TECHNICAL BULLETIN

Ref Document No.	TB17002	Issue No.	1
Subject	Steer circuit pressure filter		
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Purpose – To advise COALTRAM® owners and operators of an upgraded and relocated filter available to reduce the likelihood of contaminants entering the steering system.

Applicability – COALTRAM® CT08, CT10 & CT10LP.

Background

The COALTRAM® has suffered numerous unplanned steering movements due to contamination entering the hydraulic steering circuit.

The steering circuit utilises a pressure filter to remove contaminants from the flow. It is located directly after the supply pump and before entering the steer amplifier valve.

Investigations/Findings

Due to contamination being the cause of many issues for the steer amplifier valve an assessment was undertaken of the circuit filtration and the suitability of the steer amplifier valve.

The steer amplifier works to prioritise the hydraulic flow to the steering and allow control of the steering via the steering wheel or joystick. Trials were completed in an attempt to replace or modify the steer amplifier to remove problem areas, however, no reliable solutions were available without a complete system redesign.

The system filtration was assessed taking into account the possible points where contaminants could enter the system through normal operation. All hydraulic oil with the ability to pass through a quick connect coupling passes through the return filter prior to entry to the hydraulic tank. The hydraulic fill pump also passes through the return filter.

The steer filter element efficiency of contamination removal was assessed and determined to exceed the cleanliness standard nominated by the steer amplifier manufacturer. However, some direct areas of improvement were found for the steering circuit pressure filter:

- The location of the filter is on top of the operator foot well. Changing the filter is done blind/by touch. The surrounding area is often built up with dirt, mud, coal etc. meaning that if the service person does not thoroughly clean the surrounding area before removing and installing the new filter

there is a high likelihood of contamination entering the filter/circuit when attempting to install the new filter.

- The pressure filter has a bypass check valve for protection of the pump. Assessment of the original filter element chosen for the steer circuit has identified the possibility of the bypass being activated during cold weather start up, even when minimal back pressure being created due to captured contaminants. Due to the evidence of contamination entering the steering circuit it can also be deduced that the steer filter may not have sufficient capacity for contaminants for the current recommended service interval.

PPK has trialed (10 months) the relocation of the steer filter combined with use of a larger filter element at a mine that was having significant issues with contamination entering the steer amplifier valve. Since instigating the trial and expansion onto the rest of their fleet there have been no instances of contamination causing issues within the hydraulic steering circuit.

The steer filter was relocated to the side of the upbox (fig. 1), allowing improved access for service and minimising the risk of contaminants entering the circuit when changing the filter element. The filter element was changed to use a double length element, providing a lower pressure drop across the filter. It also reduces the likelihood of bypass during cold start up and increases the ability of the element to operate without bypassing between service periods.

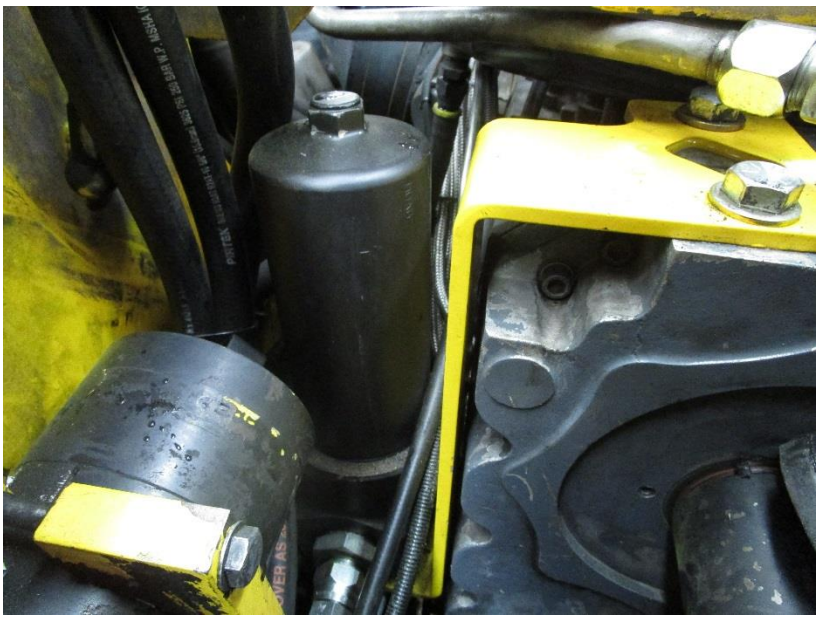

Figure 1: Steer filter mounted on side of upbox

During the above trial the steer amplifier and steer dump valve were also relocated to the area under the auxiliary coolers to improve access for maintenance. This has no impact on the effectiveness of the filer modification, though, as an option allows easier access when overhaul or replacement is required. The horn normally mounted on the upbox was required to be relocated to the other side of the upbox.

Recommendations

PPK recommend relocating the steer circuit pressure filter and replacing the filter element with the double length element at the next major service. This will minimise the chance of contamination entering the steering circuit, improving the reliability.

See attached SWP CT6.62 for relocation procedure and parts required. Contact your PPK service center for fitment pricing and availability. A SWP is also available for the relocation of the steer amplifier.

The hydraulic schematic remains unchanged, though, updated plumbing diagrams including the updated hose lengths are available to suit specific vehicle configurations.

Updated parts book pages are attached with this bulletin.

After the modification is done owners and operators should maintain the existing service interval, replacing the filter element (5520010308) every 500 hours.

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