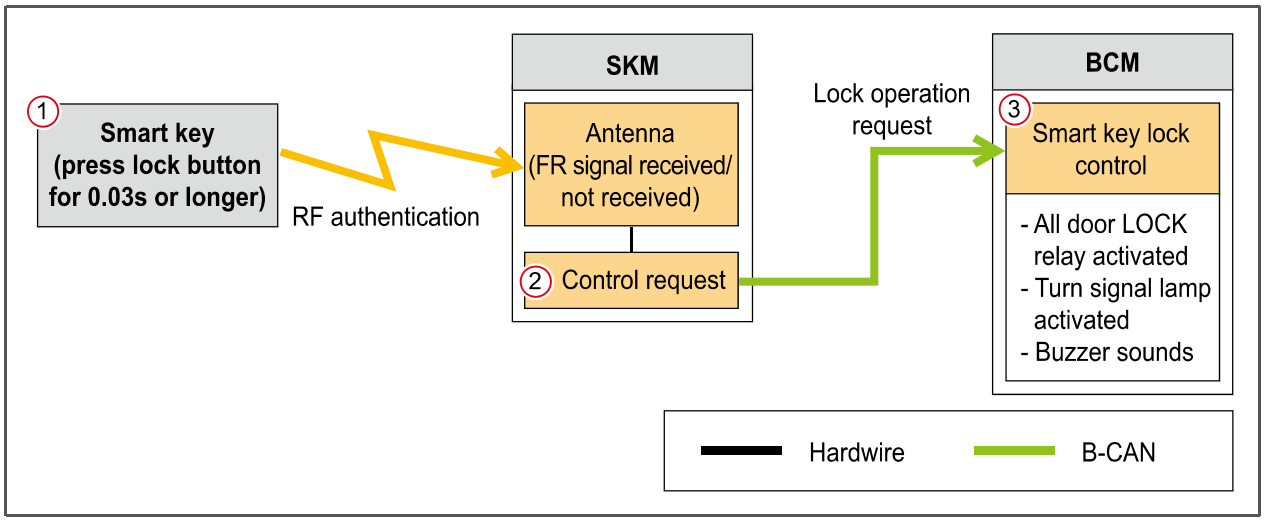
T1 : 0.3 sec. T2 : 0.1 ~ 0.59 sec. T3 : 0.6 sec. or more
T4 : Rotates 3 time T5 : Rotates 1 time T6 : Pause time

NOTE

- If the parking signal is not detected for more than 5 seconds during front washer interlocked wiper operation, the wiper will return to previous operation mode.
- When the washer switch signal input is activated during windshield wiper LO/HI operation, the washer relay is activated as long as the signal is received. If the washer switch input is shut off, then the system returns to the windshield wiper LO/HI operation.

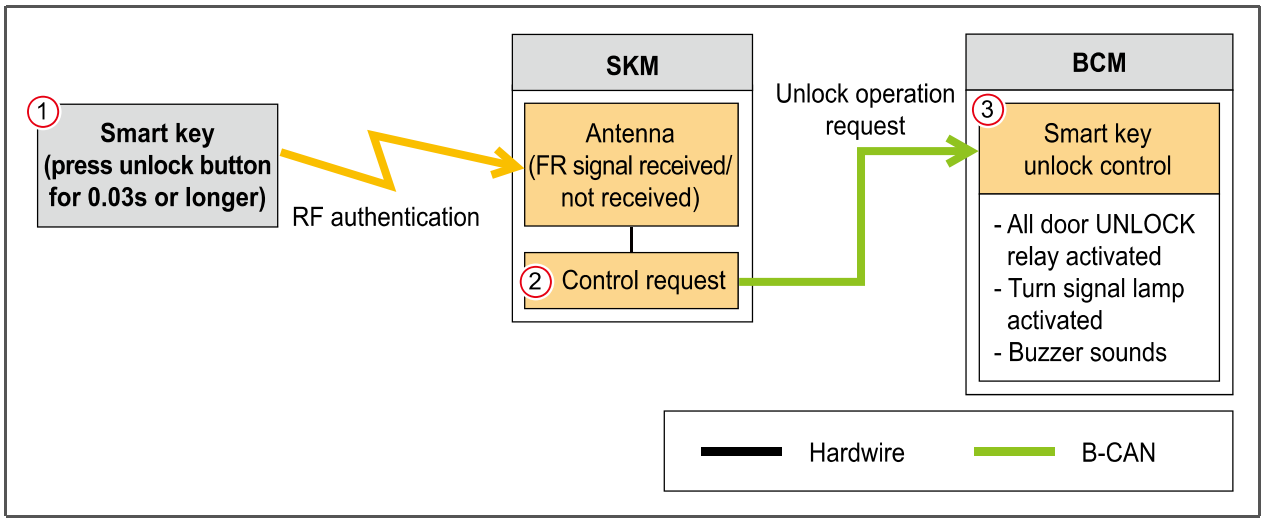
Modification basis	
Application basis	
Affected VIN	

▶ Smart key lock



1. Press LOCK button on the smart key for more than 0.03 sec to send smart key lock signal
2. When SKM receives smart key LOCK signal, it sends smart key LOCK request signal to BCM
3. BCM outputs door LOCK

▶ Smart key unlock



1. Press LOCK button on the smart key for more than 0.03 seconds to send REKES lock signal
2. The SKM receives the REKES UNLOCK signal and sends the REKES UNLOCK request signal to the BCM.
3. The BCM activates the door UNLOCK.

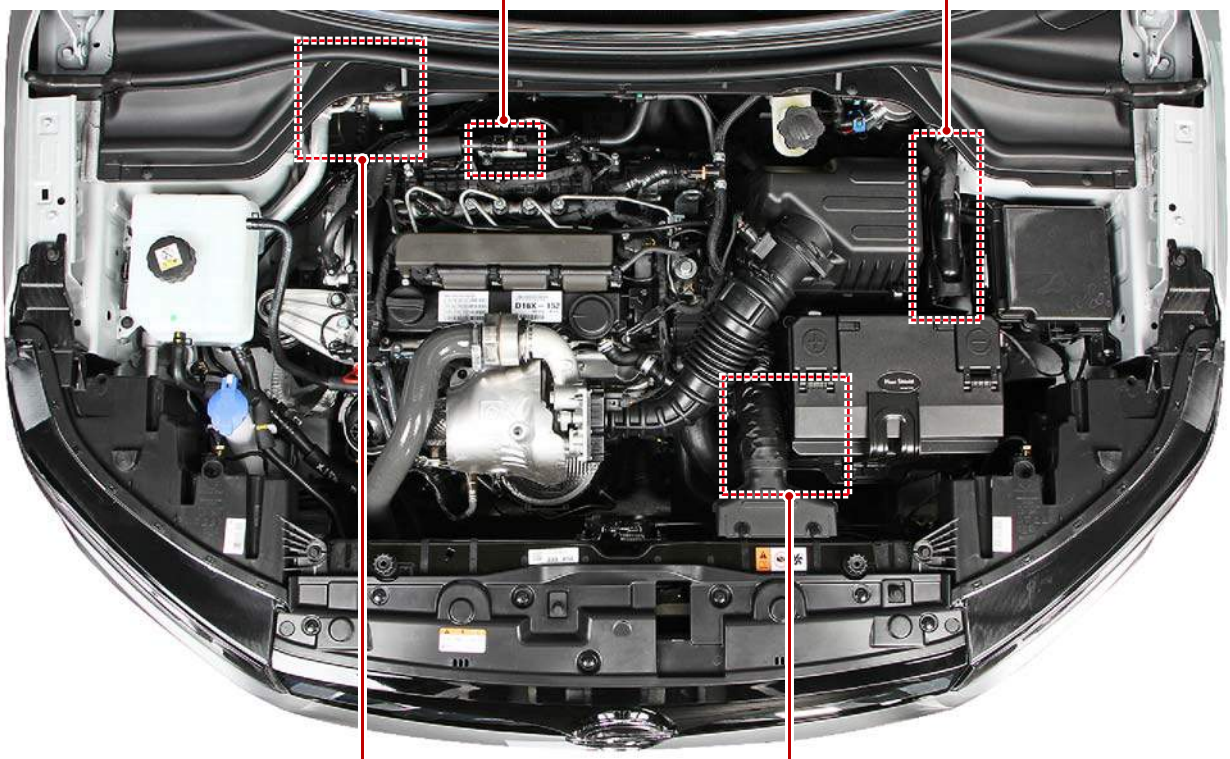
Modification basis	
Application basis	
Affected VIN	

2. COMPONENTS

▶ ENGINE COMPARTMENT

GCU

ECU



ESP

TCU

Modification basis	
Application basis	
Affected VIN	