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# IDLE STOP AND START SYSTEM

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## GENERAL INFORMATION

### Overview

#### Description

Under the precondition of ensuring the safety and comfort of user, the engine will stall automatically in the event of red light or a traffic jam. When driver has a intention for starting off, the system will start the engine automatically. It can reduce the idle fuel consumption and emission.

#### Function Definition

##### Stop and Start Function ON/OFF

When the key is power-on, default setting for stop and start function is ON. Stop and start function main button (touch type) is located on A/C control panel. With key is power-on, each time the driver presses the main button, stop and start function will switch between ON and OFF. When stop and start function is turned off, the vehicle runs like a vehicle without stop and start function.

When the stop and start system is operating properly, it can stop the engine automatically during idling and start the engine automatically during starting off while conditions are met. Stop and start system operation does not affect the driver's safety and normal operation of other vehicle's systems (A/C system, brake system, entertainment system, etc. are not affected).

##### Installation Position of Stop and Start Function Main Button

Stop and start function main button is installed on A/C control panel (arrow).

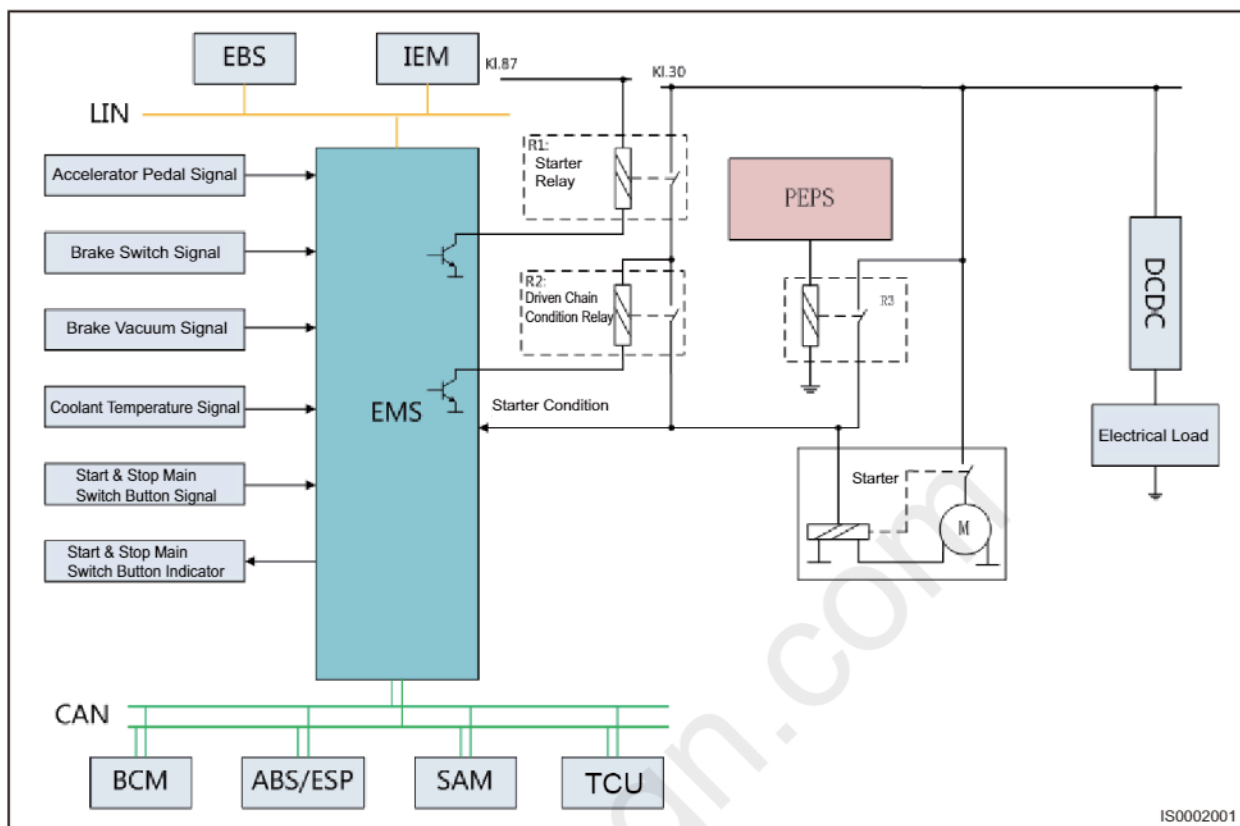


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## Stop and Start System Structure Diagram

### 1. Stop and start system structure diagram of AT models



## Auto Stop Function

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1. Engine can be stopped automatically when auto stop conditions are met. Auto stop conditions include the followings:
  - (a) After the vehicle is power-on and driving for a period of time, the stop and start function is activated for the first time (the yellow stop and start indicator on instrument cluster goes off).
  - (b) After the last starting off or turning at a large angle (more than  $270^\circ$ ), the vehicle speed has reached 15 km/h (steering angle and vehicle speed settings vary depending on models).
  - (c) The current steering angle of steering wheel does not exceed  $270^\circ$  (steering angle setting varies depending on models).
  - (d) Driver side door is closed and the seat belt is fastened.
  - (e) The hood is closed.
  - (f) A/C is not turned on.
  - (g) Not in high attitude area.
  - (h) The vehicle speed has dropped to 0.
  - (i) The system does not detect other conditions that are not allowed to stop the engine.
  - (j) Trigger conditions for stopping engine should be met:
    - AT models: Accelerator pedal is fully released, brake pedal is depressed and gear position is in D/M or P/N.
    - MT models: Gear position is in N, accelerator pedal and clutch pedal are fully released.

## Auto Start Function

1. When in auto stop state, engine can start automatically when auto start conditions are met. Auto start conditions include the followings:
    - (a) Driver side door must be closed;
    - (b) Driver seat belt must be fastened;
    - (c) The hood must be closed;
    - (d) Gear position must be in N (only for MT models);
    - (e) The system does not detect other conditions that are not allowed to start the engine;
    - (f) Any of the following driver trigger conditions should be met:
      1. Start when accelerator pedal is depressed.
      2. Starting will be triggered when driver turns the steering wheel more than 6° (steering angle setting varies depending on models).
      3. Starting will be triggered when A/C is turned on.
      4. Starting will be triggered when stop and start function is turned off with stop and start function main button.
- AT models**
- Engine will start when brake pedal is depressed with gear position in N and brake pedal not depressed.
  - Engine will start when brake pedal is depressed with gear position in P and brake pedal not depressed.
  - If gear position is in D/M and brake pedal is not released after engine is stopped, it will start when brake pedal is released.
  - Engine will start when shifting to R position.
  - Engine will start when shifting to D position with gear position in P/N and brake pedal not depressed.
- MT models**
- Engine will start when clutch pedal is depressed.
  - Engine will start when accelerator pedal is depressed.
5. When stop and start system detects that any of the following self-trigger conditions are met, engine will start automatically:
    - Starting will be triggered when coasting on a slope.
    - Starting will be triggered when battery is weak.
    - Starting will be triggered when brake vacuum is insufficient.
    - Starting will be triggered when auto stop time exceeds 3 minutes.



### Stop and Start State Meter Display Information Function

The stop and start system sends corresponding information to instrument cluster according to the current different stop and start state, and the instrument cluster provides user with current stop and start state information through the combination of indicator and reminder text, as shown in the following table:

| No. | Display State | Main Button Indicator State             | Instrument Cluster Indicator State             | LCD Reminder                           | Description                                                                                                                                                    |
|-----|---------------|-----------------------------------------|------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | State 1       | Main button indicator comes on (yellow) | Instrument cluster indicator does not come on  | /                                      | Turn off the idle stop and start system manually                                                                                                               |
| 2   | State 2       | Main button indicator does not come on  | Instrument cluster indicator does not come on  | /                                      | Stop and start function has been activated, and it is in standby mode during normal operation                                                                  |
| 3   | State 3       | Main button indicator does not come on  | Instrument cluster indicator blinks            | Please check the stop and start system | Stop and start system is not turned off manually, but it is disabled as malfunction in current system has not been repaired                                    |
| 4   | State 4       | Main button indicator does not come on  | Instrument cluster indicator comes on (yellow) | /                                      | Stop and start system first activation is not completed                                                                                                        |
| 5   | State 5       | Main button indicator does not come on  | Instrument cluster indicator comes on (yellow) | Please start the engine manually       | Stop and start system is not turned off manually, but the engine should be started manually as the system cannot determine whether the safety condition is met |

## ON-VEHICLE SERVICE

### Stop and Start Function Main Button

#### Removal

1. Turn ENGINE START STOP switch to OFF and disconnect the negative battery cable.
2. Remove the A/C control panel.

- (a) Remove A/C control panel (1) with an interior crow plate.



- (b) Unplug the rear connector (arrow) of panel and remove the panel (1).



3. Disconnect the A/C control panel connector.

#### Installation

1. Installation is in the reverse order of removal.

##### Caution:

- Be sure to install the upper fixing clip of A/C control panel assembly in place when installing.
- Be sure to align the upper dowel pin of A/C control panel assembly with the locating hole on instrument panel when installing.

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