Group 54ES
Signal Detected and Actuation Modules

Pub. No. 00ELT0145

GROUP 54ES
SIGNAL DETECTED AND ACTUATION MODULES

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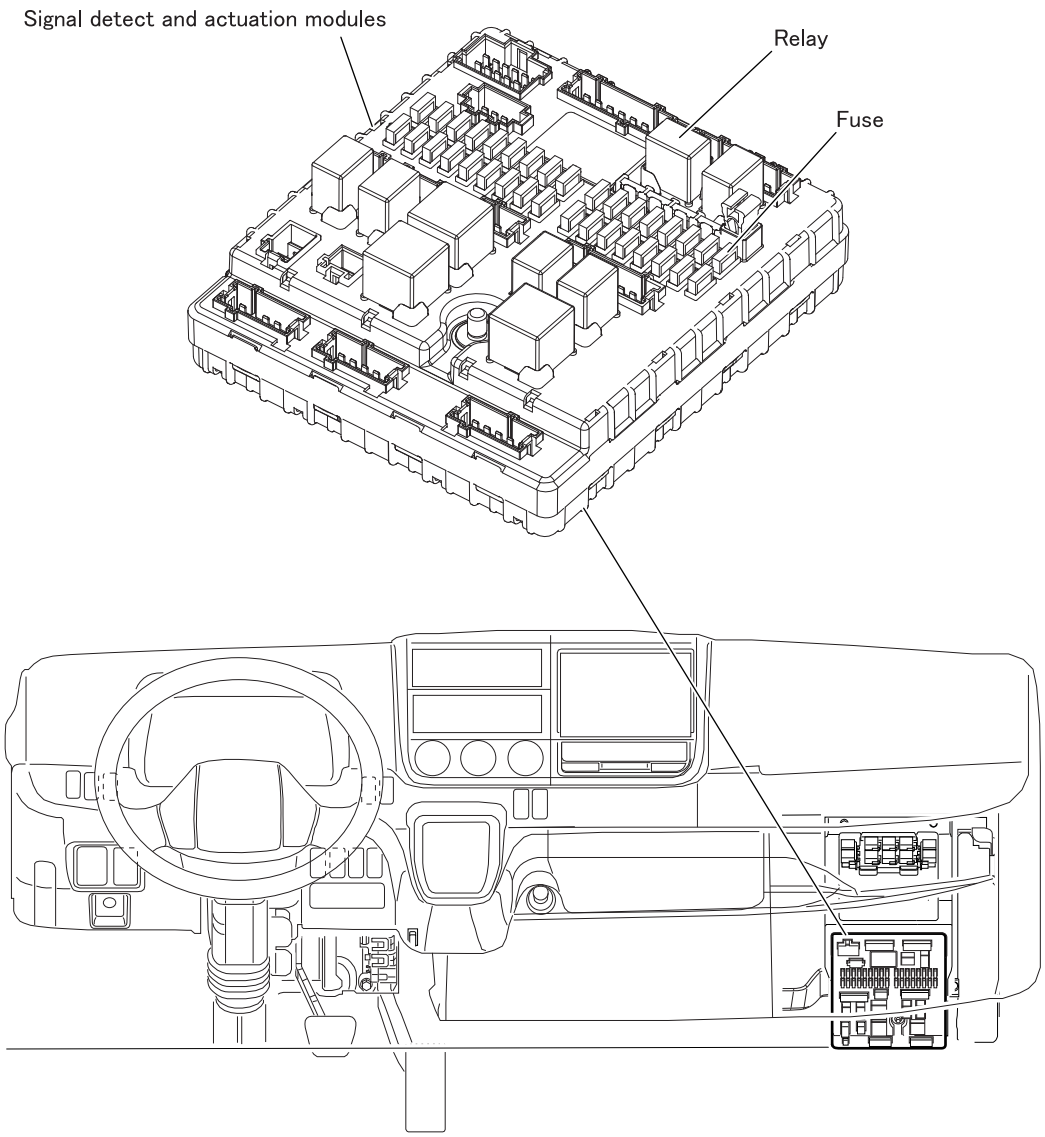
1. Overview



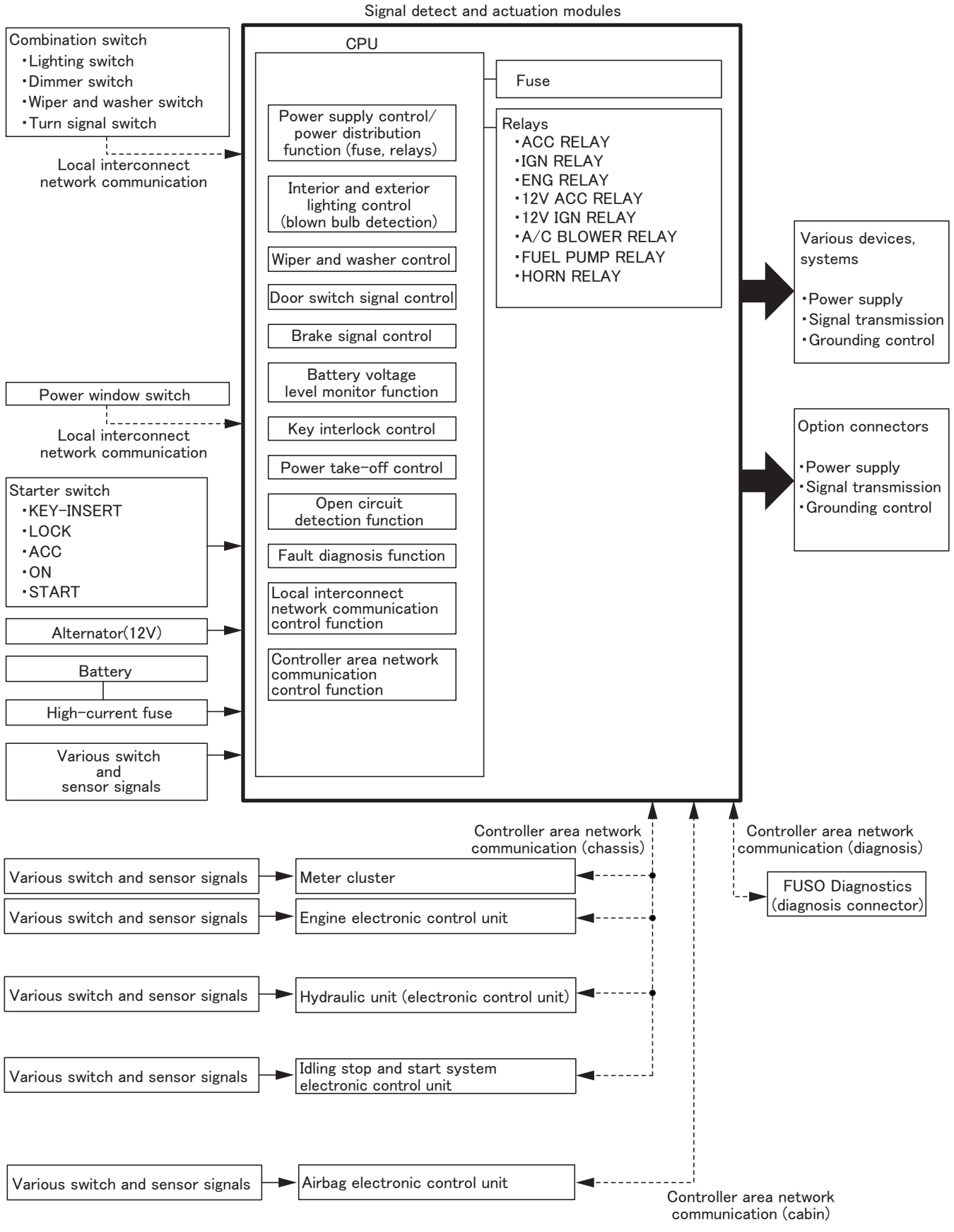
- Signal detect and actuation modules contains conventional relays and fuses in the central processing unit and effects integrated control of electric parts and power distribution. Basically, it has the following functions.
  - Power supply and power distribution functions
  - Detection of various control switch output signals (starter switch, combination switch, etc.)
  - Detection of various detection switch output signals (stop lamp switch, clutch switch, etc.)
  - Detection of various sensor output signals (fuel level sensor, etc.)
  - Junction for controller area network communication between electronic control units
  - Fault diagnosis function
  - Open circuit detection function
  - Various lighting control functions (blown bulb detection)
  - Wiper & washer control

CAUTION ⚠

- **Before replacing the signal detect and actuation modules, associated fuses and relays, be sure to disconnect (–) battery cable and protect the (–) battery terminal and (–) battery cable with insulating tape or the like.**
- **When a fuse is blown, identify the cause and repair to remove it completely. Then, install a new fuse. Be sure to use the fuse of designated ampere.**
- **To remove a spare fuse, insert a fuse puller from outside the wall holding the spare fuse. Inserting the fuse puller from inside the wall may damage the signal detect and actuation modules, resulting in system malfunction or a fire.**
- **Connect the (+) and (–) cables to the battery at right terminals. Wrong connection causes an excessive current to the signal detect and actuation modules, damaging internal elements and circuits.**

2. Electronic Control System

2.1 System block diagram



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2.2 Input and output signals list by signal detect and actuation modules functions

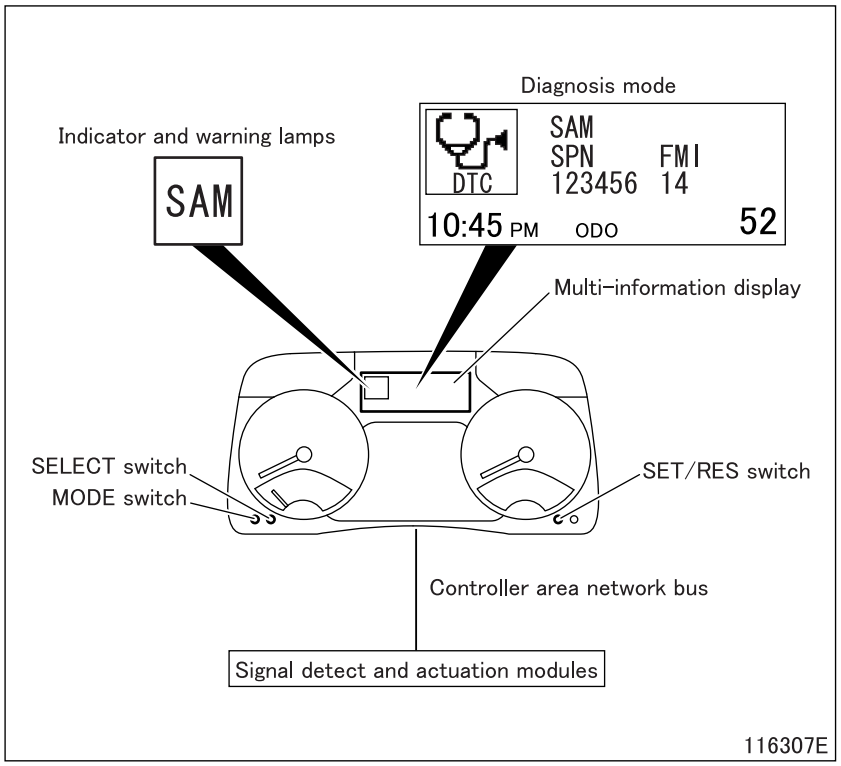
Function	Input	Output	Remarks
Back buzzer	• Starter switch • Back light switch	• Back buzzer • Buzzer in meter cluster • Electronic control units	See Gr54 (340).
Power take-off subsystem	• Starter switch • Transmission power take-off switch (cab) • Power take-off control switch (chassis) • Clutch switch	• Transmission power take-off 3-way magnetic valve • Option connector: Power take-off 12 V • Electronic control units	See Gr54 (850).
Service brake switch	• Stop lamp switch N.O. (service brake switch 1) • Stop lamp switch N.C. (service brake switch 2)	Electronic control units	See Gr54 (325), (880), (873), (790),
Parking brake switch	Parking brake switch	Electronic control units	See Gr54 (510).
Brake fluid level switch	Brake fluid level switch	Electronic control units	See Gr54 (515).
Vacuum flow switch	Vacuum switch	Electronic control units	See Gr54 (515).
Door switch status	• Driver's seat side door switch • Assistant driver's seat side door switch • Rear door switch (left-hand, right-hand) • Starter switch	Electronic control units	See Gr54 (345).
Diesel Particulate Filter	Diesel Particulate Filter cleaning switch	Engine electronic control unit	See Gr54 (880).
Fuel level sensor	Fuel level sensor	Meter cluster	See Gr54 (420).
Starter switch & relay control	• Starter switch ACC • Starter switch ON • Starter switch CRANK • Starter switch inserted	• Electronic control units [In signal detect and actuation modules] • IGN RELAY • ACC RELAY • IGN RELAY (OPTION) • ACC RELAY (OPTION)	See Gr54 (105), (110).
Backup lamp	Backup lamp switch	Backup lamp (left-hand, right-hand)	See Gr54 (340).
Headlamp	• Starter switch • Combination switch	• Dipped beam (left-hand) • Dipped beam (right-hand)	See Gr54 (310).
	• Starter switch • Combination switch	• Main beam (left-hand) • Main beam (right-hand) • Meter cluster	
Stop lamp	Stop lamp switch N.O. (service brake switch 1)	• Stop lamp (left-hand) • Stop lamp (right-hand)	See Gr54 (325).

Function	Input	Output	Remarks
Position lamp, license plate lamp, tail lamp	• Starter switch • Combination switch	• Position lamp (left-hand) • Position lamp (right-hand) • License plate lamp (left-hand) • Tail lamp (left-hand) • Tail lamp (right-hand)	See Gr54 (320).
Turn signal lamp, hazard lamp	• Hazard lamp switch • Combination switch	• Rear turn signal lamp (left-hand) • Rear turn signal lamp (right-hand) • Front turn signal lamp (left-hand) • Front turn signal lamp (right-hand) • Option connector: Side turn signal lamp (left-hand) • Option connector: Side turn signal lamp (right-hand) • Meter cluster	See Gr54 (115), (330).
Cab lamp	• Driver's seat side door switch • Assistant driver's seat side door switch • Rear door switch (left-hand, right-hand) • Starter switch	• Cab lamp (battery) • Cab lamp (control)	See Gr54 (345).
Illumination lamp	Combination switch	• Audio illumination • Various control switches illumination • Option connector: Illumination chassis • Option connector: Illumination body	See Gr54 (115), (348).
Alternator (L terminal)	Alternator (L terminal)	Meter cluster	See Gr54 (125).
Clutch switch (upper)	Clutch switch	Electronic control units	See Gr54 (880).
Key interlock	• Gear shift signal (controller area network line) • Starter switch	Key interlock solenoid: control	See Gr54 (873).
Wiper & washer	• Starter switch • Combination switch	• Wiper motor (LOW) • Wiper motor (HIGH) • Washer motor (CONTROL)	See Gr54 (514).
Battery monitor (12V battery voltage)	Battery	Limitation of various functions at low voltage and overvoltage	–
Horn	Horn switch	• Horn battery [In signal detect and actuation modules] • Horn relay	See Gr54 (616).
Central door locking switch control	Door lock switch	• Power window switch (right-hand) • Power window switch (left-hand) • Door lock actuator (right-hand) • Door lock actuator (left-hand)	See Gr54 (622).

Function		Input	Output	Remarks
Cab tilt signal switch		Cab tilt lock switch	Meter cluster	See Gr54 (550).
Power distribution module: J: accessory relay output	Fuse F15	–	• Audio accessory	See Gr54, (105), (110).
	Fuse F16	–	• Cigarette lighter accessory • Motor-driven retractable mirror	
Power distribution module: E: IGN relay output	Fuse F22	–	• Meter cluster IGN • Battery equalizer IGN	See Gr54, (105), (115), (110).
	Fuse F18	–	• Hydraulic unit (electronic control unit) IGN1	
	Fuse F19	–	• Engine electronic control unit IGN	
	Fuse F3	–	• Airbag electronic control unit IGN	
	Fuse F20	–	• Front drive switch • Idling stop and start system electronic control unit IGN	
	Fuse F1	–	• Starter relay	
Power distribution module: H: Engine relay output	Fuse F31	–	• Engine battery control 1 • Engine battery control 2 • Engine battery control 3	See Gr54, (105), (110).
	Fuse F28	–	• Engine actuator battery control • Fuel heater relay drive • Fuel pump relay drive	
Power distribution module: C: 24 V/12 V ACC relay (OPTION) output	Fuse F25	–	• Option connector: ACC chassis 12 V • Option connector: ACC body 12 V	See Gr54, (105), (115), (110).
Power distribution module: D: 24 V/12 V IGN relay (OPTION) output	Fuse F04	–	• Option connector: Main chassis 12 V • Option connector: Main body 12 V	See Gr54, (105), (115), (110).
Power distribution module: 24 V/12 V battery output	Fuse F26	–	• Option connector: Battery body 12 V • Option connector: Battery chassis 12 V	
Power distribution module: 12 V BAT output	Fuse F9	–	• Meter cluster BAT • Diagnosis connector BAT • Combination switch BAT	See Gr54, (105), (110).
	Fuse F12	–	• Audio BAT • Interior lamp BAT	
	Fuse F13	–	• Starter switch BAT • Idling stop and start system electronic control unit	
	Fuse F17	–	• Fuel heater BAT	
Power distribution module: A: A/C BLOWER RELAY output	Fuse F11	–	• Air conditioner blower motor	See Gr54, (105), (110).
Power distribution module: B: HORN RELAY output	Fuse F14	–	• Horn switch • Horn BATT	See Gr54, (105), (110).

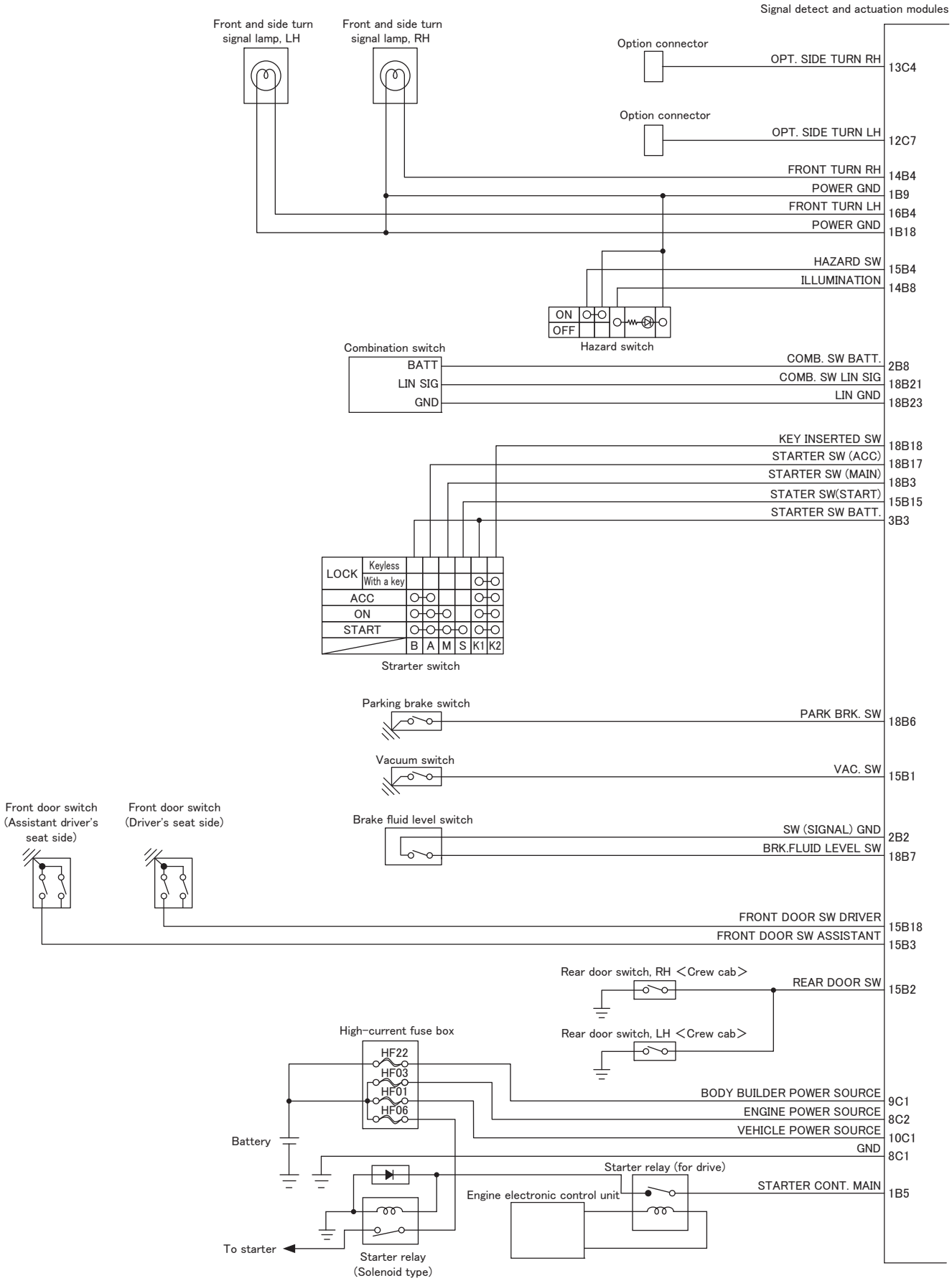
Function		Input	Output	Remarks
Power distribution module: F: FUEL PUMP RELAY output	Fuse F28	–	• Fuel pump control • Fuel heater control	See Gr54, (105), (110).
	Fuse F34	–	• Fuel pump BAT	
Power distribution module: Power window supply	Fuse F5	–	• Power window BAT driver's seat side	See Gr54, (105), (110).
	Fuse F7	–	• Power window BAT assistant driver's seat side	
Communication		• Controller area network - Cabin • Controller area network - Chassis • Controller area network - Diagnosis • Various local interconnect network lines	• Controller area network - Cabin • Controller area network - Chassis • Controller area network - Diagnosis • Various local interconnect network lines	–
Signal detect and actuation modules supply		• Signal detect and actuation modules 12 V BAT • Signal detect and actuation modules 12 V BAT • Signal detect and actuation modules 12 V ENG BAT	–	See Gr54, (105), (110), (130).
Grounding		• Signal detect and actuation modules ground • Ground, body harness, POWER • Ground, body harness, SIGNAL • Ground, central harness • Ground, various electronic control units		

2.3 Fault diagnosis function



- The driver is informed of faults in the signal detect and actuation modules through the multi-information display in the meter cluster.
- Details of diagnosis codes can be called out through the multi-information display in the meter cluster and the FUSO Diagnostics (diagnosis connector). (See Gr54-00A.)

3. Electronic Control Unit Circuit Diagram



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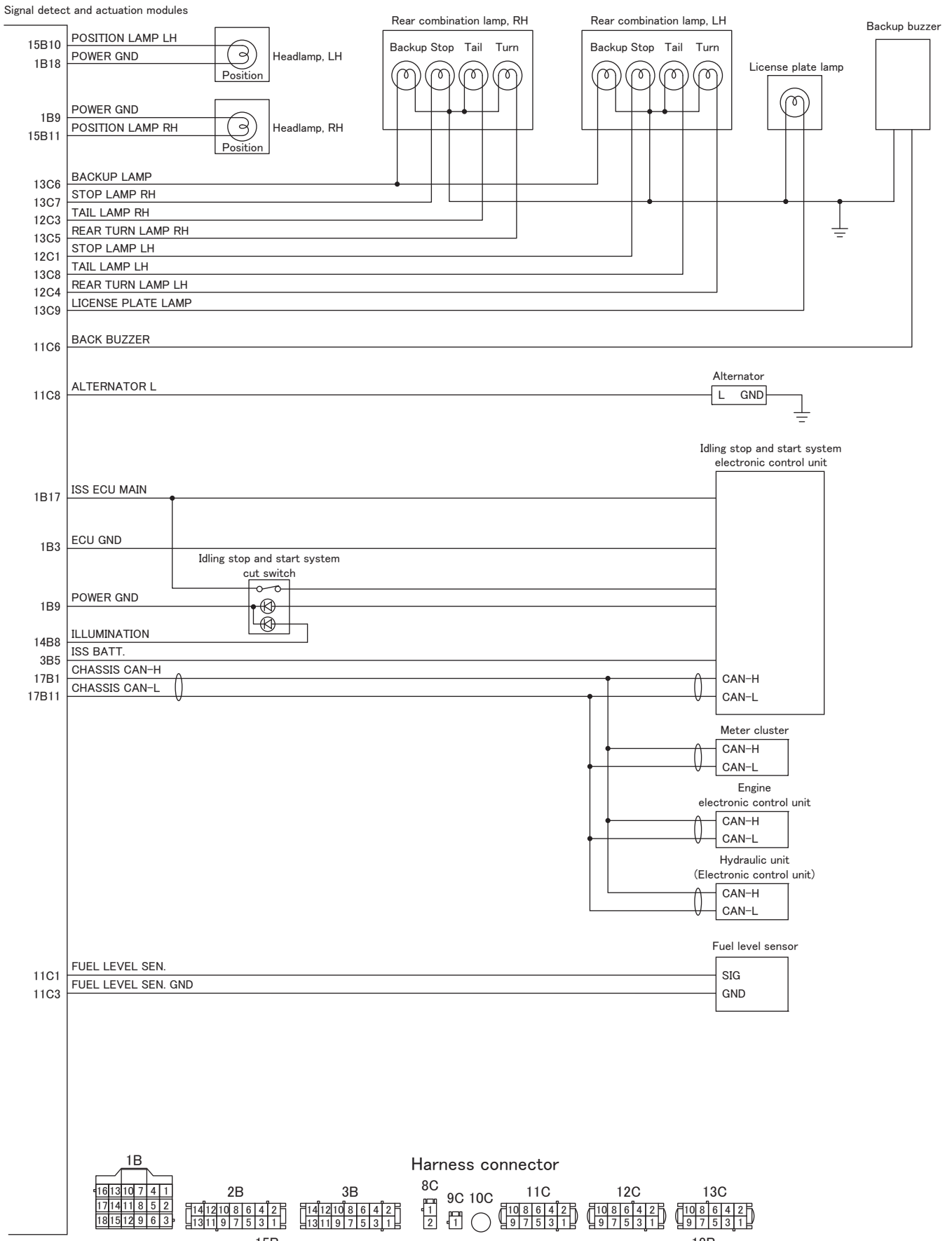

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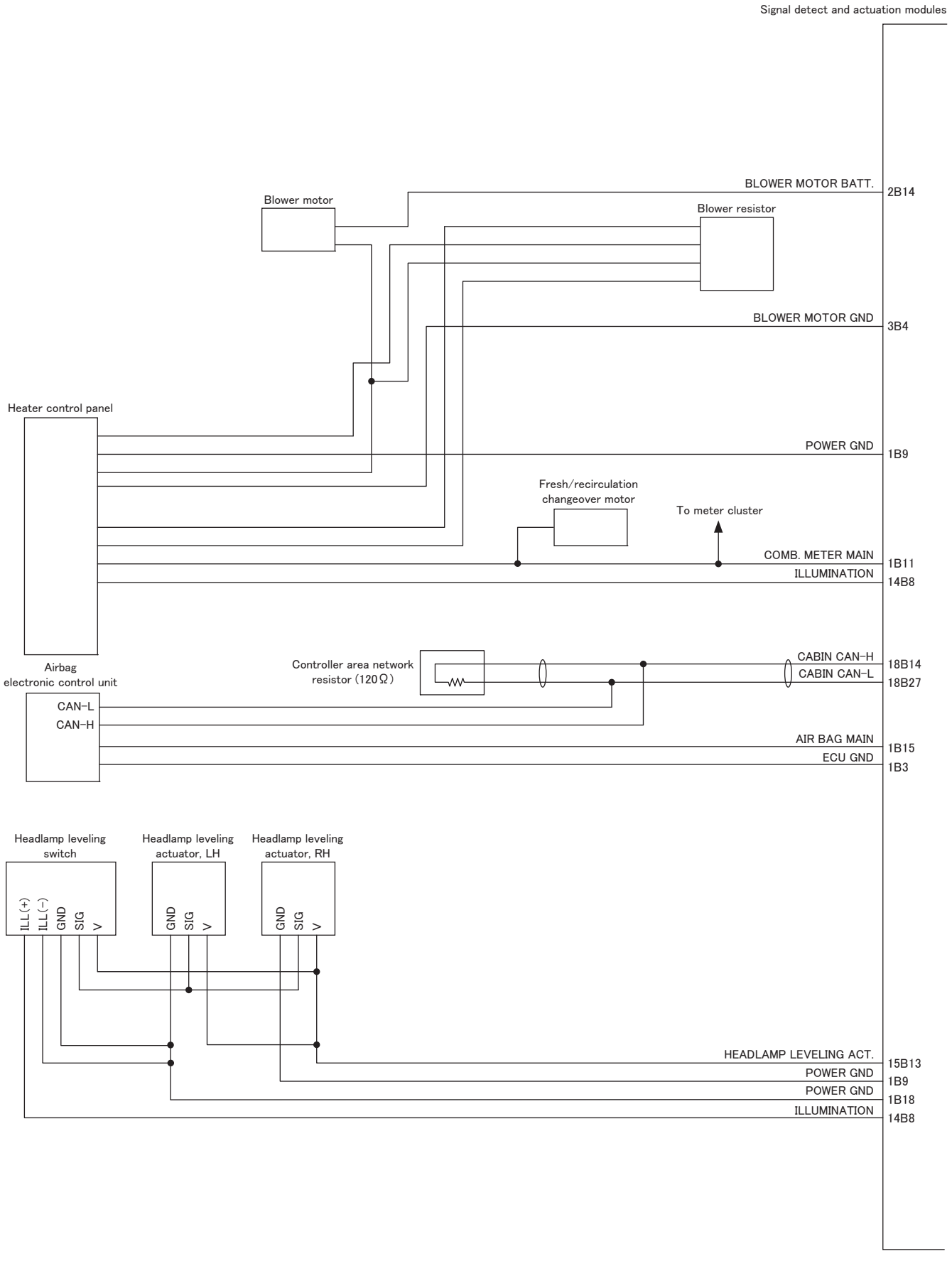

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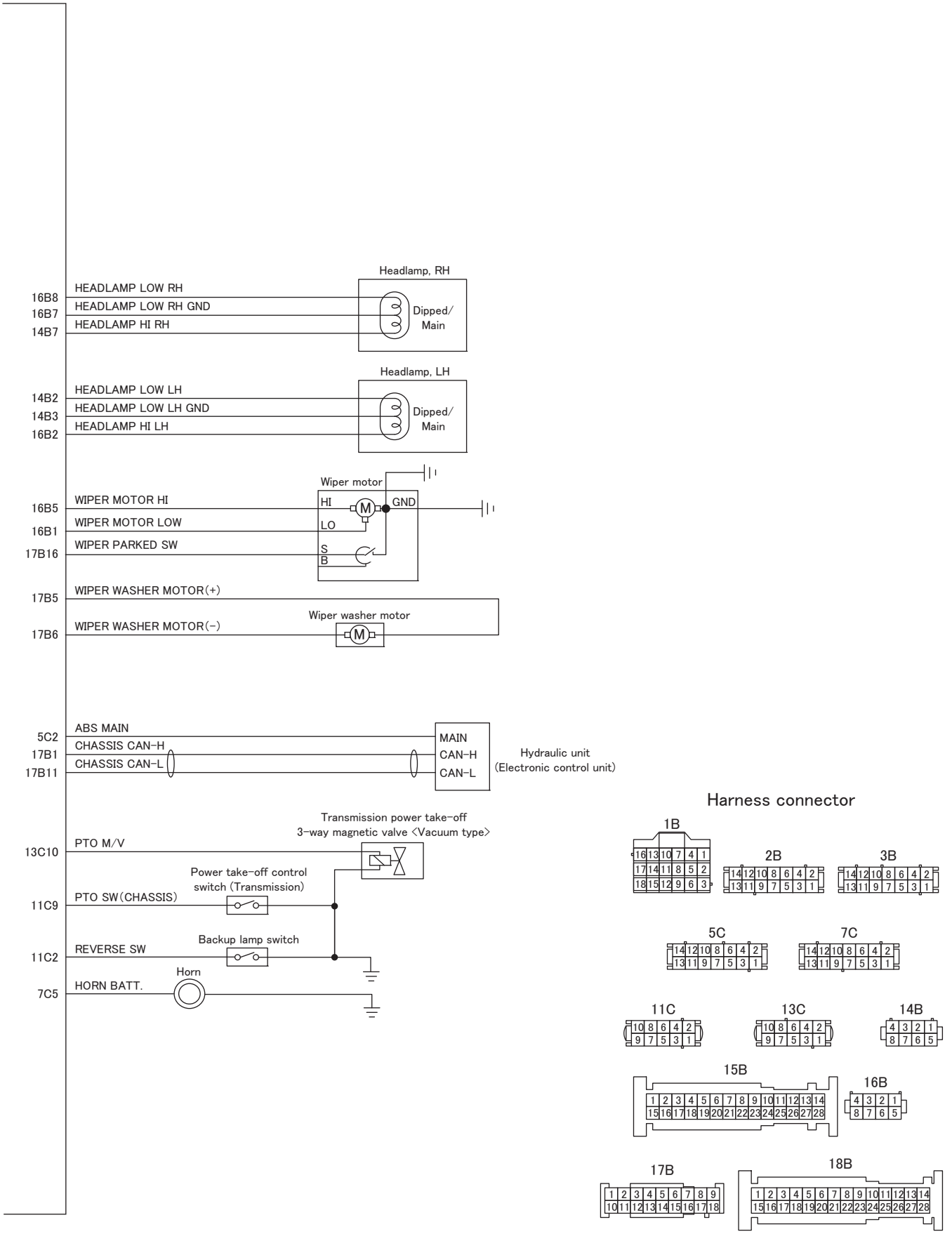
Signal detect and actuation modules



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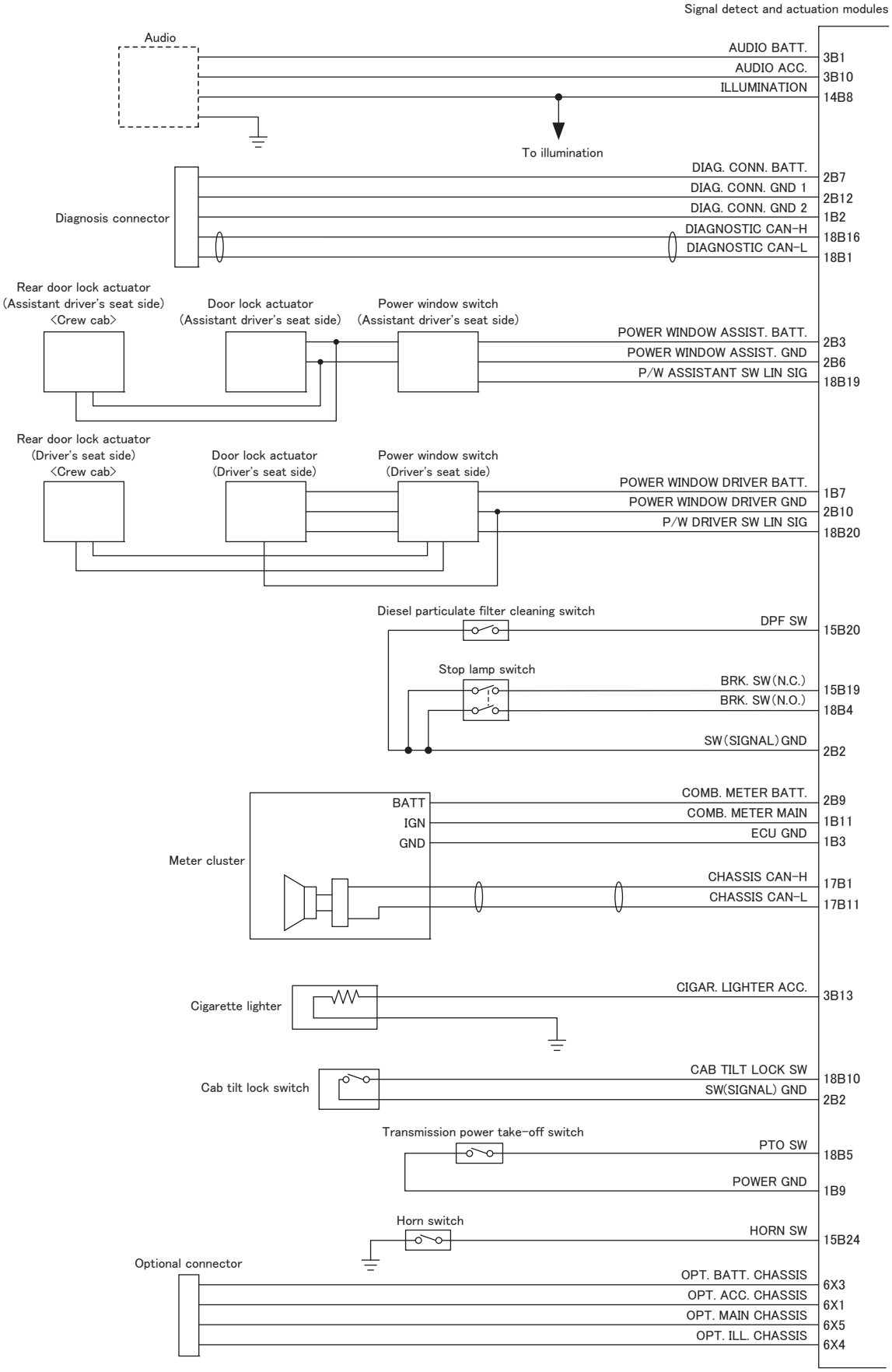

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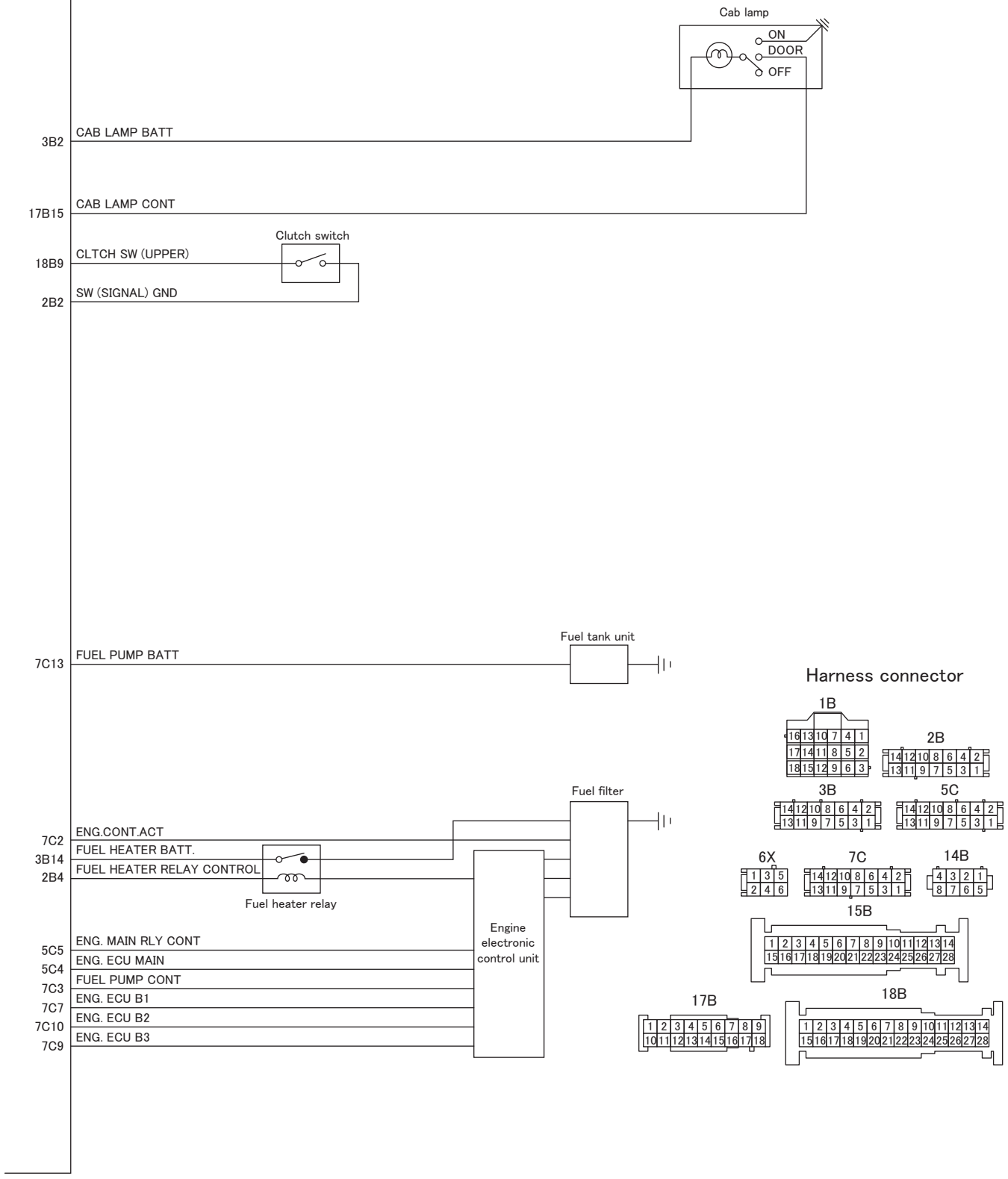
Signal detect and actuation modules



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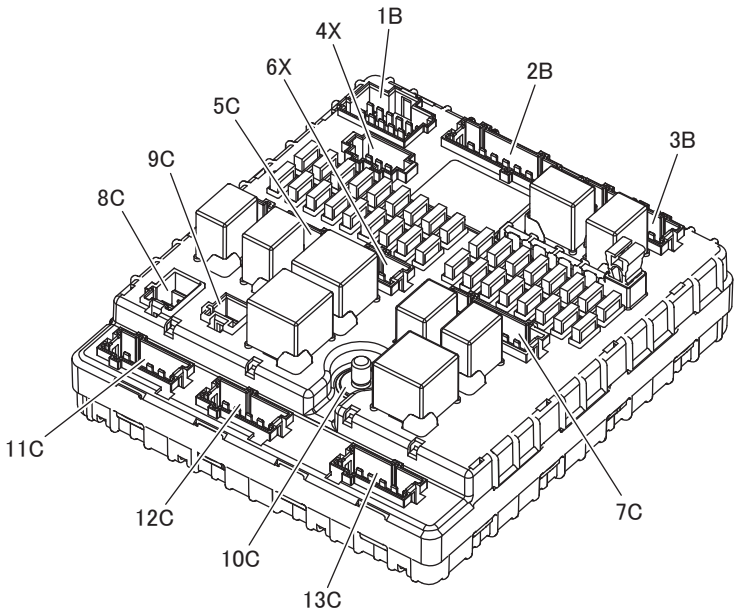

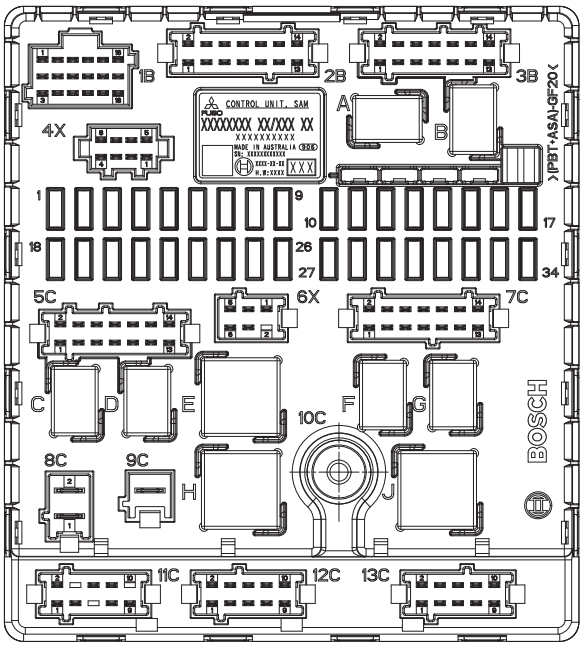

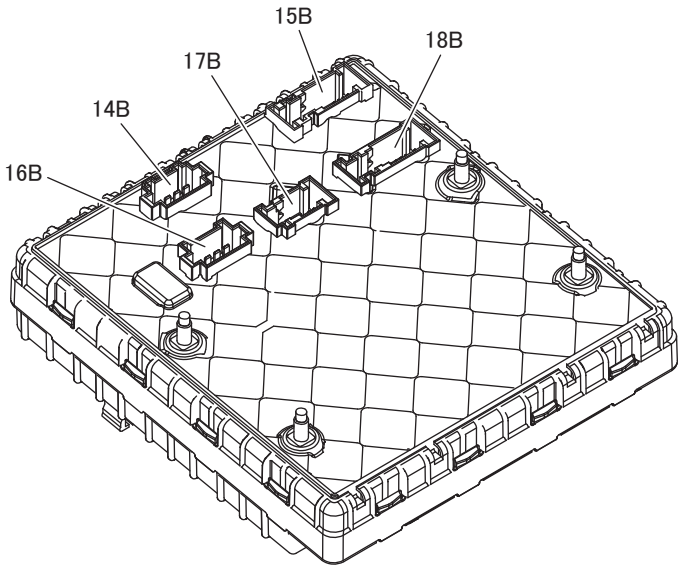

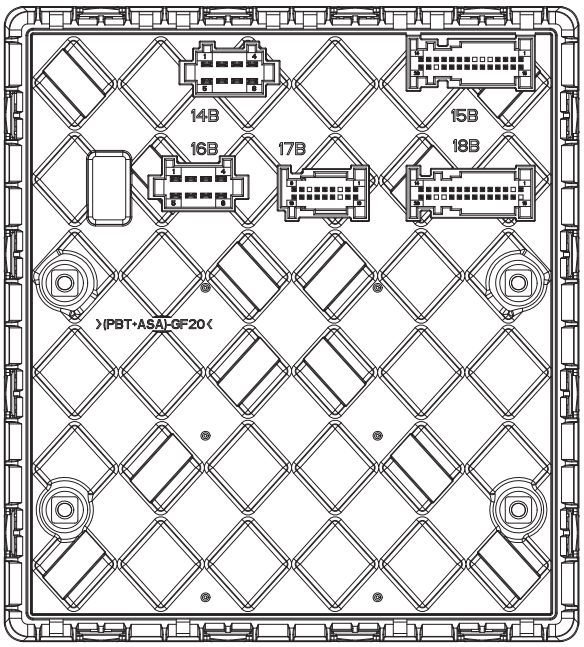

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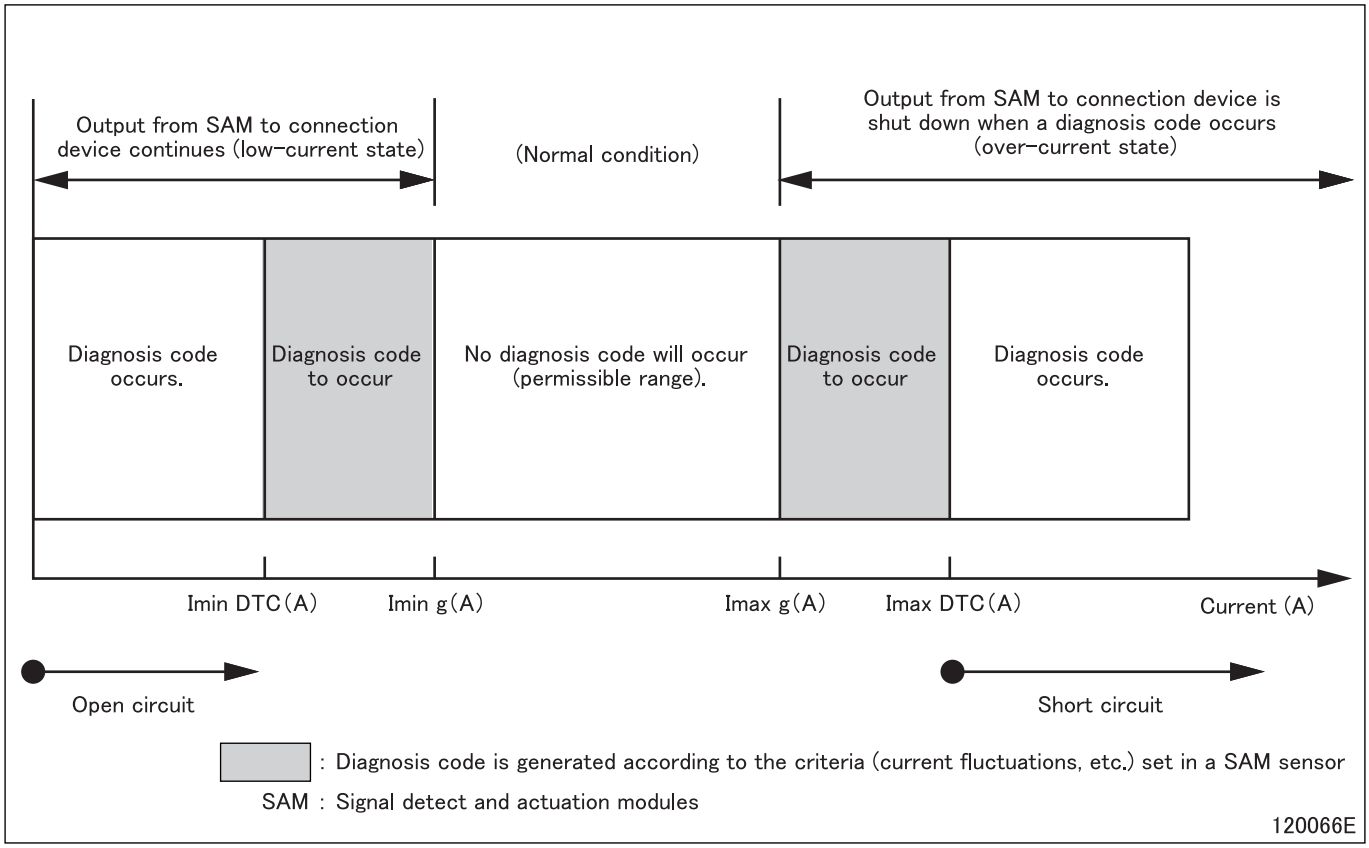
M E M O

4. Diagnosis Code Occurrence Condition Range (List of Output Current Threshold Values)

CAUTION ⚠

- **Install genuine parts only. Mounting a non-genuine part may cause a diagnosis code to occur.**

- Diagnosis code occurrence condition range of each connection device



- Connection device output current threshold values

Terminal	Devices to be connected	Imin g (A)	Imax g (A)	Imin DTC (A)	Imax DTC (A)
12C-7	Option connector (side turn lamp (LH)) *1	1.1	2.3	0.5	3.7
13C-4	Option connector (side turn lamp (RH)) *1	1.1	2.3	0.6	3.7
4X-5	Option connector (body illumination) *1	0	3.8	0	6.3 *2 7.3 *3
6X-4	Option connector (chassis illumination) *1	0	3.8	0	6.3 *2 7.3 *3
13C-10	Transmission power take-off 3-way magnetic valve	0.4	1	0.2	1.7
14B-1	Mirror heater (RH) *1	2.7	7.7	0.7	13.5
13C-6	Backup lamp	2.2	4.7	1.1	8.2
16B-2	Head lamp high beam (LH)	2.9	6.5	0.8	11.7
14B-7	Head lamp high beam (RH)	2.9	6.5	0.8	11.7
14B-2	Head lamp low beam (LH)	2.9	6	0.8	10.9
16B-8	Head lamp low beam (RH)	2.9	6	0.8	10.9
12C-9	Daytime running lamp (RH)	1.1	2.3	0.5	4
13C-3	Daytime running lamp (LH)	1.1	2.3	0.5	4
12C-1	Stop lamp (LH)	1.1	2.3	0.5	3.7
13C-7	Stop lamp (RH)	1.1	2.3	0.5	3.7
15B-10	Parking lamp (LH)	0.3	0.5	0.1	1
15B-11	Parking lamp (RH)	0.3	0.5	0.1	1

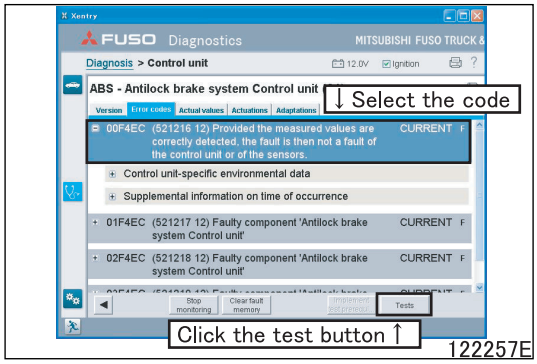
Terminal	Devices to be connected	Imin g (A)	Imax g (A)	Imin DTC (A)	Imax DTC (A)
13C-8	Tail lamp (LH)	0.3	1.3	0.1	2.4
12C-3	Tail lamp (RH)	0.3	1.3	0	2.2
12C-4	Rear turn lamp (LH)	1.1	2.3	0.5	3.7
13C-5	Rear turn lamp (RH)	1.1	2.3	0.5	3.7
16B-4	Front turn lamp (LH)	1.1	2.3	0.5	3.7
14B-4	Front turn lamp (RH)	1.1	2.3	0.5	3.9
12C-6	Front fog lamp (RH)	2.9	6	0.8	10.9
12C-2	Rear fog lamp (LH), (RH)	1.1	4.7	0.2	8.7
15B-13	Headlamp leveling actuator (LH), (RH)	0	1.5	0	2.4
15B-12	Step lamp (RH)	0.3	0.5	0.1	0.9
15B-14	Step lamp (LH)	0.3	0.5	0.1	0.9
14B-8	Illumination lamp	0	3.9	0	6.7
16B-5	Wiper motor (Hi)	0.7	11.6	0.1	19.2
16B-1	Wiper motor (Lo)	0.5	7.7	0	13.3
17B-5	Wiper washer motor	1.7	4.9	0.4	8.9
13C-9	License plate lamp	0.3	1.1	0.1	1.8
12C-5	License plate lamp (RH)	0.3	1.1	0	1.9
13C-2	Front fog lamp (LH)	2.9	6	0.8	10.9
14B-5	Mirror heater (LH) *1	2.7	7.7	0.7	13.5
11C-6	Backup buzzer *1	–	0.4 *5	–	0.9 *5
15B-27	Mirror heater switch illumination *1	–	0.4 *5	–	0.9 *5
17B-17	Key interlock solenoid	–	4.2	–	7.4
17B-15	Cab lamp	–	6 *4	–	12 *4
16B-5	Wiper interval control switch	–	12 *4	–	36 *4

Terminal positions (See section 3. Electronic Control Unit Circuit Diagram)

*1: Enabled when the option is mounted or parameters are set using coding
*2: Vehicle with battery equalizer
*3: Vehicle without battery equalizer
*4: Specify the limit at a battery voltage of 13 V.
*5: Specify the limit at a battery voltage of 13 V and to a short-circuit to 10-mΩ ground.

1. Inspection Based on Diagnosis Codes

- The contents of FUSO Diagnostics are updated to improve without any notice. When there is any difference between the FUSO Diagnostics and the workshop manual, check the latest information with the FUSO Diagnostics.



- When the FUSO Diagnostics is connected, perform the interactive troubleshooting with the following procedure.

Select the code from the diagnostics code list
↓
Click the test button
↓
Start the interactive troubleshooting

1.1 List of diagnosis codes

Code	Message	Warning lamp indication		Remarks
		SAM (red)	SAM (amber)	
2372-4	Left rear brake light - Insufficient voltage or short circuit to ground	-	O	
2372-5	Left rear brake light - The current strength is too low or there is an open circuit.	-	O	
2374-4	Right rear brake light - Insufficient voltage or short circuit to ground	-	O	
2374-5	Right rear brake light - The current strength is too low or there is an open circuit.	-	O	
521985-4	BBC Left turn signal lamp Short circuit to ground - Insufficient voltage or short circuit to ground	-	-	
521985-5	BBC Left turn signal lamp Open circuit - The current strength is too low or there is an open circuit.	-	-	
521986-4	BBC Right turn signal lamp Short circuit to ground - Insufficient voltage or short circuit to ground	-	-	
521986-5	BBC Right turn signal lamp Open circuit - The current strength is too low or there is an open circuit.	-	-	
521987-4	BBC Interior illumination - Insufficient voltage or short circuit to ground	-	-	
521988-4	BBC Exterior illumination - Insufficient voltage or short circuit to ground	-	-	
521989-4	Switches BBC Backup warning system Short circuit to ground - Insufficient voltage or short circuit to ground	-	-	
521990-4	3/2-way valve 'Power take-off' - Insufficient voltage or short circuit to ground.	-	-	
521990-5	3/2-way valve 'Power take-off' - The current strength is too low or there is an open circuit.	-	-	
521992-4	Mirror heater Driver side - Insufficient voltage or short circuit to ground.	-	-	
521994-4	Backup lamp - Insufficient voltage or short circuit to ground	-	-	
521994-5	Backup lamp - The current strength is too low or there is an open circuit.	-	-	
521995-4	Left high beam - Insufficient voltage or short circuit to ground	-	-	
521995-5	Left high beam - The current strength is too low or there is an open circuit.	-	-	
521996-4	Right high beam - Insufficient voltage or short circuit to ground	-	-	
521996-5	Right high beam - The current strength is too low or there is an open circuit.	-	-	

Code	Message	Warning lamp indication		Remarks
		SAM (red)	SAM (amber)	
521997-4	Left low beam - Insufficient voltage or short circuit to ground	-	-	
521997-5	Left low beam - The current strength is too low or there is an open circuit.	-	-	
521998-4	Right low beam - Insufficient voltage or short circuit to ground	-	-	
521998-5	Right low beam - The current strength is too low or there is an open circuit.	-	-	
521999-4	Left daytime running light - Insufficient voltage or short circuit to ground.	-	O	
521999-5	Left daytime running light - The current strength is too low or there is an open circuit.	-	O	
522000-4	Right daytime running light - Insufficient voltage or short circuit to ground.	-	O	
522000-5	Right daytime running light - The current strength is too low or there is an open circuit.	-	O	
522003-4	Left standing light - Insufficient voltage or short circuit to ground	-	O	
522003-5	Left standing light - The current strength is too low or there is an open circuit.	-	O	
522004-4	Right standing light - Insufficient voltage or short circuit to ground	-	O	
522004-5	Right standing light - The current strength is too low or there is an open circuit.	-	O	
522005-4	Left taillamp - Insufficient voltage or short circuit to ground	-	O	
522005-5	Left taillamp - The current strength is too low or there is an open circuit.	-	O	
522006-4	Right taillamp - Insufficient voltage or short circuit to ground	-	O	
522006-5	Right taillamp - The current strength is too low or there is an open circuit.	-	O	
522007-4	Left rear turn signal lamp - Insufficient voltage or short circuit to ground	-	-	
522007-5	Left rear turn signal lamp - The current strength is too low or there is an open circuit.	-	-	
522008-4	Right rear turn signal lamp - Insufficient voltage or short circuit to ground	-	-	
522008-5	Right rear turn signal lamp - The current strength is too low or there is an open circuit.	-	-	
522009-4	Left turn signal lamp (front and side) - Insufficient voltage or short circuit to ground	-	-	
522009-5	Left turn signal lamp (front and side) - The current strength is too low or there is an open circuit.	-	-	
522010-4	Right turn signal lamp (front and side) - Insufficient voltage or short circuit to ground	-	-	
522010-5	Right turn signal lamp (front and side) - The current strength is too low or there is an open circuit.	-	-	
522011-4	Right front fog lamp - Insufficient voltage or short circuit to ground	-	-	
522011-5	Right front fog lamp - The current strength is too low or there is an open circuit.	-	-	
522012-4	Rear fog lamp - Insufficient voltage or short circuit to ground	-	O	
522012-5	Rear fog lamp - The current strength is too low or there is an open circuit.	-	O	
522013-4	Electric motor “Left automatic headlamp adjustment”, Electric motor “Right automatic headlamp adjustment” - Insufficient voltage or short circuit to ground	-	-	

Code	Message	Warning lamp indication		Remarks
		SAM (red)	SAM (amber)	
522014-4	Passenger side Step illumination - Insufficient voltage or short circuit to ground	-	-	
522014-5	Passenger side Step illumination - The current strength is too low or there is an open circuit.	-	-	
522015-4	Driver side Step illumination - Insufficient voltage or short circuit to ground	-	-	
522015-5	Driver side Step illumination - The current strength is too low or there is an open circuit.	-	-	
522016-4	Cabin button illumination - Insufficient voltage or short circuit to ground	-	-	
522017-4	Wiper motor - Insufficient voltage or short circuit to ground	-	-	
522017-5	Wiper motor - The current strength is too low or there is an open circuit.	-	-	
522020-4	Left license plate lamp - Insufficient voltage or short circuit to ground	-	O	
522020-5	Left license plate lamp - The current strength is too low or there is an open circuit.	-	O	
522021-4	Right license plate lamp - Insufficient voltage or short circuit to ground	-	O	
522021-5	Right license plate lamp - The current strength is too low or there is an open circuit.	-	O	
522022-4	Left front fog lamp - Insufficient voltage or short circuit to ground	-	-	
522022-5	Left front fog lamp - The current strength is too low or there is an open circuit.	-	-	
522026-4	Mirror heater Passenger side - Insufficient voltage or short circuit to ground.	-	-	
522027-3	Interior lamp - Excessive voltage or short circuit to positive	-	-	
522028-4	Mirror heater Switches - Insufficient voltage or short circuit to ground.	-	-	
522029-4	Warning buzzer (Component 'Warning buzzer' is integrated in component 'Instrument panel'.) - Insufficient voltage or short circuit to ground.	-	-	
522030-4	Warning buzzer (Backup warning system) - Insufficient voltage or short circuit to ground	-	-	
522032-4	BBC Power take-off Short circuit to ground - Insufficient voltage or short circuit to ground.	-	-	
522033-4	BBC Switch 'TCM Neutral position' Short circuit to ground - Insufficient voltage or short circuit to ground.	-	-	
522034-4	BBC Switch 'Parking brake' Short circuit to ground - Insufficient voltage or short circuit to ground.	-	-	
522038-5	Blower motor Relays - The current strength is too low or there is an open circuit.	-	O	
522039-5	Relay 'Power supply for optional bodies' (ACC) - The current strength is too low or there is an open circuit.	-	O	
522040-5	Starter signal Relays (IGN) - The current strength is too low or there is an open circuit.	O	-	
522041-5	Starter signal Relays (ACC) - The current strength is too low or there is an open circuit.	O	-	
522042-5	Relay 'Power supply for optional bodies' (IGN) - The current strength is too low or there is an open circuit.	-	O	
522043-5	Refrigerant compressor Relays - The current strength is too low or there is an open circuit.	-	O	
522064-25	DUONIC Control unit - The received data are implausible.	-	-	
522066-25	Antilock brake system Control unit - The received data are implausible.	-	-	

Code	Message	Warning lamp indication		Remarks
		SAM (red)	SAM (amber)	
522067-25	Combination switch - The received data are implausible.	-	O	
522069-25	Combination switch - The received data are implausible.	-	-	
522070-25	Combination switch - The received data are implausible.	-	-	
522071-25	DUONIC Control unit - The received data are implausible.	-	-	
522072-25	Automatic engine start/stop Control unit - The received data are implausible.	-	-	
522073-25	Antilock brake system Control unit - The received data are implausible.	-	-	
522074-25	Combustion engine Control unit - The received data are implausible.	-	-	
522075-25	Combustion engine Control unit - The received data are implausible.	-	-	
522076-25	Combustion engine Control unit - The received data are implausible.	-	-	
522077-25	Combination switch - The received data are implausible.	-	O	
522078-25	Combination switch - The received data are implausible.	-	-	
522079-25	Selector lever - The received data are implausible.	-	-	
522080-25	Key less entry unit - The received data are implausible.	-	-	
522081-25	Power window 'Driver door' Switches - The received data are implausible.	-	-	
522082-25	Power window 'Front passenger door' Switches - The received data are implausible.	-	-	
522097-2	Starter Switches (ACC) - Implausible data	O	-	
522098-2	Starter Switches (ON) - Implausible data.	O	-	
522099-2	Starter Switches (START) - Implausible data.	O	-	
522112-3	The battery voltage is too high. - Excessive voltage or short circuit to positive	O	-	
522112-4	The battery voltage is too low. - Insufficient voltage or short circuit to ground	O	-	
522113-25	Combination switch - The received data are implausible.	-	-	
522114-25	Combination switch - The received data are implausible.	-	-	
522115-25	Power window 'Driver door' Switches - The received data are implausible.	-	-	
522116-25	Power window 'Front passenger door' Switches - The received data are implausible.	-	-	
522117-25	Key less entry unit - The received data are implausible.	-	-	
522118-25	Selector lever - The received data are implausible.	-	-	
522133-17	Vacuum system Power take-off M/T - Activation Timeout error.	-	-	
522134-17	Vacuum system Power take-off M/T - Deactivation Timeout error.	-	-	
522135-17	Vacuum system Power take-off M/T - Deactivation No request.	-	-	
522136-17	Vacuum system Power take-off M/T - Activation No request.	-	-	
522138-25	Combination switch - The received data are implausible.	-	-	
522139-25	Combination switch - The received data are implausible.	-	-	

Code	Message	Warning lamp indication		Remarks
		SAM (red)	SAM (amber)	
522140-25	Combination switch - The received data are implausible.	-	-	
522141-25	Combination switch - The received data are implausible.	-	-	
522142-4	Wiper motor - Insufficient voltage or short circuit to ground	-	-	
522143-5	Wiper motor - The current strength is too low or there is an open circuit.	-	-	
522144-3	Wiper motor - Excessive voltage or short circuit to positive	-	-	
522147-4	Ignition key Locking solenoid - Insufficient voltage or short circuit to ground	-	-	
522148-17	Faulty part CPU inside component "Signal & ActuatorModule"	-	-	
522149-17	Faulty part Memory inside component "Signal & ActuatorModule"	O	-	
522150-17	Faulty component 'Signal & ActuatorModule'	O	-	

1.2 Details of diagnosis codes

2372-4: Left rear brake light - Insufficient voltage or short circuit to ground

Generation condition	• Output current to stop lamp (left-hand) rises to range of 2.3 to 3.7 A or higher.
Recoverability	• System recovers when output current to stop lamp (left-hand) falls within range of 2.3 to 3.7 A or lower.
Control effected by electronic control unit	• Output to stop lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between stop lamp (left-hand) and signal detect and actuation module • Faulty stop lamp (left-hand) • Defective signal detect and actuation module

2372-5: Left rear brake light - The current strength is too low or there is an open circuit.

Generation condition	• Output current to stop lamp (left-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to stop lamp (left-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between stop lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between stop lamp (left-hand) and signal detect and actuation module • Faulty stop lamp (left-hand) • Defective signal detect and actuation module

2374-4: Right rear brake light - Insufficient voltage or short circuit to ground

Generation condition	• Output current to stop lamp (right-hand) rises to range of 2.3 to 3.7 A or higher.
Recoverability	• System recovers when output current to stop lamp (right-hand) falls within range of 2.3 to 3.7 A or lower.
Control effected by electronic control unit	• Output to stop lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between stop lamp (right-hand) and signal detect and actuation module • Faulty stop lamp (right-hand) • Defective signal detect and actuation module

2374-5: Right rear brake light - The current strength is too low or there is an open circuit.

Generation condition	• Output current to stop lamp (right-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to stop lamp (right-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between stop lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between stop lamp (right-hand) and signal detect and actuation module • Faulty stop lamp (right-hand) • Defective signal detect and actuation module

521985-4: BBC Left turn signal lamp Short circuit to ground - Insufficient voltage or short circuit to ground

Generation condition	• Output current to side turn signal lamp (left-hand) rises to range of 2.3 to 3.7 A or higher.
Recoverability	• System recovers when output current to side turn signal lamp (left-hand) falls within range of 2.3 to 3.7 A or lower.
Control effected by electronic control unit	• Output to side turn signal lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between side turn signal lamp (left-hand) and signal detect and actuation module • Faulty side turn signal lamp (left-hand) • Defective signal detect and actuation module

521985-5: BBC Left turn signal lamp Open circuit - The current strength is too low or there is an open circuit.

Generation condition	• Output current to side turn signal lamp (left-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to side turn signal lamp (left-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between side turn signal lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between side turn signal lamp (left-hand) and signal detect and actuation module • Faulty side turn signal lamp (left-hand) • Defective signal detect and actuation module

521986-4: BBC Right turn signal lamp Short circuit to ground - Insufficient voltage or short circuit to ground

Generation condition	• Output current to side turn signal lamp (right-hand) rises to range of 2.3 to 3.7 A or higher.
Recoverability	• System recovers when output current to side turn signal lamp (right-hand) falls within range of 2.3 to 3.7 A or lower.
Control effected by electronic control unit	• Output to side turn signal lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between side turn signal lamp (right-hand) and signal detect and actuation module • Faulty side turn signal lamp (right-hand) • Defective signal detect and actuation module

521986-5: BBC Right turn signal lamp Open circuit - The current strength is too low or there is an open circuit.

Generation condition	• Output current to side turn signal lamp (right-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to side turn signal lamp (right-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between side turn signal lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between side turn signal lamp (right-hand) and signal detect and actuation module • Faulty side turn signal lamp (right-hand) • Defective signal detect and actuation module

521987-4: BBC Interior illumination - Insufficient voltage or short circuit to ground

Generation condition	• Output current to body illumination lamp rises to range of 3.8 to 7.3 A or higher.
Recoverability	• System recovers when output current to body illumination lamp falls within range of 3.8 to 7.3 A or lower.
Control effected by electronic control unit	• Output to body illumination lamp is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between body illumination lamp (12 V) and signal detect and actuation module • Faulty body illumination lamp (12 V) • Defective signal detect and actuation module

521988-4: BBC Exterior illumination - Insufficient voltage or short circuit to ground

Generation condition	• Output current to chassis illumination lamp rises to range of 3.8 to 7.3 A or higher.
Recoverability	• System recovers when output current to chassis illumination lamp falls within range of 3.8 to 7.3 A or lower.
Control effected by electronic control unit	• Output to chassis illumination lamp is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between chassis illumination lamp (12 V) and signal detect and actuation module • Faulty chassis illumination lamp (12 V) • Defective signal detect and actuation module

521989-4: Switches BBC Backup warning system Short circuit to ground - Insufficient voltage or short circuit to ground

Generation condition	• Output current to backup lamp rises to range of 0.4 to 0.7 A or higher.
Recoverability	• System recovers when output current to backup lamp falls within range of 0.4 to 0.7 A or lower.
Control effected by electronic control unit	• Output to backup lamp is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between backup lamp and signal detect and actuation module • Faulty backup lamp • Defective signal detect and actuation module

521990-4: 3/2-way valve 'Power take-off' - Insufficient voltage or short circuit to ground

Generation condition	• Output current to transmission power take-off 3-way magnetic valve rises to range of 1.0 to 1.7 A or higher.
Recoverability	• System recovers when output current to transmission power take-off 3-way magnetic valve falls within range of 1.0 to 1.7 A or lower.
Control effected by electronic control unit	• Output to transmission power take-off 3-way magnetic valve is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between transmission power take-off 3-way magnetic valve and signal detect and actuation module • Faulty transmission power take-off 3-way magnetic valve • Defective signal detect and actuation module

521990-5: 3/2-way valve 'Power take-off' - The current strength is too low or there is an open circuit

Generation condition	• Output current to transmission power take-off 3-way magnetic valve falls to range of 0.2 to 0.4 A or lower.
Recoverability	• System recovers when output current to transmission power take-off 3-way magnetic valve rises to range of 0.2 to 0.4 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between transmission power take-off 3-way magnetic valve and signal detect and actuation module • Open-circuit in Plus harness between transmission power take-off 3-way magnetic valve and signal detect and actuation module • Faulty transmission power take-off 3-way magnetic valve • Defective signal detect and actuation module

521992-4: Mirror heater Driver side - Insufficient voltage or short circuit to ground

Generation condition	• Output current to mirror heater (driver side) rises to range of 7.7 to 13.5 A or higher.
Recoverability	• System recovers when output current to mirror heater (right-hand) falls within range of 7.7 to 13.5 A or lower.
Control effected by electronic control unit	• Output to mirror heater (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between mirror heater (right-hand) and signal detect and actuation module • Faulty mirror heater (right-hand) • Defective signal detect and actuation module

521994-4: Backup lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to backup lamp rises to range of 4.7 to 8.2 A or higher.
Recoverability	• System recovers when output current to backup lamp falls within range of 4.7 to 8.2 A or lower.
Control effected by electronic control unit	• Output to backup lamp is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between backup lamp and signal detect and actuation module • Faulty backup lamp • Defective signal detect and actuation module

521994-5: Backup lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to backup lamp falls to range of 1.1 to 2.2 A or lower.
Recoverability	• System recovers when output current to backup lamp rises to range of 1.1 to 2.2 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between backup lamp and signal detect and actuation module • Open-circuit in Plus harness between backup lamp and signal detect and actuation module • Faulty backup lamp • Defective signal detect and actuation module

521995-4: Left high beam - Insufficient voltage or short circuit to ground

Generation condition	• Output current to headlamp Hi (left-hand) rises to range of 6.5 to 11.7 A or higher.
Recoverability	• System recovers when output current to headlamp Hi (left-hand) falls within range of 6.5 to 11.7 A or lower.
Control effected by electronic control unit	• Output to headlamp Hi (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between headlamp Hi (left-hand) and signal detect and actuation module • Faulty headlamp Hi (left-hand) • Defective signal detect and actuation module

521995-5: Left high beam - The current strength is too low or there is an open circuit.

Generation condition	• Output current to headlamp Hi (left-hand) falls to range of 0.8 to 2.9 A or lower.
Recoverability	• System recovers when output current to headlamp Hi (left-hand) rises to range of 0.8 to 2.9 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between headlamp Hi (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between headlamp Hi (left-hand) and signal detect and actuation module • Faulty headlamp Hi (left-hand) • Defective signal detect and actuation module

521996-4: Right high beam - Insufficient voltage or short circuit to ground

Generation condition	• Output current to headlamp Hi (right-hand) rises to range of 6.5 to 11.7 A or higher.
Recoverability	• System recovers when output current to headlamp Hi (right-hand) falls within range of 6.5 to 11.7 A or lower.
Control effected by electronic control unit	• Output to headlamp Hi (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between headlamp Hi (right-hand) and signal detect and actuation module • Faulty headlamp Hi (right-hand) • Defective signal detect and actuation module

521996-5: Right high beam - The current strength is too low or there is an open circuit.

Generation condition	• Output current to headlamp Hi (right-hand) falls to range of 0.8 to 2.9 A or lower.
Recoverability	• System recovers when output current to headlamp Hi (right-hand) rises to range of 0.8 to 2.9 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between headlamp Hi (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between headlamp Hi (right-hand) and signal detect and actuation module • Faulty headlamp Hi (right-hand) • Defective signal detect and actuation module

521997-4: Left low beam - Insufficient voltage or short circuit to ground

Generation condition	• Output current to headlamp Lo (left-hand) rises to range of 6.0 to 10.9 A or higher.
Recoverability	• System recovers when output current to headlamp Lo (left-hand) falls within range of 6.0 to 10.9 A or lower.
Control effected by electronic control unit	• Output to headlamp Lo (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between headlamp Lo (left-hand) and signal detect and actuation module • Faulty headlamp Lo (left-hand) • Defective signal detect and actuation module

521997-5: Left low beam - The current strength is too low or there is an open circuit.

Generation condition	• Output current to headlamp Lo (left-hand) falls to range of 0.8 to 2.9 A or lower.
Recoverability	• System recovers when output current to headlamp Lo (left-hand) rises to range of 0.8 to 2.9 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between headlamp Lo (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between headlamp Lo (left-hand) and signal detect and actuation module • Faulty headlamp Lo (left-hand) • Defective signal detect and actuation module

521998-4: Right low beam - Insufficient voltage or short circuit to ground

Generation condition	• Output current to headlamp Lo (right-hand) rises to range of 6.0 to 10.9 A or higher.
Recoverability	• System recovers when output current to headlamp Lo (right-hand) falls within range of 6.0 to 10.9 A or lower.
Control effected by electronic control unit	• Output to headlamp Lo (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between headlamp Lo (right-hand) and signal detect and actuation module • Faulty headlamp Lo (right-hand) • Defective signal detect and actuation module

521998-5: Right low beam - The current strength is too low or there is an open circuit.

Generation condition	• Output current to headlamp Lo (right-hand) falls to range of 0.8 to 2.9 A or lower.
Recoverability	• System recovers when output current to headlamp Lo (right-hand) rises to range of 0.8 to 2.9 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between headlamp Lo (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between headlamp Lo (right-hand) and signal detect and actuation module • Faulty headlamp Lo (right-hand) • Defective signal detect and actuation module

521999-4: Left daytime running light - Insufficient voltage or short circuit to ground.

Generation condition	• Output current to DRL lamp (left-hand) rises to range of 2.3 to 4.0 A or higher.
Recoverability	• System recovers when output current to DRL lamp (left-hand) falls within range of 2.3 to 4.0 A or lower.
Control effected by electronic control unit	• Out put to DRL lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between DRL lamp (left-hand) and signal detect and actuation module • Faulty DRL lamp (left-hand) • Defective signal detect and actuation module

521999-5: Left daytime running light - The current strength is too low or there is an open circuit.

Generation condition	• Output current to DRL lamp (left-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to DRL lamp (left-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between DRL lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between DRL lamp (left-hand) and signal detect and actuation module • Faulty DRL lamp (left-hand) • Defective signal detect and actuation module

522000-4: Right daytime running light - Insufficient voltage or short circuit to ground.

Generation condition	• Output current to DRL lamp (right-hand) rises to range of 2.3 to 4.0 A or higher.
Recoverability	• System recovers when output current to DRL lamp (right-hand) falls within range of 2.3 to 4.0 A or lower.
Control effected by electronic control unit	• Out put to DRL lamp (right-hand) is stopped
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between DRL lamp (right-hand) and signal detect and actuation module • Faulty DRL lamp (right-hand) • Defective signal detect and actuation module

522000-5: Right daytime running light - The current strength is too low or there is an open circuit.

Generation condition	• Output current to DRL lamp (right-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to DRL lamp (right-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between DRL lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between DRL lamp (right-hand) and signal detect and actuation module • Faulty DRL lamp (right-hand) • Defective signal detect and actuation module

522003-4: Left standing light - Insufficient voltage or short circuit to ground

Generation condition	• Output current to parking lamp (left-hand) rises to range of 0.5 to 1.0 A or higher.
Recoverability	• System recovers when output current to parking lamp (left-hand) falls within range of 0.5 to 1.0 A or lower.
Control effected by electronic control unit	• Output to parking lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between parking lamp (left-hand) and signal detect and actuation module • Faulty parking lamp (left-hand) • Defective signal detect and actuation module

522003-5: Left standing light - The current strength is too low or there is an open circuit.

Generation condition	• Output current to parking lamp (left-hand) falls to range of 0.1 to 0.3 A or lower.
Recoverability	• System recovers when output current to parking lamp (left-hand) rises to range of 0.1 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between parking lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between parking lamp (left-hand) and signal detect and actuation module • Faulty parking lamp (left-hand) • Defective signal detect and actuation module

522004-4: Right standing light - Insufficient voltage or short circuit to ground

Generation condition	• Output current to parking lamp (right-hand) rises to range of 0.5 to 1.0 A or higher.
Recoverability	• System recovers when output current to parking lamp (right-hand) falls within range of 0.5 to 1.0 A or lower.
Control effected by electronic control unit	• Output to parking lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between parking lamp (right-hand) and signal detect and actuation module • Faulty parking lamp (right-hand) • Defective signal detect and actuation module

522004-5: Right standing light - The current strength is too low or there is an open circuit.

Generation condition	• Output current to parking lamp (right-hand) falls to range of 0.1 to 0.3 A or lower.
Recoverability	• System recovers when output current to parking lamp (right-hand) rises to range of 0.1 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between parking lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between parking lamp (right-hand) and signal detect and actuation module • Faulty parking lamp (right-hand) • Defective signal detect and actuation module

522005-4: Left taillamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to tail lamp (left-hand) rises to range of 1.3 to 2.4 A or higher.
Recoverability	• System recovers when output current to tail lamp (left-hand) falls within range of 1.3 to 2.4 A or lower.
Control effected by electronic control unit	• Output to tail lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between tail lamp (left-hand) and signal detect and actuation module • Faulty tail lamp (left-hand) • Defective signal detect and actuation module

522005-5: Left taillamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to tail lamp (left-hand) falls to range of 0.1 to 0.3 A or lower.
Recoverability	• System recovers when output current to tail lamp (left-hand) rises to range of 0.1 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between tail lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between tail lamp (left-hand) and signal detect and actuation module • Faulty tail lamp (left-hand) • Defective signal detect and actuation module

522006-4: Right taillamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to tail lamp (right-hand) rises to range of 1.3 to 2.2 A or higher.
Recoverability	• System recovers when output current to tail lamp (right-hand) falls within range of 1.3 to 2.2 A or lower.
Control effected by electronic control unit	• Output to tail lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between tail lamp (right-hand) and signal detect and actuation module • Faulty tail lamp (right-hand) • Defective signal detect and actuation module

522006-5: Right taillamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to tail lamp (right-hand) falls to range of 0.0 to 0.3 A or lower.
Recoverability	• System recovers when output current to tail lamp (right-hand) rises to range of 0.0 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between tail lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between tail lamp (right-hand) and signal detect and actuation module • Faulty tail lamp (right-hand) • Defective signal detect and actuation module

522007-4: Left rear turn signal lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to rear turn signal lamp (left-hand) rises to range of 2.3 to 3.7 A or higher.
Recoverability	• System recovers when output current to rear turn signal lamp (left-hand) falls within range of 2.3 to 3.7 A or lower.
Control effected by electronic control unit	• Output to rear turn signal lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between rear turn signal lamp (left-hand) and signal detect and actuation module • Faulty rear turn signal lamp (left-hand) • Defective signal detect and actuation module

522007-5: Left rear turn signal lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to rear turn signal lamp (left-hand) falls to range of 0.5 to 1.1 A or lower. <In case of LED> • Output current to rear turn signal lamp (left/right-hand) falls to range of 0.007 to 0.03 A or lower.
Recoverability	• System recovers when output current to rear turn signal lamp (left-hand) rises to range of 0.5 to 1.1 A or higher. <In case of LED> • System recovers when output current to rear turn signal lamp (left/right-hand) rises to range of 0.007 to 0.03 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between rear turn signal lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between rear turn signal lamp (left-hand) and signal detect and actuation module • Faulty rear turn signal lamp (left-hand) • Defective signal detect and actuation module

522008-4: Right rear turn signal lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to rear turn signal lamp (right-hand) rises to range of 2.3 to 3.7 A or higher.
Recoverability	• System recovers when output current to rear turn signal lamp (right-hand) falls within range of 2.3 to 3.7 A or lower.
Control effected by electronic control unit	• Output to rear turn signal lamp (right-hand) is stopped
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between rear turn signal lamp (right-hand) and signal detect and actuation module • Faulty rear turn signal lamp (right-hand) • Defective signal detect and actuation module

522008-5: Right rear turn signal lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to rear turn signal lamp (right-hand) falls to range of 0.5 to 1.1 A or lower. <In case of LED> • Output current to rear turn signal lamp (left/right-hand) falls to range of 0.007 to 0.03 A or lower.
Recoverability	• System recovers when output current to rear turn signal lamp (right-hand) rises to range of 0.5 to 1.1 A or higher. <In case of LED> • System recovers when output current to rear turn signal lamp (left/right-hand) rises to range of 0.007 to 0.03 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between rear turn signal lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between rear turn signal lamp (right-hand) and signal detect and actuation module • Faulty rear turn signal lamp (right-hand) • Defective signal detect and actuation module

522009-4: Left turn signal lamp (front and side) - Insufficient voltage or short circuit to ground

Generation condition	• Output current to front side turn signal lamp (left-hand) rises to range of 2.3 to 3.7 A or higher.
Recoverability	• System recovers when output current to front side turn signal lamp (left-hand) falls within range of 2.3 to 3.7 A or lower.
Control effected by electronic control unit	• Output to front side turn signal lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between front side turn signal lamp (left-hand) and signal detect and actuation module • Faulty front side turn signal lamp (left-hand) • Defective signal detect and actuation module

522009-5: Left turn signal lamp (front and side) - The current strength is too low or there is an open circuit.

Generation condition	• Output current to front side turn signal lamp (left-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to front side turn signal lamp (left-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between front side turn signal lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between front side turn signal lamp (left-hand) and signal detect and actuation module • Faulty front side turn signal lamp (left-hand) • Defective signal detect and actuation module

522010-4: Right turn signal lamp (front and side) - Insufficient voltage or short circuit to ground

Generation condition	• Output current to front side turn signal lamp (right-hand) rises to range of 2.3 to 3.9 A or higher.
Recoverability	• System recovers when output current to front side turn signal lamp (right-hand) falls within range of 2.3 to 3.9 A or lower.
Control effected by electronic control unit	• Output to front side turn signal lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between front side turn signal lamp (right-hand) and signal detect and actuation module • Faulty front side turn signal lamp (right-hand) • Defective signal detect and actuation module

522010-5: Right turn signal lamp (front and side) - The current strength is too low or there is an open circuit.

Generation condition	• Output current to front side turn signal lamp (right-hand) falls to range of 0.5 to 1.1 A or lower.
Recoverability	• System recovers when output current to front side turn signal lamp (right-hand) rises to range of 0.5 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between front side turn signal lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between front side turn signal lamp (right-hand) and signal detect and actuation module • Faulty front side turn signal lamp (right-hand) • Defective signal detect and actuation module

522011-4: Right front fog lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to fog lamp (right-hand) rises to range of 6.0 to 10.9 A or higher.
Recoverability	• System recovers when output current to fog lamp (right-hand) falls within range of 6.0 to 10.9 A or lower.
Control effected by electronic control unit	• Output to fog lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between fog lamp (right-hand) and signal detect and actuation module • Faulty fog lamp (right-hand) • Defective signal detect and actuation module

522011-5: Right front fog lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to fog lamp (right-hand) falls to range of 0.8 to 2.9 A or lower.
Recoverability	• System recovers when output current to fog lamp (right-hand) rises to range of 0.8 to 2.9 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between fog lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between fog lamp (right-hand) and signal detect and actuation module • Faulty fog lamp (right-hand) • Defective signal detect and actuation module

522012-4: Rear fog lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to rear fog lamp (left-hand, right-hand) rises to range of 4.7 to 8.7 A or higher.
Recoverability	• System recovers when output current to rear fog lamp (left-hand, right-hand) falls within range of 4.7 to 8.7 A or lower.
Control effected by electronic control unit	• Output to rear fog lamp (left-hand, right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between rear fog lamp (left-hand, right-hand) and signal detect and actuation module • Faulty rear fog lamp (left-hand, right-hand) • Defective signal detect and actuation module

522012-5: Rear fog lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to rear fog lamp (left-hand, right-hand) falls to range of 0.2 to 1.1 A or lower.
Recoverability	• System recovers when output current to rear fog lamp (left-hand, right-hand) rises to range of 0.2 to 1.1 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between rear fog lamp (left-hand, right-hand) and signal detect and actuation module • Open-circuit in Plus harness between rear fog lamp (left-hand, right-hand) and signal detect and actuation module • Faulty rear fog lamp (left-hand, right-hand) • Defective signal detect and actuation module

522013-4: Electric motor “Left automatic headlamp adjustment”, Electric motor “Right automatic headlamp adjustment” - Insufficient voltage or short circuit to ground

Generation condition	• Output current to headlamp leveling actuator rises to range of 1.5 to 2.4 A or higher.
Recoverability	• System recovers when output current to headlamp leveling actuator falls within range of 1.4 to 2.2 A or lower.
Control effected by electronic control unit	• Output to headlamp leveling actuator is stopped.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between rear headlamp leveling actuator and signal detect and actuation module • Open-circuit in Plus harness between headlamp leveling actuator and signal detect and actuation module • Faulty headlamp leveling actuator • Defective signal detect and actuation module

522014-4: Passenger side Step illumination - Insufficient voltage or short circuit to ground

Generation condition	• Output current to step lamp (left-hand) rises to range of 0.5 to 0.9 A or higher.
Recoverability	• System recovers when output current to step lamp (left-hand) falls within range of 0.5 to 0.9 A or lower.
Control effected by electronic control unit	• Output to step lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between step lamp (left-hand) and signal detect and actuation module • Faulty step lamp (left-hand) • Defective signal detect and actuation module

522014-5: Passenger side Step illumination - The current strength is too low or there is an open circuit.

Generation condition	• Output current to step lamp (left-hand) falls to range of 0.1 to 0.3 A or lower.
Recoverability	• System recovers when output current to step lamp (left-hand) rises to range of 0.1 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between step lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between step lamp (left-hand) and signal detect and actuation module • Faulty step lamp (left-hand) • Defective signal detect and actuation module

522015-4: Driver side Step illumination - Insufficient voltage or short circuit to ground

Generation condition	• Output current to step lamp (right-hand) rises to range of 0.5 to 0.9 A or higher.
Recoverability	• System recovers when output current to step lamp (right-hand) falls within range of 0.5 to 0.9 A or lower.
Control effected by electronic control unit	• Output to step lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between step lamp (right-hand) and signal detect and actuation module • Faulty step lamp (right-hand) • Defective signal detect and actuation module

522015-5: Driver side Step illumination - The current strength is too low or there is an open circuit.

Generation condition	• Output current to step lamp (right-hand) falls to range of 0.1 to 0.3 A or lower.
Recoverability	• System recovers when output current to step lamp (right-hand) rises to range of 0.1 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between step lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between step lamp (right-hand) and signal detect and actuation module • Faulty step lamp (right-hand) • Defective signal detect and actuation module

522016-4: Cabin button illumination - Insufficient voltage or short circuit to ground

Generation condition	• Output current to illumination lamp rises to range of 3.9 to 6.7 A or higher.
Recoverability	• System recovers when output current to illumination lamp falls within range of 3.9 to 6.7 A or lower.
Control effected by electronic control unit	• Output to illumination lamp is stopped.
Possible causes	• Short-circuit to ground in harness between battery and signal detect and actuation module • Malfunction of battery • Faulty alternator • Defective signal detect and actuation module

522017-4: Wiper motor - Insufficient voltage or short circuit to ground

Generation condition	• Output current to washer motor rises to range of 4.9 to 8.9 A or higher.
Recoverability	• System recovers when output current to washer motor falls within range of 4.9 to 8.9 A or lower.
Control effected by electronic control unit	• Output to washer motor is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between washer motor and signal detect and actuation module • Faulty washer motor • Defective signal detect and actuation module

522017-5: Wiper motor - The current strength is too low or there is an open circuit.

Generation condition	• Output current to washer motor falls to range of 0.4 to 1.7 A or lower.
Recoverability	• System recovers when output current to washer motor rises to range of 0.4 to 1.7 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between washer motor and signal detect and actuation module • Open-circuit in Plus harness between washer motor and signal detect and actuation module • Faulty washer motor • Defective signal detect and actuation module

522020-4: Left license plate lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to license plate lamp (left-hand) rises to range of 1.1 to 1.8 A or higher.
Recoverability	• System recovers when output current to license plate lamp (left-hand) falls within range of 1.1 to 1.8 A or lower.
Control effected by electronic control unit	• Output to license plate lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between license plate lamp (left-hand) and signal detect and actuation module • Faulty license plate lamp (left-hand) • Defective signal detect and actuation module

522020-5: Left license plate lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to license plate lamp (left-hand) falls to range of 0.1 to 0.3 A or lower.
Recoverability	• System recovers when output current to license plate lamp (left-hand) rises to range of 0.1 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between license plate lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between license plate lamp (left-hand) and signal detect and actuation module • Faulty license plate lamp (left-hand) • Defective signal detect and actuation module

522021-4: Right license plate lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to license plate lamp (right-hand) rises to range of 1.1 to 1.9 A or higher.
Recoverability	• System recovers when output current to license plate lamp (right-hand) falls within range of 1.1 to 1.9 A or lower.
Control effected by electronic control unit	• Output to license plate lamp (right-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between license plate lamp (right-hand) and signal detect and actuation module • Faulty license plate lamp (right-hand) • Defective signal detect and actuation module

522021-5: Right license plate lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to license plate lamp (right-hand) falls to range of 0.1 to 0.3 A or lower.
Recoverability	• System recovers when output current to license plate lamp (right-hand) rises to range of 0.1 to 0.3 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between license plate lamp (right-hand) and signal detect and actuation module • Open-circuit in Plus harness between license plate lamp (right-hand) and signal detect and actuation module • Faulty license plate lamp (right-hand) • Defective signal detect and actuation module

522022-4: Left front fog lamp - Insufficient voltage or short circuit to ground

Generation condition	• Output current to fog lamp (left-hand) rises to range of 6.0 to 10.9 A or higher.
Recoverability	• System recovers when output current to fog lamp (left-hand) falls within range of 6.0 to 10.9 A or lower.
Control effected by electronic control unit	• Output to fog lamp (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between fog lamp (left-hand) and signal detect and actuation module • Faulty fog lamp (left-hand) • Defective signal detect and actuation module

522022-5: Left front fog lamp - The current strength is too low or there is an open circuit.

Generation condition	• Output current to fog lamp (left-hand) falls to range of 0.8 to 2.9 A or lower.
Recoverability	• System recovers when output current to fog lamp (left-hand) rises to range of 0.8 to 2.9 A or higher.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between fog lamp (left-hand) and signal detect and actuation module • Open-circuit in Plus harness between fog lamp (left-hand) and signal detect and actuation module • Faulty fog lamp (left-hand) • Defective signal detect and actuation module

522026-4: Left mirror heater - Insufficient voltage or short circuit to ground

Generation condition	• Output current to mirror heater (passenger side) rises to range of 7.7 to 13.5 A or higher.
Recoverability	• System recovers when output current to mirror heater (left-hand) falls within range of 7.7 to 13.5 A or lower.
Control effected by electronic control unit	• Output to mirror heater (left-hand) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between mirror heater (left-hand) and signal detect and actuation module • Faulty mirror heater (left-hand) • Defective signal detect and actuation module

522027-3: Interior lamp - Excessive voltage or short circuit to positive

Generation condition	• Output current to room lamp rises to range of 6.0 to 12.0 A or higher.
Recoverability	• System recovers when output current to room lamp falls within range of 6.0 to 12.0 A or lower.
Control effected by electronic control unit	• Output to room lamp is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between room lamp and signal detect and actuation module • Faulty room lamp • Defective signal detect and actuation module

522028-4: Mirror heater Switches - Insufficient voltage or short circuit to ground.

Generation condition	• Output current to mirror heater switch (illuminated) rises to range of 0.4 to 0.9 A or higher.
Recoverability	• System recovers when output current to mirror heater switch (illuminated) falls within range of 0.4 to 0.9 A or lower.
Control effected by electronic control unit	• Output to mirror heater switch (illuminated) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between mirror heater switch (illuminated) and signal detect and actuation module • Faulty mirror heater switch (illuminated) • Defective signal detect and actuation module

522029-4: Warning buzzer (Component 'Warning buzzer' is integrated in component 'Instrument panel'.) - Insufficient voltage or short circuit to ground.

Generation condition	• Output current to mirror heater switch (illuminated) rises to range of 0.4 to 0.9 A or higher.
Recoverability	• System recovers when output current to warning buzzer (meter cluster) falls within range of 0.4 to 0.9 A or lower.
Control effected by electronic control unit	• Output to warning buzzer (meter cluster) is stopped.
Possible causes	• Faulty warning buzzer (meter cluster). • Faulty meter cluster. • Open-circuit in Plus harness between meter cluster and signal detect and actuation module. • Controller area network line is open or shorted to power, ground or another circuit. • Defective signal detect and actuation module.

522030-4: Warning buzzer (Backup warning system) - Insufficient voltage or short circuit to ground

Generation condition	• Chip internal temperature rises abnormally high due to overcurrent generated by full or partial short-circuit to ground.
Recoverability	• System recovers when normal current flow is detected.
Control effected by electronic control unit	• Output to back buzzer is stopped.
Possible causes	• Open-circuit or short-circuit to power or ground in SIG harness between back buzzer and signal detect and actuation module • Open-circuit in Plus harness between back buzzer and signal detect and actuation module • Faulty back buzzer • Defective signal detect and actuation module

522032-4: BBC Power take-off Short circuit to ground - Insufficient voltage or short circuit to ground

Generation condition	• Output current to option connector (transmission power take-off output) rises to range of 0.4 to 0.9 A or higher.
Recoverability	• System recovers when output current to option connector (transmission power take-off output) falls within range of 0.4 to 0.9 A or lower.
Control effected by electronic control unit	• Output to option connector (transmission power take-off output) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between option connector (transmission power take-off output) and signal detect and actuation module • Faulty option connector (transmission power take-off output) • Defective signal detect and actuation module

522033-4: BBC Switch 'TCM Neutral position' Short circuit to ground - Insufficient voltage or short circuit to ground

Generation condition	• Output current to option connector (transmission neutral switch signal) rises to range of 0.4 to 0.9 A or higher.
Recoverability	• System recovers when output current to option connector (transmission neutral switch signal) falls within range of 0.4 to 0.9 A or lower.
Control effected by electronic control unit	• Output to option connector (transmission neutral switch signal) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between option connector (transmission neutral switch signal) and signal detect and actuation module • Faulty option connector (transmission neutral switch signal) • Defective signal detect and actuation module

522034-4: BBC Switch 'Parking brake' Short circuit to ground - Insufficient voltage or short circuit to ground.

Generation condition	• Output current to option connector (parking brake switch signal) rises to range of 0.4 to 0.9 A or higher.
Recoverability	• System recovers when output current to option connector (parking brake switch signal) falls within range of 0.4 to 0.9 A or lower.
Control effected by electronic control unit	• Output to option connector (parking brake switch signal) is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between option connector (parking brake switch signal) and signal detect and actuation module • Faulty option connector (parking brake switch signal) • Defective signal detect and actuation module

522038-5: Blower motor Relays - The current strength is too low or there is an open circuit.

Generation condition	• A/C blower relay in signal detect and actuation module is malfunctioning.
Recoverability	• System recovers when A/C blower relay in signal detect and actuation module resumes normal control.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective signal detect and actuation module (faulty A/C blower relay)

522039-5: Relay 'Power supply for optional bodies' (ACC) - The current strength is too low or there is an open circuit.

Generation condition	• A/C relay in signal detect and actuation module is malfunctioning.
Recoverability	• System recovers when A/C relay in signal detect and actuation module resumes normal control.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective signal detect and actuation module (faulty A/C relay)

522040-5: Starter signal Relays (IGN) - The current strength is too low or there is an open circuit.

Generation condition	• IGN relay in signal detect and actuation module is malfunctioning.
Recoverability	• System recovers when IGN relay in signal detect and actuation module resumes normal control.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective signal detect and actuation module (faulty IGN relay)

522041-5: Starter signal Relays (ACC) - The current strength is too low or there is an open circuit.

Generation condition	• ACC relay in signal detect and actuation module is malfunctioning.
Recoverability	• System recovers when ACC relay in signal detect and actuation module resumes normal control.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective signal detect and actuation module (faulty ACC relay)

522042-5: Relay 'Power supply for optional bodies' (IGN) - The current strength is too low or there is an open circuit.

Generation condition	• IGN relay (option) in signal detect and actuation module is malfunctioning.
Recoverability	• System recovers when IGN relay (option) in signal detect and actuation module resumes normal control.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective signal detect and actuation module (faulty IGN relay)

522043-5: Refrigerant compressor Relays - The current strength is too low or there is an open circuit.

Generation condition	• A/C compressor/condenser relay in signal detect and actuation module is malfunctioning.
Recoverability	• System recovers when A/C compressor/condenser relay in signal detect and actuation module resumes normal control.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective signal detect and actuation module (faulty A/C compressor/condenser relay)

522064-25: DUONIC Control unit - The received data are implausible.

Generation condition	• Controller area network communication data (gear information) from DUONIC electronic control unit are abnormal.
Recoverability	• System recovers when normal controller area network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Controller area network line is open or shorted to power, ground or another circuit. • Faulty DUONIC electronic control unit • Defective signal detect and actuation module

522066-25: Antilock brake system Control unit - The received data are implausible.

Generation condition	• Controller area network communication data from hydraulic unit (electronic control unit) are abnormal.
Recoverability	• System recovers when normal controller area network signals are eceived.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Faulty hydraulic unit (electronic control unit). • Controller area network line is open or shorted to power, ground or another circuit. • Defective signal detect and actuation module.

522067-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (headlight and markers information) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522069-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (high beam switch information) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522070-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (high beam flash switch information) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522071-25: DUONIC Control unit - The received data are implausible.

Generation condition	• Controller area network communication data from DUONIC electronic control unit are abnormal.
Recoverability	• System recovers when normal controller area network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Controller area network line is open or shorted to power, ground or another circuit. • Faulty DUONIC electronic control unit • Defective signal detect and actuation module

522072-25: Automatic engine start/stop Control unit - The received data are implausible.

Generation condition	• Controller area network communication data from idling stop and start system electronic control unit are abnormal.
Recoverability	• System recovers when normal controller area network signals are eceived.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Faulty idling stop and start system electronic control unit. • Controller area network line is open or shorted to power, ground or another circuit. • Defective signal detect and actuation module.

522073-25: Antilock brake system Control unit - The received data are implausible.

Generation condition	• Controller area network communication data from hydraulic unit (electronic control unit) are abnormal.
Recoverability	• System recovers when normal controller area network signals are eceived.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Faulty hydraulic unit (electronic control unit). • Controller area network line is open or shorted to power, ground or another circuit. • Defective signal detect and actuation module.

522074-25: Combustion engine Control unit - The received data are implausible.

Generation condition	• Controller area network communication data from engine electronic control unit are abnormal.
Recoverability	• System recovers when normal controller area network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Controller area network line is open or shorted to power, ground or another circuit. • Defective engine electronic control unit • Defective signal detect and actuation module

522075-25: Combustion engine Control unit - The received data are implausible.

Generation condition	• Controller area network communication data from engine electronic control unit are abnormal.
Recoverability	• System recovers when normal controller area network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Controller area network line is open or shorted to power, ground or another circuit. • Defective engine electronic control unit • Defective signal detect and actuation module

522076-25: Combustion engine Control unit - The received data are implausible.

Generation condition	• Controller area network communication data from engine electronic control unit are abnormal.
Recoverability	• System recovers when normal controller area network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Controller area network line is open or shorted to power, ground or another circuit. • Defective engine electronic control unit • Defective signal detect and actuation module

522077-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (lighting information) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Headlamps and Marker Lights automatically turns on when IGN=ON.
Possible causes	• Local interconnect network line is open or shorted to power, ground or another circuit. • Defective combination switch • Defective signal detect and actuation module

522078-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (wiper information) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Wiper slow mode automatically turns on when IGN=ON.
Possible causes	• Local interconnect network line is open or shorted to power, ground or another circuit. • Defective combination switch • Defective signal detect and actuation module

522079-25: Selector lever - The received data are implausible.

Generation condition	• Local interconnect network communication data from gear shift lever unit are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Local interconnect network line is open or shorted to power, ground or another circuit. • Faulty gear shift lever unit • Defective signal detect and actuation module

522080-25: Key less entry unit - The received data are implausible.

Generation condition	• Local interconnect network communication data from keyless entry electronic control unit are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Local interconnect network line is open or shorted to power, ground or another circuit. • Faulty keyless entry electronic control unit • Defective signal detect and actuation module

522081-25: Power window 'Driver door' Switches - The received data are implausible.

Generation condition	• Local interconnect network communication data from power window switch driver side are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Local interconnect network line is open or shorted to power, ground or another circuit. • Faulty power window switch right-hand • Defective signal detect and actuation module

522082-25: Power window 'Front passenger door' Switches - The received data are implausible.

Generation condition	• Local interconnect network communication data from power window switch passenger side are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Local interconnect network line is open or shorted to power, ground or another circuit. • Faulty power window switch left-hand • Defective signal detect and actuation module

522097-2: Starter Switches (ACC) - Implausible data

Generation condition	• Starter key position disagrees with starter switch signal (the key is OFF but the signal is ACC); there is a trouble in starter switch internal circuit. • Starter key position corresponds with starter switch signal (both are ACC); there is a trouble in key reminder switch (stuck at OFF position).
Recoverability	• System recovers when normal signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Faulty key reminder switch (sticking in OFF position or open-circuit) • Open-circuit in harness between key reminder switch and signal detect and actuation module • Short-circuit in harness between signal detect and actuation module and starter switch • Faulty starter switch • Defective signal detect and actuation module

522098-2: Starter Switches (ON) - Implausible data

Generation condition	• Starter key position disagrees with starter switch signal (the key is OFF or ACC but the signal is ON); there is a trouble in starter switch internal circuit. • Starter key position corresponds with starter switch signal (both are ON); there is a trouble in key reminder switch (stuck at OFF position).
Recoverability	• System recovers when normal signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Faulty key reminder switch (sticking in OFF position or open-circuit) • Open-circuit in harness between key reminder switch and signal detect and actuation module • Short-circuit in harness between signal detect and actuation module and starter switch • Faulty starter switch • Defective signal detect and actuation module

522099-2: Starter Switches (START) - Implausible data

Generation condition	• Starter key position disagrees with starter switch signal (the key is OFF, ACC or ON but the signal is ON); there is a trouble in starter switch internal circuit. • Starter key position corresponds with starter switch signal (both are ON); there is a trouble in key reminder switch (stuck at OFF position).
Recoverability	• System recovers when normal signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Faulty key reminder switch (sticking in OFF position or open-circuit) • Open-circuit in harness between key reminder switch and signal detect and actuation module • Short-circuit in harness between signal detect and actuation module and starter switch • Faulty starter switch • Defective signal detect and actuation module

522112-3: The battery voltage is too high. - Excessive voltage or short circuit to positive

Generation condition	• Battery voltage (12 V) is too high.
Recoverability	• System recovers when normal voltage is applied.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Faulty alternator • Defective signal detect and actuation module

522112-4: The battery voltage is too low. - Insufficient voltage or short circuit to ground

Generation condition	• Battery voltage (12 V) is too low.
Recoverability	• System recovers when normal voltage is applied.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to ground in harness between battery and signal detect and actuation module • Faulty alternator • Defective signal detect and actuation module

522113-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (lighting information) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Headlamps and Marker Lights automatically turns on when IGN=ON.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522114-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522115-25: Power window 'Driver door' Switches - The received data are implausible.

Generation condition	• Local interconnect network communication data from power window switch driver side are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty power window switch right-hand • Defective signal detect and actuation module

522116-25: Power window 'Front passenger door' Switches - The received data are implausible.

Generation condition	• Local interconnect network communication data from power window switch passenger side are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty power window switch left-hand • Defective signal detect and actuation module

522117-25: Key less entry unit - The received data are implausible.

Generation condition	• Local interconnect network communication data from keyless entry unit are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty keyless entry unit • Defective signal detect and actuation module

522118-25: Selector lever - The received data are implausible.

Generation condition	• Local interconnect network communication data from gear shift lever unit are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty gear shift lever unit • Defective signal detect and actuation module

522133-17: Vacuum system Power take-off M/T - Activation Timeout error

Generation condition	• Power take-off control switch does not turn ON even in 5 seconds after transmission power take-off switch is turned ON.
Recoverability	• System recovers when normal signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit in SIG harness between transmission power take-off 3-way magnetic valve and signal detect and actuation module • Open-circuit in Plus harness between transmission power take-off 3-way magnetic valve and signal detect and actuation module • Faulty transmission power take-off 3-way magnetic valve • Defective signal detect and actuation module

522134-17: Vacuum system Power take-off M/T - Deactivation Timeout error

Generation condition	• Transmission power take-off switch (cabin switch) does not turn OFF even in 5 seconds after power take-off control switch (chassis switch) is turned OFF.
Recoverability	• System recovers when normal signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Short-circuit to power or ground in SIG harness between transmission power take-off 3-way magnetic valve and signal detect and actuation module • Faulty transmission power take-off 3-way magnetic valve • Defective signal detect and actuation module

522135-17: Vacuum system Power take-off M/T - Deactivation No request

Generation condition	• Power take-off control switch turns OFF before transmission power take-off switch is turned OFF with transmission power take-off 3-way magnetic valve ON.
Recoverability	• System recovers when normal signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit in SIG harness between power take-off control switch and signal detect and actuation module • Open-circuit in Plus harness between power take-off control switch and signal detect and actuation module • Faulty power take-off control switch • Defective signal detect and actuation module

522136-17: Vacuum system Power take-off M/T - Activation No request

Generation condition	• Power take-off control switch turns ON before transmission power take-off switch is turned ON with transmission power take-off 3-way magnetic valve OFF.
Recoverability	• System recovers when normal signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between power take-off control switch and signal detect and actuation module • Faulty power take-off control switch • Defective signal detect and actuation module

522138-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (turn signal left-hand) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522139-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (turn signal right-hand) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522140-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (wiper signal) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Wiper slow mode automatically turns on when IGN=ON.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522141-25: Combination switch - The received data are implausible.

Generation condition	• Local interconnect network communication data (interval wiper signal) from combination switch are abnormal.
Recoverability	• System recovers when normal local interconnect network signals are received.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit or short-circuit to power, ground or another circuit in local interconnect network line between combination switch and signal detect and actuation module • Faulty combination switch • Defective signal detect and actuation module

522142-4: Wiper motor - Insufficient voltage or short circuit to ground

Generation condition	• Voltage output to wiper motor is abnormal.
Recoverability	• System recovers when normal voltage is applied.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Short-circuit to ground in SIG harness between wiper motor and signal detect and actuation module • Faulty wiper motor • Defective signal detect and actuation module

522143-5: Wiper motor - The current strength is too low or there is an open circuit.

Generation condition	• Current output to wiper motor is abnormal.
Recoverability	• System recovers when normal current is applied.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Open-circuit in SIG harness between wiper motor and signal detect and actuation module • Open-circuit in Plus harness between wiper motor and signal detect and actuation module • Faulty wiper motor • Defective signal detect and actuation module

522144-3: Wiper motor - Excessive voltage or short circuit to positive

Generation condition	• Voltage input from wiper motor is abnormal.
Recoverability	• System recovers when normal voltage is applied.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Short-circuit to power in SIG harness between wiper motor and signal detect and actuation module • Faulty wiper motor • Defective signal detect and actuation module

522147-4: Ignition key Locking solenoid - Insufficient voltage or short circuit to ground

Generation condition	• Output current to key interlock solenoid rises to range of 4.2 to 7.4 A or higher.
Recoverability	• System recovers when output current to key interlock solenoid falls within range of 4.2 to 7.4 A or lower.
Control effected by electronic control unit	• Output to key interlock solenoid is stopped.
Possible causes	• Short-circuit to power, ground or another circuit in SIG harness between key interlock solenoid and signal detect and actuation module • Faulty key interlock solenoid • Defective signal detect and actuation module

522148-17: Faulty part CPU inside component “Signal & ActuatorModule”

Generation condition	• Watch dog of signal detect and actuation module generation condition is detected and resetting takes place.
Recoverability	• Watch dog of signal detect and actuation module generation condition is cleared after resetting.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective CPU of signal detect and actuation module • Defective software of signal detect and actuation module

522149-17: Faulty part Memory inside component “Signal & ActuatorModule”

Generation condition	• Checksum of signal detect and actuation module calculated at data rewriting is not correct.
Recoverability	• Checksum of signal detect and actuation module calculated at data rewriting becomes correct.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Abnormality of signal detect and actuation module

522150-17: Faulty component 'Signal & ActuatorModule'

Generation condition	• Memory unit is in an abnormal condition.
Recoverability	• Normal operations of memory unit are resumed after restarting.
Control effected by electronic control unit	• Normal control is effected.
Possible causes	• Defective software of signal detect and actuation module

2. FUSO Diagnostics Service Data (Actual Values)

- Since the contents of the FUSO Diagnostics are regularly updated, the descriptions and expressions may differ from those given in the service manuals. Check the latest information with the FUSO Diagnostics.

[Current Value Group: Lighting: Outputs]

No.	Description	Value	Explanation
000	Right high beam	ON/OFF	Shows the ON/OFF state of the headlamp RH (high beam). • ON: Illumination • OFF: Extinction [Related parts] • Headlamp RH (high beam)
001	Left high beam	ON/OFF	Shows the ON/OFF state of the headlamp LH (high beam). • ON: Illumination • OFF: Extinction [Related parts] • Headlamp LH (high beam)
002	Right turn signal	ON/OFF	Shows the ON/OFF state of the front and side turn signal lamp RH. • ON: Illumination • OFF: Extinction [Related parts] • Front and side turn signal lamp RH
003	Left turn signal	ON/OFF	Shows the ON/OFF state of the front and side turn signal lamp LH. • ON: Illumination • OFF: Extinction [Related parts] • Front and side turn signal lamp LH
004	Right turn signal REAR	ON/OFF	Shows the ON/OFF state of the rear turn lamp RH. • ON: Illumination • OFF: Extinction [Related parts] • Rear turn lamp RH
005	Left turn signal REAR	ON/OFF	Shows the ON/OFF state of the rear turn lamp LH. • ON: Illumination • OFF: Extinction [Related parts] • Rear turn lamp LH
006	Right rear brake light	ON/OFF	Shows the ON/OFF state of the stop lamp RH. • ON: Illumination • OFF: Extinction [Related parts] • Stop lamp RH
007	Left rear brake light	ON/OFF	Shows the ON/OFF state of the stop lamp LH. • ON: Illumination • OFF: Extinction [Related parts] • Stop lamp LH
008	Right taillamp	ON/OFF	Shows the ON/OFF state of the tail lamp RH. • ON: Illumination • OFF: Extinction [Related parts] • Tail lamp RH
009	Left taillamp	ON/OFF	Shows the ON/OFF state of the tail lamp LH. • ON: Illumination • OFF: Extinction [Related parts] • Tail lamp LH
010	Right clearance lamps/Right side marker lamps	ON/OFF	Shows the ON/OFF state of the clearance lamp RH. • ON: Illumination • OFF: Extinction [Related parts] • Clearance lamp RH
011	Left clearance lamps/Left side marker lamps	ON/OFF	Shows the ON/OFF state of the clearance lamp LH. • ON: Illumination • OFF: Extinction [Related parts] • Clearance lamp LH

No.	Description	Value	Explanation
012	Right license plate lamp	ON/OFF	Unused
013	Left license plate lamp	ON/OFF	Shows the ON/OFF state of the license plate lamp. • ON: Illumination • OFF: Extinction [Related parts] • License plate lamp
014	Driver side Step illumination	ON/OFF	Unused
015	Passenger side Step illumination	ON/OFF	Unused
016	Switch and controls illumination	ON/OFF	Shows the ON/OFF state of the Illumination lamp. • ON: Illumination • OFF: Extinction [Related parts] • Illumination lamp
017	Electric motor 'Automatic headlamp adjustment'	ON/OFF	Unused
018	Right front fog lamp	ON/OFF	Unused
019	Left front fog lamp	ON/OFF	Unused
020	Rear fog lamp	ON/OFF	Unused
021	Right daytime running lights	ON/OFF	Unused
022	Left daytime running lights	ON/OFF	Unused
023	Right turn signal on trailer	ON/OFF	Unused
024	Left turn signal on trailer	ON/OFF	Unused
025	Brake light of trailer	ON/OFF	Unused
028	Interior illumination	ON/OFF	Shows the ON/OFF state of the optional connector (body illumination lamp). • ON: Illumination • OFF: Extinction [Related parts] • Optional connector (body illumination lamp)
029	Exterior illumination	ON/OFF	Shows the ON/OFF state of the optional connector (chassis illumination lamp). • ON: Illumination • OFF: Extinction [Related parts] • Optional connector (chassis illumination lamp)

[Current Value Group: Wipe and Wash: Outputs]

No.	Description	Value	Explanation
030	Windshield wiper Stage ON	ON/OFF	Shows the ON/OFF state of the wiper motor LO. • ON: Operation • OFF: Stopped [Related parts] • Wiper motor
031	Windshield wiper Stage HIGH	ON/OFF	Shows the ON/OFF state of the wiper motor HI. • ON: Operation • OFF: Stopped [Related parts] • Wiper motor

[Current Value Group: Output ‘Pump of Windshield Washer System’]

No.	Description	Value	Explanation
032	Windshield washer system	ON/OFF	Shows the ON/OFF state of the windshield washer motor. • ON: Operation • OFF: Stopped [Related parts] • Windshield washer motor

[Current Value Group: Door Module: Outputs]

No.	Description	Value	Explanation
033	Mirror heater Switches	ON/OFF	Unused
034	Driver side Mirror heater	ON/OFF	Unused
035	Passenger side Mirror heater	ON/OFF	Unused

[Current Value Group: Ignition: Outputs]

No.	Description	Value	Explanation
036	Starter signal Relays (ACC)	ON/OFF	Shows the ON/OFF state of the ACC relay. • ON: ACC RELAY ON • OFF: ACC RELAY OFF [Related parts] • Audio ACC • Cigarette lighter ACC
037	Relay 'Power supply for optional bodies' (ACC)	ON/OFF	Shows the ON/OFF state of the 12V/24V ACC relay. • ON: 12V ACC RELAY ON • OFF: 12V ACC RELAY OFF [Related parts] • Optional connector (ACC body) • Optional connector (ACC chassis)
038	Starter signal Relays (IGN)	ON/OFF	Shows the ON/OFF state of the ignition relay. • ON: IGN RELAY ON • OFF: IGN RELAY OFF [Related parts] • Meter cluster (M power supply) • Battery equalizer (M power supply) • Anti-lock brake system electronic control unit (M power supply) • Engine electronic control unit (M power supply) • Airbag system electronic control unit (M power supply) • Idling stop and start system electronic control unit (M power supply) • Starter relay
039	Relay 'Power supply for optional bodies' (IGN)	ON/OFF	Shows the ON/OFF state of the 12V/24V ignition relay. • ON: 12V IGN RELAY ON • OFF: 12V IGN RELAY OFF [Related parts] • Optional connector (M power supply body) • Optional connector (power supply chassis)

[Current Value Group: Air Conditioning: Outputs]

No.	Description	Value	Explanation
040	Refrigerant compressor Relays	ON/OFF	Unused
041	Blower motor Relays	ON/OFF	Shows the ON/OFF state of the air conditioner blower relay. • ON: A/C BLOWER RELAY ON • OFF: A/C BLOWER RELAY OFF [Related parts] • Blower motor relay

[Current Value Group: Brake System: Outputs]

No.	Description	Value	Explanation
042	Parking brake Switches	ON/OFF	Unused

[Current Value Group: Transmission: Outputs]

No.	Description	Value	Explanation
043	Transmission Neutral position Switches	ON/OFF	Unused
044	Backup light Switches	ON/OFF	Unused
045	Warning buzzer (Backup warning system)	ON/OFF	Shows the ON/OFF state of the backup buzzer. • ON: Backup buzzer ON • OFF: Backup buzzer OFF [Related parts] • Backup buzzer

[Current Value Group: Status of Power Take-off: Outputs]

No.	Description	Value	Explanation
046	3/2-way valve Power take-off	ON/OFF	Shows the ON/OFF state of the transmission power take-off 3-way magnetic valve <Vacuum>. • ON: Transmission power take-off 3-way magnetic valve ON (12V) • OFF: Transmission power take-off 3-way magnetic valve OFF (0V) [Related parts] • Transmission power take-off 3-way magnetic valve <Vacuum>
047	Power take-off Outputs	ON/OFF	Shows the ON/OFF state of the optional connector (power take-off magnetic valve). • ON: Optional connector (power take-off magnetic valve) ON • OFF: Optional connector (power take-off magnetic valve) OFF [Related parts] • Optional connector

[Current Value Group: PWM actuation]

No.	Description	Value	Explanation
048	Interior lamp	■■■■%	Shows the output state of cab lamp PWM (pulse width modulation) control • 0 - 100% [Related parts] • Cab lamp
049	Left low beam	■■■■%	Shows the output state of headlamp LH (lower) PWM (pulse width modulation) control • 0 - 100% [Related parts] • Headlamp
050	Right low beam	■■■■%	Shows the output state of headlamp RH (lower) PWM (pulse width modulation) control • 0 - 100% [Related parts] • Headlamp
051	Ignition key Locking solenoid	■■■■%	Shows the output state of interlock solenoid PWM (pulse width modulation) control • 0 - 100% [Related parts] • Key interlock solenoid

[Current Value Group: Lighting: Inputs]

No.	Description	Value	Explanation
052	Hazard warning flasher Switches	ON/OFF	Shows the ON/OFF state of the hazard warning switch. • ON: Hazard warning switch ON • OFF: Hazard warning switch OFF [Related parts] • Hazard warning switch
053	Front fog lamp Switches	ON/OFF	Unused
054	Rear fog lamp switches	ON/OFF	Unused
055	Blackout switch	ON/OFF	Unused

[Current Value Group: Wipe and Wash: Inputs]

No.	Description	Value	Explanation
056	Windshield wiper Switch 'Rest position'	ON/OFF	Shows the ON/OFF state of the wiper switch. • ON: Wiper switch ON • OFF: Wiper switch OFF [Related parts] • Wiper switch

[Current Value Group: Door Module: Inputs]

No.	Description	Value	Explanation
057	Mirror heater	ON/OFF	Unused
058	Driver door	OPEN/CLOSE	Shows the OPEN/CLOSE state of the door switch LH. • OPEN: Door switch RH ON • CLOSE: Door switch RH OFF [Related parts] • Front door switch RH
059	Passenger door	OPEN/CLOSE	Shows the OPEN/CLOSE state of the door switch LH. • OPEN: Door switch RH ON • CLOSE: Door switch RH OFF [Related parts] • Front door switch RH
060	Right rear door / Left rear door	OPEN/CLOSE	Unused
061	Driver door Lock Switches OFF	ON/OFF	Shows the ON/OFF state of the door lock switch OFF. • ON: Driver door lock switches OFF • OFF: Driver door lock switches ON [Related parts] • Rear door switch RH and LH
062	Driver door Lock Switches ON	ON/OFF	Shows the ON/OFF state of the door lock switch ON. • ON: Driver door lock switches ON • OFF: Driver door lock switches OFF [Related parts] • Rear door switch RH and LH

[Current Value Group: Ignition: Inputs]

No.	Description	Value	Explanation
063	Starter Switches (LOCK)	ON/OFF	Shows the ON/OFF state of the starter switch (LOCK position). • ON: Starter switch (LOCK position) • OFF: Starter switch (any position except LOCK) [Related parts] • Starter switch
064	Starter Switches (ACC)	ON/OFF	Shows the ON/OFF state of the starter switch (ACC position). • ON: Starter switch (ACC position) • OFF: Starter switch (any position except LOCK) [Related parts] • Starter switch
065	Starter Switches (ON)	ON/OFF	Shows the ON/OFF state of the starter switch (ON position). • ON: Starter switch (ON position) • OFF: Starter switch (any position except ON) [Related parts] • Starter switch
066	Starter Switches (START)	ON/OFF	Shows the ON/OFF state of the starter switch (START position). • ON: Starter switch (START position) • OFF: Starter switch (any position except START) [Related parts] • Starter switch
067	Alternator	ON/OFF	Shows the ON/OFF state of the alternator operation. • ON: Alternator in operation • OFF: Alternator stopped [Related parts] • Alternator

No.	Description	Value	Explanation
068	Starter signal Relays (ACC)	ON/OFF	Shows the ON/OFF state of the ACC relay. • ON: ACC relay ON • OFF: ACC relay OFF [Related parts] • ACC relay (a relay within the signal detection and actuation module)
069	Relay 'Power supply for optional bodies' (ACC)	ON/OFF	Shows the ON/OFF state of the 12V/24V ACC relay. • ON: 12V ACC relay ON • OFF: 12V ACC relay OFF [Related parts] • 12V ACC relay (a relay within the signal detection and actuation module)
070	Starter signal Relays (IGN)	ON/OFF	Shows the ON/OFF state of the ignition relay. • ON: Ignition relay ON • OFF: Ignition relay OFF [Related parts] • Ignition relay (a relay within the signal detection and actuation module)
071	Relay 'Power supply for optional bodies' (IGN)	ON/OFF	Shows the ON/OFF state of the 12V/24V ignition relay. • ON: 12V Ignition relay ON • OFF: 12V Ignition relay OFF [Related parts] • 12V ignition relay (a relay within the signal detection and actuation module)

[Current Value Group: Air Conditioning: Inputs]

No.	Description	Value	Explanation
072	Air conditioning Switches	ON/OFF	Unused
073	Refrigerant compressor Relays	ON/OFF	Unused
074	Blower motor Relays	ON/OFF	Shows the ON/OFF state of the blower motor. • ON: Blower motor in operation • OFF: Blower motor stopped [Related parts] • Blower motor • Blower resistor

[Current Value Group: Brake System: Inputs]

No.	Description	Value	Explanation
075	Vacuum Switches	ON/OFF	Shows the ON/OFF state of the vacuum switch. • ON: Vacuum switch ON • OFF: Vacuum switch OFF [Related parts] • Vacuum switch
076	Bake fluid level Switches	ON/OFF	Shows the ON/OFF state of the brake fluid switch. • ON: Brake fluid switch ON • OFF: Brake fluid switch OFF [Related parts] • Brake fluid switch
077	Parking brake Switches	ON/OFF	Shows the ON/OFF state of the parking brake switch. • ON: Parking brake switch ON • OFF: Parking brake switch OFF [Related parts] • Parking brake switch
078	Brake light Switches 2	ON/OFF	Shows the ON/OFF state of the stop lamp switch (N.C.). • ON: Stop lamp switch (N.C.) ON • OFF: Stop lamp switch (N.C.) OFF [Related parts] • Stop lamp switch
079	Brake light Switches 1	ON/OFF	Shows the ON/OFF state of the stop lamp switch (N.O.). • ON: Stop lamp switch (N.O.) ON • OFF: Stop lamp switch (N.O.) OFF [Related parts] • Stop lamp switch

[Current Value Group: Transmission: Inputs]

No.	Description	Value	Explanation
080	Backup light Switches	ON/OFF	Shows the ON/OFF state of the backup lamp switch. • ON: Backup lamp switch ON • OFF: Backup lamp switch OFF [Related parts] • Backup lamp switch
081	Transmission Neutral position Switches	ON/OFF	Unused
082	Clutch Switches	ON/OFF	Shows the ON/OFF state of the clutch switch. • ON: Clutch switch ON • OFF: Clutch switch OFF [Related parts] • Clutch switch

[Current Value Group: Status of power take-off: Inputs]

No.	Description	Value	Explanation
083	Power take-off Inputs	ON/OFF	Shows the ON/OFF state of the optional connector (power-take off signal). • ON: Optional connector (power-take off signal) available • OFF: Optional connector (power-take off signal) unavailable [Related parts] • Optional connector (power-take off signal)
084	Actuation of power take-off Switches	ON/OFF	Shows the ON/OFF state of the power take-off control switch. • ON: Power take-off control switch ON • OFF: Power take-off control switch OFF [Related parts] • Power take-off control switch
085	Power take-off Switches	ON/OFF	Shows the ON/OFF state of the transmission power take-off switch and damp lever switch. • ON: Transmission power take-off switch ON • OFF: Transmission power take-off switch OFF [Related parts] • Transmission power take-off switch

[Current Value Group: Fill level of fuel tank]

No.	Description	Value	Explanation
086	Fuel level	■■■■%	Shows fill level of the fuel tank. • Approx. 0%: Fuel tank empty • Approx. 100%: Fuel tank full [Related parts] • Fuel level sensor

[Current Value Group: Battery Voltage]

No.	Description	Value	Explanation
087	Battery Voltage	■■■■V	Shows input voltage from the battery (high-current fuse box) to signal detection and actuation module. • 0 - 25.4V (0 - 254) [Related parts] • Battery • High-current fuse box

3. FUSO Diagnostics Actuator Test (Actuations)

- Since the contents of the FUSO Diagnostics are regularly updated, the descriptions and expressions may differ from those given in the service manuals. Check the latest information with the FUSO Diagnostics.
- The basic conditions for performing the actuator test: Vehicle stopped, engine stopped and starter switch ON.

No.	Selection	Explanation
000	Exterior illumination	Illuminates the stop lamp (LH).
		Illuminates the headlamp high beam (LH).
		Illuminates the position lamp (LH).
		Illuminates the turn signal lamp (LH).
		Illuminates the stop lamp (RH).
		Illuminates the headlamp high beam (RH).
		Illuminates the position lamp (RH).
		Illuminates the turn signal lamp (RH).
001	Actuation of pump for windshield washer system “Windshield“	Activates the windshield washer system.
002	Status of integrated ignition module	Activates the ignition relay. [Additional condition for performing actuator test] Starter switch position: ACC
		Activates the 12 V ignition relay (option) [Additional condition for performing actuator test] Starter switch position: ACC
		Activates the accessory relay.
		Activates the accessory relay (option).
003	Air conditioning	Activates the air conditioner compressor condenser relay.
		Activates the air blower relay.

4. Coding Data in Electronic Control Unit

4.1 Overview

- The signal detect and actuation module has various kinds of information such as technical data of vehicle and equipment registered as coding data.
- Therefore, each time the signal detect and actuation module is replaced or some setting changes are made, the coding data must surely be rewritten using diagnostic tool. Otherwise, the data stored in the signal detect and actuation module could deviate from the actual conditions of the vehicles, resulting in occurrence of diagnosis codes.

4.2 Rewriting of coding data

- If one of the following changes has been made, be sure to rewrite the relevant coding data. For details of the rewriting procedure, consult an authorized dealer or distributor.
- Depending on the specifications of the rear body to be mounted, coding data other than those listed below may have to be rewritten. Perform the data writing and resetting work, using the diagnostic tool.

Rewriting coding data required	Standards for rewriting signal detect and actuation module internal data
When signal detect and actuation module is replaced	–
When additional turn signal lamps are installed	–
When rear body is mounted	If an optional connector for rear body mounting is used, the following diagnosis/actuator functions must be set valid: • Illumination • Backup buzzer • Power take-off • Neutral switch • Parking brake switch
When additional LED rear lamps are installed	–
When additional mirror with heater is installed	–

5. Electronic Control Unit Input/Output Table

- See the Electronic Control Unit Schematic Diagram for the pin locations of each signal and ground. (See section 3. Electronic Control Unit Circuit Diagram.)

Devices to be connected	Terminal	Input/ output	Voltage and wave form
License plate lamp	13C-9-Ground	Output	ON: 12 V/OFF: 0 V
Parking lamp (RH)	15B-11-Ground	Output	ON: 12 V/OFF: 0 V
Parking lamp (LH)	15B-10-Ground	Output	ON: 12 V/OFF: 0 V
Head lamp high beam (RH)	14B-7-Ground	Output	ON: 12 V/OFF: 0 V
Head lamp high beam (LH)	16B-2-Ground	Output	ON: 12 V/OFF: 0 V
Option connector (side turn lamp (RH))	13C-4-Ground	Output	ON: 12 V/OFF: 0 V
Option connector (side turn lamp (LH))	12C-7-Ground	Output	ON: 12 V/OFF: 0 V
Rear turn lamp (RH)	13C-5-Ground	Output	ON: 12 V/OFF: 0 V
Rear turn lamp (LH)	12C-4-Ground	Output	ON: 12 V/OFF: 0 V
Front turn lamp (RH)	14B-4-Ground	Output	ON: 12 V/OFF: 0 V
Front turn lamp (LH)	16B-4-Ground	Output	ON: 12 V/OFF: 0 V
Stop lamp (RH)	13C-7-Ground	Output	ON: 12 V/OFF: 0 V
Stop lamp (LH)	12C-1-Ground	Output	ON: 12 V/OFF: 0 V
Tail lamp (RH)	12C-3-Ground	Output	ON: 12 V/OFF: 0 V
Tail lamp (LH)	13C-8-Ground	Output	ON: 12 V/OFF: 0 V
Illumination lamp	14B-8-Ground	Output	ON: 12 V/OFF: 0 V
Option connector (chassis illumination)	6X-4-Ground	Output	ON: 12 V/OFF: 0 V
Wiper motor (Hi)	16B-5-Ground	Output	ON: 12 V/OFF: 0 V
Wiper motor (Lo)	16B-1-Ground	Output	ON: 12 V/OFF: 0 V
Wiper washer motor	17B-5-Ground	Output	ON: 12 V/OFF: 0 V
Backup lamp	13C-6-Ground	Output	ON: 12 V/OFF: 0 V
Backup buzzer	11C-6-Ground	Output	ON: 12 V/OFF: 0 V
Transmission power take-off 3-way magnetic valve	13C-10-Ground	Output	ON: 12 V/OFF: 0 V
Cab lamp	17B-15-Ground	Output	PWM
Key interlock solenoid	17B-17-Ground	Output	PWM
Hazard switch	15B-4-Ground	Input	OFF: 12 V/ON: 0 V (Unlatched type)
Wiper motor stop position switch	17B-16-Ground	Input	OFF: 12 V/ON: 0 V
Rear door switch	15B-2-Ground	Input	OFF: 12 V/ON: 0 V
Front door switch (assistant driver's seat side)	15B-3-Ground	Input	OFF: 12 V/ON: 0 V
Front door switch (driver's seat side)	15B-18-Ground	Input	OFF: 12 V/ON: 0 V
Starter switch (START position)	15B-15-Ground	Input	OFF: 0 V/ON: 12 V
Starter switch (key insert switch)	18B-18-Ground	Input	OFF: 0 V/ON: 12 V
Starter switch (ACC position)	18B-17-Ground	Input	OFF: 0 V/ON: 12 V
Starter switch (M position)	18B-3-Ground	Input	OFF: 0 V/ON: 12 V
Alternator (L terminal)	11C-8-Ground	Input	Engine running: 12 V Engine stopped: 0 V
Accessory relay	3B-8, 7C-8, 3B-10, 3B-13-Ground	Output	Activated: 12 V Not activated: 0 V
12V Accessory relay (option connector)	6X-1-Ground	Output	Activated: 12 V Not activated: 0 V
Ignition relay	1B-11, 5C-2, 5C-4, 5C-11, 5C-9, 1B-1, 1B-4, 1B-5, 1B-13, 1B-14-Ground	Output	Activated: 12 V Not activated: 0 V
12V Ignition relay (option connector)	6X-5-Ground	Output	Activated: 12 V Not activated: 0 V

Devices to be connected	Terminal	Input/ output	Voltage and wave form
Air conditioner blower relay	2B-14-Ground	Output	Active (with air conditioner compressor operating): 12 V Not activated: 0 V
Vacuum switch	15B-1-Ground	Input	OFF: 12 V/ON: 0 V
Brake fluid level switch	18B-7-Ground	Input	OFF: 12 V/ON: 0 V
Parking brake switch	18B-6-Ground	Input	OFF: 12 V/ON: 0 V
Stop lamp switch (normal close)	15B-19-Ground	Input	OFF: 12 V/ON: 0 V
Stop lamp switch (normal open)	18B-4-Ground	Input	OFF: 12 V/ON: 0 V
Clutch switch	18B-9-Ground	Input	OFF: 12 V/ON: 0 V
Power-take off control switch	11C-9-Ground	Input	OFF: 12 V/ON: 0 V
Transmission power take-off switch	18B-5-Ground	Input	OFF: 12 V/ON: 0 V
Cab tilt lock switch	18B-10-Ground	Input	OFF: 12 V/ON: 0 V
Diesel particulate filter cleaning switch	15B-20-Ground	Input	OFF: 12 V/ON: 0 V (Unlatched type)
Fuel level sensor	11C-1-Ground	Input	Fuel tank empty: 150 ± 3.5Ω or more Full: 5 ± 2Ω
Battery voltage	10C-1-Ground	Input	Shows the battery voltage (12 V).
Backup lamp switch	11C-2-Ground	Input	OFF: 12 V/ON: 0 V
Headlamp leveling actuator (LH), (RH)	15B-13-Ground	Output	ON: 12 V/OFF: 0 V
Headlamp leveling switch	15B-13-Ground	Output	ON: 12 V/OFF: 0 V

6. Confirmation items before replacing the signal detect and actuation module

6.1 Diagnosis codes for signal detect and actuation module

- The diagnosis code for the signal detect and actuation module is generated when the signal detect and actuation module has normally performed self-diagnosis and has detected an abnormal load of the unit connected to the module.
- If a diagnosis code of the signal detect and actuation module is generated, first check the unit connected to the module before judging it as faulty signal detect and actuation module.

6.2 Troubleshooting before replacing the signal detect and actuation module

- Check the unit, harnesses and connectors related to the generated diagnosis code.
- Check if the system returns normal by disconnecting and connecting of the battery cable.
- Check the coding data in the signal detect and actuation module matches with the vehicle to which it is mounted.
- Temporarily replace the signal detect and actuation module with a known-good one and check if the same failure is detected.

6.3 Major symptoms and troubleshooting

- If the symptom is not observed currently, also check the past diagnosis codes.

(1) Engine would not start

Diagnosis code	Cause	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
522074-25 (522074-19)	Faulty communication to engine electronic control unit	Check the engine electronic control unit.
522075-25 (522075-19)		
522076-25 (522076-19)		
522074-25 (522074-19)	Faulty controller area network communication	• Check the controller area network-related connectors (17B/18B) and harnesses of the signal detect and actuation module, including disconnection and connection of the connectors. • Check the controller area network-related harnesses and connectors of the electronic control unit indicated by the diagnosis code, including disconnection and connection of the connectors. • If the problem reappears after the above check (and repair, if necessary), the cause of the problem may be an internal failure of the signal detect and actuation module. Replace the signal detect and actuation module.
522075-25 (522075-19)		
522076-25 (522076-19)		
522064-25 (522064-19)		
522071-25 (522071-19)		
522073-25 (522073-19)		
522040-5	Relay in signal detect and actuation module inoperative	• Disconnect and reconnect the relay - IGNITION RELAY for diagnosis code 522040-5 or ACC RELAY for 522041-5. • If the problem reappears after the above operation, the cause of the problem may be an internal failure of the signal detect and actuation module. Replace the signal detect and actuation module.
522041-5		
522097-2	Faulty starter switch signal	• Check the starter switch-related connectors (18B/15B) of the signal detect and actuation module, including disconnection and connection of the connectors. • Check the starter switch.
522098-2		
522099-2		

(2) Headlamps, turn-signal lights or wipers would not operate

Diagnosis code	Cause	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
None	None	• Check the connector (18B) and harness of the signal detect and actuation module, including disconnection and connection of the connectors. • Check the combination switch and connectors, including disconnection and connection of the connectors. In the same way as that for signal detect and actuation module, temporarily replace the combination switch with a known-good one and check if the same failure is detected.
521995-4	Headlamp, LH (high)	Check the lamps, related harnesses and connectors.
521995-5		
521996-4	Headlamp, RH (high)	
521996-5		
521997-4	Headlamp, LH (low)	
521997-5		
521998-4	Headlamp, RH (low)	
521998-5		
522142-4	Wipers	Check the wipers and related harnesses and connectors.
522143-5		
522144-3		
522007-4	Rear combination lamp, LH (turn)	Check the lamps and related harnesses and connectors.
522007-5		
522008-4	Rear combination lamp, RH (turn)	
522008-5		
522009-4	Front & side turn signal, lamps LH	
522009-5		
522010-4	Front & side turn signal, lamps RH	
522010-5		

(3) Headlamps cannot be turned off, turn-signal lamps would not operate, and wipers operate spontaneously

Diagnosis code	Cause	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
522077-25 (522077-19)	Faulty communication to combination switch	• Check the combination switch and connectors, including disconnection and connection of the connectors. In the same way as that for signal detect and actuation module, temporarily replace the combination switch with a known-good one and check if the same failure is detected. • Check the connector (18B) and harness of the signal detect and actuation module, including disconnection and connection of the connectors.
522078-25 (522078-19)		
522077-25 (522077-19)	Faulty local interconnect network communication	• Check the harness connection and operation of the unit indicated by the diagnosis code. • Check the connector (18B) and harness of the signal detect and actuation module, including disconnection and connection of the connectors.
522078-25 (522078-19)		
522079-25 (522079-19)		
522080-25 (522080-19)		
522081-25 (522081-19)		

(4) Headlamps cannot be turned off and wipers would not operate

Diagnosis code	Cause	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
None	None (Internal failure of the signal detect and actuation module is suspected.)	• Check the connector (10C) and harness of the signal detect and actuation module, including disconnection and connection of the connectors. • Check the battery, including disconnection and connection of the terminals.
522077-25 (522077-19)	Faulty communication to combination switch	• If both diagnosis codes 522078-25 (522078-19) and 522114-25 (522114-19) are not generated concurrently, check the combination switch, including disconnection and connection of the connectors. • Temporarily replace the combination switch with a known-good one and check if the same failure is detected.
522113-25 (522113-19)		

(5) Headlamps cannot be turned on and wipers operate spontaneously

Diagnosis code	Cause	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
None	None	Check the connector (18B) of the signal detect and actuation module, related harnesses and combination switch, including disconnection and connection of the connectors.
522078-25 (522078-19)	Faulty communication to combination switch	• If both diagnosis codes 522077-25 (522077-19) and 522113-25 (522113-19) are not generated concurrently, check the combination switch, including disconnection and connection of the connectors. • Temporarily replace the combination switch with a known-good one and check if the same failure is detected.
522114-25 (522114-19)		

7. Symptoms and inspection procedures when warning lamp (red or amber) illuminates

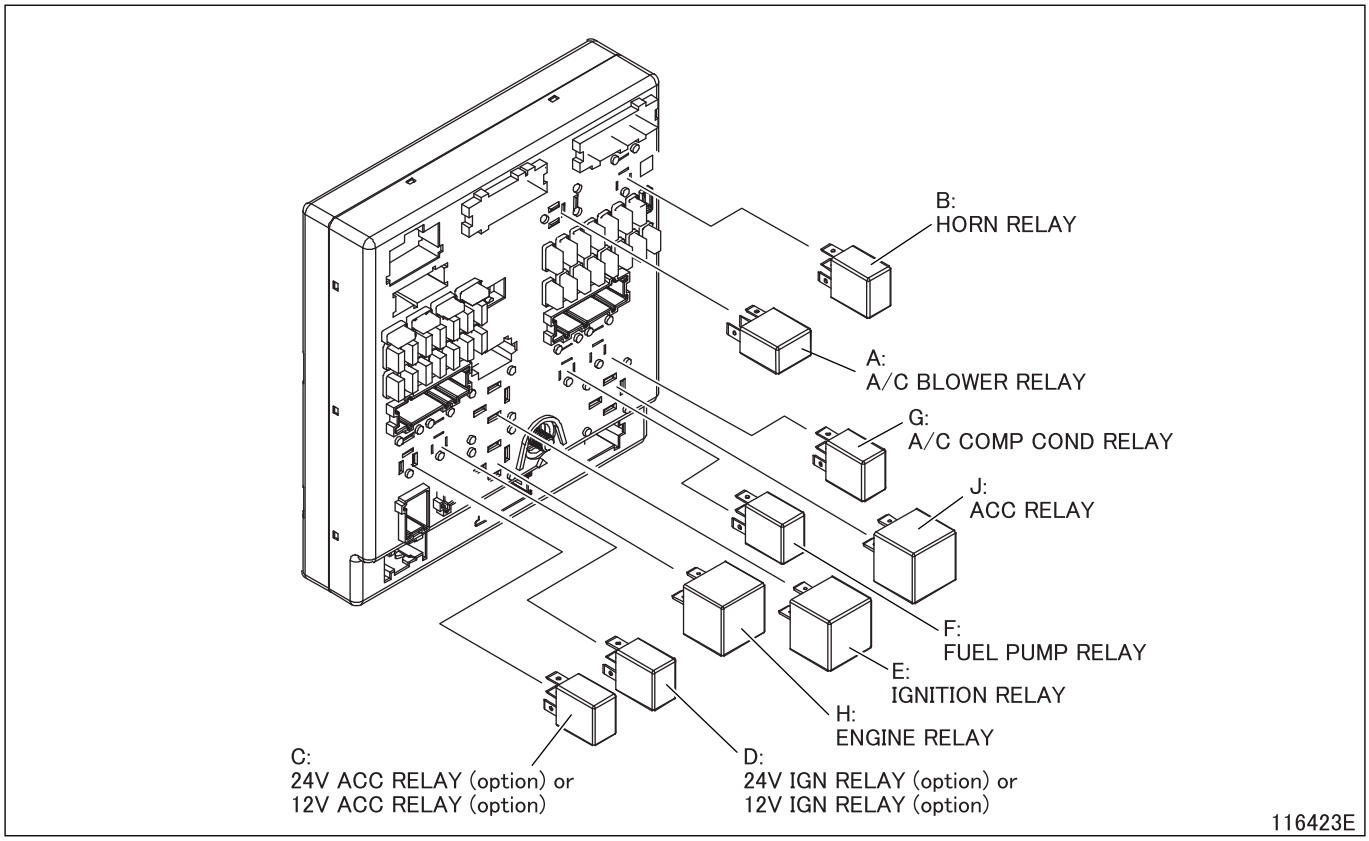
(1) When signal detect and actuation module warning lamp (red) illuminates

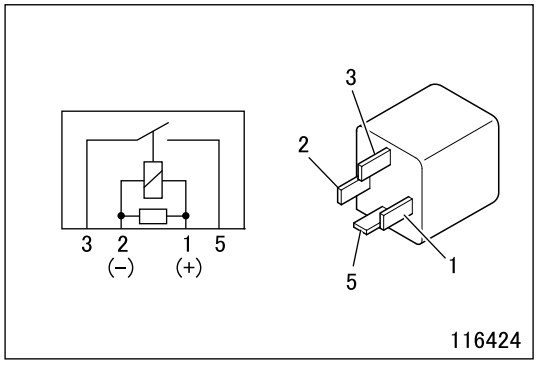
Diagnosis code	Symptom	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
522040-5	Engine unable to start	• Check the IGNITION RELAY, including disconnection and connection of the relay. (See Inspection of relays in signal detect and actuation module.) • Check service data No. 038 “Starter signal Relays (IGN)”. (See FUSO Diagnostics service data (measured values).)
522041-5	Engine unable to start	• Check the ACC RELAY, including disconnection and connection of the relay. (See Inspection of relays in signal detect and actuation module.) • Check service data No. 036 “Starter signal Relays (ACC)”. (See FUSO Diagnostics service data (measured values).)
522097-2	Engine unable to start	• Check the fuse (F13), including disconnection and connection of the fuse. • Check the starter switch. • Check the starter switch connector, including disconnection and connection of the connectors. • Check the harness between the starter switch and the signal detect and actuation module. • Check the connector (18B) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 064 “Starter Switches (ACC)”. (See FUSO Diagnostics service data (measured values).)
522098-2	Engine unable to start	• Check the fuse (F13), including disconnection and connection of the fuse. • Check the starter switch. • Check the starter switch connector, including disconnection and connection of the connectors. • Check the harness between the starter switch and the signal detect and actuation module. • Check the connector (18B) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 065 “Starter Switches (ON)”. (See FUSO Diagnostics service data (measured values).)
522099-2	Engine unable to start	• Check the fuse (F13), including disconnection and connection of the fuse. • Check the starter switch. • Check the starter switch connector, including disconnection and connection of the connectors. • Check the harness between the starter switch and the signal detect and actuation module. • Check the connector (15B) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 066 “Starter Switches (Start)”. (See FUSO Diagnostics service data (measured values).)
522112-3	Engine unable to start, or signal detect and actuation module output function halted	• Check the battery. • Check the alternator. • Check the service data No. 087 “Battery Voltage”. (See FUSO Diagnostics service data (measured values).)
522112-4	Engine unable to start, or signal detect and actuation module output function halted	• Check the battery. • Check the battery cable, including disconnection and connection of the cables. • Check the alternator. • Check the harness between the battery and alternator. • Check the high-current fuse, including disconnection and connection of the fuse. • Check the harness between the high-current fuse and the signal detect and actuation module. • Check the service data No. 087 “Battery Voltage”. (See FUSO Diagnostics service data (measured values).)
522149-17 (522149-31)	Engine unable to start	• Replace the signal detect and actuation module.
522150-17 (522150-31)	Engine unable to start	• Replace the signal detect and actuation module.

(2) When signal detect and actuation module warning lamp (amber) illuminates

Diagnosis code	Symptom	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
2372-4	Left stop lamp does not illuminate	• Check the stop lamp bulb. • Check the harness between the stop lamp and the signal detect and actuation module. • Check the connector (12C) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 007 “Left rear brake light”. (See FUSO Diagnostics service data (measured values).)
2372-5	Left stop lamp does not illuminate	
2374-4	Right stop lamp does not illuminate	• Check the stop lamp bulb. • Check the harness between the stop lamp and the signal detect and actuation module. • Check the connector (13C) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 006 “Right rear brake light”. (See FUSO Diagnostics service data (measured values).)
2374-5	Right stop lamp does not illuminate	
522003-4	Left parking lamp does not illuminate	• Check the parking lamp bulb. • Check the harness between the parking lamp and the signal detect and actuation module. • Check the connector (15B) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 011 “Left clearance lamps/Left side marker lamps”. (See FUSO Diagnostics service data (measured values).)
522003-5	Left parking lamp does not illuminate	
522004-4	Right parking lamp does not illuminate	• Check the parking lamp bulb. • Check the harness between the parking lamp and the signal detect and actuation module. • Check the connector (15B) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 010 “Right clearance lamps/Right side marker lamps”. (See FUSO Diagnostics service data (measured values).)
522004-5	Right parking lamp does not illuminate	
522005-4	Left tail lamp does not illuminate	• Check the tail lamp bulb. • Check the harness between the tail lamp and the signal detect and actuation module. • Check the connector (13C) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 009 “Left taillamp”. (See FUSO Diagnostics service data (measured values).)
522005-5	Left tail lamp does not illuminate	
522006-4	Right tail lamp does not illuminate	• Check the tail lamp bulb. • Check the harness between the tail lamp and the signal detect and actuation module. • Check the connector (12C) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 008 “Right taillamp”. (See FUSO Diagnostics service data (measured values).)
522006-5	Right tail lamp does not illuminate	
522020-4	License plate lamp does not illuminate	• Check the license plate lamp bulb. • Check the harness between the license plate lamp and the signal detect and actuation module. • Check the connector (13C) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 013 “Left license plate lamp”. (See FUSO Diagnostics service data (measured values).)
522020-5	License plate lamp does not illuminate	
522038-5	Blower does not operate	• Check the A/C BLOWER RELAY, including disconnection and connection of the relay. (See Inspection of relays in signal detect and actuation module.) • Check the service data No. 041 “Blower motor Relays”. (See FUSO Diagnostics service data (measured values).)
522039-5	Option ACC power unable to use	• Check the ACC RELAY, including disconnection and connection of the relay. (See Inspection of relays in signal detect and actuation module.) • Check the service data No. 037 “Relay 'Power supply for optional bodies' (ACC)”. (See FUSO Diagnostics service data (measured values).)
522042-5	Option IGN power unable to use Alternator does not operate (24 V models)	• Check the IGN RELAY, including disconnection and connection of the relay. (See Inspection of relays in signal detect and actuation module.) • Check the service data No. 039 “Relay 'Power supply for optional bodies' (IGN)”. (See FUSO Diagnostics service data (measured values).)

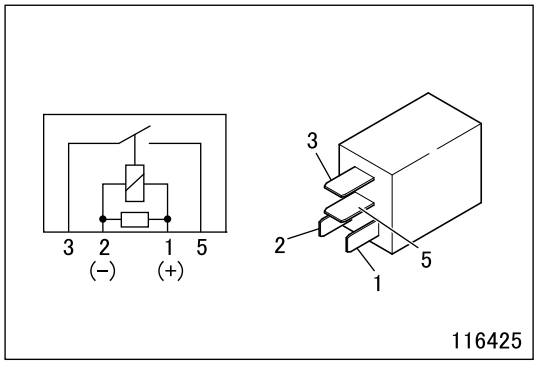
Diagnosis code	Symptom	Items to be inspected (See the “Electronic control unit circuit diagram” for the location of the signal detect and actuation module connector.)
522043-5	Air conditioner does not operate	• Check the A/C COMP COND RELAY, including disconnection and connection of the relay. (See Inspection of relays in signal detect and actuation module.) • Check the service data No. 040 “Refrigerant compressor Relays”. (See FUSO Diagnostics service data (measured values).)
522067-25 (522067-19)	Headlamps illuminate spontaneously	• Check the fuse (F09), including disconnection and connection of the fuse. • Check the combination switch. • Check the combination switch connector, including disconnection and connection of the connectors. • Check the harness between the combination switch and the signal detect and actuation module. • Check the connector (18B) of the signal detect and actuation module, including disconnection and connection of the connector. • Check the service data No. 002 “Right turn signal”. (See FUSO Diagnostics service data (measured values).)
522077-25 8522077-19)	Headlamps illuminate spontaneously	





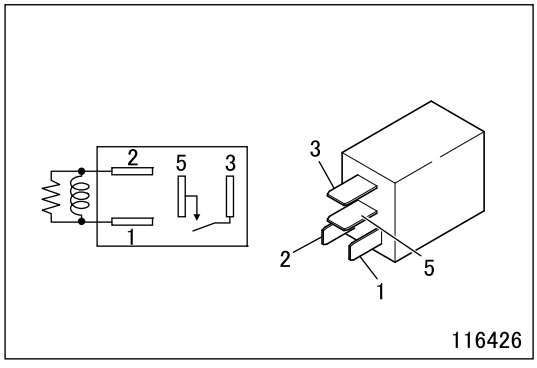
E: Ignition relay
H: Engine relay
J: ACC relay (normally open 4-pin)

- Replace the relay if any abnormal conditions are found during checking for conductivity or operation.



A: A/C blower relay
B: Horn relay
C: 12 V ACC relay (option)
D: 12 V IGN relay (option)
F: Fuel pump relay
G: A/C compressor (normally open 4-pin)

- Replace the relay if any abnormal conditions are found during checking for conductivity or operation.



C: 24 V ACC relay (option)
D: Inspection of 24 V IGN relay (normally open 4-pin)

- Replace the relay if any abnormal conditions are found during checking for conductivity or operation.

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For Chile

Shop Manual

electrical

MITSUBISHI FUSO TRUCK & BUS CORP.

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