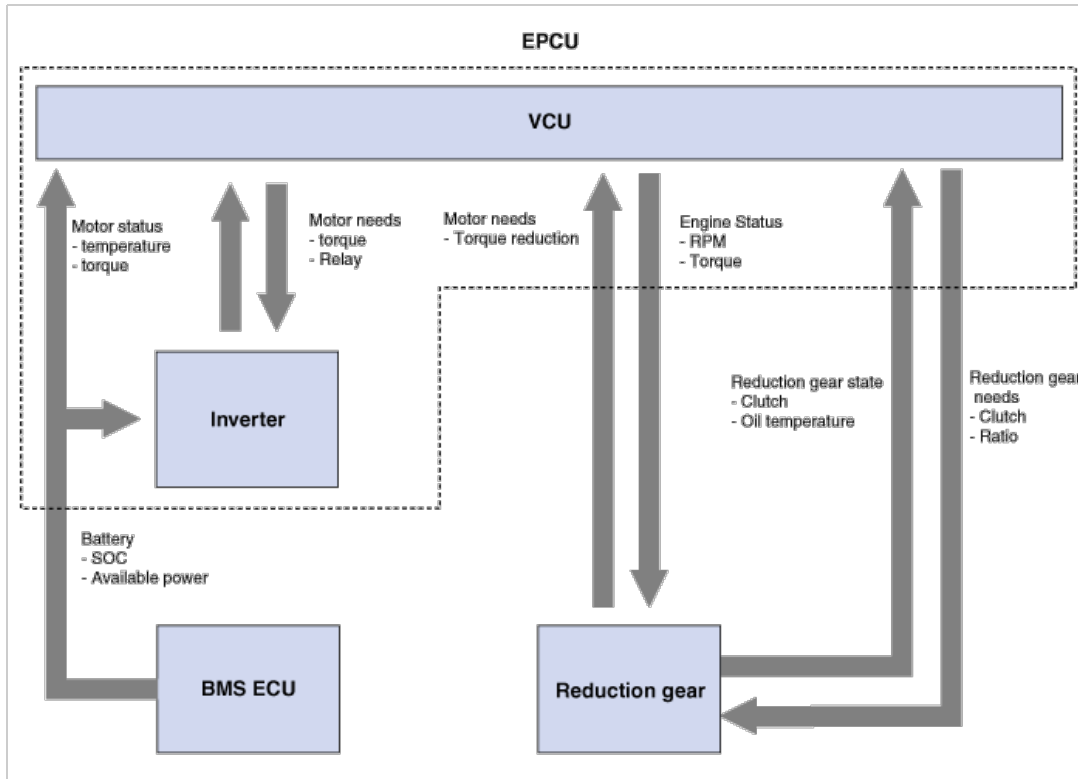


Description and Operation

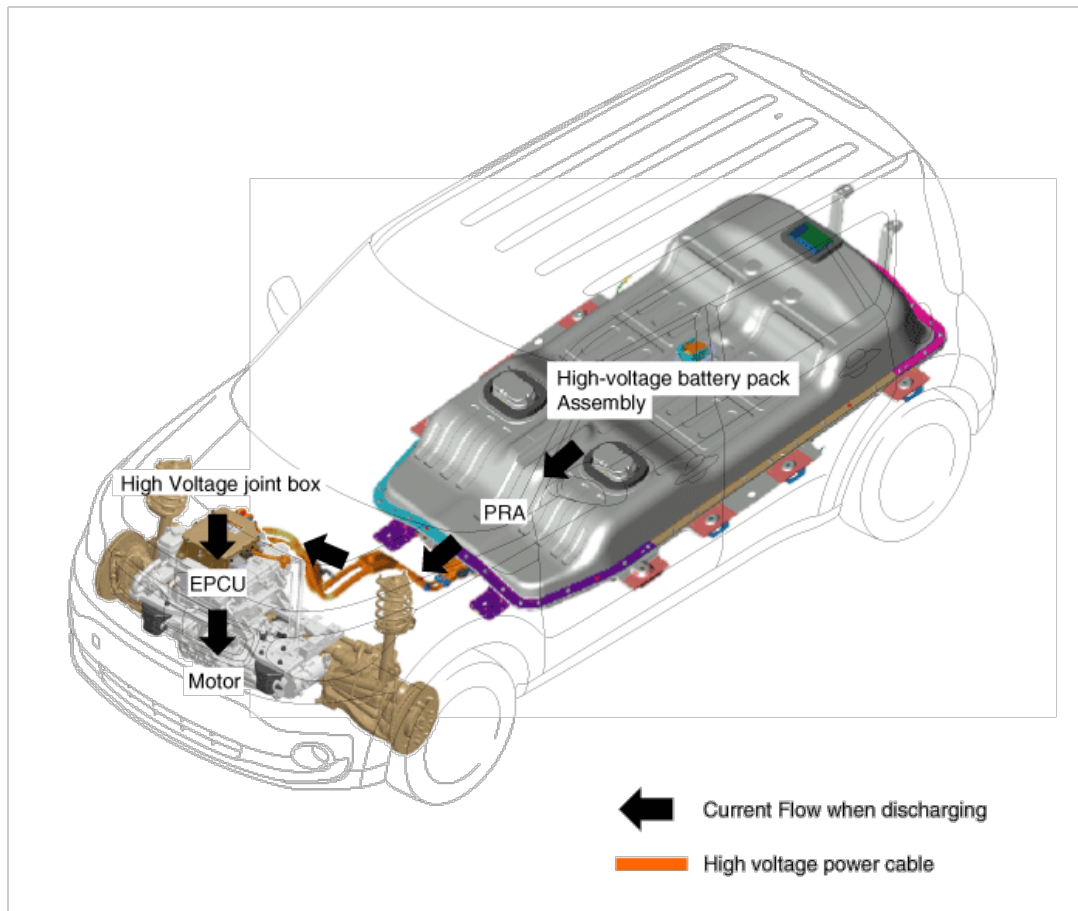
SOUL EV (PS EV) > 2019 > 81.4kW > EV Battery System

Description and Operation

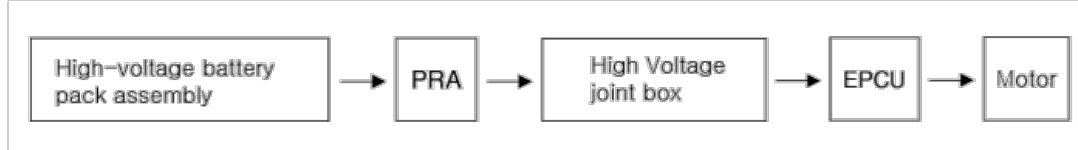
Electric vehicle is powered by transforming electric energy into kinetic energy in the motor and high voltage battery. It can be recharged by high voltage energy via IBC or OBC. Electric motor not only has the role of driving the vehicle but also acts as an alternator to generate electric energy used to recharge the high voltage battery by regenerative braking. Operation principles among modules are as detailed below.



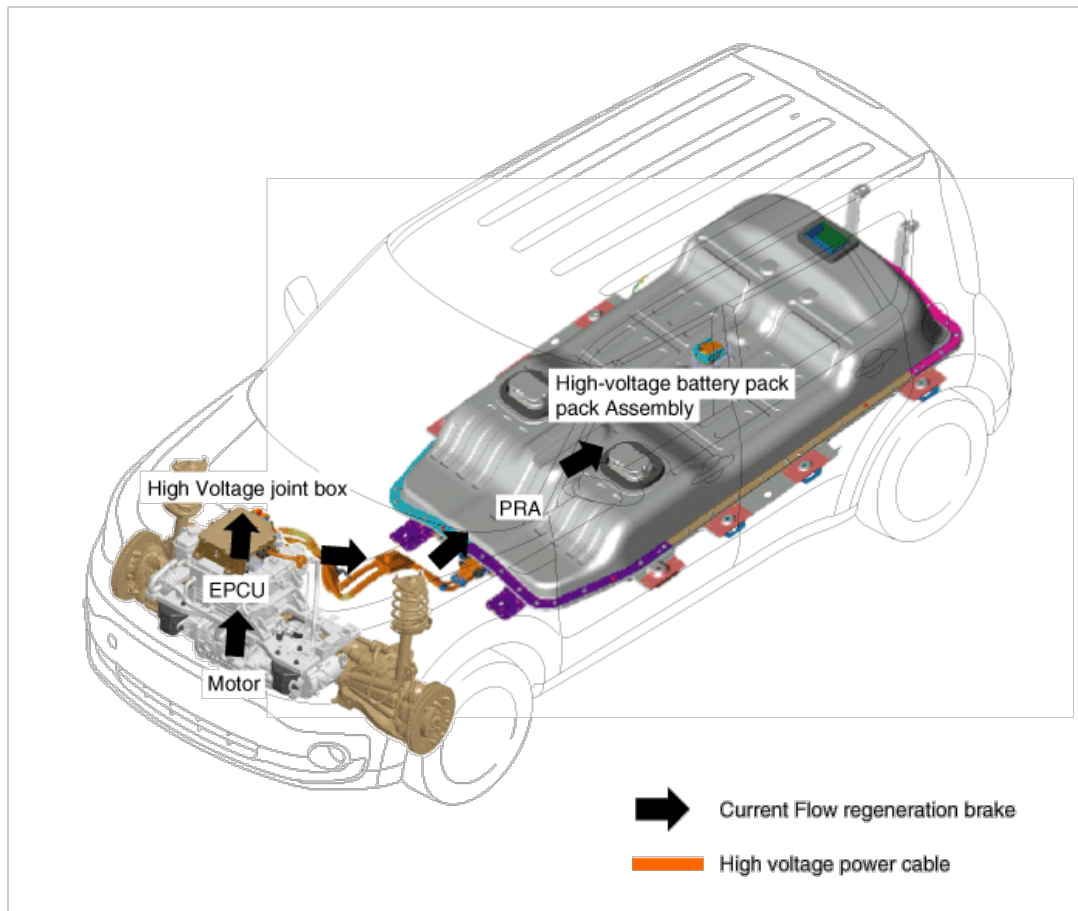
High Voltage Electricity Flow Diagram
[Start/ Acceleration/ Uphill Take-off]



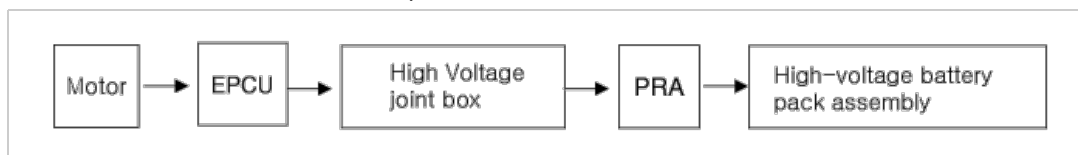
Electric energy stored in high voltage battery pack assembly is used to generate drive force from the drive motor. Electric energy is transformed into kinetic energy and drive force is transferred to the wheels.



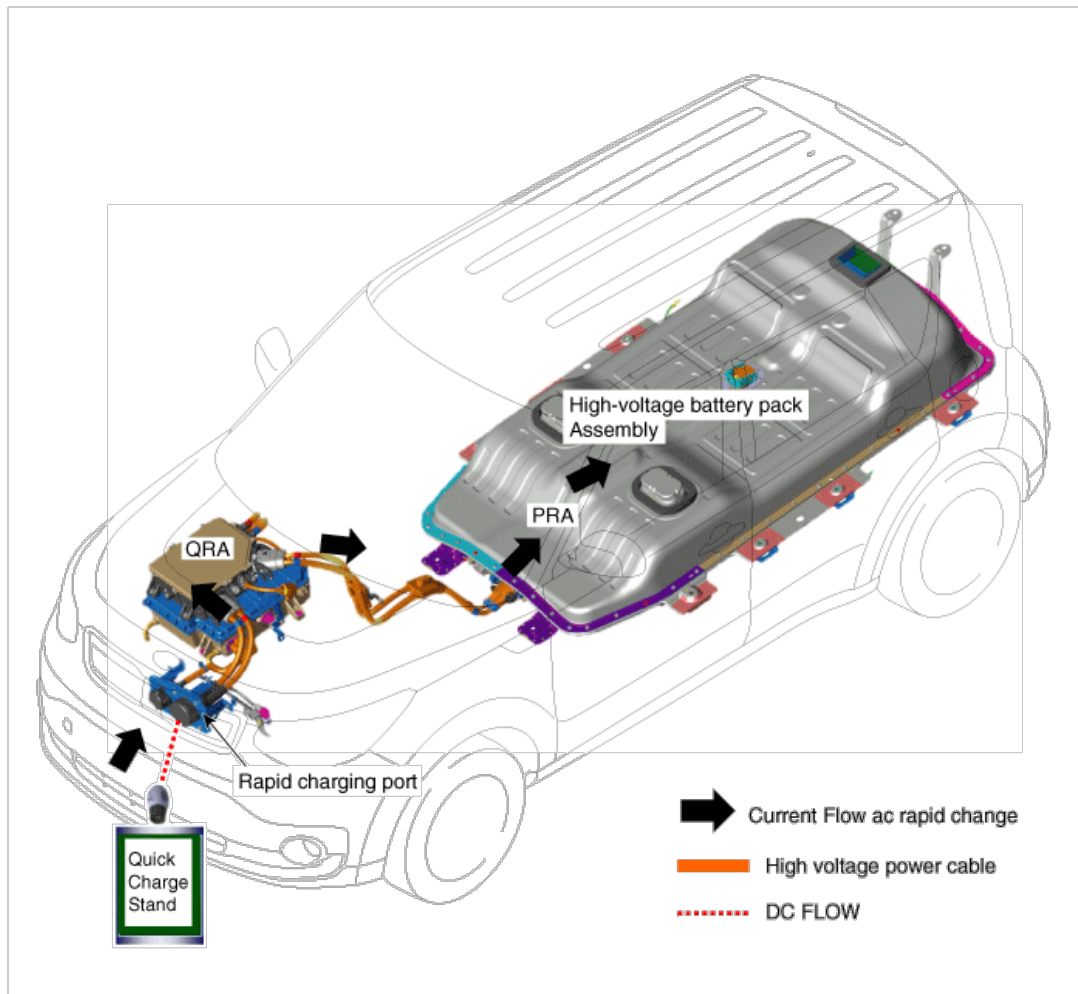
[Deceleration (Regenerative Braking)]



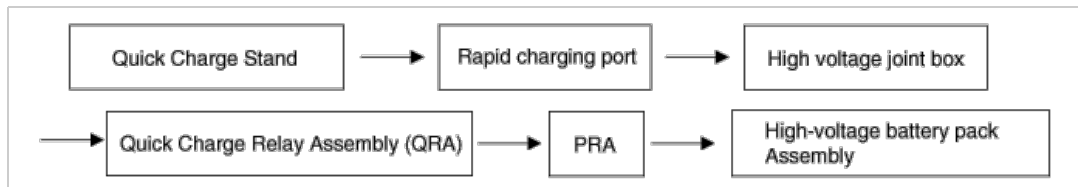
- Drive motor is used as an alternator and uses the kinetic energy generated during deceleration to recharge electric energy in the high voltage battery pack assembly.
- Activate: When the vehicle speed is over 10 km/h
- Not Activate: When the vehicle speed is less than 3 km/h



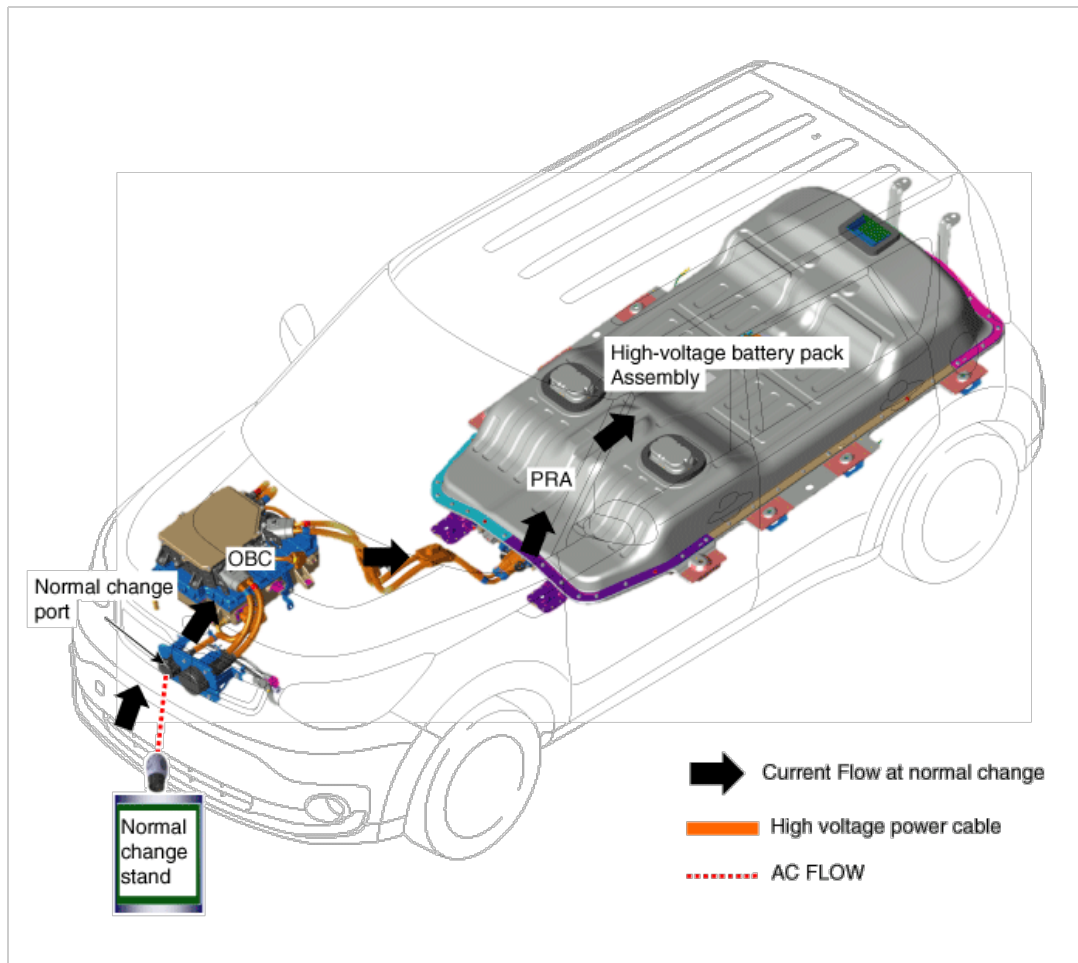
[Rapid Charge]



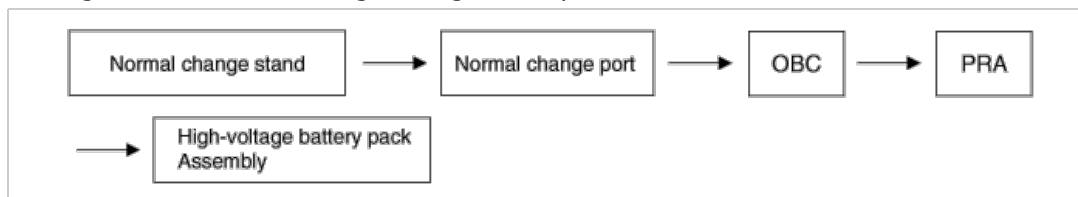
- Charge power : 500V, 200A
- Charge Type : Direct Current (DC)
- Charge time: Approx. 25 min.
- Charge Flow Diagram : Rapid Charge Stand -> High Voltage Battery System Assembly
- Charge Volume: 80% of High Voltage Battery's SOC



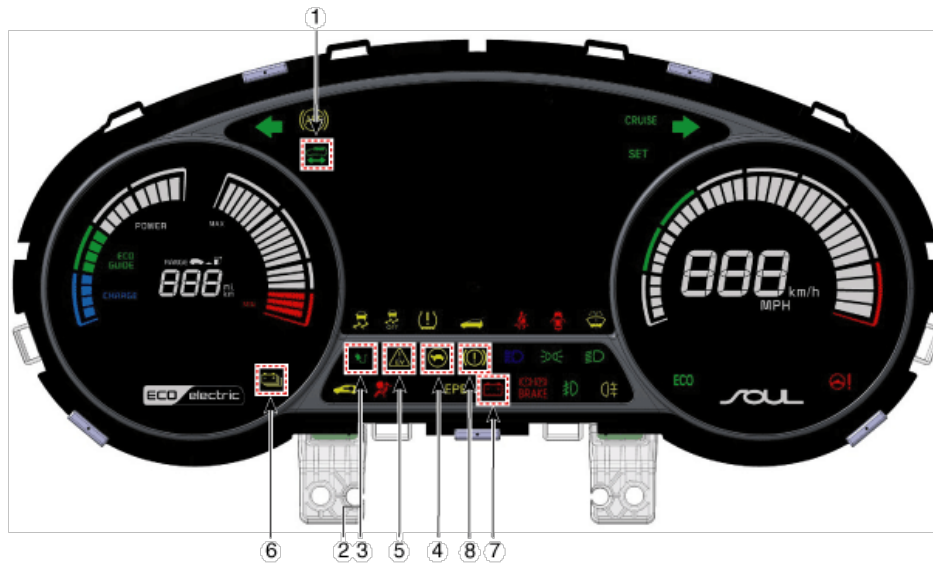
[Nomal Charge]



- Charge power: 220V, 35A
- Charge Type : Alternating Current (AC)
- Charge time: Approx. 5 hr.
- Charge Flow Diagram : Normal Charge Stand -> ON-Board Charger (OBC) -> High Voltage Battery System Assembly
- Charge Volume : 95 % of High Voltage Battery"s SOC



[Indicator]



NO	RefSymbol	Name	Description	Color	Illumination	Signal Input	Control unit	Operation power
1		Ready lamp	Request ON when vehicle is ready for driving.	Green	LED	CAN	VCU	IGN1
2		Charge Lamp	Request to turn ON indication Lamp when charging is complete.	Green	LED	CAN	BMS	IGN3
3		Charge Lamp	Request to turn ON indication Lamp when charging is in progress.	Red	LED	CAN	BMS	IGN3
4		Power Down Lamp	In case of fault as indicated below, vehicle power output is limited, and Lamp ON is requested. - Overheating, or low SOC - Overheating and system error - If vehicle speed is limited due to ABS or brake system failure. - Cooling system failure	Yellow	LED	CAN	VCU	IGN1
5		Service Lamp	- Request ON in case of VCU, MCU, BMS, LDC, FATC, or OBC failure is detected. - Turns ON at Start and then OFF after 3 seconds.	Yellow	LED	CAN	VCU MCU BMS LDC FATC	IGN1
							OBC	IG1 & IGN3

6		LOW Battery Lamp	Request Lamp ON when high voltage battery SOC is low.	Yellow	LED	CAN	BMS	IGN1
7		Auxiliary 12V Battery Charge Lamp	In case of 12V auxiliary battery discharged, recharge device failure, or recharge system failure. Warning Lamp ON Request	Red	LED	CAN	LDC	IGN1
8		RES Lamp (RBS: Regenerative Braking System)	Request ON in case of regenerative brake failure.	Yellow	LED	CAN	EBS	IGN1

Portions of materials contained herein are sourced from the Hyundai Kia Automotive Group

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