



# SERVICE BULLETIN No.1153

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<b>COACH MODEL</b>	: T2145 and C2045
<b>BULLETIN TYPE</b>	: Safety Recall Program -- NHTSA campaign number 04V-424
<b>MANUAL &amp; SECTION</b>	: Maintenance Manual: Chapter 7 - Steering Spare Parts Manual: Section 651209 Steering -- hydraulic system
<b>PARTS BOOK REVISION</b>	: No
<b>DATE</b>	: December 3, 2004
<b>SUBJECT</b>	: <b>Power steering line - inspection</b>
<b>TERMS &amp; CONDITIONS</b>	: Refer to the Warranty Information in this Bulletin.

## APPLICATION:

The field change program subject of this Bulletin is applicable to following units:

Model	Engine	VIN
T2145	Cummins	44300
	Detroit Diesel	44610 → 44619
C2045	Cummins	45435 → 45439, 45442 → 45457
	Detroit Diesel	45905 → 45934, 45939, 45941, 45955 → 45999, 46501 → 46528

## DESCRIPTION:

1. Because of manufacturing inconsistency, the hose fittings of the power steering pressure feed lines on the above-mentioned units may have been improperly crimped. It is therefore necessary to inspect the installation of these fittings to make sure that the system complies with the design specification. The inspection applies to the crimp fittings of the engine compartment and center tunnel lines only. At the front of the coach, the center tunnel to steering gearbox line crimp fittings are not affected (see Figure 1).
2. Refer to the procedure, section #4 in this Bulletin for detailed visual inspection instructions.
3. Refer to the procedure, section #5 in this Bulletin for power steering line replacement, should improperly crimped fittings be detected.

*Surviving personnel, please read, initial and circulate.*

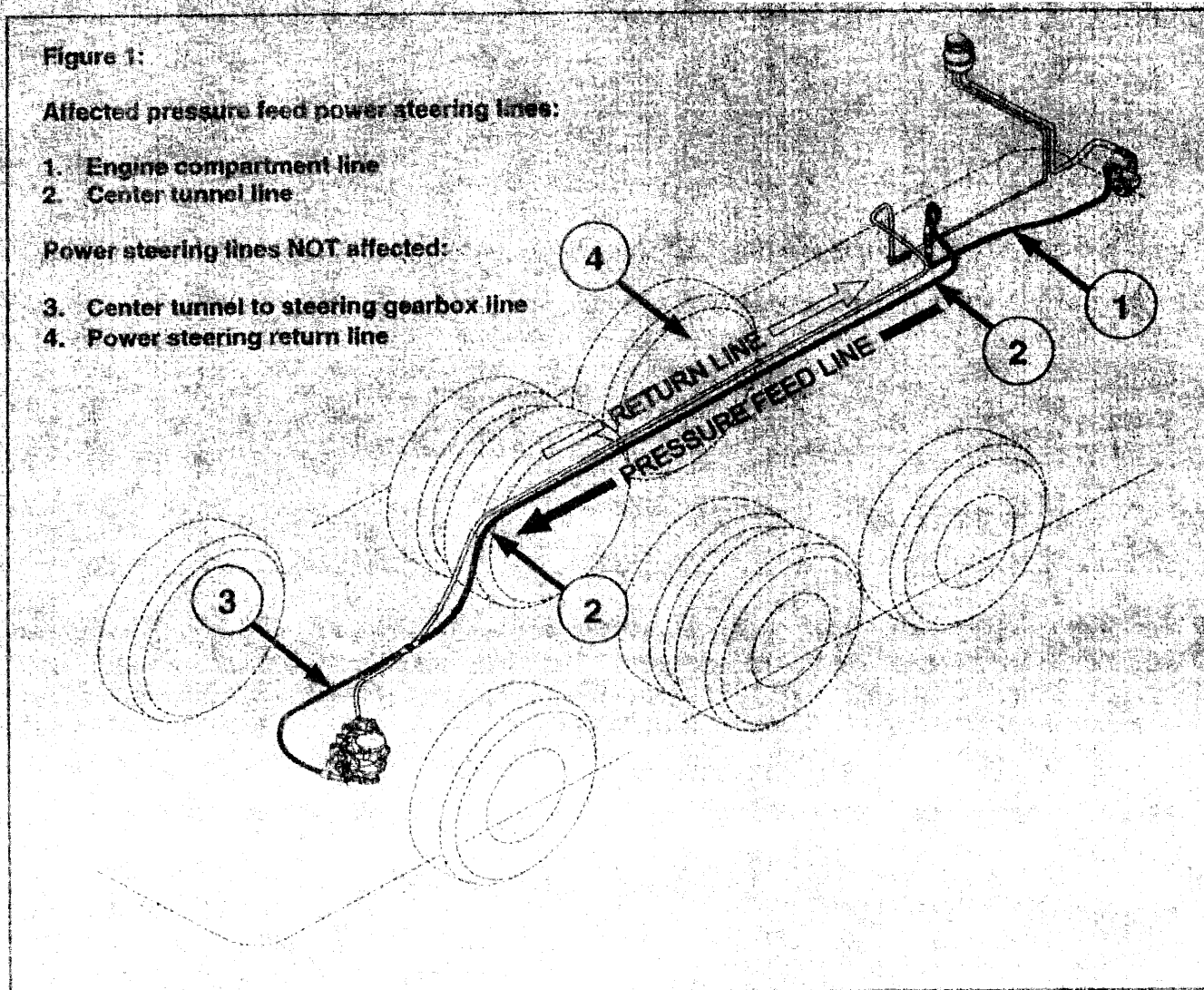
Service Manager	Parts Manager	Warranty Administrator	Workshop Foreman	Service Technician

## PARTS AND PRODUCTS:

Engine compartment and center tunnel lines listed only. The center tunnel to steering gearbox line assembly VH 10594097 is not affected (see Figure 1).

Model	Engine	Part No.	Description	Location	L (ft)	Qty.
T2145	Cummins	VH 10726443	Hose assembly, pressure feed	1, Figure 1	8.79	1
		VH 10726440	Hose assembly, pressure feed	2, Figure 1	30.93	1
	Detroit Diesel	VH 10726443	Hose assembly, pressure feed	1, Figure 1	8.79	1
		VH 10726440	Hose assembly, pressure feed	2, Figure 1	30.93	1
C2045	Cummins	VH 10864465	Hose assembly, pressure feed	1, Figure 1	5.87	1
		VH 10726442	Hose assembly, pressure feed	2, Figure 1	35.85	1
	Detroit Diesel	VH 10726446	Hose assembly, pressure feed	1, Figure 1	6.33	1
		VH 10726442	Hose assembly, pressure feed	2, Figure 1	35.85	1

**NOTE:** Plastic caps VH 637101760, which come with the new hoses, need to be recovered for further use during installation of the new center tunnel line.



- Parts may be obtained from your nearest ABC Customer Care & Parts Source service center. Refer to the Warranty Information in this Bulletin for terms and conditions.
- Parts and products disposition: discard according to applicable environmental regulations.

## PROCEDURE:

If you do not have the expertise to perform present procedure, do not hesitate to go to your nearest ABC Customer Care & Parts Source dealership.

### 1. General:

- Replacement of the pressure feed hose assembly should be done by a service technician having experience with steering system and hydraulics repair.
- For more information refer to the coach Maintenance Manual Chapter 7 - Steering.

### 2. Special tools, equipment or services:

- Inspection of the hose fittings requires the use of calipers.

### 3. Preparations:

- Park the coach on a level-surfaced service pit with the front wheels straight. If portable post lifts are going to be used, lower the suspension first.
- Apply the parking brake
- On lift equipped coaches, park the lift in the up position to gain access to RH engine compartment door.
- Shut down the engine.
- Switch off all systems and turn off the battery master switch.
- Put a "DO NOT OPERATE" tag on the instrument panel.
- Read the entire procedure before beginning to work.

**CAUTION: Observe safe shop practices at all times.**

### 4. To inspect the crimp length of power steering line pressure feed hose fittings:

Job time estimate: refer to the Warranty Information in this Bulletin.

The purpose of this procedure is to check:

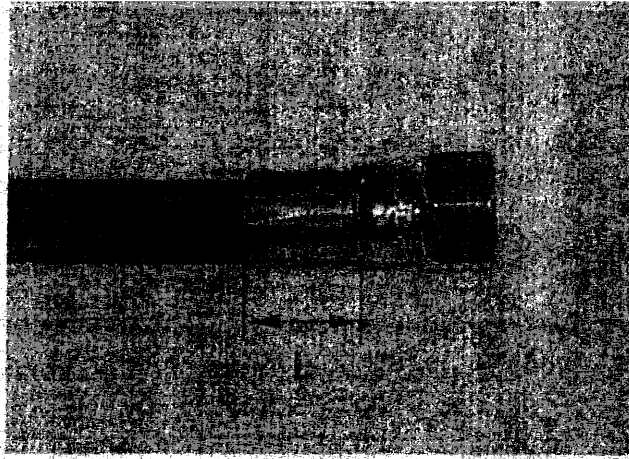
1. the crimp length of the affected hose fittings, which should be at least 0.944 inch (24 mm) as indicated in Figure 2.
2. the crimp diameter of the affected hose fittings, which should be 0.893 inch (22.7 mm) maximum as indicated in Figure 3.

Any engine compartment and/or center tunnel pressure feed hose having:

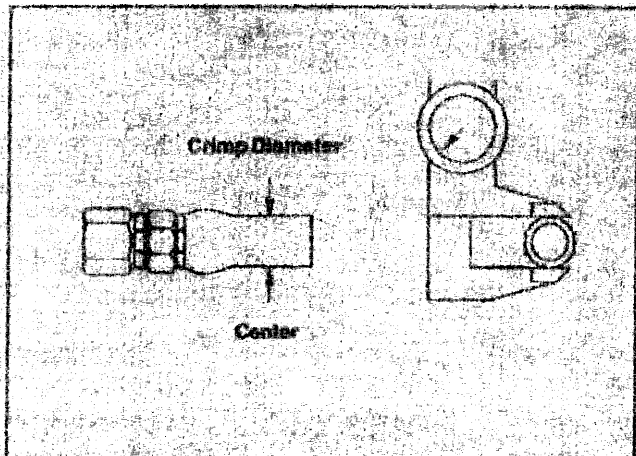
1. a fitting with a crimp length *less* than the above-mentioned value (see Figure 4) should be put out of service.
2. a fitting with a crimp diameter *higher* than the above-mentioned value should be put out of service.

A new hose with properly installed fittings should replace the hose put out of service.

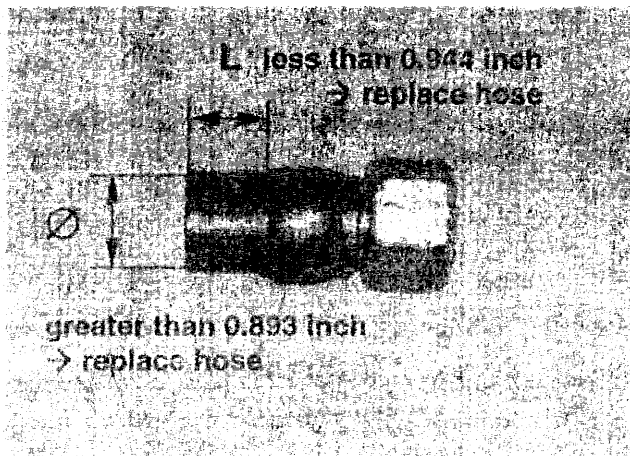
*NOTE: If the center tunnel hose has improperly crimped fittings, it can remain installed, but should be capped and labeled, so as to prevent future use.*



**Figure 2: Fitting crimp length L should be at least 0.944 inch**



**Figure 3: Fitting crimp diameter should be 0.893 inch at most. The crimp diameter is measured in the center of the crimping area**



**Figure 4: Hoses with fittings having a crimp length less than 0.944 inch and/or a crimp diameter greater than 0.893 inch should no longer be used**

- 1) Open the engine compartment rear door, the engine compartment RH side door and the front aisle trap door (T2145 only -- on C2045s the steering power line at the front of the coach can only be inspected from beneath the vehicle).

2) Referring to Figures 5 through 10, locate the crimp fittings.

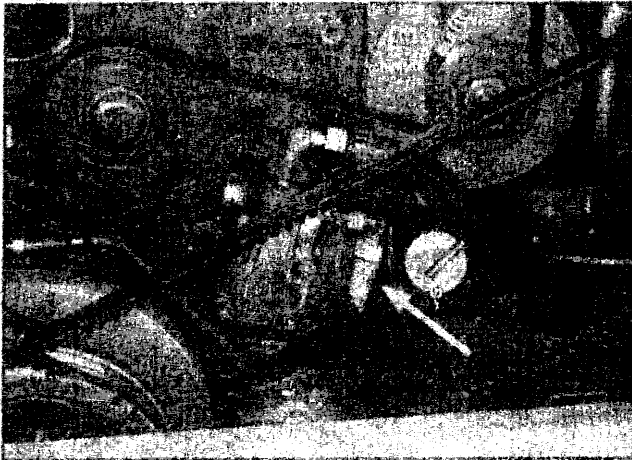


Figure 5: Behind rear engine compartment door - C2045 and T2145 w/ Detroit Diesel engine - pressure feed line at hydraulic pump. Check one crimp fitting.



Figure 5: Beneath the coach at the rear - C2045 and T2145 w/ Cummins engine - pressure feed line at hydraulic pump. Check one crimp fitting.

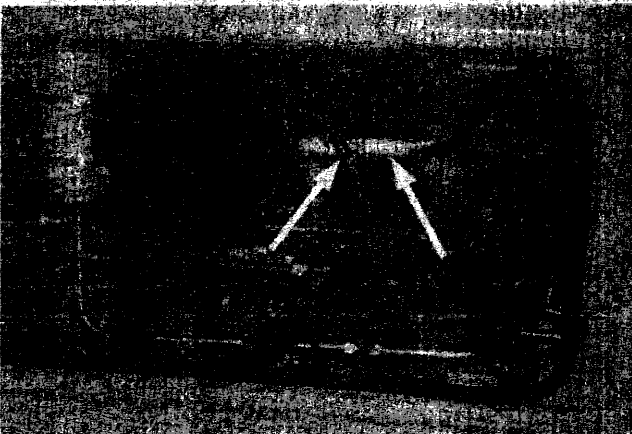


Figure 7: T2145 - Behind the RH engine compartment side door - engine compartment to central tunnel line connection. Check two crimp fittings.

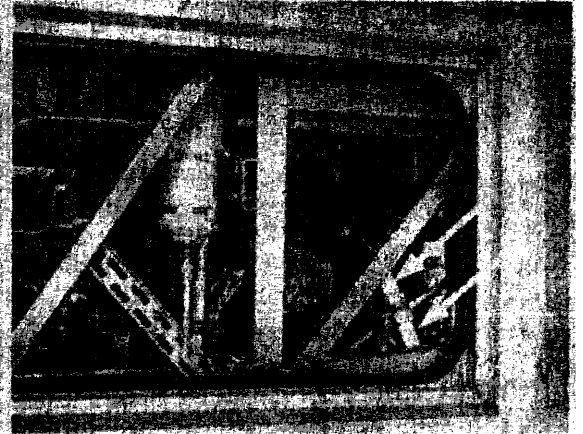


Figure 8: C2045 - Behind the RH engine compartment side door - engine compartment to central tunnel line connection. Check two crimp fittings.



Figure 9: Below the aisle front trap door - T2145 - central tunnel line to steering gearbox line connection. Check one crimp fitting.

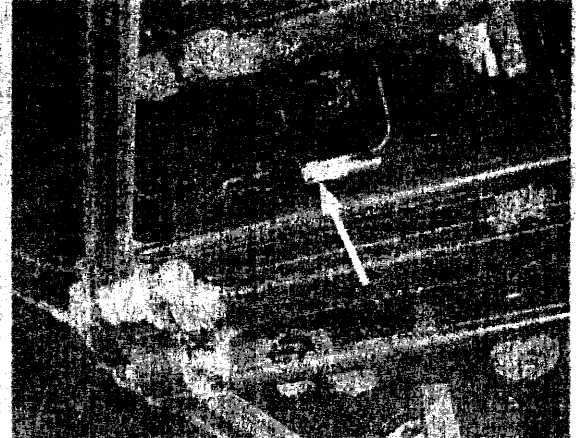


Figure 10: Beneath the coach at the front - C2045 - central tunnel line to steering gearbox line connection. Check one crimp fitting.

- 3) Measure the crimp length and crimp diameter of each fitting referring to Figures 1 and 2.
- 4) If a line fitting is out of spec, replace the affected hose section referring to subsection 5 "To replace the power steering pressure feed lines in the engine compartment and/or center tunnel"
- 5) If all fittings checked are within spec, fill out the OWNER'S CERTIFICATION LETTER, which has been attached to this Bulletin, and mail it back to ABC Customer Care & Parts Source.

**5. To replace the power steering pressure feed lines in the engine compartment and/or center tunnel:**

Job time estimate: refer to the warranty section in this Bulletin.

*NOTE: If you do not have the expertise to replace the power steering pressure feed hose assembly, do not hesitate to go to your nearest ABC Customer Care & Parts Source dealership*

**5.1 Engine compartment line**

- 1) At the power steering pump, thoroughly clean the area surrounding the pressure feed line to prevent dirt from entering the pump.
- 2) Take note of the routing of the old hose
- 3) Cut the tie wraps securing the hose to the chassis
- 4) Place a canister of at least 3 gallons capacity beneath the pump. Make sure no spillage can occur.
- 5) Disconnect the engine compartment line at the pump
- 6) After cleaning the fittings, disconnect the engine compartment line at the center tunnel line
- 7) Remove the old hose.
- 8) Put the old and the new hose next to one another. Check that the length of the new hose complies with the length of the hose removed.
- 9) Route the new hose as per old installation.
- 10) Connect the new hose to the pump and to the central tunnel line. Re-use fittings as required. Secure the new hose to the chassis using tie wraps.
- 11) To tighten the nuts of the hose fittings, proceed as follows:
  1. Run-up the nut to hand-tight.
  2. Supporting the opposite hose fitting with one wrench, continue tightening the nut 1/8 to 1/4 turn with another.
- 12) If no further hoses need replacing, add hydraulic fluid and bleed the system as per attached procedure.

**5.2 Central tunnel line**

The procedure to replace the central tunnel line is similar to that of the engine compartment line. However, the faulty hose can be left in place and does not need to be removed from the coach. Proceed the installation of the new hose as follows:

- 1) After disconnecting the old central tunnel line from the engine compartment line at the rear, and the chassis to steering gearbox line at the front, blow it through with compressed air (30 psi maximum) while an assistant catches the fluid inside the line in a suitable container. Cap the line (using the plastic caps 7H 637101760, which come with the new hoses) to avoid fluid spillage. Leave the line in place. Do add a label at both ends indicating that this line should not be re-used.
- 2) Run the new hose through the spare line duct above the fuel tank at the front (see Figure 11).
- 3) Next run the new hose along the old central tunnel line in the luggage compartment.
- 4) Finally, run the new hose to the engine compartment via the spare line duct above the drive and tag axes (see Figure 12).

*NOTE: With the new power steering hose installed, the spare line ducts remain suited for their purpose and can still be used for other applications provided wiring, lines, tubing or hoses which run through it are properly protected against chafing.*

- 5) Secure the new line to the old one with tie wraps.
- 6) If no further hoses need replacing, add hydraulic fluid and bleed the system as per attached procedure.

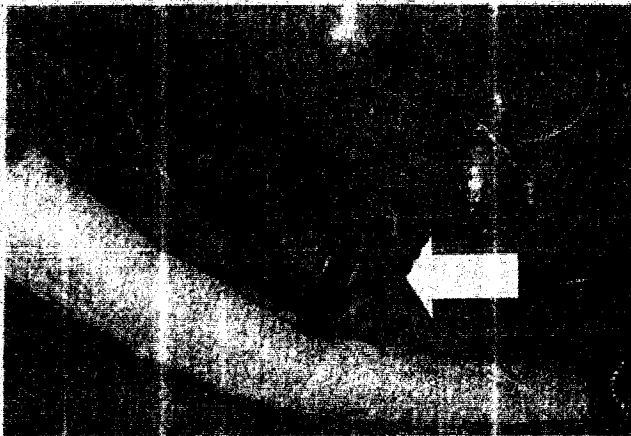


Figure 11: Spare line duct at the front of the coach with new central tunnel line installed

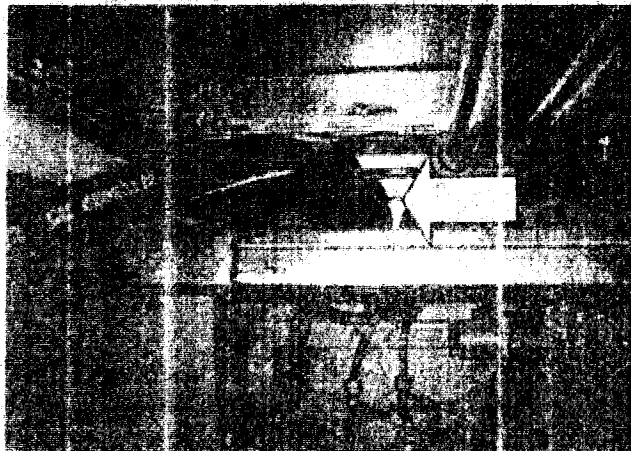


Figure 12: Spare line duct at the rear of the coach with new central tunnel line installed

### 5.3 To bleed the power steering system

- 1) Check the drive wheels and jack-up the coach so that the front wheels are clear off the ground.

- 2) Unscrew the fluid reservoir cap and fill the reservoir to the neck with hydraulic fluid (DEXRON – IID, IIF or IIG have all been approved for this application).
- 3) Be ready to top up the fluid while an assistant starts the engine. With the engine idling, the fluid level in the reservoir will drop rapidly. Add new fluid at the same rate to avoid the reservoir emptying and air being drawn into the system.

**NOTE:** Start the bleeding procedure no sooner than when the fluid in the reservoir remains at "MAX" mark while engine is running. DO NOT run the engine above idle speed to avoid fluid foaming.

- 4) With the engine idling, turn the steering wheel slowly all the way to the right and to the left. DO NOT apply effort at the steering knuckle carrier stop positions. Have an assistant keep the reservoir topped up by continuously adding new fluid. Continue this procedure until the fluid level remains constant and the reservoir is free from air bubbles.
- 5) Stop the engine. The system is properly bled if fluid rises no more than 3/8 to 3/4 inch above the "MAX" mark on the reservoir housing.
- 6) Refit the fluid reservoir cap and lower the wheels to the ground.
- 7) Check the new hose(s) for leakage at the fittings.
- 8) Close the access doors and remove the wheel chocks.

*Procedure complete.*

### **DISCLAIMER:**

The procedures contained herein are not exclusive. Van Hool cannot possibly know, evaluate, or advise the transportation industry of all conceivable ways in which a procedure may be undertaken or of the possible consequences of each such procedure. Other procedures may be as good, or better, depending upon the particular circumstances involved.

Each carrier who uses the procedures herein must first satisfy itself thoroughly that neither the safety of its employees or agents, nor the safety or usefulness of any products, will be jeopardized by any procedure selected.

### **SERVICE INFORMATION:**

Service Bulletins are issued to supplement or supersede information in the Van Hool manuals. Note Service Bulletin number, date and subject on the register at the end of the relevant chapter(s). File Service Bulletin separately for future reference.

## **WARRANTY INFORMATION:**

### **1. Claim references:**

- Causal parts: VH 10726443, VH 10726440, VH 10864465, n VH 10726442, VH 10726446
- Job code: D21421V

### **2. Terms and conditions:**

**NOTE:** Owners are required to certify on the **OWNER'S CERTIFICATION LETTER** attached to this Bulletin that the recall remedy has been executed in accordance with the manufacturer's instructions.

Van Hool will accept warranty claims for this repair as follows:

#### **Parts:**

- Supply: parts may be obtained free of charge from your nearest ABC Customer Care & Parts Source dealership.
- Disposition: discard parts according to applicable environmental regulations.

#### **Labor allocation:**

Labor will be awarded as follows:

- Inspection coaches without lift: 0.5 hours  
coaches with lift: 0.75 hours
- Center tunnel hose replacement: 1.5 hours
- Engine compartment hose: 0.3 hours
- Hydraulic fluid refill + bleeding the system: 0.3 hours

**Campaign expiration date:** Service Bulletin issue date + 6 months

**Claim submission:** Contact ABC Customer Care & Parts Source for guidance.

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