
Communications Network - Overview

Overview

Multiplexing is a method of sending 2 or more signals simultaneously over a single circuit. Multiplexing allows 2 or more electronic modules (nodes) to communicate over a twisted wire pair [data (+) and data (-)] network. The information or messages that can be communicated on these wires consists of commands, status or data. Multiplexing reduces the weight of the vehicle by reducing the number of redundant components and electrical wiring.

The vehicle has 2 module communication networks connected to the DLC, located under the instrument panel. The communication networks are:

- HS-CAN1 (DIAG 1)
- HS-CAN2 (DIAG 2)

The vehicle has 4 or 5 (optional) communication networks that do not communicate directly with the diagnostic scan tool. The GWM translates the messages on these 4 or 5 (optional) networks, and transfers the signals to the circuits at the DLC to communicate with the diagnostic scan tool. Messages communicated on the HS-CAN1 are communicated to the HS-CAN1 (DIAG 1) connection, all other networks are translated to the HS-CAN2 (DIAG 2) connection at the DLC. The communication networks are:

- HS-CAN1
- HS-CAN2
- HS-CAN3
- MS-CAN
- HS-CAN4 (optional)

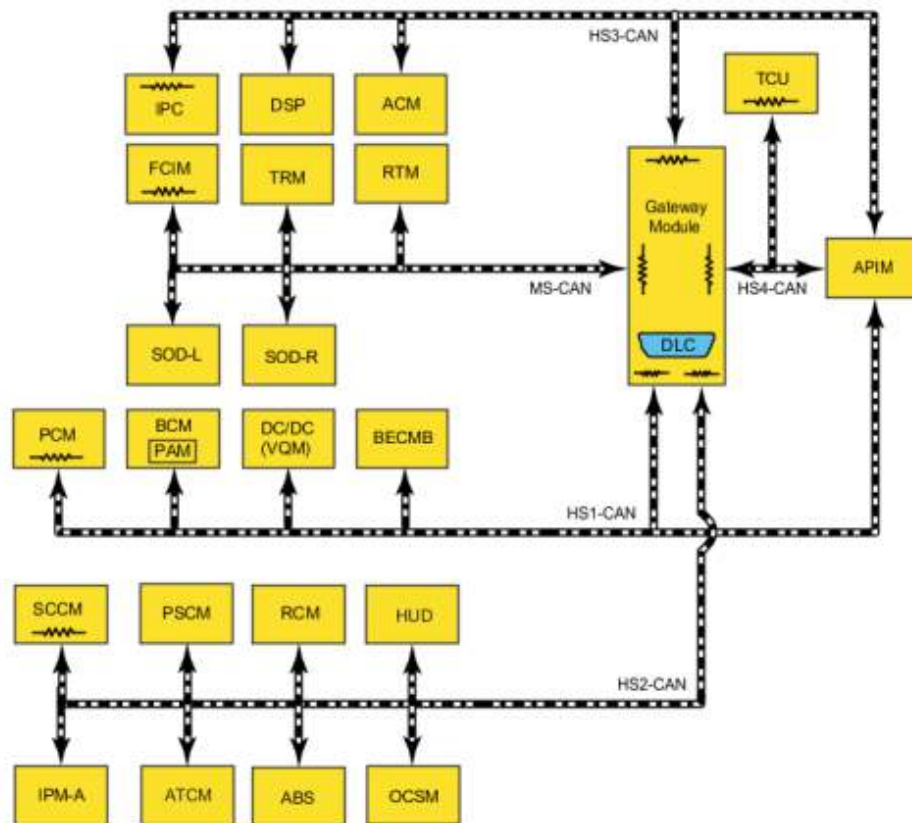
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Communications Network - System Operation and Component Description

System Operation

System Diagram

NOTE: For vehicles equipped with pre-collision assist, the CCM does not communicate directly on the HS-CAN2. The CCM communicates with the IPMA on a private CAN, and the IPMA communicates on the HS-CAN2. For description and diagnostic information, refer to Section 419-03B.



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Module Network Chart

Module Name	Network Type	Terminating Module
<u>APIM</u> (if equipped)	<u>HS-CAN1</u>	No
	<u>HS-CAN3</u>	No
	<u>HS-CAN4</u>	No
<u>ABS</u> module	<u>HS-CAN2</u>	No
<u>ACM</u>	<u>HS-CAN3</u>	No
<u>ATCM</u> (if equipped)	<u>HS-CAN2</u>	No
<u>BECMB</u>	<u>HS-CAN1</u>	No
<u>BCM</u>	<u>HS-CAN1</u>	No
<u>DC/ DC</u> converter control module (VQM) (if equipped)	<u>HS-CAN1</u>	No
<u>DSP</u> (if equipped)	<u>HS-CAN3</u>	No
<u>FCIM</u>	<u>MS-CAN</u>	Yes
<u>GWM</u>	<u>HS-CAN1</u>	Yes
	<u>HS-CAN2</u>	Yes
	<u>HS-CAN3</u>	Yes
	<u>HS-CAN4</u>	Yes
	<u>MS-CAN</u>	Yes
<u>HUD</u> module (if equipped)	<u>HS-CAN2</u>	No
<u>IPC</u>	<u>HS-CAN3</u>	Yes
<u>IPMA</u> (if equipped)	<u>HS-CAN2</u>	No
<u>OCS</u> module	<u>HS-CAN2</u>	No
<u>PAM</u> (if equipped) (Integral with <u>BCM</u>)	<u>HS-CAN1</u>	No
<u>PSCM</u>	<u>HS-CAN2</u>	No
<u>PCM</u>	<u>HS-CAN1</u>	Yes
<u>RTM</u> (if equipped)	<u>MS-CAN</u>	No
<u>RCM</u>	<u>HS-CAN2</u>	No
<u>SCCM</u>	<u>HS-CAN2</u>	Yes
<u>SODL</u> (if equipped)	<u>MS-CAN</u>	No
<u>SODR</u> (if equipped)	<u>MS-CAN</u>	No
<u>TCU</u> (if equipped)	<u>HS-CAN4</u>	No
<u>TRM</u> (if equipped)	<u>MS-CAN</u>	No

Network Termination

The CAN uses network termination to improve communication reliability. Termination modules are located at both ends of the network. As network messages are broadcast in the form of voltage signals, the network voltage signals are stabilized by the termination resistors.

Each termination module has an internal 120 ohm resistor that bridges across the positive and negative bus connection. With two 120 ohm resistors located in a parallel circuit configuration, the total network impedance, or total resistance, is 60 ohms.

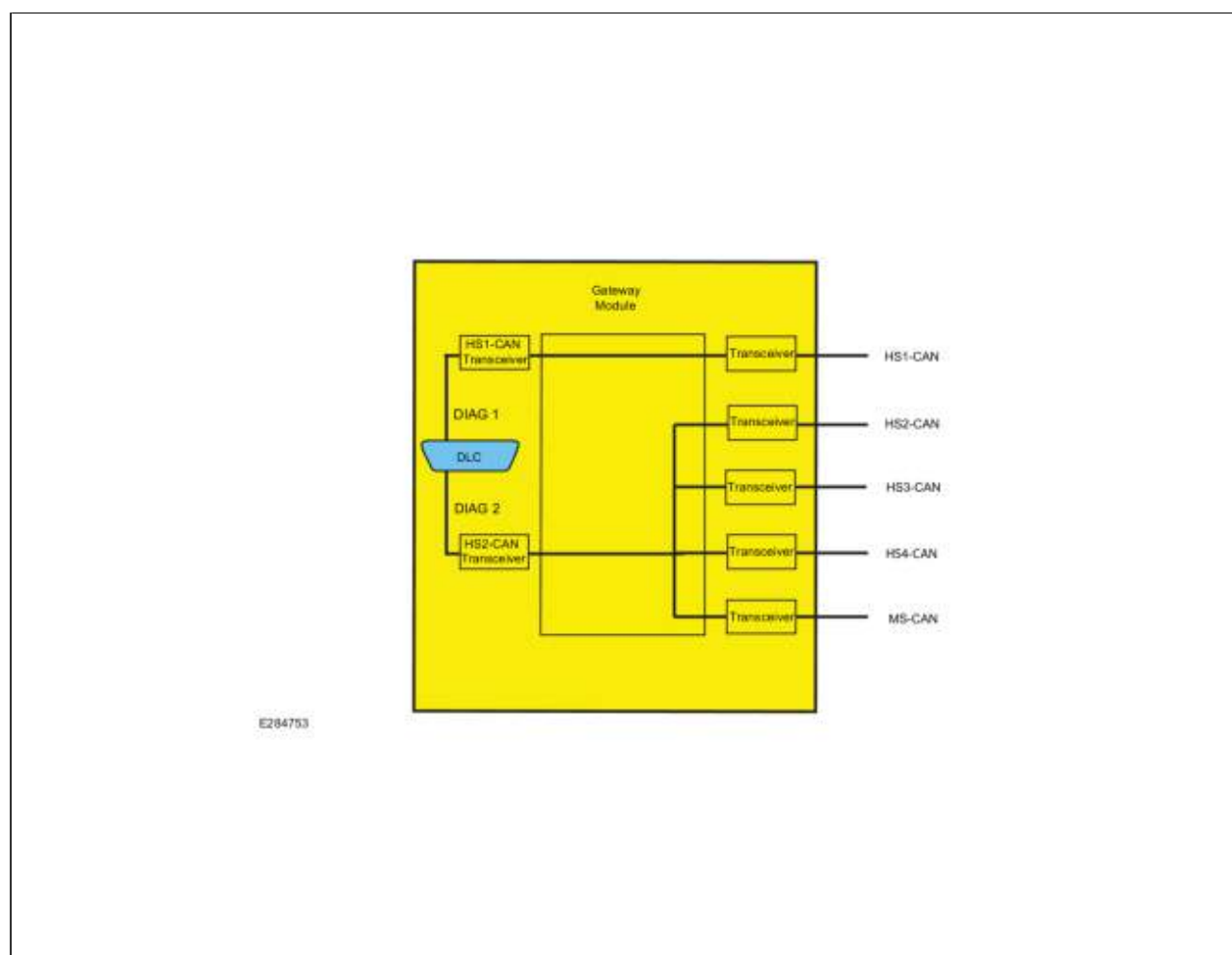
Network termination improves bus message reliability by stabilizing bus voltage and eliminating electrical interference.

Gateway Module

NOTE: The GWM, communicates with the 4 or 5 (optional) controller area networks (CAN). The OBD DLC is connected to the GWM, and is the direct interface with the scan tool.

The GWM is mounted behind the driver side knee bolster trim panel under the driver side instrument panel. A DLC connector is fitted to the GWM. The GWM acts as a central gateway to translate messages across all 4 or 5 (optional) vehicle controller area networks (CAN). The GWM is the only module on this vehicle with this ability. The GWM also serves as a termination module for each of the networks to which it is connected.

The 2 module communication networks connected to the DLC are HS-CAN1 (DIAG 1) and HS-CAN2 (DIAG 2). These 2 networks communicate directly with the diagnostic scan tool. The other 2 or 3 (optional) communication networks, communicate on the network, but do not communicate directly with the diagnostic scan tool. The GWM translates the messages from the HS-CAN3, HS-CAN4 (if equipped) and MS-CAN to the HS-CAN2 (DIAG 2), which transfers the signals to the diagnostic scan tool.



High Speed Controller Area Network 1 and 2 (HS-CAN1, HS-CAN2)

The HS-CAN1 and HS-CAN2 operate at a maximum data transfer speed of 500 Kbps and are designed for real time powertrain and driver feature information transfer and control. Modules on the HS-CAN1 and HS-CAN2 communicate using bussed messages. The HS-CAN uses an unshielded twisted pair cable, data bus

(+) and data bus (-) circuits. In addition to scan tool communication, the HS-CAN allows sharing of information between all modules on each HS-CAN.

With the addition of more modules, network traffic has increased. This has created the need for an additional HS-CAN to manage the increased bus data carried on each network.

The GWM translates the diagnostic messages from the Diag1 network to the HS-CAN1 and vice versa, allowing communication between the modules on the HS-CAN1 and diagnostic scan tool. The GWM translates the diagnostic messages from the Diag2 network to the HS-CAN2 and vice versa, allowing communication between the modules on the HS-CAN2 and diagnostic scan tool.

High Speed Controller Area Network 3 and 4 (HS-CAN3, HS-CAN4)

The HS-CAN3 and HS-CAN4 (if equipped) operate at a maximum data transfer speed of 500 Kbps and are designed for real time audio, multimedia and driver information transfer and control. Modules on the HS-CAN3 communicate using bussed messages. HS-CAN3 uses an unshielded twisted pair cable, data bus (+) and data bus (-) circuits, and allows sharing of information between all modules on the network.

The GWM is used as a gateway for the messages to transfer between the scan tool and the modules on the HS-CAN3 and HS-CAN4 (if equipped).

The GWM translates the diagnostic messages from the HS-CAN2 (DIAG 2) to the HS-CAN3 and HS-CAN4 (if equipped) and vice versa, allowing communication between the modules on the HS-CAN3 and HS-CAN4 (if equipped) and the scan tool.

Medium Speed Controller Area Network (MS-CAN)

The MS-CAN operates at a maximum data transfer speed of 125 Kbps and is designed for general information transfer. Modules on the MS-CAN communicate using bussed messages. The MS-CAN uses an unshielded twisted pair cable, data bus (+) and data bus (-) circuits. In addition to scan tool communication, the MS-CAN allows sharing of information between all modules on the network.

The GWM is used as a gateway for the messages to transfer between the scan tool and the modules on the MS-CAN.

The GWM translates the diagnostic messages from the HS-CAN2 (DIAG 2) to the MS-CAN and vice versa, allowing communication between the modules on the MS-CAN and the scan tool.

Controller Area Network (CAN) Fault Tolerance

NOTE: IDS shown, FDRS similar.

NOTE: The oscilloscope traces shown are from the IDS oscilloscope taken using the IDS pre-configured CAN settings. The traces are for both data (+) and data (-) taken simultaneously (2-channel) at a sample rate of 1 mega-sample per second (1MS/s) or greater.

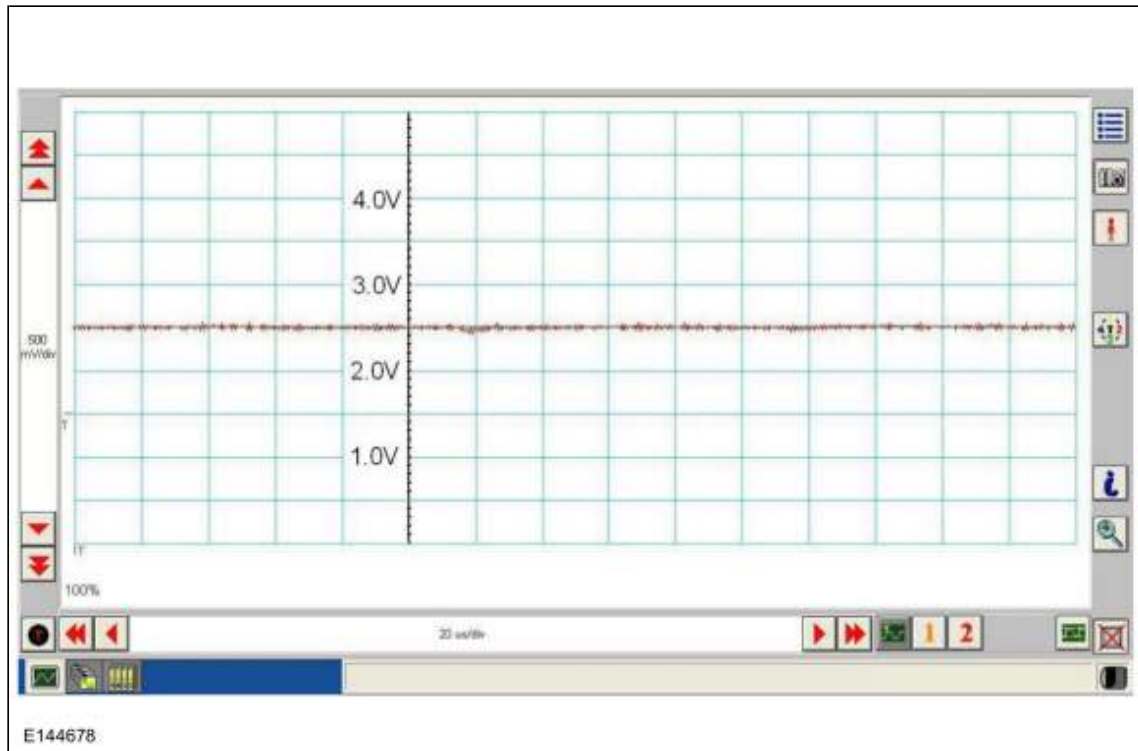
Fault Tolerance Normal Operation



The data (+) and data (-) circuits are each regulated to approximately 2.5 volts during neutral or rested network traffic. As messages are sent on the data (+) circuit, voltage is increased by approximately 1.0 volt. Inversely, the data (-) circuit is reduced by approximately 1.0 volt when a message is sent.

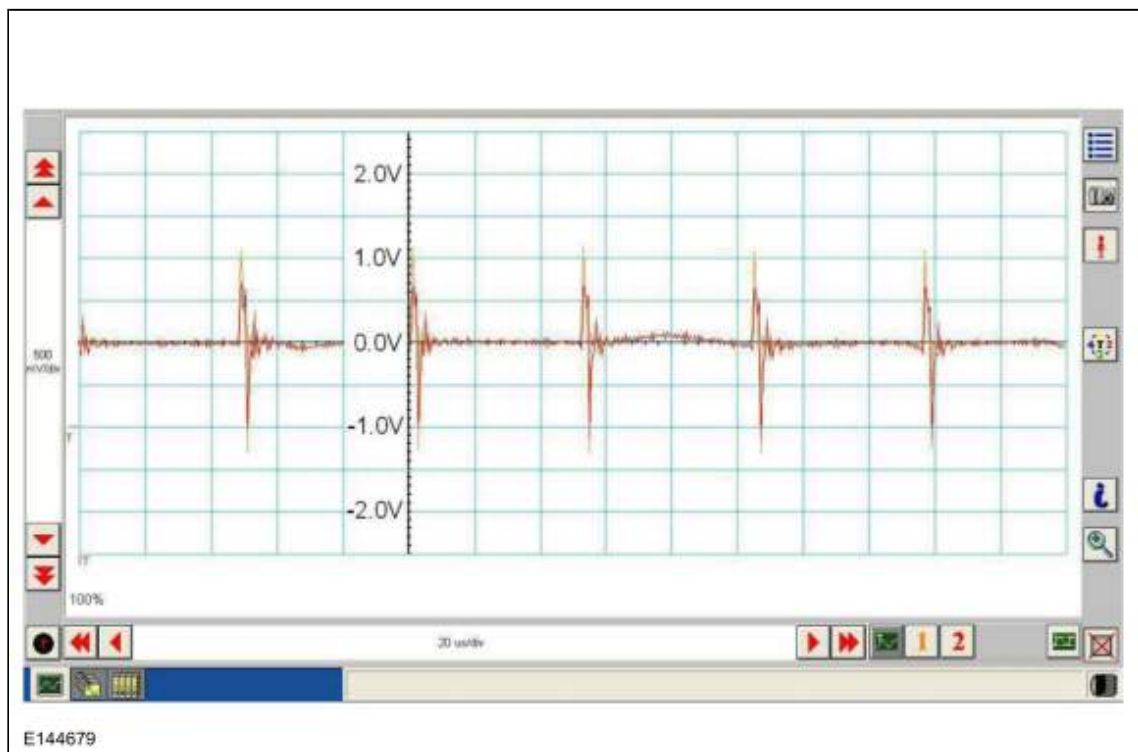
Successful communication of a message can usually be identified by the slight spike at the end of a message transmission. Any signals that are significantly different than the normal CAN waveform may cause network Diagnostic Trouble Codes (DTCs) (U-codes) to set or may cause a complete network outage.

CAN Circuits Shorted Together



In the event the data (+) and data (-) circuits become shorted together, the signal stays at base voltage (2.5V) continuously and all communication capabilities are lost.

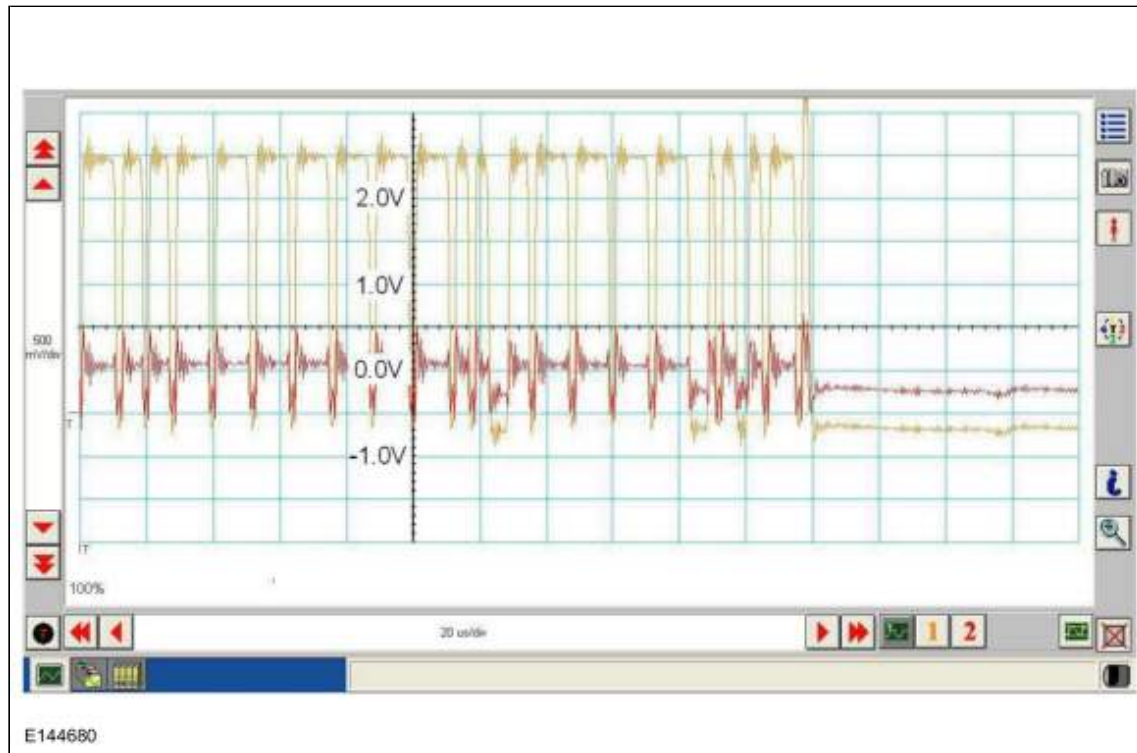
CAN (+) Circuit Shorted to Ground



In the event the data (+) circuit becomes shorted to ground, both the data (+) and data (-) circuits are pulled

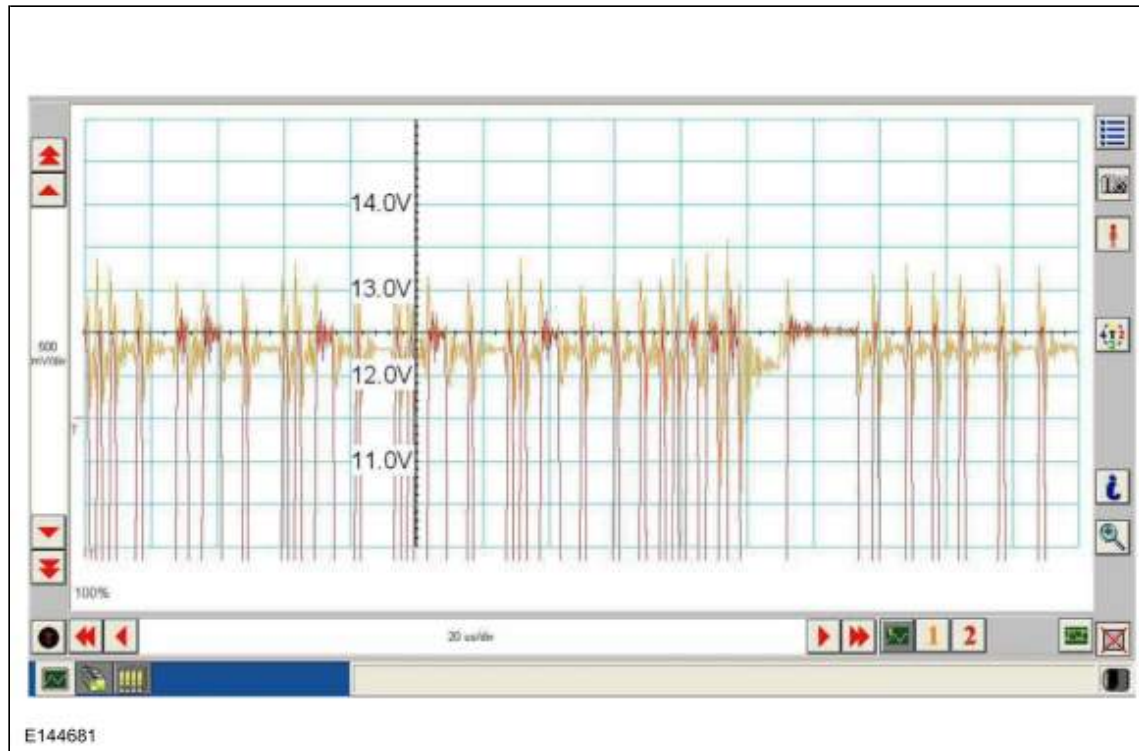
low (0V) and all communication capabilities are lost.

CAN (-) Circuit Shorted to Ground



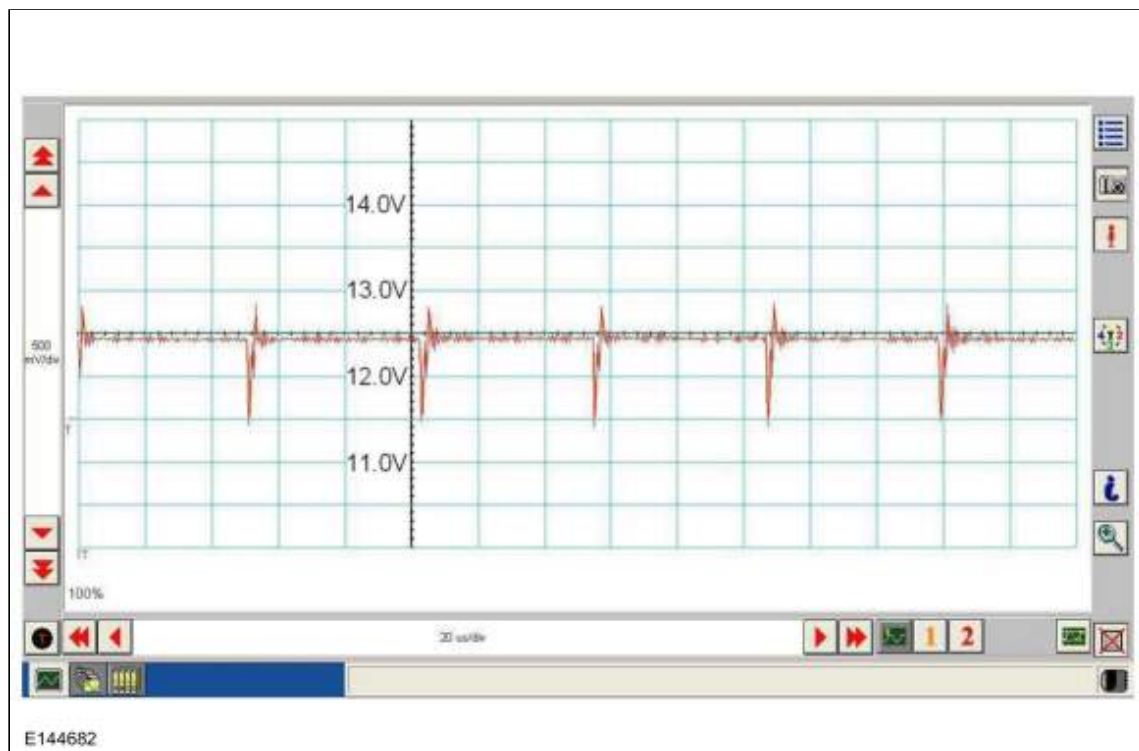
In the event the data (-) circuit becomes shorted to ground, the data (-) circuit is pulled low (0V) and the data (+) circuit reaches near-normal peak voltage (3.0V) during communication but falls to 0V instead of normal base voltage (2.5V). Communication may continue but at a degraded level.

CAN (+) Circuit Shorted to Battery Voltage



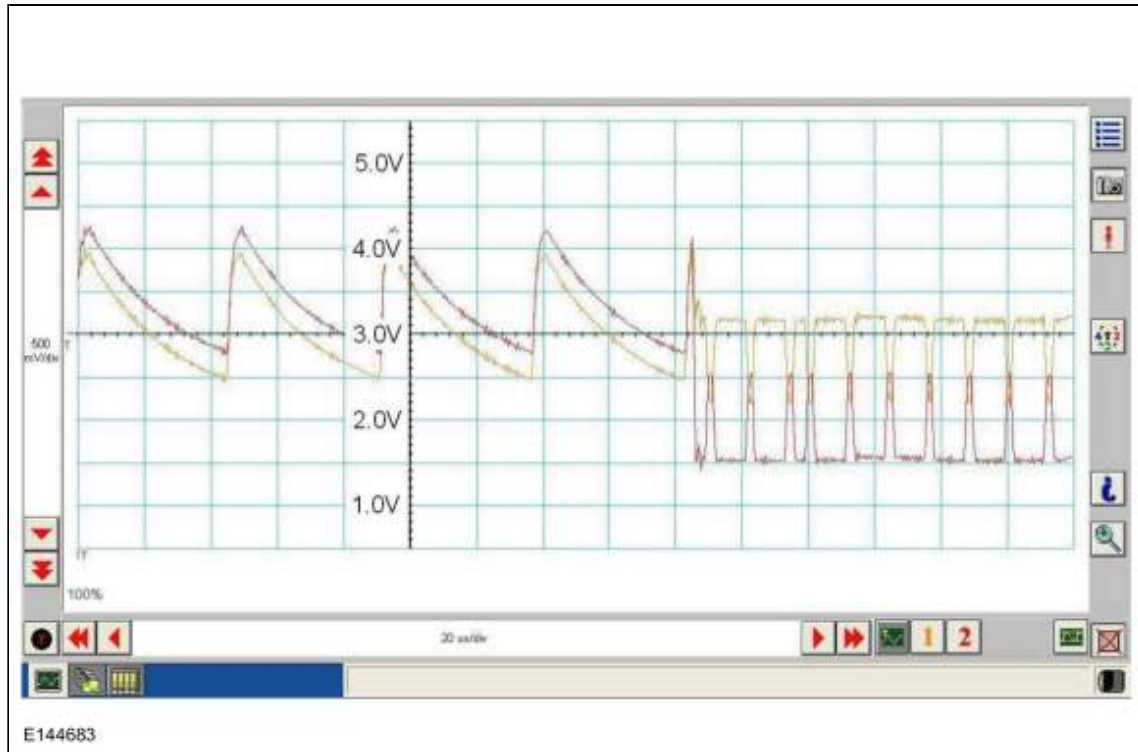
In the event the data (+) circuit becomes shorted to battery voltage, the data (+) circuit is pulled high (12V) and the data (-) circuit falls to abnormally high voltage (above 5V) during communication and reaches battery voltage (12V) for peak voltage. Communication may continue but at a degraded level.

CAN (-) Circuit Shorted to Battery Voltage



In the event the data (-) circuit becomes shorted to battery voltage, both the data (+) and data (-) circuits are pulled high (12V) and all communication capabilities are lost.

CAN Circuit Signal Corruption



Rhythmic oscillations, inductive spikes or random interference can corrupt the network communications. The corruption signal source may be outside electrical interference such as motors or solenoids or internal interference generated from a module on the network. In some cases, an open in either the data (+) or data (-) circuit to a network module may cause the module to emit interference on the one circuit which is still connected. The trace shown is an example of a "sawtooth" pattern transmitted from a module with one open network circuit.

Other corruptions may be present when a module is intermittently powered up and down. The module on power up may initiate communication out of sync with other modules on the network causing momentary communication outages.

Controller Area Network (CAN) Multiplex Messages

The network communication message chart provides a high level description of key network messages for all CAN networks on the vehicle. This information can be used to determine which modules are involved in completing a function including display of messages, status updates and commands.

Comparative functional checks can be performed without the use of test equipment to determine if faults exist in gateway module data translation, transfer paths. Specifically, this is accomplished by verifying that another feature/function works correctly which uses the same message translation paths through the gateway module as the feature/function in question. The information listed in the communication message chart below provides the key reference information to make this possible.

The ability of the power running boards to extend when the driver door is opened confirms the ability of the gateway module to successfully translate messages from the HS-CAN1 to the MS-CAN. If this function was not operating correctly then a comparative check should be performed for another function which is completed

using the same translation path but with different originating and receiving modules. REFER to the comparative example below:

Network Message	Originating Module	Network Type	Receiving Module(s)
Driver door ajar status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PCM</u> • <u>PAM</u> • <u>GWM</u>
Driver door ajar status	<u>GWM</u>	<u>MS-CAN</u>	• <u>PRB</u>

In this example the path for relaying gear lever position information from the PCM to the DDM is being used for a comparative functional check. The diagnostic scan tool display of the gear lever position info in the DDM was used to verify the functionality of the HS-CAN1 to MS-CAN path.

Network Message	Originating Module	Network Type	Receiving Module(s)
Gear lever position	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>GWM</u>
Gear lever position	<u>GWM</u>	<u>MS-CAN</u>	• <u>DDM</u> • <u>PDM</u> • <u>DSM</u> • <u>FCIM</u> • <u>PRB</u> • <u>SCMG</u> • <u>SCMH</u> • <u>SODL</u> • <u>SODR</u>

Communication Message Chart

Network Message	Originating Module	Network Type	Receiving Module(s)
Emergency assist override status	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
<u>A/C</u> clutch status	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
<u>A/C</u> clutch status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
<u>A/C</u> clutch status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
<u>ABS</u> active	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>RCM</u> • <u>IPMA</u> • <u>PSCM</u>

			• <u>GWM</u>
<u>ABS</u> active	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u> • <u>PAM</u>
<u>ABS</u> active	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
<u>ABS</u> fault	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>GWM</u>
<u>ABS</u> fault	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
<u>ABS</u> fault	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Accelerator pedal position	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Accelerator pedal position	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Accelerator pedal position	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u> • <u>ABS</u> module • <u>IPMA</u> • <u>OCSM</u>
Accelerator pedal position	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Accessory delay	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Accessory delay	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u> • <u>ACM</u>
Accessory delay	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Adaptive cruise control cancel request	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Adaptive cruise control cancel request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Adaptive cruise control cancel request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Adaptive cruise control commands	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>GWM</u> • <u>IPMA</u>
Adaptive cruise control commands	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Adaptive cruise control deceleration request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>ABS</u> • <u>RCM</u> • <u>GWM</u>
Adaptive cruise control deceleration request	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Adaptive cruise control enable request	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Adaptive cruise control enable request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Adaptive cruise control engine status	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Adaptive cruise control engine status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Adaptive cruise control follow mode	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Adaptive cruise control follow	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>

mode			
Adaptive cruise control forward distance alert	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Adaptive cruise control forward distance alert	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Adaptive cruise control gap distance display	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Adaptive cruise control gap distance display	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Adaptive cruise control gap select	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Adaptive cruise control gap select	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Adaptive cruise control service required	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Adaptive cruise control service required	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Adaptive cruise control warning request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Adaptive cruise control warning request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Adaptive cruise control warning request	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Airbag deployment status	<u>RCM</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Airbag deployment status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>APIM</u>
Airbag deployment status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Airbag warning indicator request	<u>RCM</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Airbag warning indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Ambient air temperature	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>GWM</u>
Ambient air temperature	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Ambient air temperature	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Ambient air temperature	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>SCCM</u>
Ambient air temperature	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Ambient air temperature filtered	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>GWM</u>
Ambient air temperature filtered	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Ambient air temperature filtered	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Ambient air temperature filtered	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Ambient air temperature filtered	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Ambient lighting color/intensity	<u>BCM</u>	<u>HS-CAN1</u>	• <u>APIM</u>

			• <u>GWM</u>
Ambient lighting color/intensity	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
Ambient lighting color/intensity request	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Ambient lighting color/intensity request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Ambient light sensor	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Ambient light sensor	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Audio front control module alert	<u>ACM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Audio settings	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
Audio source select	<u>ACM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>DSP</u> • <u>IPC</u> • <u>GWM</u>
Audio source select	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Audio system response status	<u>ACM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u> • <u>DSP</u> • <u>GWM</u>
Audio system response status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Audio system response status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Audio volume	<u>ACM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u> • <u>GWM</u>
Audio volume	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Auto high beam status display	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Auto high beam status display	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Auto high beam indication request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Auto high beam indication request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
<u>AWD</u> lock	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>GWM</u>
<u>AWD</u> lock	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
<u>AWD</u> lock	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
<u>AWD</u> service required	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
<u>AWD</u> service required	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module • <u>ATCM</u> • <u>RCM</u>
<u>AWD</u> service required	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Backlit <u>LED</u> status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Backlit <u>LED</u> status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>

Backlit <u>LED</u> status	<u>GWM</u>	<u>MS-CAN</u>	• <u>TRM</u>
Backlit <u>LED</u> status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ATCM</u>
Battery low state of charge	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Battery low state of charge	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>TRM</u>
Battery low state of charge	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Battery load shed level request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PCM</u> • <u>GWM</u>
Battery load shed level request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>SCCM</u>
Battery load shed level request	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>TRM</u>
Battery load shed level request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Belt-Minder® audio mute	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>DSP</u>
Bezel diagnostics	<u>ACM</u>	<u>HS-CAN3</u>	• <u>DSP</u> • <u>GWM</u>
Bezel diagnostics	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Body service required	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Body service required	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Brake warning indicator request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Brake warning indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Brake (red) warning indicator request	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>RCM</u> • <u>GWM</u>
Brake (red) warning indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Brake fluid level low message request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Brake fluid level low message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Brake On/Off (BOO) switch	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Brake On/Off (BOO) switch	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u>
Brake pedal applied	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Brake pedal applied	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u> • <u>RCM</u> • <u>OCSM</u>
Brake pedal applied	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u> • <u>ACM</u>
Camera defog request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Camera defog request	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>

Camera defog request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Camera settings request	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Camera settings request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Check fuel fill inlet message request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Check fuel fill inlet message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Chime source	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>DSP</u>
Climate control button status	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
Climate control button status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u> • <u>APIM</u>
Collision mitigation by braking engine torque	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Collision mitigation by braking engine torque	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Collision mitigation by braking event status display	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Collision mitigation by braking event status display	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Collision mitigation by braking event status display	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Crash event status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Crash event status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Cruise control mode	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Cruise control mode	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module
Cruise control override	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Cruise control override	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Cruise control override	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module • <u>IPMA</u> • <u>RCM</u>
Cruise control set speed display	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Cruise control set speed display	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Cruise control set speed request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Cruise control set speed request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>ABS</u> module
Cruise control set speed request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Cruise control status	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Cruise control status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Cruise control status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module • <u>IPMA</u> • <u>OCSM</u>

			• <u>RCM</u>
Cruise control switch commands	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Cruise control switch commands	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Date/time settings	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Day/night status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PCM</u> • <u>GWM</u>
Day/night status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Day/night status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Day/night status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ATCM</u> • <u>IPMA</u>
Day/night status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Daytime running lamps on status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Daytime running lamps on status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Display language request	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Display speed offset data	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Display speed offset data	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Display speed offset data	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Do not disturb override status	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
Driver door ajar status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u> • <u>GWM</u>
Driver door ajar status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u> • <u>ATCM</u>
Driver door ajar status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Driver door ajar status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Driver door ajar status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Driver seat belt buckle status	<u>RCM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u> • <u>GWM</u>
Driver seat belt buckle status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Driver seat belt buckle status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PCM</u>
Driver seat belt buckle status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
eCall confirmation	<u>APIM</u>	<u>HS-CAN1</u>	• <u>BCM</u>

			• <u>GWM</u>
eCall confirmation	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u>
eCall notification	<u>RCM</u>	<u>HS-CAN2</u>	• <u>GWM</u>
eCall notification	<u>GWM</u>	<u>HS-CAN1</u>	• <u>APIM</u>
eCall notification	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Emergency brake lamp request	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Emergency brake lamp request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Engine coolant temperature data	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>GWM</u>
Engine coolant temperature data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Engine coolant temperature data	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Engine coolant temperature data	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Engine idle shutdown message request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Engine idle shutdown message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Engine idle shutdown status	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>GWM</u>
Engine idle shutdown status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Engine idle shutdown status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Engine oil level warning	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Engine oil level warning	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Engine oil life	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Engine oil life	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u>
Engine oil life	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Engine oil life data reset	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Engine oil life data reset	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Engine overheat indication request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Engine overheat indication request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Engine rpm data	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u> • <u>BCM</u>
Engine rpm data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u> • <u>DSP</u>
Engine rpm data	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>RCM</u>
Engine rpm data	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>

Engine rpm data	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Engine service required request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Engine service required request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u>
Engine service required request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Engine service required request	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Engine status	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>DC/ DC</u> converter control module (VQM) • <u>GWM</u>
Engine status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module
Engine status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Engine status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>DSP</u> • <u>IPC</u>
English/metric mode	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
English/metric mode	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
English/metric mode	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
English/metric mode	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
English/metric mode	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
<u>EPAS</u> failure	<u>PSCM</u>	<u>HS-CAN2</u>	• <u>GWM</u>
<u>EPAS</u> failure	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u>
<u>EPAS</u> failure	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Evaporator temperature	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
Evaporator temperature	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Factory mode	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u> • <u>GWM</u>
Factory mode	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module • <u>IPMA</u> • <u>SCCM</u>
Factory mode	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>TRM</u> • <u>RTM</u>
Factory mode	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u> • <u>ACM</u>
Factory mode	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
<u>FCIM</u> button state	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
<u>FCIM</u> button state	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>DSP</u>
Folder/track information request	<u>APIM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Forward collision chime request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>

Forward collision chime request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Forward collision warning message request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Forward collision warning message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Forward collision warning message request	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Front fog lamp indicator request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Front fog lamp indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Front passenger detect status	<u>RCM</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Front passenger detect status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Front passenger detect status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Front passenger detect status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Front wiper status	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Front wiper status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u> • <u>BCM</u>
Front wiper status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>SODL</u> • <u>SODR</u>
Front wiper status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
Fuel flow volume display	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Fuel flow volume display	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Fuel flow volume display	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Gear lever position	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>GWM</u>
Gear lever position	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u> • <u>RCM</u> • <u>SCCM</u>
Gear lever position	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u> • <u>DSP</u>
Gear lever position	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>SODL</u> • <u>SODR</u>
Gear lever position	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Hands off status	<u>PSCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Hands off status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Head up display active	<u>HUD module</u>	<u>HS-CAN2</u>	• <u>IPMA</u>

			• <u>GWM</u>
Head up display active	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Head up display fault	<u>HUD</u> module	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Head up display fault	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Head up display flash command	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>HUD</u> module
Head up display flash rate	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>HUD</u> module
Headlamp flash to pass status	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Headlamp flash to pass status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Headlamp high/low status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PCM</u> • <u>GWM</u>
Headlamp high/low status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Headlamp high/low status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Headlamp low beam out	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Headlamp low beam out	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Headlamp on warning chime	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Headlamp on warning chime	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Headlamp switch status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Headlamp switch status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Headlamp switch status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Headlamp switch status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Heated steering wheel command status	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
Heated steering wheel command status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u> • <u>ACM</u>
Hill start assist status	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>GWM</u>
Hill start assist status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Hill start assist status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Home safe lamp indicator request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Home safe lamp indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Hood ajar status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Hood ajar status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>
Hood ajar status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
<u>HVAC</u> A/C request	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
<u>HVAC</u> A/C request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>

HVAC evaporator temperature request	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
HVAC evaporator temperature request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Ignition key type	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u> • <u>GWM</u>
Ignition key type	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Ignition key type	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>ACM</u> • <u>DSP</u> • <u>IPC</u>
Ignition key type	<u>GWM</u>	<u>MS-CAN</u>	• <u>SODL</u> • <u>SODR</u>
Ignition status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u> • <u>GWM</u>
Ignition status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>DSP</u> • <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Ignition status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>RTM</u> • <u>SODL</u> • <u>SODR</u> • <u>TRM</u>
Ignition status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>SCCM</u> • <u>RCM</u> • <u>PSCM</u> • <u>IPMA</u> • <u>HUD module</u> • <u>OCSM</u> • <u>ATCM</u>
Ignition status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Illumination dimming level	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>GWM</u>
Illumination dimming level	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Illumination dimming level	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Illumination dimming level	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ATCM</u>
Illumination dimming level	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Immobilizer message request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Immobilizer message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Input controller interface button data	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Input controller interface button data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>

			• <u>APIM</u>
IPC Chime request	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>DSP</u>
Key-in-ignition status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Key-in-ignition status	<u>GWM</u>	<u>MS-CAN</u>	• <u>RTM</u>
Key-in-ignition status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u> • <u>APIM</u> • <u>DSP</u>
Key-in-ignition indicator status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Key-in-ignition indicator status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Keypad factory code status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Keypad factory code status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Lane keep assist hands off	<u>PSCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Lane keep assist hands off	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Lane keep assist reference angle request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>PSCM</u>
Lane keeping alert request	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>PSCM</u> • <u>GWM</u>
Lane keeping alert request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Lane keeping system hands off display	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Lane keeping system hands off display	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Lane keeping system hands off display	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Lane keeping system status	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>GWM</u> • <u>PSCM</u>
Lane keeping system status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Language selection	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
Language update status	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
Left rear door ajar status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>GWM</u>
Left rear door ajar status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Left rear door ajar status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module
Left rear door ajar status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Left turn lamp on request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Left turn lamp on request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>DSP</u> • <u>IPC</u>

Left turn lamp request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Left turn lamp request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>SCCM</u> • <u>IPMA</u>
Left turn lamp request	<u>GWM</u>	<u>MS-CAN</u>	• <u>TRM</u>
Liftgate ajar status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>GWM</u>
Liftgate ajar status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>
Liftgate ajar status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>SCCM</u>
Liftgate ajar status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Message center display	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Message center display	<u>GWM</u>	<u>HS-CAN2</u>	• <u>SCCM</u> • <u>IPMA</u>
Message center display	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Message center display	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Message center feature configuration	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Message center feature configuration	<u>GWM</u>	<u>HS-CAN2</u>	• <u>SCCM</u> • <u>IPMA</u>
Message center feature configuration	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Message center feature configuration	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
<u>MIL</u> request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>GWM</u>
<u>MIL</u> request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u>
<u>MIL</u> request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
MyKey® Beltminder audio mute	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>DSP</u> • <u>APIM</u>
MyKey® change key type request	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
MyKey® change key type request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
MyKey® volume limit status	<u>ACM</u>	<u>HS-CAN3</u>	• <u>APIM</u>
Neutral tow mode request	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Neutral tow mode request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Odometer count	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Odometer count	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u> • <u>APIM</u>
Odometer master value	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>GWM</u>

Odometer master value	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u> • <u>PSCM</u> • <u>IPMA</u>
Odometer master value	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PCM</u>
Odometer trip programming data	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Odometer trip programming data	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Odometer trip verify	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Odometer trip verify	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Oil pressure warning indicator request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Oil pressure warning indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Outside air temperature	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
Outside air temperature	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u>
Outside air temperature	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u>
Parking aid audio mute request	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid audio mute request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Parking aid chime request	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid chime request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
Parking aid chime status	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid chime status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Parking aid enable request	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Parking aid enable request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u>
Parking aid fault status	<u>PAM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>GWM</u>
Parking aid fault status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
Parking aid front status	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid front status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
Parking aid message center data	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid message center data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Parking aid mode request	<u>APIM</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Parking aid mode request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u>
Parking aid rear status	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid rear status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>

Parking aid sensor data	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid sensor data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
Parking aid switch request	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid switch request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
Parking aid text message request	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking aid text message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Parking brake chime request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Parking brake chime request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Parklamp status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>GWM</u>
Parklamp status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ATCM</u>
Parklamp status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Parklamp status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>SODL</u> • <u>SODR</u> • <u>TRM</u>
Parklamp status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Passenger door ajar status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>GWM</u>
Passenger door ajar status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>ATCM</u>
Passenger door ajar status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Passenger door ajar status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Passenger door ajar status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Passenger seat belt buckle status	<u>RCM</u>	<u>HS-CAN2</u>	• <u>OCSM</u> • <u>GWM</u>
Passenger seat belt buckle status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Passenger seat belt buckle status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
<u>PATS</u> control command	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
<u>PATS</u> target status	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>GWM</u>
<u>PATS</u> target status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u>
Perimeter alarm chime request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Perimeter alarm chime request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>

Power pack torque status	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>GWM</u>
Power pack torque status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u> • <u>PSCM</u> • <u>SCCM</u> • <u>HUD module</u> • <u>OCSM</u>
Power pack torque status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>RTM</u> • <u>TRM</u>
Power pack torque status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>APIM</u> • <u>ACM</u> • <u>DSP</u>
Power pack torque status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Power shed level request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PCM</u> • <u>GWM</u>
Power shed level request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>SCCM</u>
Power shed level request	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>TRM</u>
Power shed level request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>APIM</u> • <u>ACM</u>
Power up chime modules	<u>IPC</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>DSP</u>
Powertrain cooling message request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Powertrain cooling message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Rear parking aid chime request	<u>PAM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Rear parking aid chime request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
<u>RCM</u> serial number	<u>RCM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>OCSM</u>
Restraint impact event status	<u>RCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>OCSM</u> • <u>GWM</u>
Restraint impact event status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Restraint impact event status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PCM</u>
Restraint impact event status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Restraint impact event status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Restraints module power status	<u>BECMB</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Restraints module power status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u>
Reverse light ON	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>

Reverse light ON	<u>GWM</u>	<u>MS-CAN</u>	• <u>TRM</u>
Right rear door ajar status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>GWM</u>
Right rear door ajar status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Right rear door ajar status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module
Right rear door ajar status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Right turn lamp request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Right turn lamp request	<u>GWM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>SCCM</u>
Right turn lamp request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>DSP</u> • <u>IPC</u>
Right turn lamp request	<u>GWM</u>	<u>MS-CAN</u>	• <u>TRM</u>
<u>RKE</u> data	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
<u>RKE</u> data	<u>GWM</u>	<u>MS-CAN</u>	• <u>RTM</u>
Road curvature	<u>IPMA</u>	<u>HS-CAN2</u>	• <u>PSCM</u>
Set point volume	<u>FCIM</u>	<u>MS-CAN</u>	• <u>GWM</u>
Set point volume	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>DSP</u>
Stability-traction control event in progress	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u> • <u>PSCM</u> • <u>RCM</u>
Stability-traction control event in progress	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u>
Stability-traction control event in progress	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Stability-traction control event in progress	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Stability-traction control indicator request	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>GWM</u> • <u>RCM</u> • <u>IPMA</u>
Stability-traction control indicator request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u>
Stability-traction control indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Starting system fault message request	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Starting system fault message request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Steering column torque	<u>PSCM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module • <u>SCCM</u> • <u>GWM</u>
Steering column torque	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u>

Steering wheel angle	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>PSCM</u> • <u>RCM</u> • <u>GWM</u>
Steering wheel angle	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>PCM</u>
Steering wheel angle	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
Steering wheel message center switch data	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Steering wheel message center switch data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Stop lamp brake request	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Stop lamp brake request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Stop lamp request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Stop lamp request	<u>GWM</u>	<u>MS-CAN</u>	• <u>TRM</u>
Stop/start drive mode indicator	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>GWM</u>
Stop/start drive mode indicator	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Stop/start drive mode indicator	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Stop/start drive mode indicator	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Stop/start standby mode indicator	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Stop/start standby mode indicator	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Stop/start standby mode indicator	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Tire pressure data	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Tire pressure data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u> • <u>APIM</u>
Tire pressure data	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Tire pressure information	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Tire pressure information	<u>GWM</u>	<u>MS-CAN</u>	• <u>RTM</u>
Tire pressure reset request	<u>IPC</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Tire pressure reset request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Tire pressure system status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Tire pressure system status	<u>GWM</u>	<u>MS-CAN</u>	• <u>RTM</u>
Tire pressure system status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u> • <u>APIM</u>
Tire pressure system status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Tire pressure warning indicator	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>

Tire pressure warning indicator	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u> • <u>APIM</u>
Tire pressure warning indicator	<u>GWM</u>	<u>MS-CAN</u>	• <u>RTM</u>
Traction control indicator off request	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>RCM</u> • <u>GWM</u>
Traction control indicator off request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Traction control indicator off request	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u>
Traction control mode	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>RCM</u> • <u>GWM</u>
Traction control mode	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u>
Traction control mode	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>
Traction control mode	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Trailer lamp connected	<u>TRM</u>	<u>MS-CAN</u>	• <u>SODL</u> • <u>SODR</u> • <u>GWM</u>
Trailer lamp connected	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u> • <u>BCM</u>
Trailer lamp connected	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u>
Trailer lamp connected	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u>
Trailer sway event in progress	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Trailer sway event in progress	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Trailer sway event in progress	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Transmission gear display	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Transmission gear display	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Transmission gear display mode	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Transmission gear display mode	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Transmission not in park indicator request	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Transmission not in park indicator request	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Transmission service required	<u>PCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Transmission service required	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u>
Transmission service required	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Transport mode	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u>

			• <u>PCM</u> • <u>GWM</u>
Transport mode	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u> • <u>SCCM</u>
Transport mode	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>TRM</u> • <u>RTM</u>
Transport mode	<u>GWM</u>	<u>HS-CAN3</u>	• <u>APIM</u> • <u>IPC</u> • <u>ACM</u>
Transport mode	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Turn signal switch status	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Turn signal switch status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u>
Turn signal switch status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Turn signal switch status	<u>GWM</u>	<u>MS-CAN</u>	• <u>SODL</u> • <u>SODR</u>
Valet mode status	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>GWM</u>
Valet mode status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Valet mode status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Vehicle configuration data	<u>BCM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u> • <u>GWM</u>
Vehicle configuration data	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>ATCM</u> • <u>HUD module</u> • <u>IPMA</u> • <u>OCSM</u> • <u>PSCM</u> • <u>RCM</u> • <u>SCCM</u>
Vehicle configuration data	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>RTM</u> • <u>SODL</u> • <u>SODR</u> • <u>TRM</u>
Vehicle configuration data	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Vehicle configuration data	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Vehicle dynamics SOS	<u>ABS module</u>	<u>HS-CAN2</u>	• <u>GWM</u>
Vehicle dynamics SOS	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>
Vehicle dynamics SOS	<u>GWM</u>	<u>HS-CAN3</u>	• <u>IPC</u>

Vehicle lateral acceleration	<u>RCM</u>	<u>HS-CAN2</u>	• <u>ABS module</u> • <u>IPMA</u> • <u>PSCM</u> • <u>GWM</u>
Vehicle lateral acceleration	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Vehicle lateral acceleration	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>
Vehicle lateral acceleration	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Vehicle longitudinal acceleration	<u>RCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>ABS module</u> • <u>PSCM</u> • <u>GWM</u>
Vehicle longitudinal acceleration	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PCM</u>
Vehicle longitudinal acceleration	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>
Vehicle longitudinal acceleration	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Vehicle lock requestor	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Vehicle lock requestor	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Vehicle lock requestor	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u>
Vehicle lock status	<u>BCM</u>	<u>HS-CAN1</u>	• <u>GWM</u>
Vehicle lock status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>
Vehicle lock status	<u>GWM</u>	<u>HS-CAN2</u>	• <u>ABS module</u>
Vehicle lock status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u> • <u>IPC</u>
Vehicle lock status	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Vehicle speed	<u>PCM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>GWM</u>
Vehicle speed	<u>GWM</u>	<u>HS-CAN3</u>	• <u>DSP</u> • <u>IPC</u> • <u>ACM</u> • <u>APIM</u>
Vehicle speed	<u>GWM</u>	<u>MS-CAN</u>	• <u>RTM</u> • <u>FCIM</u> • <u>SODL</u> • <u>SODR</u>
Vehicle speed	<u>GWM</u>	<u>HS-CAN2</u>	• <u>RCM</u> • <u>SCCM</u> • <u>IPMA</u> • <u>HUD module</u> • <u>OCSM</u>
Vehicle speed	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Vehicle temperature display units	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>IPC</u> • <u>GWM</u>
Vehicle temperature display units	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u>

Vehicle trip display units	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Vehicle yaw rate	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>PSCM</u> • <u>GWM</u>
Vehicle yaw rate	<u>RCM</u>	<u>HS-CAN2</u>	• <u>ABS</u> module • <u>IPMA</u> • <u>GWM</u>
Vehicle yaw rate	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u> • <u>PCM</u>
Vehicle yaw rate	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>
Vehicle yaw rate	<u>GWM</u>	<u>MS-CAN</u>	• <u>SODL</u> • <u>SODR</u>
Vehicle yaw rate	<u>GWM</u>	<u>HS-CAN4</u>	• <u>TCU</u>
Voice recognition audio source request	<u>APIM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Voice recognition bluetooth response data	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>IPC</u>
Voice recognition status	• <u>ACM</u> (without SYNC) • <u>APIM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>IPC</u>
Voltage stability status	<u>DC/ DC</u> converter control module (VQM)	<u>HS-CAN1</u>	• <u>PCM</u>
Wheel rotation count	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>GWM</u>
Wheel rotation count	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u>
Wheel rotation count	<u>GWM</u>	<u>MS-CAN</u>	• <u>SODL</u> • <u>SODR</u>
Wheel rotation count	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Wheel rotation direction	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Wheel rotation direction	<u>GWM</u>	<u>HS-CAN1</u>	• <u>PAM</u>
Wheel rotation direction	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u>
Wheel speed data	<u>ABS</u> module	<u>HS-CAN2</u>	• <u>PSCM</u> • <u>IPMA</u> • <u>GWM</u>
Wheel speed data	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u> • <u>PAM</u> • <u>PCM</u>
Wiper front status	<u>SCCM</u>	<u>HS-CAN2</u>	• <u>IPMA</u> • <u>GWM</u>
Wiper front status	<u>GWM</u>	<u>MS-CAN</u>	• <u>FCIM</u> • <u>SODL</u> • <u>SODR</u>
Wiper front status	<u>GWM</u>	<u>HS-CAN3</u>	• <u>ACM</u> • <u>APIM</u>
Wiper front status	<u>GWM</u>	<u>HS-CAN1</u>	• <u>BCM</u>

- | | | | |
|--|--|--|--|
| | | | <ul style="list-style-type: none">• <u>PCM</u> |
|--|--|--|--|

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Communications Network

DTC Chart: Gateway Module (GWM)

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
U2100:00	Initial Configuration Not Complete: No Sub Type Information	CHECK the vehicle service history for recent service actions related to this module. This <u>DTC</u> sets due to incomplete or incorrect <u>PMI</u> procedures. INSTALL As-Built data from Professional Technician Society (PTS) following diagnostic scan tool instructions under Module Programming>As-Built.
U3000:44	Control Module: Data Memory Failure	GO to Pinpoint Test AD
U3000:45	Control Module: Program Memory Failure	GO to Pinpoint Test AD
U3000:46	Control Module: Calibration/Parameter Memory Failure	GO to Pinpoint Test AD
U3000:47	Control Module: Watchdog/Safety μ C Failure	GO to Pinpoint Test AD
U3000:49	Control Module: Internal Electronic Failure	GO to Pinpoint Test AD

Symptom Chart(s)

Symptom Chart: Communication Network

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).

Symptom Chart

Condition	Possible Sources	Actions
The vehicle does not start with the diagnostic scan tool connected to the <u>DLC</u> and/or multiple malfunction indicators are only on when the diagnostic scan tool is connected to the <u>DLC</u>	Refer to the Pinpoint Test	GO to Pinpoint Test AC

No <u>HS-CAN1</u> communication, all modules are not responding	Refer to the Pinpoint Test	GO to Pinpoint Test X
No <u>HS-CAN2</u> communication, all modules are not responding	Refer to the Pinpoint Test	GO to Pinpoint Test Y
No <u>HS-CAN3</u> communication, all modules are not responding	Refer to the Pinpoint Test	GO to Pinpoint Test Z
No <u>HS-CAN4</u> communication, all modules are not responding	Refer to the Pinpoint Test	GO to Pinpoint Test AA
No <u>MS-CAN</u> communication, all modules are not responding	Refer to the Pinpoint Test	GO to Pinpoint Test AB
The <u>PCM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test A
The <u>ABS</u> module does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test B
The <u>RCM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test C
The <u>BECMB</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test D
The <u>OCSM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test E
The <u>SCCM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test F
The <u>IPC</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test G
The <u>BCM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test H
The <u>PAM</u> does not respond to the diagnostic scan tool (integrated with the <u>BCM</u>)	Refer to the Pinpoint Test	GO to Pinpoint Test H
The <u>FCIM</u> module does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test I
The <u>ACM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test J
The <u>IPMA</u> does not respond to the diagnostic scan tool	Refer to the	GO to

	Pinpoint Test	Pinpoint Test K
The <u>APIM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test L
The <u>DSP</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test M
The <u>TCU</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test N
The <u>RTM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test O
The <u>PSCM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test P
The <u>SODL</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test Q
The <u>SODR</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test R
The <u>HUD</u> module does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test S
The <u>TRM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test T
The <u>ATCM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test U
The <u>DCDC</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test V
The <u>GWM</u> does not respond to the diagnostic scan tool	Refer to the Pinpoint Test	GO to Pinpoint Test W
No power to the <u>DLC</u>	Refer to the Pinpoint Test	GO to Pinpoint Test AC

Pinpoint Tests

► [PINPOINT TEST A : THE POWERTRAIN CONTROL MODULE \(PCM\) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL](#)

▶ PINPOINT TEST B : THE ANTI-LOCK BRAKE SYSTEM (ABS) MODULE DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST C : THE RESTRAINTS CONTROL MODULE (RCM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST D : THE BECMB (EXTENDED POWER MODULE) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST E : THE OCCUPANT CLASSIFICATION SYSTEM MODULE (OCSM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST F : THE STEERING COLUMN CONTROL MODULE (SCCM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST G : THE INSTRUMENT PANEL CLUSTER (IPC) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST H : THE BODY CONTROL MODULE (BCM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST I : THE FRONT CONTROLS INTERFACE MODULE (FCIM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST J : THE AUDIO CONTROL MODULE (ACM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST K : THE IMAGE PROCESSING MODULE A (IPMA) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST L : THE ACCESSORY PROTOCOL INTERFACE MODULE (APIM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST M : THE AUDIO DIGITAL SIGNAL PROCESSING (DSP) MODULE DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST N : THE TELEMATIC CONTROL UNIT MODULE (TCU) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST O : THE RADIO TRANSCEIVER MODULE (RTM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST P : THE POWER STEERING CONTROL MODULE (PSCM) DOES NOT RESPOND

TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST Q : THE SIDE OBSTACLE DETECTION CONTROL MODULE LH (SOD-L) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST R : THE SIDE OBSTACLE DETECTION CONTROL MODULE RH (SOD-R) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST S : THE HEAD UP DISPLAY (HUD) MODULE DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST T : THE TRM (TRAILER MODULE) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST U : THE ALL TERRAIN CONTROL MODULE (ATCM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST V : THE DIRECT CURRENT/DIRECT CURRENT (DC/DC) CONVERTER CONTROL MODULE (VOLTAGE QUALITY MODULE) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST W : THE GATEWAY MODULE (GWM) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

▶ PINPOINT TEST X : NO HIGH SPEED CONTROLLER AREA NETWORK 1 (HS-CAN1) COMMUNICATION, ALL MODULES ARE NOT RESPONDING

▶ PINPOINT TEST Y : NO HIGH SPEED CONTROLLER AREA NETWORK 2 (HS-CAN2) COMMUNICATION, ALL MODULES ARE NOT RESPONDING

▶ PINPOINT TEST Z : NO HIGH SPEED CONTROLLER AREA NETWORK 3 (HS-CAN3) COMMUNICATION, ALL MODULES ARE NOT RESPONDING

▶ PINPOINT TEST AA : NO HIGH SPEED CONTROLLER AREA NETWORK 4 (HS-CAN4) COMMUNICATION, ALL MODULES ARE NOT RESPONDING

▶ PINPOINT TEST AB : NO MEDIUM SPEED CONTROLLER AREA NETWORK (MS-CAN) COMMUNICATION, ALL MODULES ARE NOT RESPONDING

▶ PINPOINT TEST AC : NO POWER TO THE DATA LINK CONNECTOR (DLC)

▶ PINPOINT TEST AD : U3000:44 ,U3000:45, U3000:46, U3000:47 OR U3000:49



Gateway Module A (GWM)**Removal**

NOTE: Removal steps in this procedure may contain installation details.

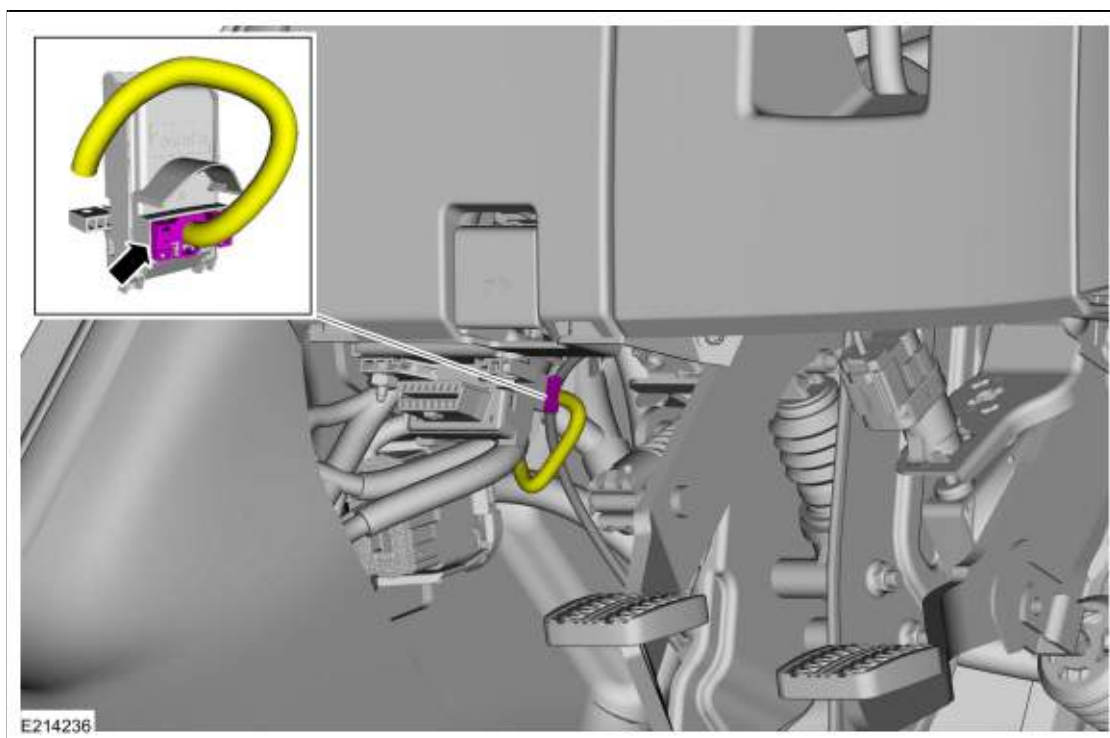
1.  **WARNING:** Before beginning any service procedure in this manual, refer to health and safety warnings in section 100-00 General Information. Failure to follow this instruction may result in serious personal injury.

Refer to: [Health and Safety Precautions](#) (100-00 General Information, Description and Operation).

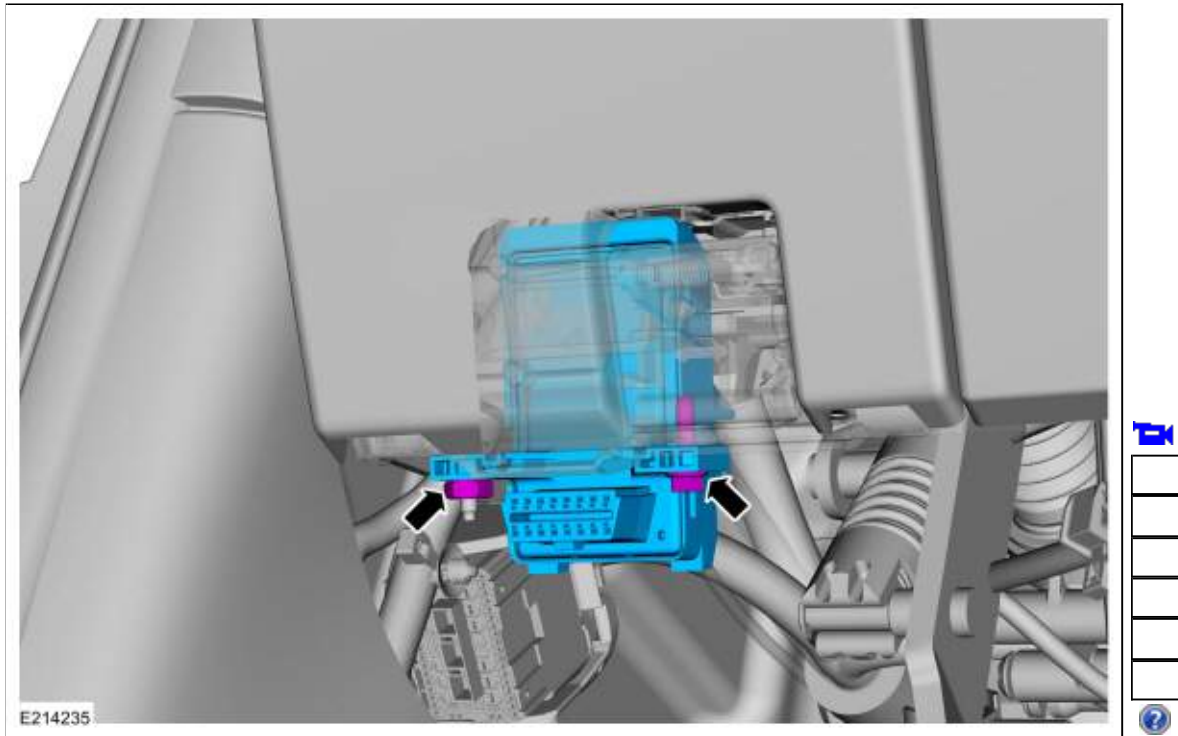
2. **NOTE:** If installing a new module, it is necessary to upload the module configuration information to the scan tool prior to removing the module. This information must be downloaded into the new module after installation.

Upload the GWM configuration to the scan tool by following the scan tool on-screen instructions.

- 3.



4. Torque: 35 lb.in (4 Nm)



Installation

1. To install, reverse the removal procedure.
2. Download the GWM configuration information from the scan tool to the new GWM following the scan tool on-screen instructions.

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