Report a Problem

GENERAL SERVICE BULLETIN
Adaptive Cruise, Pre-Collision And Collision Avoidance System Functionality Diagnostics

23-7031
02 March 2023

This bulletin supersedes 22-7034.

Summary

This article supersedes GSB 22-7034 to update the Service Information and vehicle model years affected.

This article is intended to aid in the diagnosis for vehicles with difficulty resolving image processing module A (IPMA) or cruise control module (CCM) alignment and/or functionality concerns.

Service Information

Adaptive cruise control and collision avoidance systems can use a forward windshield camera only IPMA or a combination of IPMA and a CCM. Make sure which system is present on the vehicle so the system evaluation is completed properly.

The forward collision system warning indicator will be illuminated when the vehicle is in transport mode. Prior to any diagnosis, be sure the vehicle is not in transport mode. For further information on transport mode, Refer to Workshop Manual (WSM), Section 419-10.

NOTE: Follow the Service Procedures to troubleshoot IPMA and CCM alignment issues before replacing the parts. For Mustang Mach-E and F-150 vehicles equipped with base part number 14G647, alignment and blockage issues are specific to the sensors and not the electronic control unit (ECU).

IPMA (near rear view mirror) forward windshield camera (Figure 1)

Figure 1

CCM (in the front grille, either visible or behind bumper) RADAR sensor (Figure 2)

Figure 2

NOTE: Environmental factors such as sun position, glare, moisture, frost, snow, ice, and dust/dirt can interfere with system vision and may cause the system to become inactive with a warning until these items clear.

If the IMPA/CCM alignment procedure is not successful, inspect for the presence of outside factors.

Possible outside factors that may affect IPMA alignment

1. Diagnostic trouble codes (DTCs) other than C1001:54, C1001:78, C1001:97 present in IPMA or other modules

(1). Repair all other DTCs prior to diagnosing or attempting IPMA alignment

2. Unclear road markings

3. Module or circuit concerns

4. Accessories blocking camera view, including but not limited to:

(1). Snow plow

(2). Winch

(3). Bug guard

5. Vehicle ride height - refer to specifications in Workshop Manual (WSM), Section 204-00

(1). Vehicle squatting from cargo weight

(2). Lift kit

(3). Lowering kit

(4). Leveling kit

(5). Incorrect tire size

(6). Other modifications that affect vehicle ride height or stance

(7). Incorrect wheel arch measurements input in Interactive Diagnostic System (IDS)/Ford Diagnosis and Repair System (FDRS)

6. Inspect windshield

(1). If this concern began after a recent windshield replacement, inspect the replacement windshield for imperfections and correct installation

(2). Aftermarket windshield installed

- Carlite replacement windshield recommended

(3). Windshield clean of moisture, snow, ice, frost, and dust/dirt

(4). IPMA lens clean

(5). Aftermarket tinting or windshield banners/stickers

(6). Glass distortion can distort the camera's view and prevent camera alignment and functionality (Figure 3)

Figure 3

(7). IPMA mounting and/or bracket off-center, not clocked properly or not secured to windshield (Figures 4-5)

Figure 4

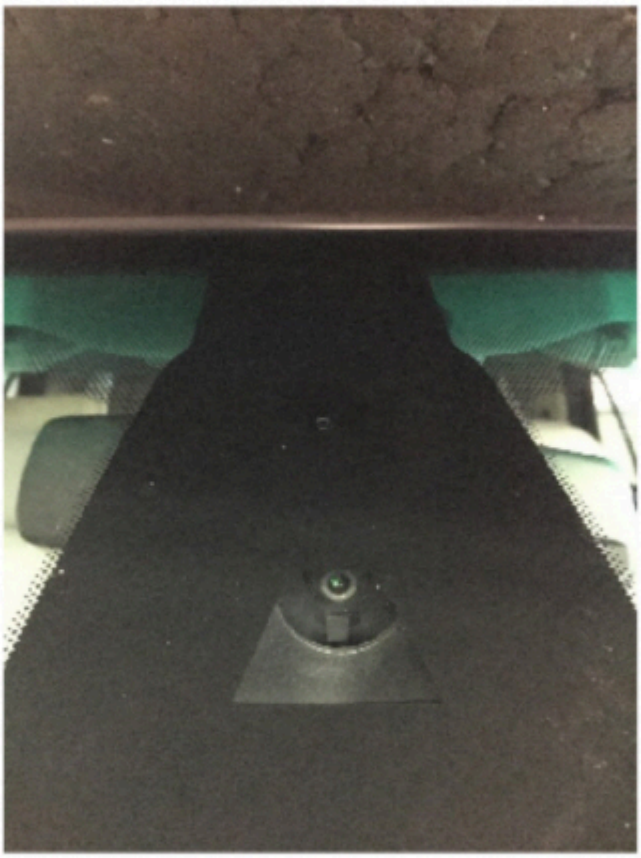

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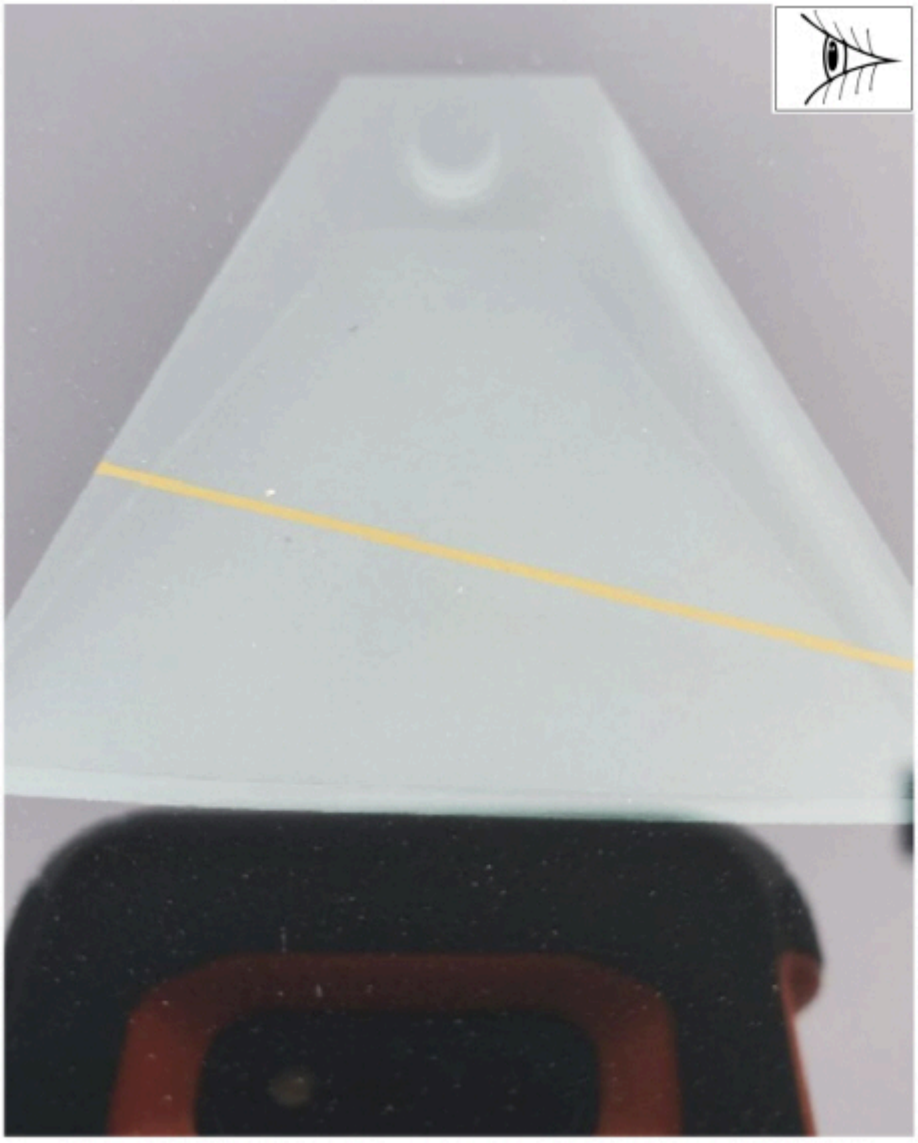
Figure 5



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(8). Windshield not installed correctly. Figure 6 shows a windshield that is recessed near the vehicle's roof, causing the camera to be pitched upward.

Figure 6

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Possible outside factors that may affect CCM alignment

1. DTCs present in CCM or other modules

- Repair all DTCs prior to diagnosing or attempting CCM alignment

2. Module or circuit concerns (usually DTCs would be present)

3. CCM radar blocked - may result in CCM DTC C1A67:97

- Inspect the front bumper or CCM location for snow, ice, dust/dirt (Figure 7)

Figure 7

(1). Incorrect front license plate/bracket mounting

(2). Aftermarket or incorrect bumper or grille

(3). Brush guard installed

(4). Snow plow or snow plow mounting hardware installed

(5). Other aftermarket accessories installed on front of vehicle (Figure 8)

Figure 8

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(6). CCM mounting hardware bent or damaged or improper CCM mounting (Figure 9)

NOTE: Improper CCM mounting may also result in DTCs B142E:78 or B1432:78 in the CCM

Figure 9

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(7). Facia damaged, facia installed incorrectly, or aftermarket facia installed.

4. Using the FDRS tool, check the parameter identification (PID) for ALGN_OFF -CCM. A value greater than +/-3 degrees indicates a mounting issue with the CCM, not necessarily a defective module. Check for CCM or mounting

surface damage. If found repair damage as necessary. If no damage found, perform the CCM alignment procedure per WSM Section 419-03, Cruise Control Radar Alignment.

CCM Alignment Incorrect

If an issue remains after addressing outside factors, perform the CCM alignment procedure. Refer to WSM, Section 419-03, Cruise Control Radar Alignment.

Notes regarding radar drive alignment

1. The radar needs to see 150-200 stationary targets on either side of the road to identify the center of the lane.

2. These targets increment as the vehicle is driving over 15 mph (24 km/h).

3. The faster it sees these targets the faster it will complete the process.

4. Loss of communication and internal fault DTCs will prevent completion of the process.

5. Key cycles between initiation of the drive alignment and the drive will move the vehicle out of alignment mode.
