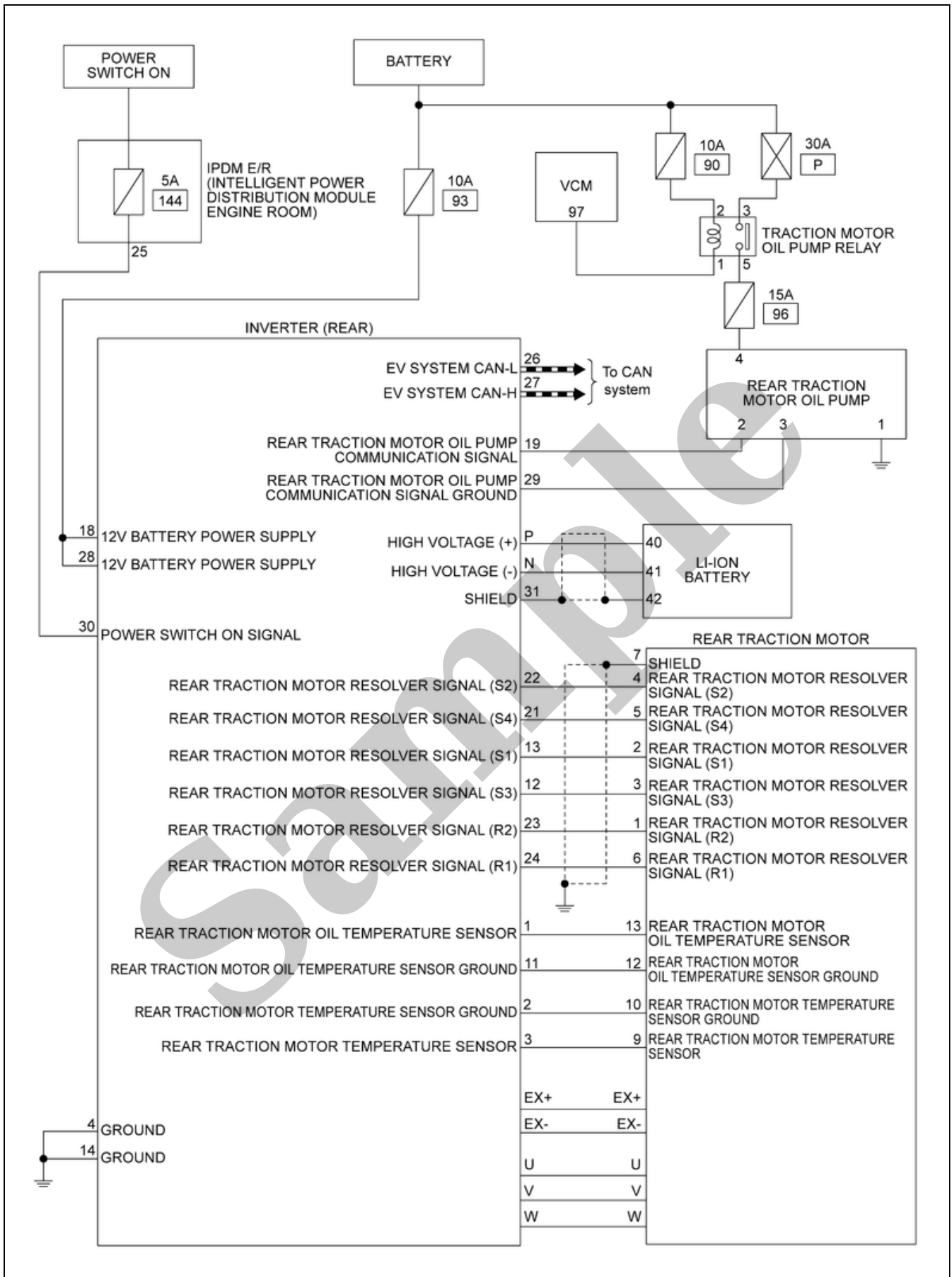


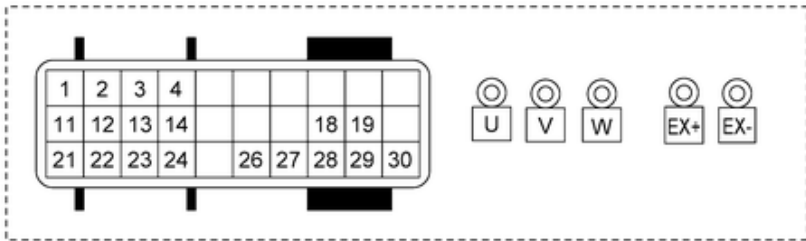
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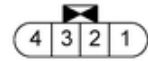
2013 Nissan 370Z Service and Repair Manual

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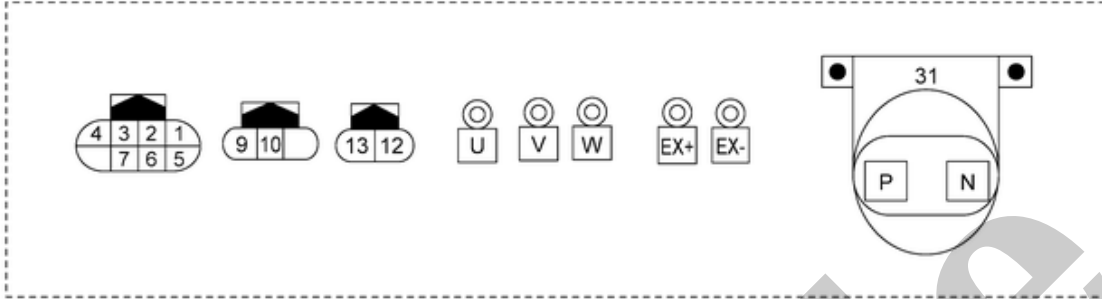




INVERTER (REAR)



REAR TRACTION MOTOR OIL PUMP



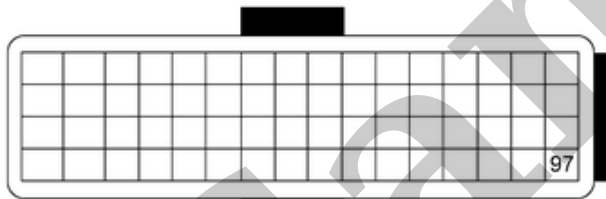
REAR TRACTION MOTOR



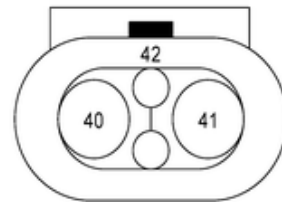
IPDM E/R
(INTELLIGENT POWER DISTRIBUTION
MODULE ENGINE ROOM)



TRACTION MOTOR OIL PUMP RELAY



VCM



LI-ION BATTERY


DTC		EV system warning lamp	Fail-safe and vehicle behavior
P030A	62	—	—
P0A1C	01	ON	Control of the rear traction motor stops. Or, the vehicle cannot be started (READY status cannot be achieved)
	03	ON	
	04	ON	
	05	ON	
	44	—	—
P0A30	11	ON	Send rear traction motor temperature of 180°C (356°F) to the VCM
	13	ON	Send rear traction motor temperature of 180°C (356°F) to the VCM
	4B	ON	The driving torque of the rear traction motor is limited to 0 Nm
P0A45	04	ON	Control of the rear traction motor stops. Or, the vehicle cannot be started (READY status cannot be achieved)
	1C	ON	
P0A55	01	ON	Control of the rear traction motor stops
P0A79	48	ON	Limits drive torque of rear traction motor
	62	ON	Control of the rear traction motor stops. Or, no limitation
P0A8B	A2	ON	Control of the rear traction motor stops
P0AF2	11	—	—
	13	—	
	1C	—	
	4B	ON	The driving torque of the rear traction motor is limited to 0 Nm. Or, control of the rear traction motor stops
P0BF1	1C	ON	The vehicle cannot be started (READY status cannot be achieved)
P0BF5	1C	ON	The vehicle cannot be started (READY status cannot be achieved)
P0BF9	1C	ON	The vehicle cannot be started (READY status cannot be achieved)
P0C02	11	ON	Control of the rear traction motor stops
	12	ON	
	18	ON	
P0C0E	01	ON	Control of the rear traction motor stops. Or, the vehicle cannot be started (READY status cannot be achieved)
	04	ON	
	1C	ON	
	A2	ON	
P0DA3	17	ON	Control of the rear traction motor stops
P0DA9	00	ON	Control of the rear traction motor stops
P161D	61	—	The vehicle cannot be started (READY status cannot be achieved)
P161E	68	—	The vehicle cannot be started (READY status cannot be achieved)
P161F	64	—	The vehicle cannot be started (READY status cannot be achieved)
P2BD8	11	—	Send coolant temperature that cannot be used to VCM
	13	—	Send coolant temperature that cannot be used to VCM
P2D3B	92	ON	—

DTC		EV system warning lamp	Fail-safe and vehicle behavior
P3081	44	ON	Change the resolver offset value to the default value. This reduces torque because optimal control of the rotor position is not possible
P3082	44	ON	Change the rotor resistance value to the default value. This will make it more likely that torque will be limited for temperature protection
P3083	44	—	—
P30D0	11	ON	—
	13	ON	—
	4B	ON	The driving torque of the rear traction motor is limited to 0 Nm
P30E5	04	ON	The driving torque of the rear traction motor is limited to 30%
	81	ON	—
	87	ON	The driving torque of the rear traction motor is limited to 30%
P30E6	11	ON	Control of the rear traction motor stops
	12	ON	
	1C	ON	
P30E7	01	ON	Control of the rear traction motor stops
	18	ON	
	1D	ON	—
U2143	82	May turn ON	Vehicle stops (torque 0 Nm), or the driving torque of the rear traction motor is limited, or is not limited
	83	May turn ON	
	87	May turn ON	
U2144	82	May turn ON	The driving torque of the rear traction motor is limited. Or, no limitation
	83	May turn ON	
	87	May turn ON	
U2150	87	—	—

Protection Function

SIEMD-7504965

When temperature of inverter (rear) or rear traction motor components rises, the inverter (rear) temporarily enters a protective control state in order to protect the system. It automatically returns to the normal status if the safety is secured.

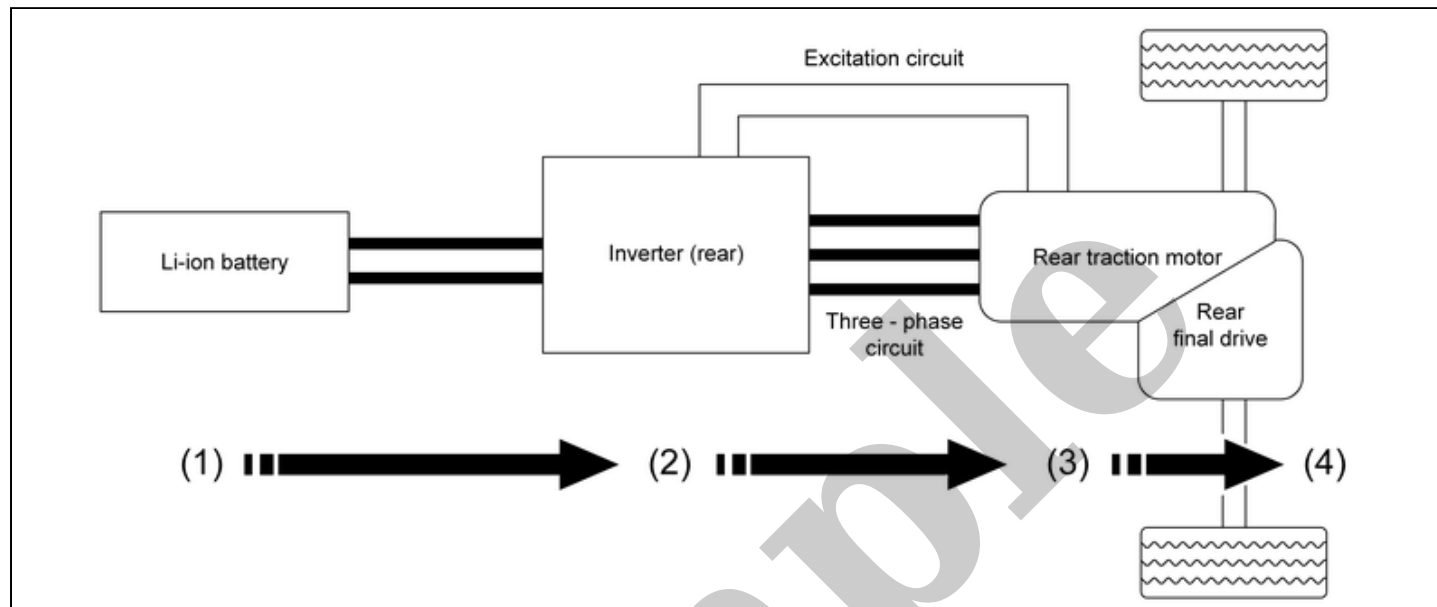
Condition	Control	Normal return condition
The rear traction motor is overheated.	The output torque from the rear traction motor is restricted according to the temperature.	The temperature has decreased to normal in the rear traction motor.
The IGBT becomes hot.	The switching frequency in the IGBT is reduced.  NOTE: Electromagnetic noise has increased at the rear traction motor.	The temperature has decreased.
The inside of the inverter, including the IGBT, is overheated.	The output torque from the rear traction motor is restricted according to the temperature.	The temperature has decreased.

Sample

DESCRIPTION

The inverter (rear) applies AC power to the rear traction motor according to the target motor torque signal calculated by VCM in order to generate drive force.

ENERGY FLOW



SIEMD-16612424364120-01-000415400

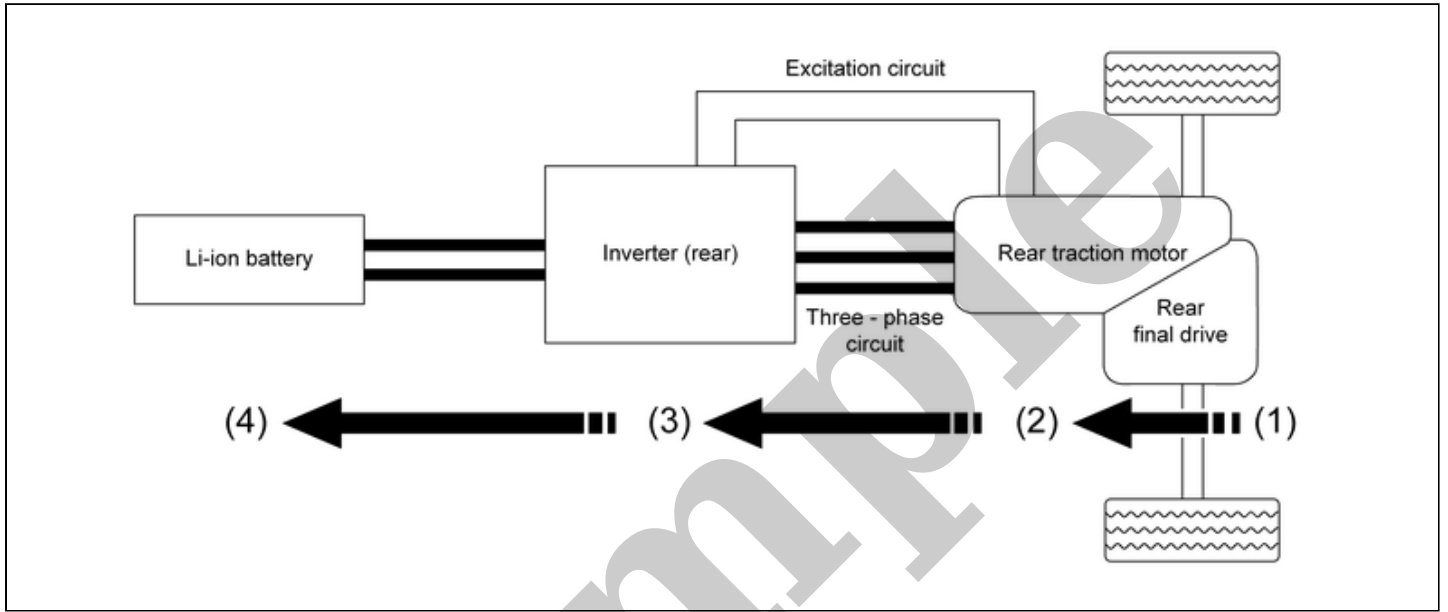
(1)	(2)	(3)	(4)
The DC power from the Li-ion battery is input to the inverter (rear).	⇒ The switching actions of the IGBT in the inverter (rear) convert DC power from the Li-ion battery to AC power.	⇒ DC power sent from the inverter (rear) to the rotor, and AC power sent to the stator, are transformed into magnetic energy and used to create a rotating magnetic field that generates driving torque.	⇒ The driving torque from the rear traction motor is used as motion energy for output from the vehicle.

DESCRIPTION

During deceleration, the inverter (rear) drives the rear traction motor to function as a generator based on the regenerative torque command signal sent via EV system CAN from the VCM, converting the kinetic torque generated by rotation of the tires into electrical energy. The converted electrical energy charges the Li-ion battery.

The regenerative torque that is generated when the rear traction motor is driven as a generator can be used as braking force, acting similar to engine braking and reducing the burden on the service brakes.

FLOW OF ENERGY



SIEMD-16612425066680-01-000415401

(4)	(3)	(2)	(1)
The DC power regenerated by the inverter (rear) is used to charge the Li-ion battery.	The IGBT in inverter (rear) switches in order to convert the AC power from the rear traction motor to DC power.	AC power is generated using DC power sent from the inverter (rear) to the rotor and rotation of the rear traction motor.	The kinetic energy generated by rotation of the tires operates the rear traction motor as a generator.

- The rear traction motor contains a compact, lightweight, high output, high efficiency “Externally Excited Synchronous Motor (EESM)”.
- The inverter (rear) is a device which converts DC power from the Li-ion battery to AC power, and drives the traction motor. Because the AC power frequency and voltage can be varied when the DC power is converted to AC power, it provides control performance with a high degree of freedom.

Sample

Specifications

SIEMD-7504811

Model	CM67
Max torque [N·m (kgf-m, ft-lb) /rpm]	300 (30.6, 221) / 0-4392
Max output [kW (PS, HP) / rpm]	160 (218, 214) / 5950-11340
Max speed (rpm)	11340
Cooling system	Water cooling type

Sample