

ISG SYSTEM (Idle Stop and Go System)

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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

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.

Modification basis	
Application basis	
Affected VIN	

Memo

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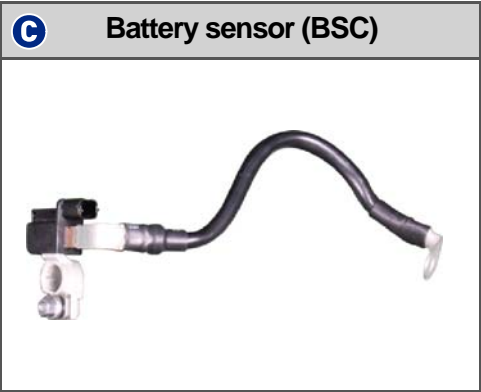
OVERVIEW AND OPERATING PROCESS

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



Modification basis	
Application basis	
Affected VIN	

FUSE

BCM

SKM

INSTRUMENT

SWITCH

LAMP

WIPER AND

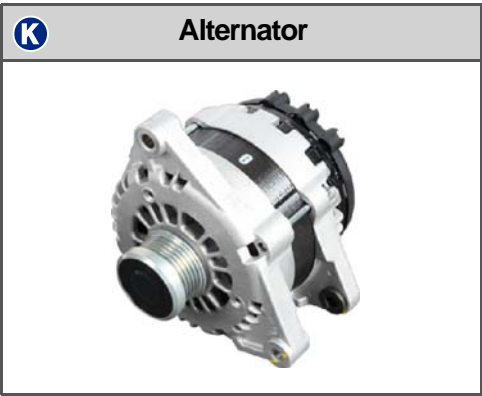
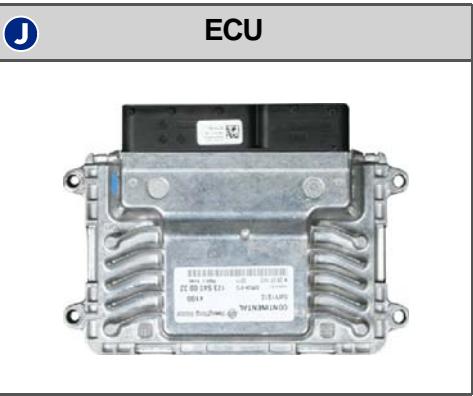
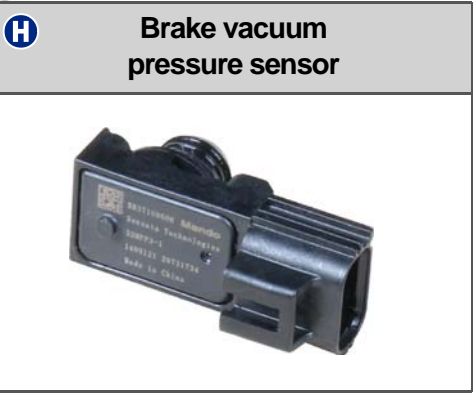
AVN

MP3 AUDIO

LCD AUDIO

ISG SYSTEM

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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

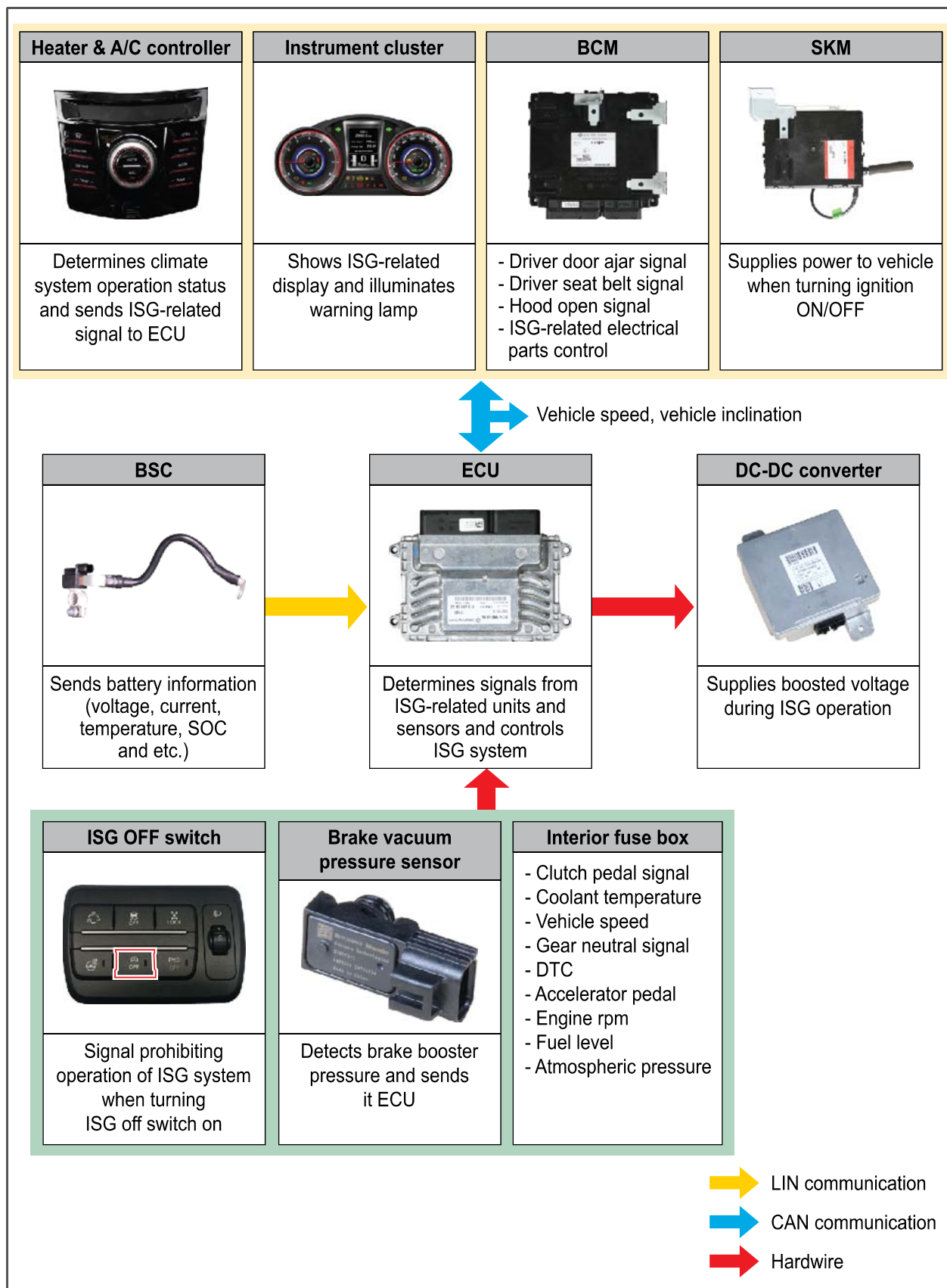
Condition	Status	
	GSL	DSL
ISG OFF switch	ON	
Coolant temperature	Above 130°C	Above 110°C
A/C and heater	Certain signal transmitted from A/C controller	
Battery information (voltage, current, temperature, SOC and etc.)	Not OK	
Brake vacuum pressure	Out of correct level	
Elapsed time after auto stop	180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

Modification basis	
Application basis	
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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



Modification basis	
Application basis	
Affected VIN	