DETERMINING OPEN CIRCUIT LOCATION (HS-CAN) [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (L.H.D.)]

Caution

- Perform the following malfunction diagnosis only when it is diagnosed with a open circuit by CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (L.H.D.)].
- · If the malfunctioning part is detected in the communication line, before disconnecting the related connector for inspection, press the connector in the connection direction to verify that there is no looseness or disconnection.
- · When disconnecting the connector, verify that there is no damage, deformation, or corrosion of the connector terminals.
- 1. Verify the CAN system-related module DTCs and the failed module on the M-MDS screen.
- 2. Apply the communication error DTC and the failed module to DTC output pattern and malfunctioning location, and select the possible cause for the diagnostic result and the reference for the inspection item.

- The open circuit location can be determined by the DTC indicated in the DTC output pattern and malfunctioning location chart. DTCs not listed in the chart are not used for the determination of the open circuit location.
- 3. Inspect the possible cause and inspection item of the applicable malfunctioning part.
- 4. After repairs, return to CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (L.H.D.)], and verify that the repairs have been completed.

DTC output pattern and malfunctioning location

Cross (x): Communication error-related DTC and failed module

M-MDS display																		
DTC output module	DTC	DTC output pattern and malfunctioning location																
PCM	U0101:00				×													
	U0121:00		×															
	U0131:00															×		
	U0140:00							×										
(PCM)	U0151:00																×	
	U0155:00																	×
	U0214:00														×			
	U0235:00											×						
ABS	U0100:00	×																
	U0101:00				×													
	U0114:00									×								
(DSC HU/	U0131:00														×*7	×*6		
CM)	U0154:00																×	
	U0155:00																	×
	U0235:00											×						
	U0100:00	×		×														
TCM ^{*1}	U0121:00		×	×														
(TCM)	U0141:00							×										
	U0155:00																	×
AFS ^{*2} (AFS control module)	U0100:00	×		×		×												
	U0131:00															×		
	U0140:00							×										
	U0155:00																	×
F_BCM (Front body control module (FBCM))	U0100:00	×		×		×												
	U0101:00				×	×												
	U0121:00		×	×		×												
	U0155:00																	×
	U0214:00														×			
	U0515:00																×	

M-MDS	display																	
DTC output module	DTC					DTC	outpu	ıt patt	ern a	nd ma	alfund	ctioni	ng loo	ation	1			
4X4*3	U0100:00	×		×		×			×									
(4WD control module)	U0101:00				×	×			×									
	U0121:00		×	×		×			×									
SCBS*4 (Laser sensor)	U0100:00	×		×		×			×		×							
	U0121:00		×	×		×			×		×							
	U0131:00															×		
	U0155:00																	×
FSC*5	U0100:00	×		×		×			×		×							
	U0121:00 U0131:00		×	×		×			×		×					×		
(Forward	U0140:00							×	×		×					^		
sensing	U0155:00							<u> </u>										×
camera)	U0214:00														×			
	U0100:00	×		×		×			×		×			×				
	U0101:00				×	×			×		×			×				
	U0121:00		×	×		×			×		×			×				
SSU	U0121:87		×	×		×			×		×			×				
(Start stop	U0131:00															×		
unit)	U0140:00							×	×		×			×				
,	U0146:00																	×
	U0151:00																×	
	U0155:00																	×
EPS	U0100:00	×		×		×			×		×			×				
(EPS control	U0121:00		×	×		×			×		×			×				
module)	U0155:00																	×
RCM (SAS control module)	U0155:00																	×
	U0100:00	×		×		×			×		×			×				
IC (Instrument cluster)	U0101:00				×	×			×		×			×				
	U0114:00									×	×			×				
	U0121:00		×	×		×			×		×			×				
	U0131:00															×		
	U0140:00							×	×		×			×				
	U0151:00																×	
	U0182:00						×		×		×			×				
	U0214:00														×			
	U0235:00											×		×				
	U023A:00									<u> </u>	L		×	×				
M-MDS display module				1	1			<u>[</u>		ispiay 	patte	rn		l				
PCM ABS		×	×	×		×			×		×			×				
				<u> </u>														
TCM*1					×	×			×		×			×				
AFS ^{*2}							×		×		×			×				
F_BCM								×	×		×			×				
4X4*3										×	×			×				
SCBS*4												×		×				
FSC*5													×	×				
SSU								-			-			<u> </u>	×			
EPS															<u> </u>	×		
RCM																	×	
IC																	† · ·	×
-5						Dia	gnost	ic resi	ult					L		<u> </u>		
Possible cause	e and	_	_		_		Ĭ					1/					_	
inspection item		A	В	С	D	Е	F	G	Н		J	K	L	M	N	0	P	Q
					4					-					-			

*1 : ATX vehicles *2 : With AFS system

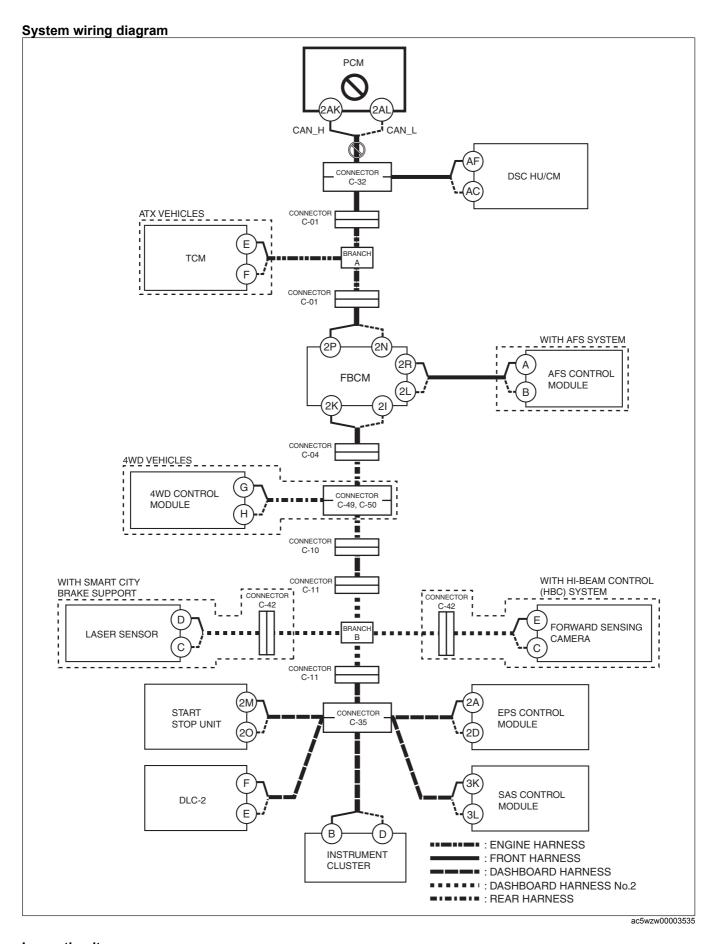
- *3:4WD vehicles

- *4 : With smart city brake support
 *5 : With hi-beam control (HBC) system
 *6 : Without smart city brake support or steering angle sensor
 *7 : With smart city brake support or steering angle sensor

Α

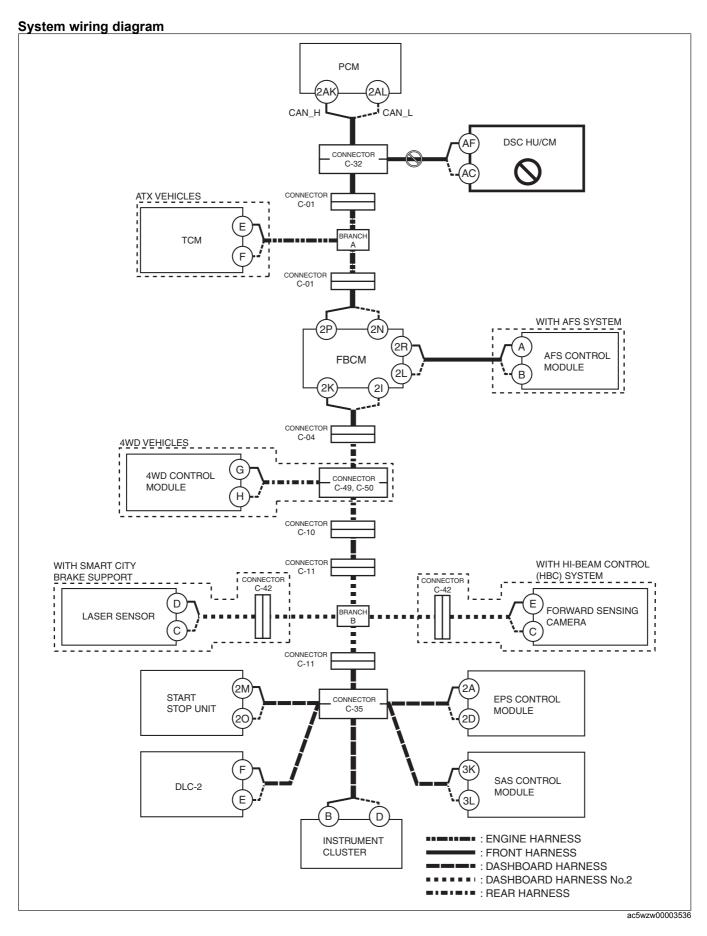
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
 Open circuit in wiring harness between PCM and connector C-32
 Connector C-32 malfunction

- PCM malfunction



- Connector C-32
- Wiring harness between PCM terminal 2AK and connector C-32
- Wiring harness between PCM terminal 2AL and connector C-32
 PCM

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between DSC HU/CM and connector C-32
 Connector C-32 malfunction
- DSC HU/CM malfunction



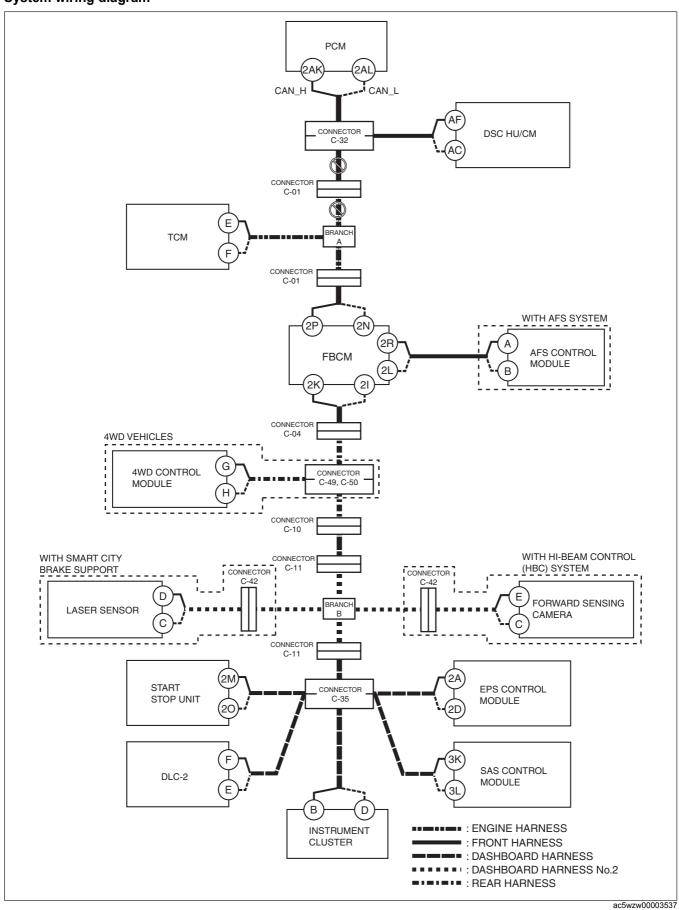
• DSC HU/CM connector

- Connector C-32
- Wiring harness between DSC HU/CM terminal AF and connector C-32
- Wiring harness between DSC HU/CM terminal AC and connector C-32
- DSC HU/CM

ATX vehicles

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connectors C-32 and C-01
- Open circuit in wiring harness between connector C-01 and branch A
 Connector C-32 malfunction
 Connector C-01 malfunction

System wiring diagram

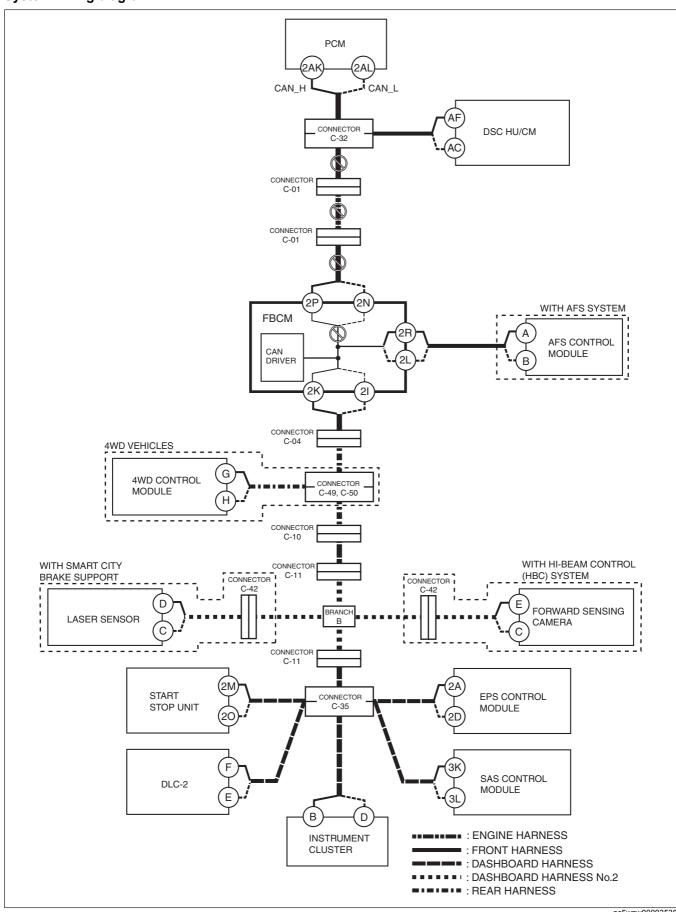


- Connector C-01
- Wiring harness between connectors C-32 and C-01
- · Wiring harness between connector C-01 and branch A

MTX vehicles

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connectors C-32 and C-01
- Open circuit in wiring harness between connectors C-01 and C-01
- Open circuit in wiring harness between connector C-01 and front body control module (FBCM)
- CAN circuit in front body control module (FBCM) malfunction

System wiring diagram



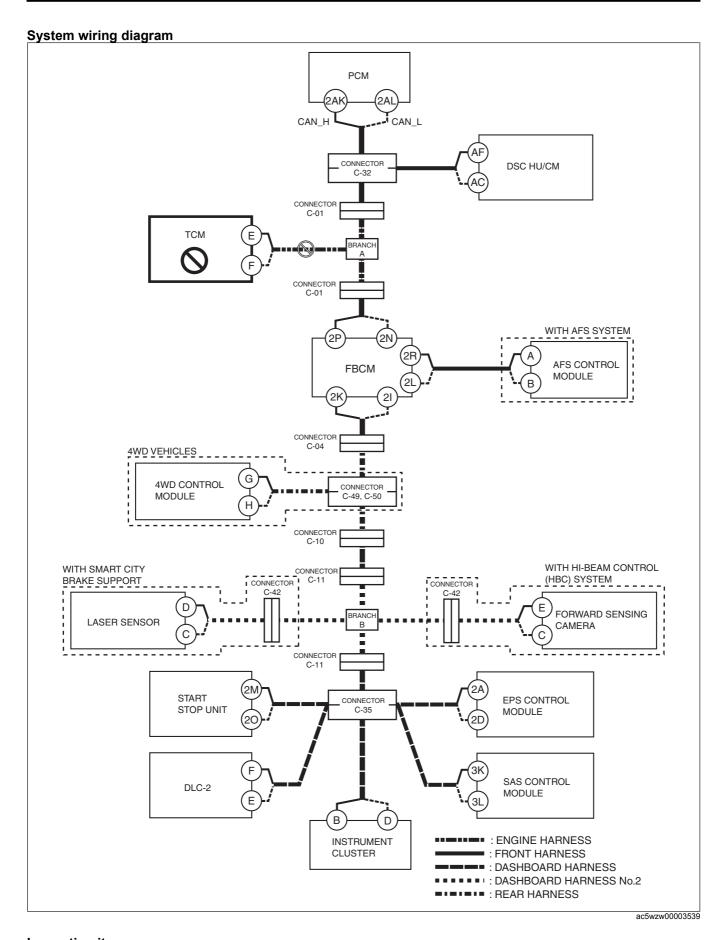
Inspection item

• Front body control module (FBCM) connector

- · Connector C-32
- Connector C-01
- · Wiring harness between connectors C-32 and C-01
- Wiring harness between connectors C-01 and C-01
- Wiring harness between front body control module (FBCM) terminal 2P and connector C-01
- Wiring harness between front body control module (FBCM) terminal 2N and connector C-01
- Front body control module (FBCM)
 - Between front body control module (FBCM) terminal 2P and front body control module (FBCM) terminal 2K
 Between front body control module (FBCM) terminal 2N and front body control module (FBCM) terminal 2I

D

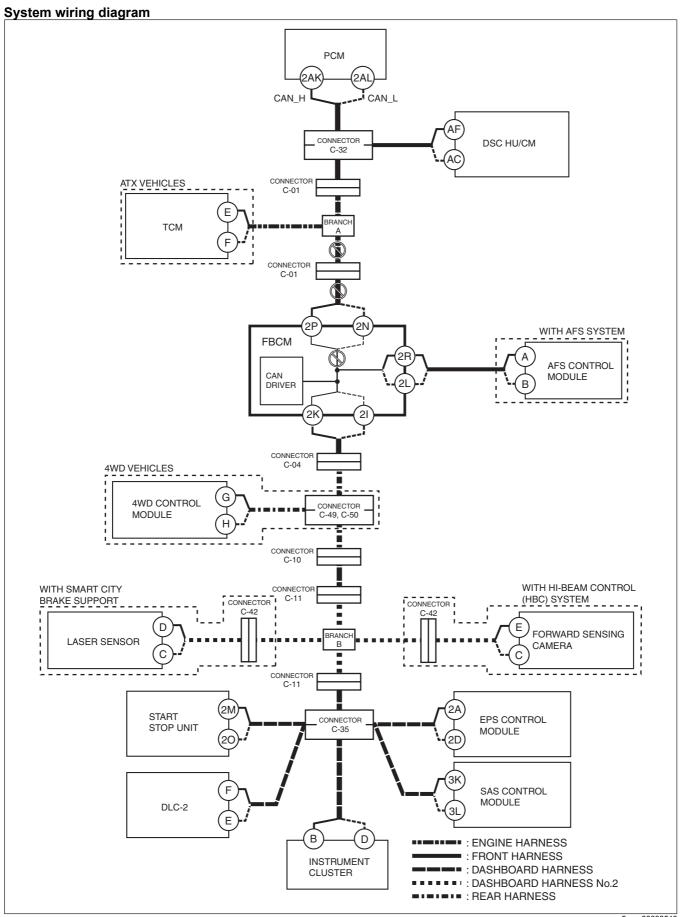
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between TCM and branch A
- TCM malfunction



- · Wiring harness between TCM terminal E and branch A
- · Wiring harness between TCM terminal F and branch A
- TCM

Ε

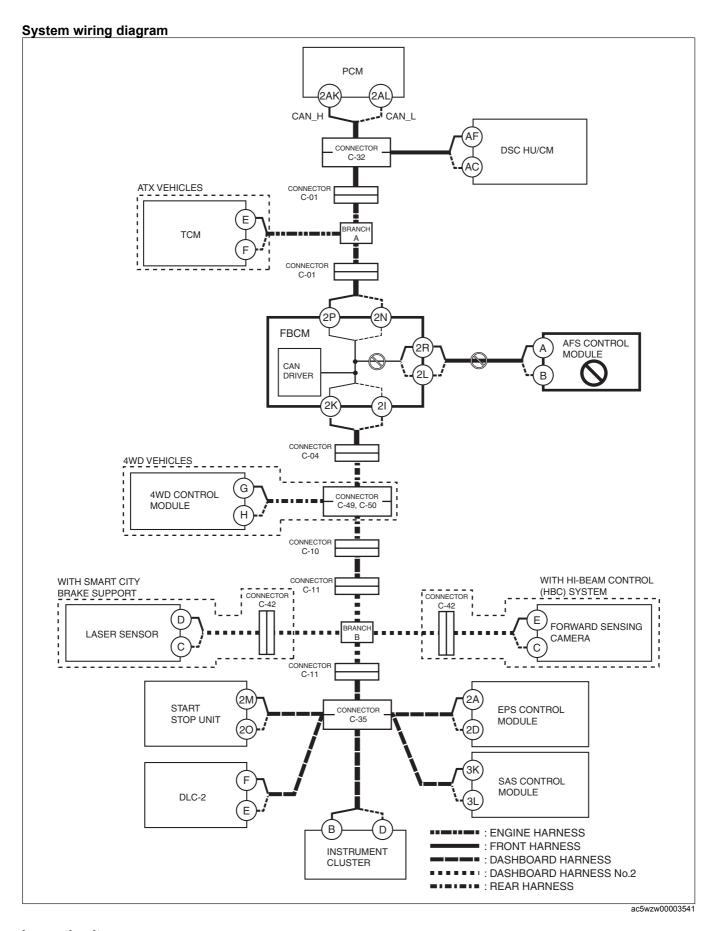
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch A and connector C-01
- Open circuit in wiring harness between connector C-01 and front body control module (FBCM)
- Connector C-01 malfunction
- CAN circuit in front body control module (FBCM) malfunction



- Front body control module (FBCM) connector
- Connector C-01
- Wiring harness between branch A and connector C-01
- Wiring harness between front body control module (FBCM) terminal 2P and connector C-01
- Wiring harness between front body control module (FBCM) terminal 2N and connector C-01
- Front body control module (FBCM)
 - Between front body control module (FBCM) terminal 2P and front body control module (FBCM) terminal 2K
 - Between front body control module (FBCM) terminal 2N and front body control module (FBCM) terminal 2I

F

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between AFS control module and front body control module (FBCM)
- CAN circuit in front body control module (FBCM) malfunction
- AFS control module malfunction

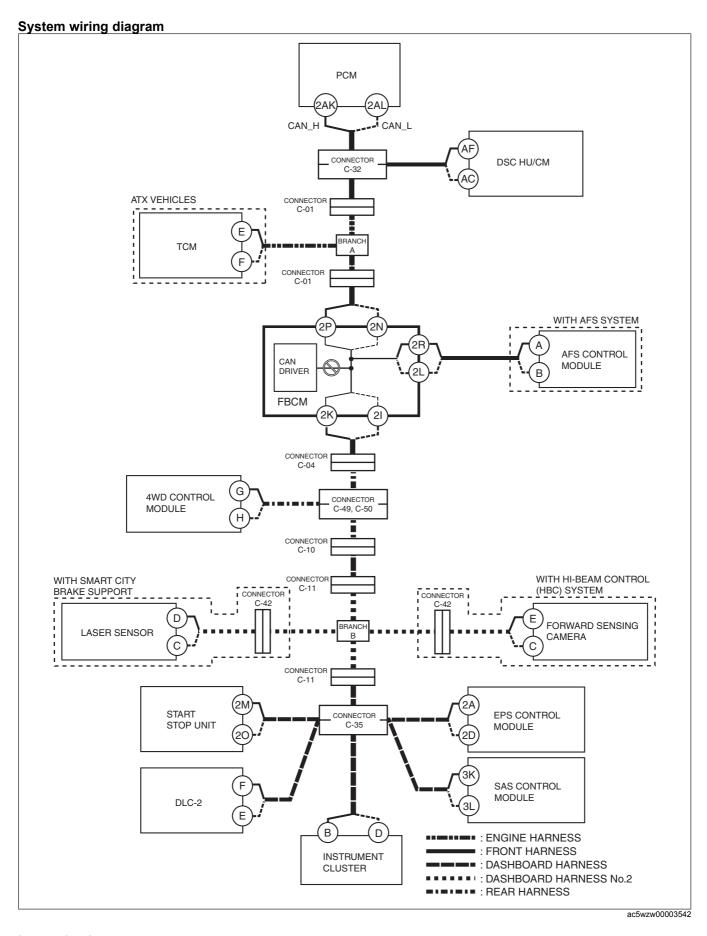


Front body control module (FBCM) connector

- · AFS control module connector
- · Wiring harness between front body control module (FBCM) terminal 2R and AFS control module terminal A
- Wiring harness between front body control module (FBCM) terminal 2L and AFS control module terminal B
- Front body control module (FBCM)
 - Between front body control module (FBCM) terminal 2R and front body control module (FBCM) terminal 2K
 - Between front body control module (FBCM) terminal 2L and front body control module (FBCM) terminal 2L

G

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Front body control module (FBCM) malfunction

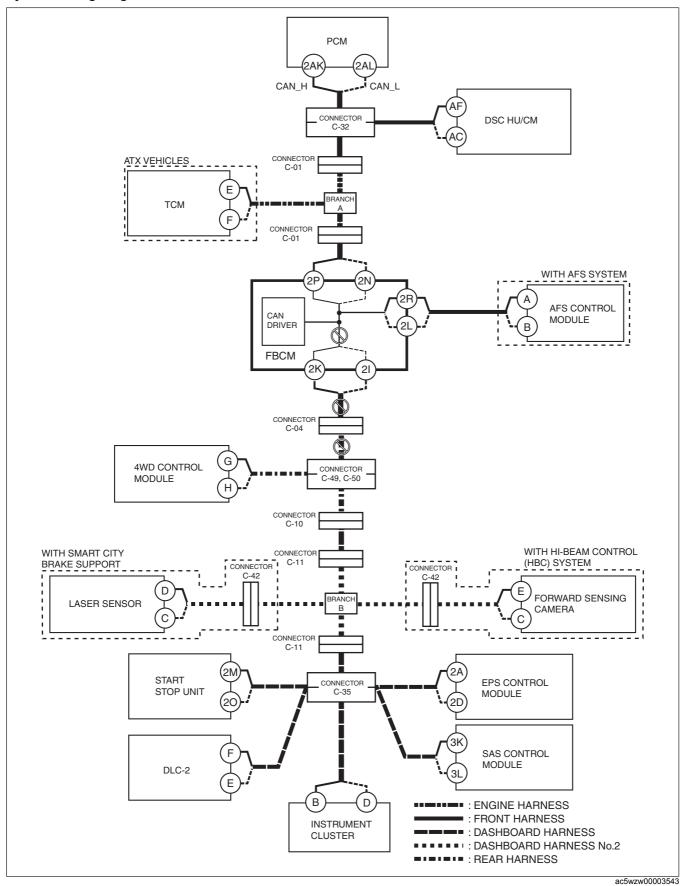


Front body control module (FBCM)

With 4WD

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
 Open circuit in wiring harness between front body control module (FBCM) and connector C-04
 Open circuit in wiring harness between connectors C-04 and C-49, C-50
- Connector C-04 malfunction
- Connectors C-49, C-50 malfunction
- CAN circuit in front body control module (FBCM) malfunction

System wiring diagram



Inspection item

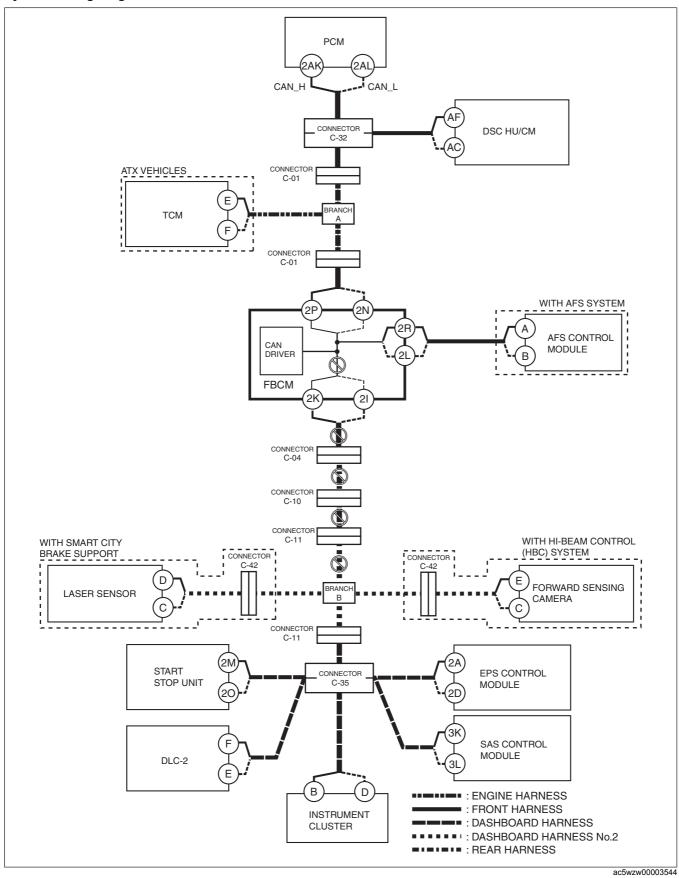
- Front body control module (FBCM) connector
- Connector C-04
- Connectors C-49, C-50

- Wiring harness between front body control module (FBCM) terminal 2K and connector C-04
- Wiring harness between front body control module (FBCM) terminal 2I and connector C-04
- Wiring harness between connectors C-04 and C-49, C-50
- Front body control module (FBCM)
 - Between front body control module (FBCM) terminal 2P and front body control module (FBCM) terminal 2K
 - Between front body control module (FBCM) terminal 2N and front body control module (FBCM) terminal 2I

2WD vehicles

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- · Open circuit in wiring harness between front body control module (FBCM) and connector C-04
- Open circuit in wiring harness between connectors C-04 and C-10
- Open circuit in wiring harness between connectors C-10 and C-11
- Open circuit in wiring harness between connectors C-11 and branch B
- Connector C-04 malfunction Connector C-10 malfunction
- Connector C-11 malfunction
- CAN circuit in front body control module (FBCM) malfunction

System wiring diagram



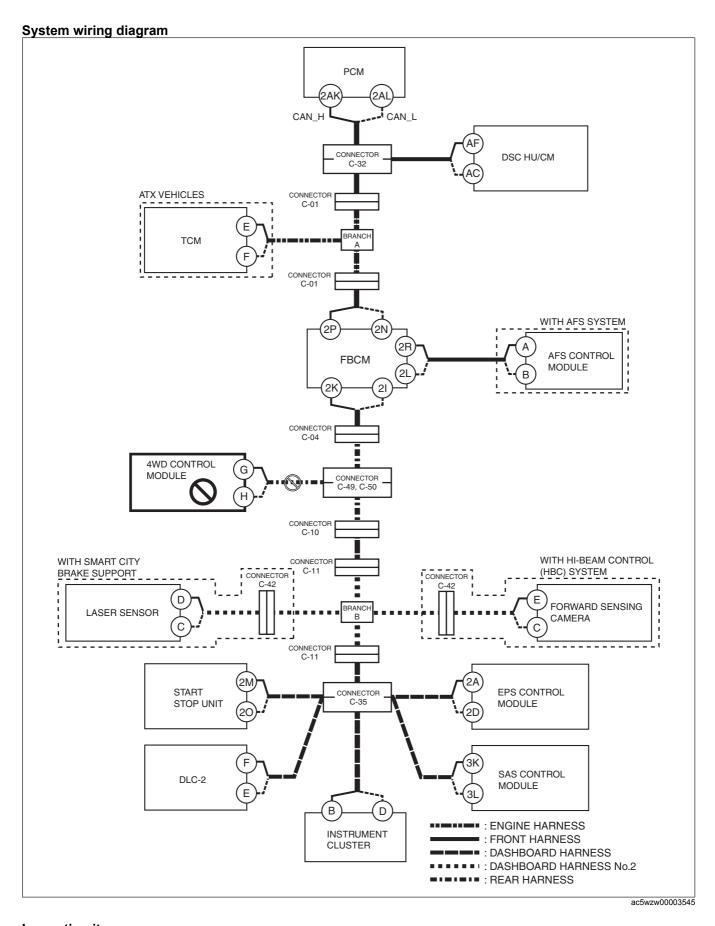
Inspection item

- Front body control module (FBCM) connector
- Connector C-04
- · Connector C-10

- Connector C-11
- Wiring harness between front body control module (FBCM) terminal 2K and connector C-04
- Wiring harness between front body control module (FBCM) terminal 2I and connector C-04
- Wiring harness between connectors C-04 and C-10
- Wiring harness between connectors C-10 and C-11
- Wiring harness between connectors C-11 and branch B
- Front body control module (FBCM)
 - Between front body control module (FBCM) terminal 2P and front body control module (FBCM) terminal 2K
 - Between front body control module (FBCM) terminal 2N and front body control module (FBCM) terminal 2I

ī

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between 4WD control module and connectors C-49, C-50
- Connector C-49, C-50 malfunction
- · 4WD control module malfunction



- 4WD control module connector
- Connectors C-49, C-50

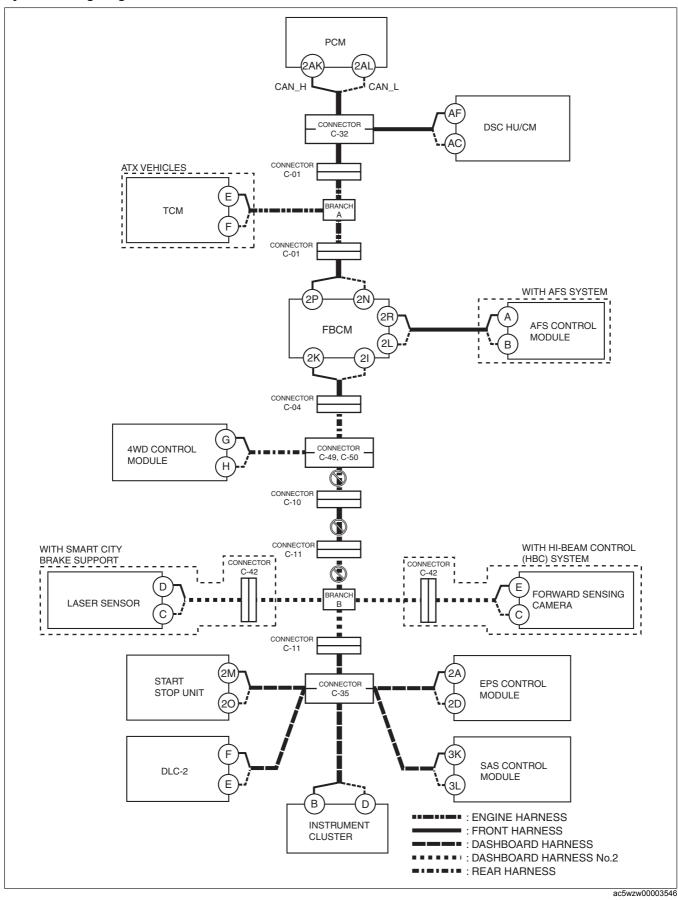
- Wiring harness between 4WD control module terminal G and connector C-49
- Wiring harness between 4WD control module terminal H and connector C-50
- 4WD control module

With smart city brake support or hi-beam control (HBC) system Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-49, C-50 and connector C-10
- Open circuit in wiring harness between connector C-10 and connector C-11
- Open circuit in wiring harness between connector C-11 and branch B
 Connector C-49, C-50 malfunction
 Connector C-10 malfunction

- Connector C-11 malfunction

System wiring diagram



Inspection item

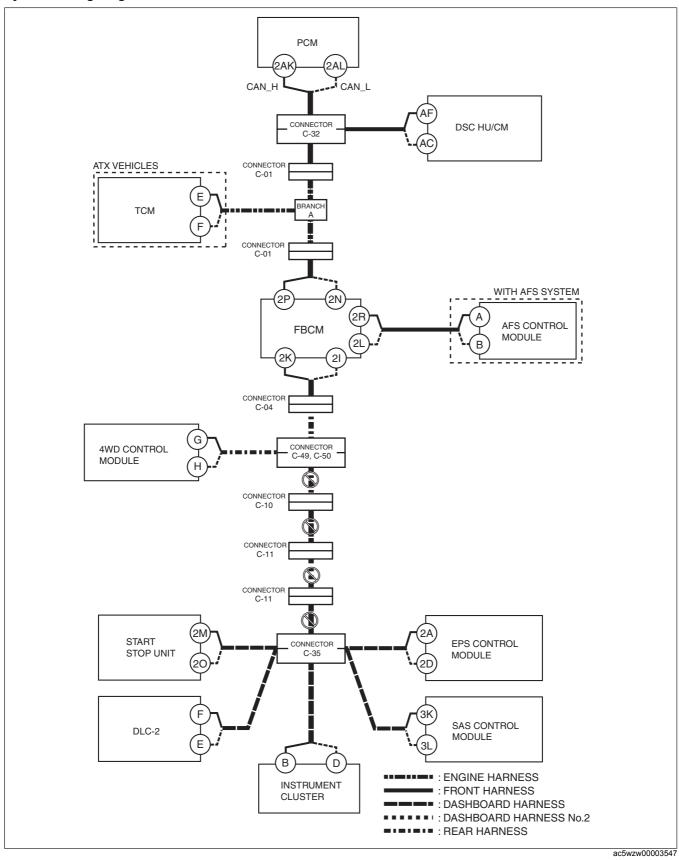
- Connector C-49, C-50
- Connector C-10

- Connector C-11
- Wiring harness between connector C-49, C-50 and connector C-10
- Wiring harness between connector C-10 and connector C-11
- Wiring harness between connector C-11 and branch B

Without smart city brake support or hi-beam control (HBC) system Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-49, C-50 and connector C-10
- Open circuit in wiring harness between connector C-10 and connector C-11
- Open circuit in wiring harness between connector C-11 and connector C-11
- Open circuit in wiring harness between connector C-11 and connector C-35
- Connector C-49, C-50 malfunction
- Connector C-10 malfunction Connector C-11 malfunction Connector C-35 malfunction

System wiring diagram



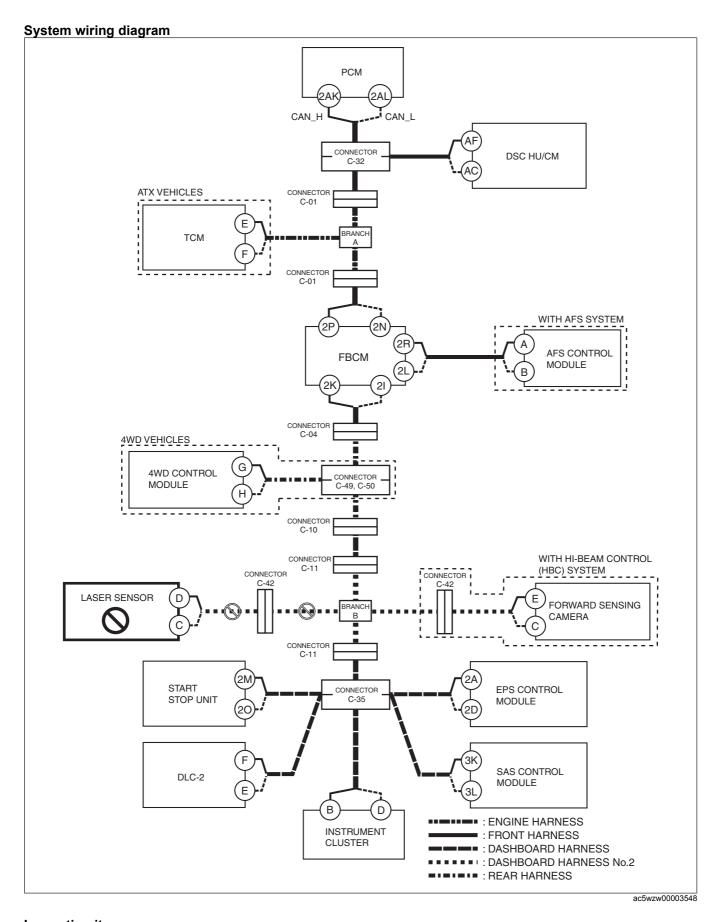
Inspection item

- Connector C-49, C-50
- Connector C-10 Connector C-11
- Connector C-35
- Wiring harness between connector C-49, C-50 and connector C-10

- Wiring harness between connector C-10 and connector C-11
- Wiring harness between connector C-11 and connector C-11
- Wiring harness between connector C-11 and connector C-35

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
 Open circuit in wiring harness between laser sensor and connector C-42
 Open circuit in wiring harness between connector C-42 and branch B

- Connector C-42 malfunction
- · Laser sensor malfunction

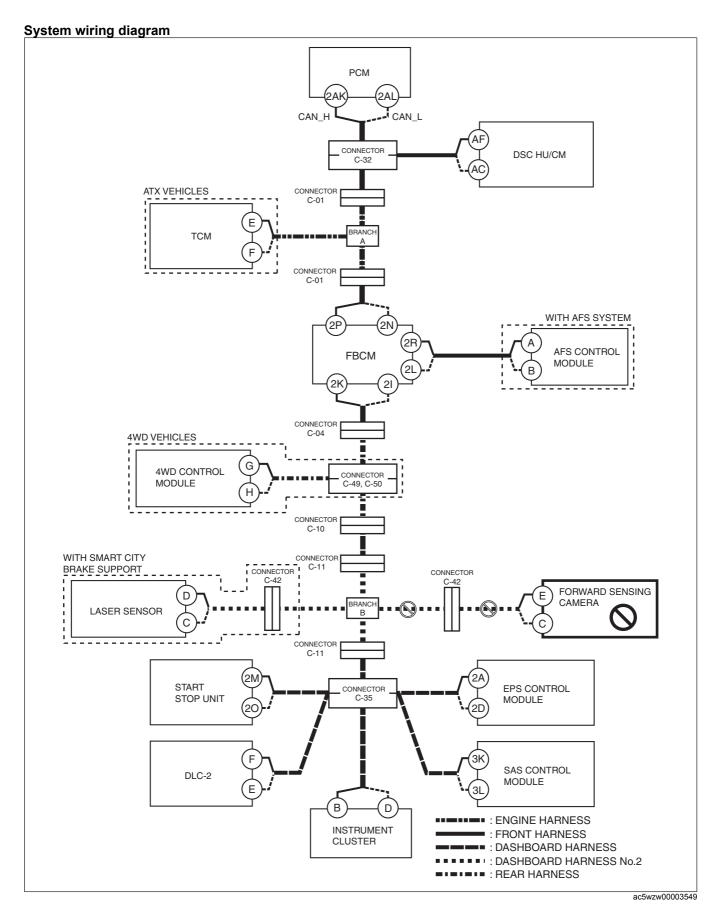


- laser sensor connector
- Connector C-42

- Wiring harness between laser sensor terminal D and connector C-42
- Wiring harness between laser sensor terminal C and connector C-42
- Wiring harness between connector C-42 and branch B
- Laser sensor

L

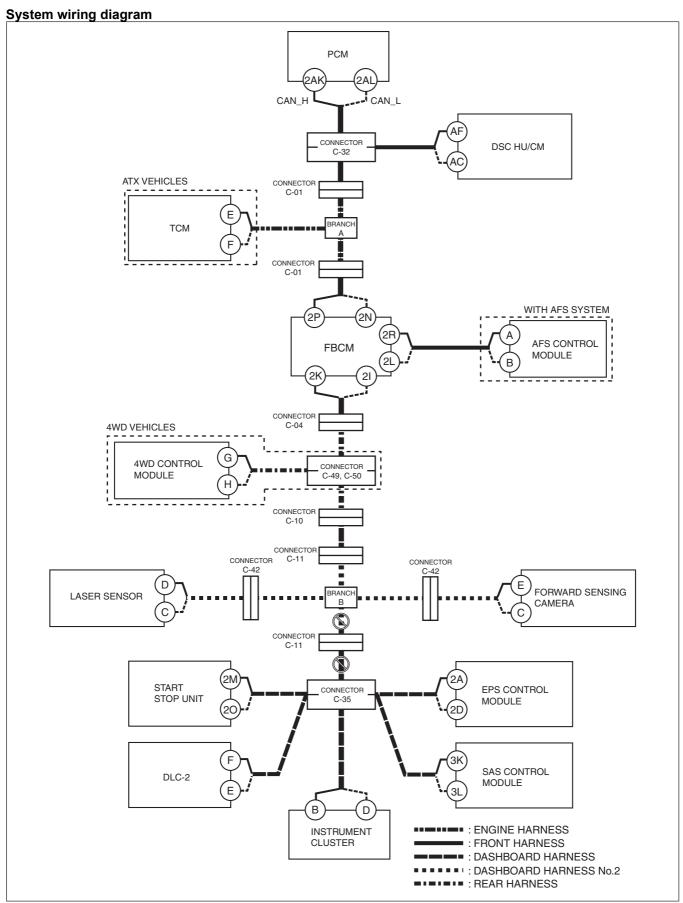
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between forward sensing camera and connector C-42
- Open circuit in wiring harness between connector C-42 and branch B
- Connector C-42 malfunction
- · Forward sensing camera malfunction



- Forward sensing camera connector
- Connector C-42

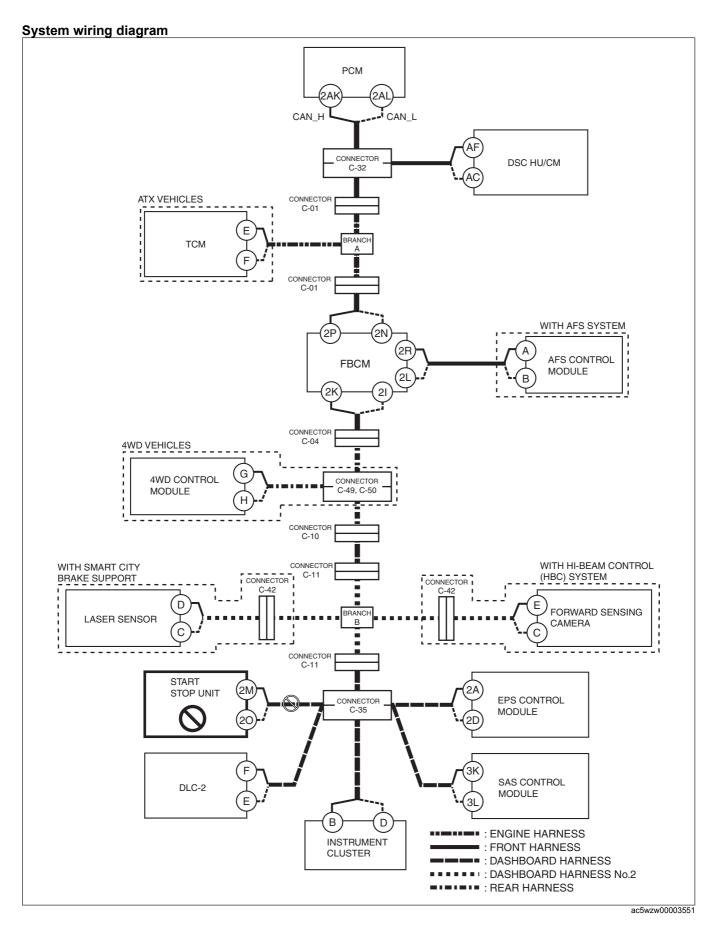
- Wiring harness between forward sensing camera terminal E and connector C-42
- Wiring harness between forward sensing camera terminal C and connector C-42
- Wiring harness between connector C-42 and branch B
- Forward sensing camera

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch B and connector C-11
- Open circuit in wiring harness between connectors C-11 and C-35
- Connector C-11 malfunctionConnector C-35 malfunction



- Connector C-11
- Connector C-35
- Wiring harness between branch B and connector C-11
- Wiring harness between connectors C-11 and C-35

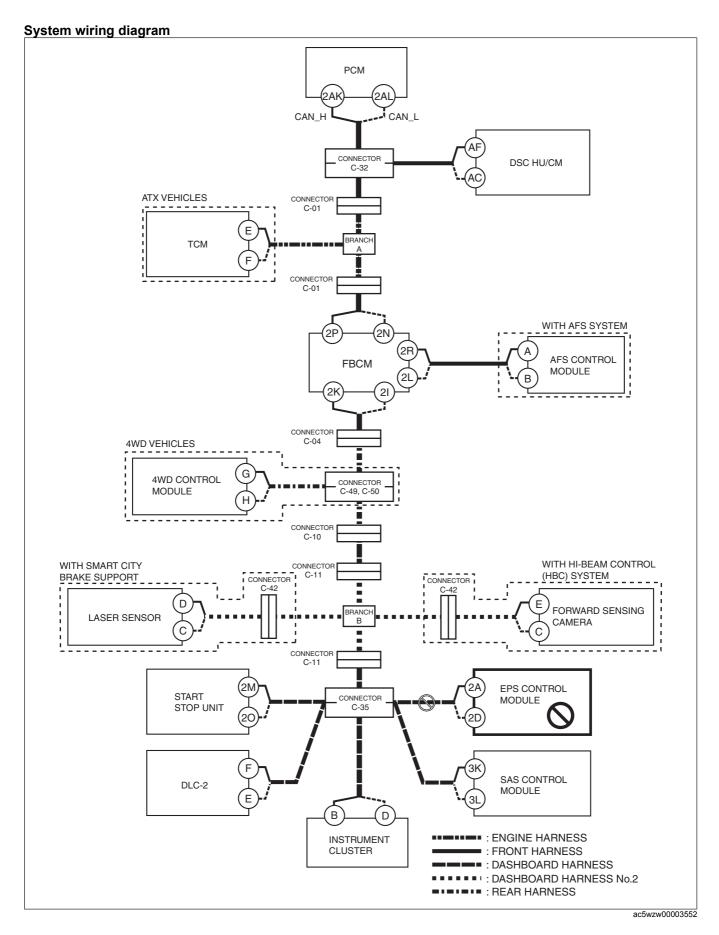
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between start stop unit and connector C-35
 Connector C-35 malfunction
- Start stop unit malfunction



Start stop unit connector

- · Connector C-35
- Wiring harness between start stop unit terminal 2M and connector C-35
- Wiring harness between start stop unit terminal 2O and connector C-35
- Start stop unit

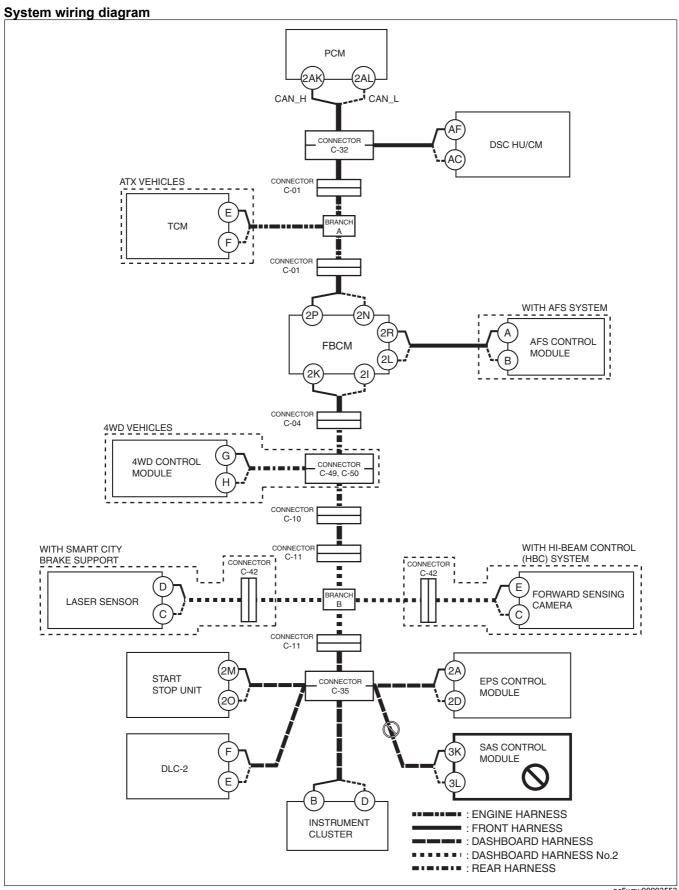
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between EPS control module and connector C-35
 Connector C-35 malfunction
- EPS control module malfunction



• EPS control module connector

- · Connector C-35
- Wiring harness between EPS control module terminal 2A and connector C-35
 Wiring harness between EPS control module terminal 2D and connector C-35
- EPS control module

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between SAS control module and connector C-35
- Connector C-35 malfunction
- · SAS control module malfunction

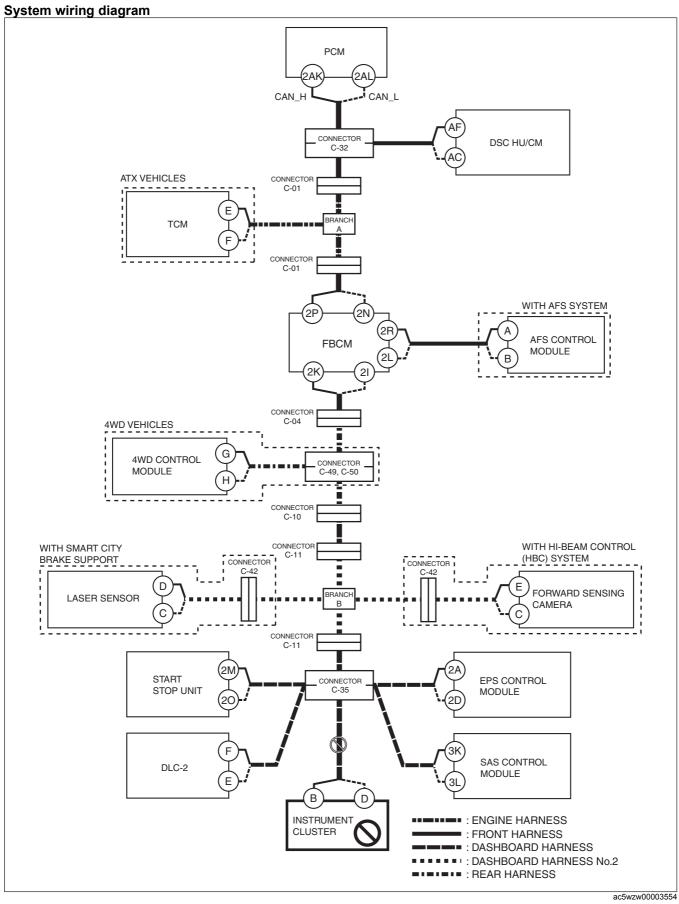


Warning

- Handling the component parts of the SRS air bag system improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components of the SRS air bag system. (See AIR BAG SYSTEM SERVICE WARNINGS.)
 (See AIR BAG SYSTEM SERVICE CAUTIONS.)
- SAS control module connector
- Connector C-35
- Wiring harness between SAS control module terminal 3K and connector C-35
- Wiring harness between SAS control module terminal 3L and connector C-35
- SAS control module

Q

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between instrument cluster and connector C-35
- Connector C-35 malfunction
- Instrument cluster malfunction



- Connector C-35
- Wiring harness between instrument cluster terminal B and connector C-35
 Wiring harness between instrument cluster terminal D and connector C-35
 Instrument cluster