

Excessive Moisture in the Air System

42-69

FLA COE
FLB COE
FLD Conventional
Business Class
FLC 112 Conventional

Century Class Conventional
Argosy COE
Cargo
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Business Class M2
> Cascadia
108SD/114SD

**Freightliner
Service Bulletin**

Description of Revisions: *This bulletin replaces the version dated June 2013. [Table 1](#) has an additional fault code.*

General Information

Some EPA10 vehicles with HDEP engines and WABCO or Bendix air dryers are experiencing excessive moisture in the air system, possibly resulting in a transmission solenoid failure, or a DEF system fault code (see [Table 1](#)) and/or a clogged air inlet screen (DDE A0001400594) in the DEF metering unit. If a vehicle is showing any of these symptoms, perform the inspection below to determine the cause of the excess moisture, and make repairs as needed.

DEF System Fault Codes		
SPN	FMI	Description
3361	7	DEF Unit Unable To Clear Restriction
4335	7	DEF Air Pressure Low
4335	1	No Air Pressure

Table 1, DEF System Fault Codes

Inspection

Verify that the air tanks are being drained daily as directed in the *Cascadia Driver's Manual*.

Check the vehicle for air system components that were installed after the vehicle was spec'ed and manufactured. Such components may require air volumes in excess of the air dryer's rating, possibly resulting in excessive compressor cycling and moisture in the air system.

If the above criteria are satisfactory, perform all of the checks in [Table 2](#) to eliminate issues that may cause excessive moisture in the air system.

Air System Troubleshooting			
Check	Why	Results	What To Do
Check the air system plumbing for leaks.	Air leaks cause extended compressor run times resulting in increased air volume and temperature to the dryer making it difficult for the dryer to remove water from the air.	Leaks found.	Repair any leaks as needed. Go to the next check.
		No leaks.	Go to the next check.
Check the dryer purge valve for debris or leakage.	Consequences are similar to a plumbing air leak. Rubber or weld slag particles may be found.	Debris or leakage found.	Clean or replace the purge valve. Go to the next check.
		No debris or leakage.	Go to the next check.
Check the governor air lines for kinks.	A restriction between the governor and air dryer will block the purge signal to the dryer, causing build-up of water, resulting in water in the air system. A restriction between the governor and air compressor will cause the compressor to continually pump, overloading the dryer with hot water-saturated air, resulting in water in the air system.	Kink found.	Replace any kinked air line. Go to the next check.
		No kinks found.	Go to the next check.

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Air System Troubleshooting			
Check	Why	Results	What To Do
Check for a leaking spring brake chamber internal seal on the truck or trailer.	Park the vehicle on a level surface and chock the tires. Build up system air pressure, then shut off the engine. Release the park brake. With the park brake released, feel for air leaking out of the bottom of the rear service brake relay valve exhaust port.	Leak found.	Repair or replace the park brake chamber.
	If air is leaking from the exhaust port of the service relay valve, then air that is holding back the spring brakes (park brake chamber) is leaking over to the service side of the brake chamber (usually because of a bad diaphragm) and through the service air lines and out the open exhaust port of the service brake relay valve. This air leakage will result in excessive air compressor run time.	No leaks.	No further inspection is needed. Consider installing an in-line air cooler.

Table 2, Air System Troubleshooting

If the issue persists, the air dryer inlet air temperature may be excessive, resulting in reduced dryer performance. Install an in-line air cooler loop, or a longer air line, depending on the vehicle configuration.

If the dryer is mounted on the left hand frame rail, follow the procedure in "Air Cooler Loop Installation, Left-Hand Forward Frame-Mounted Dryer" below.

Air Cooler Loop Installation, Left-Hand Forward Frame-Mounted Dryer

Refer to [Fig. 1](#) for this procedure.

1. Park the vehicle on a level surface, shut down the engine, and set the parking brakes. Chock the wheels securely.
2. Disconnect the batteries at the negative post.
3. Drain the air from the air system.
4. Remove the grille. See [Section 88.00, Subject 110](#) of the *Cascadia Workshop Manual*.
5. Open the hood.
6. Remove the bumper. See [Group 31](#) of the *Cascadia Workshop Manual*.
7. Relocate the air temperature sensor on the right side of the frame closing crossmember down one hole.
8. Remove the rock screen from the lower face of the radiator.
9. Install the cooler-loop mounting brackets. See [Fig. 1](#).
10. Position the P-clamps on the cooler loop and install the cooler loop on the brackets. Do not tighten the P-clamp fasteners at this time. See [Fig. 1](#).

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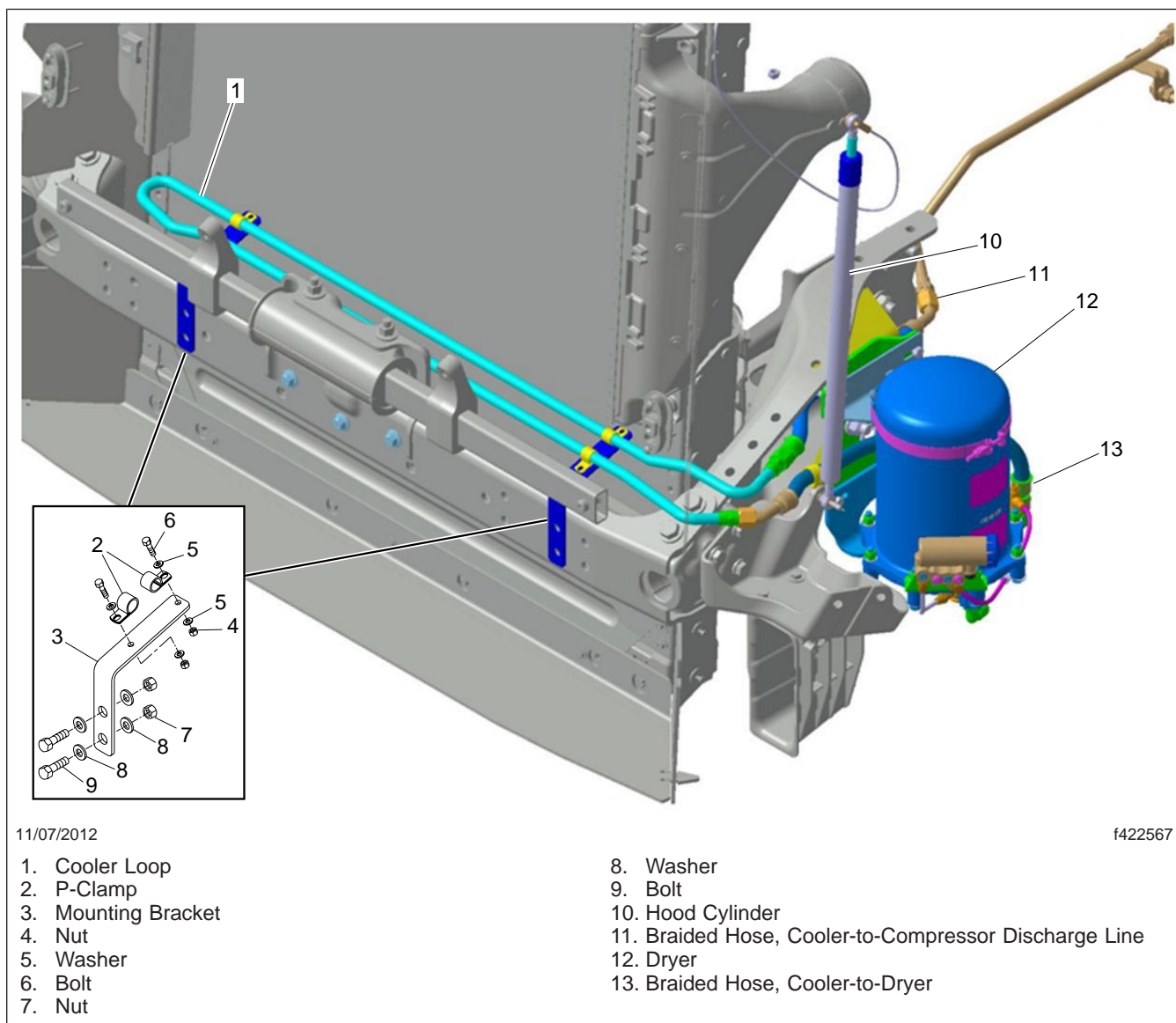


Fig. 1, Cooler Loop Installation (AD-9/AD-IP dryer shown)

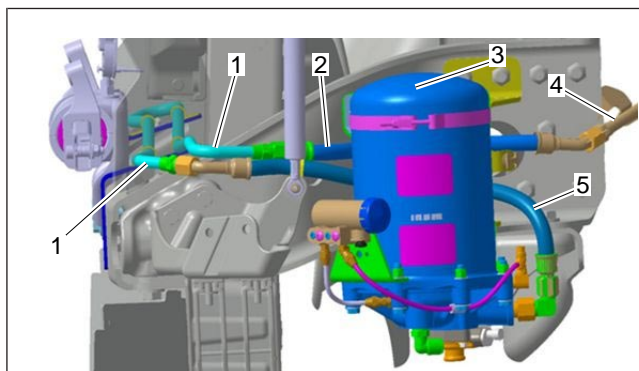
11. Cut any zip ties as needed, and move the insulation to access the braided compressor-discharge line between the frame rail fitting and the dryer. Remove the line and discard the line and insulation.
12. Install the new braided line from the loop to the frame rail connection. See [Fig. 2](#) for AD-9/AD-IP Dryers, or [Fig. 3](#) for WABCO 1200 Plus Dryer.
13. Install the new braided line from the loop to the dryer. See [Fig. 2](#).

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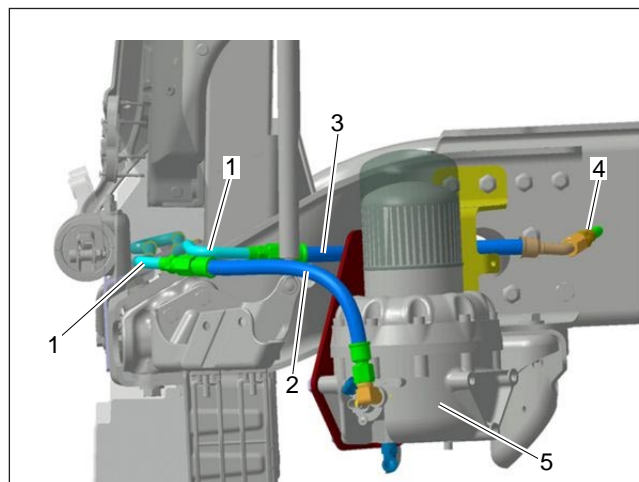


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1. Cooler Loop
2. Braided Hose, Cooler-to-Compressor Discharge Line
3. Dryer
4. Compressor Discharge Line
5. Braided Hose, Cooler-to-Dryer

Fig. 2, Braided Line Installation, AD-9/AD-IP Dryers



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1. Cooler Loop
2. Braided Hose, Cooler-to-Dryer
3. Braided Hose, Cooler-to-Compressor Discharge Line
4. Compressor Discharge Line
5. Dryer

Fig. 3, Braided Line Installation, WABCO 1200 Plus Dryer

14. On vehicles with AD-9/AD-IP dryers only, disconnect the left side hood cylinder end at the frame rail mounting bracket, and remove the attaching bolt. Place a P-clamp over the braided line between the loop and the dryer, then, using the same bolt, install the clamp on the inside of the hood cylinder mounting bracket. See [Fig. 4](#). Install the hood cylinder.
15. Secure any loose wires or hoses around the dryer with zip ties as needed.
16. Tighten the cooling loop mounting fasteners. See [Fig. 1](#).
17. Charge the air system and check the installation for leaks. Repair as needed.
18. Install the rock screen.
19. Install the bumper. See [Group 31](#) of the *Cascadia Workshop Manual*.
20. Close the hood.
21. Install the grille. See [Section 88.00, Subject 110](#) of the *Cascadia Workshop Manual*.

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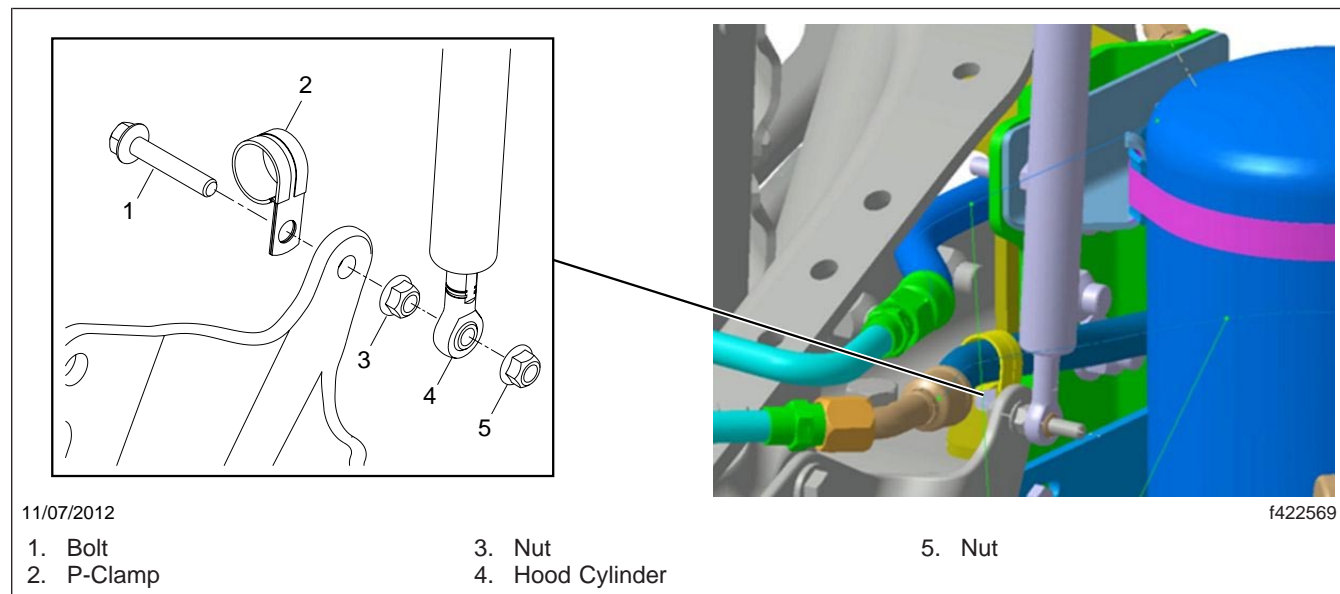


Fig. 4, P-Clamp Installation (AD-9/AD-IP dryers only)

Parts

Parts are available through the PDC. Refer to [Table 3](#) for required parts for BENDIX AD-IP/AD-9 installations, [Table 4](#) for required parts for WABCO SS1200 Plus installations.

Required Parts, BENDIX AD-IP/AD-9 Installations		
Part	Description	Quantity
A12-25748-000	TUBE-ASSY,DISCH,IN-RAIL,LHFF	1
A12-25763-019	HOSE ASSY-WIREBRAID,#10,HITEMP	1
A12-25763-022	HOSE ASSY-WIREBRAID,#10,HITEMP	1
12-25747-000	BRKT-ENG RTG,LH,ISC/L,'10	2
UMP S630G10	CLAMP-SUPPORT,.625 ID	4
23-09432-075	1/4-20x3/4 HCS GR8 PH,Oil	4
23-13861-104	1/4-20 ALL MTL PREV TORQUE HEX FLNG L/N GR F or G7	4
23-10900-125	0.281X0.625X0.065 SPCL FLT WSHR SST PSVT BLK OXD	8
23-09114-003	1/2 HRDND FLT WSHR F436 TYP 1 ZN,CL	8
23-13861-108	1/2-13 ALL MTL PREV TORQUE HEX FLNG L/N FR F ZN/A	4
23-09440-150	1/2-13X1-1/2 HCS GR8 PH,OIL	4
23-09528-047	7/8X5/8 SINGLE LOOP CSMND CLAMP STL/NEOPRN	4
23-11357-012	3/4x5/8 SINGLE LOOP CUSH HOSE CLMP STL/NEOPRN ZN U	1

Table 3, Required Parts, BENDIX AD-IP/AD-9 Installations

Required Parts, WABCO SS1200 Plus Installations		
Part	Description	Quantity
A12-25748-000	TUBE-ASSY,DISCH,IN-RAIL,LHFF	1

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Required Parts, WABCO SS1200 Plus Installations		
Part	Description	Quantity
A12-25763-019	HOSE ASSY-WIREBRAID,#10,HITEMP	1
A12-23236-015	HOSE ASSY-WIREBRAID,#10,HITEMP	1
12-25747-000	BRKT-ENG RTG,LH,ISC/L,'10	2
UMP S630G10	CLAMP-SUPPORT,.625 ID	4
23-09432-075	1/4-20x3/4 HCS GR8 PH,Oil	4
23-13861-104	1/4-20 ALL MTL PREV TORQUE HEX FLNG L/N GR F or G7	4
23-10900-125	0.281X0.625X0.065 SPCL FLT WSHR SST PSVT BLK OXD	8
23-09114-003	1/2 HRDND FLT WSHR F436 TYP 1 ZN,CL	8
23-13861-108	1/2-13 ALL MTL PREV TORQUE HEX FLNG L/N FR F ZN/A	4
23-09440-150	1/2-13X1-1/2 HCS GR8 PH,OIL	4
23-09528-047	7/8X5/8 SINGLE LOOP CSMND CLAMP STL/NEOPRN	4
23-11357-012	3/4x5/8 SINGLE LOOP CUSH HOSE CLMP STL/NEOPRN ZN U	1

Table 4, Required Parts, WABCO SS1200 Plus Installations

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 5](#) for QuickClaim damage code and labor allowance information. Refer to this service bulletin by number at the beginning of the claim comments. See [Table 6](#) for OWL VMRS codes and labor allowance information. Enter this service bulletin number in the *Service Bulletin #* field.

QuickClaim Damage Code and Labor Allowance			
Damage Code	SRT Code	Description	Time: Hours
107-001335940	107-5010A	Add Discharge Cooling Loop, Install	1.2

Table 5, QuickClaim Damage Code and Labor Allowance

OWL VMRS Codes and Labor Allowance					
Primary Failed Part	Component Code	Cause Code	SRT Code	Description	Time: Hours
A12-23236-018	013-009-023	27	107-5010A	Add Discharge Cooling Loop, Install	1.2

Table 6, OWL VMRS Codes and Labor Allowance