Lane Keeping System

Diagnostic Trouble Code (DTC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

Diagnostic Trouble Code Chart

Module	DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*
CCM	C0072:00	Brake Temperature Too High: No Sub Type Information	GO to Pinpoint Test T
CCM	C1A67:08	Forward Looking Sensor: Bus Signal/Message Failure	GO to Pinpoint Test X
IPMA	U0405:64	Invalid Data Received From Cruise Control Module: Signal Plausibility Failure	GO to Pinpoint Test AA
IPMA	U0416:86	Invalid Data Received From Vehicle Dynamics Control Module: Signal Invalid	GO to Pinpoint Test AB
IPMA	U0418:86	Invalid Data Received From Brake System Control Module A: Signal Invalid	GO to Pinpoint Test AC
IPMA	U0232:00	Lost Communication With Side Obstacle Detection Control Module - Left: No Sub-Type Information	GO to Pinpoint Test H
IPMA	B120C:11	Heater for Windshield Mounted Sensor: Circuit Short To Ground	GO to Pinpoint Test C
IPMA	B120C:13	Heater for Windshield Mounted Sensor: Circuit Open	GO to Pinpoint Test C
IPMA	B13A6:14	Lane Departure Warning (LDW) Switch Input: Circuit Short To Ground or Open	GO to Pinpoint Test A
IPMA	C1001:54	Vision System Camera: Missing Calibration	GO to Pinpoint Test U
IPMA	C1001:78	Vision System Camera: Alignment or Adjustment Incorrect	GO to Pinpoint Test U
IPMA	C1001:97	Vision System Camera: Component or System Operation Obstructed or Blocked	GO to Pinpoint Test V
IPMA	C1001:98	Vision System Camera: Component or System Over Temperature	GO to Pinpoint Test W
IPMA	U0100:00	Loss Communication with ECM/PCM "A": No Sub Type Information	GO to Pinpoint Test E
IPMA	U0101:00	Loss Communication with TCM: No Sub Type Information	GO to Pinpoint Test F
IPMA	U0121:00	Loss Communication With Anti-Lock Brake System Control Module: No Sub Type Information	GO to Pinpoint Test G
IPMA	U0122:00	Lost Communication With Vehicle Dynamics Control Module: No Sub Type Information	GO to Pinpoint Test S
IPMA	U0131:00	Lost Communication With Power Steering Control Module: No Sub-Type Information	GO to Pinpoint Test J
IPMA	U0140:00	Lost Communication With Body Control Module: No Sub-Type Information	GO to Pinpoint Test L
IPMA	U0151:00	Lost Communication With Restraints Control Module: No Sub-Type Information	GO to Pinpoint Test M
IPMA	U0155:00	Lost Communication With Instrument Panel Cluster Control Module: No Sub-Type Information	GO to Pinpoint Test N
IPMA	U0158:00	Lost Communication With Head Up Display: No Sub-Type Information	GO to Pinpoint Test K
IPMA	U0212:00	Lost Communication With Steering Column Control Module: No Sub-Type Information	GO to Pinpoint Test O
IPMA	U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	GO to Pinpoint Test P
IPMA	U0423:82	Invalid Data Received From Instrument Panel Cluster Control Module: Alive/Sequence Counter Incorrect/Not Updated	GO to Pinpoint Test AE

Module	DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*
IPMA	U0423:86	Invalid Data Received From Instrument Panel Cluster Control Module: Signal Invalid	GO to Pinpoint Test AE
IPMA	U1000:11	Solid State Driver Protection Activated: Circuit Short To Ground	GO to Pinpoint Test AJ
IPMA	U2018:51	Control Module Software#3: Not Programmed	GO to Pinpoint Test AK
IPMA	U2100:00	Initial Configuration Not Complete: No Sub Type Information	GO to Pinpoint Test AL
IPMA	U2101:64	Control Module Configuration Incompatible: Signal Plausibility Failure	GO to Pinpoint Test AM
IPMA	U2300:55	Central Configuration: Not Configured	GO to Pinpoint Test AN
IPMA	U2300:64	Central Configuration: Signal Plausibility Failure	GO to Pinpoint Test AO
IPMA	U3000:41	Control Module: General Check Sum Failure	GO to Pinpoint Test AP
IPMA	U3000:42	Control Module: General Memory Failure	GO to Pinpoint Test AQ
IPMA	U3000:44	Control Module: Data Memory Failure	GO to Pinpoint Test AR
IPMA	U3000:49	Control Module: Internal Electronic Failure	GO to Pinpoint Test AR
IPMA	U3000:64	Control Module: Signal Plausibility Failure	GO to Pinpoint Test AS
IPMA	U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test Q
IPMA	U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test R
IPMA	U0401:86	Invalid Data Received from ECM/PCM A: Signal Invalid	GO to Pinpoint Test Y
IPMA	U0233:00	Lost Communication With Side Obstacle Detection Control Module - Right: No Sub-Type Information	GO to Pinpoint Test I
IPMA	U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	GO to Pinpoint Test AD
IPMA	U0452:86	Invalid Data Received From Restraints Control Module: Signal Invalid	GO to Pinpoint Test AG
IPMA	U0429:86	Invalid Data Received From Steering Column Control Module: Signal Invalid	GO to Pinpoint Test AF
IPMA	U0533:86	Invalid Data Received From Side Obstacle Deduction Control Module A: Signal Invalid	GO to Pinpoint Test AH
IPMA	U0534:86	Invalid Data Received From Side Obstacle Deduction Control Module B: Signal Invalid	GO to Pinpoint Test AI
IPMA	U0402:86	Invalid Data Received from TCM: Signal Invalid	GO to Pinpoint Test Z
PSCM	U023A:00	Lost communication with IPMA: No Sub Type Information	GO to Pinpoint Test BB
PSCM	U053B:00	Invalid data received from IPMA: No Sub Type Information	GO to Pinpoint Test BC
PSCM	U0554:00	Invalid data received from APIM: Signal Invalid	GO to Pinpoint Test BD

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

Condition	Possible Sources	Action New: *hover over Pinpoint Test links to show title*
A module does not communicate with the diagnostic scan tool	• Fuse • Wiring, terminals or connectors • Module	GO to Pinpoint Test AT
The lane keeping alert does not turn on or activate	REFER to the Pinpoint Test	GO to Pinpoint Test A
The lane keeping alert does not provide driver feedback once activated	REFER to the Pinpoint Test	GO to Pinpoint Test B
The display lines in the IPC do not turn green after the Lane Keeping System (LKS) is turned on	Road conditions	GO to Pinpoint Test AU

The lane keeping alert provides early feedback on one side of the lane and late feedback on the other side of the lane	• Dirty or cracked windshield • Loose or incorrectly installed IPMA • Camera alignment	GO to Pinpoint Test AV
Degraded performance from the lane keeping alert system	• Dirty or cracked windshield • Camera alignment	GO to Pinpoint Test AW
LANE KEEPING SYSTEM MALFUNCTION - SERVICE REQUIRED message in the IPC	PSCM concern	GO to Pinpoint Test AX
FRONT CAMERA TEMPORARILY NOT AVAILABLE message in the IPC	Temporary over temperature condition	GO to Pinpoint Test AY
FRONT CAMERA LOW VISIBILITY - CLEAN SCREEN message in the IPC	• Dirty or cracked windshield • Dirt or debris in between the camera and the windshield • Camera windshield defrost heater	GO to Pinpoint Test AZ
FRONT CAMERA MALFUNCTION - SERVICE REQUIRED message in the IPC	REFER to the Pinpoint Test	GO to Pinpoint Test D
The lane keeping alert will not turn off	MyKeyÂ® in use	GO to Pinpoint Test BA

Pinpoint Tests

PINPOINT TEST A : THE LANE KEEPING SYSTEM DOES NOT TURN ON OR ACTIVATE

Refer to Wiring Diagrams Cell 124 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Lane Keeping System - System Operation and Component Description (419-07 Lane Keeping System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA B13A6:14	Lane Departure Warning (LDW) Switch Input: Circuit Short To Ground Or Open	An on-demand and continuous memory DTC that sets in the IPMA if the IPMA detects the lane keeping system switch has been pressed for more than 200 milliseconds during the self-test or 1 second during normal operation.

Possible Sources

- Dirty, scratched or obstructed windshield and/or camera
- IPMA overheating condition
- Communication network concern
- Wiring, terminals or connectors
- Lane keeping system switch
- PSCM concern
- SCCM concern
- BCM concern
- CCM concern
- IPC concern
- RCM concern
- PCM concern
- GWM concern
- IPMA concern

Visual Inspection and Pre-checks

- Certain Lane Keeping System (LKS) concerns can be caused by the IPMA being too cold or overheating due to heavy sunload. Prior to diagnosing a lane keeping system concern, allow the vehicle to warm up or remove the vehicle from direct sunlight. RECHECK after 10 minutes.
- Inspect the Lane Keeping System (LKS) settings in the IPC message center to be sure the concern is not caused by a system setting.

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may cause damage to the connector. Use only Rotunda Flex Probes (NUD105-R025D)

A1 VERIFY THE CONCERN

- Verify the operation of the lane keeping system (lane keeping aid and lane keeping alert).

Does the lane keeping system operate correctly?
REFER to: Lane Keeping System - System Operation and Component Description (419-07 Lane Keeping System, Description and Operation).

Yes	The system is operating correctly at this time. The concern may have been caused by high network traffic or the driver's perception of how the lane keeping system operates. REFER to the Owner's Literature.
No	GO to A2

A2 PERFORM A NETWORK TEST

- Ignition ON.
- Using a diagnostic scan tool, perform a network test.

Do all modules pass the network test?

Yes	GO to A3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

A3 CHECK THE IPMA (IMAGE PROCESSING MODULE A) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the IPMA Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	For all other Diagnostic Trouble Codes (DTCs), REFER to the IPMA DTC chart in this section.
No	GO to A4

A4 CHECK THE PSCM (POWER STEERING CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the PSCM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Power Steering (211-02 Power Steering) . REFER to: Power Steering - Vehicles With: Electronic Steering Actuator (211-02 Power Steering, Diagnosis and Testing).
No	GO to A5

A5 CHECK THE SCCM (STEERING COLUMN CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the SCCM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).
No	GO to A6

A6 CHECK THE BCM (BODY CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the BCM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Removal and Installation).
No	GO to A7

A7 CHECK THE CCM (CRUISE CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the CCM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing).
No	GO to A8

A8 CHECK THE IPC (INSTRUMENT PANEL CLUSTER) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the IPC Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
No	GO to A9

A9 CHECK THE RCM (RESTRAINTS CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the RCM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing).
No	GO to A10

A10 CHECK THE PCM (POWERTRAIN CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the PCM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	Diagnose the PCM Diagnostic Trouble Codes (DTCs). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14C Electronic Engine Controls - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Diagnosis and Testing).
No	GO to A11

A11 CHECK THE GWM (GATEWAY MODULE A) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the GWM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE the GWM Diagnostic Trouble Codes (DTCs). REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to A12

A12 VERIFY THE IPMA (IMAGE PROCESSING MODULE A) LANE KEEPING SYSTEM SWITCH PID (PARAMETER IDENTIFICATION)

- Using a diagnostic scan tool, view the IPMA lane keeping system switch PID: (LKS_SW_ST).
- While monitoring the PID, press and release the lane keeping system switch several times.

Does the PID consistently match the switch position?

Yes	GO to A13
No	GO to A14

A13 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPMA connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the IPMA connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

A14 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the SCCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the SCCM connector. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST B : THE LANE KEEPING SYSTEM DOES NOT PROVIDE FEEDBACK WHEN ACTIVATED

Normal Operation and Fault Conditions

The lane keeping system only provides feedback when the vehicle speed is above 64 km/h (40 mph) and lane markings are detected on at least one side of the vehicle by the IPMA. REFER to: Lane Keeping System - System Operation and Component Description (419-07 Lane Keeping System, Description and Operation).

Possible Sources

- Communication network concern
- PSCM (integral to the steering gear)
- IPMA (located above the interior rear view mirror)

B1 CHECK THE PSCM (POWER STEERING CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Ignition ON.
- Using a diagnostic scan tool, check the PSCM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Power Steering (211-02 Power Steering) . REFER to: Power Steering - Vehicles With: Electronic Steering Actuator (211-02 Power Steering, Diagnosis and Testing).
No	GO to B2

B2 CHECK THE IPMA (IMAGE PROCESSING MODULE A) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, check the IPMA Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the IPMA DTC chart in this section.
No	GO to B3

B3 CHECK THE STEERING WHEEL VIBRATION

- Change the intensity setting in the lane keeping system message center menu.

Does the steering wheel perform a test vibration after the intensity setting is changed?

Yes	GO to B5
No	GO to B4

B4 CHECK FOR CORRECT PSCM (POWER STEERING CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the PSCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the PSCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (EPAS).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

B5 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPMA connector.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the IPMA connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

Visual Inspection and Diagnostic Pre-Checks

Inspect the integrity of the wiring, terminals and connectors on the jumper harness between the vehicle harness and the camera windshield defrost heater.

PINPOINT TEST C : DTC (DIAGNOSTIC TROUBLE CODE) B120C:11, DTC (DIAGNOSTIC TROUBLE CODE) B120C:13

Refer to Wiring Diagrams Cell 124 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA supplies voltage and ground to the camera windshield defrost heater. The IPMA uses input from the front camera and the ambient air temperature data from the PCM to command the heater on and off. The heater may be commanded on if the ambient temperature is below 5Â°C (41Â°F).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA B120C:11	Heater for Windshield Mounted Sensor: Circuit Short To Ground	An on-demand and continuous memory DTC that sets in the IPMA if an excessive current draw is detected on the heater output circuit.
IPMA B120C:13	Heater for Windshield Mounted Sensor: Circuit Open	An on-demand and continuous memory DTC that sets in the IPMA if a lower than expected current draw is detected on the heater output circuit.

Possible Sources

- Wiring, terminals or connectors
- Camera windshield defrost heater
- IPMA

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may cause damage to the connector. Use only Rotunda Flex Probes (NUD105-R025D)

NOTE: *Before replacing the camera windshield defrost heater or IPMA for a camera windshield defrost heater concern, verify the integrity of the wiring, connectors and terminals on the camera windshield defrost heater jumper harness.*

C1 CHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, perform the IPMA self-test.

Is DTC B120C:11 or DTC B120C:13 present?

Yes	For DTC B120C:11, GO to C2 For DTC B120C:13, GO to C5
No	The system is operating correctly at this time. INSPECT the connectors, wiring and the camera windshield defrost heater for damage or poor connections.

C2 CHECK FOR SHORT TO GROUND WITH THE IPMA (IMAGE PROCESSING MODULE A) CAMERA HEATED WINDSHIELD ELEMENT DISCONNECTED

- Ignition OFF.
- Disconnect: Camera Windshield Defrost Heater Jumper C900.
- Ignition ON.
- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- **NOTE:** *DTC B120C:13 may be present during this step and can be disregarded at this time.*

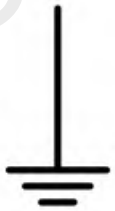
  Perform the IPMA self-test.

Is DTC B120C:11 present?

Yes	INSTALL a new windshield. REFER to: Fixed Glass (501-11 Glass, Frames and Mechanisms, General Procedures).
No	GO to C3

C3 CHECK THE IPMA (IMAGE PROCESSING MODULE A) CAMERA HEATED WINDSHIELD ELEMENT OUTPUT CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: IPMA C9224.
- Measure:

IMAGE PROCESSING MODULE A (IPMA)	

Positive Lead	Measurement / Action	Negative Lead
C9224-8	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to C4
No	REPAIR the circuit. After the repair, CLEAR the DTC, CYCLE the ignition, and RUN the IPMA on-demand self-test to re-enable the circuit.

C4 CHECK IPMA (IMAGE PROCESSING MODULE A) CAMERA HEATED ELEMENT CIRCUITS FOR A SHORT TOGETHER

- Measure:

IMAGE PROCESSING MODULE A (IPMA)

Positive Lead	Measurement / Action	Negative Lead
C9224-8	Ω	C9224-1

Is the resistance greater than 10,000 ohms?

Yes	GO to C7
No	REPAIR the circuits.

C5 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) B120C:13 WITH THE IPMA (IMAGE PROCESSING MODULE A) CAMERA HEATED ELEMENT CIRCUITS JUMPERED TOGETHER

- Ignition OFF.
- Disconnect: Camera Windshield Defrost Heater Jumper C900.
- Connect:

INLINE

Lead 1	Measurement / Action	Lead 2
C900-2		C900-5

- Ignition ON.
- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Perform the IPMA self-test.

Is DTC B120C:11 present?

Yes	REMOVE the fused jumper wire. INSTALL a new windshield. REFER to: Fixed Glass (501-11 Glass, Frames and Mechanisms, General Procedures).
No	REMOVE the fused jumper wire. GO to C6

C6 CHECK THE IPMA (IMAGE PROCESSING MODULE A) CAMERA HEATED WINDSHIELD ELEMENT CIRCUITS FOR AN OPEN

- Ignition OFF.
- Disconnect: IPMA C9224.
- Measure:

IMAGE PROCESSING MODULE A (IPMA)	INLINE

Positive Lead	Measurement / Action	Negative Lead
C9224-8	Ω	C900-2
C9224-1	Ω	C900-5

Are the resistances less than 3 ohms?

Yes	GO to C7
No	REPAIR the affected circuit.

C7 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Disconnect and inspect IPMA connector.
- Repair:
  - corrosion (install new connector or terminals - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Reconnect the IPMA connector. Make sure it seats and latches correctly.
- Operate the system to determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new IPMA REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST D : THE MESSAGE CENTER DISPLAYS A FRONT CAMERA MALFUNCTION SERVICE REQUIRED MESSAGE

Normal Operation and Fault Conditions

In addition to certain fault conditions, the FRONT CAMERA MALFUNCTION SERVICE REQUIRED message is displayed in the message center when the IPMA camera alignment has been initiated, but is incomplete.

Possible Sources

- Communication network concern
- IPMA camera alignment incomplete
- IPMA concern

D1 PERFORM A NETWORK TEST

- Ignition ON.
- Using a diagnostic scan tool, perform a network test.

Does the IPMA pass the network test?

Yes	GO to D2
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

D2 CHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, check the IPMA Diagnostic Trouble Codes (DTCs).

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the IPMA DTC chart in this section.
No	GO to D3

D3 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPMA connector.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the IPMA connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new IPMA REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST E : DTC (DIAGNOSTIC TROUBLE CODE) U0100:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the PCM through the HS-CAN2, GWM and HS-CAN1.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0100:00	Lost Communication With ECM/PCM "A": No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the PCM are missing.

Possible Sources

- Communication network concern
- PCM
- GWM concern
- IPMA concern

E1 VERIFY THE CUSTOMER'S CONCERN

- Ignition ON.
- Verify if there is an observable symptom present.

Is an observable symptom present?

Yes	GO to E2
No	CLEAR the DTC. The system is operation correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

E2 VERIFY THAT THE DIAGNOSTIC SCAN TOOL COMMUNICATES WITH THE PCM (POWERTRAIN CONTROL MODULE)

- Using a diagnostic scan tool, perform the network test

Does the PCM pass the network test?

Yes	GO to E3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

E3 PERFORM THE IPMA SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.
- Clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the IPMA self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the IPMA DTC Chart in this section.
No	GO to E4

E4 PERFORM THE PCM SELF-TEST

- Using a diagnostic scan tool, perform the PCM KOEO.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14C Electronic Engine Controls - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Diagnosis and Testing).
No	GO to E5

E5 PERFORM THE GWM SELF-TEST

- Using a diagnostic scan tool, perform the GWM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to E6

E6 RECHECK THE IPMA DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0100:00 still present?

Yes	GO to E7
No	The system is operating correctly at this time. This DTC may have been set due to high network traffic or an intermittent fault condition.

E7 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the PCM, IPMA or GWM. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to E8
No	The system is operating correctly at this time. The concern may have been caused due to incorrect parts replacement procedures or incorrect module configuration.

E8 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PCM connectors.
- Repair:
  - corrosion (install new connector or terminals - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Reconnect the PCM connectors. Make sure they seat and latch correctly.
- Operate the system to determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (PCM).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST F : DTC (DIAGNOSTIC TROUBLE CODE) U0101:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the TCM through the HS-CAN2, GWM and HS-CAN1.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0101:00	Lost Communication with TCM: No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the TCM are missing.

Possible Sources

- Communication network concern
- TCM
- GWM concern
- IPMA concern

F1 VERIFY THE CUSTOMER'S CONCERN

- Ignition ON.
- Verify if there is an observable symptom present.

Is an observable symptom present?

Yes	GO to F2
No	CLEAR the DTC. The system is operation correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

F2 VERIFY THAT THE DIAGNOSTIC SCAN TOOL CAN COMMUNICATE WITH THE TCM (TRANSMISSION CONTROL MODULE)

- Using a diagnostic scan tool, perform the network test

Does the TCM pass the network test?

Yes	GO to F3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

F3 PERFORM THE IPMA SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.
- Clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the IPMA self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the IPMA DTC Chart in this section.
No	GO to F4

F4 PERFORM THE TCM SELF-TEST

- Using a diagnostic scan tool, perform the TCM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 6.2L V8 (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission â€“ 6R100, Diagnosis and Testing). REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 6.2L V8 (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R140, Diagnosis and Testing). REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 7.3L 2V DEVCT V8 (239kW/320PS) (J0) (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R140, Diagnosis and Testing). REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 6.7L Power Stroke Diesel (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R140, Diagnosis and Testing).
No	GO to F5

F5 PREFORM THE GWM SELF-TEST

- Using a diagnostic scan tool, perform the GWM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to F6

F6 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0101:00 still present?

Yes	GO to F7
No	The system is operating correctly at this time. This DTC may have been set due to high network traffic or an intermittent fault condition.

F7 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the TCM, IPMA or GWM. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to F8
No	The system is operating correctly at this time. The concern may have been caused due to incorrect parts replacement procedures or incorrect module configuration.

F8 CHECK FOR CORRECT TCM (TRANSMISSION CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all TCM connectors.
- Repair:
  - corrosion (install new connector or terminals - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Reconnect the TCM connectors. Make sure they seat and latch correctly.
- Operate the system to determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new TCM. REFER to: Transmission (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission â€“ 6R100, Removal).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST G : DTC (DIAGNOSTIC TROUBLE CODE) U0121:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the ABS module on the HS-CAN2.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module "A": No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the ABS module over the HS-CAN2 are missing.

Possible Sources

- Communication network concern
- ABS module
- IPMA concern

G1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is there an observable symptom present?

Yes	GO to G2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

G2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform a network test.

Does the ABS module pass the network test?

Yes	GO to G3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

G3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the IPMA DTC Chart in this section.
No	GO to G4

G4 PERFORM THE ABS (ANTI-LOCK BRAKE SYSTEM) MODULE SELF-TEST

- Using a diagnostic scan tool, perform the ABS module self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Anti-Lock Brake System (ABS) and Stability Control (206-09 Anti-Lock Brake System (ABS) and Stability Control) .
No	GO to G5

G5 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using the diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0121:00 still present?

Yes	GO to G6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

G6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the ABS module or IPMA. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to G7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

G7 CHECK FOR CORRECT ABS (ANTI-LOCK BRAKE SYSTEM) MODULE OPERATION

- Ignition OFF.
- Disconnect and inspect the ABS module connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the ABS module connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (ABS).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

DTC U0232:00

Normal Operation and Fault Conditions

The DDM communicates with the SODL over the CAN. If the DDM does not receive messages from the SODL, the side obstacle detection feature can be inoperative for the left side.

PINPOINT TEST H : DTC (DIAGNOSTIC TROUBLE CODE) U0232:00

Normal Operation and Fault Conditions

The DDM communicates with the SODL over the CAN. If the DDM does not receive messages from the SODL, the side obstacle detection feature can be inoperative for the left side.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0232:00	Lost Communication With Side Obstacle Detection Control Module "A": No Sub Type Information	Sets when the DDM detects data messages are missing from the SODL.

Possible Sources

- Network communication concern
- SODL

H1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to H2
No	CLEAR the DTC. The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

H2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the SODL pass the network test?

Yes	GO to H3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

H3 CHECK FOR NON-NETWORK SODL (SIDE OBSTACLE DETECTION CONTROL MODULE LH) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the SODL self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Blind Spot Information System (419-04 Side and Rear Vision, Diagnosis and Testing).
No	GO to H4

H4 CHECK FOR NON-NETWORK DDM (DRIVER DOOR MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the DDM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the DDM DTC Chart in this section.
No	GO to H5

H5 RECHECK THE DDM (DRIVER DOOR MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the DDM self-test.

Is DTC U0232:00 still present?

Yes	GO to H6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

H6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during PMI or the PMI may not have been carried out.*

- Check the vehicle service history for recent service actions related to the SODL and the DDM. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part number
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to H7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

H7 CHECK FOR CORRECT SODL (SIDE OBSTACLE DETECTION CONTROL MODULE LH) OPERATION

- Disconnect and inspect all the SODL connectors.
- Repair:
  - corrosion (install new connectors or terminals - clean module pins)
  - damaged or bent pins - install new terminals pins
  - pushed-out pins - install new pins as necessary
- Reconnect the SODL connectors and make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM, or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new SODL. REFER to: Side Obstacle Detection Control Module (419-04 Side and Rear Vision, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST I : DTC (DIAGNOSTIC TROUBLE CODE) U0233:00

Normal Operation and Fault Conditions

The PDM communicates with the SODR over the CAN. If the PDM does not receive messages from the SODR, the side obstacle detection feature can be inoperative for the right side.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0233:00	Lost Communication With Side Obstacle Detection Control Module "B": No Sub Type Information	Sets when the PDM detects data messages are missing from the SODR.

Possible Sources

- Network communication concern
- SODR

I1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to I2
No	CLEAR the DTC. The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

I2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the SODR pass the network test?

Yes	GO to I3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

I3 CHECK FOR NON-NETWORK SODR (SIDE OBSTACLE DETECTION CONTROL MODULE RH) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the SODR self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Blind Spot Information System (419-04 Side and Rear Vision, Diagnosis and Testing).
No	GO to I4

I4 CHECK FOR NON-NETWORK PDM (PASSENGER DOOR MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the PDM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the PDM DTC Chart in this section.
No	GO to I5

I5 RECHECK THE PDM (PASSENGER DOOR MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the PDM self-test.

Is DTC U0233:00 still present?

Yes	GO to I6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

I6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during PMI or the PMI may not have been carried out.*

- Check the vehicle service history for recent service actions related to the SODR and the PDM. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part number
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to I7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

I7 CHECK FOR CORRECT SODR (SIDE OBSTACLE DETECTION CONTROL MODULE RH) OPERATION

- Disconnect and inspect all the SODR connectors.
- Repair:
  - corrosion (install new connectors or terminals - clean module pins)
  - damaged or bent pins - install new terminals pins
  - pushed-out pins - install new pins as necessary
- Reconnect the SODR connectors and make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM, or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new SODR. REFER to: Side Obstacle Detection Control Module (419-04 Side and Rear Vision, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST J : DTC (DIAGNOSTIC TROUBLE CODE) U0131:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0131:00	Lost Communication With Power Steering Control Module "A": No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the PSCM over the HS-CAN2 are missing.

Possible Sources

- Communication network concern
- PSCM (integral to the steering gear)
- IPMA concern

J1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is there an observable symptom present?

Yes	GO to J2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

J2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform a network test.

Does the PSCM pass the network test?

Yes	GO to J3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

J3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to IPMA DTC Chart in this section.
No	GO to J4

J4 PERFORM THE PSCM (POWER STEERING CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the PSCM self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Power Steering (211-02 Power Steering) . REFER to: Power Steering - Vehicles With: Electronic Steering Actuator (211-02 Power Steering, Diagnosis and Testing).
No	GO to J5

J5 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0131:00 still present?

Yes	GO to J6
No	The system is operating correctly at this time. The DTC may have set due to high network traffic or an intermittent fault condition.

J6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the PSCM or IPMA. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to J7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

J7 CHECK FOR CORRECT PSCM (POWER STEERING CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PSCM connectors.
- Repair:
  - corrosion (install new connector or terminals - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Reconnect the PSCM connectors. Make sure they seat and latch correctly.
- Operate the system to determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (EPAS).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST K : DTC (DIAGNOSTIC TROUBLE CODE) U0158:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0158:00	Lost Communication With Head Up Display: No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the HUD module over the HS-CAN2 are missing for 10 seconds or more.

Possible Sources

- Communication network concern
- HUD module
- IPMA concern

K1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is there an observable symptom present?

Yes	GO to K2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

K2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform a network test.

Does the HUD module pass the network test?

Yes	GO to K3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

K3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the DTC Chart in this section.
No	GO to K4

K4 PERFORM THE HUD (HEAD UP DISPLAY) MODULE SELF-TEST

- Using a diagnostic scan tool, perform the HUD module self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Collision Warning and Collision Avoidance System (419-03C Collision Warning and Collision Avoidance System, Diagnosis and Testing).
No	GO to K5

K5 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using the diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0158:00 still present?

Yes	GO to K6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

K6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the HUD module or IPMA. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to K7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

K7 CHECK FOR CORRECT HUD (HEAD UP DISPLAY) MODULE OPERATION

- Ignition OFF.
- Disconnect and inspect the HUD module connectors and related in-line connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the HUD module connectors and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a Technical Service Bulletin (TSB) exists for this concern, DISCONTINUE this test and FOLLOW the Technical Service Bulletin (TSB) instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new HUD module. REFER to: Collision Warning and Collision Avoidance System (419-03C Collision Warning and Collision Avoidance System, Diagnosis and Testing).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

DTC U0140:00

PINPOINT TEST L : DTC (DIAGNOSTIC TROUBLE CODE) U0140:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the BCM through the HS-CAN2, GWM and HS-CAN1.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0140:00	Lost Communication With Body Control Module: No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the BCM are missing.

Possible Sources

- Communication network concern
- GWM concern
- BCM
- IPMA concern

L1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify that there is an observable symptom present.

Is there an observable symptom present?

Yes	GO to L2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

L2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform a network test.

Do the BCM and the GWM pass the network test?

Yes	GO to L3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

L3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	DIAGNOSE all non-network Diagnostic Codes (DTCs). REFER to the IPMA DTC Chart in this section.
No	GO to L4

L4 PERFORM THE BCM (BODY CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the BCM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	GO to L5

L5 CHECK THE GWM (GATEWAY MODULE A) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, retrieve the GWM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to L6

L6 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Wait 10 seconds.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

IsDTC U0140:00 still present?

Yes	GO to L7
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

L7 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the BCM, IPMA or GWM. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to L8
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

L8 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all BCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the BCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, REPLACE the BCM. REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST M : DTC (DIAGNOSTIC TROUBLE CODE) U0151:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the RCM through the HS-CAN2.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the RCM are missing

Possible Sources

- Communication network concern
- RCM
- IPMA concern

M1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify that there is an observable symptom present.

Is there an observable symptom present?

Yes	GO to M2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

M2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform a network test.

Does the RCM pass the network test?

Yes	GO to M3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

M3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the IPMA DTC chart in this section.
No	GO to M4

M4 PERFORM THE RCM (RESTRAINTS CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the RCM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing).
No	GO to M5

M5 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0151:00 still present?

Yes	GO to M6
No	The system is operation correctly at this time. The DTC may have set due to high network traffic or an intermittent fault condition.

M6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the RCM or IPMA. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to M7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

M7 CHECK FOR CORRECT RCM (RESTRAINTS CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all RCM connectors.
- Repair:
  - corrosion (install new connector or terminals - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Reconnect the RCM connectors. Make sure they seat and latch correctly.
- Operate the system to determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new RCM. REFER to: Restraints Control Module (RCM) (501-20B Supplemental Restraint System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST N : DTC (DIAGNOSTIC TROUBLE CODE) U0155:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the IPC through the HS-CAN2, GWM and HS-CAN3.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the IPC are missing.

Possible Sources

- Communication network concern
- IPC
- GWM concern
- IPMA concern

N1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is there an observable symptom present?

Yes	GO to N2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

N2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform a network test.

Does the IPC pass the network test?

Yes	GO to N3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

N3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the DTC Chart in this section.
No	GO to N4

N4 PERFORM THE IPC (INSTRUMENT PANEL CLUSTER) SELF-TEST

- Using a diagnostic scan tool, perform the IPC self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
No	GO to N5

N5 PERFORM THE GWM (GATEWAY MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the GWM self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	SEE the GWM DTC Chart. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to N6

N6 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0155:00 still present?

Yes	GO to N7
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

N7 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the IPC, GWM or IPMA. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to N8
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

N8 CHECK FOR CORRECT IPC (INSTRUMENT PANEL CLUSTER) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPC connector.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the IPC connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (IPC).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST O : DTC (DIAGNOSTIC TROUBLE CODE) U0212:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the SCCM through the HS-CAN2.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0212:00	Lost Communication With Steering Column Control Module: No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the SCCM are missing.

Possible Sources

- Communication network concern
- SCCM
- IPMA concern

O1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is there an observable symptom present?

Yes	GO to O2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

O2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform a network test.

Does the SCCM pass the network test?

Yes	GO to O3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

O3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the DTC Chart in this section.
No	GO to O4

O4 PERFORM THE SCCM (STEERING COLUMN CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the SCCM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).
No	GO to O5

O5 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using the diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0212:00?

Yes	GO to O6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

O6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the SCCM or IPMA. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to O7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

O7 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the SCCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the SCCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST P : DTC (DIAGNOSTIC TROUBLE CODE) U0253:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the APIM through the HS-CAN2, GWM and HS-CAN1

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	A continuous memory DTC that sets in the IPMA if messages received from the APIM are missing.

Possible Sources

- Communication network concern
- APIM
- IPMA concern
- GWM concern

P1 VERIFY THE CUSTOMER'S CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to P2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

P2 VERIFY THAT THE DIAGNOSTIC SCAN TOOL COMMUNICATES WITH THE APIM (SYNC MODULE)

- Connect a diagnostic scan tool.
- Check that a vehicle session can be established using the diagnostic scan tool.

Can a vehicle session be established?

Yes	GO to P3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

P3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.
- Clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the IPMA DTC Chart in this section.
No	GO to P4

P4 PERFORM THE APIM (SYNC MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the APIM KOEO self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Information and Entertainment System (415-00 Information and Entertainment System - General Information, Diagnosis and Testing).
No	GO to P5

P5 PERFORM THE GWM (GATEWAY MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the GWM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	SEE the GWM DTC Chart. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to P6

P6 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0253:00 still present?

Yes	GO to P7
No	The system is operating correctly at this time. This DTC may have been set due to high network traffic or an intermittent fault condition.

P7 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the APIM, IPMA or GWM. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to P8
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

P8 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all APIM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the APIM module connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (APIM).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST Q : DTC (DIAGNOSTIC TROUBLE CODE) U3003:16

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U3003:16	Battery Voltage: Circuit Voltage Below Threshold	Set by the IPMA in continuous memory if the IPMA module detects low battery voltage below 9 volts.

Possible Sources

- Wiring, terminals or connectors
- Battery
- Charging system concern
- IPMA concern

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may cause damage to the connector. Use only Rotunda Flex Probes (NUD105-R025D)

Q1 CHECK THE IPMA DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs). Repeat the IPMA module self-test.

Is DTC U3003:16 still present?

Yes	GO to Q2
No	The system is operating correctly at this time. The DTC may have been set due to a previous low battery voltage condition.

Q2 CHECK FOR CHARGING SYSTEM DIAGNOSTIC TROUBLE CODES (DTCS) IN THE PCM

- Using a diagnostic scan tool, perform the PCM KOEO self-test.

Are any charging system Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to the appropriate 303-14 section.
No	GO to Q3

Q3 CHECK THE BATTERY CONDITION AND STATE OF CHARGE

- Check the battery condition and verify the battery is fully charged.
  REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

Is the battery OK and fully charged?

Yes	GO to Q4
No	REFER to: Battery Charging (414-01 Battery, Mounting and Cables, General Procedures).

Q4 CHECK THE IPMA VOLTAGE SUPPLY

- Ignition OFF.
- Disconnect: IPMA module C9224.
- Ignition ON.
- Measure and record the voltage at the battery.
- Measure:

IMAGE PROCESSING MODULE A (IPMA)	

Positive Lead	Measurement / Action	Negative Lead
C9224-4	V	Ground

Is the voltage within 0.2 volt of the recorded battery voltage?

Yes	GO to Q5
No	REPAIR the circuit.

Q5 CHECK THE IPMA MODULE GROUND CIRCUIT

- Measure:

IMAGE PROCESSING MODULE A (IPMA)

Positive Lead	Measurement / Action	Negative Lead
C9224-4		C9224-5

Is the voltage within 0.2 volts of the recorded battery voltage?

Yes	GO to Q6
No	REPAIR the circuit.

Q6 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPMA connector.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the IPMA connectors. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST R : DTC (DIAGNOSTIC TROUBLE CODE) U3003:17

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets as a continuous memory and on-demand DTC if the IPMA detects high battery voltage above 16.5 volts.

Possible Sources

- Battery
- Charging system concern
- IPMA

R1 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U3003:17 SET IN OTHER MODULES

NOTE: *DTC U3003:17 may be stored in the module memory due to past battery charging or vehicle jump starting events.*

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs). Repeat the IPMA module self-test.

Is DTC U3003:17 still present?

Yes	REFER to: Charging System - 6.2L V8/6.8L Triton-30V â€“ V10 (414-00 Charging System - General Information) . REFER to: Charging System - 6.7L Power Stroke Diesel (414-00 Charging System - General Information) . REFER to: Charging System - 7.3L 2V DEVCT V8 (239kW/320PS) (J0) (414-00 Charging System - General Information, Diagnosis and Testing).
No	GO to R2

R2 CHECK THE BATTERY VOLTAGE

- Turn off all interior/exterior lights and accessories.
- Start and run the engine at approximately 2,000 rpm for 3 minutes while monitoring the battery voltage.

Does the battery voltage rise to 15.5 volts or higher?

Yes	DIAGNOSE the overcharging condition. REFER to: Charging System - 6.2L V8/6.8L Triton-30V â€“ V10 (414-00 Charging System - General Information) . REFER to: Charging System - 6.7L Power Stroke Diesel (414-00 Charging System - General Information) . REFER to: Charging System - 7.3L 2V DEVCT V8 (239kW/320PS) (J0) (414-00 Charging System - General Information, Diagnosis and Testing).
No	GO to R3

R3 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U3003:17

- Turn the engine off.
- Ignition ON.
- Using a diagnostic scan tool, clear all Continuous Memory Diagnostic Trouble Codes (CMDTCs).
- Using the diagnostic scan tool, perform the IPMA self-test.

Is DTC U3003:17 still present?

Yes	INSTALL a new IPMA REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating normally at this time. The DTC may have been set previously during battery charging or while jump starting the vehicle.

PINPOINT TEST S : DTC (DIAGNOSTIC TROUBLE CODE) U0122:00

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0122:00	Lost Communication With Vehicle Dynamics Control Module: No Sub Type Information	Sets in continuous memory in the IPC if data messages received from the VDM through the GWM are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- GWM concern
- VDM
- IPC concern

S1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to S2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

S2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the VDM pass the network test?

Yes	GO to S3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

S3 PERFORM THE IPC (INSTRUMENT PANEL CLUSTER) SELF-TEST

- Using a diagnostic scan tool, perform the IPC self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to DTC Chart: IPC in this section.
No	GO to S4

S4 CHECK THE GWM (GATEWAY MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, check the GWM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to S5

S5 RECHECK THE IPC (INSTRUMENT PANEL CLUSTER) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPC Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPC Diagnostic Trouble Codes (DTCs).

Is DTC U0122:00 still present?

Yes	GO to S6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

S6 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the VDM, GWM or IPC. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to S7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

S7 CHECK FOR CORRECT VDM (VEHICLE DYNAMICS CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all VDM connector.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect all the VDM connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new VDM.
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST T : DTC (DIAGNOSTIC TROUBLE CODE) C0072:00

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
CCM C0072:00	Brake Temperature Too High: No Sub Type Information	This DTC sets when the CCM receives a brake over temperature message from the brake system.

Possible Sources

- CCM concern

T1 CHECK FOR THE BRAKE TEMPERATURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC C0072:00 still present?

Yes	ALLOW the brake system to cool for 30 minutes. CLEAR the DTC and REPEAT the self-test
No	The repair is complete.

PINPOINT TEST U : DTC (DIAGNOSTIC TROUBLE CODE) C1001:54 & C1001:78

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA C1001:54	Vision System Camera: Missing Calibration	This continuous memory DTC sets when a new IPMA has been installed without performing the camera alignment.
IPMA C1001:78	Vision System Camera: Alignment Or Adjustment Incorrect	This continuous memory DTC sets when a new IPMA has been installed without performing the camera alignment.

Possible Sources

- Communication concern
- IPMA concern

U1 CHECK FOR CORRECT ALIGHNMENT, ADJUSTMENT & CALIBRATION OF IPMA (IMAGE PROCESSING MODULE A)

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC C1001:54 & C1001:78 still present?

Yes	PERFORM the camera alignment using a diagnostic scan tool.
No	The repair is complete.

PINPOINT TEST V : DTC (DIAGNOSTIC TROUBLE CODE) C1001:97

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA C1001:97	Vision System Camera: Component Or System Operation Obstructed Or Blocked	This DTC sets if Vision System Camera component or system Operation Obstructed or Blocked the camera.

Possible Sources

- IPMA concern

V1 CHECK FOR VISION SYSTEM CAMERA COMPONENT OR SYSTEM OPERATION OBSTRUCTED OR BLOCKED

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC C1001:97 still present?

Yes	CLEAN and INSPECT the windshield in front of the camera, remove any aftermarket stickers that may be blocking the view of the camera. REPAIR or REPLACE the windshield as necessary if damage is found.
No	The repair is complete.

PINPOINT TEST W : DTC (DIAGNOSTIC TROUBLE CODE) C1001:98

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA C1001:98	Vision System Camera: Component Or System Over Temperature	This DTC sets if Vision System Camera component or system over temperature.

Possible Sources

- IPMA concern

W1 CHECK FOR VISION SYSTEM CAMERA COMPONENT OR SYSTEM OVER TEMPERATURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC C1001:98 still present?

Yes	This may occur during extended use in extremely high weather temperatures. The lane keeping system operation resumes after the IPMA cools.
No	The repair is complete.

PINPOINT TEST X : DTC (DIAGNOSTIC TROUBLE CODE) C1A67:08

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
CCM C1A67:08	Forward Looking Sensor: Bus Signal/Message Failures	This continues memory DTC sets due to a fault in the CCM

Possible Sources

- CCM concern

X1 CHECK FOR FORWARD LOOKING SENSOR SIGNAL/FAILURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC C1A67:08 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the CCM REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing). REFER to: Collision Warning and Collision Avoidance System (419-03C Collision Warning and Collision Avoidance System, Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST Y : DTC (DIAGNOSTIC TROUBLE CODE) U0401:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0401:86	Invalid Data Received from ECM/PCM A: Signal Invalid	This continuous memory DTC can set due to a fault in the PCM or an input to the PCM

Possible Sources

- PCM concern

Y1 CHECK FOR PCM SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0401:86 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the PCM REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14C Electronic Engine Controls - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST Z : DTC (DIAGNOSTIC TROUBLE CODE) U0402:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0402:86	Invalid Data Received from TCM: Signal Invalid	This continuous memory DTC can set due to a fault in the TCM or an input to the TCM

Possible Sources

- TCM concern

Z1 CHECK FOR TCM SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0402:86 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the TCM REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14C Electronic Engine Controls - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST AA : DTC (DIAGNOSTIC TROUBLE CODE) U0405:64

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0405:64	Invalid Data Received From Cruise Control Module: Signal Plausibility Failure	This continues memory DTC sets due to a fault in the CCM

Possible Sources

- CCM concern

AA1 CHECK FOR CCM SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0405:64 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the CCM REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing). REFER to: Collision Warning and Collision Avoidance System (419-03C Collision Warning and Collision Avoidance System, Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST AB : DTC (DIAGNOSTIC TROUBLE CODE) U0416:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0416:86	Invalid Data Received From Vehicle Dynamics Control Module: Signal Invalid	This continues memory DTC sets due to a fault in the ABS or an input to the CCM

Possible Sources

- CCM concern
- ABS concern

AB1 CHECK FOR VEHICLE DYNAMICS CONTROL MODULE SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0416:86 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the ABS REFER to: Anti-Lock Brake System (ABS) and Stability Control (206-09 Anti-Lock Brake System (ABS) and Stability Control) .
No	DIAGNOSE the observable symptom.

PINPOINT TEST AC : DTC (DIAGNOSTIC TROUBLE CODE) U0418:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0418:86	Invalid Data Received from Brake System Control Module "A": Signal Invalid	This continues memory DTC sets due to a fault in the ABS or an input to the ABS

Possible Sources

- ABS concern

AC1 CHECK FOR BRAKE SYSTEM CONTROL MODULE SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0418:86 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the ABS REFER to: Anti-Lock Brake System (ABS) and Stability Control (206-09 Anti-Lock Brake System (ABS) and Stability Control) .
No	DIAGNOSE the observable symptom.

PINPOINT TEST AD : DTC (DIAGNOSTIC TROUBLE CODE) U0422:00

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	This continuous memory DTC can set due to a fault in the BCM or an input to the BCM. RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the BCM

Possible Sources

- BCM concern

AD1 CHECK FOR BCM ALIVE/SEQUENCE COUNTER INCORRECT/NOT UPDATED

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0422:00 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the BCM REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST AE : DTC (DIAGNOSTIC TROUBLE CODE) U0423:82 & U0423:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0423:82	Invalid Data Received from Instrument Panel Cluster Control Module: Alive/Sequence Counter Incorrect/Not Updated	This continuous memory DTC can set due to a fault in the IPC or an input to the IPC
IPMA U0423:86	Invalid Data Received from Instrument Panel Cluster Control Module: Signal Invalid	This continuous memory DTC can set due to a fault in the IPC or an input to the IPC

Possible Sources

- IPC concern

AE1 CHECK FOR IPC ALIVE/SEQUENCE COUNTER INCORRECT/NOT UPDATED

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0423:82 & U0423:86 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the IPC REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST AF : DTC (DIAGNOSTIC TROUBLE CODE) U0429:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0429:86	Invalid Data Received From Steering Column Control Module: Signal Invalid	This continuous memory DTC can set due to a fault in the SCCM or an input to the SCCM

Possible Sources

- SCCM concern

AF1 CHECK FOR SCCM (STEERING COLUMN CONTROL MODULE) SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0429:86 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the SCCM REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST AG : DTC (DIAGNOSTIC TROUBLE CODE) U0452:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0452:86	Invalid Data Received From Restraints Control Module: Signal Invalid	This continuous memory DTC can set due to a fault in the RCM or an input to the RCM

Possible Sources

- RCM concern

AG1 CHECK FOR RCM (RESTRAINTS CONTROL MODULE) SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0452:86 still present?

Yes	RETRIEVE and FOLLOW non-network Diagnostic Trouble Codes (DTCs) from the RCM REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing).
No	DIAGNOSE the observable symptom.

PINPOINT TEST AH : DTC (DIAGNOSTIC TROUBLE CODE) U0533:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0533:86	Invalid Data Received From Side Obstacle Detection Control Module "A": Signal Invalid	This DTC set when the IPC recieves invalid network data due to configuration mismatch between the IPC and the SODL

Possible Sources

- SODL concern

AH1 CHECK FOR SODL (SIDE OBSTACLE DETECTION CONTROL MODULE LH) SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0533:86 still present?

Yes	CHECK the vehicle service history for recent service actions related to this module. This DTC sets due to incomplete or incorrect PMI procedure. If there have been recent service actions with this module. REPEAT the PMI procedure as directed by the scan tool. If there have been no recent service actions, INSTALL a new module to correct the failure to retain configuration data.
No	The repair is complete.

PINPOINT TEST AI : DTC (DIAGNOSTIC TROUBLE CODE) U0534:86

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U0534:86	Invalid Data Received From Side Obstacle Detection Control Module "B": Signal Invalid	This DTC set when the IPC recieves invalid network data due to configuration mismatch between the IPC and the SODR

Possible Sources

- SODR concern

AI1 CHECK FOR SODR (SIDE OBSTACLE DETECTION CONTROL MODULE RH) SIGNAL

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U0534:86 still present?

Yes	CHECK the vehicle service history for recent service actions related to this module. This DTC sets due to incomplete or incorrect PMI procedure. If there have been recent service actions with this module. REPEAT the PMI procedure as directed by the scan tool. If there have been no recent service actions, INSTALL a new module to correct the failure to retain configuration data.
No	The repair is complete.

PINPOINT TEST AJ : DTC (DIAGNOSTIC TROUBLE CODE) U1000:11

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U1000:11	Solid State Driver Protection Active -Driver Disabled: Circuit Short To Ground	This DTC set in the IPMA when the IPMA has temporarily disabled the camera windshield heater defroster output because an excessive current draw exists (such as a short to ground).

Possible Sources

- IPMA concern

AJ1 CHECK FOR THE CAMERA WNIDSHIELD HEATER DEFROSTER OUTPUT

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U1000:11 still present?

Yes	The IPMA cannot enable the output driver until the short is corrected. ADDRESS all other IPMA DTC first. After the cause of the concern is corrected, CLEAR the DTC and REPEAT the IPMA self-test to enable the output driver.
No	The repair is complete.

PINPOINT TEST AK : DTC (DIAGNOSTIC TROUBLE CODE) U2018:51

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U2018:51	Control Module Software #3: Not Programmed	This continuous memory DTC can set due to incomplete or incorrect PMI procedures.

Possible Sources

- IPMA concern

AK1 CHECK FOR THE CORRECT PMI (PROGRAMMABLE MODULE INSTALLATION) PROCEDURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U2018:51 still present?

Yes	CHECK the vehicle service history for recent service actions related to this module. If there have been recent service actions with this module, INSTALL As-Built data from Professional Technician Society (PTS), following the diagnostic scan tool instructions under Module Programming>As-Built. REFER to: Module Programming (418-01 Module Configuration, General Procedures). If there have been no recent service actions, INSTALL a new module to correct the failure to retain configuration data. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The repair is complete.

PINPOINT TEST AL : DTC (DIAGNOSTIC TROUBLE CODE) U2100:00

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U2100:00	Initial Configuration Not Complete: No Sub Type Information	This continuous memory DTC can set due to incomplete or incorrect PMI procedures.

Possible Sources

- PMI concern

AL1 CHECK FOR THE CORRECT PMI (PROGRAMMABLE MODULE INSTALLATION) PROCEDURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U2100:00 still present?

Yes	CHECK the vehicle service history for recent service actions related to this module. If there have been recent service actions with this module, INSTALL As-Built data from Professional Technician Society (PTS), following the diagnostic scan tool instructions under Module Programming>As-Built. REFER to: Module Programming (418-01 Module Configuration, General Procedures). If there have been no recent service actions, INSTALL a new module to correct the failure to retain configuration data.
No	The repair is complete.

PINPOINT TEST AM : DTC (DIAGNOSTIC TROUBLE CODE) U2101:64

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U2101:64	Control Module Configuration Incompatible: Signal Plausibility Failure	This continuous memory DTC can set due to incomplete or incorrect PMI procedures.

Possible Sources

- PMI concern

AM1 CHECK FOR THE CORRECT PMI (PROGRAMMABLE MODULE INSTALLATION) PROCEDURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U2101:64 still present?

Yes	CHECK the vehicle service history for recent service actions related to this module. If there have been recent service actions with this module, INSTALL As-Built data from Professional Technician Society (PTS), following the diagnostic scan tool instructions under Module Programming>As-Built. REFER to: Module Programming (418-01 Module Configuration, General Procedures). If there have been no recent service actions, INSTALL a new module to correct the failure to retain configuration data.
No	The repair is complete.

PINPOINT TEST AN : DTC (DIAGNOSTIC TROUBLE CODE) U2300:55

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U2300:55	Central Configuration: Not Configured	This continuous memory DTC can set due to incomplete or incorrect PMI procedures.

Possible Sources

- IPMA concern

AN1 CHECK FOR THE CORRECT PMI (PROGRAMMABLE MODULE INSTALLATION) PROCEDURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U2300:55 still present?

Yes	CHECK the vehicle service history for recent service actions related to this module. If there have been recent service actions with this module, INSTALL As-Built data from Professional Technician Society (PTS), following the diagnostic scan tool instructions under Module Programming>As-Built. REFER to: Module Programming (418-01 Module Configuration, General Procedures). If there have been no recent service actions, INSTALL a new module to correct the failure to retain configuration data. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The repair is complete.

PINPOINT TEST AO : DTC (DIAGNOSTIC TROUBLE CODE) U2300:64

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U2300:64	Central Configuration: Signal Plausibility Failure	This continuous memory DTC can set due to incomplete or incorrect PMI procedures.

Possible Sources

- IPMA concern

AO1 CHECK FOR THE CORRECT PMI (PROGRAMMABLE MODULE INSTALLATION) PROCEDURE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U2300:64 still present?

Yes	CHECK the vehicle service history for recent service actions related to this module. If there have been recent service actions with this module, INSTALL As-Built data from Professional Technician Society (PTS), following the diagnostic scan tool instructions under Module Programming>As-Built. REFER to: Module Programming (418-01 Module Configuration, General Procedures). If there have been no recent service actions, INSTALL a new module to correct the failure to retain configuration data. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The repair is complete.

PINPOINT TEST AP : DTC (DIAGNOSTIC TROUBLE CODE) U3000:41

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U3000:41	Control Module: General Checksum Failure	This DTC sets when the IPMA detects the IPMA is not configured correctly.

Possible Sources

- IPMA concern

AP1 CHECK FOR THE CORRECT IPMA (IMAGE PROCESSING MODULE A) CONFIGURATION

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U3000:41 still present?

Yes	CARRY OUT the PMI procedure (when the original module is not available) for the module in question as directed by the diagnostic scan tool. REFER to: Module Programming (418-01 Module Configuration, General Procedures).
No	The repair is complete.

PINPOINT TEST AQ : DTC (DIAGNOSTIC TROUBLE CODE) U3000:42

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U3000:42	Control Module: General Memory Failure	This DTC sets when other IPMA related DTC's not addressed.

Possible Sources

- IPMA concern

AQ1 CHECK WHETHER ALL IPMA (IMAGE PROCESSING MODULE A) DTC (DIAGNOSTIC TROUBLE CODE) 'S ADDRESSED

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U3000:42 still present?

Yes	ADDRESS all other IPMA DTC first. If this continuous memory DTC is still present after all other DTC have been addressed, INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The repair is complete.

PINPOINT TEST AR : DTC (DIAGNOSTIC TROUBLE CODE) U3000:44 & U3000:49

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U3000:44	Control Module: Data Memory Failure	This DTC sets when other IPMA related DTC's not addressed.
IPMA U3000:49	Control Module: Internal Electronic Failure	This DTC sets when other IPMA related DTC's not addressed.

Possible Sources

- IPMA concern

AR1 CHECK WHETHER ALL IPMA (IMAGE PROCESSING MODULE A) DTC (DIAGNOSTIC TROUBLE CODE) 'S ADDRESSED

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U3000:44 & U3000:49 still present?

Yes	The IPMA has permanently disabled an output because an excessive current draw has occurred more times than allowed. ADDRESS all other IPMA DTC. If this continuous memory DTC is still present after all other IPMA DTC have been addressed. INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The repair is complete.

PINPOINT TEST AS : DTC (DIAGNOSTIC TROUBLE CODE) U3000:64

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA U3000:64	Control Module: Signal Plausibility Failure	This DTC sets when the IPMA detects the IPMA is not configured correctly.

Possible Sources

- IPMA concern

AS1 CHECK FOR THE CORRECT IPMA (IMAGE PROCESSING MODULE A) CONFIGURATION

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Is DTC U3000:64 still present?

Yes	CARRY OUT the PMI procedure (when the original module is not available) for the module in question as directed by the diagnostic scan tool. REFER to: Module Programming (418-01 Module Configuration, General Procedures).
No	The repair is complete.

PINPOINT TEST AT : A MODULE DOES NOT COMMUNICATE WITH THE DIAGNOSTIC SCAN TOOL

Normal Operation and Fault Conditions

A module does not communicate with the diagnostic scan tool

Possible Sources

- Fuse
- Wiring, terminals or connectors
- Module

AT1 CHECK FOR THE FUSE, WIRING, TERMINALS, CONNECTIONS AND MODULE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	The repair is complete.

PINPOINT TEST AU : THE DISPLAY LINES IN THE IPC (INSTRUMENT PANEL CLUSTER) DO NOT TURN GREEN AFTER THE LANE KEEPING SYSTEM (LKS) IS TURNED ON

Normal Operation and Fault Conditions

The display lines in the IPC do not turn green after the lane keeping switch (LKS) is turned on.

Possible Sources

- Road conditions

AU1 CHECK FOR THE IPC (INSTRUMENT PANEL CLUSTER) DISPLAY

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	The display lines are gray when the IPMA cannot detect lane marking(s) on the road in front of the vehicle. VERIFY the road conditions described under System Display. REFER to: Lane Keeping System - System Operation and Component Description (419-07 Lane Keeping System, Description and Operation).
No	The repair is complete.

PINPOINT TEST AV : THE LANE KEEPING ALERT PROVIDES EARLY FEEDBACK ON ONE SIDE OF THE LANE AND LATE FEEDBACK ON THE OTHER SIDE OF THE LANE.

Normal Operation and Fault Conditions

The lane keeping alert provides early feedback on one side of the lane and late feedback on the other side of the lane.

Possible Sources

- Dirty or cracked windshield
- Loose or incorrectly installed IPMA
- Camera alignment

AV1 CHECK FOR THE CORRECT IPMA (IMAGE PROCESSING MODULE A) INSTALLATION

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	CLEAN and INSPECT the windshield in front of the camera. INSPECT the IPMA for proper installation. Using a diagnostic scan tool, PERFORM the front camera alignment.
No	The repair is complete.

PINPOINT TEST AW : DEGRADED PERFORMANCE FROM THE LANE KEEPING ALERT SYSTEM.

Normal Operation and Fault Conditions

Degraded performance from the lane keeping alert system.

Possible Sources

- Dirty or cracked windshield
- Camera alignment

AW1 CHECK FOR THE CORRECT IPMA (IMAGE PROCESSING MODULE A) INSTALLATION

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	CLEAN and INSPECT the windshield in front of the camera. Using a diagnostic scan tool, PERFORM the front camera alignment.
No	The repair is complete.

PINPOINT TEST AX : LANE KEEPING SYSTEM FUNCTION - SERVICE REQUIRED MESSAGE IN IPC (INSTRUMENT PANEL CLUSTER) .

Normal Operation and Fault Conditions

Lane keeping system function - service required message in IPC.

Possible Sources

- PSCM concern

AX1 CHECK FOR CORRECT PSCM (POWER STEERING CONTROL MODULE) OPERATION

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	RETRIEVE and REPAIR all PSCM DTC REFER to: Power Steering (211-02 Power Steering) .
No	The repair is complete.

PINPOINT TEST AY : FRONT CAMERA TEMPORARILY NOT AVAILABLE - MESSAGE IN IPC (INSTRUMENT PANEL CLUSTER) .

Normal Operation and Fault Conditions

Front camera temporarily not available - message in IPC.

Possible Sources

- Temporary over temperature condition

AY1 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	REMOVE the vehicle from direct sunlight, RECHECK after 10 minutes.
No	The repair is complete.

PINPOINT TEST AZ : FRONT CAMERA LOW VISIBILITY - CLEAN SCREEN MESSAGE IN THE IPC (INSTRUMENT PANEL CLUSTER) .

Normal Operation and Fault Conditions

Front camera low visibility - clean screen message in the IPC.

Possible Sources

- Dirty or cracked windshield
- Dirt or debris in between the camera and the windshield
- Camera windshield defrost heater

AZ1 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	CLEAN and INSPECT the windshield in front of the camera. REPAIR or REPLACE the windshield as necessary if damage is found. CLEAN the area between the front camera and the windshield. INSPECT the camera windshield defrost heater for damage and DIAGNOSE any IPMA heater DTC that are present.
No	The repair is complete.

PINPOINT TEST BA : THE LANE KEEPING ALERT WILL NOT TURN OFF.

Normal Operation and Fault Conditions

The lane keeping alert will not turn off.

Possible Sources

- MyKeyÂ® in use

BA1 CHECK FOR THE MYKEYÂ® SETTINGS

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.

Was an obvious cause found?

Yes	Normal operation.
No	The repair is complete.

PINPOINT TEST BB : DTC (DIAGNOSTIC TROUBLE CODE) U023A:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA communicates with the PSCM through the HS-CAN2.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
PSCM U023A:00	Lost Communication With Image Processing Module A: No Sub Type Information	A continuous memory DTC that sets in the PSCM if messages received from the IPMA are missing.

Possible Sources

- Communication network concern
- IPMA concern
- PSCM concern

BB1 VERIFY THE CUSTOMER'S CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to BB2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

BB2 VERIFY THAT THE DIAGNOSTIC SCAN TOOL COMMUNICATES WITH THE IPMA (IMAGE PROCESSING MODULE A)

- Connect a diagnostic scan tool.
- Check that a vehicle session can be established using the diagnostic scan tool.

Can a vehicle session be established?

Yes	GO to BB3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

BB3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.
- Clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to the IPMA DTC Chart in this section.
No	GO to BB4

BB4 PERFORM THE PSCM (POWER STEERING CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the PSCM KOEO self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE all non-network Diagnostic Trouble Codes (DTCs). REFER to: Power Steering (211-02 Power Steering, Diagnosis and Testing).
No	GO to BB5

BB5 PERFORM THE GWM (GATEWAY MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the GWM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	SEE the GWM DTC Chart. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to BB6

BB6 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U023A:00 still present?

Yes	GO to BB7
No	The system is operating correctly at this time. This DTC may have been set due to high network traffic or an intermittent fault condition.

BB7 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the PSCM, IPMA or GWM. If recent service history is found:
  - verify correct replacement module was installed
    - HVBOM may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to BB8
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

BB8 CHECK FOR CORRECT PSCM (POWER STEERING CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PSCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the PSCM module connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (EPAS).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST BC : U053B:00

Refer to Wiring Diagrams Cell 14 for schematic and connector information.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
PSCM U053B:00	Invalid Data Received From Image Processing Module A: No Sub Type Information	A continuous memory and on-demand DTC that sets when the PSCM receives invalid network data from the IPMA.

Possible Sources

- PSCM
- IPMA

BC1 REPEAT THE ON-DEMAND SELF-TEST AND CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

- For DTC U053B:00, Using a diagnostic scan tool, repeat the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	For DTC U053B:00, REPAIR the IPMA Diagnostic Trouble Codes (DTCs). REFER to: Power Steering (211-02 Power Steering, Diagnosis and Testing).
No	Diagnose all network Diagnostic Trouble Codes (DTCs). REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

PINPOINT TEST BD : U0554:00

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
PSCM U0554:00	Invalid Data Received From Accessory Protocol Interface Module: No Sub Type Information	Sets in the IPMA when the PSCM received invalid network data from the APIM.

Possible Sources

- Communication concern
- IPMA
- APIM

BD1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to BD2
No	CLEAR the DTC. The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

BD2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the APIM pass the network test?

Yes	GO to BD3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

BD3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to DTC Chart: IPMA in this section.
No	GO to BD4

BD4 CHECK THE APIM (SYNC MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, check the APIM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to BD5

BD5 PERFORM THE APIM (SYNC MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the APIM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Information and Entertainment System (415-00C) .
No	GO to BD6

BD6 RECHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the IPMA Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Check the IPMA Diagnostic Trouble Codes (DTCs).

Is DTC U0554:00 present?

Yes	GO to BD7
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic, or an intermittent fault condition.

BD7 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: *If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI, or the PMI may not have been carried out.*

- CHECK the vehicle service history for recent service actions related to the APIM or PAM. If recent service history is found:
  - verify correct replacement module was installed
    - vehicle parts build may be used to verify correct part fitment
  - verify the configuration of replacement module was correct
    - re-configure module using as-built data if prior configuration is suspect
  - verify the module was not obtained from a like vehicle and installed into customer vehicle
    - return the swapped module to source vehicle and obtain new replacement module
    - if a new replacement module is installed, PERFORM PMI using as-built data
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to BD8
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

BD8 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the APIM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (APIM).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.