

ISG SYSTEM (Idle Stop and Go System)

0000-00

GENERAL INFORMATION

1. SPECIFICATIONS

| Unit | Description | Specification |
|----------------------------|-------------------------------------|--|
| Alternator | Rated output | 120 A (13.25 V) 70 A/2,000 rpm, 99 A/4,000 rpm, 103 A/6,000 rpm |
| Battery | Capacity | AGM 70 Ah |
| | Reserve capacity | 110 minutes |
| | Starting current (when engine cold) | 760 A |
| | Weight | 21 Kg |
| BSC (Battery Sensor Cable) | Operating current | Maximum 20 mA |
| | Dark current | Maximum 0.35 mA |
| | Operating voltage | 9~18 V |
| | Operating temperature | -30~110°C |
| | Communication | LIN 2.0 |
| Starting motor | Rated voltage | 12 V 1.4 kw |
| | Solenoid operating voltage (V) | Max. 8V |
| | Motor output (11.5 V at unloaded) | Max. 100 A/min. 3,400 rpm |
| | Motor output (8.0 V under load) | 370 A (min. 7.6 Nm)/min. 1,300 rpm |
| | Weight | 3.3 kg |
| DC-DC Converter | Conversion Mode | Input voltage: 7~12 V Output voltage: 12 ± 1 V |
| | By Pass Mode | Input voltage: 9~16 V Output voltage: 9~16 V |
| | Operating temperature | -30~75°C |
| ISG OFF switch | Rated voltage | 12 V at 50 mA |
| | Operating temperature | -30°C ~ +80°C |
| | Rated load | 12 V - 50 mA |

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| Modification basis | |
| Application basis | |
| Affected VIN | |

2. CAUTIONS

CAUTION

- When ISG system is in operation, some warning lights (ABS, brake, ESP, ESP OFF) maybe turn on due to a momentary loss of current when you restart the engine. This is normal and not systems malfunction.
- When the engine stopped automatically, if you unfasten the seat belt or, the door or hood is open, the engine will not start automatically for safety, instead the warning buzzer will sound. If this happens, you must use your REKES key/Smart key (if equipped) to start the engine. ISG system does not operate on a sloped road, because a quick acceleration or slip can occur.
- This is normal for your safety, and not system malfunction.
External navigation without battery built in could be reset upon auto restart if using the cigarette jack to power on.
The navigation with no battery built in can be initialized if connected to the cigarette jack or multi-purpose socket upon Auto Start.
Use only specified power line (RV 12V, current consumption below 2.3 A)
- Connecting the power line to cigarette jack, multi-purpose socket or other wiring and equipment of the vehicle can make the audio system inoperable.
- If "AUTO STOP deactivated" message appears several times continuously, The ISG system and the battery need to be checked.
- Always use the genuine ISG system battery manufactured by Ssang Yong. If not, ISG system could be inoperable in normal conditions.
- Do not charge the ISG system battery with a universal charger to prevent the battery from being damaged or exploded.
- Do not open or remove the battery cap. Doing so may cause an electrolyte leakage resulting in body injuries.

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| Modification basis | |
| Application basis | |
| Affected VIN | |

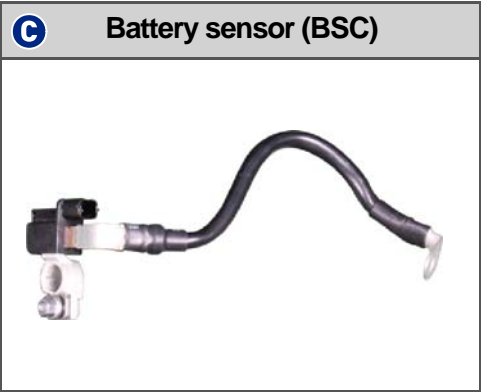
OVERVIEW AND OPERATING PROCESS

1. OVERVIEW

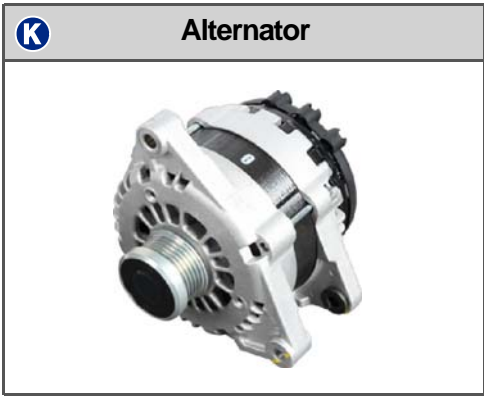
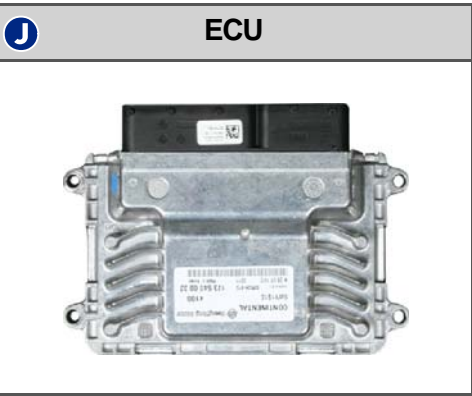
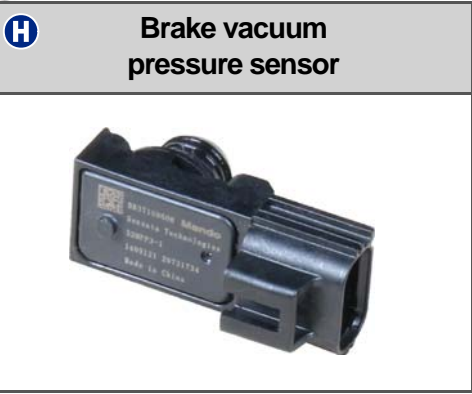
The ISG (Idle Stop and Go) system stops the engine temporarily when the vehicle is stationary (e.g. waiting at a traffic light) to improve fuel consumption and reduce exhaust emissions.

The ISG system is fitted to the vehicle with manual transmission only which uses a high-performance battery, starting motor and alternator due to frequent ignition on/off switching compared to the normal vehicle. In addition, systems such as BSC and DC-DC converter are fitted for smooth operation.

2. COMPONENTS



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| Modification basis | |
| Application basis | |
| Affected VIN | |



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| Modification basis | |
| Application basis | |
| Affected VIN | |

3. OPERATING CONDITIONS

The ISG system auto engine stop and start is operated only when the ECU is satisfied with the signals from the relevant units and sensors as conditions for operating the ISG. Otherwise, the ISG does not function.

1) Conditions For Auto Stop

| Condition | Status | |
|---|------------------------------------|---------------|
| | GSL | DSL |
| Starting engine | Started | |
| Vehicle speed | Vehicle speed is "0" | |
| Shift lever | In N (neutral) position | |
| Clutch pedal | Not depressed | |
| ISG OFF switch | OFF | |
| Driver door | Close | |
| Driver seat belt | Fastened | |
| Engine compartment hood switches 1 and 2 | OFF | |
| Accelerator pedal value | 5% or less | |
| Engine rpm | 0~2,000 rpm | 550~1,350 rpm |
| Coolant temperature | 50~115°C | 15~105°C |
| Based on certain speed before ISG stop | Above 10 km/h | |
| Battery information (voltage, current, temperature, SOC and etc.) | Normal | |
| Driven distance after reset by ISG | Over 5 m | |
| Brake vacuum pressure | Proper level | |
| A/C and heater | No signal inhibiting ISG auto stop | |
| Fuel level | Above certain level | |
| Gradient of road | Vehicle is not on steep slope | |
| Minimum required time to stop vehicle before ISG stop | 0.5 sec. | 0.2 sec. |
| Atmospheric pressure | Vehicle is not on high altitudes | |
| ISG-related system and sensor | DTC not found | |

| Condition | Status | |
|------------------------|--------|----------------------------------|
| | GSL | DSL |
| CDPF | - | DPF regeneration not in progress |
| Injector MDP learning | - | MDP learning not in progress |
| Engine torque | - | Below 250 Nm |
| Fuel temperature | - | 15~105°C |
| Engine oil temperature | - | 15~105°C |
| DOC temperature | - | -45~1,000°C |

2) Conditions For Starting From Auto Stop

► Auto start by driver's will

| Condition | Status | |
|--------------|-----------|-----|
| | GSL | DSL |
| Clutch pedal | Depressed | |

► Forced auto start

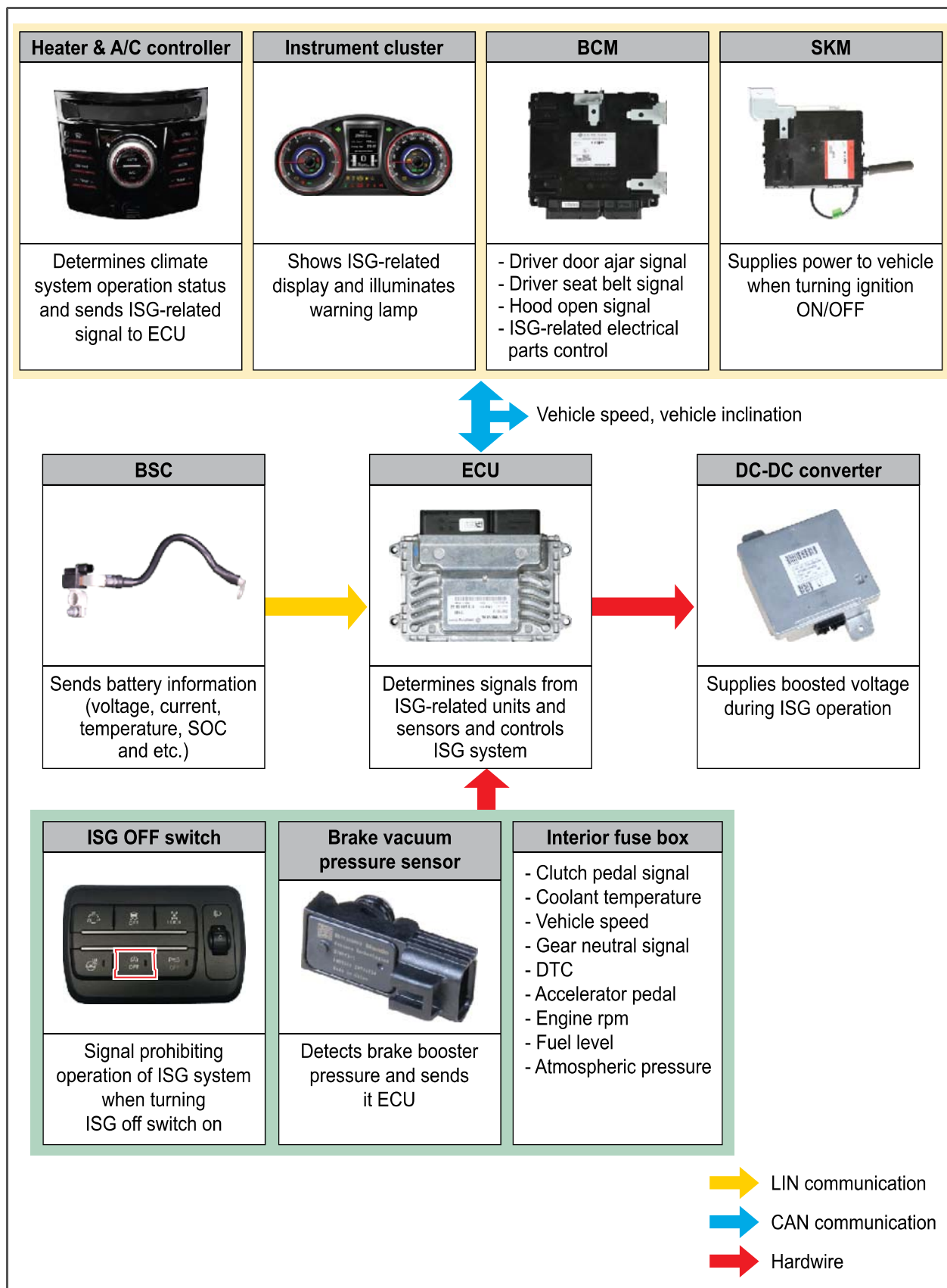
| Condition | Status | |
|---|--|------------------|
| | GSL | DSL |
| ISG OFF switch | ON | |
| Coolant temperature | Above 130°C | Above 110°C |
| A/C and heater | Certain signal transmitted from A/C controller | |
| Battery information (voltage, current, temperature, SOC and etc.) | Not OK | |
| Brake vacuum pressure | Out of correct level | |
| Elapsed time after auto stop | 180 sec. or longer | |
| Vehicle speed | 2 km/h or higher | 5 km/h or higher |

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|--------------------|--|
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3) Conditions For Inhibiting Starting From Auto Stop

| Condition | Status | Remarks |
|---|------------|--|
| Engine compartment hood | Open | Key required for re-start when open and closed |
| Driver door | Open | Auto start available when door closed |
| Driver seat belt | Unfastened | Auto start available when fastened |
| Status of accelerator pedal with auto stop on | Depressed | - |

4. ISG SYSTEM INPUT/OUTPUT DIAGRAM



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|--------------------|--|
| Modification basis | |
| Application basis | |
| Affected VIN | |