SS 3142-FTL J1939 CAN issues for vehicles equipped w/ Bendix Side Radar w/ expanded field of view

Applicable Vehicles

This solution targets New Cascadia vehicles built from 9/9/2019 with Cummins engine, automated or Allison transmissions, Bendix side radar connected to the J1939 500K back bone and customer access RP1226 connections (typically found in module 6TS or 786).

Symptoms

Symptoms related to communication errors may include various vehicle network communication issues including the following.

- Engine starting issues
- Issues with ICUC display the transmission position
- Possibility of the transmission being stuck in a particular gear.

Issue

Certain vehicles equipped with Bendix Side Radar revision 2 may have a J1939 communication issue. The two attached documents will help you determine if your vehicle is subject to this communication issue along with providing a containment (if needed) that will temporarily scale back side radar functionality, while maintaining a downgraded level of function, for continued driver assistance purposes. Providing the containment, optimizes the J1939 communications.

At all times, the driver is required to maintain safe vehicle control, observe roadway conditions and postings, supervise the vehicle and assistance systems, and respond to surroundings.

Adding third party J1939 devices such as telematics to the J1939 500K backbone, can produce communication errors, which result in J1939 faults, and the symptoms listed above.

Solution

This service solution is intended to provide guidance, when encountering J1939 500K communication errors, associated with the applicable vehicles. Two documents are attached to this solution. The document labeled “J1939 500K Problem Identification” should be used when determining what type of J1939 issue is being encountered. The second document labeled "Procedure for Unplugging the Bendix Side Radar as Containment**"** is intended to provide a possible containment, if determined that error frames are associated with the J1939 backbone. In some cases, customer may add more options than what the J1939 backbone can properly support. A long-term process is in place to provide a Service Bulletin containing J1939 overlay harness that resolves the communication issue and provides the larger side monitoring range for the Bendix side radar, while supporting third-party telematics. This Solution will be updated with the Service Bulletin once the bulletin is released.

Labels :

Electrical **New Cascadia**

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Attachments

1 Kudo

Comment

J1939 500K Problem Identification

General Information:

This document was created to help identify issues related to the J1939 500K for New Cascadia vehicles with Cummins engine, Eaton automated or Allison transmission, with Bendix side radar. The adding of third party J1939 devices such as telematics can produce error frames, which result in J1939 faults.

Symptoms:

Any or all of the following symptoms may be present.

- Engine will not Start.
- The ICUC display will cycle current gear from F to N.
- Transmission does not shift and is stuck in current gear.

Procedure for identifying J1939 backbone signal problems:

1. What is the Powertrain?
    a. Cummins Diesel (go to step 2)
    b. Cummins Natural Gas (unlikely related to SS 3142-FTL)
2. What transmission does this vehicle have:
    a. Eaton AMT [Endurant, Ultrashift] (Go to step 3)
    b. Allison (Go to step 3)
    c. Manual (unlikely related to SS 3142-FTL)
3. Does this unit have Bendix Side Radar?
    a. Yes (Go to step 4)
    b. No (unlikely related to SS 3142-FTL)
4. Does this unit have any third-party telematics connected to the J1939?
    a. Yes (Go to step 5)
    b. No (unlikely related to SS 3142-FTL)
5. Measure the resistance on pins C and D of the diagnostic connector. (Key Off)
    a. 120 ohms +- 5 ohms (missing a resistor)
        i. Install missing resistor.
        ii. If symptoms persist go to step 6
    b. 60 ohms +- 5 ohms (go to step 6)
    c. 40 ohms +- 5 ohms (extra resistor)
        i. Remove extra resistor and go to step 6.
    d. 30 ohms +- 5 ohms (2 extra resistors)
        i. Remove 2 extra resistors and go to step 6.
    e. 0 ohms
        i. Wires are shorted together follow proper troubleshooting.
    f. Open Circuit
        i. Repair J1939 wiring or missing terminating resistors as needed.
        ii. Go to step 6
6. Connect Diagnostic Link to the unit.
7. Turn the Key on

8. Are the following fault codes active or become active while monitoring?

SA	SPN	FMI	Description
37 (CGW)	523615	31	Received network data in error - XBR
37 (CGW)	523515	31	CGW has detected an issue with the J1939 CAN, offline or performance.
3 (TCM)	639	9	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link) - Abnormal update rate
3 (TCM)	751	9	Transmission Primary Shift Selector - Abnormal update rate

   a. Yes (go to step 9)
   b. No (unlikely related to SS 3142-FTL)
9. Unplug the 2 pin J1939 connector from the Bendix side radar. Do the fault codes become inactive?
   a. Yes (In-Active) (go to step 10)
   b. No (Active) (go to step 13)
10. Reconnect the side radar 2 pin J1939 Connector (Go to step 11)
11. Unplug any Third-Party Devices on J1939. (Go to step 12)
12. Are the fault codes listed in step 8 active?
   a. No (In-Active): Stop Here. **Containment procedure provided in SS 3142-FTL should be applied**. Investigate Third-Party Device Integration making sure that the connection to the third-party telematics is correct. Stub shaft connection to the third-party telematics should not exceed 1.67 meters or 5.48 feet in total length, including both DTNA access wiring along with the third-party telematics.
   b. Yes (Active): Stop Here. **Containment procedure provided in SS 3142-FTL should be applied.**
13. Disconnect any J1939 third-party devices, go to step 14
14. Do the fault codes listed in step 8 become inactive?
   a. Yes (In-Active): Stop Here. Problem is unlikely related to SS 3142-FTL. Investigate third party device and device integration.
   b. No (Active): Stop Here. Problem is unlikely related to SS 3142-FTL. There is an actual ECU device failing. Please follow the appropriate troubleshooting for the remaining fault codes.

Procedure for Unplugging the Bendix Side Radar as Containment

General Information:

The Bendix Side radar revision 2 uses J1939 to monitor vehicle speed. The containment would include unplugging only the 2-pin J1939 connection to the side radar. Unplugging of the J1939 allows the Bendix side radar to function like the earlier version. The only function difference with the J1939 unplugged relates to vehicle speed. With the J1939 unplugged, vehicle speed above 20 MPH, will not expand the detection zone to up to 40 feet, but rather maintain the roughly 12-foot detection zone as pictured in the Figure 1 below.

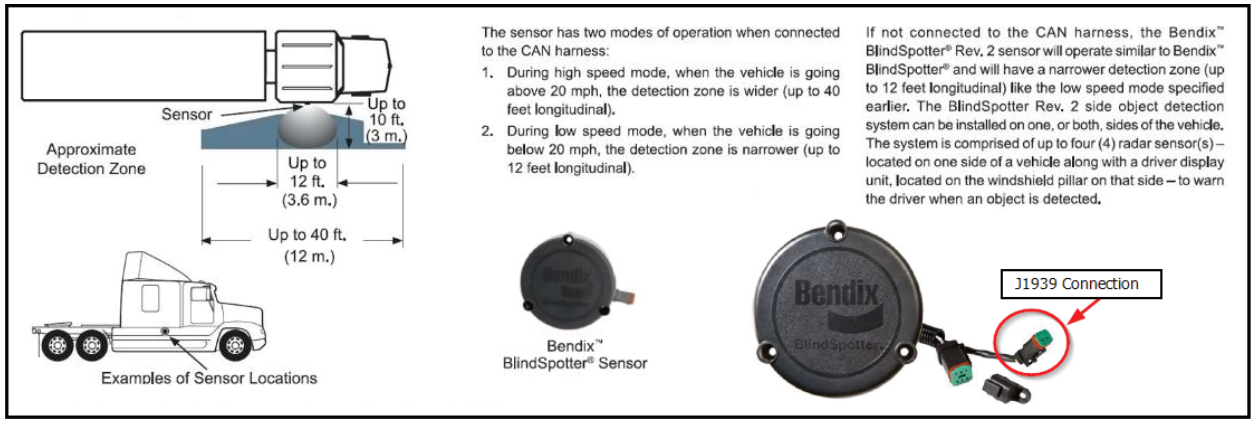

Figure 1

Procedure for unplugging the J1939 two pin connection at the side radar:

1. There will be a 6-pin connection and 2-pin connection at the Bendix side radar. Only unplug the 2-pin J1939 connector going to the side radar.
2. To eliminate any chance of contamination from entering both the plug and receptacle ends of the J1939 connections, connectors with seal plugs will need to be added to each end. Use the following parts to seal both ends of the connector.

Parts:

To seal the chassis harness end of the J1939 connector use a quantity of 1 P/N DUF DT04 2P connector with a quantity of two cavity plugs P/N 23-13218-204.

To seal the Bendix side radar end of the J1939 connector, use a quantity of 1 P/N DUF DT06 2S connector with a quantity of two cavity plugs P/N 23-13218-204.

Obtaining Required Notice Sticker For dash:

After performing the containment, a notice sticker needs to be placed in the dash. To obtain the sticker use the following link to navigate to DTNA Publications.

LINK: DTNA Publications (dtnadocumentservices.com)

Select Warranty on the left side of the page to access the Notice sticker (Figure 2).

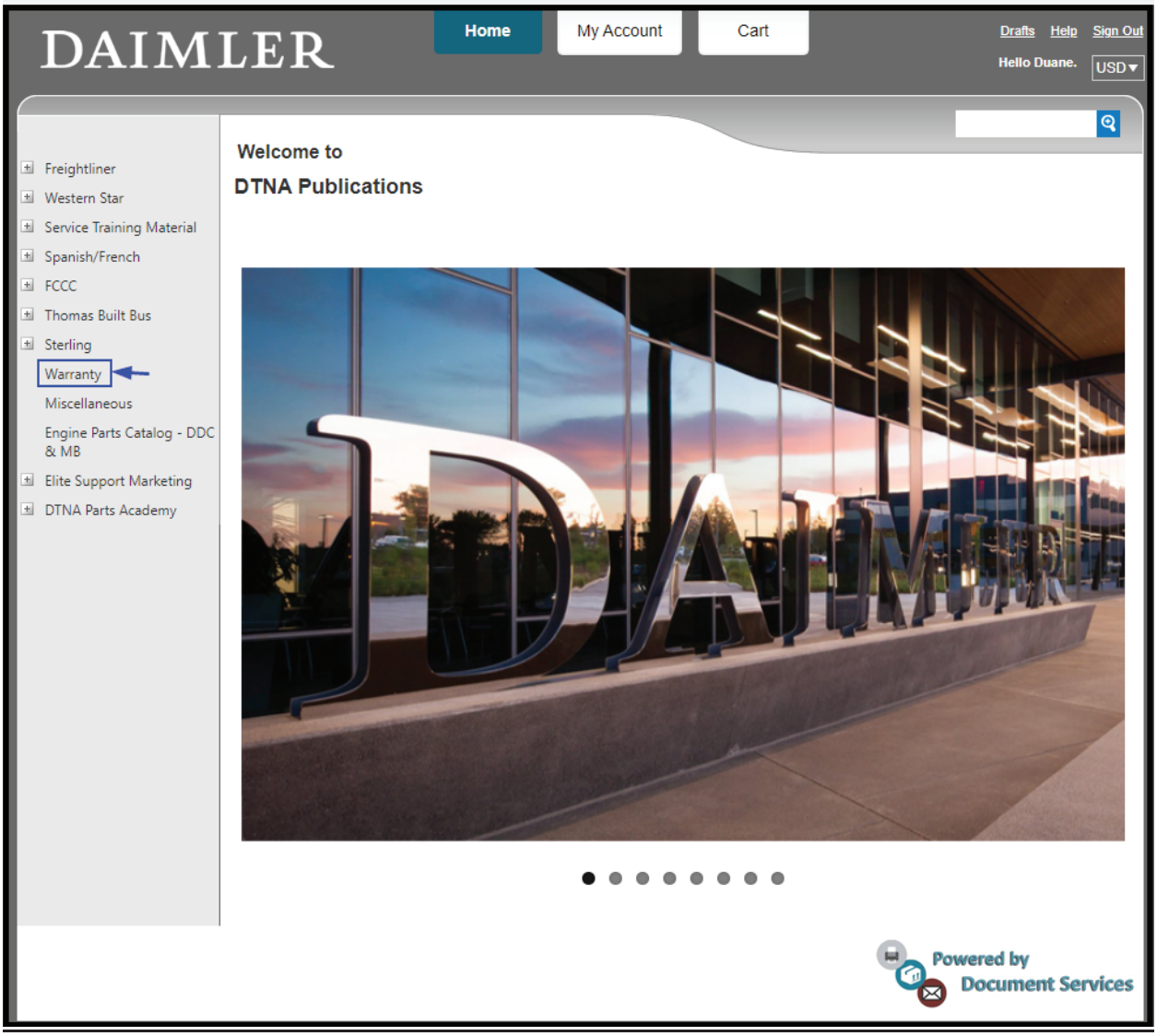

Figure 2

Under the Warranty section, select the notice sticker SS 3142-FTL to place order (Figure 3).

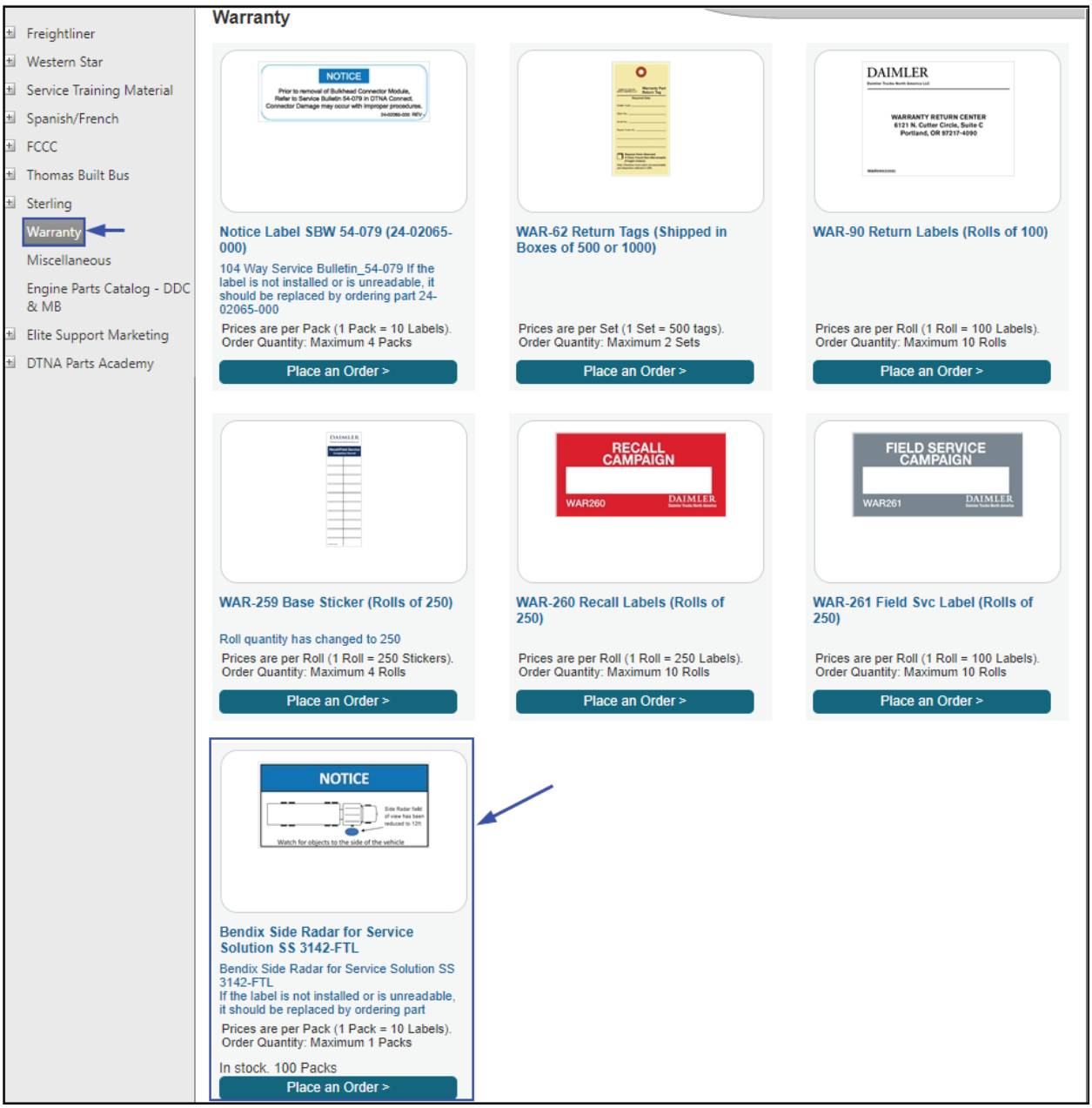

Figure 3

Sticker Placement for containment:

The notice message needs to be attached to the dash. See Figure 4 below for the correct mounting location of the sticker P/N 24-02145-000. Prior to installing the sticker, clean surface with mild soap & water and completely dry the mounting area.

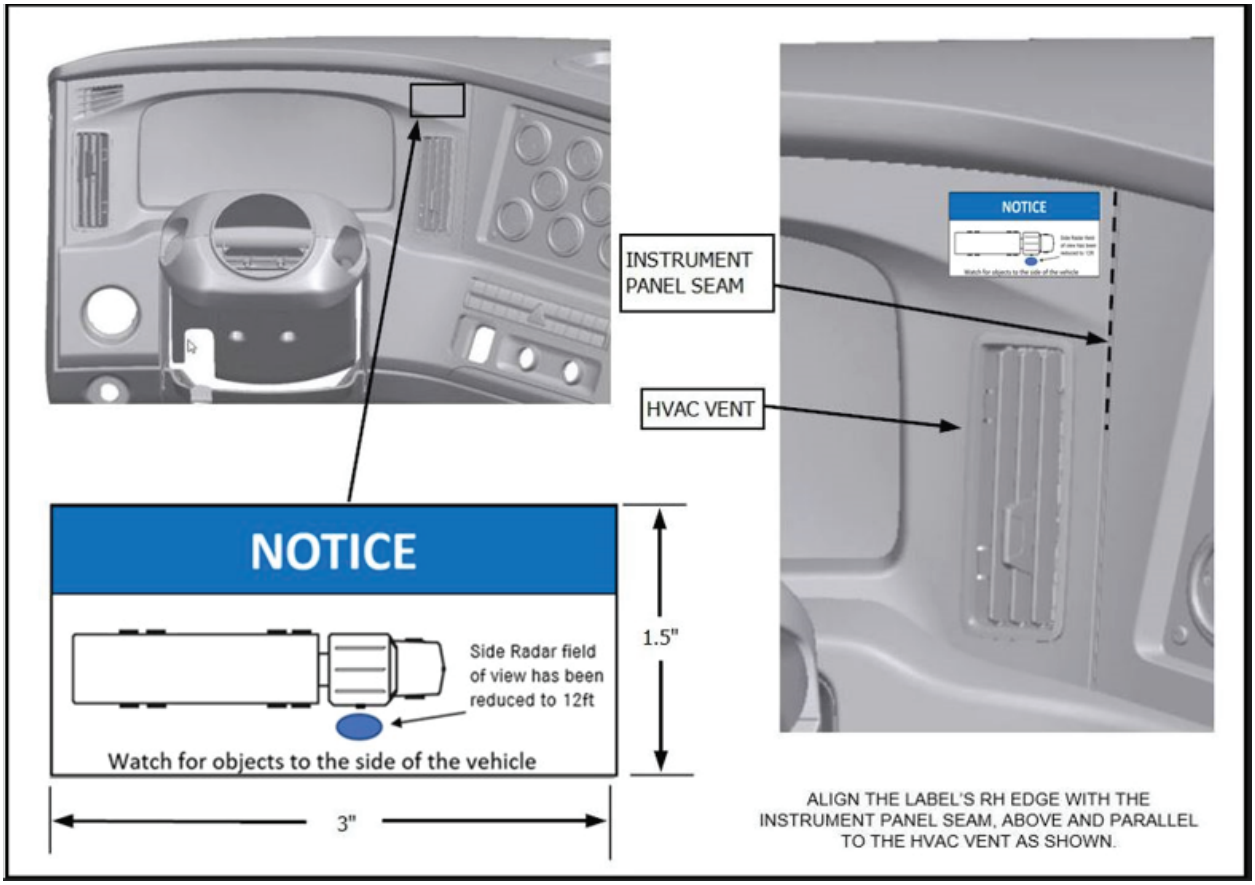
INSTRUMENT PANEL SEAM
HVAC VENT
NOTICE
Side Radar field of view has been reduced to 12ft
Watch for objects to the side of the vehicle
1.5"
3"
NOTICE
ALIGN THE LABEL'S RH EDGE WITH THE INSTRUMENT PANEL SEAM, ABOVE AND PARALLEL TO THE HVAC VENT AS SHOWN.

Figure 4