

Isolated Radiator Mounting, Behr/Mahle M80 FEPTO Radiator

20-85

FLA COE
FLB COE
FLD Conventional
Business Class
FLC 112 Conventional

Century Class Conventional
Argosy COE
Cargo
Columbia

122SD and Coronado
Business Class M2
Cascadia
> 108SD/114SD

Freightliner
Service Bulletin

Under extreme operating conditions, Freightliner 114SD vehicles, equipped with Cummins engines and a Behr/Mahle M80 FEPTO radiators, may develop a leak next to the FEPTO surround. If this is found, replace the radiator and retrofit the installation to isolated mounting.

Radiator Removal

1. Park the vehicle on a level surface, shut down the engine, and set the parking brakes. Chock the tires.
2. Disconnect the batteries at the negative post.

WARNING

Do not attempt to drain the cooling system until the coolant and engine are cool. Draining the cooling system prior to system cooling could cause severe personal injury due to scalding.

3. Drain the coolant.
4. Remove the lower coolant hose assembly between the radiator and the engine.
5. Disconnect the wiring harness from the hood.
6. Remove the hood. See **Group 88** of the *108/114 SD Workshop Manual*.

NOTE: Once the FEPTO driveline is uncoupled, it will remain in the radiator assembly until the radiator is removed.

7. Uncouple the FEPTO driveline as follows.
 - 7.1 Unbolt the FEPTO driveline from the engine. See **Fig. 1**.



Fig. 1, FEPTO Driveline

- 7.2 Loosen the setscrew in the slip sleeve, and slide the driveline forward to clear the engine pulley.
 - 7.3 Working through the hole in the front closing cross member, unbolt the FEPTO driveline at the pump.
8. Remove the charge air cooler (CAC) inlet and outlet hoses.
 9. Remove the upper coolant hose.
 10. Disconnect the surge tank vent line from the radiator, and free the retaining clips.

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11. Remove the grille from the radiator.
12. Remove the radiator support brackets. Discard the brackets, spacers, and fasteners.
13. Loosen the A/C condenser and move it out of the way as follows.
 - 13.1 Remove the receiver-drier and upper condenser line mounting nuts, then free the receiver-drier. See [Fig. 2](#).



Fig. 2, Receiver-Drier Installation (typical)

- 13.2 Loosen the radiator baffle at the top right corner of the radiator.
 - 13.3 Unbolt the A/C condenser from the CAC. See [Fig. 3](#).
- NOTE:** Wrap the condenser in cardboard to protect it while it is moved. Do not kink the refrigerant hoses.
- 13.4 Carefully move the condenser around and set it on the right front tire or on top of the engine. Secure it as needed. See [Fig. 4](#).
14. Disconnect the transmission cooler lines.
 15. Attach an appropriate lifting device to the radiator, then remove the fasteners that connect the radiator to the radiator mounting bracket.
 16. Remove the radiator assembly and FEPTO driveline from the vehicle.
- NOTE:** Save all of the parts removed from the radiator assembly to install on the new radiator.
17. Remove the FEPTO driveline from the radiator.
 18. Remove the baffles from the radiator.
 19. Remove the CAC from the radiator.
 20. Remove the fan shroud from the radiator.
 21. Remove the side and lower channels from the radiator. Discard the lower channel. Save all other parts for the new radiator.

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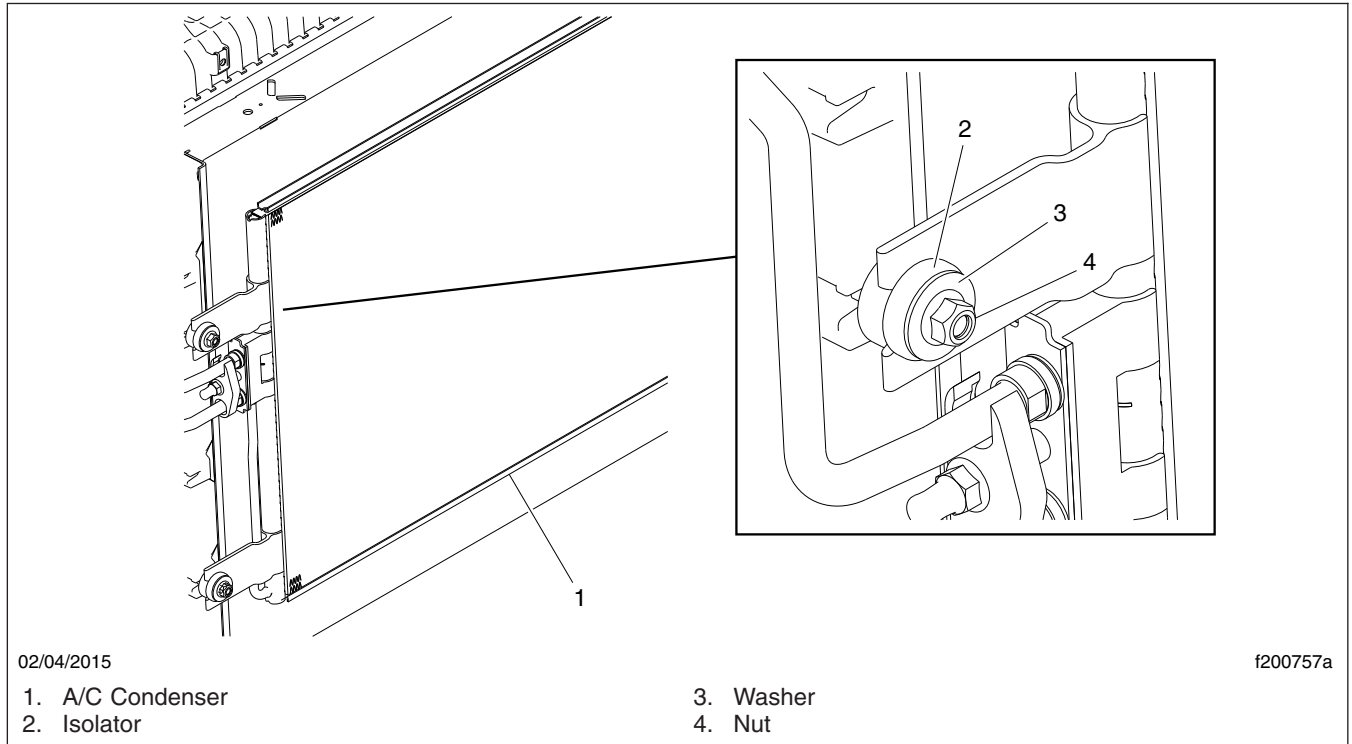


Fig. 3, A/C Condenser Installation (typical)

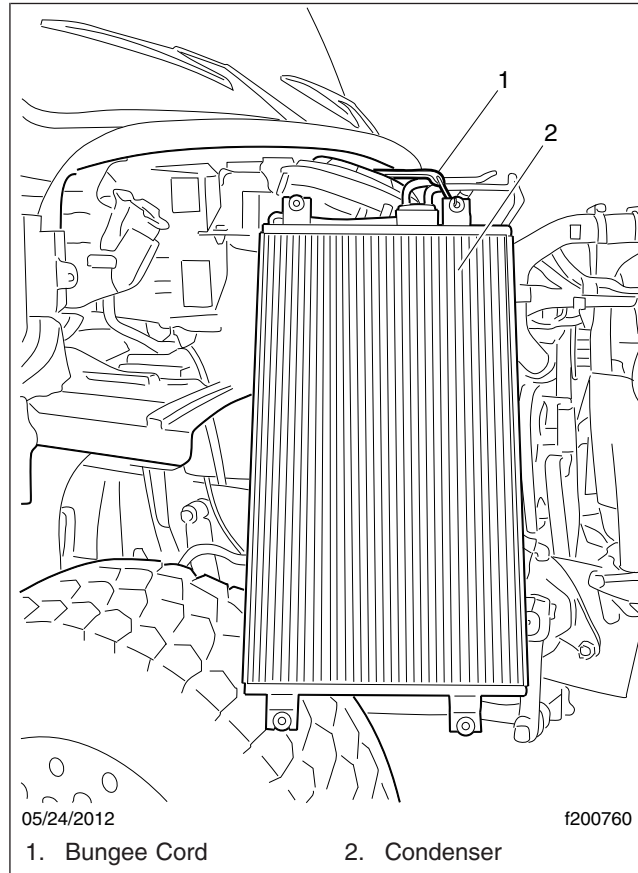
Front Engine Mount Replacement

Refer to [Fig. 5](#) for this procedure.

1. Attach an appropriate lifting device to the engine.
2. Remove the front engine mount fasteners at the crossmember.
3. Lift the engine enough to remove the weight from the front engine mount.
4. Remove the front engine-mount-to-block fasteners, then remove the engine mount. Discard the engine mount.
5. Attach the new front engine mount to the engine. Tighten the fasteners 74 to 92 lbf·ft (100 to 125 N·m)
6. Position the upper engine mount isolators on top of the frame cross member.
7. Lower the engine onto the cross member and isolators.
8. Install the lower isolators and the engine-mount-to-cross member fasteners. Tighten 122 to 149 lbf·ft (166 to 202 N·m).

Radiator Installation

1. Install the new lower channel, and the original side channels on the new radiator.
2. Install the CAC on the new radiator.
3. Install the grille. Tighten 50 to 55 lbf·in (565 to 622 N·cm).

**Fig. 4, Securing the A/C Condenser**

4. Install the fan shroud on the new radiator.
5. Install the left and upper baffles on the new radiator.
6. Insert the FEPTO driveshaft through the opening in the new radiator.
7. Install the lower radiator isolators on the new front engine mount.

NOTE: It may be easier to install the transmission cooler lines before the radiator is completely set in the isolators.

8. Using a proper lifting device, position the radiator above the isolators.
9. Connect the transmission cooler lines.
10. Lower the radiator into the isolators and install the mounting nuts and washers. Do not tighten at this time.
11. Connect the lower radiator hose.
12. Install the A/C condenser as follows.
 - 12.1 Move the condenser into position in front of the radiator and secure it temporarily.
 - 12.2 Position the receiver-drier and upper A/C line on their respective brackets and install the mounting nuts. Tighten the nuts 14 to 16 lbf-ft (19 to 22 N-m).

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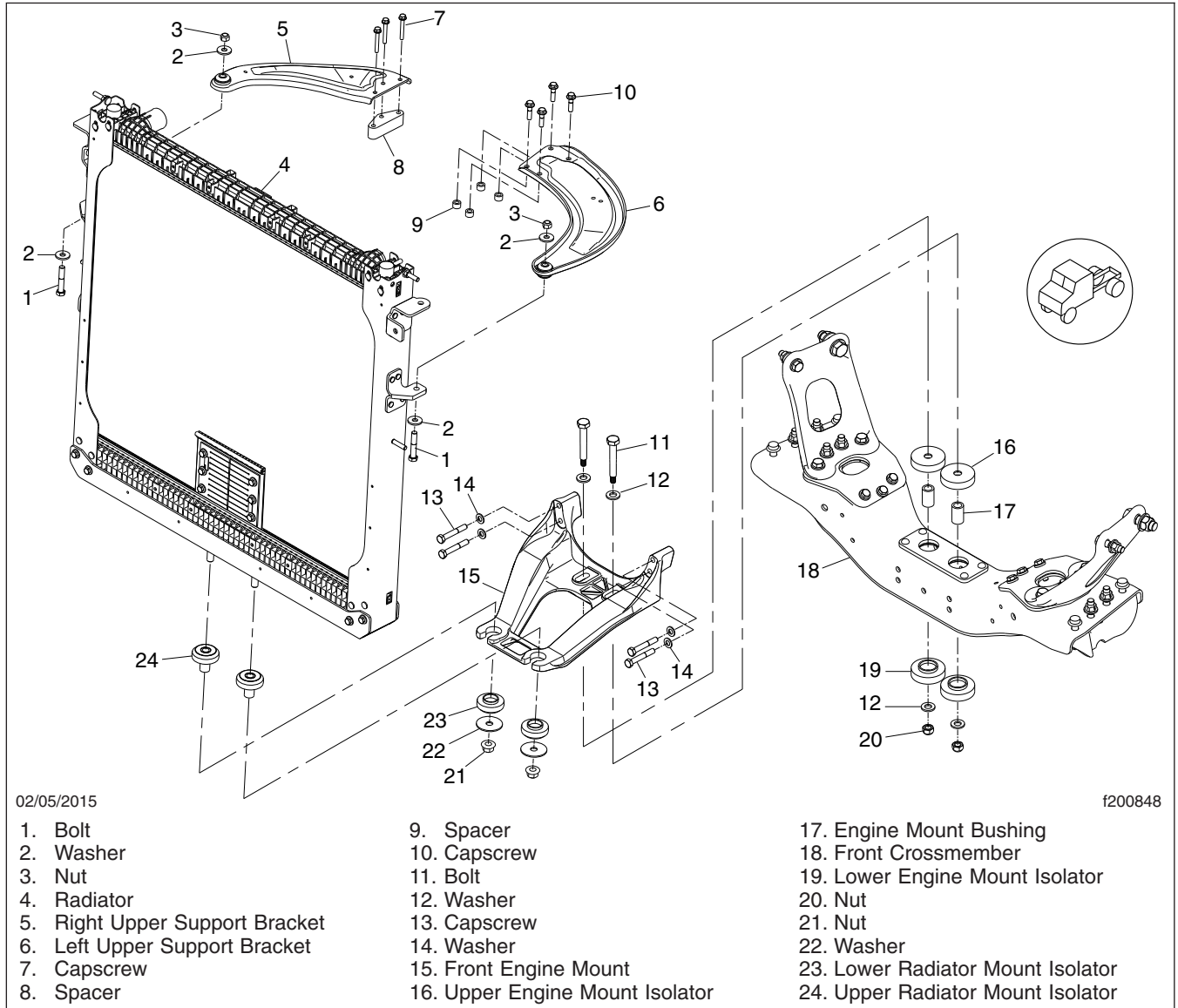


Fig. 5, Radiator and Front Engine Mount Installation

- 12.3 Install the condenser mounting bolts. Tighten 112 to 144 lbf-in (1265 to 1625 N-cm).
13. Install the lower radiator hose assembly.
14. Install the new radiator support brackets, spacers, and fasteners. Tighten the fasteners at the radiator 76 to 90 lbf-ft (103 to 122 N-m), and the capscrews at the engine 43 to 53 lbf-ft (58 to 72 N-m).
15. Tighten the radiator mounting nuts 140 to 170 lbf-ft (190 to 230 N-m).
16. Adjust the fan shroud as needed.

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17. Connect the FEPTO drive shaft.
 - 17.1 Expand the driveshaft and align it with the engine and pump.
 - 17.2 Install the coupling fasteners in the engine pulley.
 - 17.3 Install the coupling fasteners in the pump through the hole in the front closing crossmember.
 - 17.4 Tighten the set screw in the slip sleeve.
 - 17.5 Safety wire the set screw.
18. Install the upper coolant hose.
19. Install the CAC inlet and outlet hoses. Tighten the clamps 88 to 108 lbf-in (994 to 1220 N·cm).
20. Fill the cooling system with approved coolant.
21. Connect the batteries.
22. Install the hood.
23. Connect the wiring harness to the hood.
24. Start the engine and check for leaks on all lines and hoses that were disconnected for this procedure. Tighten any leaking connections as needed.

Parts

Parts are available through the PDC. See [Table 1](#) for the list of required parts.

Required Parts		
PART	DESCRIPTION	QTY
N000931 012065	SCREW-CAP,HEX M12X80	4
01-33913-000	SUPT-ENG,ISL,M80,ISOLATED RAD	1
23-09114-000	WASHER-HRDN,0.69X1.31X.177,ZN	2
23-12955-100	SCREW-CAP	2
23-12965-000	NUT-HX,ALL METAL,M16 X 2.00	2
TLB 13371 45	ISOLATOR-BTM OR TOP,45 DURO	4
BHT Y0715004	BOTTOM CHANNEL	1
01-20963-001	WASHER,HARDENED STEEL,ENGINE MNT	2
A 681 991 05 40	IMPORTSPACER-TB,STL,19.1X10.3X12.7LG	4
BCD 27463 14	ISOLATOR-RAD,LWR,BTM,60 DURO	2
23-13833-108	NUT-HEX,PT,1/2-13,C,ZN/AL,.448	2
23-09114-017	WASHER-HRDN,0.53X1.38X.177,ZN	4
N210101 010001	BOLT-FLG HD,M10X40,10.9,P&O	4
23-11751-275	SCREW-CAP,HEX,1/2-13,GR8,ZNDI	2
05-32533-000	SPACER-RAD SUPPORT,RH,1.25IN	1
N910105 008006	SCREW-HEX FLANGE, M8 X 1.25 X 60.0	3
23-13861-110	NUT-HEX,FLNG,LKG,5/8-11,ZN AL	2
A05-32523-000	BRKT ASSY-RAD SUPT,UPR,LH,ISL-G,M2112	1
A05-32524-000	BRKT-RAD SUPT,UPR,RH,ISL-G,M2112	1

Table 1, Required Parts

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Warranty

This procedure is warrantable only if the described condition exists and the repair is performed within the applicable base or extended coverage warranty period. If a failure is not found, this procedure is considered preventive and warranty does not apply.

Normal warranty applies. See [Table 2](#) for OWL VMRS codes and labor allowance information. Enter this service bulletin number in the *Service Bulletin #* field.

OWL VMRS Codes and Labor Allowance					
Primary Failed Part	Component Code	Cause Code	SRT Code	Description	Time: Hours
BHT EB905001	042-002-001	03	266-5060A	SD, FEPTO Radiator, Isolated Mounting	6.9
BHT EB906001	042-002-013				

Table 2, OWL VMRS Codes and Labor Allowance