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

id100209000400

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 (R.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.

Note

- 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 (R.H.D.)], and verify that the repairs have been completed.

DTC output pattern and malfunctioning location

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

M-MDS display		DTC output pattern and malfunctioning location																	
DTC output module	DTC																		
PCM (PCM)	U0101:00				×														
	U0121:00		×																
	U0131:00																	×	
	U0140:00							×											
	U0151:00														×				
	U0155:00																		×
	U0214:00																×		
	U0235:00											×							
ABS (DSC HU/ CM)	U0100:00	×																	
	U0101:00				×														
	U0114:00									×									
	U0131:00																×*7	×*6	
	U0154:00														×				
	U0155:00																		×
	U0235:00											×							
TCM*1 (TCM)	U0100:00	×		×															
	U0121:00		×	×															
	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		×	×		×													
	U0151:00														×				
	U0155:00																		×
	U0214:00																×		
	U0515:00														×				

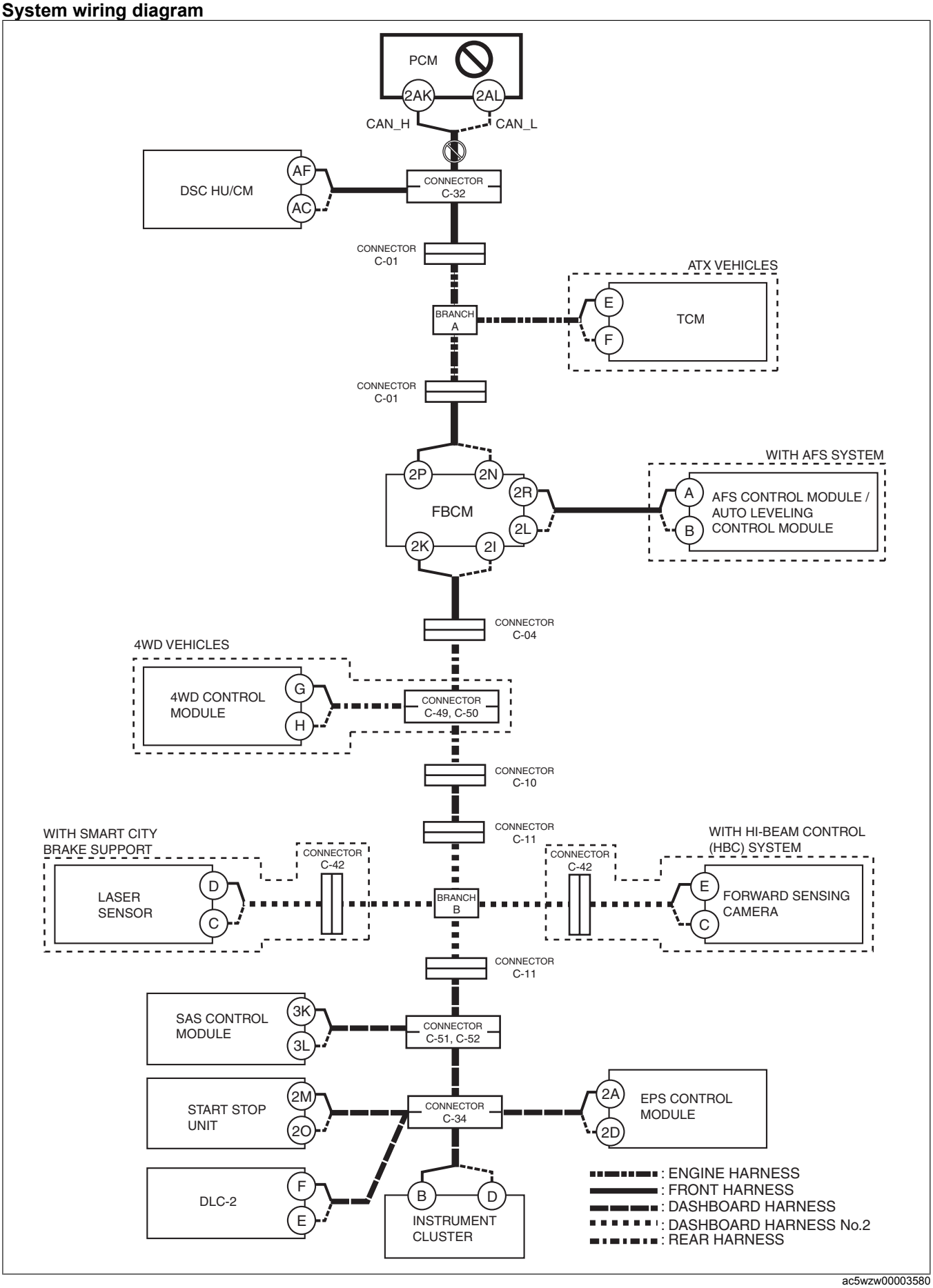
M-MDS display		DTC output pattern and malfunctioning location																	
DTC output module	**DTC**																		
4X4*3 (4WD control module)	U0100:00	×		×		×			×										
	U0101:00				×	×			×										
	U0121:00		×	×		×			×										
SCBS*4 (Laser sensor)	U0100:00	×		×		×			×		×								
	U0121:00		×	×		×			×		×								
	U0131:00																	×	
	U0155:00																		×
FSC*5 (Forward sensing camera)	U0100:00	×		×		×			×		×								
	U0121:00		×	×		×			×		×								
	U0131:00																	×	
	U0140:00							×	×		×								
	U0155:00																		×
	U0214:00																×		
RCM (SAS control module)	U0155:00																		×
SSU (Start stop unit)	U0100:00	×		×		×			×		×			×		×			
	U0101:00				×	×			×		×			×		×			
	U0121:00		×	×		×			×		×			×		×			
	U0121:87		×	×		×			×		×			×		×			
	U0131:00																	×	
	U0140:00							×	×		×			×		×			
	U0146:00																		×
	U0151:00														×	×			
	U0155:00																		×
EPS (EPS control module)	U0100:00	×		×		×			×		×			×		×			
	U0121:00		×	×		×			×		×			×		×			
	U0155:00																		×
IC (Instrument cluster)	U0100:00	×		×		×			×		×			×		×			
	U0101:00				×	×			×		×			×		×			
	U0114:00									×	×			×		×			
	U0121:00		×	×		×			×		×			×		×			
	U0131:00																	×	
	U0140:00							×	×		×			×		×			
	U0151:00														×	×			
	U0182:00						×		×		×			×		×			
	U0214:00																×		
	U0235:00											×		×		×			
	U023A:00												×	×		×			
M-MDS display module		[Fail] display pattern																	
PCM		×		×		×			×		×			×		×			
ABS			×	×		×			×		×			×		×			
TCM*1					×	×			×		×			×		×			
AFS*2							×		×		×			×		×			
F_BCM								×	×		×			×		×			
4X4*3										×	×			×		×			
SCBS*4												×		×		×			
FSC*5													×	×		×			
RCM															×	×			
SSU																	×		
EPS																		×	
IC																			×
Possible cause and inspection item		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R

*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

A
Possible cause
- 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

System wiring diagram



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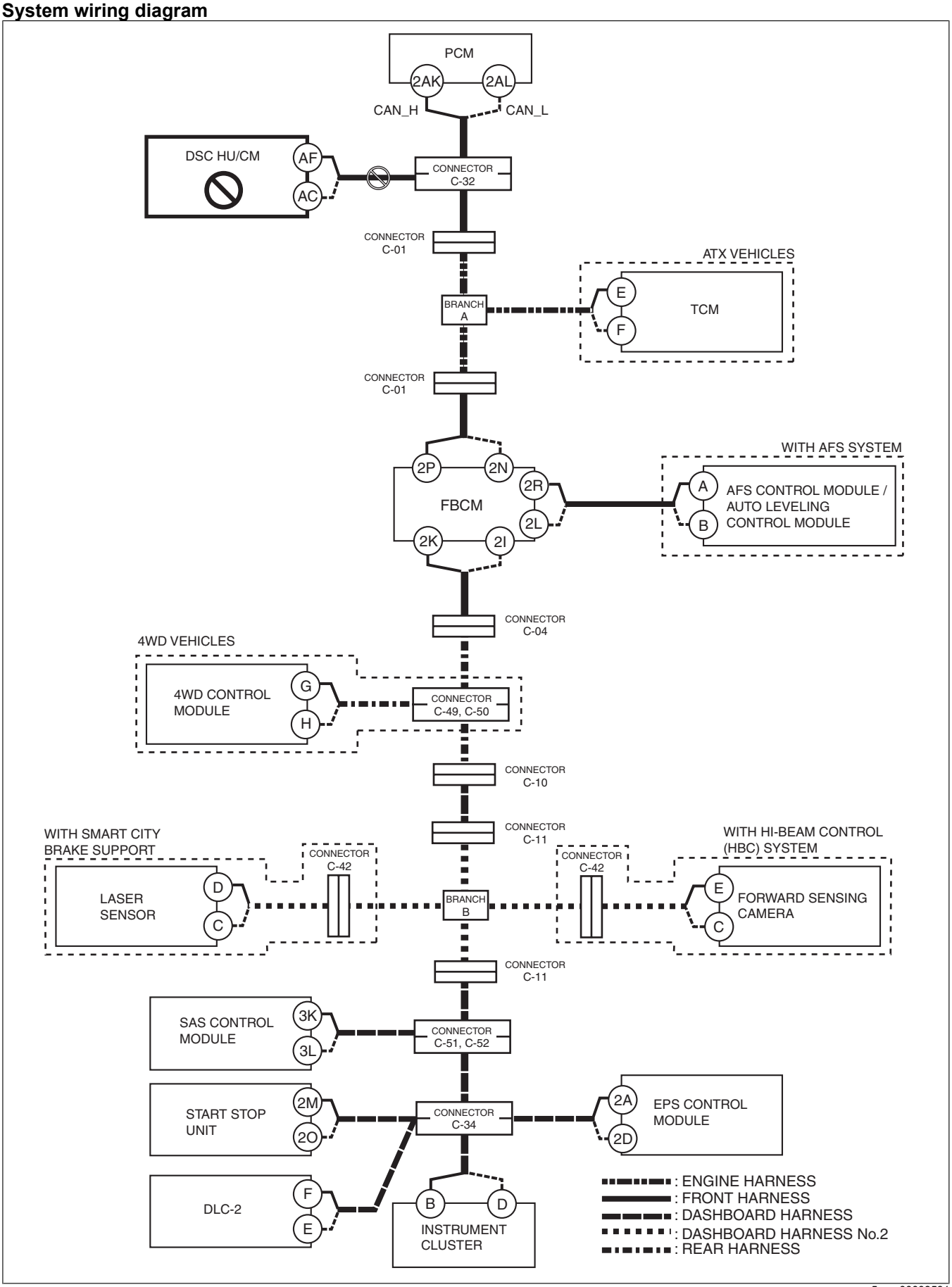
Inspection item
- PCM connector
- Connector C-32
- Wiring harness between PCM terminal 2AK and connector C-32
- Wiring harness between PCM terminal 2AL and connector C-32
- PCM

B
Possible cause
- 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

System wiring diagram



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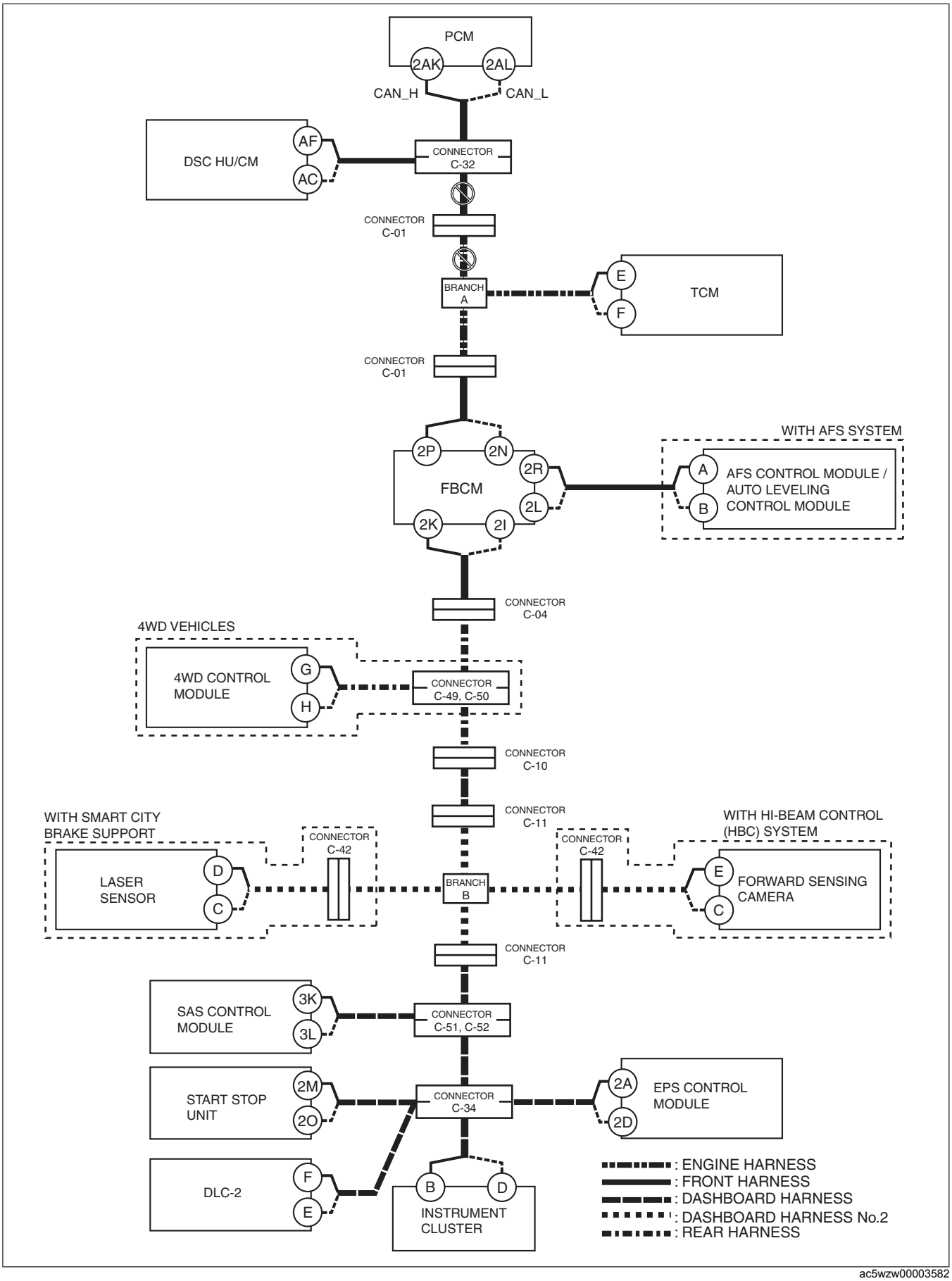
Inspection item
- DSC HU/CM connector
- Connector C-32
- Wiring harness between DSC HU/CM terminal AF and connector C-32
- Wiring harness between DSC HU/CM terminal AC and connector C-32
- DSC HU/CM

C
ATX vehicles
Possible cause
- 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



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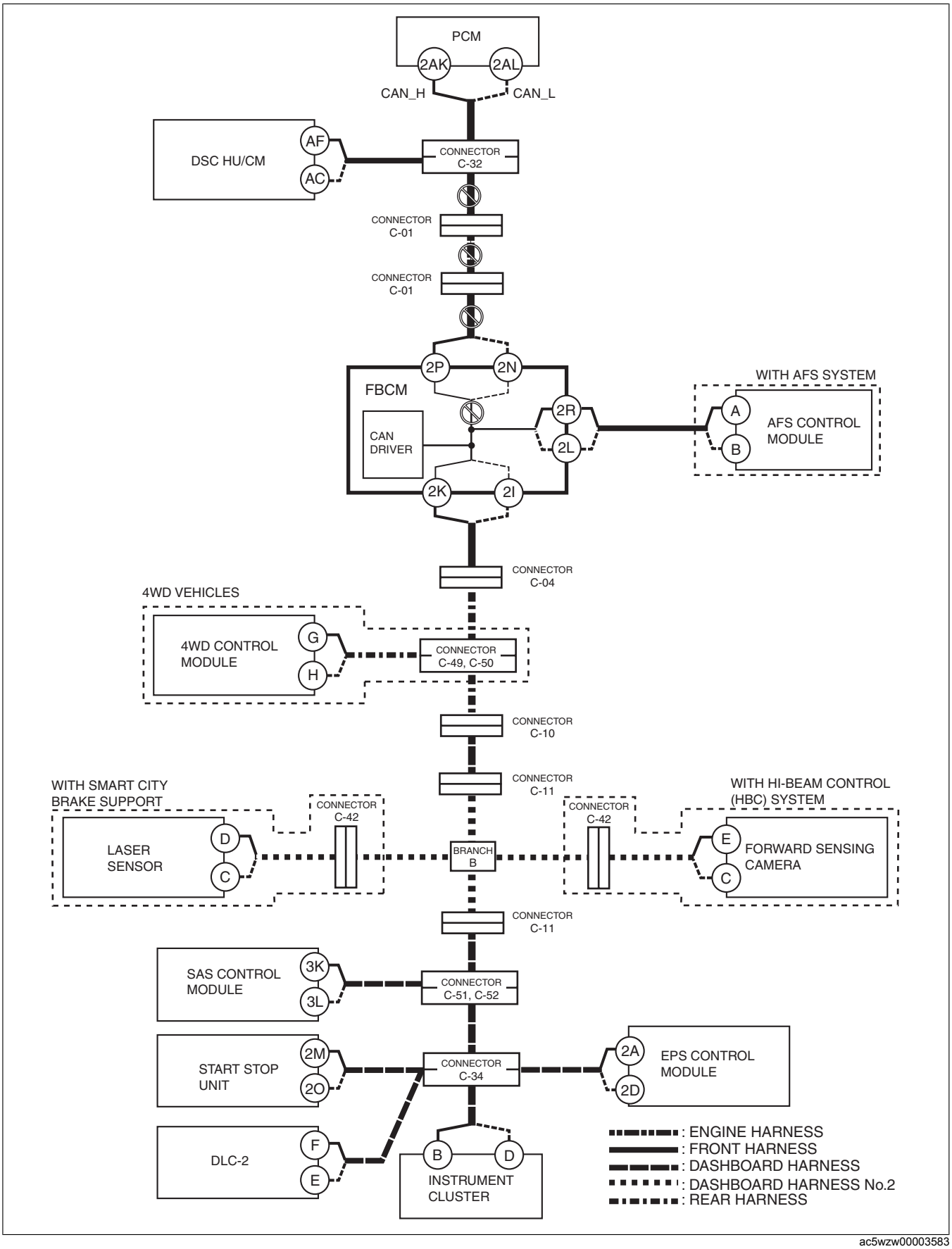
Inspection item

- Connector C-32

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

MTX vehicles
Possible cause
- 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



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Inspection item

- Front body control module (FBCM) connector
- Connector C-32

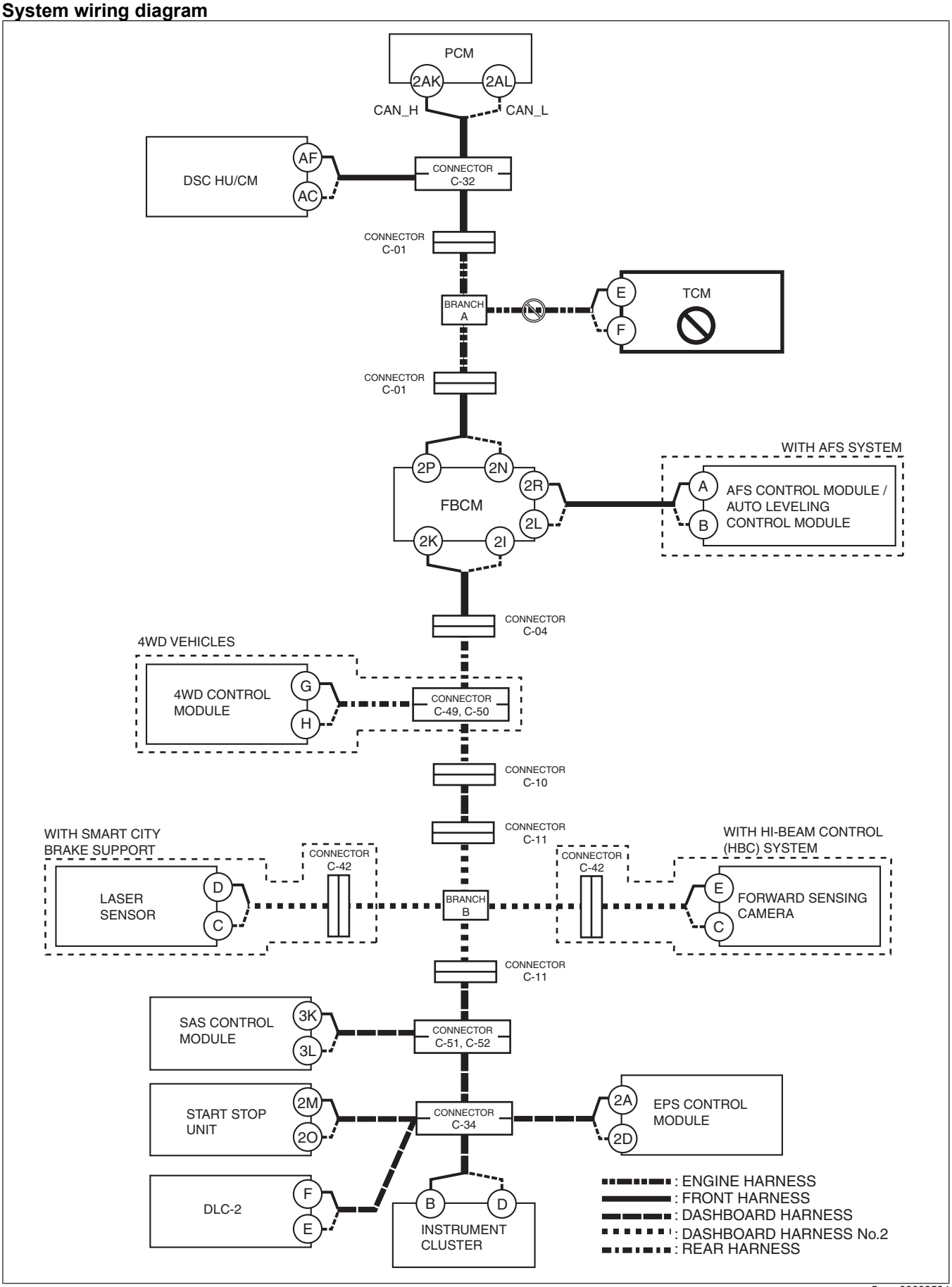
- Connector C-01
- Wiring harness between connectors C-32 and C-01
- Wiring harness between connectors C-01 and C-01
- Wiring harness between front body control module (FBCM) terminal 2P and connector C-01
- Wiring harness between front body control module (FBCM) terminal 2N and connector C-01
- Front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

Possible cause

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

System wiring diagram



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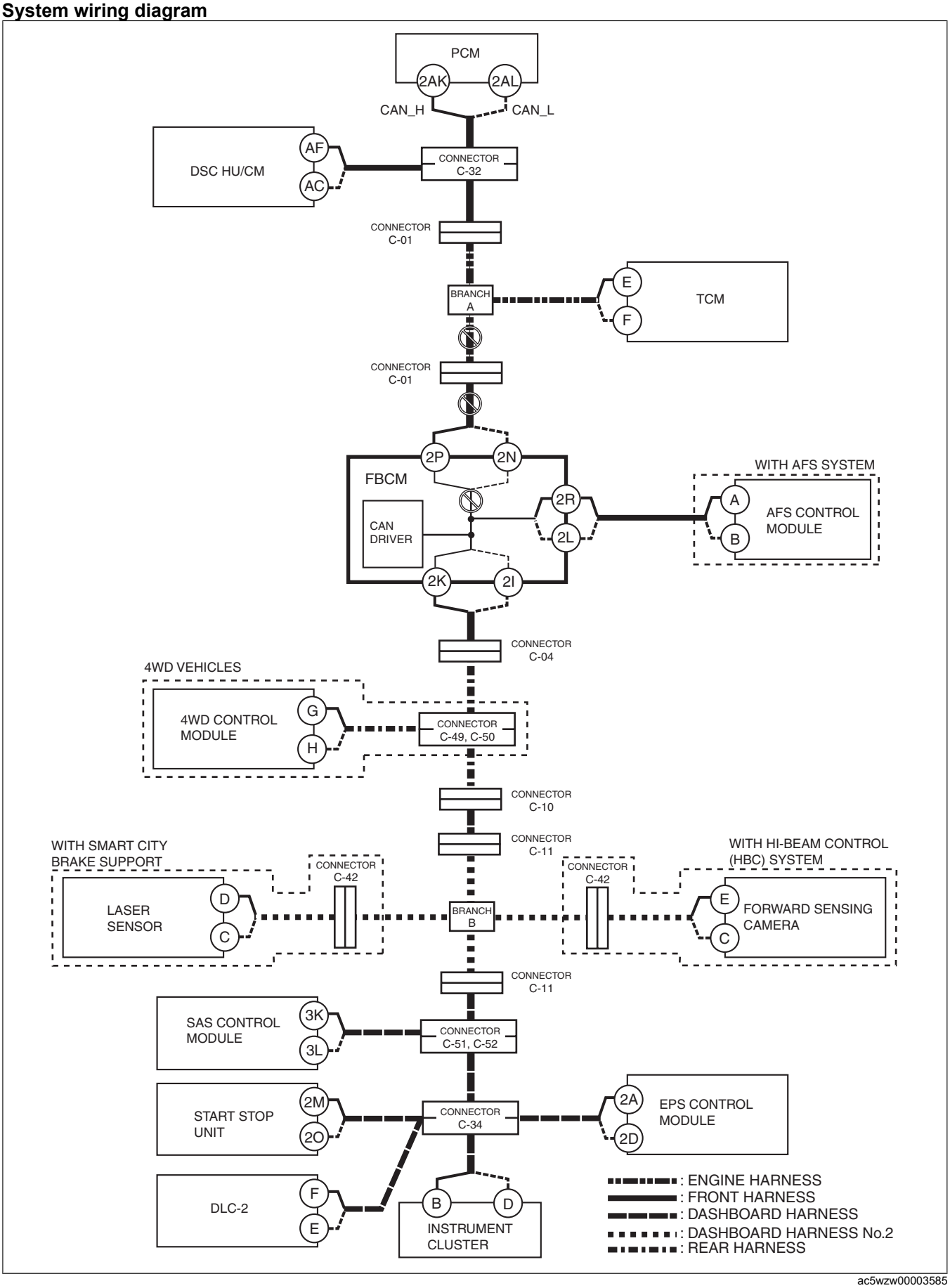
Inspection item
- TCM connector
- Wiring harness between TCM terminal E and branch A
- Wiring harness between TCM terminal F and branch A
- TCM

E
Possible cause
- 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

System wiring diagram



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Inspection item

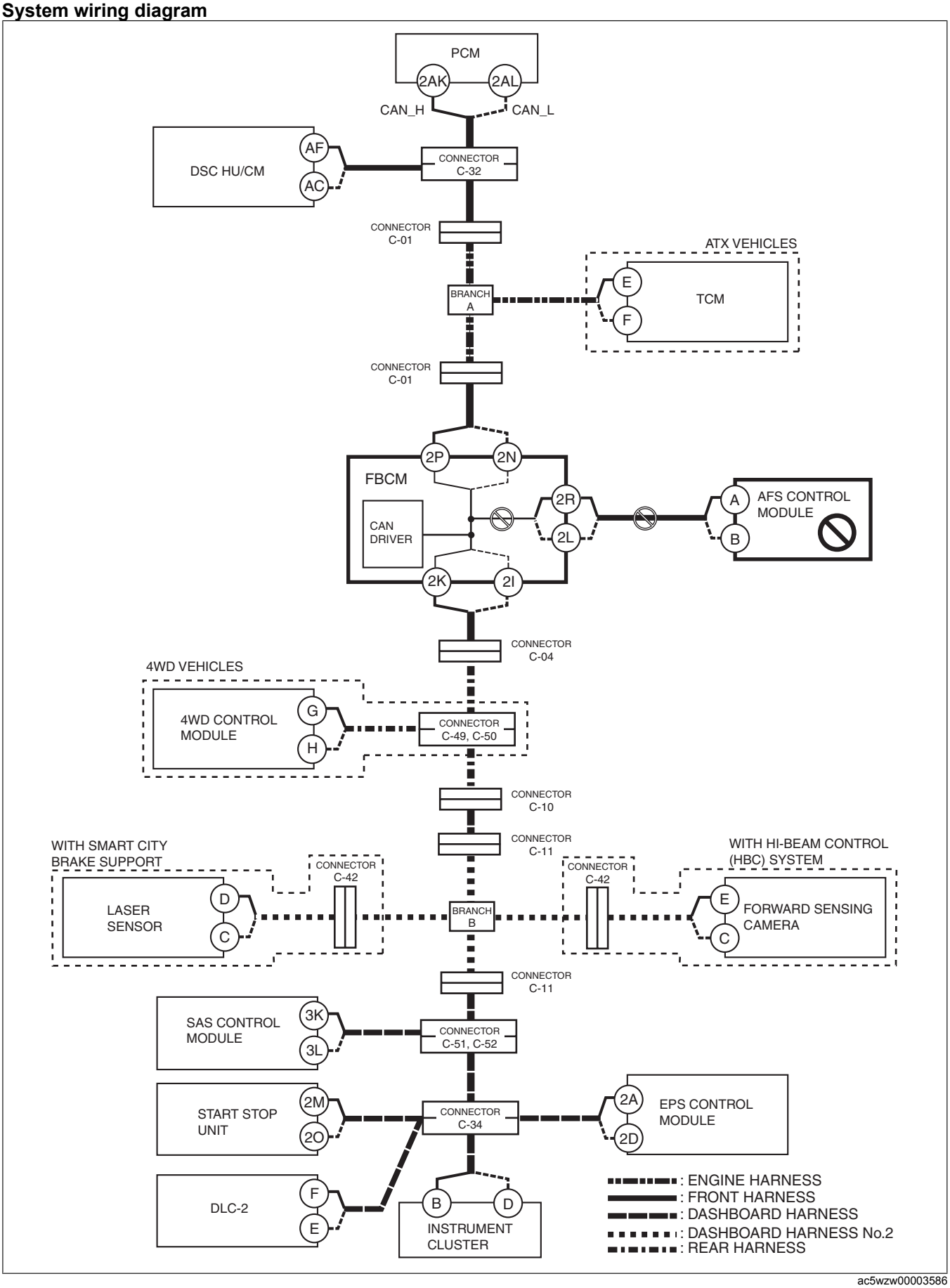
- Front body control module (FBCM) connector
- Connector C-01
- Wiring harness between branch A and connector C-01
- Wiring harness between front body control module (FBCM) terminal 2P and connector C-01
- Wiring harness between front body control module (FBCM) terminal 2N and connector C-01
- Front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

Possible cause

- 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

System wiring diagram



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Inspection item

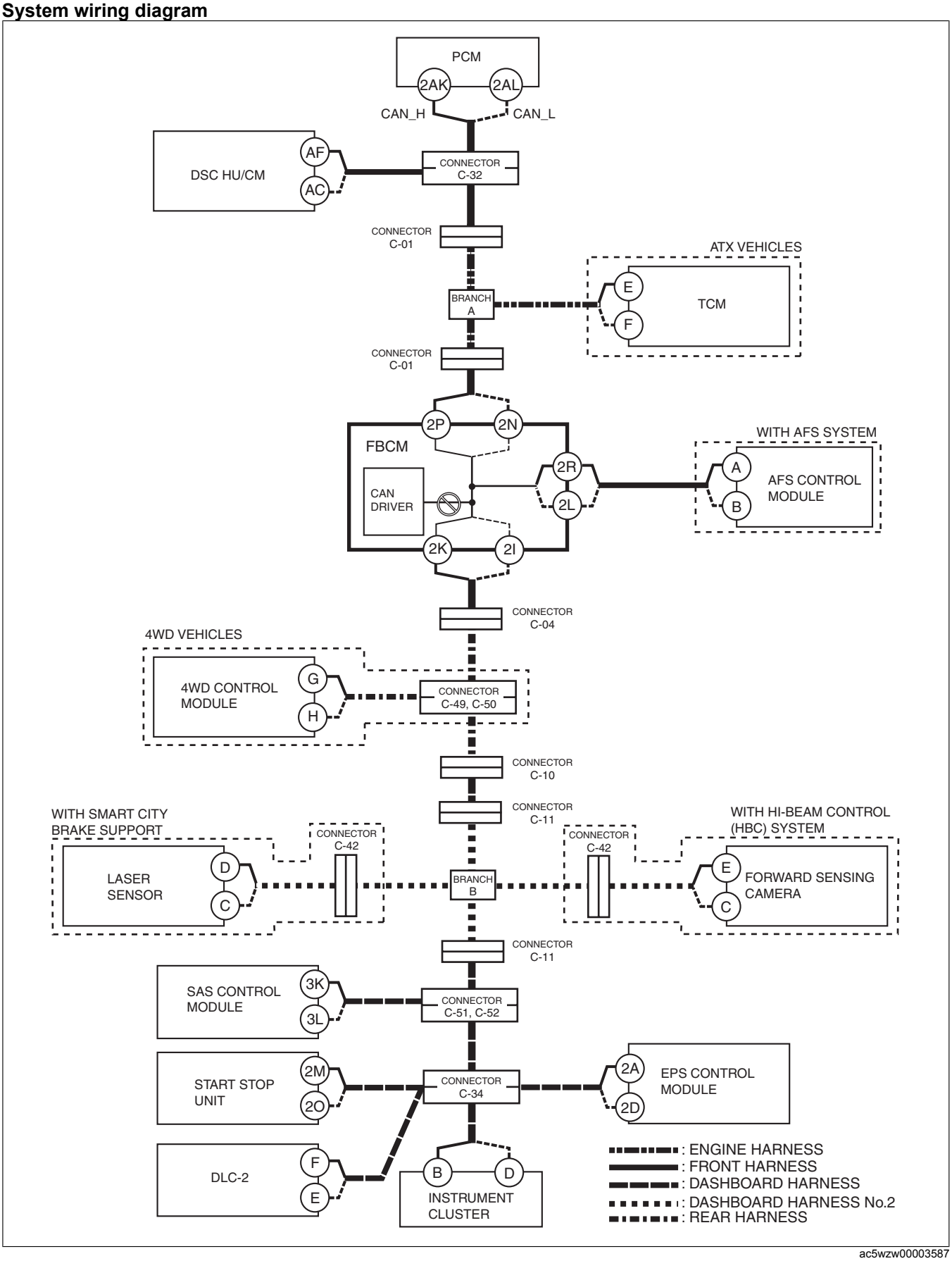
- Front body control module (FBCM) connector
- AFS control module connector
- Wiring harness between front body control module (FBCM) terminal 2R and AFS control module terminal A
- Wiring harness between front body control module (FBCM) terminal 2L and AFS control module terminal B
- Front body control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

G

Possible cause

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

System wiring diagram



ac5wzw00003587

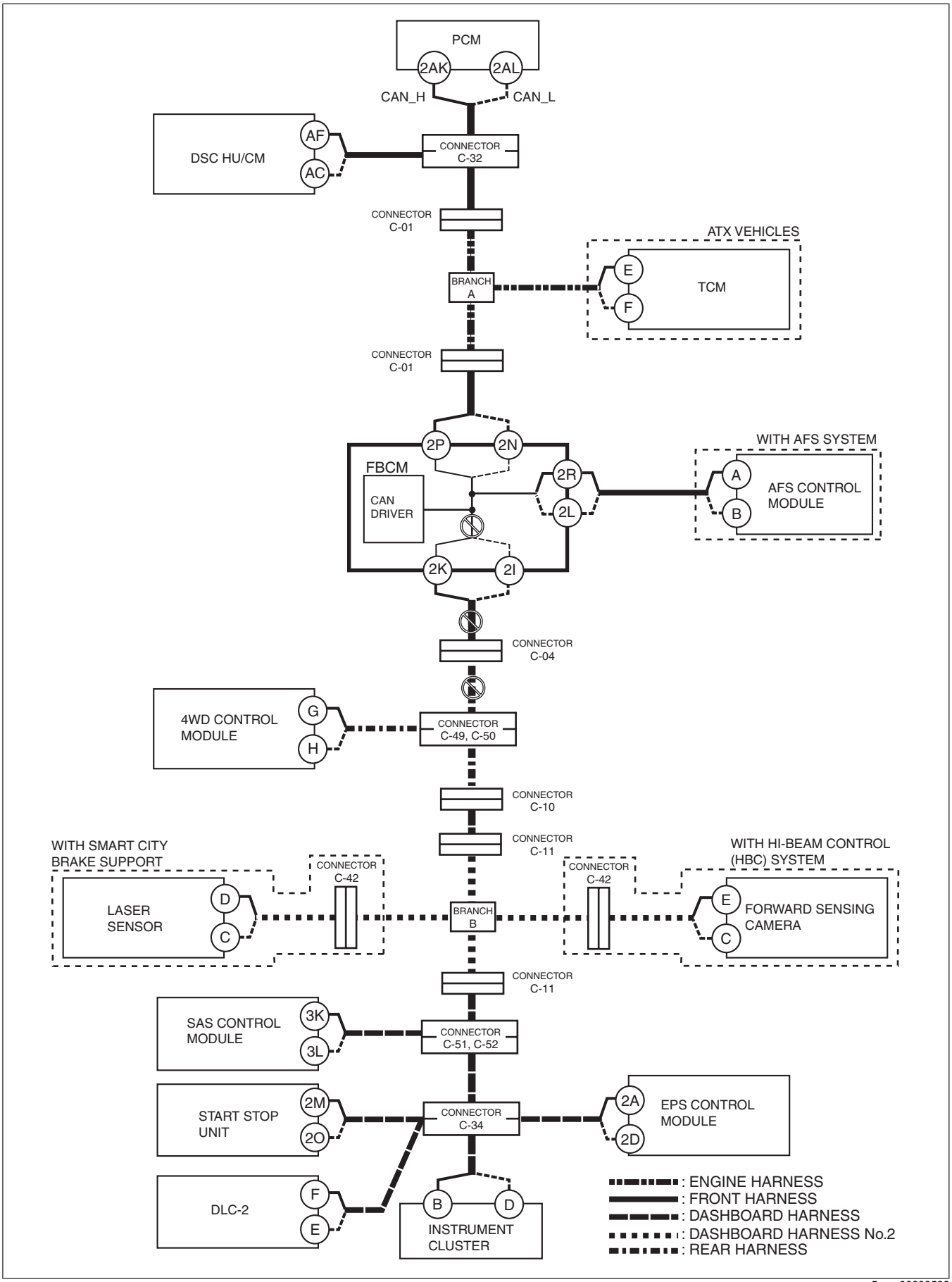
Inspection item

- Front body control module (FBCM)

H
With 4WD
Possible cause

- 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



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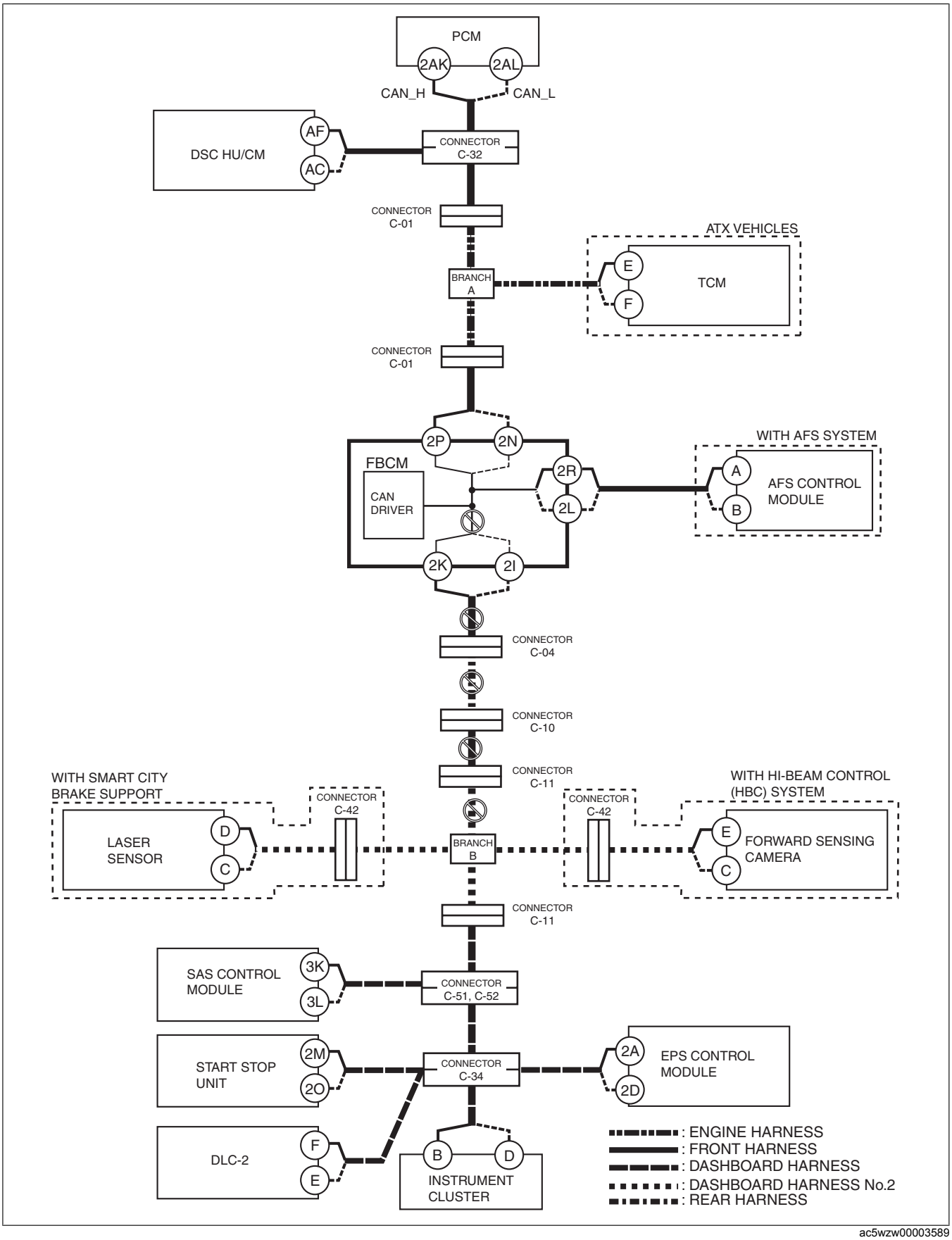
Inspection item

- 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
Possible cause

- 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



ac5wzw00003589

Inspection item

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

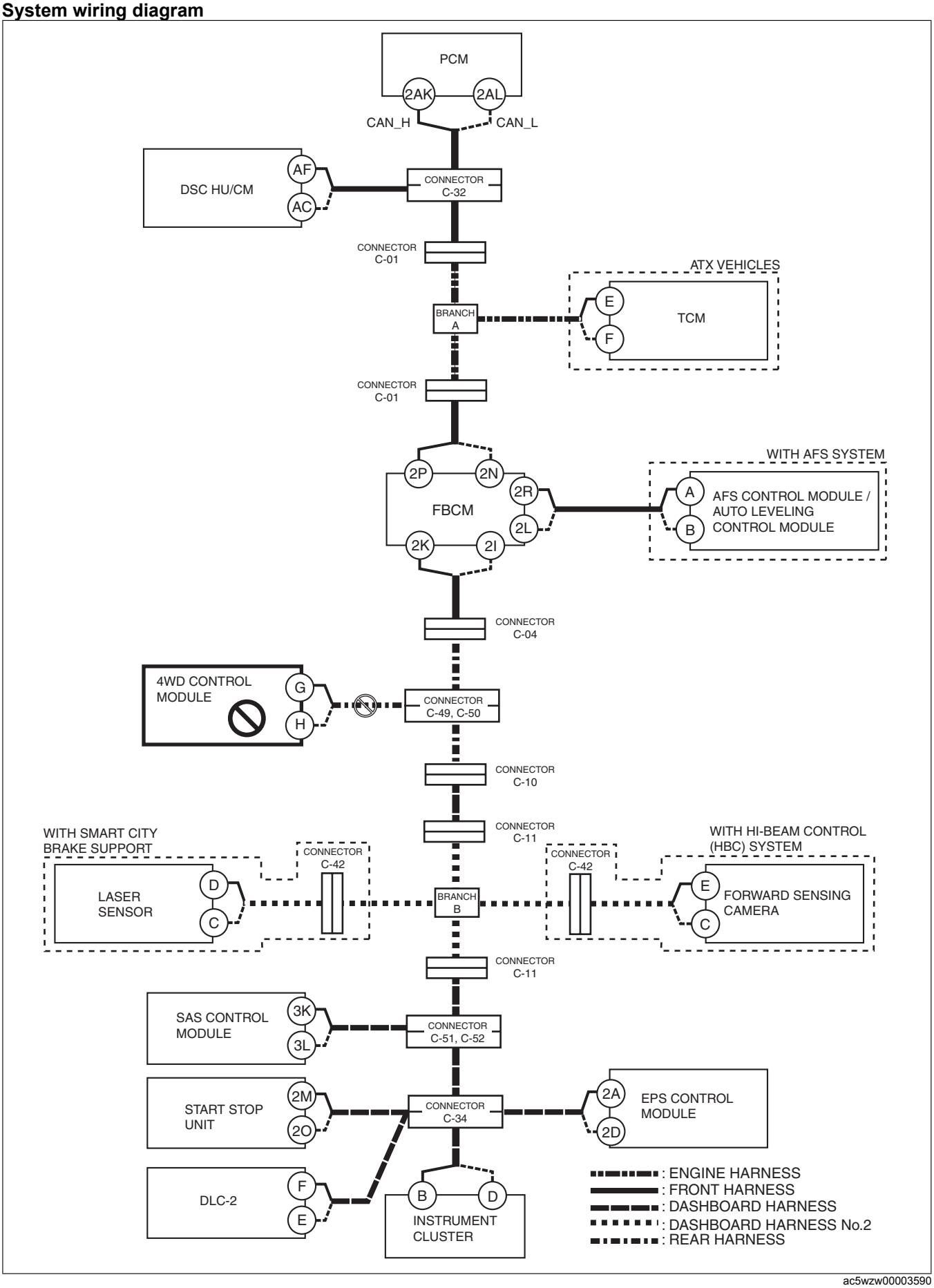
- Connector C-11
- Wiring harness between front body control module (FBCM) terminal 2K and connector C-04
- Wiring harness between front body control module (FBCM) terminal 2I and connector C-04
- Wiring harness between connectors C-04 and C-10
- Wiring harness between connectors C-10 and C-11
- Front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

I

Possible cause

- 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

System wiring diagram



ac5wzw00003590

Inspection item

- 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

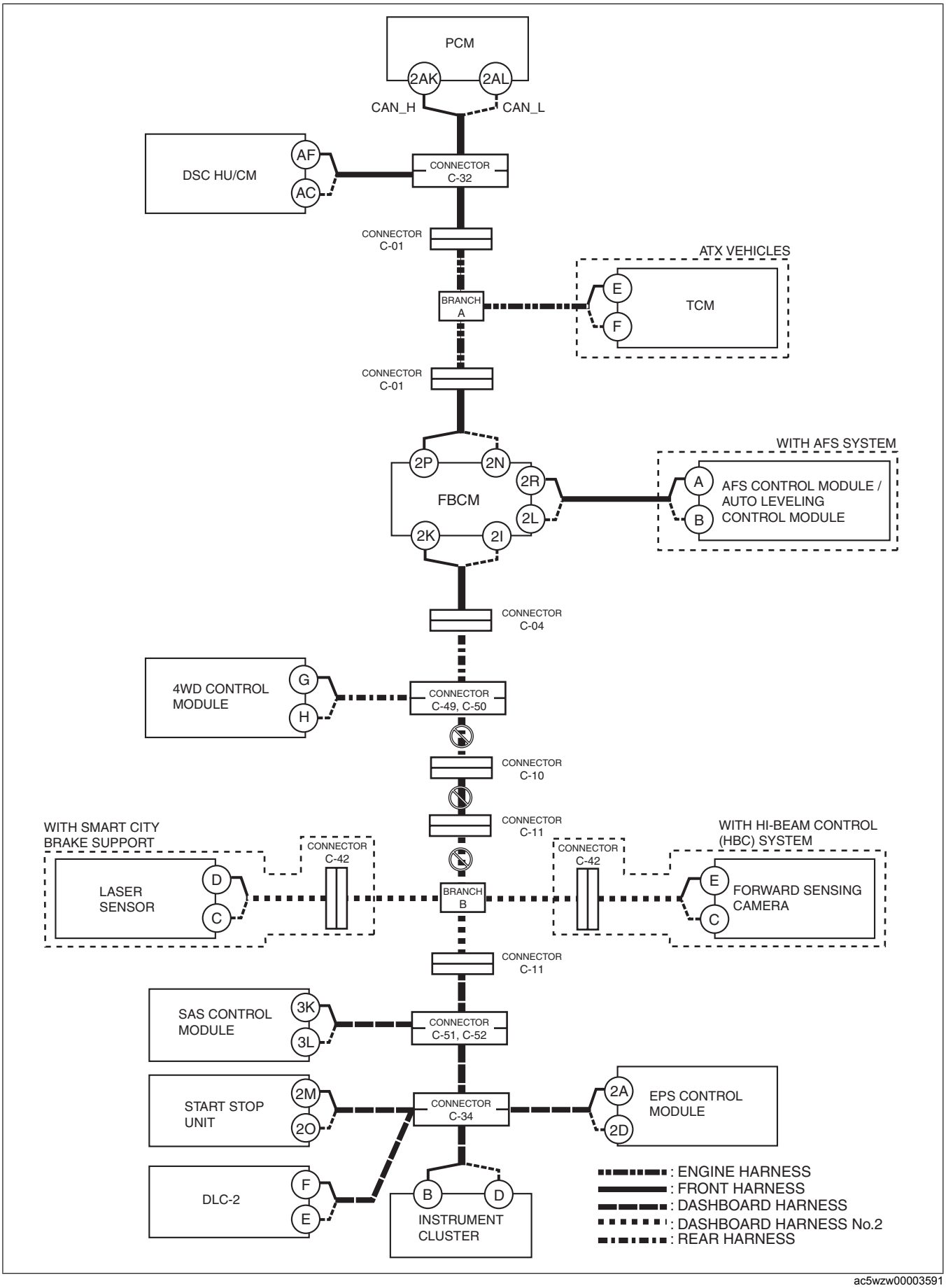
J

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

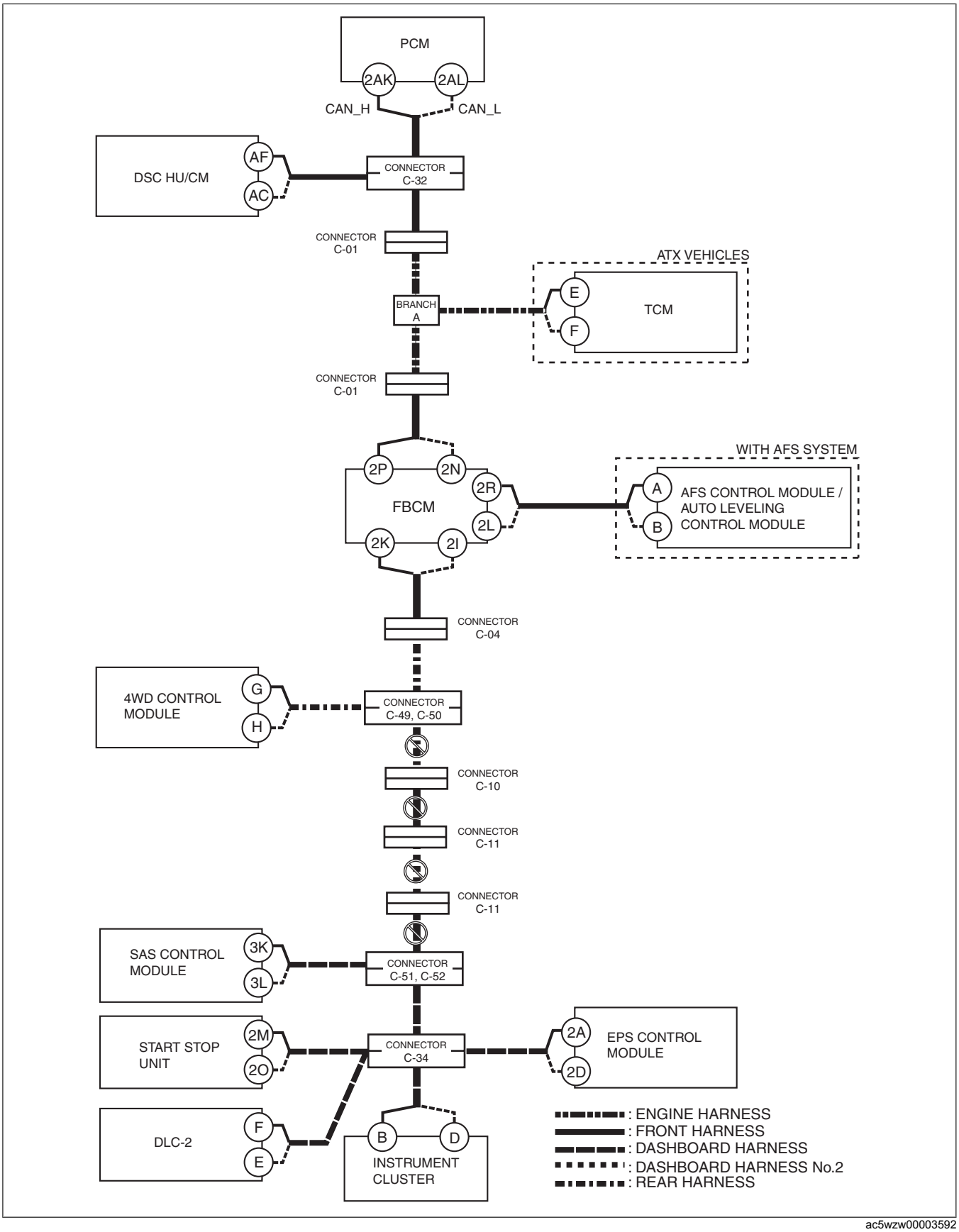


ac5wzw00003591

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-51, C-52
- Connector C-49, C-50 malfunction
- Connector C-10 malfunction
- Connector C-11 malfunction
- Connector C-51, C-52 malfunction

System wiring diagram



ac5wzw00003592

Inspection item

- Connector C-49, C-50
- Connector C-10
- Connector C-11
- Connector C-51, C-52

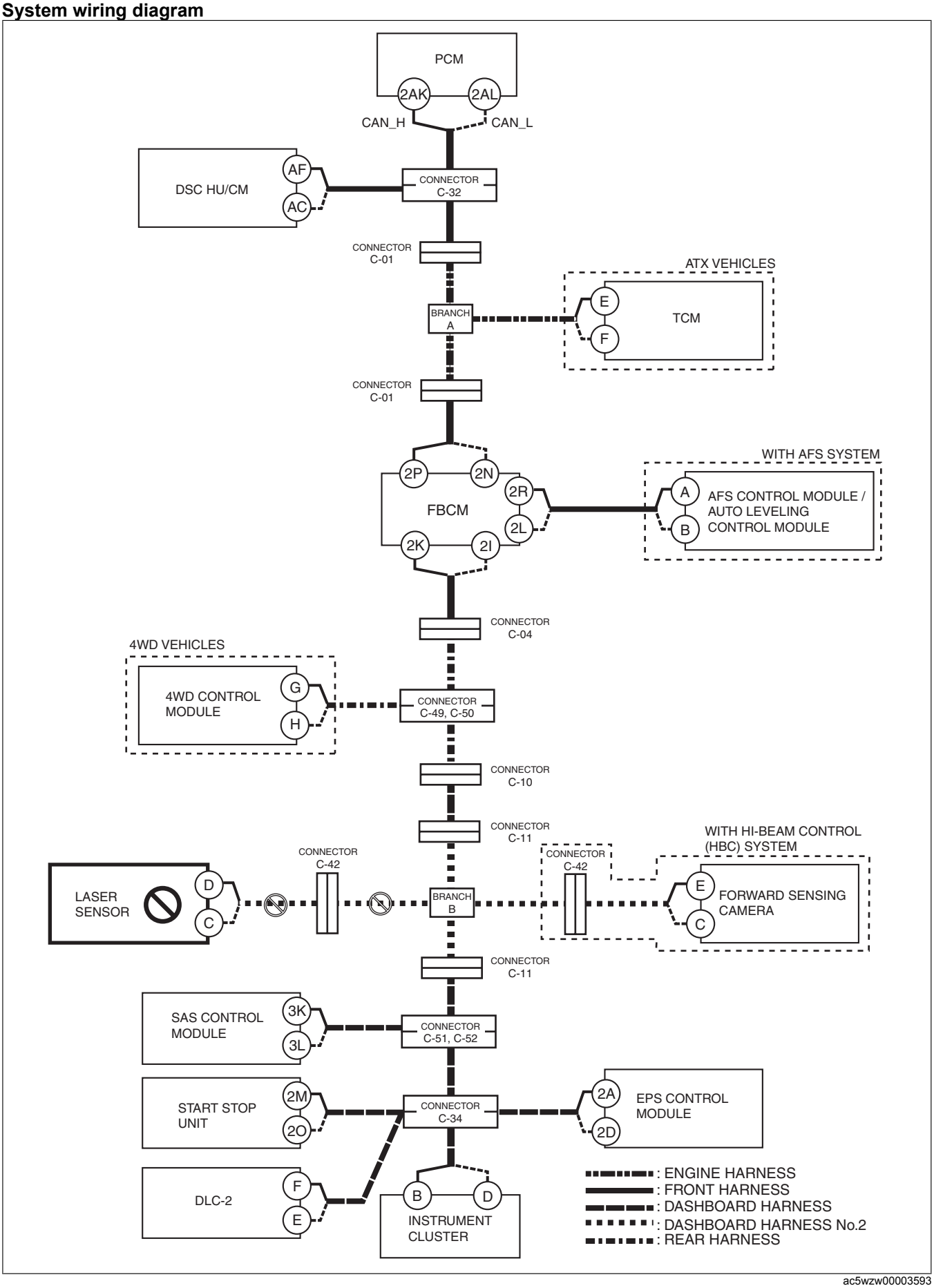
- Wiring harness between connector C-49, C-50 and connector C-10
- Wiring harness between connector C-10 and connector C-11
- Wiring harness between connector C-11 and connector C-11
- Wiring harness between connector C-11 and connector C-51, C-52

K

Possible cause

- 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

System wiring diagram

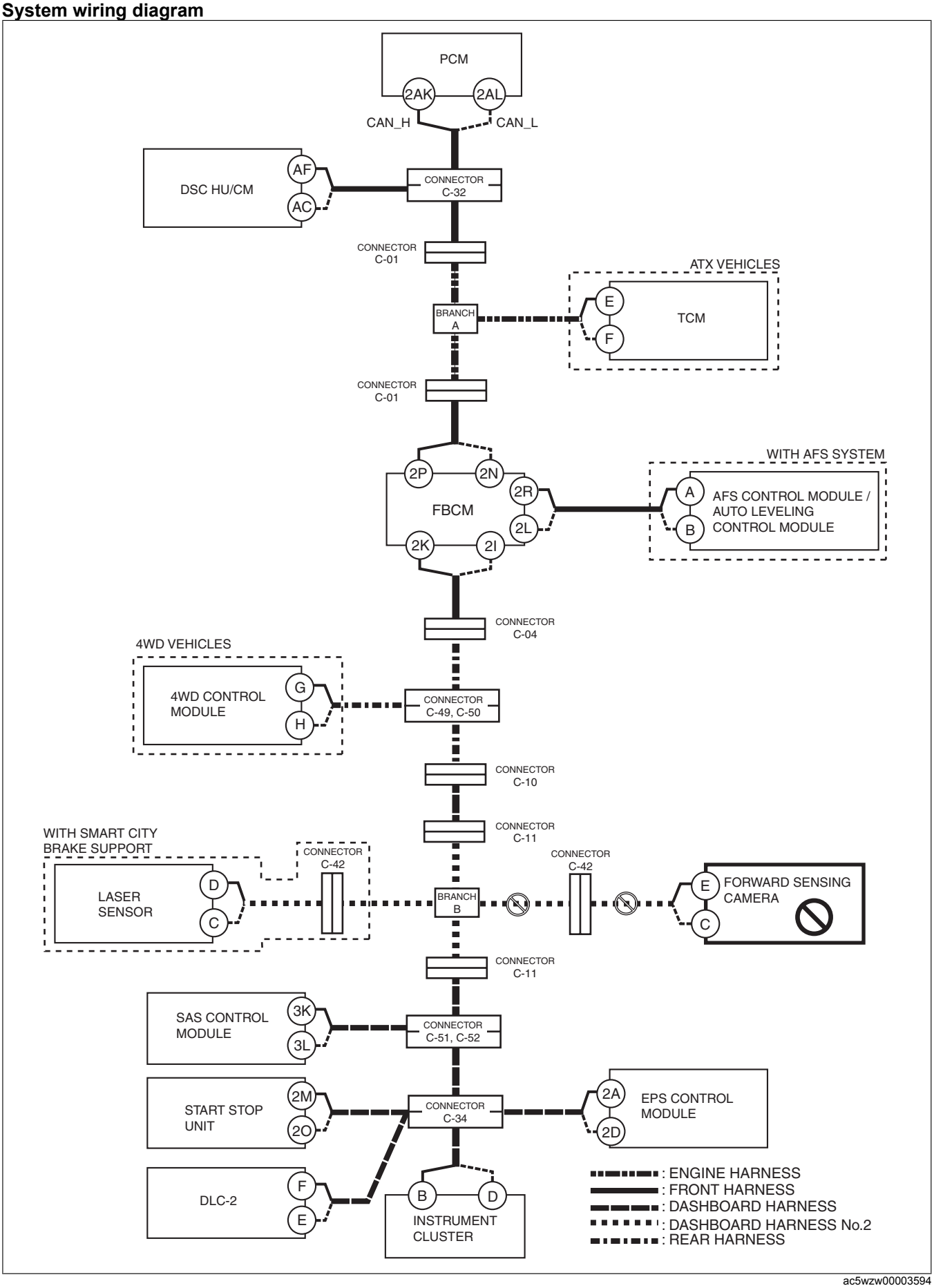


ac5wzw00003593

Inspection item
- 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
Possible cause
- 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

System wiring diagram



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Inspection item

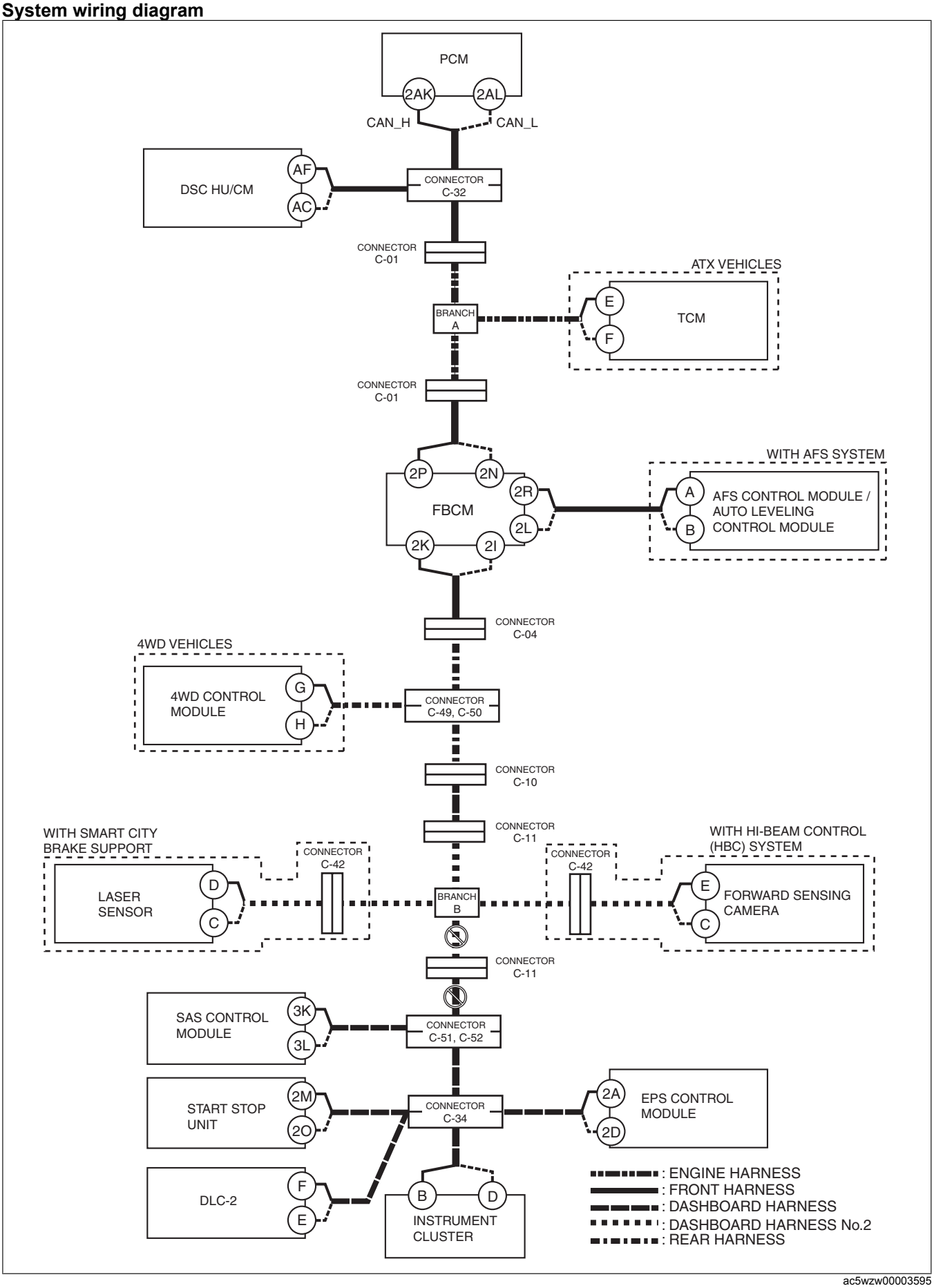
- Forward sensing camera connector
- Connector C-42
- Wiring harness between forward sensing camera terminal E and connector C-42
- Wiring harness between forward sensing camera terminal C and connector C-42
- Wiring harness between connector C-42 and branch B
- Forward sensing camera

M

Possible cause

- 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-51, C-52
- Connector C-11 malfunction
- Connector C-51, C-52 malfunction

System wiring diagram



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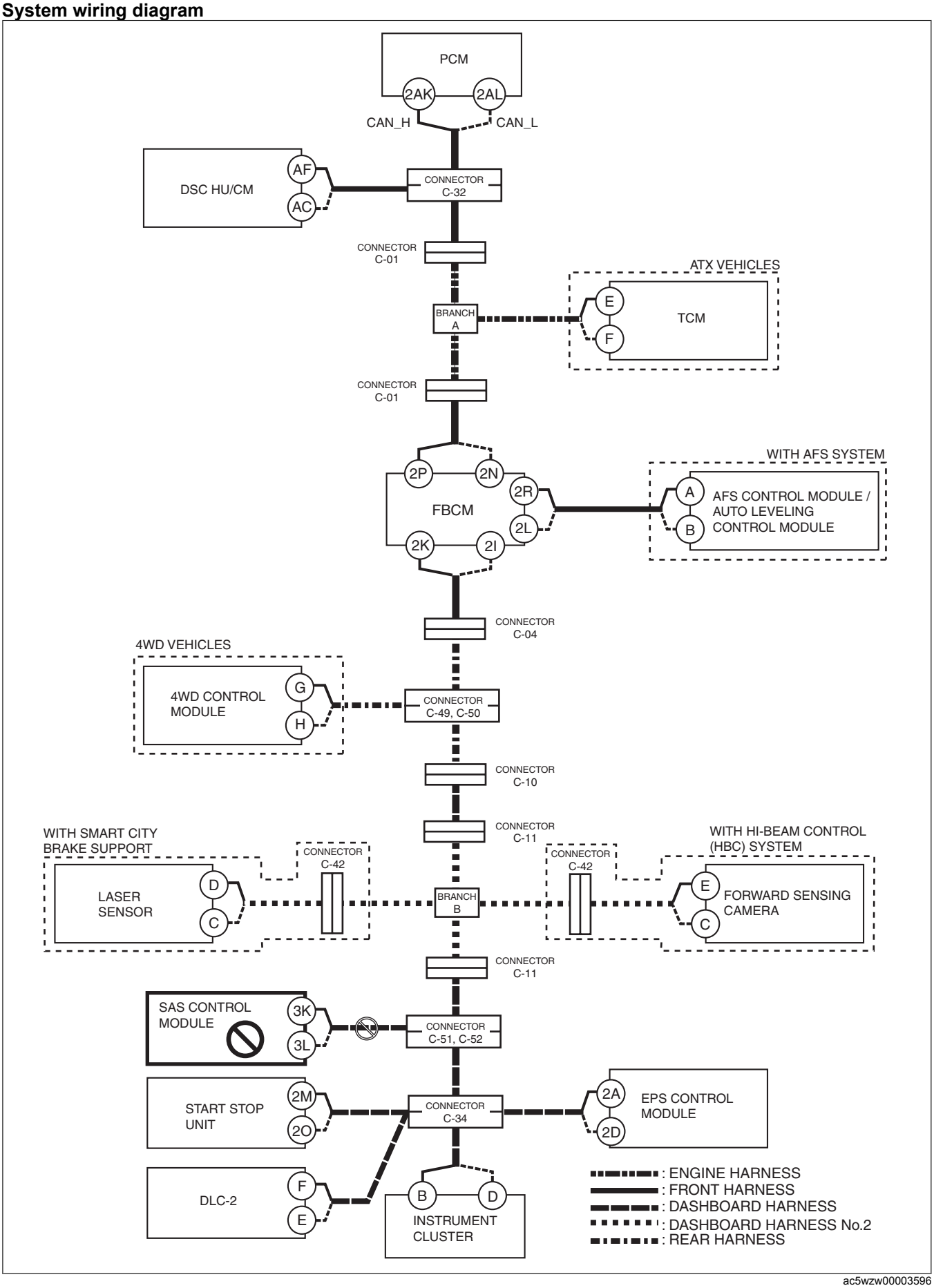
Inspection item
- Connectors C-11
- Connector C-51, C-52
- Wiring harness between branch B and connector C-11
- Wiring harness between connectors C-11 and C-51, C-52

N
Possible cause
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between SAS control module and connector C-51, C-52
- Connector C-51, C-52 malfunction
- SAS control module malfunction

System wiring diagram



ac5wzw00003596

Inspection item

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.)**

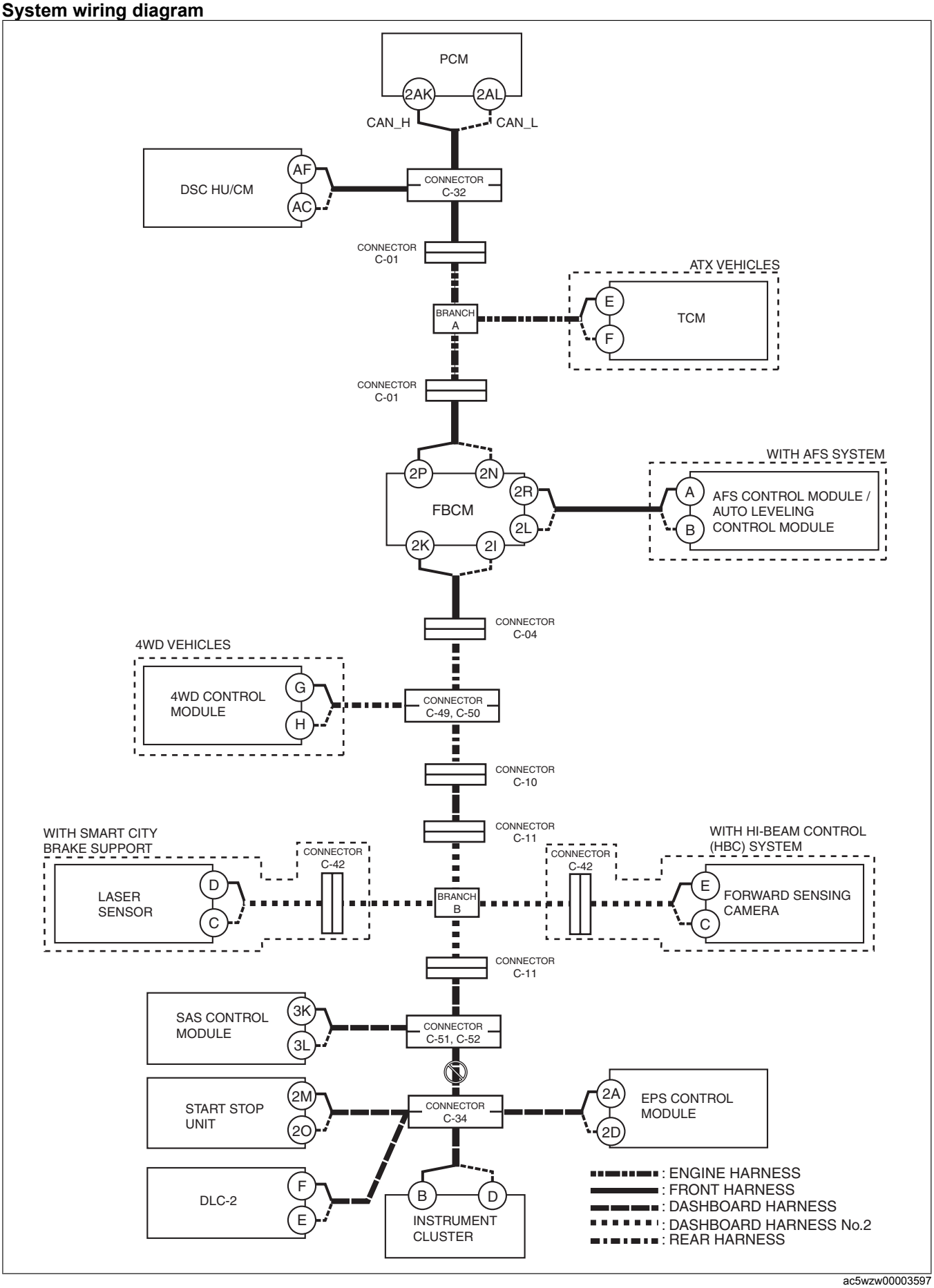
- SAS control module connector
- Connector C-51, C-52
- Wiring harness between SAS control module terminal 3K and connector C-51
- Wiring harness between SAS control module terminal 3L and connector C-52
- SAS control module

O

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-51, C-52 and C-34
- Connector C-51, C-52 malfunction
- Connector C-34 malfunction

System wiring diagram



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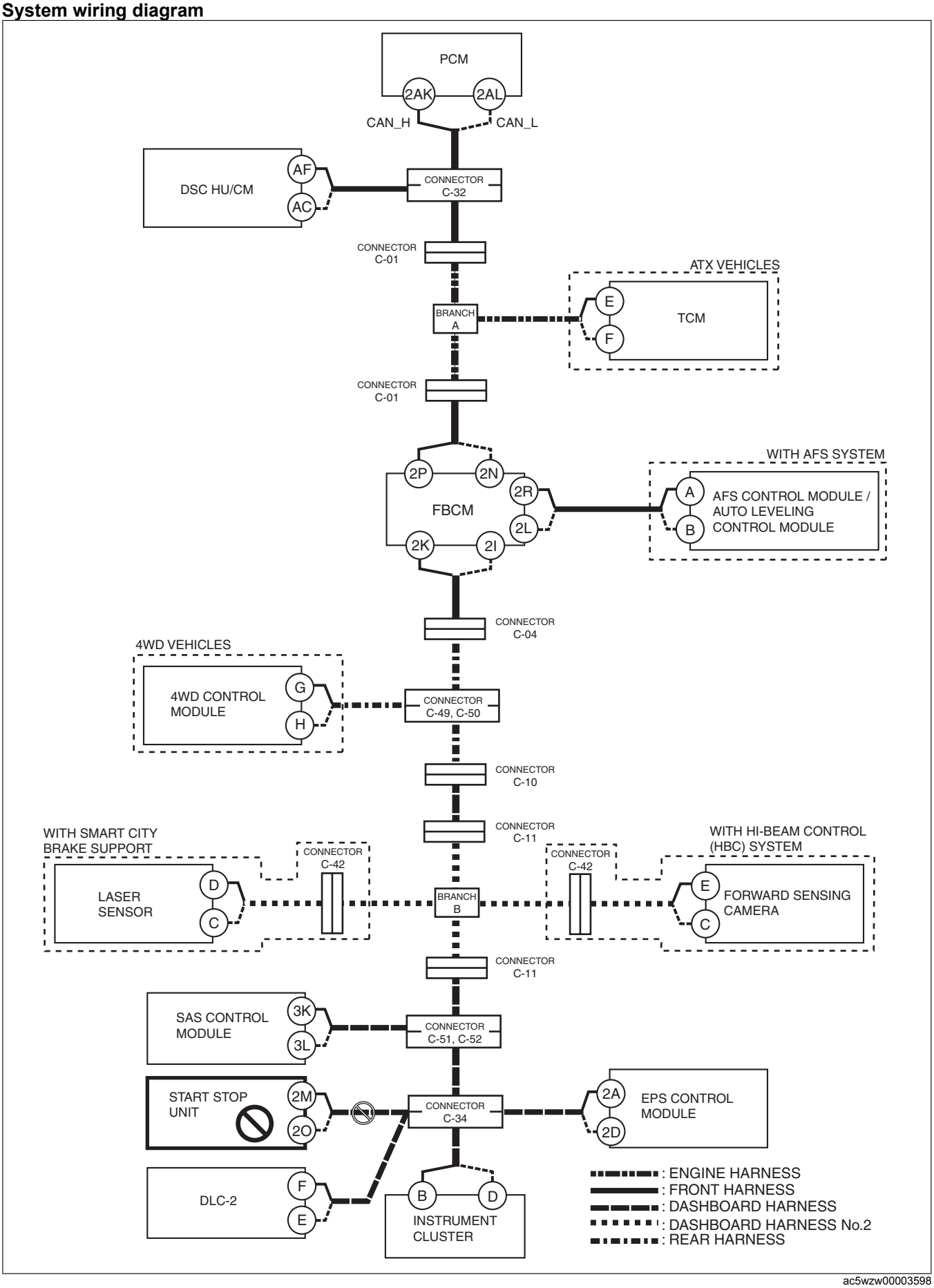
Inspection item
- Connector C-51, C-52
- Connector C-34
- Wiring harness between connector C-51, C-52 and C-34

P
Possible cause
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between start stop unit and connector C-34
- Connector C-34 malfunction
- Start stop unit malfunction

System wiring diagram

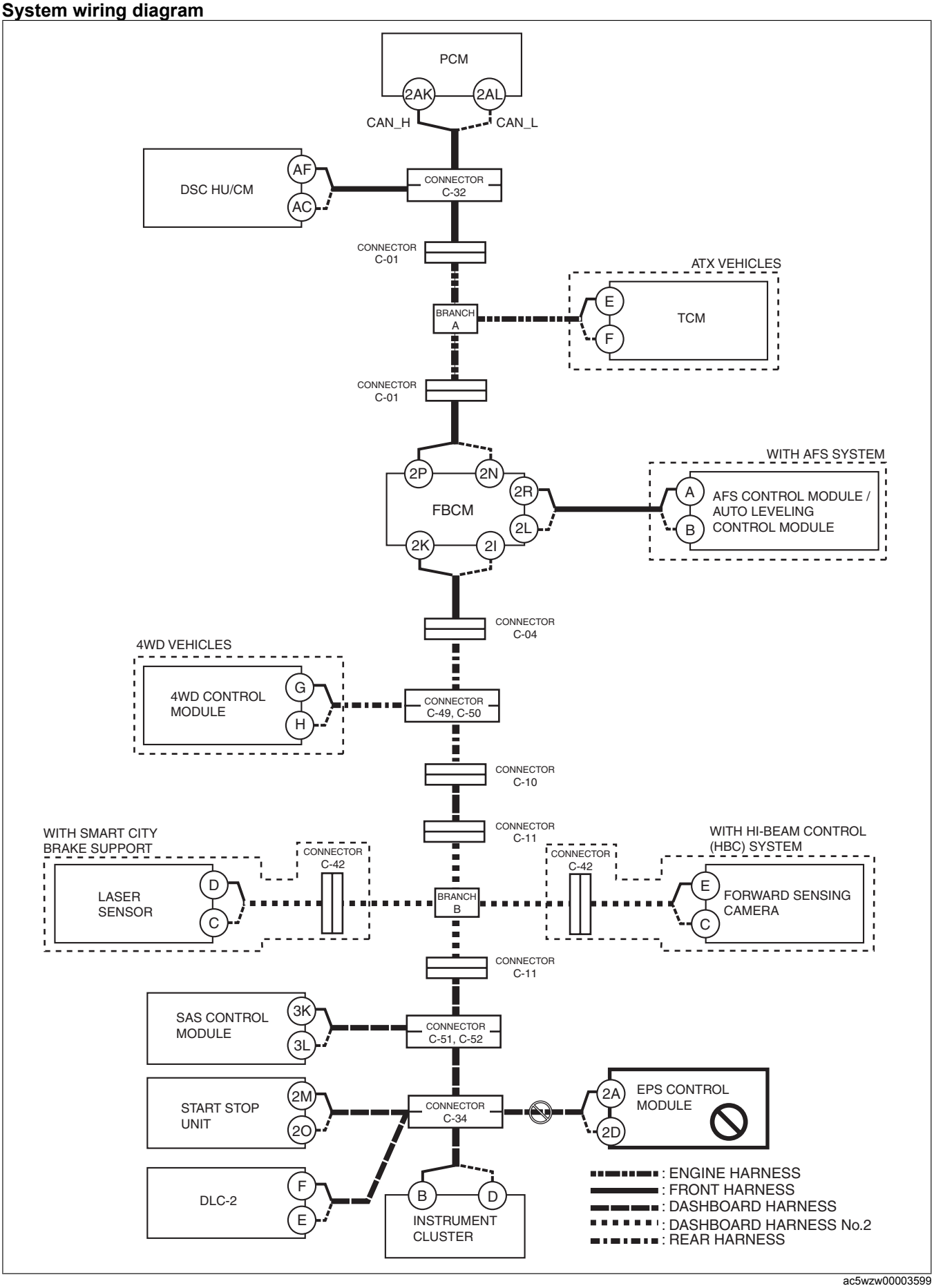


ac5wzw00003598

Inspection item
- Start stop unit connector
- Connector C-34
- Wiring harness between start stop unit terminal 2M and connector C-34
- Wiring harness between start stop unit terminal 2O and connector C-34
- Start stop unit

Q
Possible cause
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between EPS control module and connector C-34
- Connector C-34 malfunction
- EPS control module malfunction

System wiring diagram



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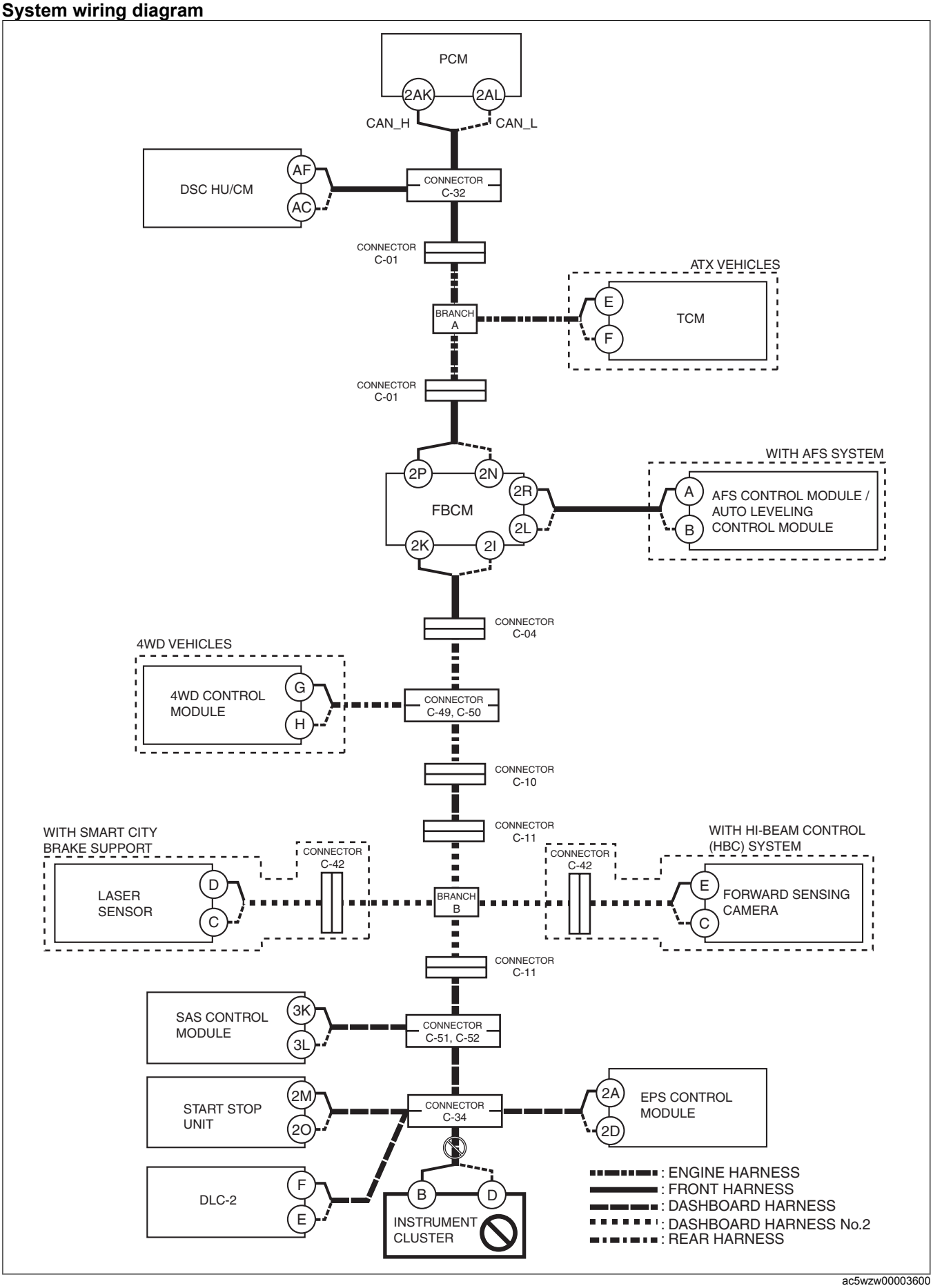
Inspection item
- EPS control module connector
- Connector C-34
- Wiring harness between EPS control module terminal 2A and connector C-34
- Wiring harness between EPS control module terminal 2D and connector C-34
- EPS control module

R
Possible cause
- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between instrument cluster and connector C-34
- Connector C-34 malfunction
- Instrument cluster malfunction

System wiring diagram



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Inspection item

- Instrument cluster connector
- Connector C-34
- Wiring harness between instrument cluster terminal B and connector C-34
- Wiring harness between instrument cluster terminal D and connector C-34
- Instrument cluster