

Parking Aid

DTC Chart(s)

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).

DTC Chart: TRM

DTC	Description	Action <i>New: hover over Pinpoint Test links to show title</i>
B1496:12	Trailer Backup Assist Input Sensor: Circuit Short To Battery	GO to Pinpoint Test D
B1496:14	Trailer Backup Assist Input Sensor: Circuit Short To Ground or Open	GO to Pinpoint Test D
C1B14:11	Sensor Supply Voltage A: Circuit Short To Ground	GO to Pinpoint Test D
C1B14:12	Sensor Supply Voltage A: Circuit Short To Battery	GO to Pinpoint Test D
U2009:1C	Rotary Encoder: Circuit Voltage Out Of Range	GO to Pinpoint Test D
All other Diagnostic Trouble Codes (DTCs)	â€”	REFER to: Trailer Lamps (417-01 Exterior Lighting, Diagnosis and Testing).

DTC Chart: RCM

DTC	Description	Action <i>New: hover over Pinpoint Test links to show title</i>
B1496:11	Trailer Backup Assist Input Sensor: Circuit Short Ground	GO to Pinpoint Test D
B1496:12	Trailer Backup Assist Input Sensor: Circuit Short To Battery	GO to Pinpoint Test D
B1496:68	Trailer Backup Assist Input Sensor: Event Information	GO to Pinpoint Test D
B1496:81	Trailer Backup Assist Input Sensor: Invalid Serial Data Received	GO to Pinpoint Test D
B1496:96	Trailer Backup Assist Input Sensor: Component Internal Failure	GO to Pinpoint Test D
All other Diagnostic Trouble Codes (DTCs)	â€”	REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing).

Symptom 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).

NOTE: Rule out any parking aid camera system concerns prior to diagnosing the PTBA system.

NOTE: The customer trailer needs to be connected to the vehicle to properly diagnose a PTBA system concern.

NOTE: Low battery voltage is a condition that prevents the PTBA system from operating. Verify the battery voltage and condition if the

system is not available prior to diagnosing the PTBA system.

NOTE: Anytime a camera or any body component that a camera is attached to is removed or adjusted, carry out the 360 degree view camera alignment following the repair.

REFER to: 360 Degree View Camera Alignment (413-13B Parking Aid - Vehicles With: Parking Aid Camera, General Procedures).

Condition	Possible Causes	Actions
A module does not communicate with the diagnostic scan tool	-	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
The PTBA control knob status indicator is inoperative or always illuminated (the PTBA system is operating correctly)	Refer to the Pinpoint Test	GO to Pinpoint Test A
The PTBA system consistently jackknifes the trailer	Refer to the Pinpoint Test	GO to Pinpoint Test B
The PTBA system cannot find the trailer target sticker or the IPC message center displays "PTBA Sticker Not Found. Shift to Park" or "PTBA Sticker Not Found. Refer to Owner's Manual"	Refer to the Pinpoint Test	GO to Pinpoint Test C
The PTBA system cannot find the trailer target sticker at night or during low light conditions only	Refer to the Pinpoint Test	GO to Pinpoint Test F
The PTBA system does not turn the trailer sharp enough	Refer to the Pinpoint Test	GO to Pinpoint Test G
The PTBA system goes directly into large turn without the knob being turned	Refer to the Pinpoint Test	GO to Pinpoint Test H
The PTBA system does not backup the trailer straight	Refer to the Pinpoint Test	GO to Pinpoint Test I
Frozen or slow screen transitions between PTBA camera views	Refer to the Pinpoint Test	GO to Pinpoint Test E
The IPC message center displays "Pro Trailer Backup Assist, System is Not Available."	Refer to the Pinpoint Test	GO to Pinpoint Test D
The IPC message center or the centerstack infotainment display shows a "Pro Trailer Backup Assist, Stop Now" message	Refer to the Pinpoint Test	GO to Pinpoint Test D
The IPC message center displays "Sensor Not Detected. Refer to Owners Manual"	Refer to the Pinpoint Test	GO to Pinpoint Test K

Condition	Possible Causes	Actions
The PTBA system is inoperative or does not operate correctly	Refer to the Pinpoint Test	GO to Pinpoint Test D
The IPC displays "Driving Required to initialize Steering"	Refer to the Pinpoint Test	GO to Pinpoint Test J
The IPC message center trailer information or the PTBA displays are inoperative or always displayed	-	REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
The IPC message center or the LH upper steering wheel switch is not operating correctly	-	REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
Rear parking aid camera/display concern	-	REFER to: Parking Aid (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Diagnosis and Testing).

Pinpoint Test(s)

☐ [PINPOINT TEST A : THE PTBA \(PRO TRAILER BACKUP ASSIST\) CONTROL KNOB STATUS INDICATOR IS INOPERATIVE OR ALWAYS ILLUMINATED](#)

Refer to Wiring Diagrams Cell [95](#) for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- Wiring, terminals or connectors
- PTBA control knob
- GWM concern
- PSCM concern
- TRM

A1 VERIFY THE CONCERN

- Verify the operation of the PTBA system.

Does the PTBA control knob status indicator operate correctly?

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 PTBA system operates. Refer to the Owner's Literature.
No	GO to A2

A2 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE GWM (GATEWAY MODULE A) SELF-TEST

- Using the diagnostic scan tool, carry out the GWM self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

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

A3 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE PSCM (POWER STEERING CONTROL MODULE) SELF-TEST

- Using the diagnostic scan tool, carry out the PSCM self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	See the PSCM DTC Chart. □ Click here to access Guided Routine (EPAS).
No	GO to A4

A4 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE TRM (TRAILER MODULE) SELF-TEST

- Using the diagnostic scan tool, carry out the TRM self-test.

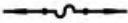
Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	REFER to the TRM DTC Chart in this section.
No	If the PTBA control knob status indicator is inoperative, GO to A5 If the PTBA control knob status indicator is always illuminated, GO to A9

A5 BYPASS THE TRM (TRAILER MODULE)

- Ignition OFF.
- Disconnect TRM [C2496C](#) . **NOTE:** *If the jumper wire fuse fails during this step, refer to the Wiring Diagrams manual to identify the possible causes of the circuit short.*
- Connect:

TRAILER TOW MODULE	
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Positive Lead	Measurement / Action	Negative Lead
C2496C-6		Positive Battery Terminal

Does the PTBA control knob status indicator illuminate?

Yes	REMOVE the fused jumper wire. GO to A10
No	REMOVE the fused jumper wire. GO to A6

A6 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB INDICATOR CIRCUIT FOR A SHORT TO GROUND

- Disconnect PTBA Control Knob [C2599](#) .
- Measure:

PRO TRAILER BACKUP ASSIST CONTROL KNOB	
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Positive Lead	Measurement / Action	Negative Lead
C2599-7	Ω	Ground

Is resistance greater than 10,000 ohms?

Yes	GO to A7
No	REPAIR the circuit.

A7 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB STATUS INDICATOR CIRCUIT FOR AN OPEN

- Measure:

PRO TRAILER BACKUP ASSIST CONTROL KNOB	TRAILER TOW MODULE
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Positive Lead	Measurement / Action	Negative Lead
C2599-7	Ω	C2496C-6

Is the resistance less than 3 ohms?

Yes	GO to A8
No	REPAIR the circuit.

A8 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB GROUND CIRCUIT FOR AN OPEN

- Measure:

PRO TRAILER BACKUP ASSIST CONTROL KNOB	
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Positive Lead	Measurement / Action	Negative Lead
C2599-6	Ω	Ground

Is the resistance less than 3 ohms?

Yes	INSTALL a new PTBA control knob. REFER to: Pro Trailer Backup Assist Control Knob (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Removal and Installation).
No	REPAIR the circuit.

A9 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB STATUS INDICATOR CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect TRM [C2496C](#) .
- Disconnect PTBA Control Knob [C2599](#) .
- Ignition ON.
- Measure:

PRO TRAILER BACKUP ASSIST CONTROL KNOB	
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Positive Lead	Measurement / Action	Negative Lead
C2599-7		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to A10

A10 CHECK FOR CORRECT TRM (TRAILER MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all TRM 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 TRM 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 TRM. REFER to: Trailer Module (TRM) (417-01 Exterior Lighting, 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 PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM CONSISTENTLY JACKKNIFES THE TRAILER.

Refer to Wiring Diagrams Cell [95](#) for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- Communication network concern
- IPC parameters/measurement concern
- PTBA camera alignment (also known as Trailer Angle Detection (TAD) calibration) concern
- PSCM concern
- The trailer design is not supported by the PTBA
- IPMB
- RCM
- Trailer yaw rate sensor installation
- Backing at low speed below 1 kph for extended duration with fifth wheel or gooseneck trailer

Visual Inspection and Pre-checks

- Verify the tailgate is fully closed.
- Verify that the user input measurements are correct by going through the replace PTBA sticker menu option in the trailer menu of the IPC. Compare the measurements of the trailer to the ones that are present in the system. Correct any errors that are found and reevaluate.
- Verify that there is no damage/issues with the tailgate/tailgate release handle or tailgate support structure. This can affect the camera alignment and ability of the PTBA system to locate and track the trailer target sticker. It must be repaired before any PTBA operational concerns can be addressed.

B1 VERIFY THE CONCERN

- Verify the operation of the PTBA system.

Does the PTBA system operate correctly?

Yes	The system is operating correctly at this time. The concern may have been caused by incorrect trailer measurements or the driver's perception of how the PTBA system operates. Refer to the Owner's Literature.
No	GO to B2

B2 CARRY OUT A NETWORK TEST

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

Do all modules pass the network test?

Yes	GO to B3
No	See the Symptom Chart: Communication Network. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

B3 CHECK THE PSCM (POWER STEERING CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the PSCM DTC Chart. □ Click here to access Guided Routine (EPAS).
No	For a conventional trailer, GO to B4 For a gooseneck or 5th wheel trailer, GO to B5

B4 CHECK THE IPMB (IMAGE PROCESSING MODULE B) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the IPMB self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the IPMB DTC Chart. REFER to: Parking Aid (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Diagnosis and Testing).
No	GO to B6

B5 CHECK THE RCM (RESTRAINTS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

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

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the RCM DTC Chart in this section.
No	Verify trailer yaw rate sensor installation. If the sensor is installed correctly, carry out the gooseneck or 5th wheel trailer setup and calibration. REFER to the Owner's Literature.

B6 CARRY OUT THE 360 DEGREE VIEW CAMERA ALIGNMENT

- Using a diagnostic scan tool, carry out the 360 degree view camera alignment.
REFER to: 360 Degree View Camera Alignment (413-13B Parking Aid - Vehicles With: Parking Aid Camera, General Procedures).
- Operate the PTBA system and determine if the concern is still present.

Is the concern still present?

Yes	GO to B7
No	The system is operating correctly at this time. The concern was a result of a PTBA camera alignment issue.

B7 MODIFY THE TRAILER PARAMETERS IN IPC (INSTRUMENT PANEL CLUSTER)

- Go to the IPC message center trailer menu and select "Change Pro Trailer Sticker".
- Go to measurement D input screen and reduce the vehicle tailgate to trailer axle length by 10%.
- Operate the system and determine if the concern is still present.
- If the issue is not resolved, repeat and reduce the trailer axle length by an additional 10%.

Is the concern still present?

Yes	INFORM the customer that the PTBA system does not support the trailer design.
No	INFORM the customer that the concern was resolved by modifying the vehicle tailgate to trailer axle length. The dimension for length has been updated. If dimensions for this trailer are changed back, the jackknife issue will likely return.

PINPOINT TEST C : THE PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM CONSISTENTLY LOSES THE TRAILER TARGET STICKER (CONVENTIONAL TRAILER)

Refer to Wiring Diagrams Cell [95](#) for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- Dirty or scratched camera lens
- Rear parking aid camera view obstruction
- Communication network concern
- PTBA camera alignment (also known as Trailer Angle Detection (TAD) calibration) concern
- Rear parking aid camera
- PSCM concern
- IPMB

Visual Inspection and Pre-checks

- Verify the tailgate is fully closed.
- Verify that the PTBA trailer target sticker is clean and not obstructed from view of the rear parking aid camera.
- Inspect the rear parking aid camera lenses for damage, dirt, debris and scratches.
- Verify that the user input measurements are correct by going through the replace PTBA sticker menu option in the trailer menu of the IPC. Compare the measurements of the trailer to the ones that are present in the system. Correct any errors that are found and reevaluate.
- Verify that there is no damage/issues with the tailgate/tailgate release handle or tailgate support structure. This can affect the camera alignment and ability of the PTBA system to locate and track the trailer target sticker. It must be repaired before any PTBA operational concerns can be addressed.
- If the rear parking aid camera is not configured after replacement, some functions will be inoperative. Verify the rear parking aid camera configuration using the diagnostic scan tool (LIN New Module Initialization- IPMB).

NOTE: Make sure nothing obstructs the rear parking camera view of the sticker. For example, items such as a jack handle or wiring.

C1 VERIFY THE CONCERN

- Verify the operation of the PTBA system.

Does the PTBA system operate correctly?

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 PTBA system operates. Refer to the Owner's Literature.
No	GO to C2

C2 CHECK AND CLEAN THE REAR PARKING AID CAMERA LENS

- Clean and make sure the rear parking aid camera lens is clear of any debris and scratches.

Is the rear parking aid camera lens damaged?

Yes	INSTALL a new rear parking aid camera. REFER to: Rear Parking Aid Camera (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Removal and Installation).
No	GO to C3

C3 CARRY OUT A NETWORK TEST

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

Do all modules pass the network test?

Yes	GO to C4
No	See the Symptom Chart: Communication Network. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

C4 CHECK THE PSCM (POWER STEERING CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the PSCM DTC Chart. □ Click here to access Guided Routine (EPAS).
No	GO to C5

C5 CHECK THE IPMB (IMAGE PROCESSING MODULE B) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the IPMB self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the IPMB DTC Chart. REFER to: Parking Aid (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Diagnosis and Testing).
No	GO to C6

C6 CARRY OUT THE PTBA (PRO TRAILER BACKUP ASSIST) CAMERA ALIGNMENT

- Using a diagnostic scan tool, carry out the PTBA camera alignment.
REFER to: Pro Trailer Backup Assist Camera Alignment (413-13 Parking Aid - Trailer Back Up Assist (TBA)) .
- Operate the PTBA system and determine if the concern is still present.

Is the concern still present?

Yes	GO to C7
No	The system is operating correctly at this time. The concern was a result of a PTBA camera alignment issue.

C7 CHECK FOR CORRECT REAR PARKING AID CAMERA OPERATION

- Ignition OFF.
- Disconnect and inspect all rear parking aid camera 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 rear parking aid camera 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 rear parking aid camera. REFER to: Rear Parking Aid Camera (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Removal and Installation). If the concern is still present after the rear parking aid camera replacement, GO to C8
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.

C8 CHECK FOR CORRECT IPMB (IMAGE PROCESSING MODULE B) OPERATION

- Ignition OFF.
- Disconnect and inspect all IPMB 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 IPMB 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 IPMB. REFER to: Image Processing Module B (IPMB) (413-13B Parking Aid - Vehicles With: Parking Aid Camera, 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 D : THE PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

Refer to Wiring Diagrams Cell [14](#) for schematic and connector information.

Refer to Wiring Diagrams Cell [95](#) for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
TRM B1496:12	Trailer Backup Assist Input Sensor: Circuit Short To Battery	A continuous memory DTC that sets in the TRM when the PTBA control knob sensor signal input circuit is shorted to battery voltage.
TRM B1496:14	Trailer Backup Assist Input Sensor: Circuit Short To Ground Or Open	A continuous memory DTC that sets in the TRM when the PTBA control knob sensor signal input circuit is shorted to ground or open.
TRM C1B14:11	Sensor Supply Voltage A: Circuit Short To Ground	A continuous memory DTC that sets in the TRM when the PTBA control knob sensor supply circuit is shorted to ground or open.
TRM C1B14:12	Sensor Supply Voltage A: Circuit Short To Battery	A continuous memory DTC that sets in the TRM when the PTBA control knob sensor supply circuit is shorted to battery voltage.
TRM U2009:1C	Rotary Encoder: Circuit Voltage Out Of Range	A continuous memory DTC that sets in the TRM when the PTBA control knob voltage is out of the specified range.
RCM B1496:11	Trailer Backup Assist Input Sensor: Circuit Short To Ground	A continuous memory or on demand DTC that sets in the RCM when the trailer yaw rate sensor signal input circuit is shorted to ground.
RCM B1496:12	Trailer Backup Assist Input Sensor: Circuit Short To Battery	A continuous memory or on demand DTC that sets in the RCM when the trailer yaw rate sensor signal input circuit is shorted to battery voltage.
RCM B1496:68	Trailer Backup Assist Input Sensor: Event Information	A continuous memory or on demand DTC that sets in the RCM when the trailer yaw rate sensor stores event information.
RCM B1496:81	Trailer Backup Assist Input Sensor: Invalid Serial Data Received	A continuous memory or on demand DTC that sets in the RCM when it receives invalid serial data from the trailer yaw rate sensor.

RCM B1496:96	Trailer Backup Assist Input Sensor: Component Internal Failure	A continuous memory or on demand DTC that sets in the RCM when the trailer yaw rate sensor detects an internal failure.
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Possible Sources

- Wiring, terminals or connectors
- Dirty or scratched camera lens
- Obstruction between the rear parking aid camera lens and the trailer target sticker
- Incorrect trailer setup and/or measurements
- Communication network concern
- Charging system concern
- Vehicle speed input concern
- Rear parking aid camera concern
- Speedometer indication concern
- Gear range concern
- ABS module concern
- PCM concern
- IPC concern
- GWM concern
- IPMB concern
- PTBA control knob
- TRM
- PSCM
- RCM
- Trailer yaw rate sensor
- Trailer yaw rate sensor wiring harness
- Backing at low speed below 1 kph for extended duration with fifth wheel or gooseneck trailer

Visual Inspection and Pre-checks

- Verify the tailgate is fully closed.
- Verify the vehicle wasn't allowed to roll rearward or forward before system activation while the transmission is in reverse.
- Verify pressure or resistance wasn't placed on the steering wheel while the PTBA system was active.
- Verify the operation of the rear parking aid camera system.
- Check for obstruction between the rear parking aid camera lens and the trailer target sticker.
- Check the trailer target sticker condition.
- Verify for correct trailer setup and measurements. Refer to the Owner's Literature.
- Check the battery condition and state of charge.
- If the rear parking aid camera is not configured after replacement, some functions will be inoperative. Verify the rear parking aid camera configuration using the diagnostic scan tool (LIN New Module Initialization- IPMB).

NOTE: The engine needs to be running for the PTBA system and PTBA control knob status indicator to function.

NOTE: If the battery was recently discharged, disconnected, is currently discharged, or a module is disconnected or replaced, the PTBA system may be inoperative until the vehicle is driven straight forward above 40 km/h (25 mph) before the system is available again.

If the PTBA remains inoperative, it may be necessary to disconnect the battery for 5 minutes with the driver's door open, then drive the vehicle straight forward above 40 km/h (25 mph).

NOTE: Before disconnecting the PTBA control knob, verify the connector is properly seated and latched.

D1 VERIFY THE CONCERN

- Verify the operation of the PTBA system.

Does the PTBA system operate correctly?

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 PTBA system operates. Refer to the Owner's Literature.
No	GO to D2

D2 CHECK THE BATTERY CONDITION AND STATE OF CHARGE

- Ignition OFF.
- 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 D3
No	If the battery is discharged, DIAGNOSE the cause of the low battery condition. REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing). If the battery condition fails, INSTALL a new battery. REFER to: Battery (414-01 Battery, Mounting and Cables, Removal and Installation).

D3 CARRY OUT A NETWORK TEST

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

Do all modules pass the network test?

Yes	GO to D4
No	See the Symptom Chart: Communication Network. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

D4 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE IPC (INSTRUMENT PANEL CLUSTER) SELF-TEST

- Using the diagnostic scan tool, carry out the IPC self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	See DTC Chart: IPC. REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
No	GO to D5

D5 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE PSCM (POWER STEERING CONTROL MODULE) SELF-TEST

- Using the diagnostic scan tool, carry out the PSCM self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	See the PSCM DTC Chart. □ Click here to access Guided Routine (EPAS).
No	GO to D6

D6 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE GWM (GATEWAY MODULE A) SELF-TEST

- Using the diagnostic scan tool, carry out the GWM self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	See the GWM DTC Chart. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to D7

D7 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE RCM (RESTRAINTS CONTROL MODULE) SELF-TEST

- Using the diagnostic scan tool, carry out the RCM self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	For Diagnostic Trouble Codes (DTCs) B1496:11, B1496:12, B1496:68 or B1496:81; GO to D15 For Diagnostic Trouble Codes (DTCs) B1496:96, INSTALL a new trailer yaw rate sensor. For all other RCM Diagnostic Trouble Codes (DTCs). REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing).
No	GO to D8

D8 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE IPMB (IMAGE PROCESSING MODULE B) SELF-TEST

- Using a diagnostic scan tool, carry out the IPMB self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the IPMB DTC Chart. REFER to: Parking Aid (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Diagnosis and Testing).
No	GO to D9

D9 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE ABS (ANTI-LOCK BRAKE SYSTEM) MODULE SELF-TEST

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

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the ABS module DTC Chart. REFER to: Anti-Lock Brake System (ABS) and Stability Control (206-09 Anti-Lock Brake System (ABS) and Stability Control, Diagnosis and Testing).
No	GO to D10

D10 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE PCM (POWERTRAIN CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, carry out the PCM self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the PCM DTC Chart in Electronic Engine Controls. Refer to the appropriate 303-14 section.
No	GO to D11

D11 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE TRM (TRAILER MODULE) SELF-TEST

- Using the diagnostic scan tool, carry out the TRM self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	For DTC B1496:12 or C1B14:12, GO to D19 For DTC B1496:14 or C1B14:11, GO to D20 For all other TRM Diagnostic Trouble Codes (DTCs), REFER to: Trailer Lamps (417-01 Exterior Lighting, Diagnosis and Testing).
No	GO to D12

D12 VERIFY THE PSCM (POWER STEERING CONTROL MODULE) CENTER CALIBRATION

- Start the engine.
- Using a diagnostic scan tool, monitor the PSCM PID: SW_ANGLE.
- While monitoring the SW_ANGLE PID, turn the steering wheel to the full LH lock position and then to the full RH lock position.

Does the PID value change when the steering wheel is turned?

Yes	GO to D13
No	DRIVE the vehicle straight on a flat/smooth road above 40 km/h (25 mph) with minimal driver steering input for 30 seconds. VERIFY the PID as indicated above. If the PID value changes when the steering wheel is turned, operate the PTBA system and determine if the concern is still present. If the concern is still present, GO to D13 If the concern is no longer present, the PSCM center calibration resolved the concern. If the PID value doesn't change when the steering wheel is turned, Click here to access Guided Routine (EPAS) .

D13 CHECK THE PCM (POWERTRAIN CONTROL MODULE) TRANSMISSION RANGE PID (PARAMETER IDENTIFICATION)

- Ignition ON.
- Apply the parking brake.
- Using a diagnostic scan tool, view PCM Parameter Identifications (PIDs).
- Monitor the TR PID.
- Place the gear selector in REVERSE (R).

Does the PID indicate the gear range is in reverse?

Yes	GO to D14
No	DIAGNOSE the transmission range concern. REFER to: External Controls (307-05A Automatic Transmission External Controls - 6-Speed Automatic Transmission â€™ 6R100, Diagnosis and Testing).

D14 CHECK FOR CORRECT SPEEDOMETER OPERATION

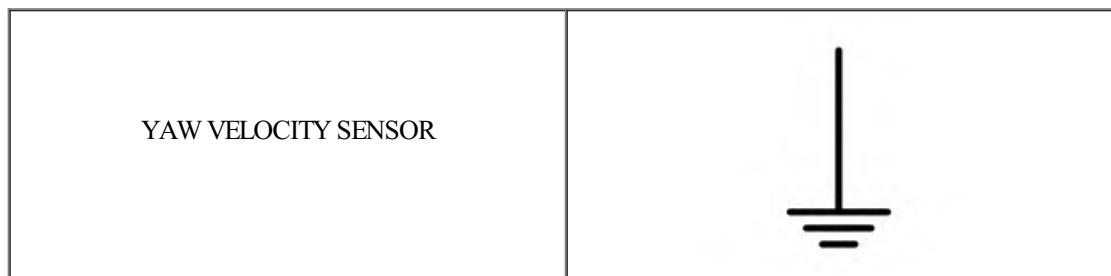
- Verify the operation of the speedometer.

Does the speedometer operate correctly?

Yes	GO to D18
No	DIAGNOSE the speedometer. REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).

D15 CHECK THE TRAILER YAW RATE SENSOR CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect RCM [C310B](#) .
- Disconnect Trailer yaw rate sensor [C3819](#) .
- Measure:



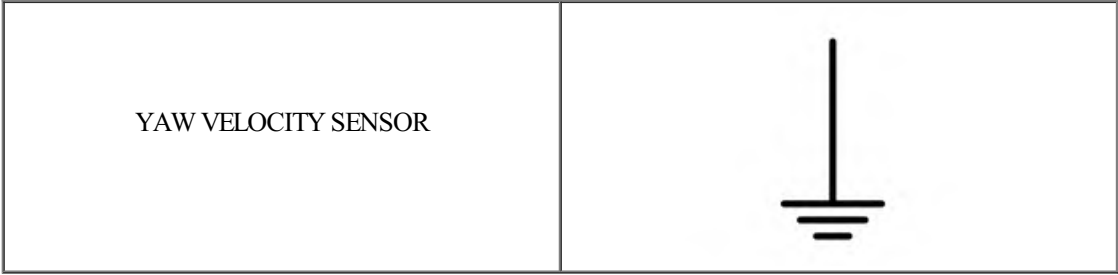
Positive Lead	Measurement / Action	Negative Lead
C3819-1	Ω	Ground
C3819-2	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to D16
No	REPAIR the circuit in question.

D16 CHECK THE TRAILER YAW RATE SENSOR CIRCUITS FOR A SHORT TO POWER

- Ignition ON.
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C3819-1		Ground
C3819-2		Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to D17

D17 CHECK THE TRAILER YAW RATE SENSOR CIRCUITS FOR AN OPEN

- Ignition OFF.
- Measure:

YAW VELOCITY SENSOR	RESTRAINTS CONTROL MODULE (RCM)
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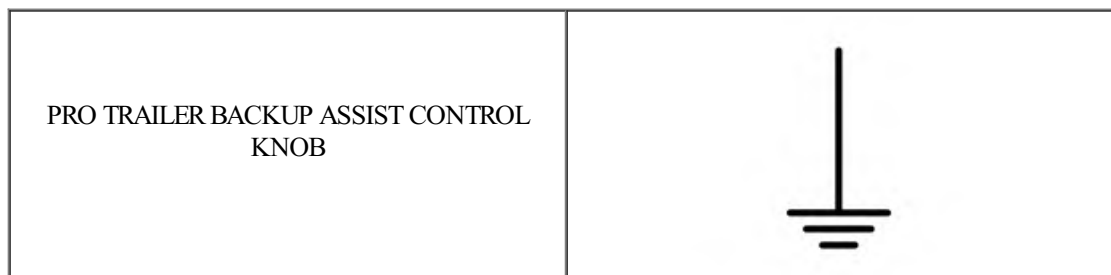
Positive Lead	Measurement / Action	Negative Lead
C3819-1	Ω	C310B-29
C3819-2	Ω	C310B-30

Are the resistances less than 3 ohms?

Yes	INSTALL a new trailer yaw rate sensor. If the concern is still present after the trailer yaw rate sensor replacement, GO to D22
No	REPAIR the circuit in question.

D18 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB GROUND CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect PTBA Control Knob [C2599](#) .
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C2599-6	Ω	Ground

Is the resistance less than 3 ohms?

Yes	GO to D19
No	REPAIR the circuit.

D19 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect PTBA Control Knob [C2599](#) .
- Disconnect TRM [C2496C](#) .
- Ignition ON.
- Measure:

PRO TRAILER BACKUP ASSIST CONTROL KNOB	
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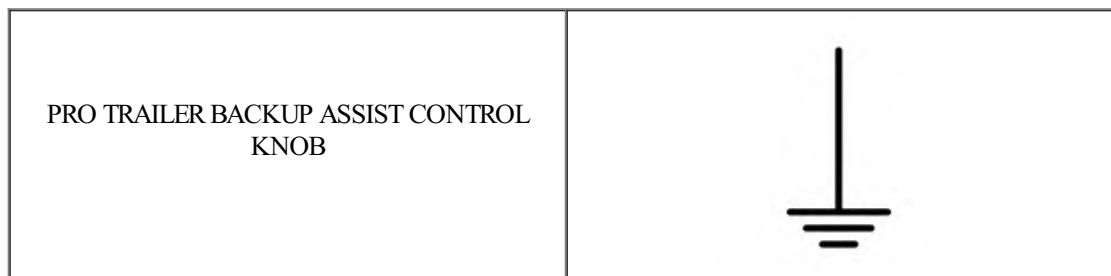
Positive Lead	Measurement / Action	Negative Lead
C2599-1		Ground
C2599-2		Ground
C2599-3		Ground
C2599-5		Ground

Is any voltage present?

Yes	REPAIR the circuit(s) in question.
No	GO to D20

D20 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect PTBA Control Knob [C2599](#) .
- Disconnect TRM [C2496C](#) .
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C2599-1	Ω	Ground
C2599-2	Ω	Ground
C2599-3	Ω	Ground
C2599-5	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to D21
No	REPAIR the circuit in question.

D21 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB CIRCUITS FOR AN OPEN

- Measure:

PRO TRAILER BACKUP ASSIST CONTROL KNOB	TRAILER TOW MODULE
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Positive Lead	Measurement / Action	Negative Lead
C2599-1	Ω	C2496C-2
C2599-2	Ω	C2496C-4
C2599-3	Ω	C2496C-5
C2599-5	Ω	C2496C-7

Are the resistances less than 3 ohms?

Yes	INSTALL a new PTBA control knob. REFER to: Pro Trailer Backup Assist Control Knob (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Removal and Installation). If the concern is still present after the PTBA control knob replacement, GO to D23
No	REPAIR the circuit in question.

D22 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 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 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 a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

D23 CHECK FOR CORRECT TRM (TRAILER MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all TRM 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 TRM 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 TRM. REFER to: Trailer Module (TRM) (417-01 Exterior Lighting, Removal and Installation). If the concern is still present after the TRM replacement, GO to D24
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.

D24 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 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 E : FROZEN OR SLOW SCREEN TRANSITIONS BETWEEN PTBA (PRO TRAILER BACKUP ASSIST) CAMERA VIEWS

Refer to Wiring Diagrams Cell [95](#) for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- IPMB

E1 CHECK FOR CORRECT IPMB (IMAGE PROCESSING MODULE B) OPERATION

- Ignition OFF.
- Disconnect and inspect all IPMB 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 IPMB 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 IPMB. REFER to: Image Processing Module B (IPMB) (413-13B Parking Aid - Vehicles With: Parking Aid Camera, 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 F : THE PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM CANNOT FIND THE TRAILER TARGET STICKER AT NIGHT OR DURING LOW LIGHT CONDITIONS ONLY

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- PTBA not enabled or activated
- Inoperative trailer assist lamp
- Dirty camera lens
- PTBA trailer target sticker concern

F1 CHECK AND CLEAN THE REAR VIDEO CAMERA LENS

- Clean and make sure the rear parking aid camera lens is clear of any debris.
- Ignition ON.
- Test the system and verify the parking aid camera image.

Is the parking aid camera clean and functioning correctly?

Yes	GO to F2
No	REFER to: Parking Aid (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Diagnosis and Testing).

F2 VERIFY THE PTBA (PRO TRAILER BACKUP ASSIST) IS ENABLED

- Verify the PTBA is enabled.

Is the PTBA is enabled?

Yes	GO to F3
No	ENABLE the PTBA system.

F3 VERIFY THAT PTBA (PRO TRAILER BACKUP ASSIST) TRAILER TARGET STICKER IS CLEAN AND INSTALLED CORRECTLY

- Verify that PTBA trailer target sticker is clean and installed correctly.

Is the PTBA trailer target sticker is clean and installed correctly

Yes	GO to F4
No	CLEAN or REPLACE the PTBA trailer target sticker as needed. REFER to the Owner's Literature.

F4 VERIFY THAT THE TRAILER ASSIST LAMP IS OPERATING CORRECTLY

- Verify that the trailer assist lamp is operating correctly.

Is the trailer assist lamp functioning correctly?

Yes	GO to F5
No	REFER to: Interior Lighting (417-02 Interior Lighting, Diagnosis and Testing).

F5 CHECK FOR CORRECT IPMB (IMAGE PROCESSING MODULE B) OPERATION

- Ignition OFF.
- Disconnect and inspect all IPMB 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 IPMB 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 IPMB. REFER to: Image Processing Module B (IPMB) (413-13B Parking Aid - Vehicles With: Parking Aid Camera, 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 G : THE PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM DOES NOT TURN THE TRAILER SHARP ENOUGH

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- Incorrect trailer setup
- Trailer yaw rate sensor installation concern

G1 IDENTIFY THE TYPE OF TRAILER THAT IS BEING USED

- Identify the type of trailer that is being used.

Is the concern with a conventional trailer?

Yes	GO to G3
No	For gooseneck or 5th wheel trailers, GO to G2

G2 VERIFY THAT THE TRAILER IS SET UP CORRECTLY

NOTE: The trailer yaw rate sensor needs to be calibrated, if the sensor needs to be moved or installed correctly. REFER to the Owner's Literature.

- Verify that the trailer is set up correctly and the trailer yaw rate sensor is installed correctly.

Is the trailer set up correctly and the sensor installed correctly?

Yes	No action is required. Normal operation due to the hitch angle limiting feature.
No	Carry out the gooseneck or 5th wheel trailer setup. REFER to the Owner's Literature.

G3 VERIFY THAT THE TRAILER IS SET UP WITH THE CORRECT MEASUREMENTS

- Verify that the trailer is set up with the correct measurements.

Is the trailer is set up with the correct measurements?

Yes	No action is required. Normal operation due to the hitch angle limiting feature.
No	Set up the trailer measurements. REFER to the Owner's Literature.

PINPOINT TEST H : THE PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM GOES DIRECTLY INTO LARGE TURN WITHOUT THE KNOB BEING TURNED

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- The wrong trailer in the trailer selection menu
- PTBA trailer target sticker concern
- Sticky or defective PTBA control knob
- Trailer yaw rate sensor installation concern

H1 VERIFY THE TRAILER SELECTED IN IPC (INSTRUMENT PANEL CLUSTER) IS THE SAME AS THE ONE BEING USED

- Verify that the correct trailer is selected.

Is the correct trailer selected in the IPC?

Yes	For conventional trailers, GO to H3 For gooseneck or 5th wheel trailers, GO to H2
No	The correct trailer needs to be selected.

H2 VERIFY THAT THE TRAILER IS SET UP CORRECTLY

NOTE: The trailer yaw rate sensor needs to be calibrated, if the sensor needs to be moved or installed correctly. REFER to the Owner's Literature.

- Verify that the trailer is set up correctly and the trailer yaw rate sensor is installed correctly.

Is the trailer set up correctly and the sensor installed correctly?

Yes	GO to H4
No	Carry out the gooseneck or 5th wheel trailer setup. REFER to the Owner's Literature.

H3 VERIFY THAT THE TRAILER IS SET UP WITH THE CORRECT MEASUREMENTS

- Verify that the trailer is set up with the correct measurements.

Is the trailer is set up with the correct measurements?

Yes	GO to H4
No	Set up the trailer measurements. REFER to the Owner's Literature.

H4 CHECK FOR CORRECT PRO TRAILER BACK UP ASSIST CONTROL KNOB OPERATION

- Ignition OFF.
- Disconnect and inspect the pro trailer back up assist control knob 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 pro trailer back up assist control knob 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 pro trailer back up assist control knob connector. REFER to: Pro Trailer Backup Assist Control Knob (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), 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 I : THE PTBA \(PRO TRAILER BACKUP ASSIST\) SYSTEM DOES NOT BACKUP THE TRAILER STRAIGHT](#)

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- The ground is irregular
- The vehicle and trailer were on an irregular or highly crowned road when calibrated
- The rear parking aid camera, the tailgate or the tailgate release handle is damaged affecting the position of the camera
- The drawbar connection to the hitch receiver has excessive lash
- The tires are not inflated to the correct pressure, the tires are not the same size or the tires are not the OE (original equipment) size
- Vehicle or trailer suspension concern
- Trailer yaw rate sensor installation concern
- Fifth wheel hitch has excessive lash or is not centered left/right in the bed.
- Gooseneck ball connection to trailer has excessive lash or is not centered left/right in the bed.

11 IDENTIFY THE TYPE OF TRAILER THAT IS BEING USED

- Identify the type of trailer that is being used.

Is the concern with a conventional trailer?

Yes	GO to 13
No	For gooseneck or 5th wheel trailers, GO to 12

12 VERIFY THAT THE TRAILER IS SET UP CORRECTLY

NOTE: The trailer yaw rate sensor needs to be calibrated, if the sensor needs to be moved or installed correctly. REFER to the Owner's Literature.

- Verify that the trailer is set up correctly and the trailer yaw rate sensor is installed correctly.

Is the trailer set up correctly and the sensor installed correctly?

Yes	GO to 17
No	Carry out the gooseneck or 5th wheel trailer setup. REFER to the Owner's Literature.

13 CHECK THE REAR VIDEO CAMERA, TAILGATE OR TAILGATE RELEASE HANDLE FOR DAMAGE

- Check the rear video camera, tailgate or tailgate release handle for damage.

Is there any damage to the rear video camera, tailgate or tailgate release handle?

Yes	REPAIR or REPLACE the component(s) as necessary. INFORM the customer that trailers in the IPC memory may need to be recalibrated. REFER to the Owner's Literature.
No	GO to 14

14 VERIFY THE CONCERN ON FLAT SURFACE

- Verify the concern on flat surface.

Does the trailer back up straight on a flat surface?

Yes	INFORM the customer that irregular ground can affect how straight the PTBA system backs up the trailer when the PTBA control knob is not turned. The PTBA control knob may need to be turned to maintain straight backing on some surfaces. REFER to the Owner's Literature.
No	GO to 15

I5 CARRY OUT THE TRAILER CALIBRATION ON A FLAT SURFACE

- Carry out the trailer calibration on a flat surface. Refer to the owner's literature.

Is the system operating correctly at this time?

Yes	No action is required.
No	GO to 16

I6 CHECK THE DRAWBAR CONNECTION TO THE HITCH RECEIVER FOR EXCESSIVE LASH

- Check the drawbar connection to the hitch receiver for excessive lash.

Is there excessive lash between the drawbar connection and hitch receiver?

Yes	INFORM the customer some PTBA control knob input may be required to account for significant lash in drawbar connection. REFER to the Owner's Literature.
No	GO to 17

I7 CHECK VEHICLE AND TRAILER TIRES AND SUSPENSION

- CHECK vehicle and trailer tires and suspension
 - tire pressure
 - condition of the tire and tire size

Is there issues with the vehicle or trailer tires or suspension?

Yes	REPAIR or REPLACE the component(s) as necessary.
No	No action is required.

☐ PINPOINT TEST J : DRIVING REQUIRED TO INITIALIZE STEERING

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- Trailer backup assist steering control initialization

J1 CARRY OUT THE TRAILER BACKUP ASSIST STEERING CONTROL INITIALIZATION

- Drive the vehicle above 40 kph (25 mph).

Does the system work properly after initialization?

Yes	No action is required. The system needed to be initialized.
No	REFER to the symptom chart in this section.

PINPOINT TEST K : THE IPC (INSTRUMENT PANEL CLUSTER) MESSAGE CENTER DISPLAYS "SENSOR NOT DETECTED REFER TO OWNERS MANUAL"

Normal Operation and Fault Conditions

REFER to: Parking Aid - System Operation and Component Description (413-13C Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Sources

- Trailer yaw rate sensor wiring

Visual Inspection and Pre-checks

- Verify that there is a 7/12 way trailer tow connector installed in the bed or on the bumper of the vehicle.
- Verify that there is a trailer yaw rate sensor installed on the trailer.

K1 INSPECT THE TRAILER WIRING FROM THE 12 WAY CONNECTOR TO THE TRAILER YAW RATE SENSOR

- Check that the 12 way connector is fully inserted into the 12 way socket. The red rubber seal is not visible when the connector is fully inserted.
- Check that the wiring harness sensor connection is fully inserted at the trailer yaw rate sensor.
- Check for damaged wiring between the 12 way connector and the trailer yaw rate sensor.
- If you have a 12 way connector inside the bed and on the bumper, ensure that only a single trailer yaw rate sensor is connected.

Is the 12 pin trailer yaw rate sensor wiring damaged?

Yes	REPAIR the 12 pin trailer yaw rate sensor wiring.
No	GO to K2

K2 CHECK THE RCM (RESTRAINTS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the RCM DTC Chart in this section.
No	REFER to the symptom chart in this section.

