SECTION PCS
POWER CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000014388533

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precaution for Work

INFOID:0000000014388534

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:

- Water soluble dirt:

- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:

- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

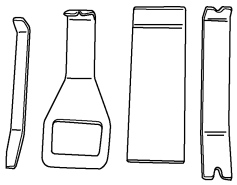
PREPARATION

PREPARATION

Special Service Tools

INFOID:0000000014388535

The actual shape of the tools may differ from those illustrated here.

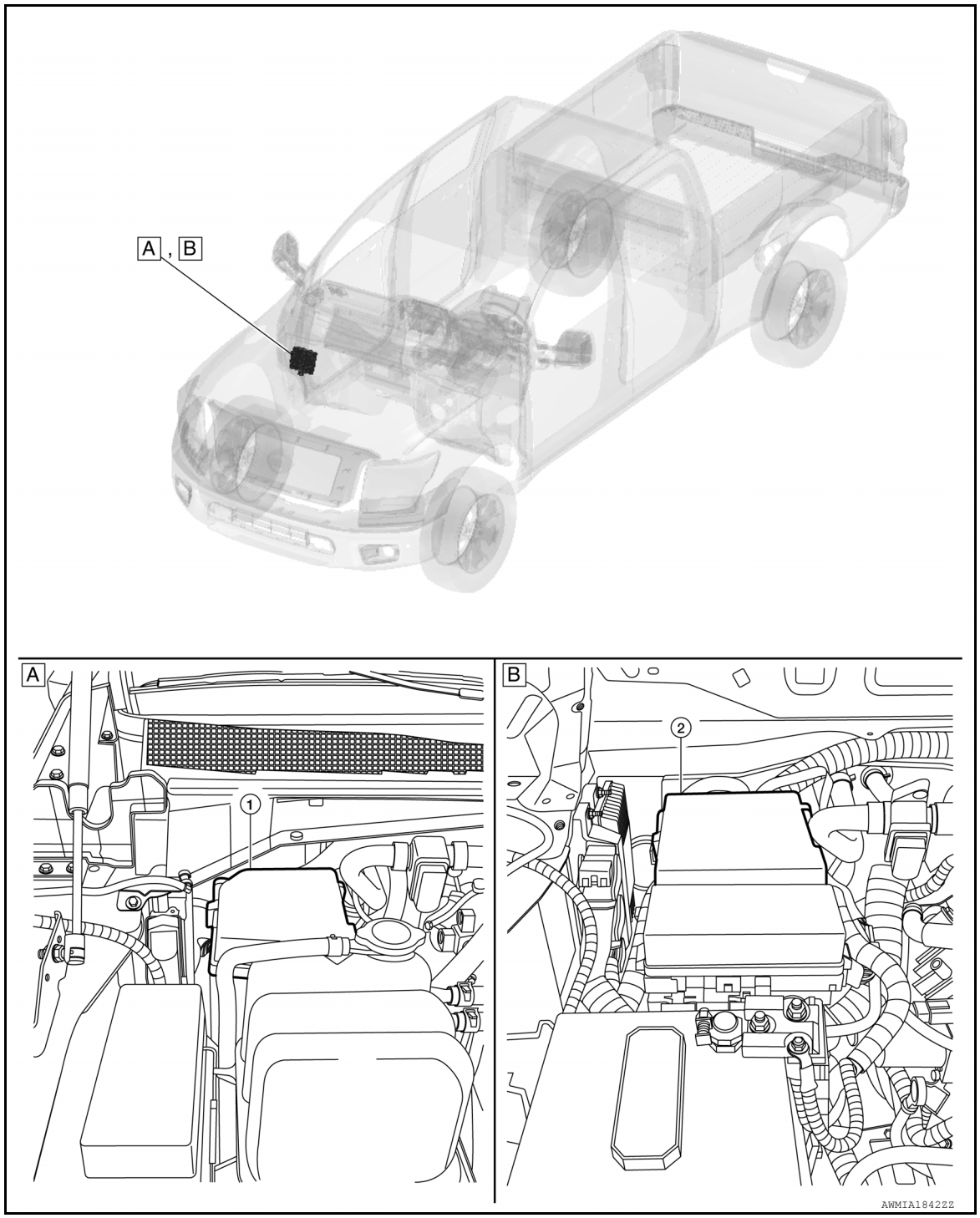
Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014388536

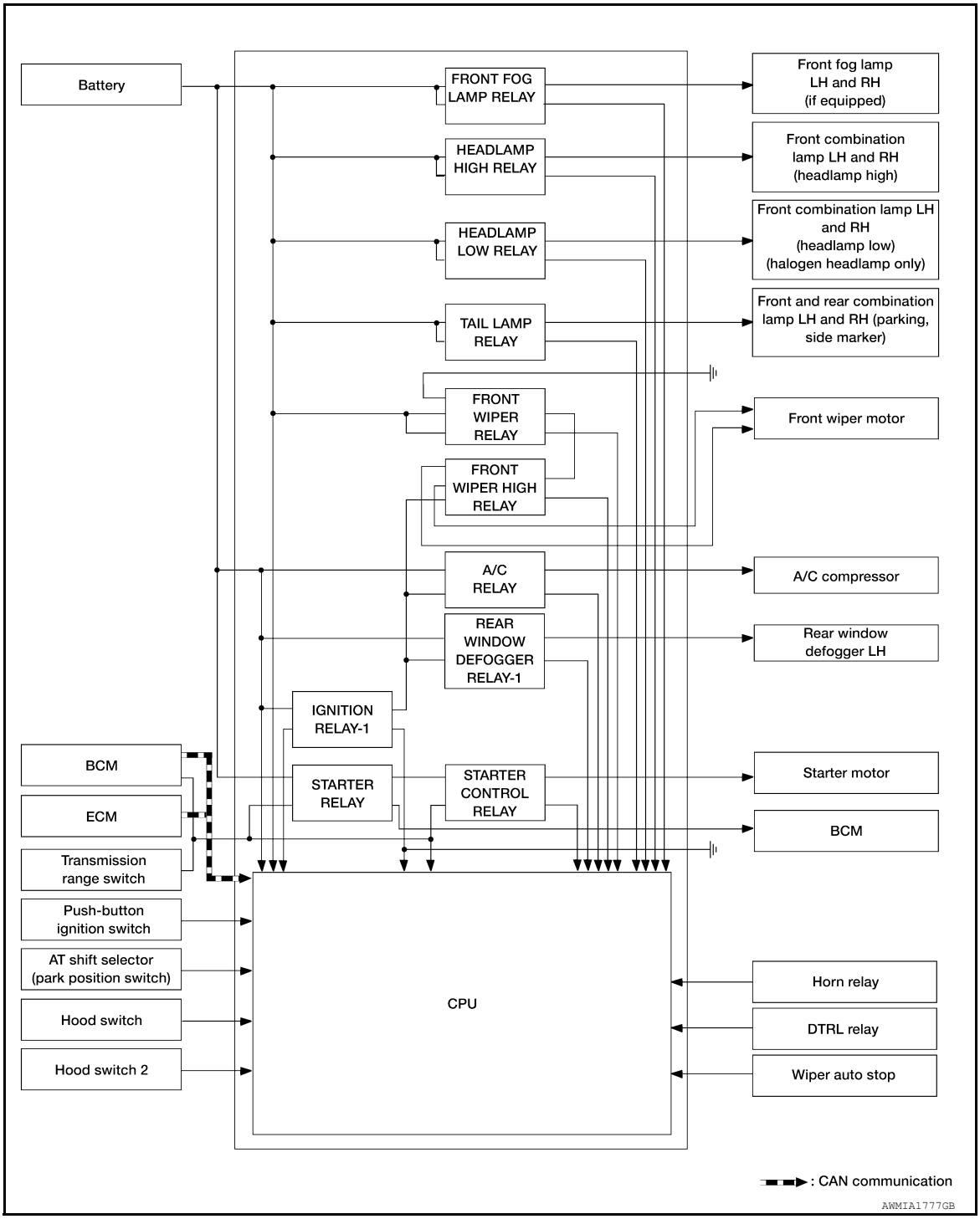


A Engine room right side rear (Cummins 5.0L)
B Engine room right side rear (VK56VD)
1. IPDM E/R
2. IPDM E/R

SYSTEM
RELAY CONTROL SYSTEM
RELAY CONTROL SYSTEM : System Description

INFOID:0000000014388537

SYSTEM DIAGRAM



DESCRIPTION

IPDM E/R controls relays based on input signals from various sensors and from request signals received via CAN communication.

CAUTION:

IPDM E/R integrated relays cannot be removed.

Relay	Signal Type	Transmitting Unit	Control Part	Reference page
Front fog lamp relay[1]	Front fog lamp request signal	BCM (CAN)	Front fog lamps	EXL-15 EXL-164
Headlamp high relay	High beam request signal	BCM (CAN)	Headlamp high	EXL-11 EXL-159
Headlamp low relay[2]	Low beam request signal	BCM (CAN)	Headlamp low	EXL-11
Tail lamp relay	Position light request signal	BCM (CAN)	• Parking lamps • Side marker lamps • License plate lamps • Tail lamps • Trailer tow relay 1 • Illumination system	EXL-13 EXL-162
• Front wiper relay • Front wiper high relay	Front wiper request signal	BCM (CAN)	Front wiper motor	WW-9
A/C relay	A/C request signal	• BCM (CAN) • ECM (CAN)	A/C compressor	HAC-17 HAC-147
Rear window defogger relay-1	Rear window defogger request signal	BCM (CAN)	Rear window defogger LH	DEF-7
Ignition relay-1	Ignition switch ON signal	Ignition switch	Ignition relay	PCS-38
Starter relay	Ignition switch START signal	• TCM • BCM	Starter motor	STR-7
Starter control relay				

[1]: If equipped

[2]: Halogen headlamp only

RELAY CONTROL SYSTEM : Fail Safe

INFOID:0000000014388538

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

Control part	Fail-safe in operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamps • License plate lamps • Tail lamps	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Rear window defogger (if equipped)	Rear window defogger relay OFF
A/C compressor	A/C relay OFF
Front fog lamps (if equipped)	Front fog lamp relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Ignition switch	Ignition relay	Tail lamp relay
ON	ON	—
OFF	OFF	—

NOTE:
The tail lamp turns OFF when the ignition switch is turned ON.

FRONT WIPER CONTROL

IPDM E/R detects front wiper stop position by a front wiper auto stop signal.
When a front wiper auto stop signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop five times.

Ignition switch	Front wiper switch	Auto stop signal
ON	OFF	Front wiper stop position signal cannot be input 10 seconds.
	ON	The signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “DATA MONITOR” that displays “Block” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

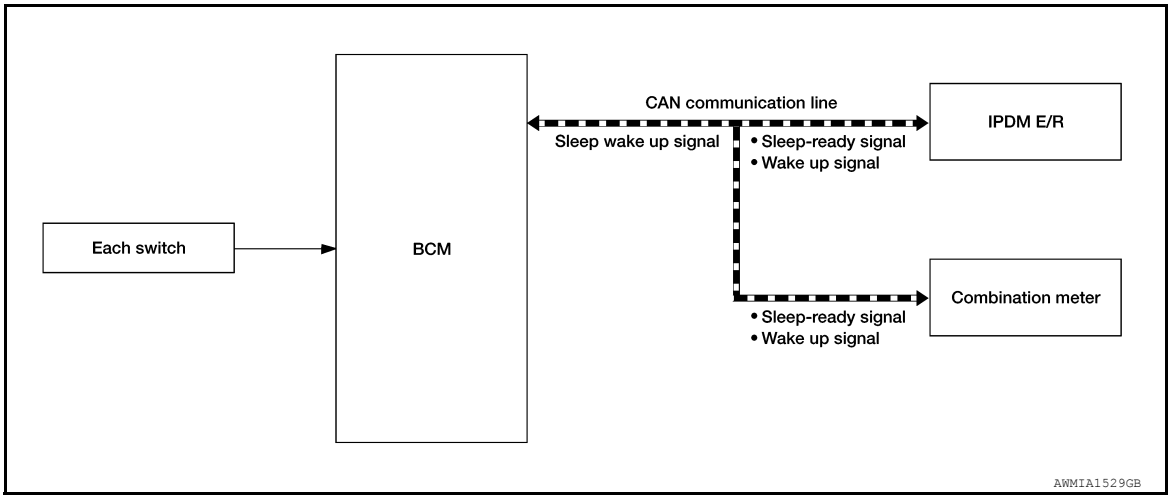
IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

POWER CONSUMPTION CONTROL SYSTEM

POWER CONSUMPTION CONTROL SYSTEM : System Description

INFOID:0000000014388539

SYSTEM DIAGRAM



DESCRIPTION

Outline
- IPDM E/R incorporates a power consumption control function that reduces the power consumption according to the vehicle status.
- IPDM E/R changes its status (control mode) with the sleep wake up signal received from BCM via CAN communication.

Normal mode (wake-up)
- CAN communication is normally performed with other control units.
- Individual unit control by IPDM E/R is normally performed.

Low power consumption mode (sleep)
- Low power consumption control is active.
- CAN transmission is stopped.

Sleep Mode Activation

- IPDM E/R judges that the sleep-ready conditions are fulfilled when the ignition switch is OFF and none of the conditions below are present. Then it transmits a sleep-ready signal (ready) to BCM via CAN communication.
  - Front wiper fail-safe operation
  - Outputting signals to actuators
  - Switches or relays operating
  - Auto active test is starting
  - Emergency OFF
  - Output requests are being received from control units via CAN communication.
- IPDM E/R stops CAN communication and enters the low power consumption mode when it receives a sleep wake up signal (sleep) from BCM and the sleep-ready conditions are fulfilled.

Wake-Up Operation

- IPDM E/R changes from the low power consumption mode to the normal mode when it receives a sleep wake-up signal (wake up) from BCM or any of the following conditions is fulfilled. In addition, it transmits a sleep-ready signal (not-ready) to BCM via CAN communication to report the CAN communication start:
  - Ignition switch ON.
  - An output request is received from a control unit via CAN communication.

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000014388540

AUTO ACTIVE TEST

Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation:

- Rear window defogger
- Front wipers (HI, LO)
- Front fog lamps (if equipped)
- Tail, license and parking lamps
- Daytime running lamps (if equipped)
- Headlamps (HI, LO)
- A/C compressor (magnetic clutch)

Operation Procedure

1. Close the hood and front door RH, and lift the wiper arms from the windshield (to prevent windshield damage due to wiper operation).
   NOTE:
   When auto active test is performed with hood opened, sprinkle water on windshield before hand.
2. Turn ignition switch OFF.
3. Turn the ignition switch ON and, within 20 seconds, press the front door switch LH 10 times. Then turn the ignition switch OFF.
4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:
When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

CAUTION:

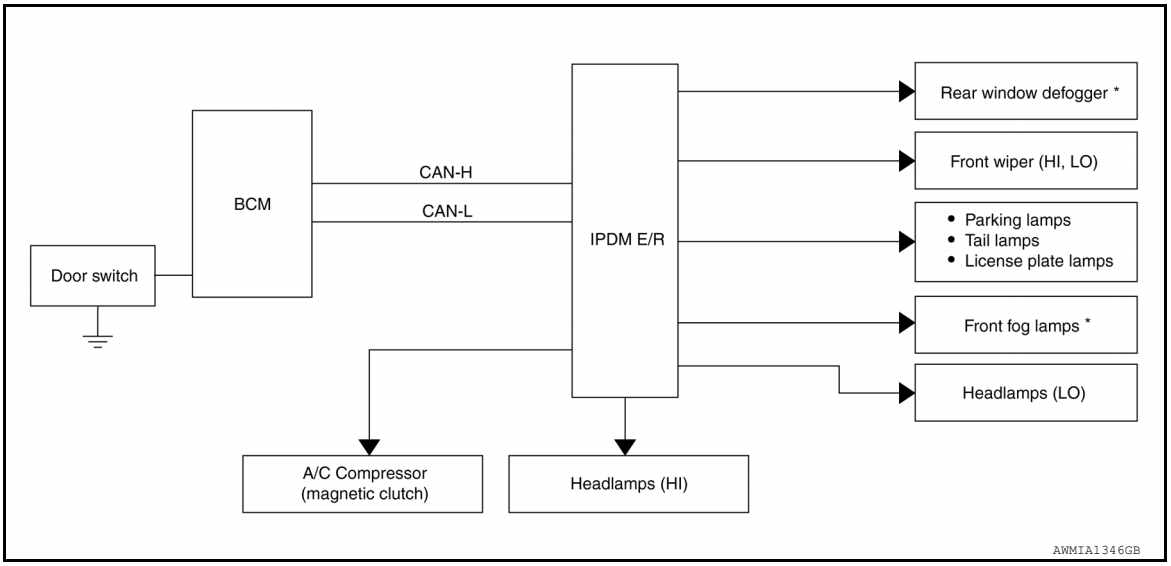
- **If auto active test mode cannot be actuated, check door switch system. Refer to DLK-98, "Component Function Check".**
- **Do not start the engine.**

Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following 6 steps are repeated 3 times.

Operation sequence	Inspection Location	Operation
1	Rear window defogger	10 seconds
2	Front wipers	HI for 5 seconds → LO for 5 seconds
3	Front fog lamps (if equipped), tail, license and parking lamps and daytime running lamps (if equipped)	10 seconds
4	Headlamps	LO for 10 seconds → HI on-off for 5 seconds
5	A/C compressor (magnetic clutch)	ON ⇔ OFF 5 times

Concept of auto active test



*: If equipped

- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger (if equipped) operate?	YES	BCM signal input circuit
		NO	CAN communication signal between BCM and IPDM E/R
Any of the following components do not operate: • Front wipers (HI, LO) • Front fog lamps (if equipped) • Tail lamps • License plate lamps • Parking lamps • Daytime running lamps (if equipped) • Headlamps (HI, LO)	Perform auto active test. Does the applicable system operate?	YES	BCM signal input system
		NO	• Lamp or front wiper motor malfunction • Lamp or front wiper motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R (integrated relay malfunction)
A/C compressor does not operate	Perform auto active test. Does the A/C compressor operate?	YES	• BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnetic clutch malfunction • Harness or connector between IPDM E/R and magnetic clutch • IPDM E/R (integrated relay malfunction)

CONSULT Function (IPDM E/R)

INFOID:0000000014388541

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R:

Direct Diagnostic Mode	Description
Self Diagnostic Result	The IPDM E/R self diagnostic results are displayed.
Data Monitor	The IPDM E/R input/output data is displayed in real time.
Active Test	The IPDM E/R activates outputs to test components.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

SELF DIAGNOSTIC RESULT

Refer to PCS-23, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
IGN RLY1 -REQ [On/Off]		Indicates ignition switch ON signal received from BCM on CAN communication line.
IGN RLY [On/Off]	×	Indicates condition of ignition relay
PUSH SW [On/Off]		Indicates condition of push-button ignition switch.
INTER/NP SW [On/Off]		Indicates condition of AT shift position.
ST RLY CONT [On/Off]		Indicates starter relay status signal received from BCM on CAN communication line.
IHBT RLY -REQ [On/Off]		Indicates starter control relay signal received from BCM on CAN communication line.
ST/INHI RLY [Off/ ST /INHI]		Indicates condition of starter relay and starter control relay.
DETENT SW [On/Off]		Indicates condition of AT shift selector (park position switch).
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
HOOD SW [On/Off]		Indicates condition of hood switch.
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line
HOOD SW 2 [On/Off]		Indicates condition of hood switch 2.

ACTIVE TEST

Test item	Description
REAR DEFOGGER	This test is able to check rear defogger operation [On/Off].
FRONT WIPER	This test is able to check wiper motor operation [Hi/Lo/Off].

Test item	Description
EXTERNAL LAMPS	This test is able to check external lamp operation [Fog/Hi/Lo/TAIL/Off].
HORN	This test is able to check horn operation [On].

ECU DIAGNOSIS INFORMATION

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

Reference Value

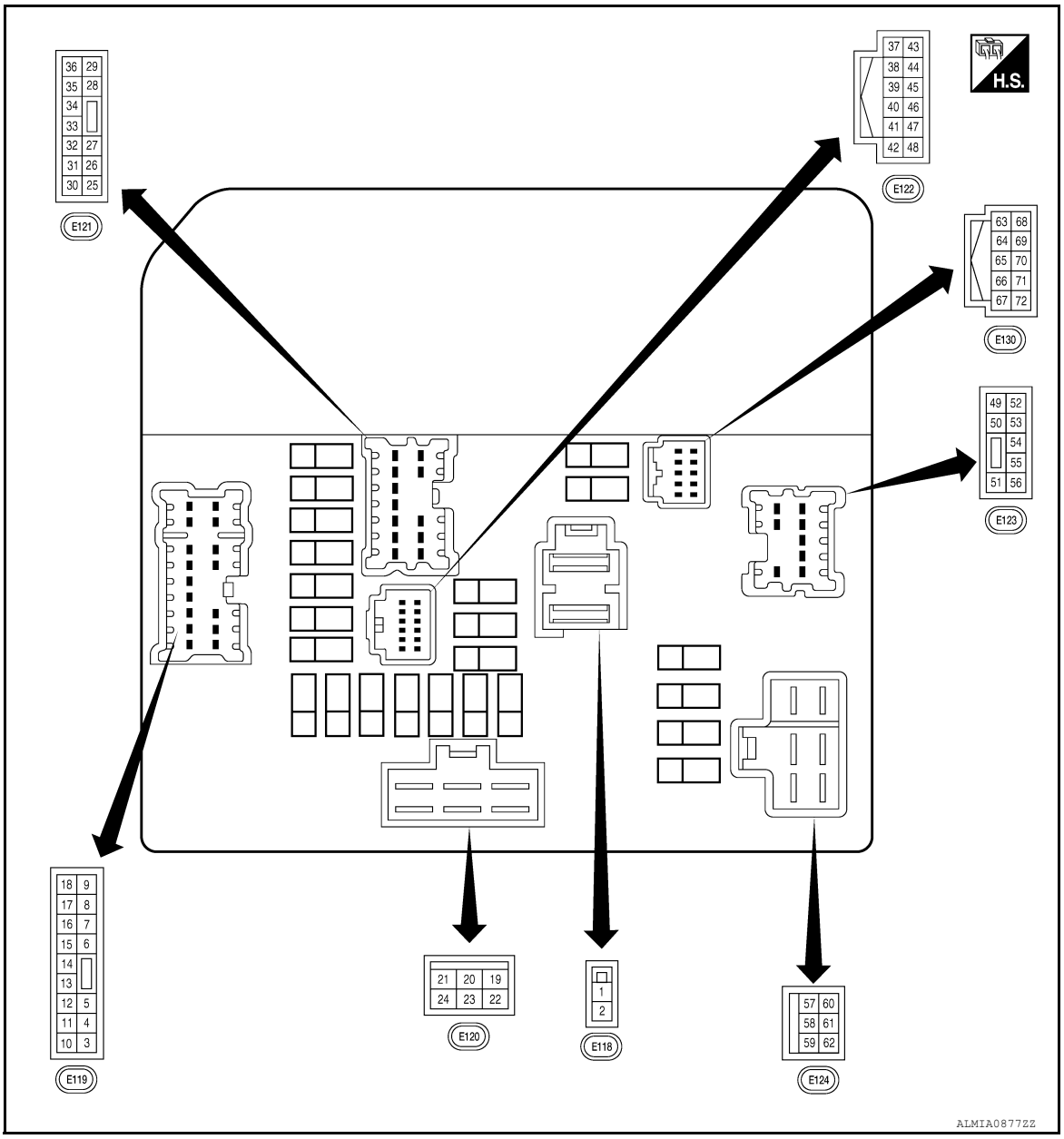
INFOID:0000000014388542

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
A/C COMP REQ	A/C switch OFF		Off
	A/C switch ON		On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND, HI or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND HI or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI		On
FR FOG REQ	Lighting switch 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		• Front fog lamp switch ON • Daytime light activated (Canada only)	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	Stop
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
IGN RLY1 -REQ	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
PUSH SW	Release the push-button ignition switch		Off
	Press the push-button ignition switch		On
INTER/NP SW	Ignition switch ON	AT selector lever in any position other than P or N	Off
		AT selector lever in P or N position	On
ST RLY CONT	Ignition switch ON		Off
	At engine cranking		On
IHBT RLY -REQ	Ignition switch ON		Off
	At engine cranking		On

Monitor Item	Condition		Value/Status
ST/INHI RLY	Ignition switch ON		Off
	At engine cranking		ST →INHI
	The status of starter relay or starter control relay cannot be recognized by the battery voltage malfunction, etc. when the starter relay is ON and the starter control relay is OFF		UNKWN
DETENT SW	Ignition switch ON	AT selector lever in any position other than P	Off
		AT selector lever in P position	On
DTRL REQ	Not operated		Off
	Daytime Running Lights ON		On
HOOD SW	Hood closed		Off
	Hood open		On
THFT HRN REQ	Not operated		Off
	• Panic alarm is activated • Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM		On
HORN CHIRP	Not operated		Off
	Door locking with keyfob (horn chirp mode)		On
HOOD SW 2	Hood closed		Off
	Hood open		On

TERMINAL LAYOUT



PHYSICAL VALUES – WITH CUMMINS 5.0L

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
		Signal name	Input/ Output			
+	–					
1 (B/Y)	Ground	Fusible link IPDM E/R	Input	Ignition switch OFF		Battery voltage
2 (R)	Ground	Fusible link main	Input	Ignition switch OFF		Battery voltage
4 (B/R)	Ground	Transmission range switch signal	Input	Ignition switch ON	AT selector lever in any position other than P or N position	0 V
					AT selector lever in P or N position	Battery voltage
5 (L/W)	Ground	Headlamp HI RH	Output	Ignition switch ON	• Lighting switch HI • Lighting switch PASS	Battery voltage
					Lighting switch OFF	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
6 (G)	Ground	Headlamp HI LH	Output	Ignition switch ON	• Lighting switch HI • Lighting switch PASS	Battery voltage
					Lighting switch OFF	0 V
7 (L)	Ground	Headlamp LO LH	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
8 (R/Y)	Ground	Headlamp LO RH	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
9 (G/W)	Ground	Front fog lamp LH	Output	Ignition switch ON	Fog lamp switch OFF	0 V
					Fog lamp switch ON	Battery voltage
11 (P)	Ground	Actuator power relay output	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0 V
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		Battery voltage
12 (W/R)	Ground	Front fog lamp RH	Output	Ignition switch ON	Fog lamp switch OFF	0 V
					Fog lamp switch ON	Battery voltage
13 (Y/R)	Ground	Transmission control module	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
14 (G)	Ground	Reverse lamps	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
15 (GR)	Ground	ABS actuator and electric unit (control unit)	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
16 (G)	Ground	Actuator power relay control	Output	Ignition switch ON → OFF		0 -1.0 V ↓ Battery voltage ↓ 0 V
				Ignition switch ON		0 - 1.0 V
17 (L/W)	Ground	ECM ignition switch	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
19 (W/R)	Ground	Starter motor	Output	At engine cranking		5 V
20 (L)	Ground	Fusible link ignition switch	Input	Ignition switch OFF		Battery voltage
25 (BR)	Ground	ECM battery	Output	Ignition switch OFF		Battery voltage
27 (R/L)	Ground	Parking lamp RH	Output	Ignition switch ON	Lighting switch 1ST	Battery voltage
					Lighting switch OFF	0 V
28 (R/L)	Ground	Tail and license plate lamps	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 1ST	Battery voltage
29 (Y)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch HI	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
31 (L)	Ground	ECM relay control	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		Battery voltage
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 - 1.5 V
33 (R/L)	Ground	Parking lamp LH	Output	Ignition switch ON	Lighting switch 1ST	Battery voltage
					Lighting switch OFF	0 V
34 (R/W)	Ground	Illumination	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 1ST	Battery voltage
35 (BR)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch LO	Battery voltage
39 (L/Y)	Ground	Wiper autostop	Input	Ignition switch ON	Front wiper stop position	0 V
					Any position other than front wiper stop position	Battery voltage
40 (P)	—	CAN-low	Input/ Output	—		—
41 (L)	—	CAN-high	Input/ Output	—		—
42 (BR)	Ground	Daytime running lamps relay	Output	Ignition switch ON	Daytime running light system active	Battery voltage
				Ignition switch ON	Daytime running light system inactive	0 V
44 (W/B)	Ground	Starter control	Input	Ignition switch ON	AT selector lever in any position other than P or N	0 V
					AT selector lever P or N	Battery voltage
45 (GR)	Ground	Fuel pump relay control	Output	• Approximately 1 second after turning the ignition switch ON • Engine running		0 - 1.0 V
				Approximately 1 second or more after turning the ignition switch ON		Battery voltage
46 (Y)	Ground	Hood switch	Input	Ignition switch ON	Hood closed	0 V
					Hood open	Battery voltage
48 (R/W)	Ground	Horn relay	Input	The horn is deactivated		Battery voltage
				The horn is activated		0 V
49 (Y/B)	Ground	A/C compressor	Output	Engine running	A/C compressor OFF	0 V
					A/C compressor ON (A/C compressor is operating)	Battery voltage
50 (BR)	Ground	Trailer tow relay	Output	Ignition switch OFF		Battery voltage
52 (B)	Ground	Ground (signal)	—	Ignition switch ON		0 V
57 (W/B)	Ground	Rear window defogger relay	Output	Ignition switch ON	Rear defogger switch ON	Battery voltage
					Rear defogger switch OFF	0V

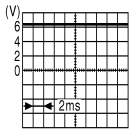
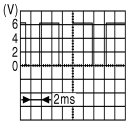
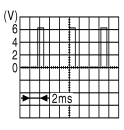
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
58 (BR)	Ground	Lift pump	Output	Approximately 1 second or more after turning the ignition switch ON		0 V
				• Approximately 1 second after turning the ignition switch ON • Engine running		Battery voltage
62 (B)	Ground	Ground (Power)	—	Ignition switch ON		0 V
64 (R)	Ground	Park position switch	Input	Ignition switch ON	Press the AT selector button (AT selector lever P)	Battery voltage
					• AT selector lever in any position other than P • Release the AT selector button (AT selector lever P)	0 V
66 (P)	Ground	Push-button ignition switch	Input	Press the push-button ignition switch		0 V
				Release the push-button ignition switch		Battery voltage
68 (L)	Ground	Ignition signal*	Input	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		0 V
71 (SB)	Ground	Hood switch 2	Input	Ignition switch ON	Hood closed	0 V
					Hood open	Battery voltage

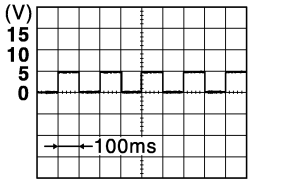
*: Ignition battery saver logic turns OFF the IPDM E/R and BCM if the ignition is ON for 30 minutes with the engine OFF.

PHYSICAL VALUES – WITH VK56VD

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (B/Y)	Ground	Fusible link IPDM E/R	Input	Ignition switch OFF		Battery voltage
2 (R)	Ground	Fusible link main	Input	Ignition switch OFF		Battery voltage
4 (B/R)	Ground	Transmission range switch signal	Input	Ignition switch ON	AT selector lever in any position other than P or N position	0 V
					AT selector lever in P or N position	Battery voltage
5 (L/W)	Ground	Headlamp HI RH	Output	Ignition switch ON	• Lighting switch HI • Lighting switch PASS	Battery voltage
					Lighting switch OFF	0 V
6 (G)	Ground	Headlamp HI LH	Output	Ignition switch ON	• Lighting switch HI • Lighting switch PASS	Battery voltage
					Lighting switch OFF	0 V
7 (L)	Ground	Headlamp LO LH	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
8 (R/Y)	Ground	Headlamp LO RH	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
9 (G/W)	Ground	Front fog lamp LH	Output	Ignition switch ON	Fog lamp switch OFF	0 V
					Fog lamp switch ON	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
11 (O)	Ground	Electronic throttle control	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0 V
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		Battery voltage
12 (W/R)	Ground	Front fog lamp RH	Output	Ignition switch ON	Fog lamp switch OFF	0 V
					Fog lamp switch ON	Battery voltage
13 (Y/R)	Ground	Transmission control module	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
14 (G)	Ground	Reverse lamps	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
15 (GR)	Ground	ABS actuator and electric unit (control unit)	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
16 (V/R)	Ground	Throttle control motor relay control	Output	Ignition switch ON → OFF		0 -1.0 V ↓ Battery voltage ↓ 0 V
				Ignition switch ON		0 - 1.0 V
17 (W)	Ground	ECM ignition switch	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
19 (W/R)	Ground	Starter motor	Output	At engine cranking		5 V
20 (L)	Ground	Fusible link ignition switch	Input	Ignition switch OFF		Battery voltage
25 (W)	Ground	ECM battery	Output	Ignition switch OFF		Battery voltage
26 (V)	Ground	O2 sensor	Output	Ignition switch OFF		Battery voltage
27 (R/L)	Ground	Parking lamp RH	Output	Ignition switch ON	Lighting switch 1ST	Battery voltage
					Lighting switch OFF	0 V
28 (R/L)	Ground	Tail and license plate lamps	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 1ST	Battery voltage
29 (Y)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch HI	Battery voltage
31 (L)	Ground	ECM relay control	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		Battery voltage
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 - 1.5 V
32 (L)	Ground	ECM power supply	Output	Ignition switch OFF		Battery voltage
33 (R/L)	Ground	Parking lamp LH	Output	Ignition switch ON	Lighting switch 1ST	Battery voltage
					Lighting switch OFF	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
34 (R/W)	Ground	Illumination	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 1ST	Battery voltage
35 (BR)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch LO	Battery voltage
39 (L/Y)	Ground	Wiper autostop	Input	Ignition switch ON	Front wiper stop position	0 V
					Any position other than front wiper stop position	Battery voltage
40 (P)	—	CAN-low	Input/ Output	—		—
41 (L)	—	CAN-high	Input/ Output	—		—
42 (BR)	Ground	Daytime running lamps relay	Output	Ignition switch ON	Daytime running light system active	Battery voltage
				Ignition switch ON	Daytime running light system inactive	0 V
44 (W/B)	Ground	Starter control	Input	Ignition switch ON	AT selector lever in any position other than P or N	0 V
					AT selector lever P or N	Battery voltage
45 (GR)	Ground	Fuel pump relay control	Output	• Approximately 1 second after turning the ignition switch ON • Engine running		0 - 1.0 V
				Approximately 1 second or more after turning the ignition switch ON		Battery voltage
46 (Y)	Ground	Hood switch	Input	Ignition switch ON	Hood closed	0 V
					Hood open	Battery voltage
47 (Y)	Ground	Power generation command signal	Output	Ignition switch ON		 JPMIA0001GB 6.3 V
				40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"		 JPMIA0002GB 3.8 V
				40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"		 JPMIA0003GB 1.4 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
48 (R/W)	Ground	Horn relay	Input	The horn is deactivated		Battery voltage
				The horn is activated		0 V
49 (GR/R)	Ground	A/C compressor	Output	Engine running	A/C compressor OFF	0 V
					A/C compressor ON (A/C compressor is operating)	Battery voltage
50 (BR)	Ground	Trailer tow relay	Output	Ignition switch OFF		Battery voltage
52 (B)	Ground	Ground (signal)	—	Ignition switch ON		0 V
57 (W/B)	Ground	Rear window defogger relay	Output	Ignition switch ON	Rear defogger switch ON	Battery voltage
					Rear defogger switch OFF	0V
58 (B/Y)	Ground	Lift pump	Output	Approximately 1 second or more after turning the ignition switch ON		0 V
				• Approximately 1 second after turning the ignition switch ON • Engine running		Battery voltage
62 (B)	Ground	Ground (Power)	—	Ignition switch ON		0 V
64 (R)	Ground	Park position switch	Input	Ignition switch ON	Press the AT selector button (AT selector lever P)	Battery voltage
					• AT selector lever in any position other than P • Release the AT selector button (AT selector lever P)	0 V
66 (P)	Ground	Push-button ignition switch	Input	Press the push-button ignition switch		0 V
				Release the push-button ignition switch		Battery voltage
68 (L)	Ground	Ignition signal*	Input	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		0 V
71 (SB)	Ground	Hood switch 2	Input	Ignition switch ON	Hood closed	0 V
					Hood open	Battery voltage
72 (W)	Ground	Cooling fan control	Output	Ignition switch	OFF	5 V
					ACC	0 V
					ON	 JMMIA0404GB 2. 5 V
				Engine running		

*: Ignition battery saver logic turns OFF the IPDM E/R and BCM if the ignition is ON for 30 minutes with the engine OFF.

Fail Safe

INFOID:0000000014388543

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

Control part	Fail-safe in operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamps • License plate lamps • Tail lamps	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Rear window defogger (if equipped)	Rear window defogger relay OFF
A/C compressor	A/C relay OFF
Front fog lamps (if equipped)	Front fog lamp relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Ignition switch	Ignition relay	Tail lamp relay
ON	ON	—
OFF	OFF	—

NOTE:

The tail lamp turns OFF when the ignition switch is turned ON.

FRONT WIPER CONTROL

IPDM E/R detects front wiper stop position by a front wiper auto stop signal.
When a front wiper auto stop signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop five times.

Ignition switch	Front wiper switch	Auto stop signal
ON	OFF	Front wiper stop position signal cannot be input 10 seconds.
	ON	The signal does not change for 10 seconds.

NOTE:

This operation status can be confirmed on the IPDM E/R “DATA MONITOR” that displays “Block” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

DTC Index

INFOID:0000000014388544

CONSULT display	Fail-safe	TIME[NOTE]		Refer to
No DTC is detected. Further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	1 – 39	PCS-35
U1010: CONTROL UNIT (CAN)	×	CRNT	1 – 39	PCS-37
B2098: IGN RELAY ON	×	CRNT	1 – 39	PCS-38

CONSULT display	Fail-safe	TIME[NOTE]		Refer to
B2099: IGN RELAY OFF	—	CRNT	1 – 39	PCS-40
B210B: PNP RELAY ON	—	CRNT	1 – 39	SEC-127
B210C: PNP RELAY OFF	—	CRNT	1 – 39	SEC-128
B210D: STARTER RELAY ON	—	CRNT	1 – 39	SEC-129
B210E: STARTER RELAY OFF	—	CRNT	1 – 39	SEC-131
B210F: INTRLCK PNP SW ON	—	CRNT	1 – 39	SEC-133
B2110: INTRLCK PNP SW OFF	—	CRNT	1 – 39	SEC-136

NOTE:
The details of TIME display are as follows.
- CRNT: The malfunctions that are detected now
- 1 - 39: The number is indicated when it is normal at present and a malfunction was detected in the past. It increases like 0 → 1 → 2 · · · 38 → 39 after returning to the normal condition whenever IGN OFF → ON. It is fixed to 39 until the self-diagnosis results are erased if it is over 39. It returns to 0 when a malfunction is detected again in the process.

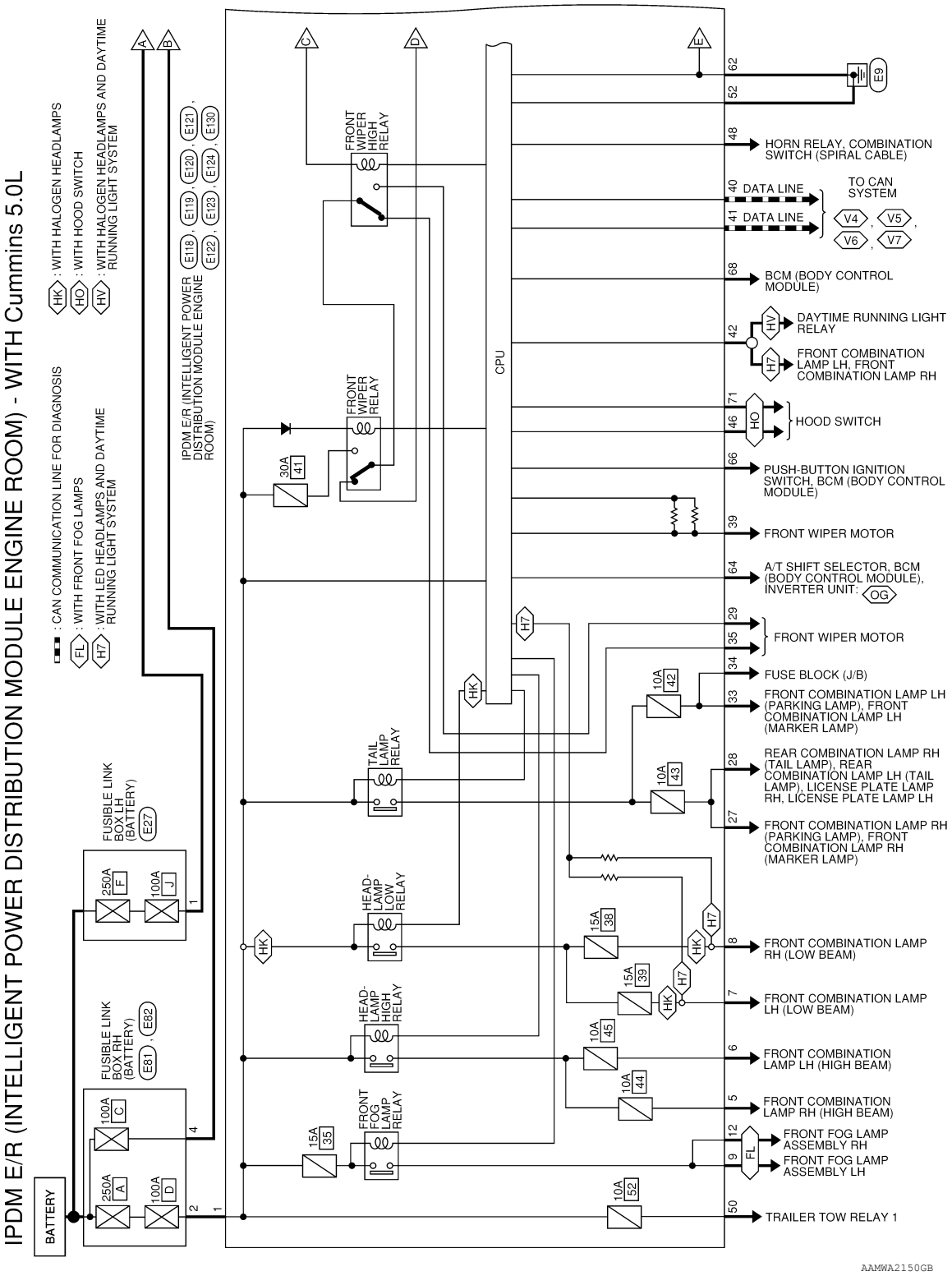
WIRING DIAGRAM

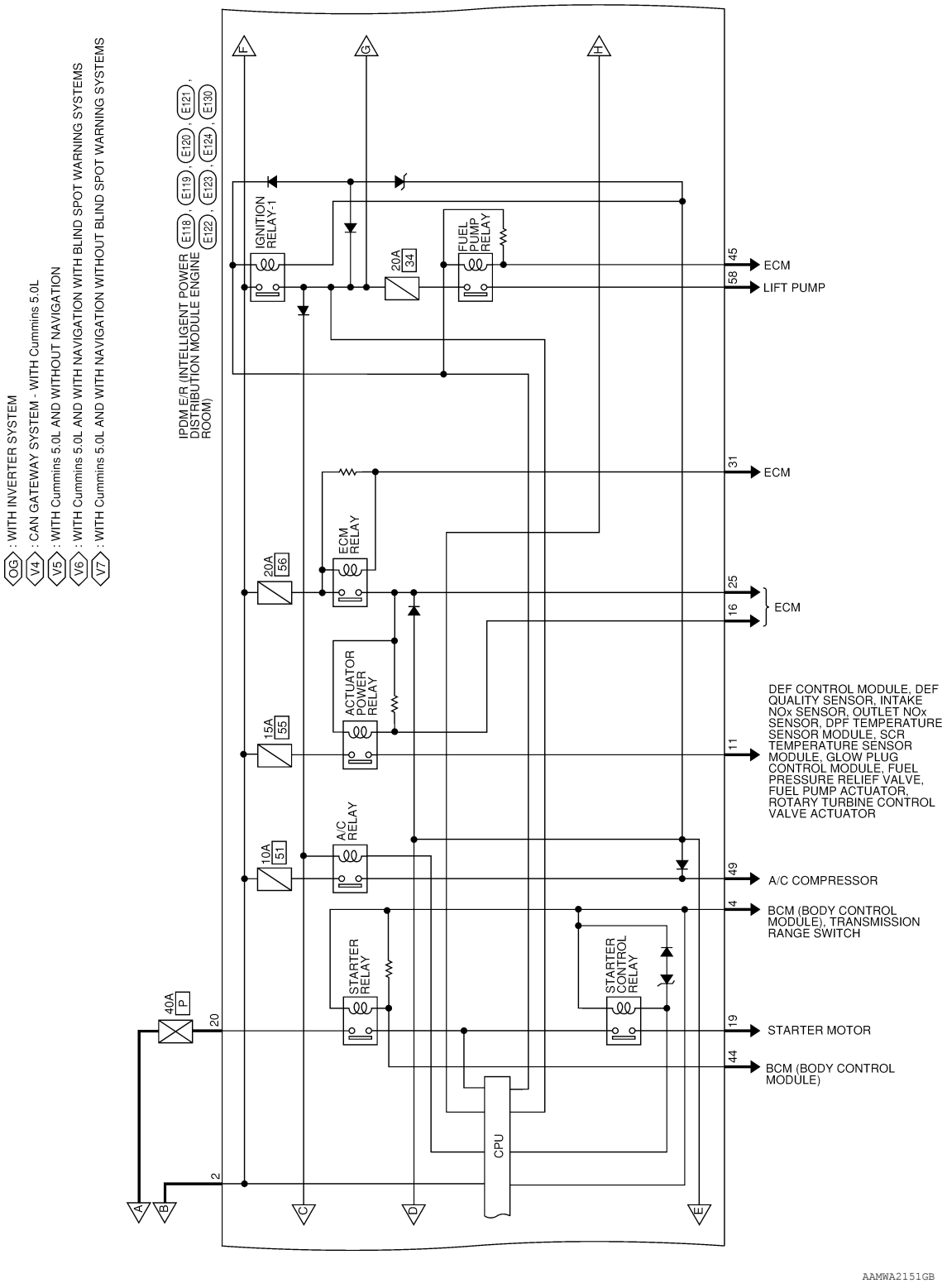
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

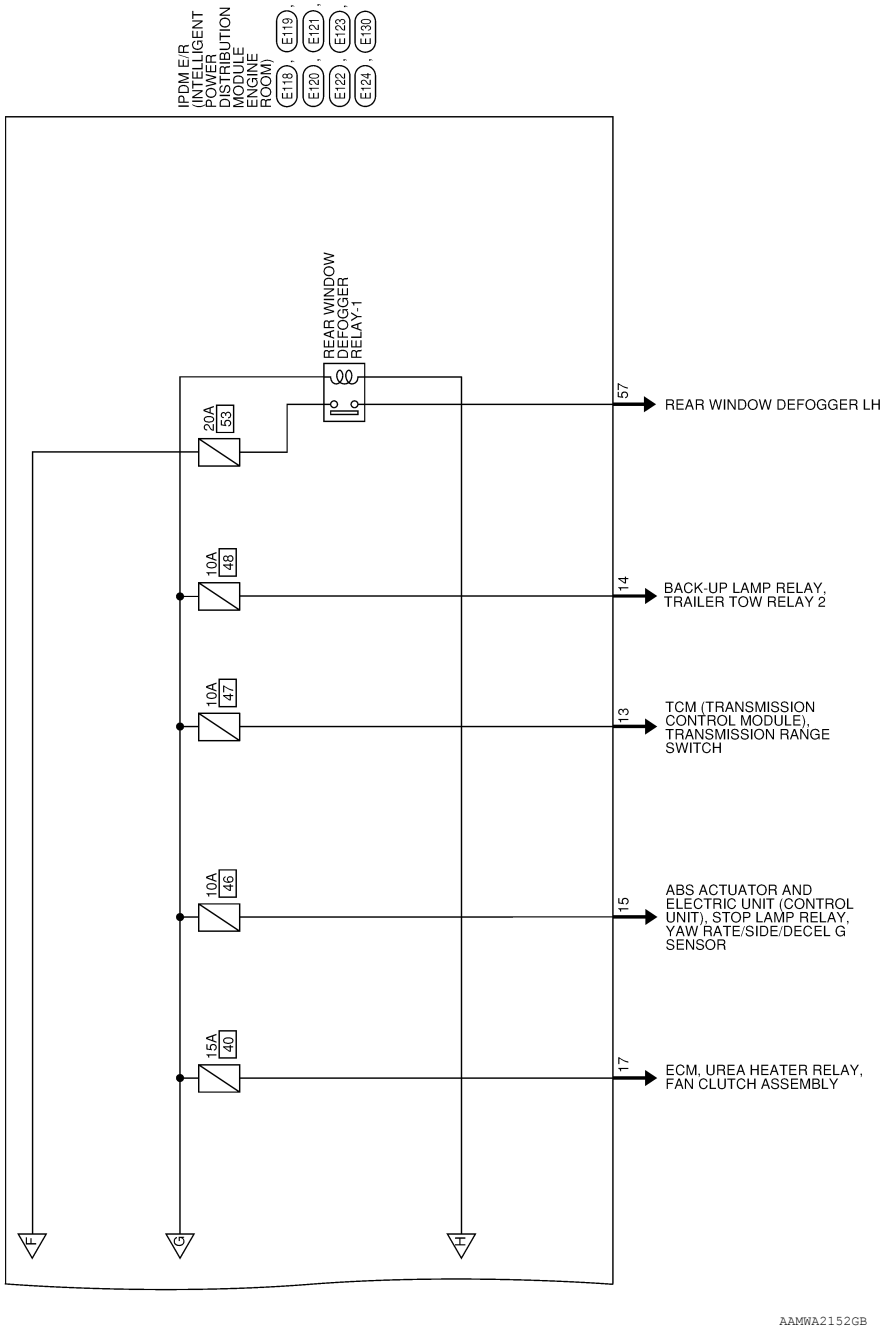
CUMMINS 5.0L

CUMMINS 5.0L : Wiring Diagram

INFOID:0000000014388545




OG : WITH INVERTER SYSTEM
V4 : CAN GATEWAY SYSTEM - WITH Cummins 5.0L
V5 : WITH Cummins 5.0L AND WITHOUT NAVIGATION
V6 : WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS
V7 : WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E118, E119, E120, E121, E122, E123, E124, E130
IGNITION RELAY-1
20A 34
FUEL PUMP RELAY
ECM RELAY
20A 56
ACTUATOR POWER RELAY
15A 55
A/C RELAY
10A 51
STARTER RELAY
STARTER CONTROL RELAY
40A P
CPU
45 ECM
58 LIFT PUMP
31 ECM
25 ECM
16 ECM
DEF CONTROL MODULE, DEF QUALITY SENSOR, INTAKE NOx SENSOR, OUTLET NOx SENSOR, DPF TEMPERATURE SENSOR MODULE, SCR TEMPERATURE SENSOR MODULE, GLOW PLUG CONTROL MODULE, FUEL PRESSURE RELIEF VALVE, FUEL PUMP ACTUATOR, ROTARY TURBINE CONTROL VALVE ACTUATOR
11
49 A/C COMPRESSOR
4 BCM (BODY CONTROL MODULE), TRANSMISSION RANGE SWITCH
19 STARTER MOTOR
44 BCM (BODY CONTROL MODULE)
20
2
A
B
C
D
E
F
G
H
AAMWA2151GB


IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E119
E121
E123
E130
E118
E120
E122
E124
REAR WINDOW DEFOGGER RELAY-1
20A 53
10A 48
10A 47
10A 46
15A 40
57
REAR WINDOW DEFOGGER LH
14
BACK-UP LAMP RELAY, TRAILER TOW RELAY 2
13
TCM (TRANSMISSION CONTROL MODULE), TRANSMISSION RANGE SWITCH
15
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT), STOP LAMP RELAY, YAW RATE/SIDE/DECEL G SENSOR
17
ECM, UREA HEATER RELAY, FAN CLUTCH ASSEMBLY
F
G
H
AAMWA2152GB

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) CONNECTORS - WITH Cummins 5.0L

Connector No.	E27
Connector Name	FUSIBLE LINK BOX LH (BATTERY)
Connector Type	L02FBR-MC
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	BATTERY
2	W	BATTERY

Connector No.	E81
Connector Name	FUSIBLE LINK BOX RH (BATTERY)
Connector Type	L02FBR-MC
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
1	B/L	BATTERY
2	B/Y	BATTERY

Connector No.	E82
Connector Name	FUSIBLE LINK BOX RH (BATTERY)
Connector Type	L02FGY-MC
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
3	W	BATTERY
4	R	BATTERY

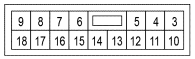
Connector No.	E118
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	L02FB-MC
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	B/Y	F/L USM
2	R	F/L MAIN

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS
Connector Color	WHITE

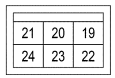
H.S.



Terminal No.	Color of Wire	Signal Name
3	–	–
4	B/R	NP SW
5	L/W	H/LAMP HI RH
6	G	H/LAMP HI LH
7	L	H/LAMP LO LH
8	R/Y	H/LAMP LO RH
9	G/W	FR FOG/L LH
10	–	–
11	P	ETC VB - (WITH CUMMINS 5.0L)
11	O	ETC VB - (WITH VK56VD)
12	W/R	FR FOG/L RH
13	Y/R	A/T ECU IGN
14	G	REVERSE LAMP IGN
15	GR	ABS ECU IGN
16	G	ETC RLY CONT - (WITH CUMMINS 5.0L)
16	V/R	ETC RLY CONT - (WITH VK56VD)
17	L/W	IGN COIL - (WITH CUMMINS 5.0L)
17	W	IGN COIL - (WITH VK56VD)
18	–	–

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FW-LC
Connector Color	WHITE

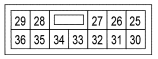
H.S.



Terminal No.	Color of Wire	Signal Name
19	W/R	STARTER MOTOR
20	L	F/L IGNSW
21	–	–
22	–	–
23	–	–
24	–	–

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FBR-CS
Connector Color	BROWN

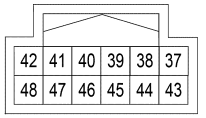
H.S.



Terminal No.	Color of Wire	Signal Name
25	BR	ECM VB - (WITH CUMMINS 5.0L)
25	W	ECM VB - (WITH VK56VD)
26	V	O2 SENS - (WITH VK56VD)
27	R/L	PARKING RH
28	R/L	TAIL 1
29	Y	FR WIPER HI
30	–	–
31	L	ECM RLY CONT
32	L	ECM BAT - (WITH VK56VD)
33	R/L	PARKING LH
34	R/W	TAIL 2
35	BR	FR WIPER LO
36	–	–

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
37	–	–
38	–	–
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY
43	–	–
44	W/B	START CONT
45	GR	FUEL RLY CONT
46	Y	HOOD SW
47	Y	ALT C - (WITH VK56VD)
48	R/W	HORN RLY CONT

AAMIA5009GB

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) CONNECTORS - WITH Cummins 5.0L

VK56VD

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FBR-CS
Connector Color	BROWN

H.S.

51		50	49
56	55	54	53	52

Terminal No.	Color of Wire	Signal Name
49	Y/B	A/C COMP - (WITH CUMMINS 5.0L)
49	GR/R	A/C COMP - (WITH VK56VD)
50	BR	TRAILER TOW
51	–	–
52	B	S-GND
53	–	–
54	–	–
55	–	–
56	–	–

Connector No.	E130
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH10FB-NH
Connector Color	BLACK

H.S.

67	66	65	64	63
72	71	70	69	68

Terminal No.	Color of Wire	Signal Name
63	–	–
64	R	DETENT SW
65	–	–
66	P	PUSH START SW
67	–	–
68	L	IGN SIGNAL
69	–	–
70	–	–
71	SB	HOOD SW2
72	W	E-CPLG - (WITH VK56VD)

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FB-LC
Connector Color	BLACK

H.S.

59	58	57
62	61	60

Terminal No.	Color of Wire	Signal Name
57	W/B	RR DEF
58	B/Y	FUEL PUMP - (WITH VK56VD)
58	BR	FUEL PUMP - (WITH CUMMINS 5.0L)
59	–	–
60	–	–
61	–	–
62	B	P GND

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VK56VD : Wiring Diagram

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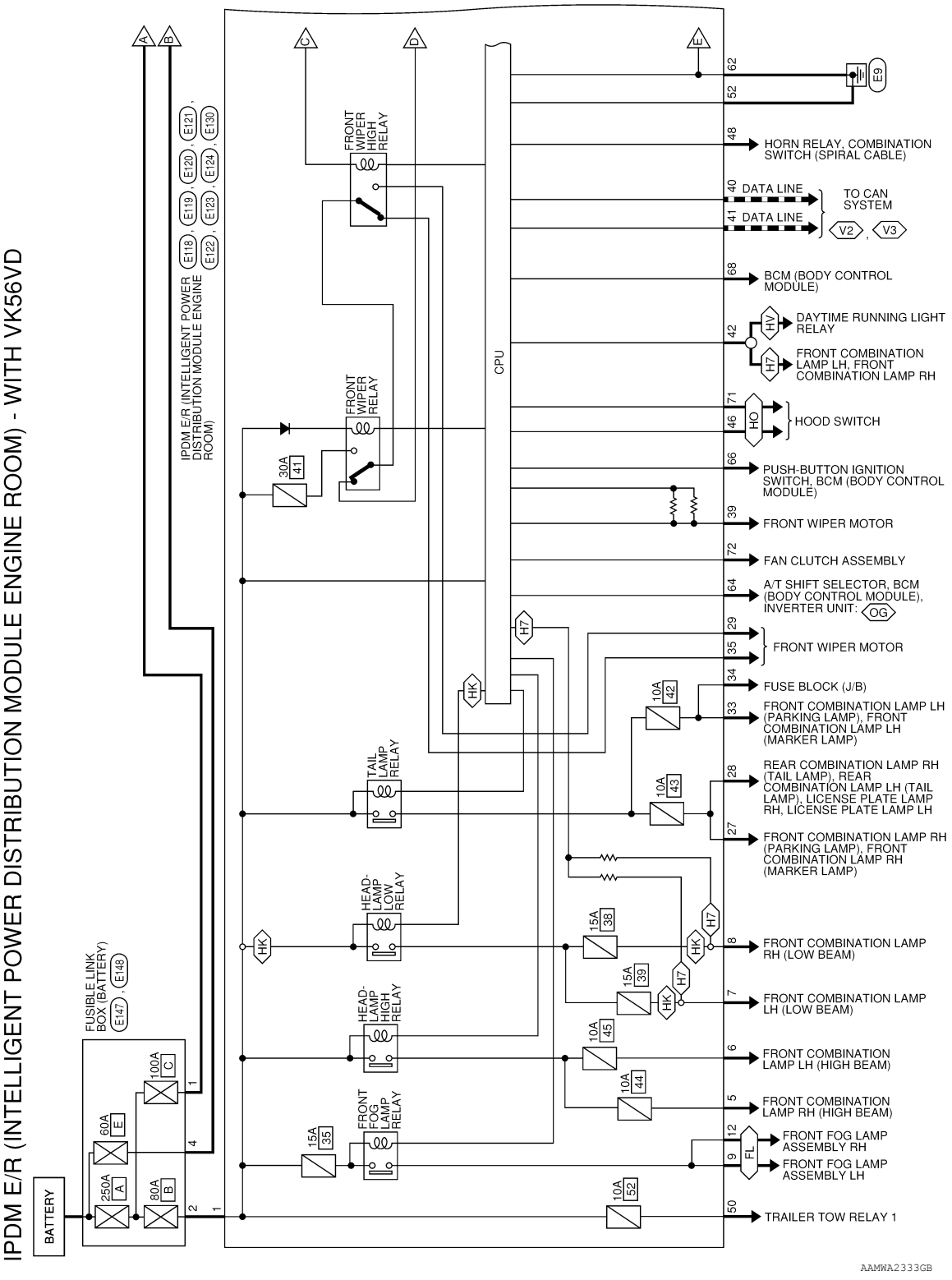
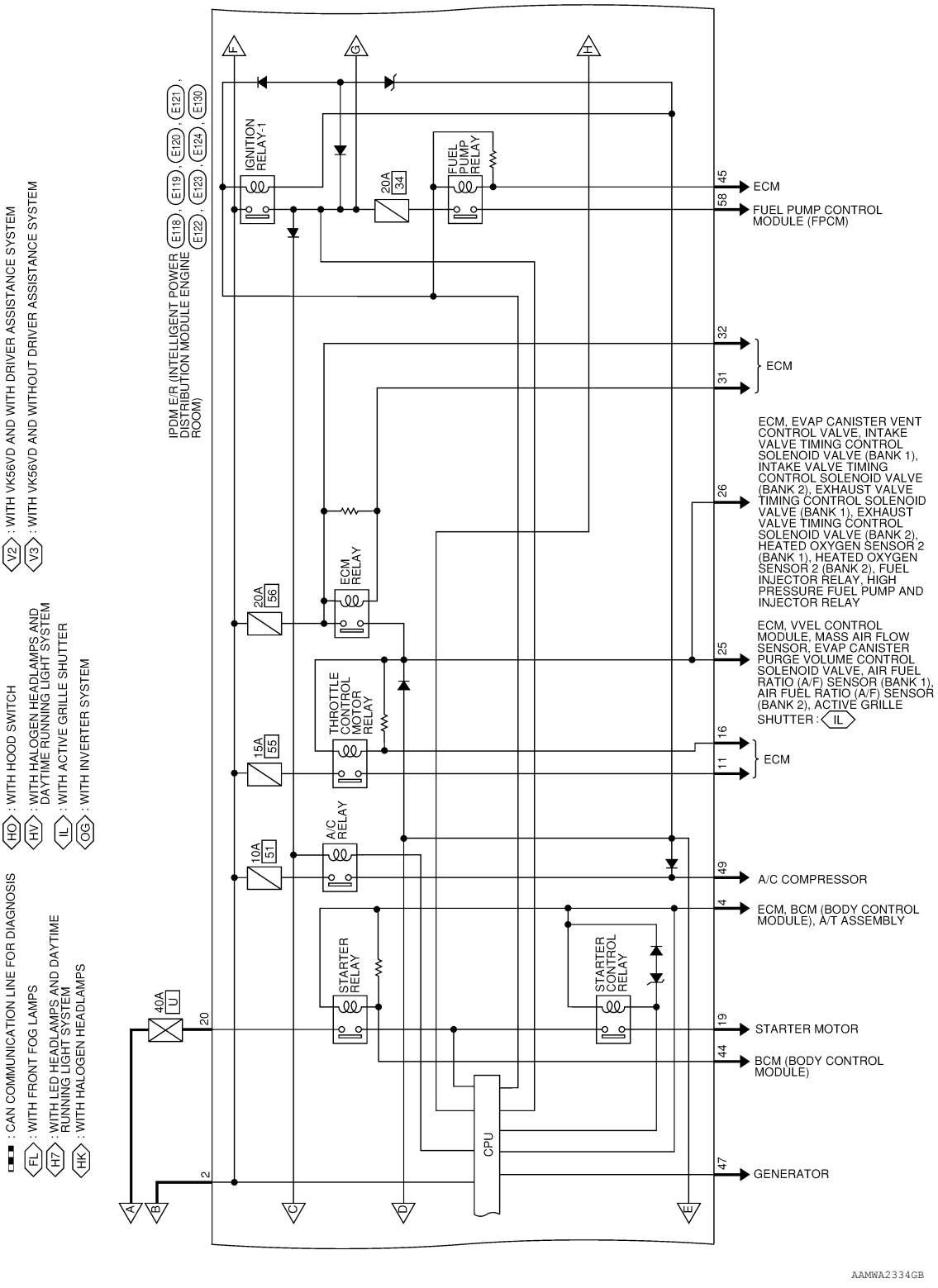
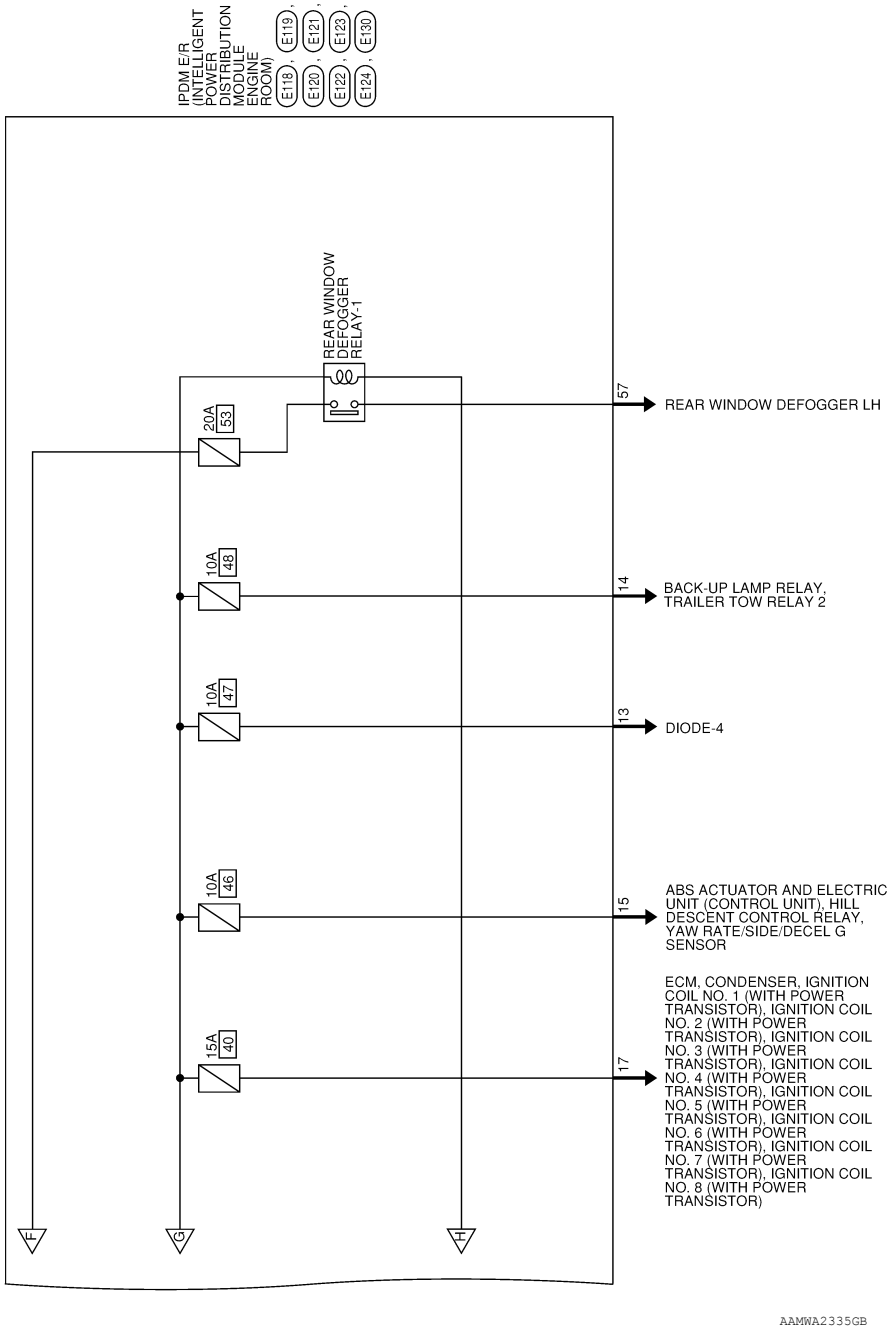



: CAN COMMUNICATION LINE FOR DIAGNOSIS
FL : WITH FRONT FOG LAMPS
H7 : WITH LED HEADLAMPS AND DAYTIME RUNNING LIGHT SYSTEM
HK : WITH HALOGEN HEADLAMPS
HO : WITH HOOD SWITCH
HV : WITH HALOGEN HEADLAMPS AND DAYTIME RUNNING LIGHT SYSTEM
IL : WITH ACTIVE GRILLE SHUTTER
OG : WITH INVERTER SYSTEM
V2 : WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM
V3 : WITH VK56VD AND WITHOUT DRIVER ASSISTANCE SYSTEM
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E118, E119, E122, E123, E120, E121, E124, E130
IGNITION RELAY-1
FUEL PUMP RELAY
20A 34
ECM RELAY
20A 56
THROTTLE CONTROL MOTOR RELAY
15A 55
A/C RELAY
10A 51
STARTER RELAY
STARTER CONTROL RELAY
40A U
CPU
45 ECM
58 FUEL PUMP CONTROL MODULE (FPCM)
32 ECM
31
26 ECM, EVAP CANISTER VENT CONTROL VALVE, INTAKE VALVE TIMING CONTROL SOLENOID VALVE (BANK 1), INTAKE VALVE TIMING CONTROL SOLENOID VALVE (BANK 2), EXHAUST VALVE TIMING CONTROL SOLENOID VALVE (BANK 1), EXHAUST VALVE TIMING CONTROL SOLENOID VALVE (BANK 2), HEATED OXYGEN SENSOR 2 (BANK 1), HEATED OXYGEN SENSOR 2 (BANK 2), FUEL INJECTOR RELAY, HIGH PRESSURE FUEL PUMP AND INJECTOR RELAY
25 ECM, VVEL CONTROL MODULE, MASS AIR FLOW SENSOR, EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE, AIR FUEL RATIO (A/F) SENSOR (BANK 1), AIR FUEL RATIO (A/F) SENSOR (BANK 2), ACTIVE GRILLE SHUTTER : IL
16 ECM
11
49 A/C COMPRESSOR
4 ECM, BCM (BODY CONTROL MODULE), A/T ASSEMBLY
19 STARTER MOTOR
44 BCM (BODY CONTROL MODULE)
47 GENERATOR
20
2
A
B
C
D
E
F
G
H
AAMWA2334GB


IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E119
E121
E123
E130
E118
E120
E122
E124
REAR WINDOW DEFOGGER RELAY-1
20A 53
10A 48
10A 47
10A 46
15A 40
57
REAR WINDOW DEFOGGER LH
14
BACK-UP LAMP RELAY, TRAILER TOW RELAY 2
13
DIODE-4
15
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT), HILL DESCENT CONTROL RELAY, YAW RATE/SIDE/DECEL G SENSOR
17
ECM, CONDENSER, IGNITION COIL NO. 1 (WITH POWER TRANSISTOR), IGNITION COIL NO. 2 (WITH POWER TRANSISTOR), IGNITION COIL NO. 3 (WITH POWER TRANSISTOR), IGNITION COIL NO. 4 (WITH POWER TRANSISTOR), IGNITION COIL NO. 5 (WITH POWER TRANSISTOR), IGNITION COIL NO. 6 (WITH POWER TRANSISTOR), IGNITION COIL NO. 7 (WITH POWER TRANSISTOR), IGNITION COIL NO. 8 (WITH POWER TRANSISTOR)
E
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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) CONNECTORS - WITH VK56VD

Connector No.	E118
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	L02FB-MC
Connector Color	BLACK

H.S.

1	2

Terminal No.	Color of Wire	Signal Name
1	B/Y	F/L USM
2	R	F/L MAIN

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

9	8	7	6		5	4	3
18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
3	–	–
4	B/R	NP SW
5	L/W	H/LAMP HI RH
6	G	H/LAMP HI LH
7	L	H/LAMP LO LH
8	R/Y	H/LAMP LO RH
9	G/W	FR FOG/L LH
10	–	–
11	P	ETC VB - (WITH CUMMINS 5.0L)
11	O	ETC VB - (WITH VK56VD)
12	W/R	FR FOG/L RH
13	Y/R	A/T ECU IGN
14	G	REVERSE LAMP IGN
15	GR	ABS ECU IGN
16	G	ETC RLY CONT - (WITH CUMMINS 5.0L)
16	V/R	ETC RLY CONT - (WITH VK56VD)
17	L/W	IGN COIL - (WITH CUMMINS 5.0L)

17	W	IGN COIL - (WITH VK56VD)
18	–	–

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FW-LC
Connector Color	WHITE

H.S.

21	20	19
24	23	22

Terminal No.	Color of Wire	Signal Name
19	W/R	STARTER MOTOR
20	L	F/L IGNSW
21	–	–
22	–	–
23	–	–
24	–	–

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FBR-CS
Connector Color	BROWN

H.S.

29	28		27	26	25
36	35	34	33	32	31	30

Terminal No.	Color of Wire	Signal Name
25	BR	ECM VB - (WITH CUMMINS 5.0L)
25	W	ECM VB - (WITH VK56VD)
26	V	O2 SENS - (WITH VK56VD)
27	R/L	PARKING RH
28	R/L	TAIL 1
29	Y	FR WIPER HI
30	–	–
31	L	ECM RLY CONT
32	L	ECM BAT - (WITH VK56VD)
33	R/L	PARKING LH
34	R/W	TAIL 2

35	BR	FR WIPER LO
36	–	–

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

42	41	40	39	38	37
48	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
37	–	–
38	–	–
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY
43	–	–
44	W/B	START CONT
45	GR	FUEL RLY CONT
46	Y	HOOD SW
47	Y	ALT C - (WITH VK56VD)
48	R/W	HORN RLY CONT

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FBR-CS
Connector Color	BROWN

H.S.

51		50	49
56	55	54	53	52

Terminal No.	Color of Wire	Signal Name
49	Y/B	A/C COMP - (WITH CUMMINS 5.0L)
49	GR/R	A/C COMP - (WITH VK56VD)
50	BR	TRAILER TOW
51	–	–

52	B	S-GND
53	–	–
54	–	–
55	–	–
56	–	–

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FB-LC
Connector Color	BLACK

H.S.

59	58	57
62	61	60

Terminal No.	Color of Wire	Signal Name
57	W/B	RR DEF
58	BR	FUEL PUMP - (WITH CUMMINS 5.0L)
58	B/Y	FUEL PUMP - (WITH VK56VD)
59	–	–
60	–	–
61	–	–
62	B	P GND

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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) CONNECTORS - WITH VK56VD

Connector No.	E130
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH10FB-NH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
63	–	–
64	R	DETENT SW
65	–	–
66	P	PUSH START SW
67	–	–
68	L	IGN SIGNAL
69	–	–
70	–	–
71	SB	HOOD SW2
72	W	E-CPLG - (WITH VK56VD)

Connector No.	E148
Connector Name	FUSIBLE LINK BOX (BATTERY) (WITH VK56VD)
Connector Type	L02FGY-MC
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
3	W	BATTERY
4	R	BATTERY

Connector No.	E147
Connector Name	FUSIBLE LINK BOX (BATTERY) (WITH VK56VD)
Connector Type	L02FBR-MC
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
1	B/L	BATTERY
2	B/Y	BATTERY

AAMIA5012GB

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000014388547

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicles are equipped with many electronic control units and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-74, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1000	CAN COMM CIRCUIT (CAN communication circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

Control part	Fail-safe operation
A/C compressor	A/C relay OFF

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON. • Turns OFF the headlamp low relay when the ignition switch is turned OFF. • Headlamp high relay OFF
• Parking lamp • License plate lamp • Illumination • Tail lamp • Side marker lamp	• Turns ON the tail lamp relay when the ignition switch is turned ON. • Turns OFF the tail lamp relay when the ignition switch is turned OFF.
Front wiper motor	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. • Returns wiper automatically to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and the wiper is in any position other than the stop position. • The status is held at service position if the fail-safe control is activated while the service position function is operating.
Front fog lamp	Front fog lamp relay OFF
Horn	Horn relay OFF
Ignition relay-1	The status just before activation of fail-safe is maintained.
Starter motor	Starter control relay OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check “Self Diagnostic Result” mode of “IPDM E/R”.
3. Check DTC.

Is DTC “U1000” displayed?

YES >> Refer to PCS-36, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-47, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014388548

1.PERFORM SELF DIAGNOSIS

CONSULT
1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check “Self Diagnostic Result” mode of “IPDM E/R”.
3. Check DTC.

Is DTC “U1000” displayed?

YES >> Refer to LAN-53, "Trouble Diagnosis Flow Chart".
NO >> Refer to GI-47, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000014388549

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1010	CONTROL UNIT(CAN) (Control unit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- IPDM E/R

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check “Self Diagnostic Result” mode of “IPDM E/R”.
3. Check DTC.

Is DTC “U1000” displayed?

YES >> Refer to PCS-37, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-47, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014388550

1.REPLACE IPDM E/R

Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".

>> Inspection End.

B2098 IGNITION RELAY ON STUCK

DTC Description

INFOID:0000000014388551

- IPDM E/R operates the ignition relay when it receives an ignition switch ON signal from BCM via CAN communication.
- Turn the ignition relay OFF by pressing the push-button ignition switch once when the vehicle speed is 4 km/h (2.5 MPH) or less.
- Turn the ignition relay OFF with the following operation when the vehicle speed is more than 4 km/h (2.5 MPH) or when an abnormal condition occurs in CAN communication from the combination meter (Emergency OFF)

- Press and hold the push-button ignition switch for 2 seconds or more.
- Press the push-button ignition switch 3 times within 1.5 seconds.

NOTE:
The ignition relay does not turn ON for 3 seconds after emergency OFF even if the push-button ignition switch is pressed.

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B2098	IGN RELAY ON (Ignition relay ON circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	1 second or more

Possible Cause

- IPDM E/R.
- Harness or connectors (ignition relay circuit short).

FAIL-SAFE

Turns ON the tail lamp relay for 10 minutes.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Turn ignition switch ON.
2. Turn ignition switch OFF and wait 1 second or more.
3. Check DTC in “Self Diagnostic Result” mode of “IPDM E/R”.

Is DTC detected?

YES >> Refer to PCS-38, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-47, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014388552

Regarding Wiring Diagram information, refer to PCS-25, "CUMMINS 5.0L : Wiring Diagram".

1.SELF DIAGNOSTIC RESULT

CONSULT
1. Check “Self Diagnostic Result” mode of “IPDM E/R”.

What is the display history of DTC “B2098”?

“CRNT”>> GO TO 2.
“PAST” >> GO TO 5.

2.CHECK IGNITION RELAY CONTROL CIRCUIT VOLTAGE 1

1. Turn ignition switch ON.
2. Check voltage between IPDM E/R harness connector E130 and ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E130	68	Ground	0 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 3.

3. CHECK IGNITION RELAY CONTROL CIRCUIT VOLTAGE 2

1. Disconnect IPDM E/R connector.
2. Turn ignition switch ON.
3. Check voltage between IPDM E/R harness connector E130 and ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E130	68	Ground	0 V

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> Repair or replace harness or connectors.

4. CHECK IGNITION RELAY CONTROL CIRCUIT

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector E130 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E130	68		No

Is the inspection result normal?

YES >> Perform the diagnosis procedure for DTC B26F2. Refer to PCS-86, "DTC Description".
NO >> Repair or replace harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

>> Inspection End.

B2099 IGNITION RELAY OFF STUCK

DTC Description

INFOID:0000000014388553

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B2099	IGN RELAY OFF (Ignition relay OFF circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	1 second or more

NOTE:
When IPDM E/R power supply voltage is low (Approx. 7 - 8 V for about 1 second), the “DTC: B2099” may be detected.

POSSIBLE CAUSE

- IPDM E/R
- Fuse
- Battery

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “IPDM E/R”.
3. Check DTC.

Is DTC detected?

YES >> Refer to PCS-40, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-47, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000014388554

Regarding Wiring Diagram information, refer to PCS-25, "CUMMINS 5.0L : Wiring Diagram".

1.CHECK FUSE

Check that all of the fuses installed on the downstream of the contact point side circuit of the ignition relay in IPDM E/R are not blown.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after replacing the affected circuit if a fuse is blown.

2.CHECK IGNITION RELAY CONTROL CIRCUIT VOLTAGE

1. Turn ignition switch ON
2. Check voltage between IPDM E/R harness connector E130 and ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E130	68	Ground	0V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".

3. CHECK BATTERY VOLTAGE

Check battery voltage.

Which is the measurement result?

More than 12.4 V>>GO TO 4.
Less than 12.4 V>>Perform battery inspection. Refer to PG-175, "How to Handle Battery".

4. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

>> Inspection End.

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000014388555

Regarding Wiring Diagram information, refer to PCS-25, "CUMMINS 5.0L : Wiring Diagram".

1. CHECK FUSIBLE LINKS

Check that the following fusible links are not blown.

Terminal	Signal name	Fusible link No.	
		Cummins 5.0L	VK56VD
1	Battery power supply	A (250A), D (100A)	A (250A), B (80A)
2		C (100A)	E (60A)
20		F (250A), J (100A), P (40A)	A (250A), C (100A), U (40A)

Is the fusible link blown?

YES >> Replace the blown fusible link after repairing the affected circuit.
NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect IPDM E/R connectors E118 and E120.
2. Check voltage between IPDM E/R connectors and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E118	1	(—)	Battery voltage
	2		
E120	20		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness or connectors.

3. CHECK GROUND CIRCUIT

1. Disconnect IPDM E/R connectors E123 and E124.
2. Check continuity between IPDM E/R connectors and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E123	52	—	Yes
E124	62		

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace harness or connectors.

UNIT REMOVAL AND INSTALLATION

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

Removal and Installation of IPDM E/R

INFOID:0000000014388556

REMOVAL

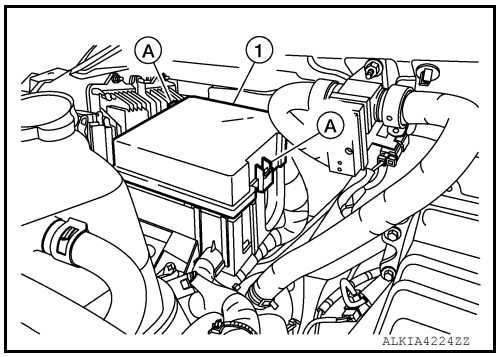
CAUTION:

Do not remove the relays from the IPDM E/R. Except for the fuses, the IPDM E/R must be replaced as an assembly.

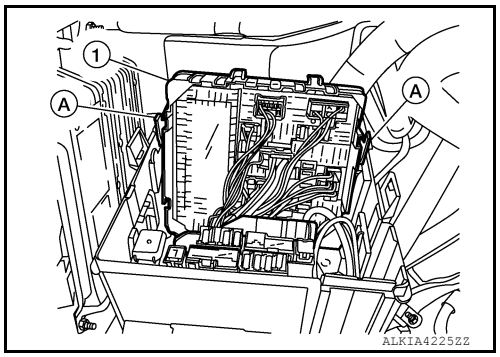
NOTE:

Cummins 5.0L Models shown. VK56VD Models similar.

1. Disconnect the battery or batteries negative terminal(s). Refer to PG-185, "Battery Disconnect".
2. Release the clips (A) and remove IPDM E/R upper cover (1).



3. Release the clips (A) and pull IPDM E/R (1) from case.



4. Disconnect the harness connectors and remove IPDM E/R from vehicle.

INSTALLATION

Installation is in the reverse order of removal.

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000014388557

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precaution for Work

INFOID:0000000014388558

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:

- Water soluble dirt:
- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:
- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

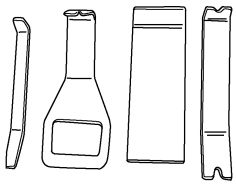
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000014388559

The actual shape of the tools may differ from those illustrated here.

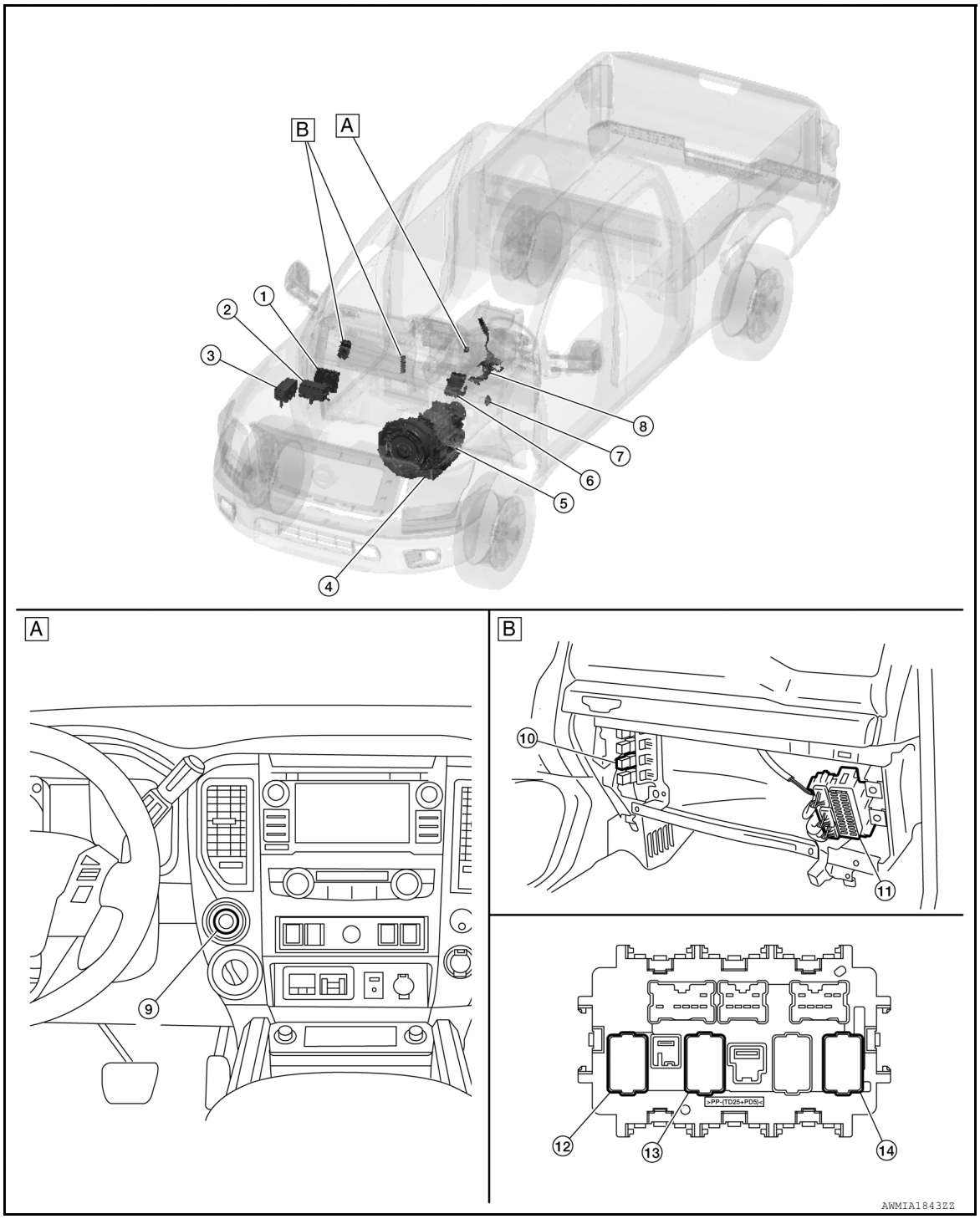
Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014388560



A. Front of center stack

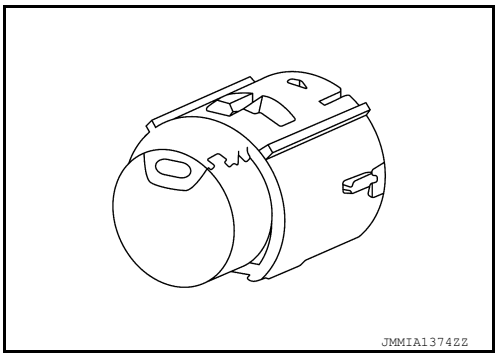
B. Instrument lower panel RH

No.	Component	Function
1.	IPDM E/R	• IPDM E/R detects push-button ignition switch (push switch) status, and transmits push-button ignition switch status signal (CAN) to BCM. • IPDM E/R receives ignition relay (IPDM E/R) control signal and ignition switch ON signal (CAN) from BCM, and controls ignition relay (built in IPDM E/R) Refer to PCS-5, "Component Parts Location" for detailed installation location.
2.	Fuse and relay box (VK56VD) • Stop lamp relay (without LED rear combination lamps) • TCM (transmission control module) relay	• Stop lamp relay detects that brake pedal is depressed, and transmits the signal to BCM. • TCM relay provides ignition power to the A/T assembly.
3.	Fuse and relay box (Cummins 5.0L) • Stop lamp relay (without LED rear combination lamps)	• Stop lamp relay detects that brake pedal is depressed, and transmits the signal to BCM.
4.	A/T assembly (VK56VD)	The A/T assembly transmits shift P (park) and N (neutral) signals to the BCM. Refer to TM-267, "A/T CONTROL SYSTEM : Transmission Range Switch".
5.	Transmission range switch (Cummins 5.0L)	The transmission range switch transmits shift P (park) and N (neutral) signals to the BCM. Refer to TM-17, "A/T CONTROL SYSTEM : Transmission Range Switch".
6.	BCM	• BCM controls power distribution system. • BCM judges ignition switch position by push-button ignition switch (push switch) and vehicle condition. • BCM checks the ignition switch position internally. Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
7.	Stop lamp switch (with LED rear combination lamps)	Stop lamp switch detects that brake pedal is depressed, and transmits the signal to BCM. Refer to BRC-12, "Stop Lamp Switch".
8.	AT shift selector (park position switch)	AT shift selector detects shift lever status, transmits park position switch signal to BCM.
9.	Push-button ignition switch	Refer to PCS-48, "Push-button Ignition Switch".
10.	Accessory relay-2	• Accessory relay-2 is controlled by BCM. • Accessory relay-2 supplies accessory power supply or ignition ON signal to each ECU when ignition is turned ON. • BCM compares status of accessory relay-2 control signal, and ignition position judged by BCM.
11.	Fuse block (J/B)	The fuse block (J/B) houses the fuses and relays of the power distribution system.
12.	Ignition relay-2 (in fuse block)	• Ignition relay-2 is controlled by BCM. • Ignition relay-2 supplies ignition ON power supply or ignition ON signal to each ECU and system when ignition is turned ON. • BCM compares status of ignition relay-2 control signal and ignition position judged by BCM. • BCM monitors ignition relay-2 operating status by ignition relay-2 feedback signal.
13.	Front blower motor relay (in fuse block)	• Front blower motor relay is controlled by BCM. • Front blower motor supplies ignition ON power supply or ignition ON signal to air conditioning system when ignition is turned ON. • BCM compares status of front blower motor relay control signal and ignition position judged by BCM.
14.	Accessory relay-1 (in fuse block)	• Accessory relay-1 is controlled by BCM. • Accessory relay-1 supplies accessory power supply or ignition ON signal to each ECU when ignition is turned ON. • BCM compares status of accessory relay-1 control signal, and ignition position judged by BCM.

Push-button Ignition Switch

INFOID:0000000014388561

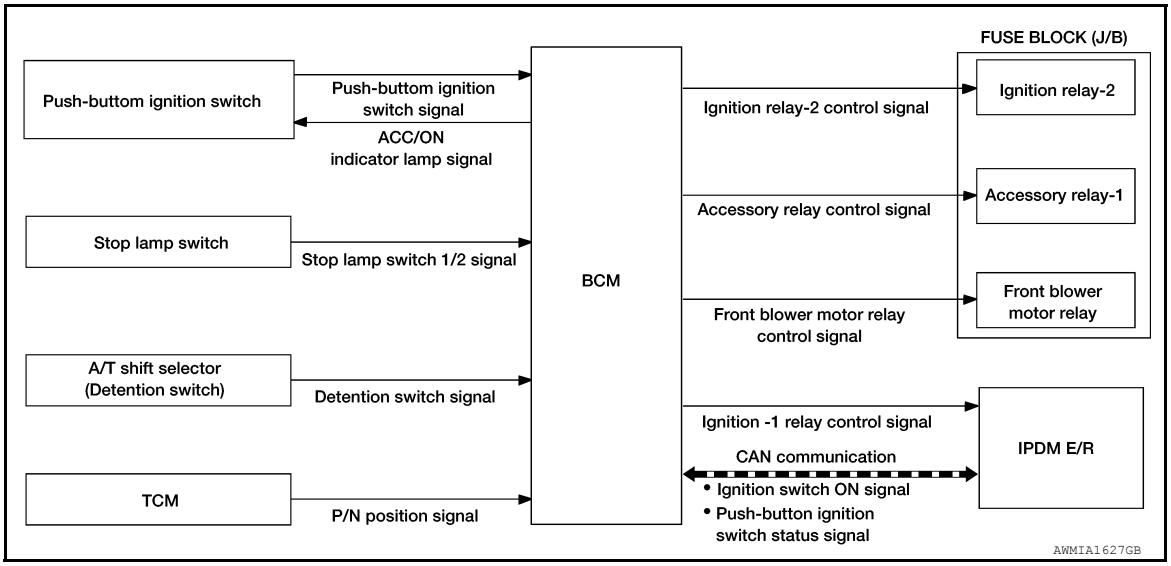
Push-button ignition switch is pressed, and transmits the status signal to BCM and IPDM E/R.



SYSTEM
POWER DISTRIBUTION SYSTEM
POWER DISTRIBUTION SYSTEM : System Description

INFOID:0000000014388562

SYSTEM DIAGRAM



DESCRIPTION

Power Distribution System

- The power distribution system is the system that BCM controls with the operation of the push-button ignition switch and performs the power distribution to each power circuit. This system is used instead of the mechanical power supply changing mechanism with the operation of the conventional key cylinder.
- The push-button ignition switch can be operated when Intelligent Key is in the following condition:
- Intelligent Key is in the detection area of the inside key antenna.
- Intelligent Key backside is contacted to push-button ignition switch.
- The push-button ignition switch operation is input to BCM as a signal. BCM changes the power supply position according to the status and operates the following relays to supply power to each power circuit:
- Ignition relay-1
- Ignition relay-2
- Accessory relay-1
- Accessory relay-2
- Front blower motor relay

NOTE:
The engine switch operation changes due to the conditions of brake pedal, selector lever and vehicle speed.

- The power supply position can be confirmed with the lighting of the indicators in the push-button ignition switch.

Ignition Battery Saver System

When all the following conditions are met for a period of time, the battery saver system will cut off the power supply (ignition switch ON/ACC → OFF) to prevent battery discharge.

- Ignition switch is in the ACC or ON position
- Turn signal lamp is not in operation
- Selector lever is in the P (park) position

RESET CONDITION OF IGNITION BATTERY SAVER SYSTEM

If any of the following conditions are met, the battery saver system is released.

- Ignition switch is not in the ACC or ON position
- Turn signal lamp is in operation
- Selector lever is not in the P (park) position

NOTE:
The ignition battery saver system can be temporarily disabled, without using CONSULT, to prevent it from functioning when performing trouble diagnosis. Refer to PCS-76, "Work Procedure".

Power Supply Position Change Table by Push-Button Ignition Switch Operation

The power supply position changing operation can be performed with the following operations.

NOTE:

- When an Intelligent Key is within the detection area of inside key antenna and when Intelligent Key backside is contacted to push-button ignition switch, it is equivalent to the operations below.
- When starting the engine, the BCM monitors under the engine start conditions:
- Brake pedal operating condition
- Selector lever position
- Vehicle speed

VEHICLE SPEED: LESS THAN 4 KM/H (2.5 MPH)

Power supply position	Engine start/stop condition		Push-button ignition switch operation frequency
	Selector lever position	Brake pedal operation condition	
OFF → ACC	—	Not depressed	1
OFF → ACC → ON	—	Not depressed	2
OFF → ACC → ON → OFF	—	Not depressed	3
OFF → START ACC → START ON → START	P or N position	Depressed	1
Engine is running → OFF	—	—	1

VEHICLE SPEED: 4 KM/H (2.5 MPH) OR MORE

Power supply position	Engine start/stop condition		Push-button ignition switch operation frequency
	Selector lever position	Brake pedal operation condition	
Engine is running → ACC	—	—	Emergency stop operation
Engine stall return operation while driving	N position	Not depressed	1

Emergency stop operation

- Press and hold the push-button ignition switch for 2 seconds or more.
- Press the push-button ignition switch 3 times or more within 1.5 seconds.

Fail Safe

INFOID:0000000014388563

Display contents of CONSULT	Fail-safe	Cancellation
B2192: ID DISCORD BCM-ECM	Inhibit engine cranking	Erase DTC
B2193: CHAIN OF BCM-ECM	Inhibit engine cranking	Erase DTC
B2195: ANTI-SCANNING	Inhibit engine cranking	Ignition switch ON → OFF
B2560: START POW SUP CIRC	Inhibit engine cranking	500 ms after the following CAN signal communication status has become consistent: • Starter control relay signal • Starter relay status signal
B2562: LOW VOLTAGE	Inhibit engine cranking	100 ms after the power supply voltage increases to more than 8.8 V
B2608: STARTER RELAY	Inhibit engine cranking	500 ms after the following signal communication status becomes consistent: • Starter motor relay control signal • Starter relay status signal (CAN)
B260A: IGN RELAY	Inhibit engine cranking	500 ms after the following conditions are fulfilled: • IGN relay (IPDM E/R) control signal: OFF (Battery voltage) • Ignition ON signal (CAN to IPDM E/R): OFF (Request signal) • Ignition ON signal (CAN from IPDM E/R): OFF (Condition signal)
B261E: FUEL MIS CONFIG	Inhibit engine cranking	BCM initialization

DIAGNOSIS SYSTEM (BCM)
COMMON ITEM
COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000014692784

APPLICATION ITEM
CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
ECU Identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	• The vehicle specification can be read and saved. • The vehicle specification can be written when replacing BCM.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION
BCM can perform the following functions:

System	Sub System	Direct Diagnostic Mode						
		ECU Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Door lock	DOOR LOCK		×	×	×	×		
Rear window defogger	REAR DEFOGGER			×	×	×		
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Exterior lamp	HEADLAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×	×		
Air conditioner	AIR CONDITIONER			×				
Intelligent Key system	INTELLIGENT KEY		×	×	×	×		
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×			
Interior room lamp battery saver	BATTERY SAVER			×	×			
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×				
Signal buffer system	SIGNAL BUFFER			×				

FREEZE FRAME DATA (FFD)
The BCM records the following vehicle condition at the time a particular DTC is detected, and displays it on CONSULT.

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed at the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) at the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power position status at the moment a particular DTC is detected*	While turning BCM status from low power consumption mode to normal mode (Power supply position is “LOCK”*).
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode (Power supply position is “OFF”.)
	LOCK>ACC		While turning power supply position from “LOCK” *to “ACC”
	ACC>ON		While turning power supply position from “ACC” to “IGN”
	RUN>ACC		While turning power supply position from “RUN” to “ACC” (Vehicle is stopped and selector lever is in P position.)
	CRANK>RUN		While turning power supply position from “CRANKING” to “RUN” (From cranking up the engine to run it)
	RUN>URGENT		While turning power supply position from “RUN“ to “ACC” (Emergency stop operation)
	ACC>OFF		While turning power supply position from “ACC” to “OFF”
	OFF>LOCK		While turning power supply position from “OFF” to “LOCK”*
	OFF>ACC		While turning power supply position from “OFF” to “ACC”
	ON>CRANK		While turning power supply position from “IGN” to “CRANKING”
	OFF>SLEEP		While turning BCM status from normal mode (Power supply position is “OFF”.) to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode (Power supply position is “LOCK”*.) to low power consumption mode
	LOCK		Power supply position is “LOCK” (Ignition switch OFF)*
	OFF		Power supply position is “OFF” (Ignition switch OFF)
	ACC		Power supply position is “ACC” (Ignition switch ACC)
	ON		Power supply position is “IGN” (Ignition switch ON with engine stopped)
	ENGINE RUN		Power supply position is “RUN” (Ignition switch ON with engine running)
	CRANKING		Power supply position is “CRANKING” (At engine cranking)
IGN Counter	0 - 39	The number of times that ignition switch is turned ON after DTC is detected • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition is switched OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.	

NOTE:
*: Power supply position shifts to “LOCK” from “OFF”, when ignition switch is in the OFF position, selector lever is in the P position, and any of the following conditions are met:
- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

The power supply position shifts to “ACC” when the push-button ignition switch (push switch) is pushed at “LOCK”.

INTELLIGENT KEY

INTELLIGENT KEY : CONSULT Function (BCM - INTELLIGENT KEY)

INFOID:0000000014692785

SELF DIAGNOSTIC RESULT

Refer to BCS-52, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main	Description
REQ SW -DR [On/Off]	×	Indicates condition of door request switch LH.
REQ SW -AS [On/Off]	×	Indicates condition of door request switch RH.
PUSH SW [On/Off]		Indicates condition of push-button ignition switch.
SHIFTLOCK SOLENOID PWR SUPPLY [On/Off]	×	Indicates condition of power supply to shiftlock solenoid.
BRAKE SW 1 [On/Off]	×	Indicates condition of brake switch.
BRAKE SW 2 [On/Off]		Indicates condition of brake switch.
DETE/CANCL SW [On/Off]	×	Indicates condition of P (park) position.
SFT PN/N SW [On/Off]	×	Indicates condition of P (park) or N (neutral) position.
UNLK SEN -DR [On/Off]	×	Indicates condition of door unlock sensor.
PUSH SW -IPDM [On/Off]		Indicates condition of push-button ignition switch received from IPDM E/R on CAN communication line.
IGN RLY1 -F/B [On/Off]		Indicates condition of ignition relay 1 received from IPDM E/R on CAN communication line.
DETE SW -IPDM [On/Off]		Indicates condition of park position switch received from TCM on CAN communication line.
SFT PN -IPDM [On/Off]		Indicates condition of P (park) or N (neutral) position from TCM on CAN communication line.
SFT P -MET [On/Off]		Indicates condition of P (park) position from TCM on CAN communication line.
SFT N -MET [On/Off]		Indicates condition of N (neutral) position from IPDM E/R on CAN communication line.
ENGINE STATE [Stop/Start/Crank/Run]	×	Indicates condition of engine state from ECM on CAN communication line.
VEH SPEED 1 [mph/km/h]	×	Indicates condition of vehicle speed signal received from ABS on CAN communication line.
VEH SPEED 2 [mph/km/h]	×	Indicates condition of vehicle speed signal received from combination meter on CAN communication line.
DOOR STAT -DR [LOCK/READY/UNLK]	×	Indicates condition of driver side door status.
DOOR STAT -AS [LOCK/READY/UNLK]	×	Indicates condition of passenger side door status.
DOOR STAT -RR [LOCK/READY/UNLK]	×	Indicates condition of rear right side door status.
DOOR STAT -RL [LOCK/READY/UNLK]	×	Indicates condition of rear left side door status.
ID OK FLAG [Set/Reset]		Indicates condition of Intelligent Key ID.
PRMT ENG STRT [Set/Reset]		Indicates condition of engine start possibility.
PRMT RKE STRT [Set/Reset]		Indicates condition of engine start possibility from Intelligent Key.
I-KEY OK FLAG [Key ON/Key OFF]	×	Indicates condition of Intelligent Key OK flag.
PRBT ENG STRT [Set/Reset]		Indicates condition of engine start prohibit.
ID AUTHENTICATION CANCEL TIMER [under a stop]		Indicates condition of Intelligent Key ID authentication.
ACC BATTERY SAVER [under a stop]		Indicates condition of battery saver.
CRNK PRBT TMR [On/Off]		Indicates condition of crank prohibit timer.
AUT CRNK TMR [On/Off]		Indicates condition of automatic engine crank timer from Intelligent Key.
CRNK PRBT TME [sec]		Indicates condition of crank prohibit timer.
AUT CRNK TMR [sec]		Indicates condition of automatic engine crank timer from Intelligent Key.
CRANKING TME [sec]		Indicates condition of engine cranking time from Intelligent Key.
ST RLY -REQ		Indicates condition of starter relay.
IGN RLY 1 -REQ		Indicates condition of ignition 1 relay.
IGN RLY 2 -REQ		Indicates condition of ignition 2 relay.
DETE SW PWR [On/Off]		Indicates condition of park position switch voltage.

Monitor Item [Unit]	Main	Description
ACC RLY -REQ [On/Off]		Indicates condition of accessory relay control request.
RKE OPE COUN1 [0-19]	×	When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing.
RKE OPE COUN2 [0-19]	×	When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing.
RKE-LOCK [On/Off]		Indicates condition of lock signal from Intelligent Key.
RKE-UNLOCK [On/Off]		Indicates condition of unlock signal from Intelligent Key.
RKE-PANIC [On/Off]		Indicates condition of panic signal from Intelligent Key.
RKE-MODE CHG [On/Off]		Indicates condition of mode change signal from Intelligent Key.

ACTIVE TEST

Test Item	Description
INTELLIGENT KEY LINK (CAN)	This test is able to check Intelligent Key identification number [Off/ID No1/ID No2/ID No3/ID No4/ID No5].
INT LAMP	This test is able to check interior room lamp operation [On/Off].
FLASHER	This test is able to check hazard lamp operation [LH/RH/Off].
HORN	This test is able to check horn operation [On].
BATTERY SAVER	This test is able to check battery saver operation [On/Off].
OUTSIDE BUZZER	This test is able to check Intelligent Key warning buzzer operation [On/Off].
INSIDE BUZZER	This test is able to check combination meter warning chime operation [Take Out/Knob/Key/Off].
INDICATOR	This test is able to check combination meter warning lamp operation [KEY ON/KEY IND/Off].
IGN CONT2	This test is able to check ignition relay-2 control operation [On/Off].
ENGINE SW ILLUMI	This test is able to check push-button ignition switch START indicator operation [On/Off].
PUSH SWITCH INDICATOR	This test is able to check push-button ignition switch indicator operation [On/Off].
ACC CONT	This test is able to check accessory relay control operation [On/Off].
IGN CONT1	This test is able to check ignition relay-1 control operation [On/Off].
ST CONT LOW	This test is able to check starter control relay operation [On/Off].
IGNITION RELAY	This test is able to check ignition relay operation [On/Off].
TRUNK/LUGGAGE LAMP TEST	This test is able to check cargo lamp illumination operation [On/Off].
KEYFOB PW TEST	This test is able to check power window operation using the Intelligent Key [P/W up/down OFF/Send P/W down ON/Send P/W up ON].
SHIFTLOCK SOLENOID TEST	This test is able to check shift lock solenoid operation [On/Off].

WORK SUPPORT

Support Item	Setting	Description
IGN/ACC BATTERY SAVER	On*	Battery saver function ON.
	Off	Battery saver function OFF.
REMOTE ENGINE STARTER	On*	Remote engine start function ON.
	Off	Remote engine start function OFF.
ANSWERBACK I-KEY LOCK UNLOCK	BUZZER*	Buzzer reminder function by door lock/unlock request switch ON.
	HORN	Horn chirp reminder function by door lock request switch ON.
	Off	No reminder function by door lock/unlock request switch.
	INVALID	This mode is not used.

Support Item	Setting		Description
ANSWERBACK KEYLESS LOCK UNLOCK	On*		Buzzer or horn chirp reminder when doors are locked/unlocked with Intelligent Key.
	Off		No buzzer or horn chirp reminder when doors are locked/unlocked with Intelligent Key.
ANSWER BACK	On*		Horn chirp reminder when doors are locked with Intelligent Key.
	Off		No horn chirp reminder when doors are locked with Intelligent Key.
RETRACTABLE MIRROR SET	On		Retractable mirror set ON.
	Off*		Retractable mirror set OFF.
LOCK/UNLOCK BY I-KEY	On*		Door lock/unlock function from Intelligent Key ON.
	Off		Door lock/unlock function from Intelligent Key OFF.
ENGINE START BY I-KEY	On*		Engine start function from Intelligent Key ON.
	Off		Engine start function from Intelligent Key OFF.
CONFIRM KEY FOB ID	—		Intelligent Key ID code can be checked.
SHORT CRANKING OUTPUT	Start	70 msec	Starter motor operation duration times.
		100 msec	
		200 msec	
	End		—
INSIDE ANT DIAGNOSIS	—		This function allows inside key antenna self-diagnosis.
AUTO LOCK SET	MODE7	5 min	Auto door lock time can be set in this mode.
	MODE6	4 min	
	MODE5	3 min	
	MODE4	2 min	
	MODE3*	1 min	
	MODE2	30 sec	
	MODE1	Off	

*: Initial Setting

ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:0000000014388566

ECU	Reference
BCM	BCS-32, "Reference Value"
	BCS-51, "Fail Safe"
	BCS-51, "DTC Inspection Priority Chart"
	BCS-52, "DTC Index"
IPDM E/R	PCS-14, "Reference Value"
	PCS-22, "Fail Safe"
	PCS-23, "DTC Index"

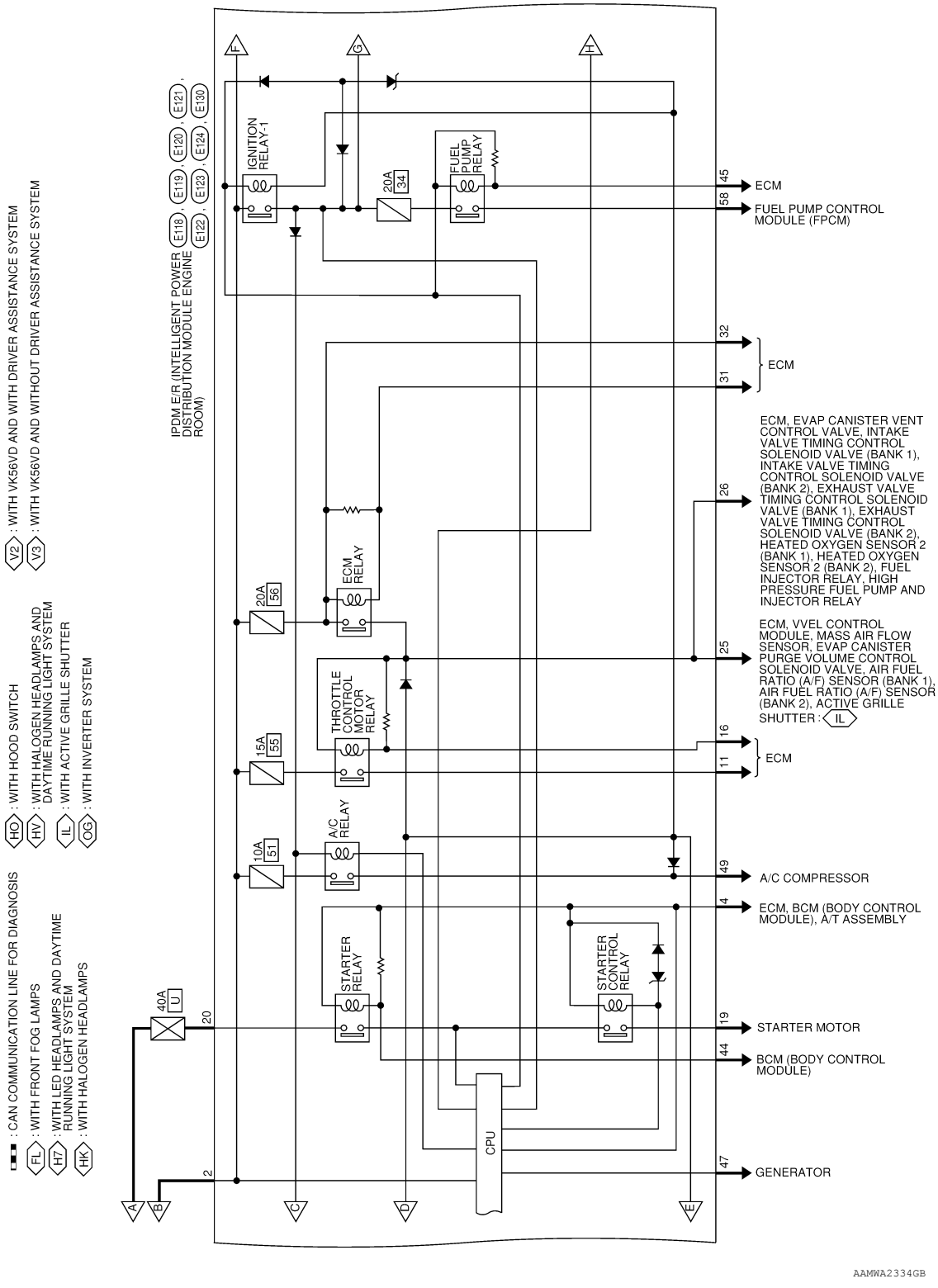
WIRING DIAGRAM

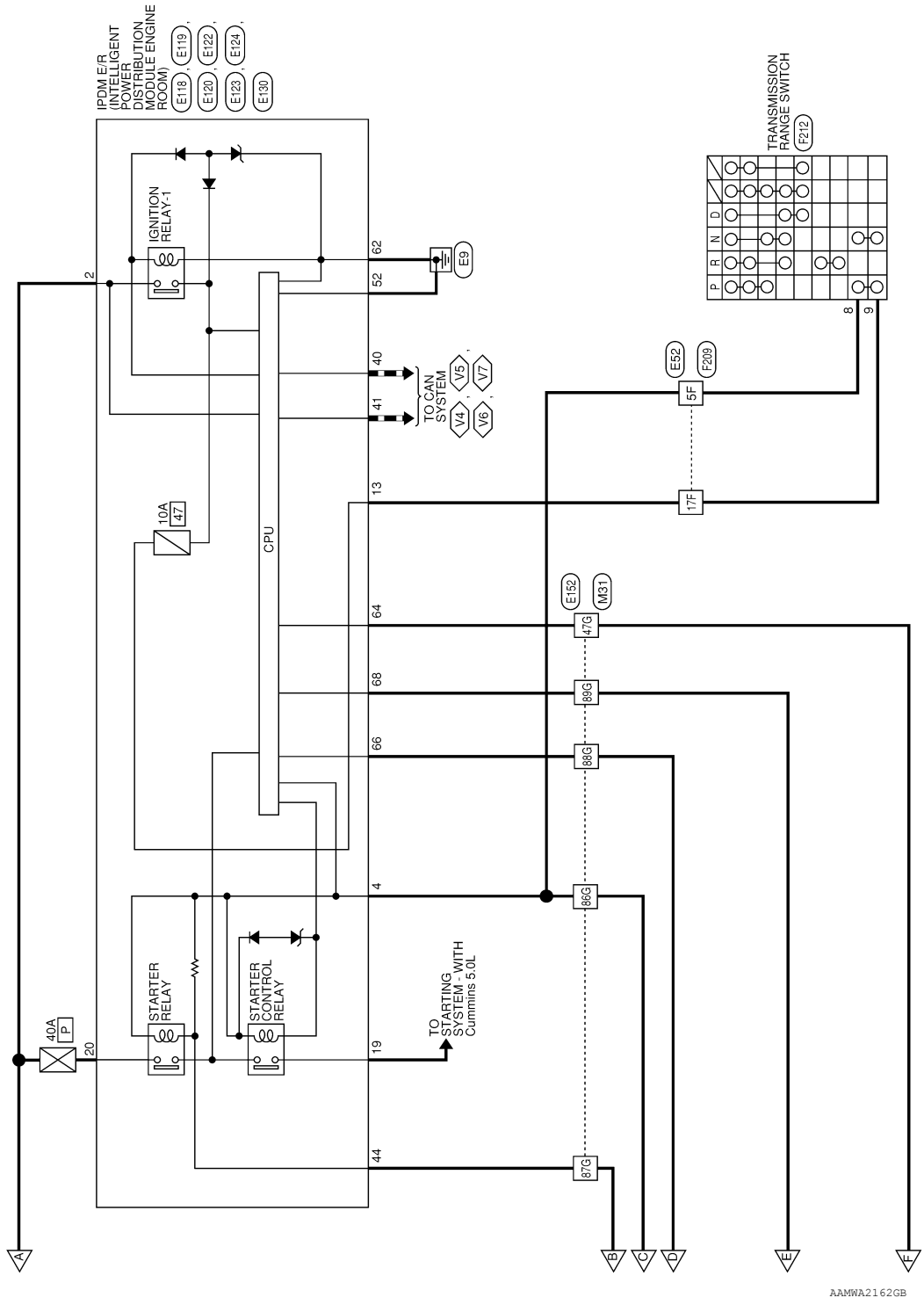
POWER DISTRIBUTION SYSTEM

CUMMINS 5.0L

CUMMINS 5.0L : Wiring Diagram

INFOID:0000000014388567




IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E118, E119, E120, E122, E123, E124, E130
IGNITION RELAY-1
CPU
10A 47
40A P
STARTER RELAY
STARTER CONTROL RELAY
TO CAN SYSTEM
V5, V7, V4, V6
TO STARTING SYSTEM - WITH Cummins 5.0L
TRANSMISSION RANGE SWITCH
F212
P R N D
E9
E52
F209
5F
17F
E152
M31
47G
89G
88G
86G
87G
2
20
62
52
40
41
13
64
68
66
4
19
44
8
9
A
B
C
D
E
F
AAMWA2162GB

POWER DISTRIBUTION SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	E12
Connector Name	STOP LAMP RELAY
Connector Type	MS02FL-M2-LC
Connector Color	BLUE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	W	RELAY CONTROL
3	R/G	STOP LAMPS
5	R/Y	BATTERY

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	R/Y	BATTERY
2	W	RELAY CONT - (WITHOUT LED REAR COMBINATION LAMPS)
2	R/G	STOP LAMPS - (WITH LED REAR COMBINATION LAMPS)
3	GR	IGNITION
4	R/B	STOP 2

Connector No.	E52
Connector Name	WIRE TO WIRE
Connector Type	RK26FGY-RS20-X6
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1F	Y	TO ENGINE CONTROL NO. 2 HARNESS
2F	B	TO ENGINE CONTROL NO. 2 HARNESS
3F	BR	TO ENGINE CONTROL NO. 2 HARNESS
4F	W/R	TO ENGINE CONTROL NO. 2 HARNESS
5F	B/R	TO ENGINE CONTROL NO. 2 HARNESS
6F	O	TO ENGINE CONTROL NO. 2 HARNESS
7F	GR/Y	TO ENGINE CONTROL NO. 2 HARNESS
8F	V	TO ENGINE CONTROL NO. 2 HARNESS
9F	BR	TO ENGINE CONTROL NO. 2 HARNESS
10F	Y/B	TO ENGINE CONTROL NO. 2 HARNESS
11F	L	TO ENGINE CONTROL NO. 2 HARNESS
12F	R	TO ENGINE CONTROL NO. 2 HARNESS
13F	Y	TO ENGINE CONTROL NO. 2 HARNESS
14F	V	TO ENGINE CONTROL NO. 2 HARNESS
15F	SB	TO ENGINE CONTROL NO. 2 HARNESS
16F	P	TO ENGINE CONTROL NO. 2 HARNESS
17F	Y/R	TO ENGINE CONTROL NO. 2 HARNESS
18F	R	TO ENGINE CONTROL NO. 2 HARNESS
19F	V	TO ENGINE CONTROL NO. 2 HARNESS
20F	BR	TO ENGINE CONTROL NO. 2 HARNESS

21F	L/R	TO ENGINE CONTROL NO. 2 HARNESS
22F	L/W	TO ENGINE CONTROL NO. 2 HARNESS
23F	R/L	TO ENGINE CONTROL NO. 2 HARNESS
24F	W/L	TO ENGINE CONTROL NO. 2 HARNESS
25F	W/R	TO ENGINE CONTROL NO. 2 HARNESS
26F	B/R	TO ENGINE CONTROL NO. 2 HARNESS
27F	Y	TO ENGINE CONTROL NO. 2 HARNESS
28F	W/R	TO ENGINE CONTROL NO. 2 HARNESS
29F	L/O	TO ENGINE CONTROL NO. 2 HARNESS
30F	B	TO ENGINE CONTROL NO. 2 HARNESS
31F	B	TO ENGINE CONTROL NO. 2 HARNESS
32F	V/W	TO ENGINE CONTROL NO. 2 HARNESS
33F	GR	TO ENGINE CONTROL NO. 2 HARNESS
34F	L/R	TO ENGINE CONTROL NO. 2 HARNESS
35F	R/W	TO ENGINE CONTROL NO. 2 HARNESS
36F	L/B	TO ENGINE CONTROL NO. 2 HARNESS
37F	L	TO ENGINE CONTROL NO. 2 HARNESS
38F	R/Y	TO ENGINE CONTROL NO. 2 HARNESS
39F	R/Y	TO ENGINE CONTROL NO. 2 HARNESS
40F	B/R	TO ENGINE CONTROL NO. 2 HARNESS
41F	W	TO ENGINE CONTROL NO. 2 HARNESS
42F	Y	TO ENGINE CONTROL NO. 2 HARNESS
43F	B/P	TO ENGINE CONTROL NO. 2 HARNESS
44F	Y/B	TO ENGINE CONTROL NO. 2 HARNESS
45F	L/Y	TO ENGINE CONTROL NO. 2 HARNESS
46F	O	TO ENGINE CONTROL NO. 2 HARNESS
47F	W/R	TO ENGINE CONTROL NO. 2 HARNESS
48F	L	TO ENGINE CONTROL NO. 2 HARNESS
49F	BR	TO ENGINE CONTROL NO. 2 HARNESS
50F	SHIELD	TO ENGINE CONTROL NO. 2 HARNESS
51F	L	TO ENGINE CONTROL NO. 2 HARNESS

52F	BR	TO ENGINE CONTROL NO. 2 HARNESS

Connector No.	E118
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	L02FB-MC
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	B/Y	F/L USM
2	R	F/L MAIN

AAMIA5013GB

POWER DISTRIBUTION SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

9	8	7	6		5	4	3
18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
3	–	–
4	B/R	NP SW
5	L/W	H/LAMP HI RH
6	G	H/LAMP HI LH
7	L	H/LAMP LO LH
8	R/Y	H/LAMP LO RH
9	G/W	FR FOG/L LH
10	–	–
11	O	ETC VB - (WITH VK56VD)
11	P	ETC VB - (WITH CUMMINS 5.0L)
12	W/R	FR FOG/L RH
13	Y/R	A/T ECU IGN
14	G	REVERSE LAMP IGN
15	GR	ABS ECU IGN
16	V/R	ETC RLY CONT - (WITH VK56VD)
16	G	ETC RLY CONT - (WITH CUMMINS 5.0L)
17	W	IGN COIL - (WITH VK56VD)
17	L/W	IGN COIL - (WITH CUMMINS 5.0L)
18	–	–

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FW-LC
Connector Color	WHITE

H.S.

21	20	19
24	23	22

Terminal No.	Color of Wire	Signal Name

19	W/R	STARTER MOTOR
20	L	F/L IGNSW
21	–	–
22	–	–
23	–	–
24	–	–

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

42	41	40	39	38	37
48	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
37	–	–
38	–	–
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY
43	–	–
44	W/B	START CONT
45	GR	FUEL RLY CONT
46	Y	HOOD SW
47	Y	ALT C - (WITH VK56VD)
48	R/W	HORN RLY CONT

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FBR-CS
Connector Color	BROWN

H.S.

51		50	49
56	55	54	53	52

Terminal No.	Color of Wire	Signal Name

49	Y/B	A/C COMP - (WITH CUMMINS 5.0L)
49	GR/R	A/C COMP - (WITH VK56VD)
50	BR	TRAILER TOW
51	–	–
52	B	S-GND
53	–	–
54	–	–
55	–	–
56	–	–

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FB-LC
Connector Color	BLACK

H.S.

59	58	57
62	61	60

Terminal No.	Color of Wire	Signal Name
57	W/B	RR DEF
58	BR	FUEL PUMP - (WITH CUMMINS 5.0L)
58	B/Y	FUEL PUMP - (WITH VK56VD)
59	–	–
60	–	–
61	–	–
62	B	P GND

Connector No.	E130
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH10FB-NH
Connector Color	BLACK

H.S.

67	66	65	64	63
72	71	70	69	68

Terminal No.	Color of Wire	Signal Name
63	–	–

64	R	DETENT SW
65	–	–
66	P	PUSH START SW
67	–	–
68	L	IGN SIGNAL
69	–	–
70	–	–
71	SB	HOOD SW2
72	W	E-CPLG - (WITH VK56VD)

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH VK56VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	Y/B	TO MAIN HARNESS
15G	G/W	TO MAIN HARNESS
16G	G	TO MAIN HARNESS
17G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/V	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/Y	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS

24G	G/B	TO MAIN HARNESS
25G	R/W	TO MAIN HARNESS
26G	R	TO MAIN HARNESS
27G	LG	TO MAIN HARNESS
28G	G/B	TO MAIN HARNESS
29G	G/B	TO MAIN HARNESS
30G	BR/Y	TO MAIN HARNESS
31G	P	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	R	TO MAIN HARNESS - (WITH VK56VD)
32G	P	TO MAIN HARNESS
33G	Y/L	TO MAIN HARNESS
34G	GR	TO MAIN HARNESS
35G	G/R	TO MAIN HARNESS
36G	SB	TO MAIN HARNESS
37G	R/W	TO MAIN HARNESS
38G	BR	TO MAIN HARNESS
39G	BR	TO MAIN HARNESS
40G	–	TO MAIN HARNESS
41G	R/G	TO MAIN HARNESS
42G	O	TO MAIN HARNESS
43G	B	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
43G	G	TO MAIN HARNESS - (WITH VK56VD)
44G	R/Y	TO MAIN HARNESS
45G	G	TO MAIN HARNESS
46G	LG	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	W	TO MAIN HARNESS
49G	–	TO MAIN HARNESS
50G	BR	TO MAIN HARNESS
51G	R	TO MAIN HARNESS
52G	L	TO MAIN HARNESS
53G	W	TO MAIN HARNESS
54G	W	TO MAIN HARNESS
55G	G	TO MAIN HARNESS
56G	W	TO MAIN HARNESS
57G	Y	TO MAIN HARNESS
58G	BG	TO MAIN HARNESS
59G	BG	TO MAIN HARNESS
60G	BG	TO MAIN HARNESS
61G	B	TO MAIN HARNESS
62G	W	TO MAIN HARNESS
63G	R	TO MAIN HARNESS
64G	W/L	TO MAIN HARNESS
65G	W/R	TO MAIN HARNESS
66G	BG	TO MAIN HARNESS
67G	BG	TO MAIN HARNESS
68G	B	TO MAIN HARNESS
69G	Y	TO MAIN HARNESS
70G	L	TO MAIN HARNESS
71G	R/W	TO MAIN HARNESS

72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	–	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	V/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

Connector No.	F209
Connector Name	WIRE TO WIRE
Connector Type	RK26MGY-RS20-X6
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1F	Y/R	TO ENGINE ROOM HARNESS
2F	B	TO ENGINE ROOM HARNESS
3F	B/Y	TO ENGINE ROOM HARNESS

4F	W/R	TO ENGINE ROOM HARNESS
5F	B/R	TO ENGINE ROOM HARNESS
6F	O/L	TO ENGINE ROOM HARNESS
7F	GR	TO ENGINE ROOM HARNESS
8F	P	TO ENGINE ROOM HARNESS
9F	BR/W	TO ENGINE ROOM HARNESS
10F	G/Y	TO ENGINE ROOM HARNESS
11F	L/W	TO ENGINE ROOM HARNESS
12F	R/W	TO ENGINE ROOM HARNESS
13F	G/Y	TO ENGINE ROOM HARNESS
14F	V/W	TO ENGINE ROOM HARNESS
15F	LG	TO ENGINE ROOM HARNESS
16F	R/Y	TO ENGINE ROOM HARNESS
17F	BR/Y	TO ENGINE ROOM HARNESS
18F	R	TO ENGINE ROOM HARNESS
19F	V	TO ENGINE ROOM HARNESS
20F	BR	TO ENGINE ROOM HARNESS
21F	L/R	TO ENGINE ROOM HARNESS
22F	L/LG	TO ENGINE ROOM HARNESS
23F	SB	TO ENGINE ROOM HARNESS
24F	W/L	TO ENGINE ROOM HARNESS
25F	W/B	TO ENGINE ROOM HARNESS
26F	B/Y	TO ENGINE ROOM HARNESS
27F	Y	TO ENGINE ROOM HARNESS
28F	W/R	TO ENGINE ROOM HARNESS
29F	L/O	TO ENGINE ROOM HARNESS
30F	B	TO ENGINE ROOM HARNESS
31F	B	TO ENGINE ROOM HARNESS
32F	V	TO ENGINE ROOM HARNESS
33F	BG	TO ENGINE ROOM HARNESS
34F	L/R	TO ENGINE ROOM HARNESS
35F	R/W	TO ENGINE ROOM HARNESS
36F	L/B	TO ENGINE ROOM HARNESS
37F	L/O	TO ENGINE ROOM HARNESS
38F	Y/W	TO ENGINE ROOM HARNESS
39F	R/Y	TO ENGINE ROOM HARNESS
40F	G/B	TO ENGINE ROOM HARNESS
41F	W	TO ENGINE ROOM HARNESS
42F	Y	TO ENGINE ROOM HARNESS
43F	B/P	TO ENGINE ROOM HARNESS
44F	Y/B	TO ENGINE ROOM HARNESS
45F	L/Y	TO ENGINE ROOM HARNESS
46F	O	TO ENGINE ROOM HARNESS
47F	W/L	TO ENGINE ROOM HARNESS
48F	L	TO ENGINE ROOM HARNESS
49F	BR	TO ENGINE ROOM HARNESS
50F	SHIELD	TO ENGINE ROOM HARNESS
51F	L	TO ENGINE ROOM HARNESS
52F	BR	TO ENGINE ROOM HARNESS

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	F212
Connector Name	TRANSMISSION RANGE SWITCH
Connector Type	HS10FB
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	L/W	RANGE SIGNAL C
2	P	RANGE SIGNAL B
3	R/Y	IGNITION
4	GR	RANGE SIGNAL PA
5	Y/R	RANGE SIGNAL A
6	O/L	BATTERY
7	R	REVERSE RELAY CONT
8	B/R	NP SW
9	BR/Y	IGNITION RELAY
10	-	-

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1N	-	-
2N	W	BATTERY
3N	W	BLOWER FAN RELAY OUT
4N	V	BATTERY
5N	Y	BATTERY
6N	W	BATTERY
7N	L	ACC RELAY OUT
8N	W	IGNITION

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	Y	IGNITION
3P	G	IGNITION RELAY OUT
4P	B/W	RR DEF RLY
5P	B/W	RR DEF RLY
6P	O	RR DEF RLY OUT
7P	G	IGNITION
8P	W	IGNITION
9P	L	BATTERY
10P	-	-
11P	-	-
12P	-	-
13P	R	BATTERY
14P	Y	BATTERY
15P	Y/LG	BATTERY
16P	W	BLOWER FAN RELAY OUT

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
Connector Color	GREEN

H.S.

Terminal No.	Color of Wire	Signal Name
1	G	ENG START SW NO ESCL
2	-	-
3	R	A/L POWER SUPPLY 5V
4	W/R	A/L SIGNAL
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	SB	COMBI SW IN 5
11	G/Y	COMBI SW IN 4
12	Y	COMBI SW IN 3
13	G/B	COMBI SW IN 2
14	V	COMBI SW IN 1
15	-	-
16	-	-
17	P	GND RF A/L
18	V	SECURITY INDICATOR
19	-	-
20	R	SHIFT P
21	R/W	STEP LAMP CONT
22	-	-
23	Y	AIRCON SW
24	-	-
25	W	BRAKE SW FUSE
26	L	SHORT IN PIN INPUT
27	R/G	BRAKE SW LAMP
28	-	-
29	W	BLOWER FAN SW
30	P	DR DOOR LOCK STATUS
31	-	-
32	Y	REAR DEFOGGER SW
33	-	-
34	-	-
35	R/G	REVERSE SW
36	W/B	HAZARD SW
37	-	-
38	-	-
39	B/R	SHIFT N/P
40	-	-

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	-	-
44	-	-
45	-	-
46	-	-
47	-	-
48	R	HIGH SIDE START SW LED
49	-	-
50	-	-
51	-	-
52	W	AUDIO DONGLE
53	-	-
54	W/L	PW UART
55	W/B	L&R SENSOR K-LINE
56	-	-
57	-	-
58	-	-
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	-	-
64	P	BUZZER OUT
65	-	-
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	-	-
74	-	-
75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	-	-

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	–	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS
27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	–	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	–	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	–	TO ENGINE ROOM HARNESS
80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M46
Connector Name	PUSH-BUTTON IGNITION SWITCH
Connector Type	TH08FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	BG	BATTERY
4	B	GND
5	R	HIGH SIDE START SW LED
6	W	ILLUMINATION -
7	P	ACC LED
8	G	ENG START SW NO ESCL

Connector No.	M68
Connector Name	A/T SHIFT SELECTOR
Connector Type	TK08FW
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	B	GND
3	L/R	SHIFT LOCK SOL OUT
4	R	SHIFT P
5	R/B	AT DEVICE OUT
6	LG	TOW MODE SW
7	BR	SHIFT UP
8	V/W	SHIFT DOWN

Connector No.	M69
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1M	GR	IGNITION
2M	–	–
3M	–	–
4M	–	–
5M	R/Y	BATTERY
6M	R/W	TAIL LAMP 2
7M	–	–
8M	–	–
9M	–	–
10M	W/R	IGNITION

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH Cummins 5.0L

VK56VD

Connector No.	M70
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN

H.S.

7R	6R	5R	4R		3R	2R	1R
16R	15R	14R	13R	12R	11R	10R	9R	8R

Terminal No.	Color of Wire	Signal Name
1R	L	TAIL LAMP 2
2R	G/R	IGNITION
3R	Y/R	BATTERY
4R	–	–
5R	W	BATTERY
6R	G/W	ACCESSORY
7R	–	–
8R	–	–
9R	–	–
10R	W	BATTERY
11R	–	–
12R	BG	BATTERY
13R	B	ACCESSORY
14R	G/Y	BATTERY
15R	Y	BATTERY
16R	G/R	ACCESSORY

Connector No.	M80
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH24FB-NH
Connector Color	BLACK

H.S.

116	115	114	113	112	111	110	109	108	107	106	105
128	127	126	125	124	123	122	121	120	119	118	117

Terminal No.	Color of Wire	Signal Name
105	G/Y	FR FLASHER
106	–	–
107	W	LOW SIDE START SW LED
108	L/R	SHIFT LOCK SOLENOID OUT
109	–	–
110	–	–

111	P	ACC LED
112	–	–
113	L	ACC RELAY OUT
114	W	AS DOOR ANT A
115	BG	AS DOOR ANT B
116	W	ROOM ANT 2 A
117	G/B	FL FLASHER
118	–	–
119	R	RF NIMOCO
120	–	–
121	G	DR DOOR ANT B
122	P	DR DOOR ANT A
123	W	ROOM ANT 1 A
124	G	ROOM ANT 1 B
125	–	–
126	P	IMMO START BUTTON ANT B
127	BG	IMMO START BUTTON ANT A
128	B	ROOM ANT 2 B

Connector No.	M81
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHA6-SA
Connector Color	WHITE

H.S.

137	136	135	134	133	132	131	130	129
143	142	141	140	139	138			

Terminal No.	Color of Wire	Signal Name
129	R/G	BATTERY SAVER OUT
130	LG	SUPER LOCK/DOOR UNLOCK AS
131	W	BAT BCM FUSE
132	Y	DOOR LOCK AS/RR/RL
133	BR	DOOR UNLOCK AS/RR/RL
134	B	GND2
135	O	DOOR LOCK DR/AS/FL
136	L	ROOM LAMP CONT
137	V	DOOR UNLOCK DR/AS/FL
138	V	BAT REAR DOOR
139	W	BAT-POWER F/L
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
142	Y	BAT FRONT DOOR
143	B	GND1

Connector No.	M88
Connector Name	ACCESSORY RELAY-2
Connector Type	MS02FL-M2-LC
Connector Color	BLUE

H.S.

3	
5	
2	1

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	L	RELAY CONTROL
3	R	RELAY OUTPUT
5	W	BATTERY

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VK56VD : Wiring Diagram

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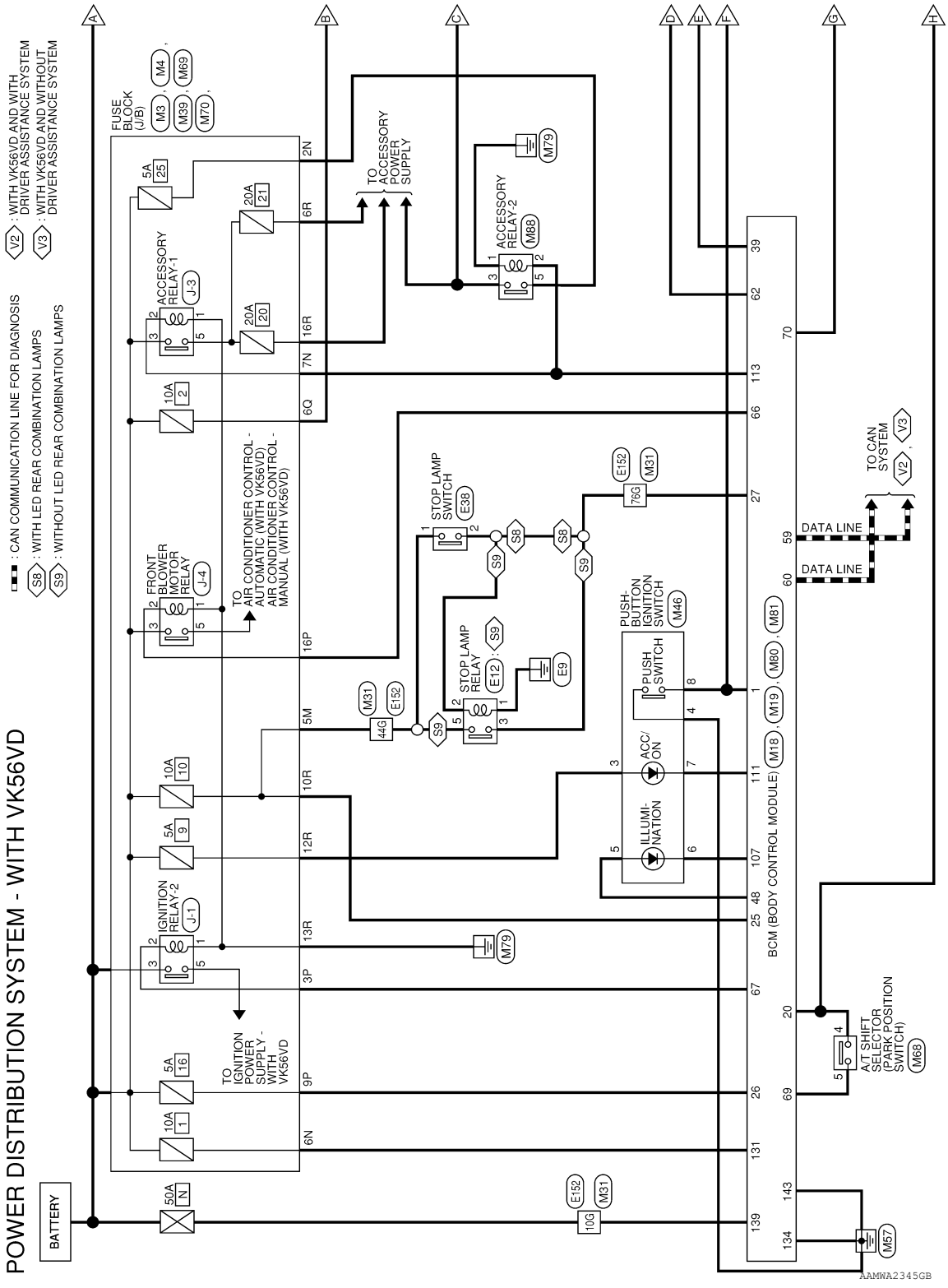

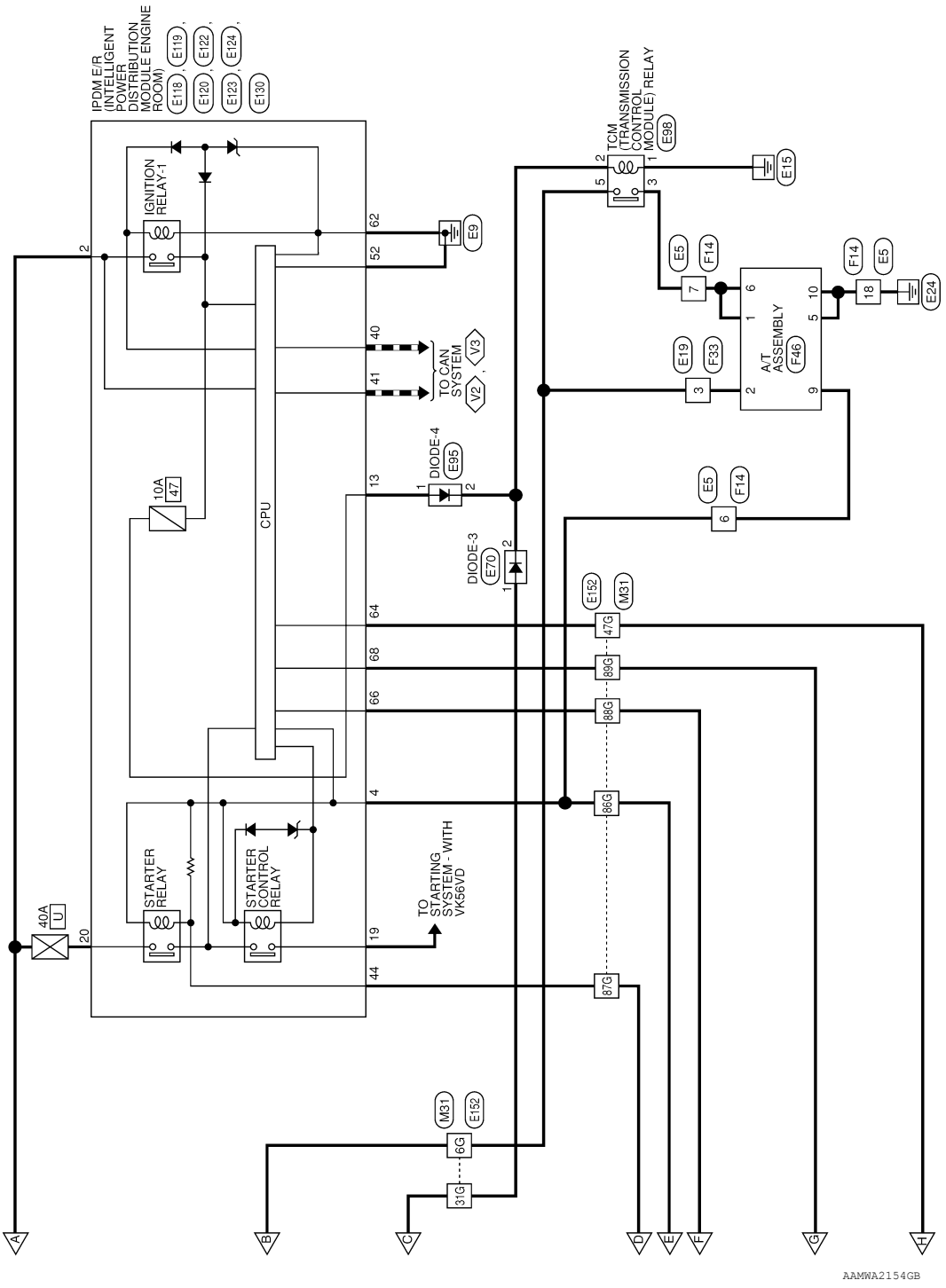
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E119, E122, E124, E118, E120, E123, E130
IGNITION RELAY-1
CPU
10A 47
40A U
STARTER RELAY
STARTER CONTROL RELAY
TO STARTING SYSTEM-WITH VK56VD
TO CAN SYSTEM
V3, V2
DIODE-4 E95
DIODE-3 E70
TCM (TRANSMISSION CONTROL MODULE) RELAY E98
A/T ASSEMBLY F46
E152 M31
E9
E15
E24
F14
E5
F33
E19
47G
89G
88G
86G
87G
6G
31G
AAMWA2154GB

POWER DISTRIBUTION SYSTEM CONNECTORS - WITH VK56VD

Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE CONTROL HARNESS
2	BR	TO ENGINE CONTROL HARNESS
3	V	TO ENGINE CONTROL HARNESS
4	L/O	TO ENGINE CONTROL HARNESS
5	W	TO ENGINE CONTROL HARNESS
6	B/R	TO ENGINE CONTROL HARNESS
7	Y/R	TO ENGINE CONTROL HARNESS
8	BR	TO ENGINE CONTROL HARNESS
9	W/L	TO ENGINE CONTROL HARNESS
10	L/Y	TO ENGINE CONTROL HARNESS
11	SB	TO ENGINE CONTROL HARNESS
12	L	TO ENGINE CONTROL HARNESS
13	W/R	TO ENGINE CONTROL HARNESS
14	Y	TO ENGINE CONTROL HARNESS
15	B	TO ENGINE CONTROL HARNESS
16	B	TO ENGINE CONTROL HARNESS
17	R	TO ENGINE CONTROL HARNESS
18	B	TO ENGINE CONTROL HARNESS
19	B/R	TO ENGINE CONTROL HARNESS
20	GR	TO ENGINE CONTROL HARNESS
21	V/R	TO ENGINE CONTROL HARNESS
22	B	TO ENGINE CONTROL HARNESS
23	B	TO ENGINE CONTROL HARNESS
24	P	TO ENGINE CONTROL HARNESS

Connector No.	E12
Connector Name	STOP LAMP RELAY
Connector Type	MS02FL-M2-LC
Connector Color	BLUE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	W	RELAY CONTROL
3	R/G	STOP LAMPS
5	R/Y	BATTERY

Connector No.	E19
Connector Name	WIRE TO WIRE
Connector Type	NS04MW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	TO ENGINE CONTROL HARNESS
2	W	TO ENGINE CONTROL HARNESS
3	P	TO ENGINE CONTROL HARNESS
4	SB	TO ENGINE CONTROL HARNESS

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	R/Y	BATTERY
2	W	RELAY CONT - (WITHOUT LED REAR COMBINATION LAMPS)
2	R/G	STOP LAMPS - (WITH LED REAR COMBINATION LAMPS)
3	GR	IGNITION
4	R/B	STOP 2

Connector No.	E70
Connector Name	DIODE-3
Connector Type	24335_C9900
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	R	ACC
2	BR	ACC

Connector No.	E95
Connector Name	DIODE-4
Connector Type	24335_C9900
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	Y/R	A/T ECU IGN
2	BR	A/T ECU IGN

Connector No.	E98
Connector Name	TCM (TRANSMISSION CONTROL MODULE) RELAY
Connector Type	MS02FL-M2-LC
Connector Color	BLUE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	BR	IGNITION RELAY CONT
3	Y/R	VIGN
5	P	BATTERY

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH VK56VD

Connector No.	E118
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	L02FB-MC
Connector Color	BLACK

H.S.

1	2

Terminal No.	Color of Wire	Signal Name
1	B/Y	F/L USM
2	R	F/L MAIN

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

9	8	7	6		5	4	3
18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
3	–	–
4	B/R	NP SW
5	L/W	H/LAMP HI RH
6	G	H/LAMP HI LH
7	L	H/LAMP LO LH
8	R/Y	H/LAMP LO RH
9	G/W	FR FOG/L LH
10	–	–
11	P	ETC VB - (WITH CUMMINS 5.0L)
11	O	ETC VB - (WITH VK56VD)
12	W/R	FR FOG/L RH
13	Y/R	A/T ECU IGN
14	G	REVERSE LAMP IGN
15	GR	ABS ECU IGN
16	G	ETC RLY CONT - (WITH CUMMINS 5.0L)
16	V/R	ETC RLY CONT - (WITH VK56VD)
17	L/W	IGN COIL - (WITH CUMMINS 5.0L)

17	W	IGN COIL - (WITH VK56VD)
18	–	–

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FW-LC
Connector Color	WHITE

H.S.

21	20	19
24	23	22

Terminal No.	Color of Wire	Signal Name
19	W/R	STARTER MOTOR
20	L	F/L IGNSW
21	–	–
22	–	–
23	–	–
24	–	–

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

42	41	40	39	38	37
48	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
37	–	–
38	–	–
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY
43	–	–
44	W/B	START CONT
45	GR	FUEL RLY CONT
46	Y	HOOD SW
47	Y	ALT C - (WITH VK56VD)

48	R/W	HORN RLY CONT

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FBR-CS
Connector Color	BROWN

H.S.

51		50	49
56	55	54	53	52

Terminal No.	Color of Wire	Signal Name
49	Y/B	A/C COMP - (WITH CUMMINS 5.0L)
49	GR/R	A/C COMP - (WITH VK56VD)
50	BR	TRAILER TOW
51	–	–
52	B	S-GND
53	–	–
54	–	–
55	–	–
56	–	–

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FB-LC
Connector Color	BLACK

H.S.

59	58	57
62	61	60

Terminal No.	Color of Wire	Signal Name
57	W/B	RR DEF
58	BR	FUEL PUMP - (WITH CUMMINS 5.0L)
58	B/Y	FUEL PUMP - (WITH VK56VD)
59	–	–
60	–	–
61	–	–

62	B	P GND

Connector No.	E130
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH10FB-NH
Connector Color	BLACK

H.S.

67	66	65	64	63
72	71	70	69	68

Terminal No.	Color of Wire	Signal Name
63	–	–
64	R	DETENT SW
65	–	–
66	P	PUSH START SW
67	–	–
68	L	IGN SIGNAL
69	–	–
70	–	–
71	SB	HOOD SW2
72	W	E-CPLG - (WITH VK56VD)

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH VK56VD

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH VK56VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	Y/B	TO MAIN HARNESS
15G	G/W	TO MAIN HARNESS
16G	G	TO MAIN HARNESS
17G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/V	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/Y	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS
24G	G/B	TO MAIN HARNESS
25G	R/W	TO MAIN HARNESS
26G	R	TO MAIN HARNESS
27G	LG	TO MAIN HARNESS
28G	G/B	TO MAIN HARNESS
29G	G/B	TO MAIN HARNESS
30G	BR/Y	TO MAIN HARNESS
31G	P	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	R	TO MAIN HARNESS - (WITH VK56VD)
32G	P	TO MAIN HARNESS
33G	Y/L	TO MAIN HARNESS
34G	GR	TO MAIN HARNESS
35G	G/R	TO MAIN HARNESS
36G	SB	TO MAIN HARNESS
37G	R/W	TO MAIN HARNESS
38G	BR	TO MAIN HARNESS
39G	BR	TO MAIN HARNESS
40G	–	TO MAIN HARNESS
41G	R/G	TO MAIN HARNESS
42G	O	TO MAIN HARNESS
43G	B	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
43G	G	TO MAIN HARNESS - (WITH VK56VD)
44G	R/Y	TO MAIN HARNESS
45G	G	TO MAIN HARNESS
46G	LG	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	W	TO MAIN HARNESS
49G	–	TO MAIN HARNESS
50G	BR	TO MAIN HARNESS
51G	R	TO MAIN HARNESS
52G	L	TO MAIN HARNESS
53G	W	TO MAIN HARNESS
54G	W	TO MAIN HARNESS
55G	G	TO MAIN HARNESS
56G	W	TO MAIN HARNESS
57G	Y	TO MAIN HARNESS
58G	BG	TO MAIN HARNESS
59G	BG	TO MAIN HARNESS
60G	BG	TO MAIN HARNESS
61G	B	TO MAIN HARNESS
62G	W	TO MAIN HARNESS
63G	R	TO MAIN HARNESS
64G	W/L	TO MAIN HARNESS
65G	W/R	TO MAIN HARNESS
66G	BG	TO MAIN HARNESS
67G	BG	TO MAIN HARNESS
68G	B	TO MAIN HARNESS
69G	Y	TO MAIN HARNESS
70G	L	TO MAIN HARNESS
71G	R/W	TO MAIN HARNESS
72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	–	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	V/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE ROOM HARNESS
2	BR	TO ENGINE ROOM HARNESS
3	V	TO ENGINE ROOM HARNESS
4	L/O	TO ENGINE ROOM HARNESS
5	W	TO ENGINE ROOM HARNESS
6	B/R	TO ENGINE ROOM HARNESS
7	Y/R	TO ENGINE ROOM HARNESS
8	BR	TO ENGINE ROOM HARNESS
9	W/L	TO ENGINE ROOM HARNESS
10	L/Y	TO ENGINE ROOM HARNESS
11	SB	TO ENGINE ROOM HARNESS
12	L	TO ENGINE ROOM HARNESS
13	W/R	TO ENGINE ROOM HARNESS
14	Y	TO ENGINE ROOM HARNESS
15	B	TO ENGINE ROOM HARNESS
16	B	TO ENGINE ROOM HARNESS
17	R	TO ENGINE ROOM HARNESS
18	B	TO ENGINE ROOM HARNESS
19	B/R	TO ENGINE ROOM HARNESS
20	GR	TO ENGINE ROOM HARNESS
21	V/R	TO ENGINE ROOM HARNESS
22	SHIELD	TO ENGINE ROOM HARNESS
23	SHIELD	TO ENGINE ROOM HARNESS
24	P	TO ENGINE ROOM HARNESS

Connector No.	F33
Connector Name	WIRE TO WIRE
Connector Type	NS04FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	TO ENGINE ROOM HARNESS
2	W	TO ENGINE ROOM HARNESS
3	P	TO ENGINE ROOM HARNESS
4	SB	TO ENGINE ROOM HARNESS

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH VK56VD

Connector No.	F46
Connector Name	A/T ASSEMBLY (WITH VK56VD)
Connector Type	RK10FG
Connector Color	GREEN

H.S.

Terminal No.	Color of Wire	Signal Name
1	Y/R	VIGN
2	P	BATT
3	L	CAN-H
4	BR	K-LINE
5	B	GND
6	Y/R	VIGN
7	R	REV LAMP RELAY
8	P	CAN-L
9	B/R	STARTER RELAY
10	B	GND

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1N	–	–
2N	W	BATTERY
3N	W	BLOWER FAN RELAY OUT
4N	V	BATTERY
5N	Y	BATTERY
6N	W	BATTERY
7N	L	ACC RELAY OUT
8N	W	IGNITION

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	Y	IGNITION
3P	G	IGNITION RELAY OUT
4P	B/W	RR DEF RLY
5P	B/W	RR DEF RLY
6P	O	RR DEF RLY OUT
7P	G	IGNITION
8P	W	IGNITION
9P	L	BATTERY
10P	–	–
11P	–	–
12P	–	–
13P	R	BATTERY
14P	Y	BATTERY
15P	Y/LG	BATTERY
16P	W	BLOWER FAN RELAY OUT

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
Connector Color	GREEN

H.S.

Terminal No.	Color of Wire	Signal Name
1	G	ENG START SW NO ESCL
2	–	–
3	R	A/L POWER SUPPLY 5V
4	W/R	A/L SIGNAL
5	–	–
6	–	–
7	–	–
8	–	–
9	–	–
10	–	–
11	SB	COMBI SW IN 5
12	Y	COMBI SW IN 4
13	G/B	COMBI SW IN 3
14	V	COMBI SW IN 2
15	–	COMBI SW IN 1
16	–	–
17	P	GND RF A/L
18	V	SECURITY INDICATOR
19	–	–
20	R	SHIFT P
21	R/W	STEP LAMP CONT
22	–	–
23	Y	AIRCON SW
24	–	–
25	W	BRAKE SW FUSE
26	L	SHORT IN PIN INPUT
27	R/G	BRAKE SW LAMP
28	–	–
29	W	BLOWER FAN SW
30	P	DR DOOR LOCK STATUS
31	–	–
32	Y	REAR DEFOGGER SW
33	–	–
34	–	–
35	R/G	REVERSE SW
36	W/B	HAZARD SW
37	–	–
38	–	–
39	B/R	SHIFT N/P
40	–	–

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	–	–
44	–	–
45	–	–
46	–	–
47	–	–
48	R	HIGH SIDE START SW LED
49	–	–
50	–	–
51	–	–
52	W	AUDIO DONGLE
53	–	–
54	W/L	PW UART
55	W/B	L&R SENSOR K-LINE
56	–	–
57	–	–
58	–	–
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	–	–
64	P	BUZZER OUT
65	–	–
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	–	–
74	–	–
75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	–	–

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POWER DISTRIBUTION SYSTEM CONNECTORS - WITH VK56VD

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	–	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS
27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	–	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	–	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	–	TO ENGINE ROOM HARNESS
80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M39
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS08FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1Q	–	–
2Q	O/L	IGNITION
3Q	–	–
4Q	–	–
5Q	–	–
6Q	R/W	BATTERY
7Q	R/W	IGNITION
8Q	–	–

Connector No.	M46
Connector Name	PUSH-BUTTON IGNITION SWITCH
Connector Type	TH08FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	BG	BATTERY
4	B	GND
5	R	HIGH SIDE START SW LED
6	W	ILLUMINATION -
7	P	ACC LED
8	G	ENG START SW NO ESCL

Connector No.	M68
Connector Name	A/T SHIFT SELECTOR
Connector Type	TK08FW
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	B	GND
3	L/R	SHIFT LOCK SOL OUT
4	R	SHIFT P
5	R/B	AT DEVICE OUT
6	LG	TOW MODE SW
7	BR	SHIFT UP
8	V/W	SHIFT DOWN

AAMIA5023GB

POWER DISTRIBUTION SYSTEM CONNECTORS - WITH VK56VD

Connector No.	M69
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE

H.S.

4M	3M		2M	1M
10M	9M	8M	7M	6M	5M

Terminal No.	Color of Wire	Signal Name
1M	GR	IGNITION
2M	–	–
3M	–	–
4M	–	–
5M	R/Y	BATTERY
6M	R/W	TAIL LAMP 2
7M	–	–
8M	–	–
9M	–	–
10M	W/R	IGNITION

14R	G/Y	BATTERY
15R	Y	BATTERY
16R	G/R	ACCESSORY

Connector No.	M80
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH24FB-NH
Connector Color	BLACK

H.S.

116	115	114	113	112	111	110	109	108	107	106	105
128	127	126	125	124	123	122	121	120	119	118	117

Terminal No.	Color of Wire	Signal Name
105	G/Y	FR FLASHER
106	–	–
107	W	LOW SIDE START SW LED
108	L/R	SHIFT LOCK SOLENOID OUT
109	–	–
110	–	–
111	P	ACC LED
112	–	–
113	L	ACC RELAY OUT
114	W	AS DOOR ANT A
115	BG	AS DOOR ANT B
116	W	ROOM ANT 2 A
117	G/B	FL FLASHER
118	–	–
119	R	RF NIMOCO
120	–	–
121	G	DR DOOR ANT B
122	P	DR DOOR ANT A
123	W	ROOM ANT 1 A
124	G	ROOM ANT 1 B
125	–	–
126	P	IMMO START BUTTON ANT B
127	BG	IMMO START BUTTON ANT A
128	B	ROOM ANT 2 B

Connector No.	M70
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN

H.S.

7R	6R	5R	4R		3R	2R	1R
16R	15R	14R	13R	12R	11R	10R	9R	8R

Terminal No.	Color of Wire	Signal Name
1R	L	TAIL LAMP 2
2R	G/R	IGNITION
3R	Y/R	BATTERY
4R	–	–
5R	W	BATTERY
6R	G/W	ACCESSORY
7R	–	–
8R	–	–
9R	–	–
10R	W	BATTERY
11R	–	–
12R	BG	BATTERY
13R	B	ACCESSORY

Connector No.	M81
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHA6-SA
Connector Color	WHITE

H.S.

137	136	135	134	133	132	131	130	129
143	142	141	140	139	138

Terminal No.	Color of Wire	Signal Name
129	R/G	BATTERY SAVER OUT
130	LG	SUPER LOCK/DOOR UNLOCK AS
131	W	BAT BCM FUSE
132	Y	DOOR LOCK AS/RR/RL
133	BR	DOOR UNLOCK AS/RR/RL
134	B	GND2
135	O	DOOR LOCK DR/AS/FL
136	L	ROOM LAMP CONT
137	V	DOOR UNLOCK DR/AS/FL
138	V	BAT REAR DOOR
139	W	BAT-POWER F/L
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
142	Y	BAT FRONT DOOR
143	B	GND1

Connector No.	M88
Connector Name	ACCESSORY RELAY-2
Connector Type	MS02FL-M2-LC
Connector Color	BLUE

H.S.

3		
	5	
2		1

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	L	RELAY CONTROL
3	R	RELAY OUTPUT
5	W	BATTERY

AAMIA5024GB

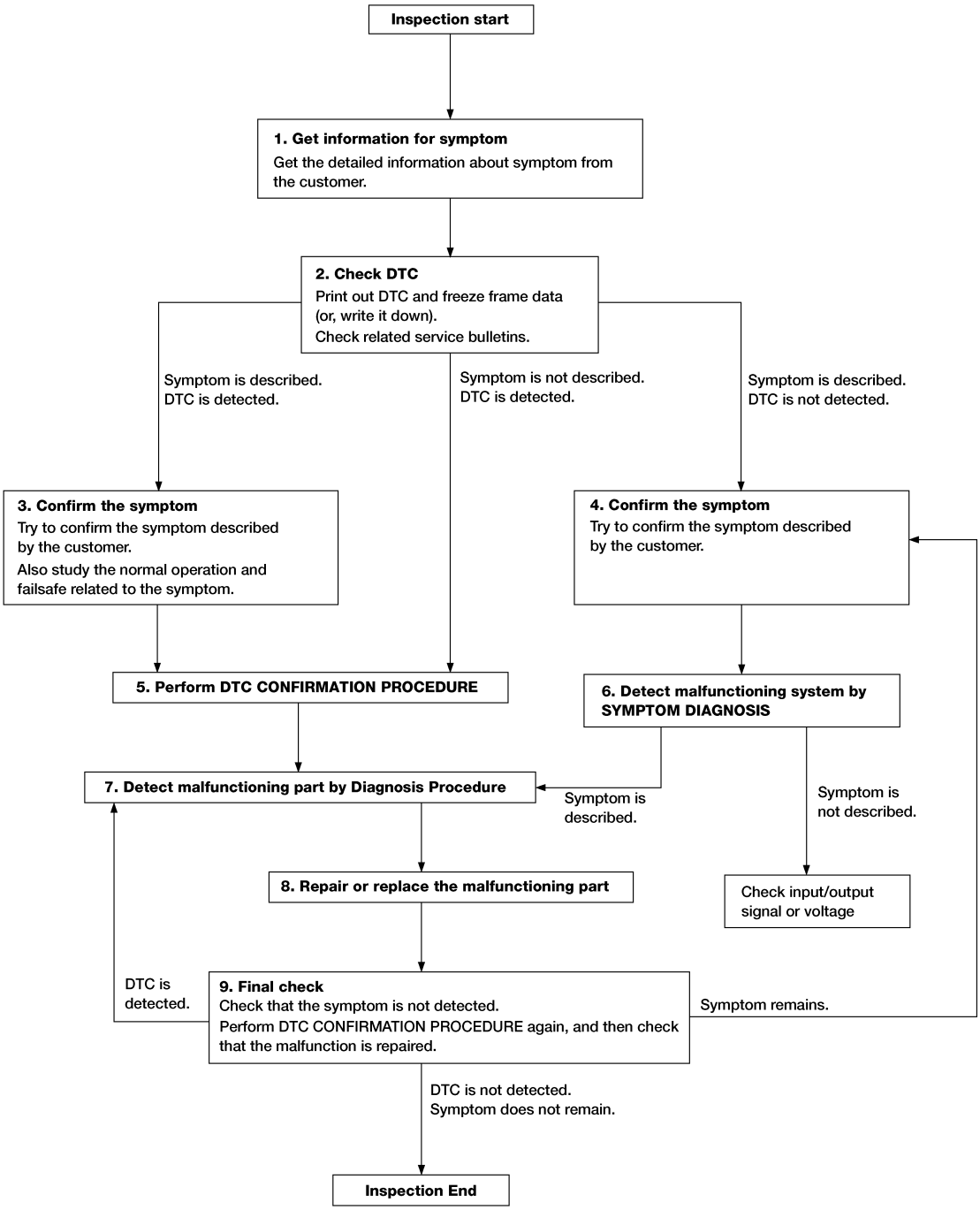
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000014388569

OVERALL SEQUENCE



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DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

1. Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).
2. Check operation condition of the component or system that is malfunctioning.

>> GO TO 2.

2.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.

- Record DTC and freeze frame data (Print them out using CONSULT).
- Erase DTC.
- Study the relationship between the cause detected by DTC and the symptom described by the customer.

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.
Symptom is described, DTC is not detected>>GO TO 4.
Symptom is not described, DTC is detected>>GO TO 5.

3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.
Also study the normal operation and fail-safe related to the symptom.
Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.
Verify relation between the symptom and the condition when the symptom is detected.
NOTE:
Freeze frame data is useful if the DTC is not detected.

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the detected DTC, and then check that DTC is detected again. At this time, always connect CONSULT to the vehicle, and check self diagnostic results in real time.
If two or more DTCs are detected, refer to BCS-51, "DTC Inspection Priority Chart", and determine trouble diagnosis order.

Is DTC detected?

YES >> GO TO 7.
NO >> Refer to GI-47, "Intermittent Incident".

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

Detect malfunctioning system according to SYMPTOM DIAGNOSIS based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

Is the symptom described?

YES >> GO TO 7.
NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

7.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Refer to GI-47, "Intermittent Incident".

8.REPAIR OR REPLACE THE MALFUNCTIONING PART

1. Repair or replace the malfunctioning part.
2. Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
3. Check DTC. If DTC is detected, erase it.

>> GO TO 9.

9.FINAL CHECK

When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.
When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 7.
YES-2 >> Symptom remains: GO TO 4.
NO >> Inspection End.

PROCEDURE FOR TEMPORARILY DISABLING THE IGNITION BATTERY SAVER SYSTEM

Description

INFOID:0000000014388570

The ignition battery saver system can be temporarily disabled, without using CONSULT, to prevent it from functioning when performing trouble diagnosis. Refer to PCS-76, "Work Procedure".

Work Procedure

INFOID:0000000014388571

1. Enter the vehicle carrying a registered Intelligent Key.
2. Place the ignition switch in the OFF position.
3. Without depressing the brake pedal, press and hold the push-button ignition switch continuously for ten seconds.
4. Check that the buzzer in the combination meter sounds for 2 seconds.
5. Operation is completed.
   NOTE:
   When the ignition switch is placed in any position other than ON, the ignition battery saver system is activated again.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000014692786

Description

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicles are equipped with many electronic control units and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H-line, CAN L-line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. CAN Communication Signal Chart. Refer to LAN-74, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1000	CAN COMM CIRCUIT (CAN communication circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

—

Diagnosis Procedure

INFOID:0000000014692787

1. SELF DIAGNOSTIC RESULT

CONSULT

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check “Self Diagnostic Result” mode of “BCM”.
3. Check DTC.

Is DTC “U1000” displayed?

YES >> Refer to LAN-53, "Trouble Diagnosis Flow Chart".
NO–1 >> To check malfunction symptom before repair: Refer to GI-47, "Intermittent Incident".
NO–2 >> Confirmation after repair: Inspection End.

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000014692788

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1010	CONTROL UNIT(CAN) (Control unit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- BCM

FAIL-SAFE

—

Diagnosis Procedure

INFOID:0000000014692789

1. REPLACE BCM

When DTC U1010 is detected, replace BCM.

>> Replace BCM. Refer to BCS-79, "Removal and Installation".

B260A IGNITION RELAY

DTC Description

INFOID:0000000014388576

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B260A	IGN RELAY	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connectors
- BCM
- IPDM E/R

FAIL SAFE

—

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions and wait for at least 2 seconds:
- AT selector lever is in the P (park) or N (neutral) position.
- Release the brake pedal.
2. Perform “Self Diagnostic Result” mode of “BCM”.

Is DTC B260A detected?

YES >> Refer to PCS-79, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014388577

Regarding Wiring Diagram information, refer to PCS-57, "CUMMINS 5.0L : Wiring Diagram".

1. SELF DIAGNOSTIC RESULT

CONSULT

Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-23, "DTC Index".
NO >> GO TO 2.

2. CHECK IGNITION RELAY-1 POWER SUPPLY (IPDM E/R)

Check voltage between IPDM E/R connector E130 terminal 68 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E130	68	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> GO TO 3.

3. CHECK IGNITION RELAY-1 POWER SUPPLY (BCM)

Check voltage between BCM connector M19 terminal 70 and ground.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M19	70	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Refer to GI-47, "Intermittent Incident".
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

B261A PUSH-BUTTON IGNITION SWITCH

DTC Description

INFOID:0000000014388578

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B261A	ENGINE SW (Push-button ignition switch)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	1 second or more

POSSIBLE CAUSE

- Harness or connectors
  [Push-button ignition switch circuit is open or shorted]
- BCM
- IPDM E/R

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

Ⓐ CONSULT

1. Press the push-button ignition switch under the following conditions, and wait for at least 1 second.
- AT selector lever is in the P (park) or N (neutral) position.
- Release the brake pedal.
2. Perform “Self Diagnostic Result” mode of “BCM”.

Is DTC B261A detected?

YES >> Refer to PCS-81, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014388579

Regarding Wiring Diagram information, refer to PCS-57, "CUMMINS 5.0L : Wiring Diagram".

1. CHECK PUSH-BUTTON IGNITION SWITCH OUTPUT SIGNAL (PUSH-BUTTON IGNITION SWITCH)

1. Disconnect push-button ignition switch connector.
2. Check voltage between push-button ignition switch connector M46 terminal 8 and ground.

Push-button ignition switch		Ground	Voltage (Approx.)
Connector	Terminal		
M46	8	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 4.

2. CHECK IGNITION SWITCH OUTPUT SIGNAL (IPDM E/R)

Check voltage between IPDM E/R connector E130 terminal 66 and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E130	66	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".

3. CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (IPDM E/R)

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E130 and BCM connector M18.
3. Check continuity between IPDM E/R connector E130 terminal 66 and push-button ignition switch connector M46 terminal 8.

IPDM E/R		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
E130	66	M46	8	Yes

4. Check continuity between IPDM E/R connector E130 terminal 66 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E130	66	—	No

Is the inspection result normal?

YES >> Refer to GI-47, "Intermittent Incident".
NO >> Repair or replace harness or connectors.

4. CHECK IGNITION SWITCH OUTPUT SIGNAL (BCM)

Check voltage between BCM connector M18 terminal 1 and ground.

BCM		Ground	Voltage (Approx.)
Connector	Terminal		
M18	1	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

5. CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (BCM)

1. Turn ignition switch OFF.
2. Disconnect BCM connector M18 and IPDM E/R connector E130.
3. Check continuity between BCM connector M18 terminal 1 and push-button ignition switch connector M46 terminal 8.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M18	1	M46	8	Yes

4. Check continuity between BCM connector M18 terminal 1 and ground.

BCM		Ground	Continuity
Connector	Terminal		
M18	1	—	No

Is the inspection result normal?

YES >> Refer to GI-47, "Intermittent Incident".
NO >> Repair or replace harness or connectors.

B26F1 IGNITION RELAY

DTC Description

INFOID:0000000014388580

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B26F1	IGN RELAY OFF STUCK FAIL (Ignition relay off)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connectors
  (Ignition relay circuit is open)
- BCM
- IPDM E/R

FAIL-SAFE

Inhibit engine cranking.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more:
- AT selector lever is in the P (park) or N (neutral) position.
- Do not depress brake pedal.
2. Perform “Self Diagnostic Result” mode of “BCM”.

Is DTC B26F1detected?

YES >> Go to PCS-84, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014388581

Regarding Wiring Diagram information, refer to PCS-57, "CUMMINS 5.0L : Wiring Diagram".

1.SELF DIAGNOSTIC RESULT

CONSULT

1. Perform “Self Diagnostic Result” mode of “IPDM E/R”.
2. Erase DTCs.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-23, "DTC Index".
NO >> GO TO 2.

2.CHECK IGNITION RELAY-1 CONTROL SIGNAL (IPDM E/R)

Check voltage between BCM connector M19 terminal 70 and ground.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal			

M19	70	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

3. CHECK IGNITION RELAY-1 CONTROL SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E130 and BCM connector M19.
3. Check continuity between IPDM E/R connector E130 terminal 68 and BCM connector M19 terminal 70.

IPDM E/R		BCM		Continuity
Connector	Terminal	Connector	Terminal	
E130	68	M19	70	Yes

4. Check continuity between IPDM E/R connector E130 terminal 68 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E130	68	—	No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> Repair or replace harness or connectors.

B26F2 IGNITION RELAY

DTC Description

INFOID:0000000014388582

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B26F2	IGN RELAY ON STUCK FAIL (Ignition relay on)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connectors
  (Ignition relay circuit is shorted)
- BCM
- IPDM E/R

FAIL-SAFE

Inhibit engine cranking

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more:
- AT selector lever is in the P (park) or N (neutral) position.
- Do not depress brake pedal.
2. Perform “Self Diagnostic Result” mode of “BCM”.

Is DTC B26F2 detected?

YES >> Go to PCS-86, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014388583

Regarding Wiring Diagram information, refer to PCS-57, "CUMMINS 5.0L : Wiring Diagram".

1. SELF DIAGNOSTIC RESULT

CONSULT

1. Perform “Self Diagnostic Result” mode of “IPDM E/R”.
2. Erase DTCs.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-23, "DTC Index".
NO >> GO TO 2.

2.CHECK IGNITION RELAY-1 CONTROL SIGNAL (IPDM E/R)

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E130.
3. Check voltage between IPDM E/R connector E130 terminal 68 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E130	68	—	Ignition: OFF	0V

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> GO TO 3.

3. CHECK IGNITION RELAY-1 CONTROL SIGNAL CIRCUIT

1. Disconnect BCM connector M19.
2. Check voltage between IPDM E/R connector E130 terminal 68 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E130	68	—	Ignition: OFF	0V

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-79, "Removal and Installation".
NO >> Repair or replace harness or connectors.

B26F6 BCM

DTC Description

INFOID:0000000014388584

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B26F6	IGN USM CONT FAIL (Body control module)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	0.5 seconds or more

POSSIBLE CAUSE

- BCM

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.CHECK DTC PRIORITY

If DTC B26F6 is displayed with DTC U1000 or U1010, first perform the trouble diagnosis for the DTC U1000 or U1010.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. U1000: Refer to PCS-77, "DTC Description". U1010: Refer to PCS-78, "DTC Description".

NO >> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions, and wait for 0.5 seconds or more:
- AT selector lever is in the P (park) or N (neutral) position.
- Do not depress brake pedal.
2. Perform “Self Diagnostic Result” mode of “BCM”.

Is DTC B26F6 detected?

YES >> Go to PCS-88, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014388585

Regarding Wiring Diagram information, refer to PCS-57, "CUMMINS 5.0L : Wiring Diagram".

1. SELF DIAGNOSTIC RESULT

CONSULT

Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-23, "DTC Index".

NO >> GO TO 2.

2. CHECK IGNITION RELAY-1 POWER SUPPLY (IPDM E/R)

Check voltage between IPDM E/R connector E130 terminal 68 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E130	68	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> GO TO 3.

3. CHECK IGNITION RELAY-1 POWER SUPPLY (BCM)

Check voltage between BCM connector M19 terminal 70 and ground.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M19	70	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Refer to GI-47, "Intermittent Incident".
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

PUSH-BUTTON IGNITION SWITCH

Component Function Check

INFOID:0000000014388586

1.CHECK FUNCTION

CONSULT
1. Select “PUSH SW” in “Data Monitor” mode of BCM.
2. Check the push-button ignition switch signal under the following conditions.

Test item	Condition	Status
PUSH SW	Push-button ignition switch is pressed	On
	Push-button ignition switch is not pressed	Off

Is the indication normal?

YES >> Inspection End.
NO >> Go to PCS-90, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014388587

Regarding Wiring Diagram information, refer to PCS-57, "CUMMINS 5.0L : Wiring Diagram".

1. CHECK PUSH-BUTTON IGNITION SWITCH OUTPUT SIGNAL (PUSH-BUTTON IGNITION SWITCH)

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector M46 and IPDM E/R connector E130.
3. Check voltage between push-button ignition switch connector M46 terminal 8 and ground.

Push-button ignition switch		Ground	Voltage (Approx.)
Connector	Terminal		
M46	8	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (BCM)

1. Disconnect BCM connector M18.
2. Check continuity between BCM connector M18 terminal 1 and push-button ignition switch connector M46 terminal 8.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M18	1	M46	8	Yes

3. Check continuity between BCM connector M18 terminal 1 and ground.

BCM		Ground	Continuity
Connector	Terminal		
M18	1	—	No

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-79, "Removal and Installation".
NO >> Repair or replace harness or connectors.

3. CHECK IGNITION SWITCH OUTPUT SIGNAL (IPDM E/R)

Check voltage between IPDM E/R connector E130 terminal 66 and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E130	66	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 4.

4. CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (IPDM E/R)

1. Disconnect BCM connector M18.
2. Check continuity between IPDM E/R connector E130 terminal 66 and push-button ignition switch connector M46 terminal 8.

IPDM E/R		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
E130	66	M46	8	Yes

3. Check continuity between IPDM E/R connector E130 terminal 66 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E130	66	—	No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> Repair or replace harness or connectors.

5. CHECK PUSH-BUTTON IGNITION SWITCH GROUND CIRCUIT

Check continuity between push-button ignition switch connector M46 terminal 4 and ground.

Push-button ignition switch		Ground	Continuity
Connector	Terminal		
M46	4	—	Yes

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace harness or connectors.

6. CHECK PUSH-BUTTON IGNITION SWITCH

Refer to PCS-91, "Component Inspection".

Is the inspection result normal?

YES >> Refer to GI-47, "Intermittent Incident".
NO >> Replace push-button ignition switch. Refer to PCS-98, "Removal and Installation".

Component Inspection

INFOID:0000000014388588

1. CHECK PUSH-BUTTON IGNITION SWITCH

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector.
3. Check continuity between push-button ignition switch terminals.

Push-button ignition switch terminals	Condition	Continuity
4 – 8	Pressed	Yes
	Not pressed	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace push-button ignition switch. Refer to PCS-98, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT

BCM

BCM : Diagnosis Procedure

INFOID:0000000014692790

Regarding Wiring Diagram information, refer to BCS-54, "Wiring Diagram".

1. CHECK FUSE AND FUSIBLE LINK

Check that the following fuse and fusible link are not blown.

Signal name	Fuse and fusible link No.	
	Cummins 5.0L	VK56VD
Fusible link battery power	R (50A)	N (50A)
BCM battery fuse	1 (10A)	1 (10A)

Is the fuse or fusible link blown?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit.
NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect BCM connector M81.
2. Check voltage between BCM connector M81 terminals 131, 139 and ground.

BCM		Ground	Voltage (Approx.)
Connector	Terminal		
M81	131	(—)	Battery voltage
	139		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness or connectors.

3. CHECK GROUND CIRCUIT

Check continuity between BCM connector M81 terminals 134, 143 and ground.

BCM		Ground	Continuity
Connector	Terminal		
M81	134	—	Yes
	143		

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace harness or connectors.

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

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

INFOID:0000000014692791

Regarding Wiring Diagram information, refer to PCS-25, "CUMMINS 5.0L : Wiring Diagram".

1. CHECK FUSIBLE LINKS

Check that the following fusible links are not blown.

Terminal	Signal name	Fusible link No.	
		Cummins 5.0L	VK56VD
1	Battery power supply	A (250A), D (100A)	A (250A), B (80A)
2		C (100A)	E (60A)
20		F (250A), J (100A), P (40A)	A (250A), C (100A), U (40A)

Is the fusible link blown?

YES >> Replace the blown fusible link after repairing the affected circuit.
NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect IPDM E/R connectors E118 and E120.
2. Check voltage between IPDM E/R connectors and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E118	1	(—)	Battery voltage
	2		
E120	20		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness or connectors.

3. CHECK GROUND CIRCUIT

1. Disconnect IPDM E/R connectors E123 and E124.
2. Check continuity between IPDM E/R connectors and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E123	52	—	Yes
E124	62		

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace harness or connectors.

SYMPTOM DIAGNOSIS

PUSH-BUTTON IGNITION SWITCH DOES NOT OPERATE

Description

INFOID:0000000014388591

Check that vehicle is under the condition shown in “Conditions of vehicle” before starting diagnosis, and check each symptom.

NOTE:

The engine start function, door lock function, power distribution system, and NATS-IVIS in the Intelligent Key system are closely related to each other regarding control. The vehicle security function can operate only when the door lock and power distribution system are operating normally.

Conditions of Vehicle (Operating Conditions)

- “ENGINE START BY I-KEY” in “WORK SUPPORT” is ON when setting on CONSULT.
- One or more of Intelligent Keys with registered Intelligent Key ID is in the vehicle.

Diagnosis Procedure

INFOID:0000000014388592

1.PERFORM WORK SUPPORT

CONSULT

Perform “INSIDE ANT DIAGNOSIS” in “Work support” mode of “INTELLIGENT KEY”.

Refer to PCS-52, "INTELLIGENT KEY : CONSULT Function (BCM - INTELLIGENT KEY)".

>> GO TO 2.

2.SELF DIAGNOSTIC RESULT

CONSULT

Perform “Self Diagnostic Result” mode of “BCM”.

Are any DTCs detected?

YES >> Refer to BCS-52, "DTC Index".

NO >> GO TO 3.

3.CHECK PUSH-BUTTON IGNITION SWITCH

Check push-button ignition switch.

Refer to PCS-90, "Component Function Check".

Is the operation normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 1.

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR DOES NOT ILLUMINATE

Diagnosis Procedure

INFOID:0000000014388593

1.CHECK PUSH-BUTTON IGNITION SWITCH OPERATION

Check push-button ignition switch.
Refer to PCS-90, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning parts.

2. CHECK PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR POWER CIRCUIT

1. Disconnect push-button ignition switch connector.
2. Check voltage between push-button ignition switch connector M46 terminal 3 and ground.

Push-button ignition switch		Ground	Voltage (Approx.)
Connector	Terminal		
M46	3	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness or connectors.

3. CHECK PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR CONTROL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector M80.
3. Check continuity between BCM connector M80 terminal 111 and push-button ignition switch connector M46 terminal 7.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M80	111	M46	7	Yes

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace harness or connectors.

4.REPLACE BCM

Replace BCM. Refer to BCS-79, "Removal and Installation"

Is the inspection result normal?

YES >> Inspection End.
NO >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

REMOVAL AND INSTALLATION

BCM (BODY CONTROL MODULE)

Removal and Installation

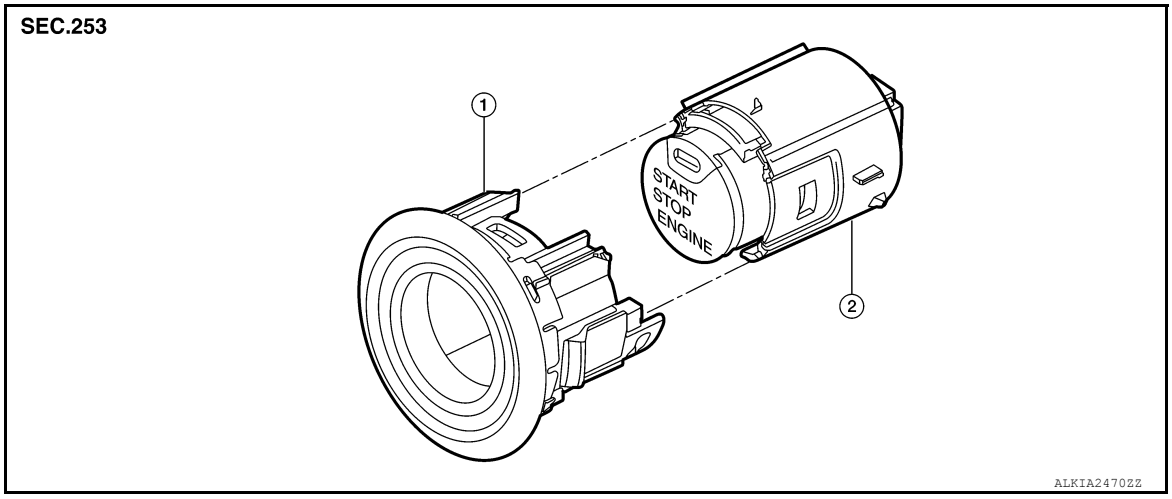
INFOID:0000000014388594

For removal and installation of the BCM (Body Control Module), refer to BCS-79, "Removal and Installation".

PUSH-BUTTON IGNITION SWITCH

Exploded View

INFOID:0000000014388595



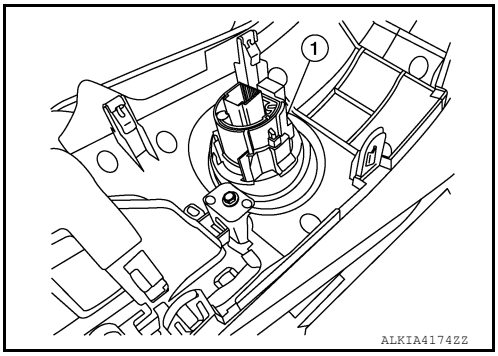
1. NATS antenna amp.
2. Push-button ignition switch

Removal and Installation

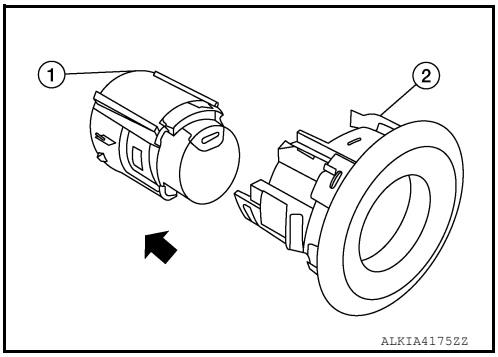
INFOID:0000000014388596

REMOVAL

1. Remove the center console. Refer to IP-24, "Removal and Installation".
2. Remove the cluster lid C side finisher.
3. Disconnect the push-button ignition switch electrical connector.
4. Release the pawl on each side of the push-button ignition switch (1) and remove from the cluster lid C side finisher.



5. Release the pawl on each side and remove the push-button ignition switch (1) from the NATS antenna amp (2).



INSTALLATION

Installation is in the reverse order of removal.