

## Bulletin 02/2015

- Subject:** C27 Engine fuel hoses & clamps - AD55B/AD60 machines
- Affected Product:** Current field population of AD55B<sup>1</sup> and AD60<sup>1</sup> Machines
- Identified Risks:** Fuel leakage and potential fire hazard from chafed flexible hoses.

### Problem Overview

The flexible fuel lines installed in the engine compartment of the affected products listed above are subject to movement and abrasive wear before full engine life is achieved. If the flexible fuel lines contact anything other than the standard fitment Caterpillar rubber grommets, fuel leakage and fire hazards may occur due to abrasive wear. Wear, and subsequent movement between the contact surfaces of the rubber grommets and the flexible lines, can also lead to excess movement and abrasive wear of the flexible fuel lines. Figure 1 shows the location of the affected lines.

### Product Problem History and Current Status

There have been improvements made to extend the life of the engine flexible fuel lines since the introduction of the AD55B and AD60. These include improved mounting brackets, and improved rubber grommets that resist hardening when subjected to sustained high engine compartment temperatures. The introduction of these improved grommets, together with greater emphasis on field installation quality, 250 service hour or monthly inspections<sup>2</sup> and recommended replacement of grommets and hoses at 6000 service hours, has seen a significant decrease in the reporting of fuel line damage and fires. Abrasive wear between the outer layer of the flexible fuel lines and the improved rubber grommets has been observed between 6500 and 7000 hours. Refer figure 3.

### New Information

Caterpillar recently announced the release of an improved fuel line arrangement for AD55B and AD60 Underground Articulated Trucks. The improved fuel line arrangement is significantly different from the existing arrangement and incorporate a large number of new parts. These improved parts are effective in production, and Caterpillar have released a program to upgrade affected products in the field.

Due to the worldwide field population of affected machines, and the corresponding large demand for parts, Hastings Deering estimate it may take up to 12 months to upgrade all machines in its dealership territory. As the parts supply allows, Hastings Deering personnel will contact customers to discuss the scheduling of this upgrade.

<sup>1</sup> This bulletin also applies to earlier AD55 Underground Articulated Trucks retrofitted with C27 engines.

<sup>2</sup> Refer to the latest version of the Operation and Maintenance Manual (O&MM). Refer to WEBSIS or ask your Dealer Support Representative. The current versions of the Operation and Maintenance Manual (O&MM) AD55B Media Number -SEBU7336-06 and AD60 Media Number -SEBU7340-01 lists the maintenance interval for 'Hoses and Clamps - Inspect/Replace' as every 50 Service Hours or Weekly. The next revision of the AD55B and AD60 Operation and Maintenance Manuals will list the maintenance interval for 'Hoses and Clamps - Inspect/Replace' as every 250 Service Hours or Monthly.

## Management Actions Required – Existing fuel line arrangement<sup>3</sup>

Daily: Before starting the machine, inspect the machine and engine compartment for fluid leaks or signs of fluid loss in accordance with the current Caterpillar Operation and Maintenance Manual (O&MM) task: 'Daily Inspection' (refer Operation Section).

Every 250 service hours or monthly<sup>1</sup>: Inspect/replace hoses, hose clamps and grommets in accordance with this bulletin, the current Caterpillar O&MM task: 'Hoses and Clamps - Inspect/Replace', and the relevant Service Manual procedures. Ensure that the correct parts including grommets are installed as per current Caterpillar WEBSIS parts information.

Scheduled Replacement: Based on site experience gained from the scheduled 250 service hour or weekly inspections, a replacement interval should be determined for all engine flexible fuel lines and rubber grommets. Based on site and customer feedback, Hastings Deering recommends that the maximum interval between the scheduled replacement of flexible lines and grommets should be 6000 hours. Replacement hoses must be purchased from a Caterpillar Dealer as complete assemblies of the correct part number. **Do not** use fabricated fuel hoses – even those manufactured using genuine Caterpillar fittings and hoses.

## 250 Service Hours or Monthly Inspection Procedure – Existing fuel line arrangement<sup>3</sup>

Perform the following inspection with the engine stopped and secured from starting in accordance with site operational procedures. Allow the engine to cool to allow safe handling and inspection of hoses and clamps. Remove guards, covers and components as necessary to allow thorough inspection as per procedure below.

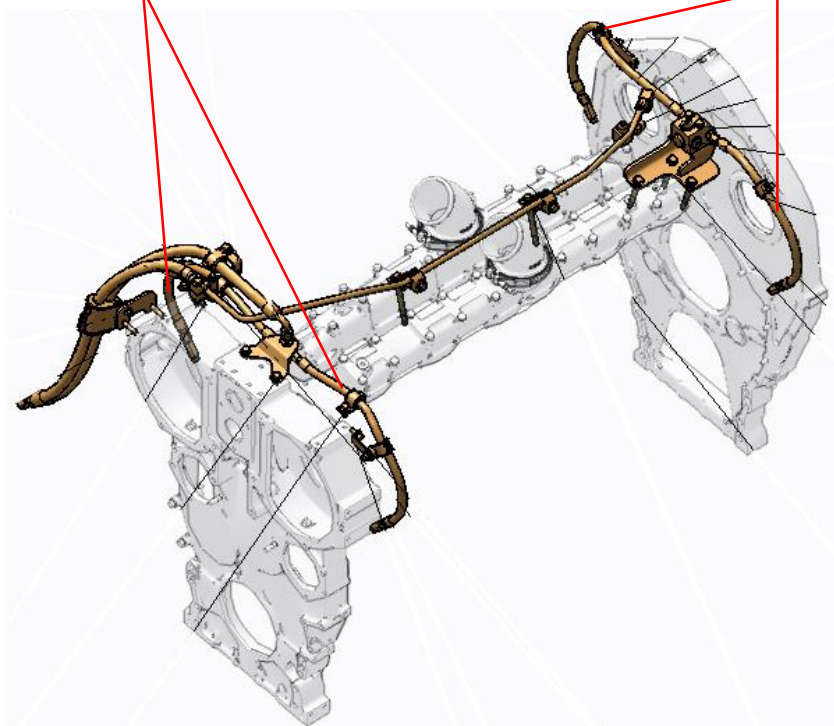
Inspect all hoses in the engine compartment to ensure they are correctly routed, and secured, using the correct parts.

- Look for signs of fluid leaks, hose chafing, contact marks, and rubbing that may indicate excessive hose movement or poor installation.
- All P-clips must have the rubber grommets fitted with the opening in each grommet aligned with the joint in the P-clip. Refer figure 2.
- The hose should not have clearance in the grommet – move the hose to check for clearance. Movement is usually the result of wear on the internal diameter of grommet and external surface of the hose. Refer figure 3. Replace worn, hardened or damaged hoses and grommets. **NB** Dirt and other contaminants can accelerate the wear process, and cause corrosion of fittings.
- Ensure the hoses do not contact anything other than the rubber grommet in the P-clips.

<sup>3</sup> All machines require regular inspections and maintenance as per the current O&MM. This requirement includes fuel, air, oil and water lines. The new fuel line arrangement for AD55B and AD60 will require less maintenance but will still be subject to regular inspection and maintenance as per the Operation and Maintenance Manual (O&MM).

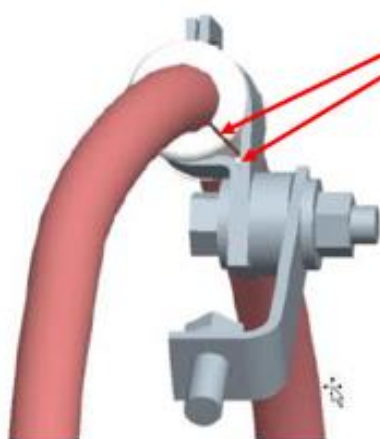
Front low-pressure fuel lines

Rear low-pressure fuel lines



**Figure 1. Fuel Line Identification**

Grommet gap and P-clip joint aligned



**Figure 2. Ensure correct alignment between grommet opening and P-clip joint**



**Figure 3.** These photos show wear to the corresponding surfaces of a hose and grommet that have been in service for 6500 hours. Accelerated wear occurs from the resulting clearance. In some instances, abrasive material can enter this clearance and further accelerate wear.

**Before operating the machine, rectify any defects identified during the inspections outlined in this General Equipment Safety Bulletin.**

**Do not use any type of hose sleeving, non-standard clamps and brackets, or zip ties, on AD55B and AD60 fuel line hoses.**

### Contact Details

If further information is required about this bulletin, contact your Mining Support or Product Support Representative on 131 228.

*This bulletin is to inform you of the recommendations of the supplier in respect of issues dealt with in the bulletin and should not be used as specific advice in respect of any particular events. Advice from a qualified repairer should be sought in respect of any particular events and Hastings Deering (Australia) Limited accepts no responsibility for any loss or damage occasioned by a party using this general bulletin.*