



Fontaine Modification Field Service Bulletin

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FNT-103014025

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Rev #
-

Field Service Bulletin Name:
Peterbilt 220 Air Line Relocation

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Purpose:

This document proposes the evaluation criteria and subsequent repair requirements related to possible interference between the VPD suction oil line and the chassis air compressor discharge line on Peterbilt 220 chassis used on Elgin Crosswind1 and Whirlwind1 sweepers. Inspection of the units will determine which condition(s) exist and what repairs are required.

Please verify Elgin Service Bulletin SB-0235C and SB-0238D have been completed.

Action:

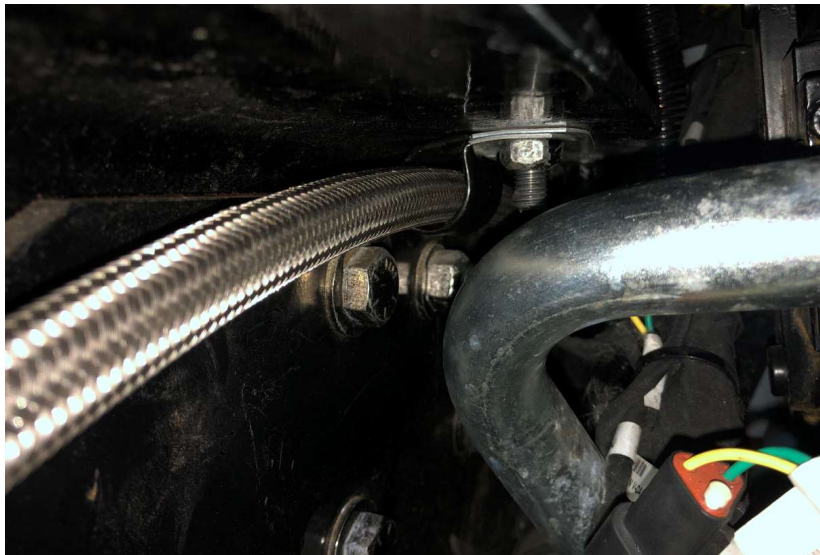
Condition A	2
Condition B	2
Condition C	3
Condition D	4
Repair	5

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1 Condition A

1.1 Evaluation:

- 1.1.1** There is no evidence of contact between the suction tube and the stainless braided line.



2 Condition B

2.1 Evaluation:

- 2.1.1** There is evidence of contact between the suction tube and the stainless steel braided airline.
- 2.1.2** The suction tube plating is worn but there is no discernable depression in the suction tube.
- 2.1.3** There is no wear or fraying visible on the air line.



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3 Condition C

3.1 Evaluation:

- 3.1.1** The suction tube should be inspected **before** removing from the VPD.
- 3.1.2** There is evidence of a worn depression and/or hole worn in the suction tube.
- 3.1.3** If any damage is found, contact Fontaine Modification at 704-409-1614, or tim.wheeler@fontainemod.com



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4 Condition D

4.1 Evaluation:

- 4.1.1** There is evidence of damage (frayed braid or other) to the stainless-steel air line from contact with the suction tube.
- 4.1.2** If any damage is found, contact Fontaine Modification at 704-409-1614, or Tim.Wheeler@fontainemod.com. If it is determined that the hose needs to be replaced, your local Peterbilt Dealership may need to be contacted.



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5 Repair: Standard Repair time is 2.0 hours

- 5.1 Download the VPD EPR file and submit to the MH Aftermarket Portal.
- 5.2 Relocate the airline to provide 0.25" minimum clearance to the suction tube.
 - 5.2.1 Remove the VPD cover



- 5.2.2 Remove the bolt at the bottom of the support bar.



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5.2.3 Remove the plate and cables where the support bar was connected.

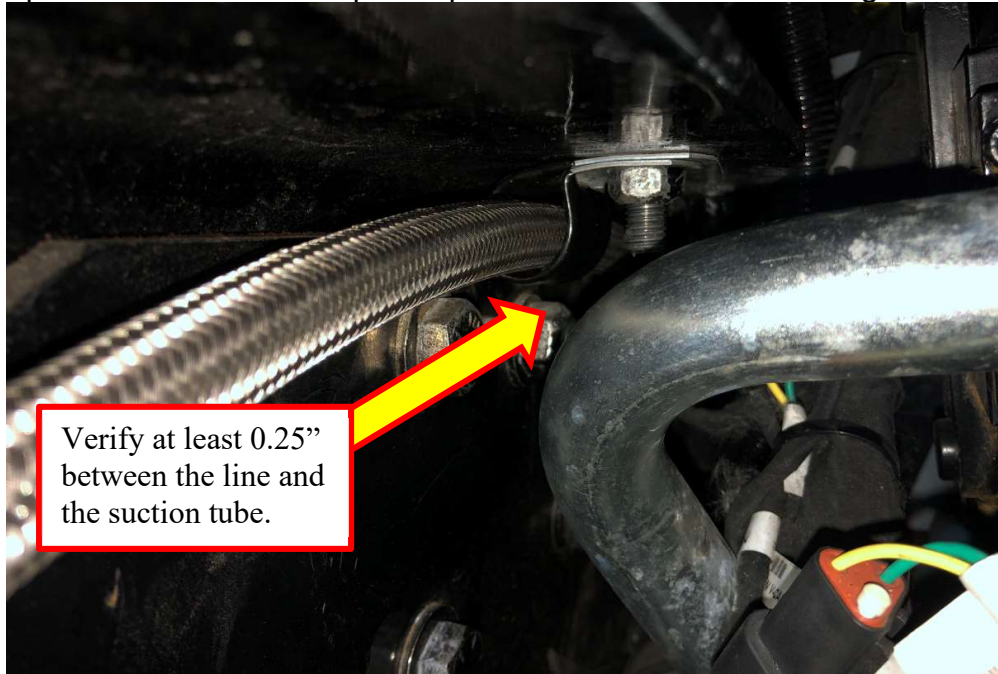


5.2.4 Remove the bolt securing the p-clamp and discard the "L" bracket.



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5.2.5 Swap the orientation of the p-clamp and bolt it to the frame using the existing hole.



5.2.6 Reassemble the ground cable plate, and VPD covers. **Verify there is at least 0.25" between the suction tube and the braided airline.**

5.3 If Condition C exist: If any damage is found, contact Elgin at 877-800-1111 and Fontaine Modification at 704-409-1614, or Tim.Wheeler@fontainemod.com. If replacement of the suction tube is required, follow the Marmon-Herrington Work Instructions **WI-0282 Rev – A** attached below.

5.3.1 Replacement of the tube requires oil replacement. 5 gallons of Shell Spirax S4 TXM / Mobil 454 should be used.

5.4 If Condition D exist: If any damage is found contact Fontaine Modification Co at 704-409-1614 or email tim.wheeler@fontainemod.com . If it is determined that the hose needs to be replaced, your local Peterbilt Dealership will need to be contacted.

5.5 Determine if Elgin Service Bulletin **SB-0235C** and **SB-0238D** have been completed. If not, this is a good time to complete while the oil is drained.

5.6 Evaluate the VPD oil condition during suction tube replacement. Check for debris and foreign material. If any foreign material is present, contact Elgin Service at 877-800-1111.



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- 5.7** Operate the VPD in “Road Mode” per the attached “Crosswind 1 Service – VPD Mode and Mode Select”
 - 5.7.1** Drive unit on roadway and reach top speed of 59 mph.
 - 5.7.2** Confirm there are no issues with driving the vehicle.

- 5.8** Operate the VPD in “Work Mode/Sweep Mode” per the attached “Crosswind 1 Service – VPD Mode and Mode Select”
 - 5.8.1** Engage Work Mode.
 - 5.8.2** Engage Sweep Mode.
 - 5.8.3** Turn on Side Brooms, Lower the Pickup Head, and Turn on Water Functions.
 - 5.8.4** Adjust engine speed to max (2000 engine RPM) using the throttle on the sweeper console.
 - 5.8.5** Operate unit for at least an hour, until machine reaches operating temperature.

- 5.9** Confirm no leaks or error codes are present.

- 5.10** Please send an invoice and the photos of the repaired line to Tim.Wheeler@fontainemod.com for payment.

- 5.11** SRT Relocate Stainless Steel Air Line
 - 5.11.1** 2.0 Hours

- 5.12** SRT Replace VPD Suction Tube
 - 5.12.1** 2.0 Hours.



Operator Work Instructions

VPD Suction Tube

- **Personal Protective Equipment:**

- **Safety Glasses**
- **Steel Toe Boots**
- **Gloves**

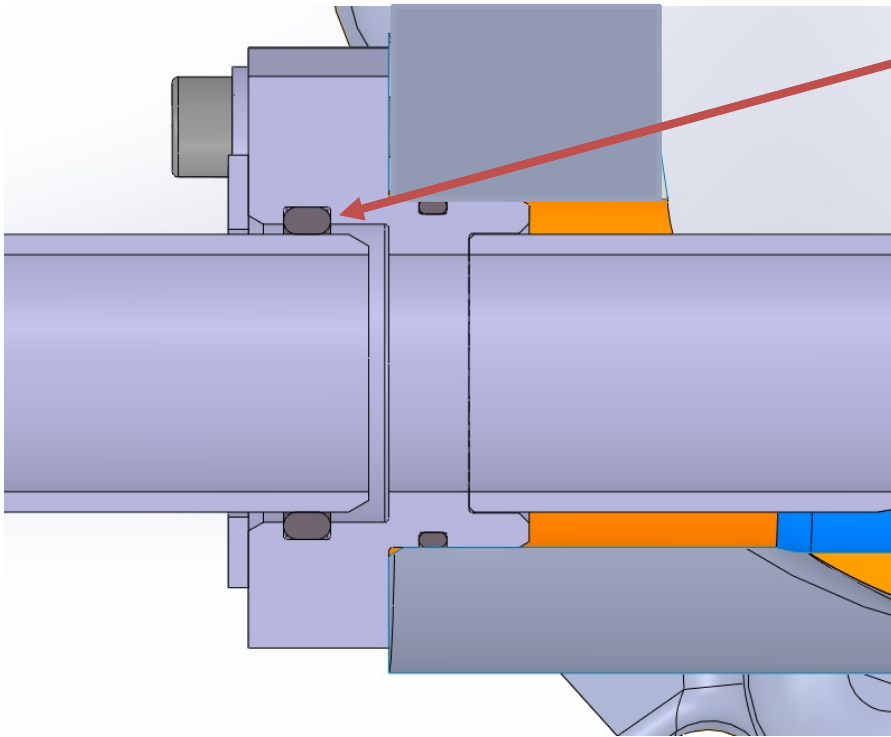
- **Tools**

- **5mm allen socket**
- **Torque wrench**
- **41mm open wrench**

Approval By:	Engineering		Quality	
	Operations		Safety	

Operator Work Instructions

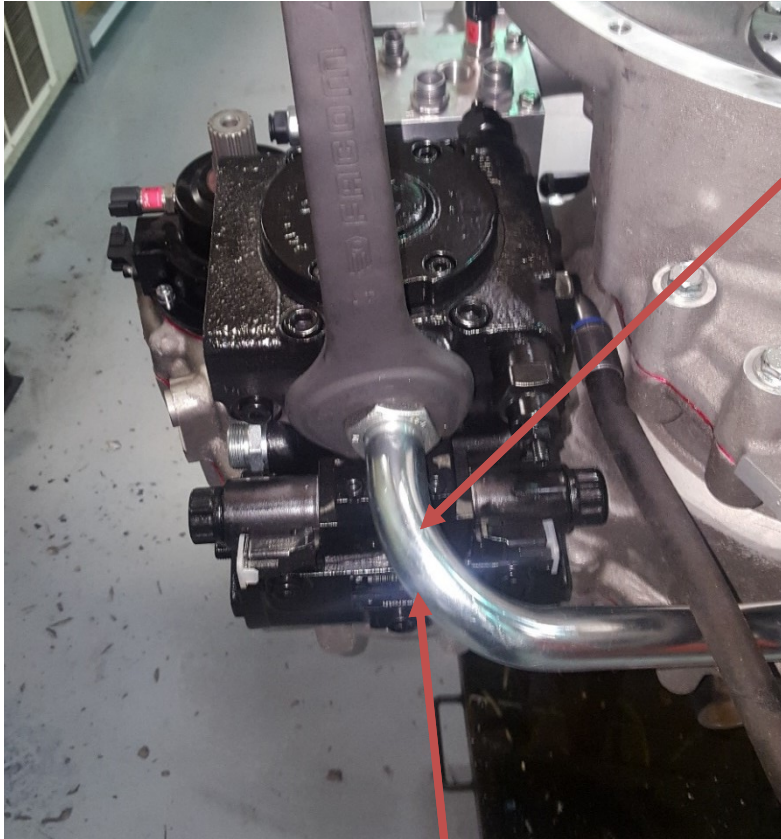
VPD Suction Tube



- **Grease and install 28x3.5 O-ring (MT945541) into groove in flange**

Operator Work Instructions

VPD Suction Tube



PUSH

- Install pickup tube (1250001058) to pump and VPD housing.
- **!!MAKE SURE TUBE IS PUSHED IN AS FAR AS POSSIBLE!!**
- Tighten nut (MT951152) and ferrule (MT951153) until light wrench resistance is felt. Tighten another 5 wrench flats (300°).

Ferrule must be installed as shown



Operator Work Instructions VPD Suction Tube



- **Apply Loctite 243 to M6x12 screw (MT945545).**
- **Install with 5mm allen socket and and M6 washer (MT945544).**
- **Torque to 10 Nm.**
- **Mark head of fastener with paint pen as it is torqued.**

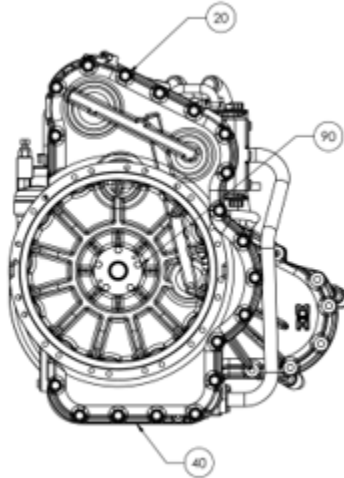


3 General Service Work

3.1 Oil Fill/Drain Procedure

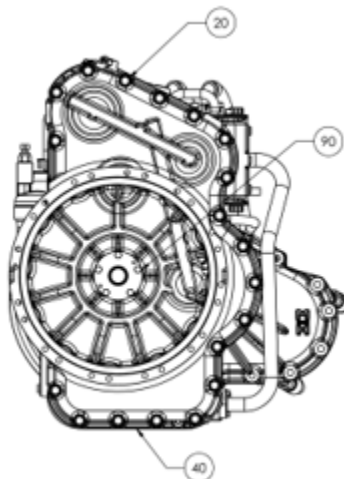
3.1.1 Oil Draining

To drain VPD oil, remove drain plug using 10 mm hex key from bottom of VPD (item 40). Reinstall plug after oil has drained, torquing to 70 Nm (50 ft lbs)



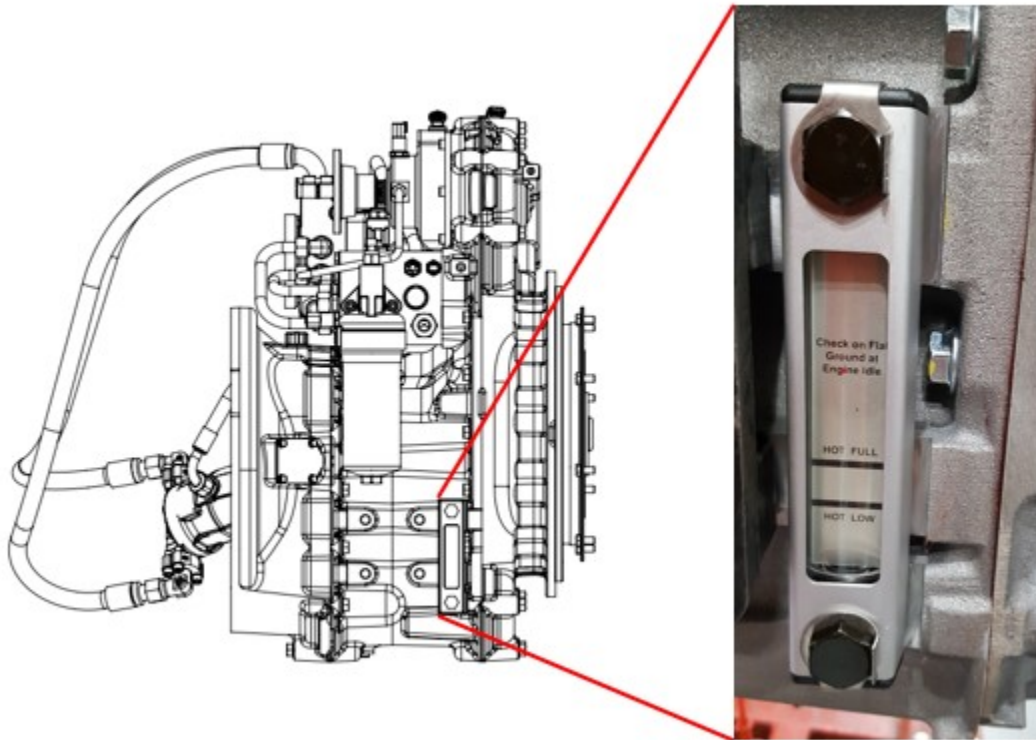
3.1.2 Oil Filling Procedure

The VPD is filled with oil through a plug (item 20) on the top of the central housing. Remove plug with 10mm hex key wrench.





Oil capacity is approximately 5 gallons (oil cooler, hoses, etc. included), but oil level should be checked with oil level gauge on side of central housing. Oil level is checked with engine running at idle (<1000 rpm) with VPD in road mode. Oil temperatures should be around 60°C (140° F). Add or remove as necessary when oil is cold and engine is not running.



3.1.3 Acceptable Oil

The VPD requires use of specialized lubricants designed for use with hydrostatic pumps, motors, and wet clutches. A list of acceptable lubricants can be found below.

- SHELL SPIRAX S4 TXM
- BP AGRI SUPER UNIVERSAL 10W-40
- CASTROL AGRI MP PLUS 10W-40
- KUWAIT PETROLEUM Q8 T 1000 D SAE 10W-30
- MOTUL SUPER AGRI 10W-30
- PETRONAS LUBRICANTS MULTI VT (SAE 10W-30)
- SHELL SPIRAX S4 TX
- SHELL SPIRAX S4 TXM
- SHELL SPIRAX S4 CX

WORK AND ROAD MODE

The Crosswind 1 uses the chassis engine to power both the chassis and the sweeper components.

VARIABLE POWER DIVIDER (VPD) SYSTEM CONTROLS

The Crosswind Single Engine Sweeper uses a console panel (Fig. 10: VPD Controls) for control of the Single Engine Sweeping System. The VPD specific controls are:

- Chassis - Mode Select
- Work Throttle
- Sweeper - Mode Select
- Fan Speed Tachometer

Chassis - Mode Select Button/Indicator Light

The Chassis - Mode Select button (Fig. 11: Chassis Mode Select Button) includes an indicator light. This button allows the operator to switch between ROAD and WORK modes. Pressing the button while in ROAD mode engages WORK mode—provided the appropriate conditions exist for a mode change. Pressing the button while in WORK mode returns the sweeper to ROAD mode.

Chassis Modes

- **ROAD:** Indicator light is OFF and chassis drive functions are normal.
- **WORK:** Indicator light is ON and VPD System is active.
- **ACTIVE FAULT:** A flashing CHASSIS - MODE SELECT indicator light can occur for several reasons:
 - a. The chassis key has been turned to the ON position but the engine has not been started.
 - b. Mode Engage/Change: A flashing indicator light can be indicative of an unsuccessful mode change. Verify mode change conditions have been met and attempt mode change again. If mode change is still unsuccessful, cycle the chassis key OFF/ON and repeat Mode Change steps. If the light continues to flash, an active fault condition exists. Notify service.
 - c. During Sweep Operation - If the indicator light begins to flash, an active fault is present in the VPD control system. Contact the Elgin servicing dealer for diagnosis of the fault.

NOTE

The Chassis Mode Indicator Light flashes when the chassis ignition is ON but the engine is not running. The light indicates the selected mode once the engine is running. The mode always defaults to ROAD mode when the ignition is turned OFF.

NOTE

In conditions where the engine RPM is greater than 800, it is not possible to transition to WORK mode. For example, if you are starting a cold engine, the engine controller accelerates the RPM to warm the engine.

Also, during a regen of the chassis engine, the engine controller maintains the engine RPM above 800. If the engine is performing a regen in WORK mode, you will not be forced into ROAD mode. But, you cannot transition into WORK mode while the engine controller is maintaining an RPM greater than 800.



Fig. 10: VPD Controls



Fig. 11: Chassis Mode Select Button

Sweeper - Mode Select Switch

NOTE

When the chassis is cycled on/off, the mode defaults to **TRANSPORT**.

- **SWEEP:** From **TRANSPORT** mode, press the left side of the **MODE SELECT** switch to select **SWEEP** mode and begin sweeping operations (Fig. 12: [Sweeper Mode Select](#)). The Sweep Mode icon illuminates.
- **TRANSPORT:** From **SWEEP** mode, press the right side of the **MODE SELECT** switch to return **TRANSPORT** mode. Sweeper functions are disabled and the Transport Mode icon illuminates. Sweeper functions will be disabled.
- **DUMP:** Press the right side of the **MODE SELECT** switch to select **DUMP** mode. An indicator light in the **MODE SELECT** switch illuminates to display successful selection. The Sweeper fan will be disabled but the hopper dump controls will be enabled.



Fig. 12: Sweeper Mode Select



Fig. 13: Work Throttle

NOTE

Dump the hopper in chassis **WORK** mode and sweeper **DUMP** mode. The sweeper fan will not run when in **DUMP** mode.

Work Throttle Control

When **WORK** mode is selected (VPD enabled), the chassis engine speed is controlled by the **WORK THROTTLE** thumb wheel control (Fig. 13: [Work Throttle](#)).

NOTE

Turn the thumb wheel to **DUMP** to dump the hopper. In order for the sweeper to travel, set the thumb wheel to a setting between slow (turtle) and fast (rabbit).

NOTE

In **WORK** mode, chassis engine speed will not exceed 2000 RPM.

Sweeper Fan Speed (Tachometer)

With **WORK** mode and **SWEEP** mode selected, sweeper fan speed will be displayed (Fig. 14: [Fan Speed Tachometer](#)).

An LCD screen in the tachometer will also display sweeper status information.



Fig. 14: Fan Speed Tachometer