

GWM along the HS-CAN2. The GWM sends this message to the IPC along the HS-CAN3. When the IPC receives a trailer brake message from the GWM, one or more of the following messages is displayed in the message center:

- **TRAILER CONNECTED** - Displays when the TBM detects a correct trailer wiring connection (a trailer with electric trailer brakes) during the current ignition cycle.
- **TRAILER DISCONNECTED** - Displays when the TBM detects a trailer connection and then a disconnection, either intentional or unintentional, during the current ignition cycle, the display is accompanied by a single audible chime. This message also displays if a vehicle or trailer-wiring fault occurs causing the trailer to appear disconnected, or if the manual slider switch is activated without a trailer connected.
- **TRAILER BRAKE MODULE FAULT** - Displays in response to Diagnostic Trouble Codes (DTCs) reported by the TBM, accompanied by a single audible chime. When this message appears, the system may still function, but performance may be degraded.
- **WIRING FAULT ON TRAILER** - Displays when there is a short circuit on the TBM PWM output signal circuit. If the message is displayed and accompanied by a single audible chime, without a trailer connected, the concern is in the vehicle wiring. If the message only displays with a trailer connected, the concern is in the trailer wiring.
- **TBC GAIN = XX.X NO TRAILER** - Shows the current gain setting for the current ignition cycle and when adjusting the gain. This message also displays if the manual slider switch or gain buttons are used without a trailer connected.
- **TBC GAIN = XX.X OUTPUT = / / / / / /** - Displays when the brake pedal is pressed, or when the manual slider switch is used for the first time. Bar indicators illuminate in the message center to indicate the amount of power going to the trailer brakes relative to the brake pedal or manual slider switch input. One bar indicates the least amount of output; 6 bars indicate maximum output.

DESCRIPTION AND OPERATION > AUXILIARY BRAKE SYSTEM - VEHICLES WITH: TRAILER BRAKE CONTROL - SYSTEM OPERATION AND COMPONENT DESCRIPTION > COMPONENT DESCRIPTION

TBM

The TBM is the electronic control unit for the trailer brake system. The TBM monitors all sensor inputs and all HS-CAN messages relating to trailer braking and directly controls the trailer brakes using a PWM signal. Vehicle configuration information is sent to a new TBM from the BCM when the ignition is set to ON.

DIAGNOSIS AND TESTING > AUXILIARY BRAKE SYSTEM - VEHICLES WITH: TRAILER BRAKE CONTROL > DTC CHART: TBM

Diagnostics in this service information assume a certain skill level and knowledge of Ford-specific diagnostic practices. REFER to: Diagnostic Methods .

TBM DTC Chart

DTC	Description	Action
B148A:11	Trailer Brake Output: Circuit Short to Ground	GO to Pinpoint Test C
B148A:12	Trailer Brake Output: Circuit Short to Battery	GO to Pinpoint Test C
B148A:57	Trailer Brake Output: Invalid / Incompatible Software Component	This DTC indicates the TBM hardware and software are incompatible. This is most likely due to an older version of software being downloaded into the TBM. VERIFY the diagnostic scan tool is at the latest software level revision. REFLASH the TBM.
B148B:2A	Trailer Brake Manual Slider: Signal Stuck In Range	This DTC sets when the manual slider switch is applied in a fixed, active position for more than 5 minutes. This is either an internal failure of the TBM or something is holding the manual slider switch in the applied position. INSPECT for a stuck or damaged manual sliding lever. REPAIR or CLEAR any obstructions or foreign material. Ignition ON. CLEAR the DTC. OPERATE the manual slider switch twice. CARRY OUT the TBM self-test. RETRIEVE and RECORD all Diagnostic Trouble Codes (DTCs). If the DTC does not return, the concern may have been caused by something laying on or against the manual slider switch. INFORM the customer of the manual slider switch fault setting condition as stated above. If the DTC returns, INSTALL a new TBM. REFER to: Trailer Brake Control Module (TBM) .
B148C:2A	Trailer Brake Gain Button: Signal Stuck In Range	This DTC sets when either gain button is pressed for more than 2 minutes. This is either an internal failure of the TBM or something is holding either gain button in the applied position. INSPECT for stuck or damaged gain buttons. REPAIR or CLEAR

		any obstructions or foreign material. Ignition ON. CLEAR the DTC. Press both gain buttons twice. CARRY OUT the TBM self-test. RETRIEVE and RECORD all Diagnostic Trouble Codes (DTCs). If the DTC does not return, the concern may have been caused by something laying on or against one or both gain buttons. INFORM the customer of the gain button fault setting condition as stated above. If the DTC returns, INSTALL a new TBM. REFER to: Trailer Brake Control Module (TBM) .
P0604:94	Internal Control Module Random Access Memory (RAM) Error: Unexpected Operation	REPAIR all other TBM Diagnostic Trouble Codes (DTCs) before diagnosing DTC P0604:94. CLEAR the DTC. REPEAT the TBM self-test. If the DTC returns, INSTALL a new TBM. REFER to: Trailer Brake Control Module (TBM) .
U0100:00	Lost Communication with ECM / PCM "A": No Sub Type Information	GO to Pinpoint Test G
U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module: No Sub Type Information	GO to Pinpoint Test H
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test I
U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test J
U0415:81	Invalid Data Received from Anti-Lock Brake System (ABS) Control Module: Invalid Serial Data Received	GO to Pinpoint Test H
U0415:82	Invalid Data Received from Anti-Lock Brake System (ABS) Control Module: Alive / Sequence Counter Incorrect / Not Updated	GO to Pinpoint Test H

U0415:83	Invalid Data Received from Anti-Lock Brake System (ABS) Control Module: Value of Signal Protection Calculation Incorrect	GO to Pinpoint Test H
U0423:55	Invalid Data Received from Instrument Panel Cluster Control Module: Not Configured	This DTC sets when the value of trailer brake configuration message from the IPC is "No" and a value of "Yes" has not been received during the current ignition cycle. CHECK the service history for recent service actions related to the IPC. This DTC sets due to incomplete or improper PMI procedures. If there have been recent service actions with the IPC, REPEAT the PMI procedure using a diagnostic scan tool. FOLLOW all diagnostic scan tool instructions. If there have been no recent service actions,
U3000:46	Control Module: Calibration / Parameter Memory Failure	CLEAR the DTC. CARRY OUT the TBM self-test. RETRIEVE and RECORD all Diagnostic Trouble Codes (DTCs). If the DTC returns, INSTALL a new TBM. REFER to: Trailer Brake Control Module (TBM) .
U3000:49	Control Module: Internal Electronic Failure	CLEAR the DTC. CARRY OUT the TBM self-test. RETRIEVE and RECORD all Diagnostic Trouble Codes (DTCs). If the DTC returns, INSTALL a new TBM. REFER to: Trailer Brake Control Module (TBM) .
U3000:4B	Control Module: Over Temperature	CLEAR the DTC. CARRY OUT the TBM self-test. RETRIEVE and RECORD all Diagnostic Trouble Codes (DTCs). If the DTC returns, INSTALL a new TBM. REFER to: Trailer Brake Control Module (TBM) .
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test E
U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test D