TS 382 Detroit Assurance Frontend Radar (RDF) General Troubleshooting Approach

Overview and Symptoms:

This solution acts as an overall guide for troubleshooting Frontend Radar (RDF), Adaptive Cruise Control (ACC), and Active Brake Assist (ABA) issues. The troubleshooting approach below is an all-encompassing approach to address most of the relevant complaints related to the RDF. Some of it may be redundant for the specific issue you run into but most likely will address the issue you are facing. Common complaints heard from the call center are:

- Adaptive Cruise control inop/intermittent
- Truck is attempting to stop
- RDF alignment issues

Here are some examples of fault codes the CAC has seen that are relevant to this guide:

- 42-RDF/523004/13 - ECU not alligned/Active-Yes;
- 232-VRDU/524042/9 - ECU RDF timeout/Active-Yes;
- 42-RDF/523006/7 - ECU misaligned EL EOL and Service
- 42-RDF/1590/19 - CAN Out of Range for signal ACC1_MODE/Active-Yes;
- 42-RDF/517529/13 - alignment monitoring failed in elevation - sensor looks too low/Active-Yes;
- 42-RDF/523001/12 - ECU Disturbance
- 42-RDF/523001/31 - ECU Contamination error (blockage detection)
- 232-VRDU/524042/19 – ECU RDF Data Error
- 232-VRDU/524042/9 – ECU RDF Timeout

Note: Most of this troubleshooting can be used for troubleshooting other radar systems such as Wabco Ongaurd, but this troubleshooting is specific to Detroit Assurance Systems.

Troubleshooting Approach:

** Run radar alignment after any change.

- Is the VRDU on roll call?

    - No: This is either a wiring issue or an internal failure in the VRDU. Run a volt drop test on the power, ground and ignition at the VRDU. Ensure 2.3V on low side of Chassis CAN wire and 2.6V on high side Chassis CAN at the VRDU/Chassis CAN Starpoint. Also, ensure 60 ohms of resistance. Verify proper pin tension and lack of corrosion. If all is in spec, replace VRDU.
    - Yes: Move on to step 2.
- Is the RDF on roll call?
    - No: This is either a wiring issue or an internal failure in the RDF. Run a volt drop test on the power, ground at the RDF. Ensure 2.3V on low side of ACAN wire and 2.6V on high side ACAN wire at the RDF. Also, ensure 60 ohms of resistance. Verify proper pin tension and lack of corrosion. If all is in spec, replace RDF
        - See SS 1033364 for harness chafe information.
    - Yes: Run a volt drop test on the power, ground at the RDF. Ensure 2.3V on low side of ACAN wire and 2.6V on high side ACAN wire at the RDF. Also, ensure 60 ohms of resistance. Verify proper pin tension and lack of corrosion.
- Is this unit equipped with a Hadley Smart Valve and Aerodynamic Height Control? This can easily be see if you navigate to subgroup/module 87D in PartsPro or Excelerator and look at the wiring schematics to see if there is a Hadley Smart Valve included in the wiring.
    - If yes: See SS 3083
    - If no, continue to step 4.
- Re-interview the driver, ask open-ended questions to find out under what conditions the issue arose. The truck could have been in a small accident or on a road not fit for a radar system.
- Ensure there is no blockage in front of RDF.
    - Commonly seen are anything from a brush guard/cattle guard to a sticker affect the RDF.
    - Heavy snow and rain can be detected by the radar and possibly set a warning or attempt to stop the vehicle.
    - See SS 1034216. Remove the sticker no matter where it is.
- Verify the bumper is mounted correctly, and not damaged in *any way*.
    - See Parts Pro/Excelerator module 736 for Installation Diagram. Stand 30 ft. away from the front of the truck and inspect the gaps between the fenders and the bumper. For instance, is one fender sitting higher than the other one? If so, attempt to align the bumper as it may be interfering with the RDF.
- You MUST inspect the cross member that the bracket is mounted to, is there any wrinkled paint? Was the vehicle involved in any type of collision? Is there evidence on the bumper of any contact with unwanted stationary objects? Are the bolts tight?
- Ensure the RDF sits perpendicular to the ground, measured with an inclinometer; it MUST BE 90° +/- 1 deg. If you notice any deflection, inspect the RDF bracket and inspect it for damage. If any damage is found the bracket will need to be replaced. Sometimes the deflection is unable to be seen with the human eye.
- If all else fails in diagnosing/solving the issue, if possible, install a test RDF and attempt to calibrate.

  - If, during the Calibration process, the process seems to stop and then state “Calibration Complete/FAIL’, this is an indication that the RDF is ‘pointed’ in the wrong specific direction. The most likely root cause is that either the RDF bracket is bent, of the closing member the RDF bracket is mounted to, is bent.
- If the test RDF did not resolve the issue or there is not one available, Replace the RDF bracket and perform an alignment procedure as defined in the associated workshop manual.
- If the bracket did not resolve the issue and a test RDF is not available, replace the RDF.

Note: Damaged harnesses, poor pin tension/corrosion or a bent RDF bracket/closing member causes most RDF issues. The only time an RDF should be replaced out-of-hand, is if there are codes for Internal Hardware/Gyro.

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