

Parking Aid

DTC Chart(s)

DTC Chart: IPMB

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	Description	Action
B1530:78	Trailer Aid Camera Angle Detection: Alignment or Adjustment Incorrect	• Sets in continuous memory and on-demand in the IPMB when the PTBA camera alignment has not been successfully completed. ◦ PERFORM the PTBA camera alignment using a diagnostic scan tool. REFER to: Pro Trailer Back Up Assist Camera Alignment (413-13D Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), General Procedures).
All other Diagnostic Trouble Codes (DTCs)	—	REFER to: Parking Aid (413-13 Parking Aid - Vehicles With: Parking Aid Camera) .

DTC Chart: TRM

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	Description	Action
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
All other Diagnostic Trouble Codes (DTCs)	—	REFER to: Trailer Lamps (417-01 Exterior Lighting, 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: On vehicles equipped with the rear only parking aid camera system, anytime the rear parking aid camera or any body component that the camera is attached to is removed or adjusted, the PTBA camera alignment must be performed following the repair.

Refer to PTBA Camera Alignment in this section.

NOTE: On vehicles equipped with the 360 degree view camera system, anytime a camera or any body component that a camera is attached to is removed or adjusted, the 360 degree view camera alignment **and** the PTBA camera alignment must be performed following the repair.

Refer to 360 Degree View Camera Alignment in section 413-13B (Parking Aid - Vehicles With: Parking Aid Camera).

Refer to PTBA Camera Alignment in this section.

Condition	Possible Causes	Actions
A module does not communicate with the diagnostic scan tool	• Fuse • Wiring, terminals or connectors • Module	See: Symptom Chart: Communication Network. 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"	• Incorrect user measurements	Verify the setup measurements. REFER to the Owner's Literature.
	• Dirty or iced over rear parking aid camera lens	INSPECT the rear parking aid camera lens for debris, dirt, ice or snow accumulation. CLEAN the rear parking aid camera as necessary.

	There is no trailer target sticker on the trailer tongue or the trailer target sticker is not located on the correct zone of the trailer tongue	The PTBA system works only if a trailer target sticker is detected by the rear parking aid camera within a specific zone on a conventional trailer tongue. Refer to the Owner's Literature (Pro Trailer Backup Assist Quick Start Guide) to find the detailed instructions required to properly position the trailer target sticker.
	An obstruction may be covering the trailer target sticker	INSPECT and CLEAN the trailer target sticker. REMOVE any obstruction that is covering the trailer target sticker.
	Damaged rear parking aid camera	INSPECT the camera lens for damage or scratches. REPLACE the rear parking aid camera as necessary. REFER to: Rear Parking Aid Camera (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Removal and Installation).
	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 (except China)	- PTBA not enabled or activated - Inoperative trailer assist lamp - Dirty camera lens - PTBA trailer target sticker concern - Wiring, terminals or connectors - BCM	See: The cargo lamps, bed lamps or trailer assist lamp is inoperative or always on. REFER to: Interior Lighting (417-02 Interior Lighting, Diagnosis and Testing).
The PTBA system cannot find the trailer target sticker at night or during low light conditions only (China only)	The PTBA system is operating correctly	Normal operation; no action is required. The feature should only be operated in daylight conditions.
The PTBA system does not turn the trailer sharp enough	Incorrect user measurements	Verify the setup measurements. REFER to the Owner's Literature.

	The PTBA system is operating correctly	No action is required. Normal operation due to the jackknife protection feature.
The PTBA system goes directly into large turn without the knob being turned (after vehicle and trailer stabilizes into a constant radius turn the steering wheel position stays above 90 degrees from straight ahead position while backing up without turning knob)	• The driver selected the wrong trailer in the trailer selection menu • The driver moved or replaced the trailer target sticker and did not repeat the setup process by selecting "Change Sticker" option in the trailer menus • Sticky or defective PTBA control knob	• VERIFY the trailer name stored in IPC and check if more than one trailer can be selected. ◦ If more than one trailer can be selected, the correct trailer need to be selected. Determine if condition still exist. • Select "Change Trailer Sticker" option from the message center trailer menu, verify user measurements are correct and follow the IPC prompts to calibrate the trailer by driving straight forward. Determine if condition still exist. • INSTALL a new PTBA control knob if condition is not resolved by repeating setup and calibration. REFER to: Pro Trailer Back Up Assist Control Knob (413-13D Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Removal and Installation).
The PTBA system does not backup the trailer straight	• The ground is irregular	INFORM the customer that an irregular ground can affect how straight the PTBA system backup 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.
	• The vehicle and trailer were on an irregular or highly crowned road when calibrated	INFORM the customer that a repeat calibration on a flat smooth road may be necessary. REFER to the Owner's Literature (Troubleshooting).

	The rear parking aid camera, the tailgate or the tailgate release handle is damaged affecting the position of the camera	- INSPECT the rear parking aid camera, the tailgate and the tailgate release handle. REPAIR or REPLACE the component(s) as necessary. REFER to: Rear Parking Aid Camera (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Removal and Installation). REFER to: Tailgate Release Handle (501-14 Handles, Locks, Latches and Entry Systems, Removal and Installation). - INFORM the customer that trailers in the IPC memory may need to be recalibrated. REFER to the Owner's Literature (Troubleshooting).
	The drawbar connection to the hitch receiver has excessive lash	INFORM the customer that some PTBA control knob input may be required to account for significant lash in drawbar connection. REFER to the Owner's Literature.
	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	INSPECT the vehicle and trailer suspension, tire pressure, condition of the tire and tire size. REPAIR or REPLACE the suspect component(s) as necessary.
	Vehicle or trailer suspension concern	
Frozen or slow screen transitions between PTBA camera views (vehicles with 360 degree view camera system)	IPMB	INSTALL a new IPMB. REFER to: Image Processing Module B (IPMB) (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Removal and Installation).

The IPC message center displays "Pro Trailer Backup Assist™ System is Not Available."	The driver allowed the vehicle to roll rearward or forward before system activation while the transmission is in reverse	INFORM the customer not to allow the vehicle to roll rearward or forward before system activation while the transmission is in reverse. If the vehicle rolls backwards before active control begins the "Stop Now Take Control of Steering Wheel" warning is displayed along with chimes and then the system returns to the trailer selection screen. REFER to the Owner's Literature.
	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	The driver applied pressure or resistance on the steering wheel while the PTBA system was active	INFORM the customer not to touch the steering wheel while the system is active. REFER to the Owner's Literature.
	Refer to the Pinpoint Test	GO to Pinpoint Test D
The PTBA system is inoperative or does not operate correctly	Refer to the Pinpoint Test	GO to Pinpoint Test D
The IPC message center trailer information or the PTBA displays are inoperative or always displayed	IPC	See: The trailer information or trailer backup assist displays are never 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	- Wiring, terminals or connectors - Message center switch (part of the LH upper steering wheel switch) - Clockspring - IPC - SCCM	See: The message center is not operating correctly. REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).

Pinpoint Test(s)

The PTBA 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](#) (413-13D Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

Possible Causes

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

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

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 operate. 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, perform 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, perform 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, perform 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 C2498C.**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.*

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.

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

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

Is the resistance less than 3 ohms?

Yes	INSTALL a new PTBA control knob. REFER to: Pro Trailer Back Up Assist Control Knob (413-13D 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 C2498C.
- Disconnect PTBA Control Knob C2599.
- Ignition ON.

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 and related in-line 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 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 TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) 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.

The PTBA System Consistently Jackknifes The Trailer.

Normal Operation and Fault Conditions

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

Possible Causes

- 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

Visual Inspection and Diagnostic 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 effect 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.

PINPOINT TEST B : THE PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM CONSISTENTLY JACKKNIFES THE TRAILER.

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 operate. Refer to the Owner's Literature.
No	GO to B2

B2 PERFORM A NETWORK TEST

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

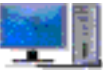
Do all modules pass the network test?

Yes	GO to 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, perform 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 B4

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

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

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the IPMB DTC Chart. REFER to: Parking Aid (413-13 Parking Aid - Vehicles With: Parking Aid Camera) .
No	GO to B5

B5 PERFORM THE PTBA (PRO TRAILER BACKUP ASSIST) CAMERA ALIGNMENT

- Using a diagnostic scan tool, perform the PTBA camera alignment.
REFER to: [Pro Trailer Back Up Assist Camera Alignment](#) (413-13D Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), General Procedures).
- Operate the PTBA system and determine if the concern is still present.

Is the concern still present?

Yes	GO to B6
No	The system is operating correctly at this time. The concern was a result of a PTBA camera alignment issue.

B6 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.

The PTBA System Consistently Loses The Trailer Target Sticker

Normal Operation and Fault Conditions

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

Possible Causes

- 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 Diagnostic 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 effect 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).

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

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 operate. 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 PERFORM A NETWORK TEST

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

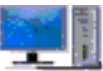
Do all modules pass the network test?

Yes	GO to 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, perform 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, perform the IPMB self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the IPMB DTC Chart. REFER to: Parking Aid (413-13 Parking Aid - Vehicles With: Parking Aid Camera) .
No	GO to C6

C6 PERFORM THE PTBA (PRO TRAILER BACKUP ASSIST) CAMERA ALIGNMENT

- Using a diagnostic scan tool, perform the PTBA camera alignment.
REFER to: [Pro Trailer Back Up Assist Camera Alignment](#) (413-13D Parking Aid - Vehicles With: Trailer Back Up Assist (TBA), General Procedures).
- 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 and related in-line 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 rear parking aid camera 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 TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) 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 and related in-line 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 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 TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) 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.

The PTBA System Is Inoperative Or Does Not Operate Correctly

Refer to Wiring Diagrams Cell 95 for schematic and connector information.

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

Normal Operation and Fault Conditions

REFER to: [Parking Aid - System Operation and Component Description](#) (413-13D Parking Aid -

Vehicles With: Trailer Back Up Assist (TBA), Description and Operation).

TRM DTC Fault Trigger Conditions

DTC	Description	Action
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.
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.
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.
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.

Possible Causes

- 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
- PSCM center calibration concern
- ABS module concern
- PCM concern

- IPC concern
- GWM concern
- IPMB concern
- PTBA control knob
- TRM
- PSCM (integral to the steering gear)

Visual Inspection and Diagnostic Pre-Checks

- Verify the tailgate is fully closed.
- 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).

PINPOINT TEST D : THE PTBA (PRO TRAILER BACKUP ASSIST) SYSTEM IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

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 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 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, perform the IPC self-test.

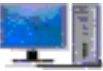
Are any Diagnostic Trouble Codes (DTCs) retrieved?

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, perform 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, perform 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 IPMB (IMAGE PROCESSING MODULE B) SELF-TEST

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

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	See the IPMB DTC Chart. REFER to: Parking Aid (413-13 Parking Aid - Vehicles With: Parking Aid Camera) .
No	GO to D8

D8 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE ABS (ANTI-LOCK BRAKE SYSTEM) MODULE SELF-TEST

- Using a diagnostic scan tool, perform 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).
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No	GO to D9
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D9 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE PCM (POWERTRAIN CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform 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.
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No	GO to D10
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D10 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE TRM (TRAILER MODULE) SELF-TEST

- Using the diagnostic scan tool, perform the TRM self-test.

Are any Diagnostic Trouble Codes (DTCs) retrieved?

Yes	For DTC B1496:12 or C1B14:12, GO to D15 For DTC B1496:14 or C1B14:11, GO to D16 For all other TRM DTC, REFER to: Trailer Lamps (417-01 Exterior Lighting, Diagnosis and Testing).
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No	GO to D11
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D11 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 D12
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 change 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 D12 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).

D12 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 D13
No	DIAGNOSE the transmission range concern. REFER to: External Controls (307-05 Automatic Transmission External Controls, Diagnosis and Testing).

D13 CHECK FOR CORRECT SPEEDOMETER OPERATION

- Verify the operation of the speedometer.

Does the speedometer operate correctly?

Yes	GO to D14
No	DIAGNOSE the speedometer. REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).

D14 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB GROUND CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect PTBA Control Knob C2599.

Is the resistance less than 3 ohms?

Yes	GO to D15
No	REPAIR the circuit.

D15 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect PTBA Control Knob C2599.
- Disconnect TRM C2498C.
- Ignition ON.

Is any voltage present?

Yes	REPAIR the circuit(s) in question.
No	GO to D16

D16 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect PTBA Control Knob C2599.
- Disconnect TRM C2498C.

Are the resistances greater than 10,000 ohms?

Yes	GO to D17
No	REPAIR the circuit in question.

D17 CHECK THE PTBA (PRO TRAILER BACKUP ASSIST) CONTROL KNOB CIRCUITS FOR AN OPEN

Are the resistances less than 3 ohms?

Yes	INSTALL a new PTBA control knob. REFER to: Pro Trailer Back Up Assist Control Knob (413-13D 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 D18
No	REPAIR the circuit in question.

D18 CHECK FOR CORRECT TRM (TRAILER MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all TRM connectors and related in-line 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 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 TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) 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 D19
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.

D19 CHECK FOR CORRECT PSCM (POWER STEERING CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PSCM connectors and related in-line 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 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 TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern,  Click here to access Guided Routine (EPAS).
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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.
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