

TEM-11-00001 Detroit Assurance Forward Radar RDF02T Relocation

This topic is for Detroit Assurance Forward Radar RDF02T Relocation.

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Parent topic: [Safety Systems, Radars, & Cameras](#)

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Forward Radar Relocation

The Detroit Assurance® forward radar RDF02T distance sensor is an integral part of the suite of advanced driver assistance systems, including Active Brake Assist (ABA) and Adaptive Cruise Control (ACC). The forward radar system is intended solely as a driver aid and is not intended to be relied upon to safely operate a vehicle. The system should be used in conjunction with rearview mirrors and other instruments to safely operate the vehicle.

This document provides guidelines and instructions for relocating the forward radar RDF02T when installing equipment or accessories on vocational vehicles. This document applies to Freightliner® and Western Star® vehicles configured with the CEEA+ architecture.

⚠ Caution: The Detroit Assurance system should be used as a driver aid only and should not be used in place of safe driving practices.

To ensure the proper operation of the forward radar, follow the guidelines listed below.

- Do not mount any attachments in front of the radar distance sensor.
- Do not paint or affix items over the radar distance sensor cover.
- Improper installation, configuration, and/or calibration of the forward radar distance sensor can impair the operation of the radar distance sensor.
- All work, including maintenance and repair work on the radar distance sensor, should only be performed by an authorized service facility or provider.

Note:

Parent topic: [TEM-11-00001 Detroit Assurance Forward Radar RDF02T Relocation](#)

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Parts Overview

Table 1 lists the parts required for forward radar installation.

Table 1, Forward Radar Bracket Installation Parts List

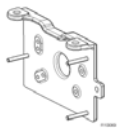
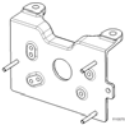
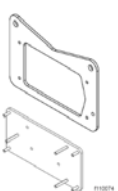
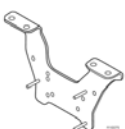
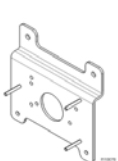
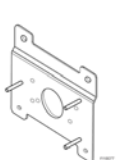
Part Number	Description	Vehicle Model	Bracket Diagram
A66-15329	Standard Bumper 700 to 900 in² radiator (1778 to 2286 cm²)	Freightliner M2 106	
A66-15330	Offset Bumper 700 to 900 in² radiator (1778 to 2286 cm²)	Freightliner M2 106	
A66-05575	Standard Bumper 950 to 1100 in² radiator (2413 to 2794 cm²)	Freightliner M2 106	
A66-05577	Offset Bumper 950 to 1100 in² radiator (2413 to 2794 cm²)	Freightliner M2 106	
A66-17950	Forward Bumper	Freightliner SD 108	
A66-12360 and A66-12361	Forward Radar Bracket Assembly	Freightliner SD 114	
A15-29914	Centered Town Pin Bumper	Western Star 47X & 49X	
A15-29920	Logger Bumper	Western Star 47X & 49X	
A15-30128	Vocational Standard Tow Bumper	Western Star 47X & 49X	
A15-30190	Vocational Bridge Formula Bumper	Western Star 47X & 49X	

Table 1, Forward Radar Bracket Installation Parts List

👉 **Note:** Alternate brackets or customized brackets may be used as long as the forward radar mounting pattern is followed and all functional requirements are met.

Table 2 lists the parts required for mounting the forward radar ECU.

Table 2, Forward Radar Mounting Hardware Parts List

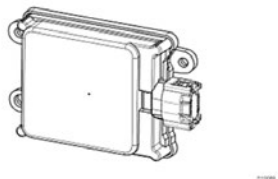
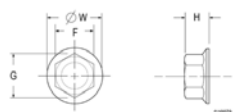
Part Number	Description	Quantity	Bracket Diagram
A 000 446 33 49	Forward Radar ECU (RDF02T)	1	
23-14062-025	Forward Radar Mounting Screws M6 x 1.0 x 25 mm (steel class 8.8) Tighten to 4.4 to 5.9 lbf·ft (6 to 8 N·m)	3	
910112 006001	Forward Radar Mounting Nuts NUT,HX FLNG MTRC,M6 x 1.0,CLS 8 Tighten to 4.4 to 5.9 lbf·ft (6 to 8 N·m)	3	

Table 2, Forward Radar Mounting Hardware Parts List

Table 3 lists the parts required for the forward radar cover and installation hardware.

Table 3, Forward Radar Cover & Installation Hardware Parts List

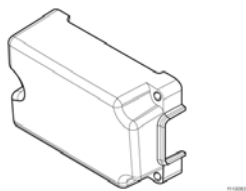
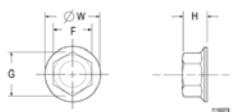
Part Number	Description	Quantity	Bracket Diagram
06-95316-000	Forward Radar Cover FASCIA-RDR, AEROCLAD BMPR	1	
910112 006001	Cover Mounting Nuts NUT,HX FLNG MTRC,M6X1.0,CLS 8 Tighten to 4.4 to 5.9 lbf·ft (6 to 8 N·m)	3	

Table 3, Forward Radar Cover & Installation Hardware Parts List

👉 **Note:** Do not change or paint the factory-installed cover. If vehicle painting is required, the forward radar ECU and cover must first be removed or properly protected.

Note:

Parent topic: [TEM-11-00001 Detroit Assurance Forward Radar RDF02T Relocation](#)

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Forward Radar RDF02T Wiring

Figure 1 shows a diagram of the CT-A 8-pin connector. Forward Radar Connector (A210 007 29 99) Vehicle Connector (A210 540 44 81).

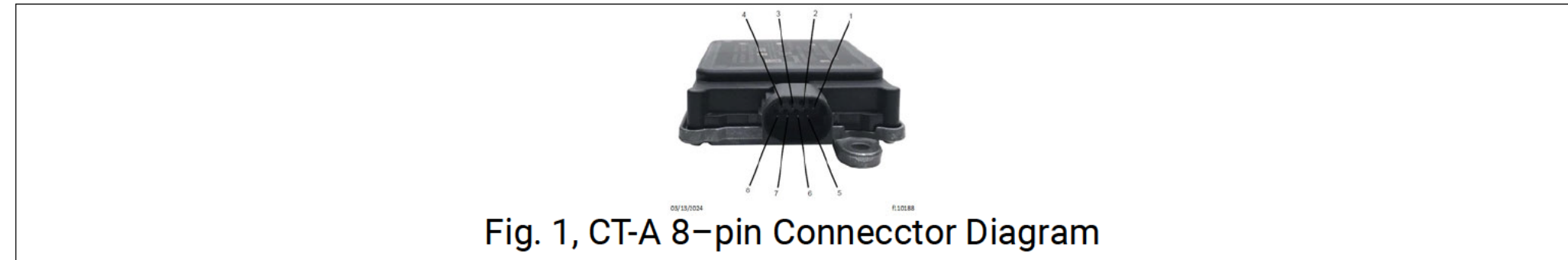


Table 1 provides pinout information for the CT-A 8-pin connector.

Table 1, Wire & Harness Connector Pin Descriptions

Pin	Description
1	KL 15/KL 30
2	Not Connected
3	CAN_GND_1
4	CAN_L
5	Not Connected
6	CAN_GND_2
7	CAN_H
8	KL 31

Table 1, Wire & Harness Connector Pin Descriptions

Wiring Harness Modifications

When modifying factory-installed wiring harnesses while relocating the forward radar RDF02T, follow the below guidelines:

- When shortening the harness, follow the pinout diagram in Fig. 1.

- Do not use pigtails or jumpers when wiring CT-A connectors.
- When modifying the factory-installed forward radar wire harness (such as routing or clipping the harness), route the harness so that it does not interfere with any vehicle assembly.
- Make sure that the harness is protected from environmental hazards such as mud, salt spray, debris, excessive heat, and power washing.

Note:

Parent topic: [TEM-11-00001 Detroit Assurance Forward Radar RDF02T Relocation](#)

Document Number: 0000200556

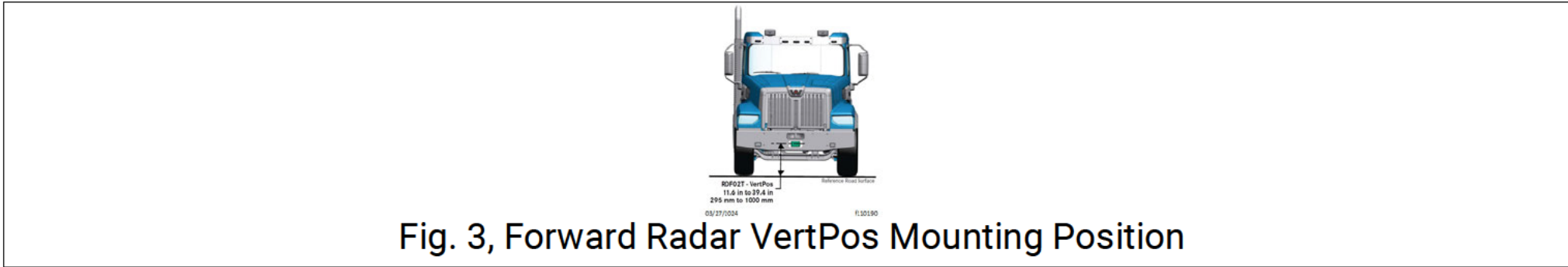
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Table 1. Forward Radar VertPos Installation Range

VertPos Position	Above-Ground Clearance
Overall acceptable radar height	11.61 to 39.37 in (295 to 1000 mm)
Ideal radar height for optimized radar performance	11.61 to 31.50 in (295 to 800 mm)
Acceptable reduced radar detection zone installation position	31.50 to 39.37 in (800 to 1000 mm)

Table 1, Forward Radar VertPos Installation Range



Radar Mounting Offset Angle Variation

Forward radar lateral off-center must be 2° to -2°. The center of the radar should match the vehicle's center longitudinal axis. Variations from this position will affect the functionality of the system. See Table 2.

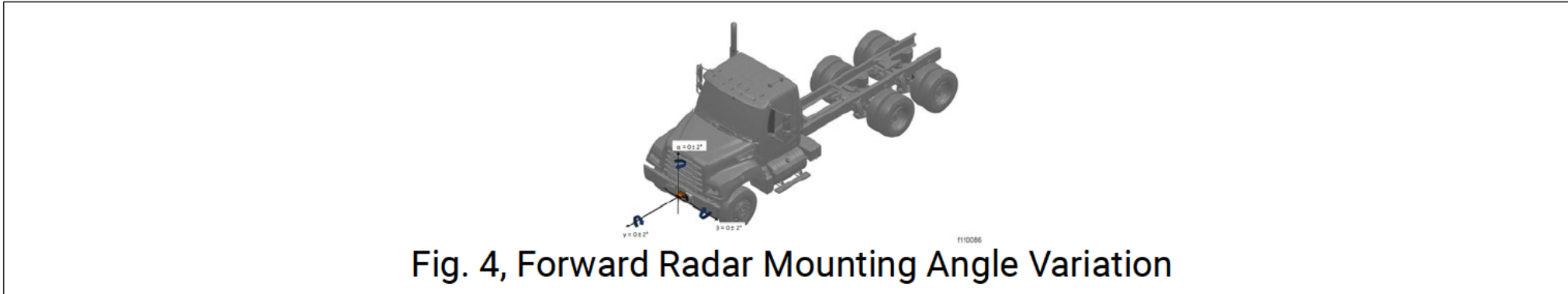
Table 2, Forward Radar Mounting Angle Variation

Description	Angle Variation
Yaw – vertical y axis	$\alpha = -2^{\circ}$ to 2°
Pitch – horizontal axis	$\beta = -2^{\circ}$ to 2°
Roll – line of sight axis	$\gamma = -2^{\circ}$ to 2°

Table 2, Forward Radar Mounting Angle Variation

Figure 4 shows mounting offset variation for forward radar placement.

👉 **Note:** The forward radar connector orientation must always face the left side of the vehicle.



Radar Bumper Placement

The forward radar cover should not extend past the external face of the bumper, as shown in Fig. 5, to avoid damage during a collision. The radar should be recessed 0.08 to 0.39 in (2.0 to 10.0 mm) from the face of the bumper.

To accommodate the installation of special equipment, the forward radar cover may be recessed more than 0.39 in (10 mm) from the front bumper face. When choosing a mounting location, make sure there are no obstructions to the radar FoV.

Bumper radar clearances should be followed, as shown in Fig. 6, to avoid interference with radar FoV.

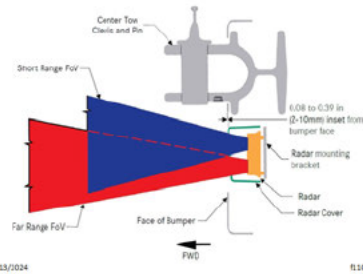


Fig. 5, Radar Cover Bumper Inset Depth

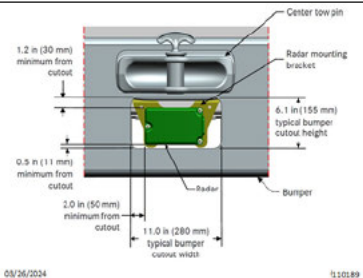


Fig. 6, Radar Bumper Installation Clearances

Forward Radar Field of View (FoV) & Keep Out Zone (KOZ)

FoV defines the radar nominal angular cone coverage in azimuth (horizontal plane) and elevation (vertical plane).

The KOZ is defined as the safety dimensional boundary where the radar could be operating including installation tolerances and part-to-part variations. KOZ is always larger than the FoV (FoV is located within the KoZ) and must be used to define the vehicle installation minimum clearance between the nominal FoV and the closest vehicle components, such as defining the bumper cut-out geometry, front guard installation, and others.

When relocating the forward radar, the KOZ external boundary will be defined considering at least 1.0 in (25 mm) horizontal and vertical clearance from the nominal FoV to the closest vehicle accessory or component. The KOZ must be free of any physical obstructions. For new or modified installations, DTNA recommends using a 3D model with KOZ information. A 3D model is available through DTNA engineering.

Note: If any vehicle component is installed within the KOZ boundaries, radar alignment may be compromised causing false positive behaviors such as unexpected Active Brake Assist (ABA) activation, malfunction of the Adaptive Cruise Control (ACC), or unexpected steering if the vehicle is equipped with the Active Side Guard Assist (ASGA) feature.

For reference, Fig. 7 shows the forward radar nominal FoV and KOZ based on the radar characteristics.

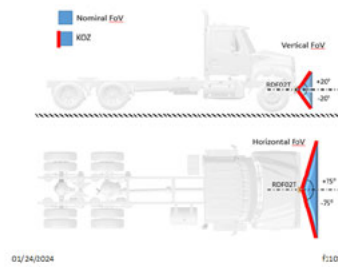


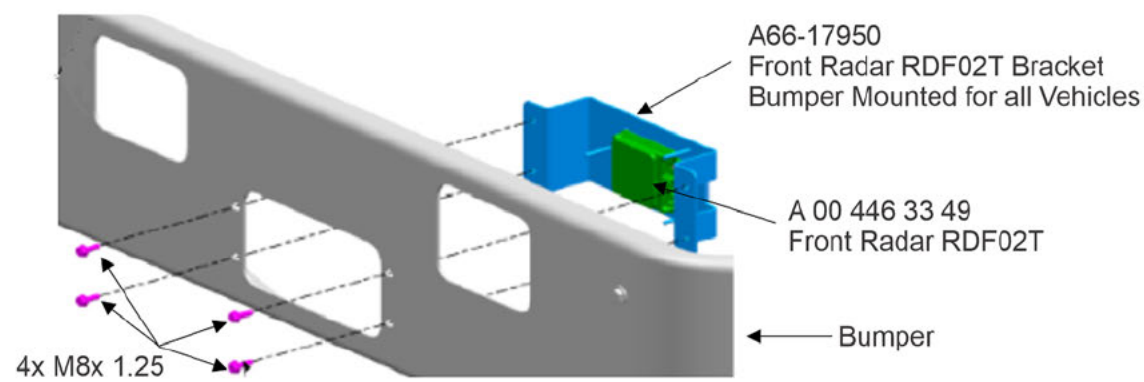
Fig. 7, Horizontal & Vertical FoV, KOZ Overview

Note: The RDF02T KOZ external boundary dimensions must have at least 1.0 in (25 mm) clearance between the nominal FoV to the bumper cutout relative to the nominal FoV, as shown in Fig. 5.

Front Guard and Non-Factory Installed Bumpers and Accessories

Customized bumpers and/or front guards should not interfere with the forward radar FoV.

Vehicles configured with front frame extensions and equipped with a forward radar will have the factory bumper mounted bracket (A66-17950-000) installed to a temporary or permanent bumper. See Fig. 8. If new equipment or a customized bumper is installed, the entire radar bracket assembly should be relocated.



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Fig. 8, Front Frame Extension Assembly

Note:

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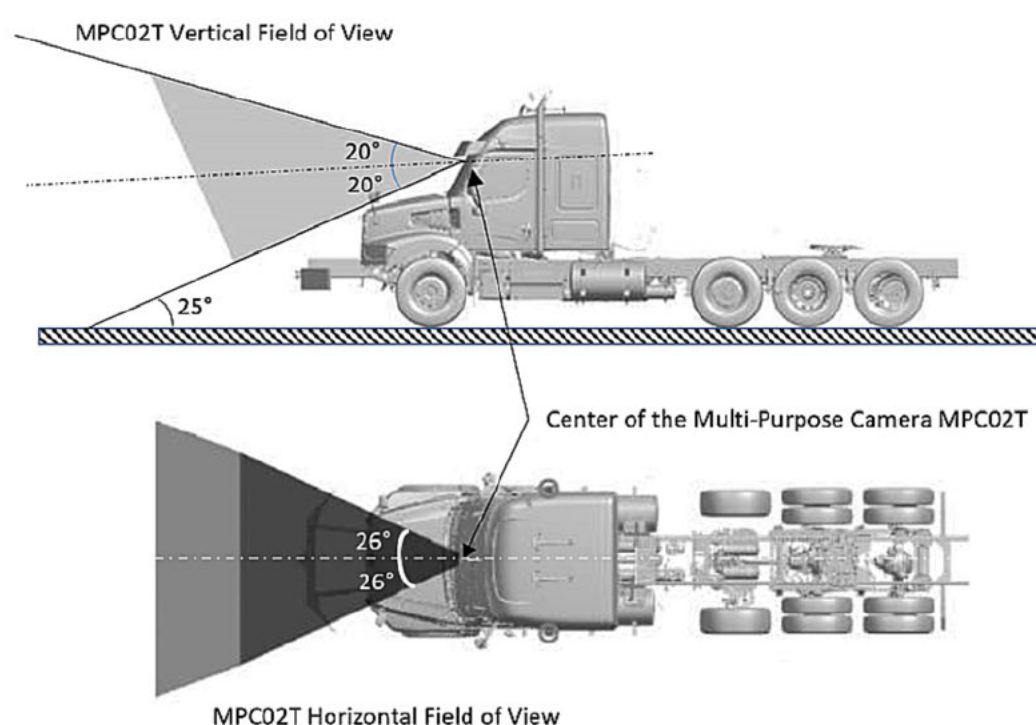
Topic Publication Date: 2025-08-05

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Multi-Purpose Camera MPC02T FOV

The MPC02T multi-purpose camera works in conjunction with the front-mounted radar. The Detroit Assurance safety system requires the MPC02T and RDF02T to work together. Any equipment or accessory that obstructs the FoV of the camera must be relocated. See Fig. 1.

For replacement and calibration instructions, see **Group 54** of the Freightliner [M2 Plus](#), [108SD / 114SD Plus](#) and Western Star [47X](#), [48X](#), and [49X](#) Workshop Manuals located on the [DTNA Technical Literature](#) site.



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Fig. 1, MPC02T Multi-Purpose Camera FoV

Note:

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Forward Radar Relocation Installation and Verification Checklist

After installation, verify that the items listed in Table 1 have been checked.

Table 1, Forward Radar RDF02T Installation and Verification Checklist

Item	Completion
Verify a minimum of 1.0 in (25 mm) clearance between the forward radar FoV and the bumper or any other installed accessory.	_____
Forward radar mounting angle variation (relative to the ground): Yaw – vertical axis angle: $\alpha = -2^{\circ}$ to 2° Pitch – horizontal axis angle: $\beta = -2^{\circ}$ to 2° Roll – line of sight axis angle: $\gamma = -2^{\circ}$ to 2°	_____
Installation height of 11.61 to 39.37 in (295 to 1000 mm) relative to the ground.	_____
Forward radar connector orientation pointing towards the vehicle’s left side. ¹	_____
Center the forward radar on the vehicle’s longitudinal axis. No lateral offset is allowed for forwarding radar installation.	_____
The forward radar and cover are free from damage, paint, or modifications.	_____
Wire harness routing and clipping do not interfere with new equipment and must be protected against excessive heat.	_____
Measure the longitudinal distance between the center of the steer axle and the external face of the radar/bumper to determine the final installation dimensions: - RDF02T: Longitudinal_offset - VRDU02T: Front_Overhang - SRRR01T: Dist_Length_Bumper_Axle1	_____
Measure the longitudinal distance between the external front face of the forward radar and the center of the multi-purpose camera MPC02TCamera_Longitudinal_Displacement_to_RADAR_sensor	_____

1. For right-handed vehicles, the forward radar connector will point towards the right side.

Note:

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ECU Parameter Verification After Forward Radar Relocation

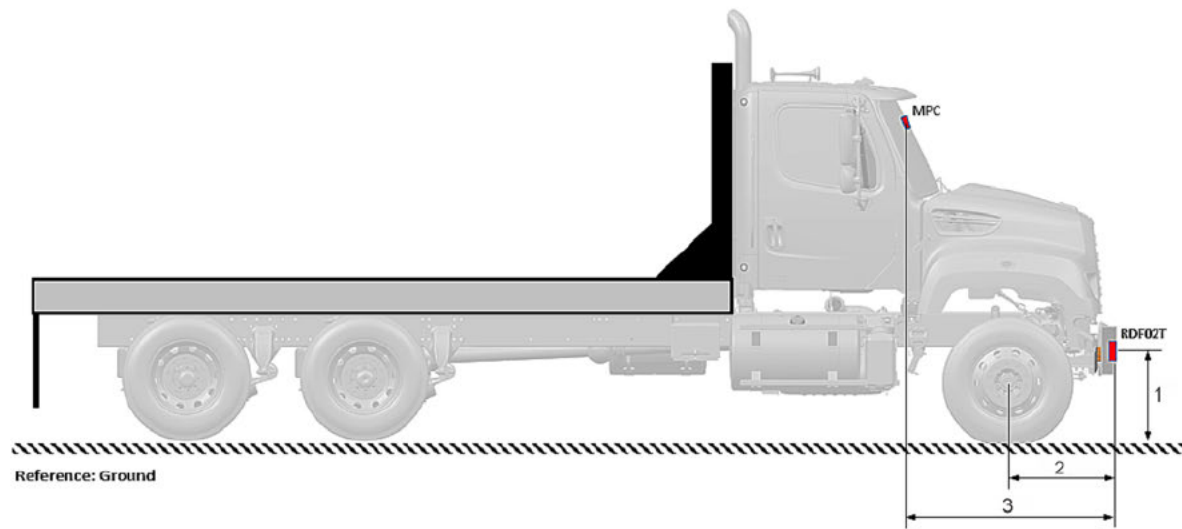
Table 1 shows the DiagnosticLink® parameters that will need to be verified after mounting the forward radar.

Table 1, ECU Forward Radar Parameter Verification

Item	ECU: RDF02T	Unit	Description
1	Vehicle Parameter Set 1	m	Vertical displacement (height) over ground.
	VertPos		
2	Vehicle Parameter Set 4	mm	The longitudinal distance between the center of the first axle and the bumper front face.
	Longitudinal_offset		
Item	ECU: VRDU02T	Unit	
3	Vehicle Parameter: Vehicle Geometry	m	Front overhang to the middle of the first axle. Released Values up to 2.05 m.
	Front_Overhang		
Item	ECU: MPC02T	Unit	
4	Camera Parameter	m	Longitudinal displacement of the camera optical center.
	Camera_Longitudinal_Displacement_to_RADAR_sensor		
Item	ECU: SRRR01T	Unit	
5	Overwrite Sensor Mounting Data	mm	The longitudinal distance between the center of the first axle and the bumper front face.
	Dist_Length_Bumper_Axle1		

Table 1, ECU Forward Radar Parameter Verification

👉 **Note:** The forward radar position, shown in Fig. 1, must not vary more than –1.97 to 1.97 in (50 mm) from the nominal value declared in the ECU parametrization.



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Fig. 1, Forward Radar Position

Parameter Part Numbers

Table 2 lists released parameter part numbers to be verified in DiagnosticLink.

Table 2, Released Parameter Part Numbers

Dimension (2,3,5): in (mm)	(2) SRRR01T DistLengthBumperAxle1	(3) RDF02T Front Overhang	(5) VRDU02T Front Overhang
37.4 (950)	A 004 447 98 92	A 002 447 24 49	A 003 447 66 51
41.3 (1050)	A 004 447 99 92	A 001 447 05 49	A 003 447 64 51
45.3 (1150)	A 005 447 00 92	A 001 447 06 49	A 003 447 17 51
49.2 (1250)	A 003 447 43 92	A 001 447 03 49	A 003 447 18 51
53.1 (1350)	A 005 447 01 92	A 002 447 11 49	A 005 447 61 51
57.1 (1450)	A 005 447 02 92	A 002 447 12 49	A 005 447 62 51
61.0 (1550)	A 005 447 03 92	A 002 447 13 49	A 005 447 63 51
65.0 (1650)	A 005 447 04 92	A 002 447 14 49	A 005 447 64 51
68.9 (1750)	A 005 447 05 92	A 002 447 15 49	A 005 447 65 51
72.8 (1850)	A 005 447 28 92	A 002 447 16 49	A 001 447 43 51
76.8 (1950)	A 005 447 06 92	A 002 447 17 49	A 005 447 66 51
80.7 (2050)	A 005 447 07 92	A 002 447 18 49	A 005 447 67 51

Table 2, Released Parameter Part Numbers

Note:

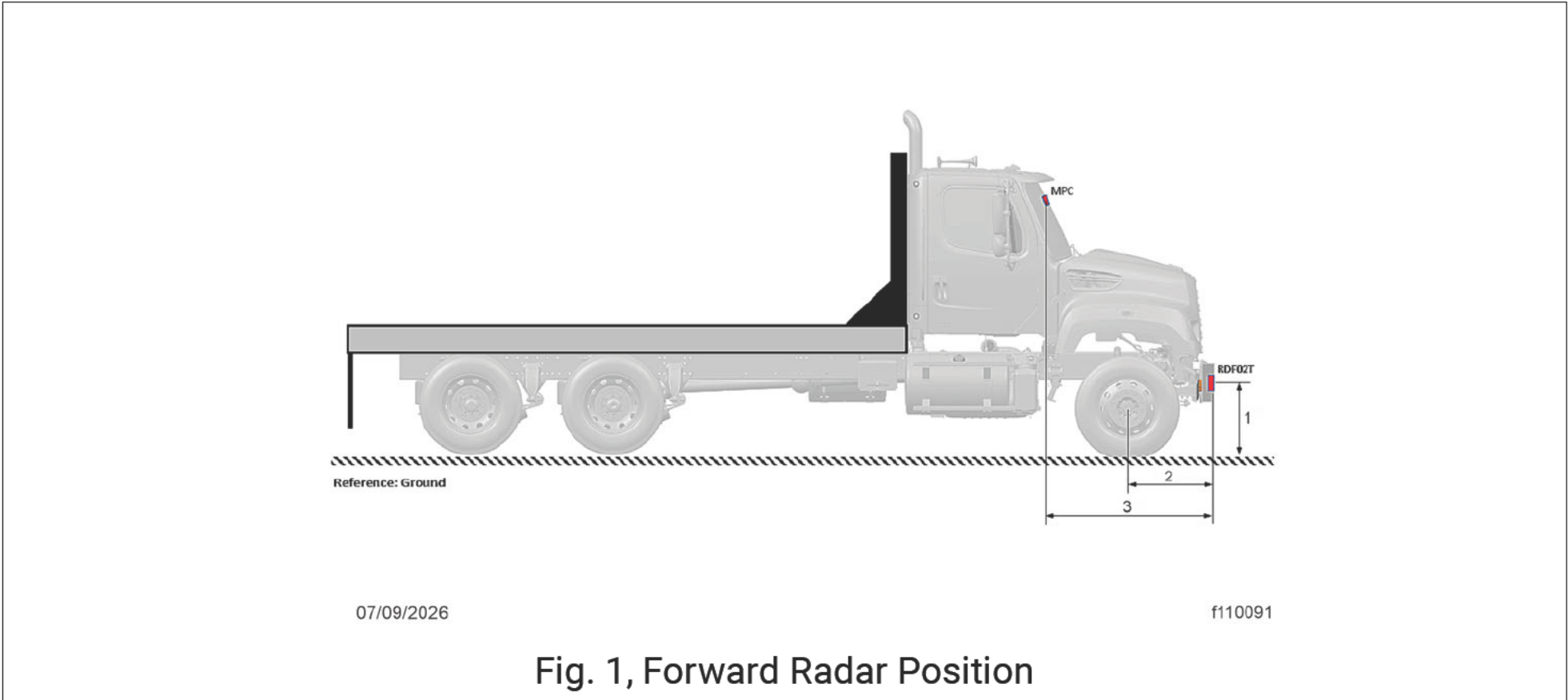
Parent topic: [TEM-11-00001 Detroit Assurance Forward Radar RDF02T Relocation](#)

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Topic Publication Date: 2025-08-05

Relocating the Forward Radar

1. ☐ Measure the vehicle dimension (2, 3, 5), as shown in Fig. 1, between the center of the front steer axle and the front face of the bumper.



Note: After measuring the dimension (2, 3, 5), the parameter part numbers covering the SRRR01T, RDF02T, and VRDU02T must be selected from the same line from Table “Released Parameter Part Numbers” in topic [ECU Parameter Verification After Forward Radar Relocation](#).

Note: Use the closest dimension listed in Table 1 to determine the part number if the measured dimension is not exact.

2. ☐ Select the table line from where the parameter part numbers should be used to update the ECUs using DiagnosticLink. As an example, if the measurement is 49.2 in (1250 mm), the following part numbers must be used:

SRRR01T - DistLengthBumperAxle1: A 003 447 43 92

RDF02T - Front Overhang: A 001 447 03 49

VRDU02T - Front Overhang: A 003 447 18 51

Due to parts and assembly tolerances and production variations, the measured vehicle’s physical dimension may not match the dimension listed in Table “Released Parameter Part Numbers” in topic [ECU Parameter Verification After Forward Radar Relocation](#). To proceed with the parameter updates, the closest dimension value must be used to determine the respective part numbers. A list of examples is shown below:

If the actual measurement is:

36.2 in (920 mm), then use 37.4 in (950 mm)

38.6 in (980 mm), then use 37.4 in (950 mm)

39.4 in (1000 mm), then use 41.3 in (1050 mm)

40.2 in (1020 mm), then use 41.3 in (1050 mm)

42.9 in (1090 mm), then use 41.3 in (1050 mm)

Follow the same procedure as described previously for the SRRR01T, RDF02T and VRDU02T parameters. After measuring the longitudinal physical vehicle dimension between the forward radar RDF02T front face and the MPC02T center, use Table 1 to determine the corresponding part number.

Table 1, Camera Longitudinal Displacement Parameter Part Numbers

Dimension (4): in (mm)	(4) Camera_Longitudinal_Displacement_to_RADAR_sensor Part Number
57.1 (1450)	A 005 447 38 05
61.0 (1550)	A 005 447 39 05
65.0 (1650)	A 005 447 40 05
68.9 (1750)	A 005 447 41 05
72.8 (1850)	A 005 447 42 05
76.8 (1950)	A 005 447 44 05
80.7 (2050)	A 005 447 46 05
84.6 (2150)	A 005 447 48 05
88.6 (2250)	A 007 447 21 05
92.5 (2350)	A 007 447 23 05
100.4 (2550)	A 007 447 27 05

Table 1, Camera Longitudinal Displacement Parameter Part Numbers

DiagnosticLink ECU Calibration/Alignment After Forward Radar Relocation

Follow the procedures listed in **Group 54** of the Freightliner [M2 Plus](#), [108SD / 114SD Plus](#), and Western Star [47X / 49X](#) Workshop Manual located on the [DTNA Technical Literature](#) site to calibrate the forward radar after installation.

Functional Verification

After changing the parameters, test drive the vehicle following the instructions in **Group 54** of the Freightliner [M2 Plus](#), [108SD / 114SD Plus](#), and Western Star [47X / 49X](#) Workshop Manual located on the [DTNA Technical Literature](#) site and verify the following:

- RDF02T and MPC02T alignment and calibration routines are completed successfully

- No active fault codes are displayed
- Verify that the feature is working properly
- If equipped, operate and verify that cruise control and adaptive cruise control work properly
- Verify that lane depart warnings operate properly

Note:

MODIFY

Parent topic: [TEM-11-00001 Detroit Assurance Forward Radar RDF02T Relocation](#)

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