

ENGINEERING BULLETIN

Ref Document No.	EB18005	Issue No.	3
Subject	Exhaust Conditioner Float Update		
Release Date	23 rd October 2018		

Purpose – Advise COALTRAM® owners/operators of an update to the design of the exhaust conditioner static water level float (PPK part number **5520000070**). Also advise of an update to the float and arm as used in the exhaust conditioner low water shutdown sensors (PPK Part number **5520000058**).

Applicability – All in service COALTRAM® models CT08, CT10, CT10LP and CT13.

Background

In May 2018 PPK was advised by our supplier that manufacture of the existing float used in PPK's exhaust conditioner low level shutdown sensor (PPK Part Numbers 5520000070) has ceased. A direct replacement float to fit on the existing float arm could not be found. PPK has determined that a modified float arm to accommodate the replacement float from the manufacturer is the most suitable option. Testing was carried out to ensure that the new float and arm design have negligible impact on the Exhaust Conditioner Level sensor function, and that the requirements of the DES registration are still met.

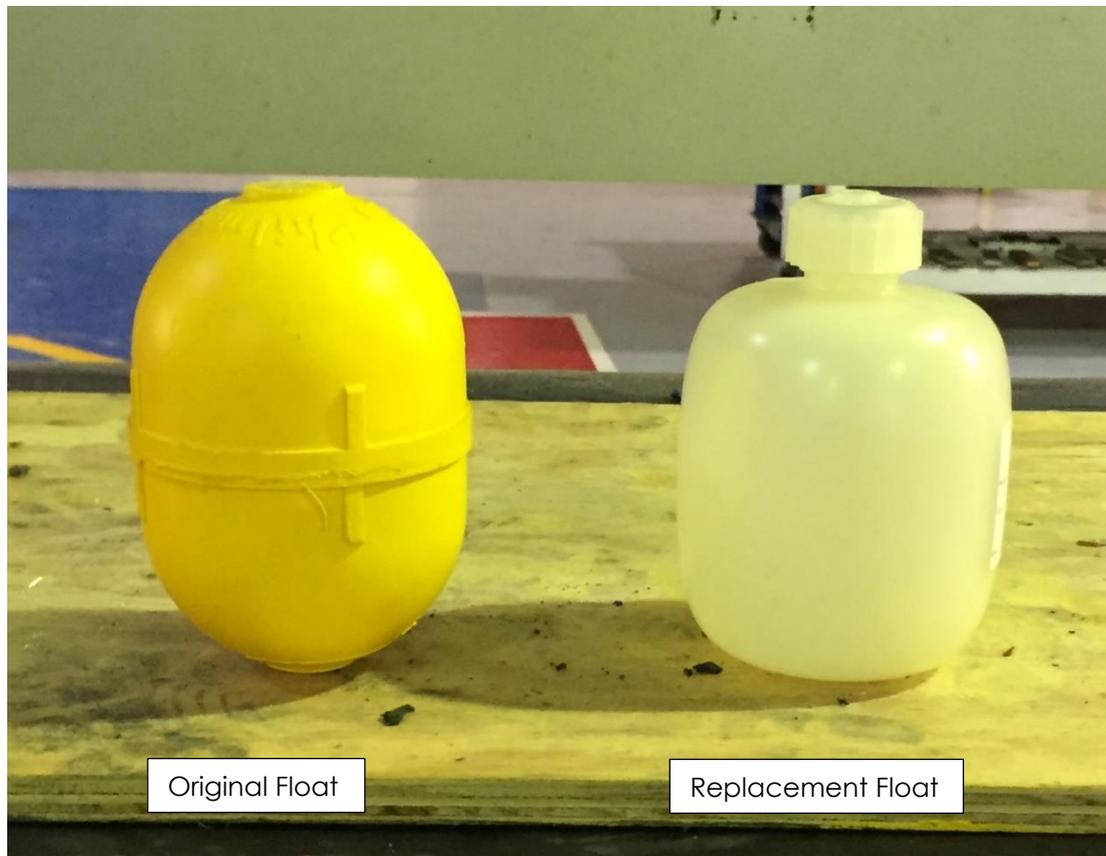


Figure 1 – Original vs Replacement Float

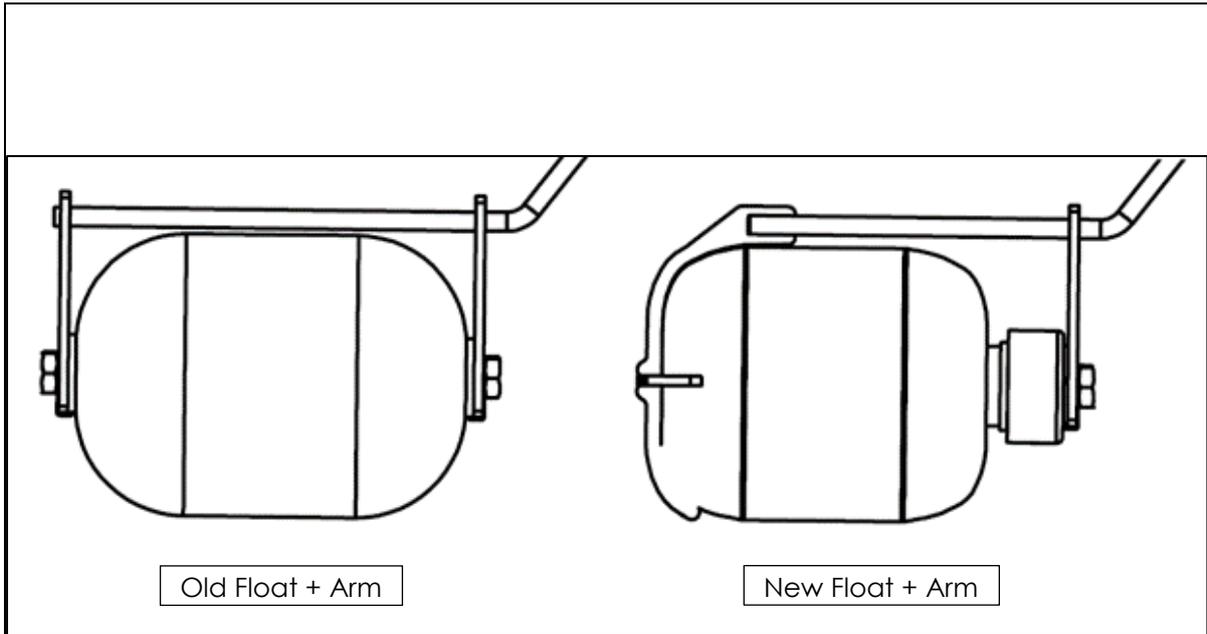


Figure 2 - Old vs. New Float Arm Design

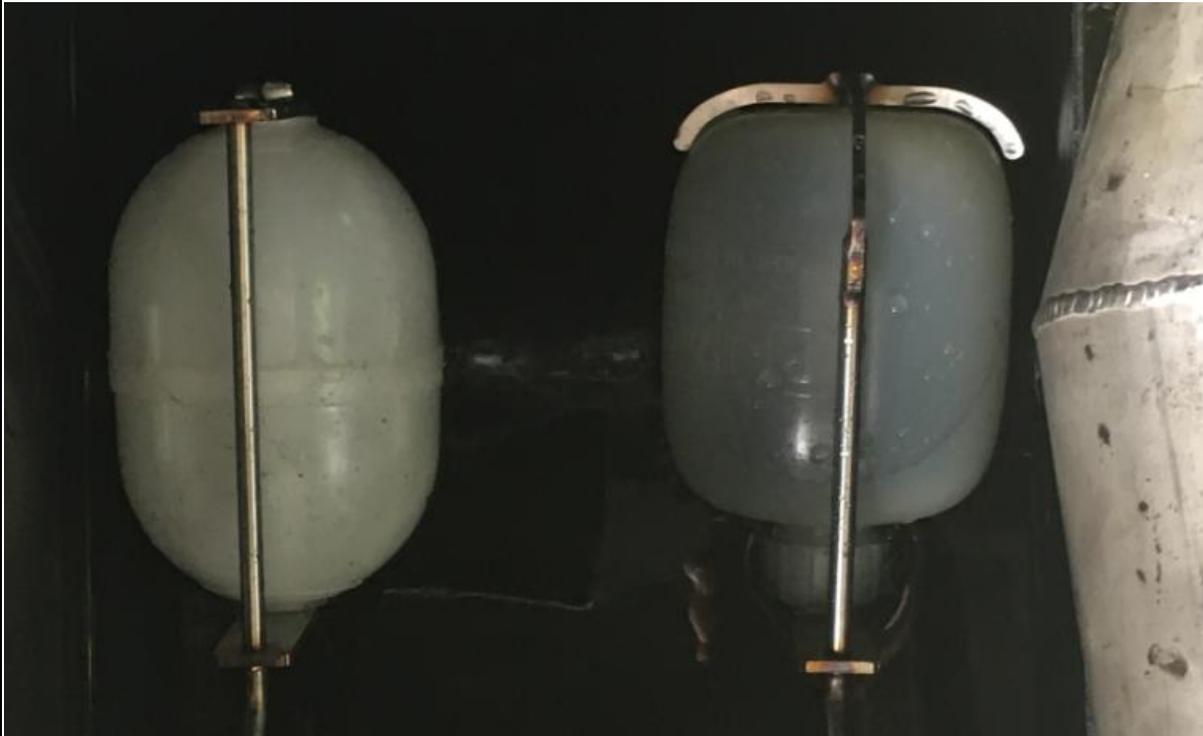


Figure 3 - Old vs. New Float Arm

Investigations/Findings & Recommendations

Float Mass and Internal Volume Measurements

	Old Float	New Float
Mass - Empty (g)	78	94
Internal Volume (mL)	466	469

The new float can be seen to weigh slightly more than the old design, while maintaining approximately the same internal volume. The float weight increase has been counteracted with the float holder mass being reduced from 110g to 94g, resulting in a zero net weight difference.

Low Water Shutdown Testing

Location: PPK Tomago Workshop

Test Summary: A level sensor with the new float and arm design was subjected to low water shutdown testing on a Coaltram CT10. The level sensor was placed in the outer position of the exhaust conditioner. The inner level sensor was tied high. The Coaltram was started and run at low idle, and the exhaust conditioner water was drained until the engine shut down. This was repeated a total of five (5) times. The objective of the test was to ensure that the sensor initiated an automatic engine shutdown before the statutory minimum water level was reached.

Results: In all five tests the machine automatically shut down before the statutory minimum water level was reached. This was confirmed by observing that water was still flowing from the low water shut down test valve after shutdown. On each occasion shut down occurred just as the water level reached the top of the low water shutdown test valve.

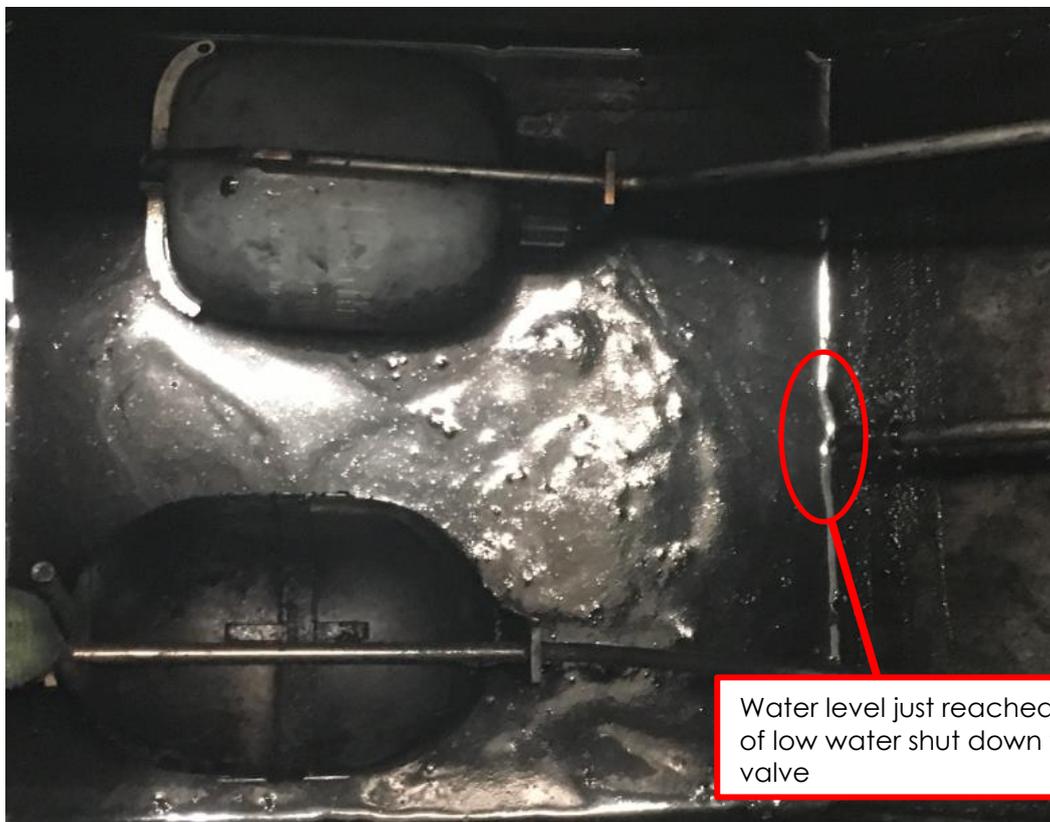


Figure 4 - Exhaust Conditioner Water Level After Automatic Shutdown

Measurement Comparison

Location: PPK Tomago Workshop

Test Summary: A float with the new arm and float design was tested alongside a float with the old arm and float design in a test exhaust conditioner setup. Exhaust conditioner was filled with water and drained a total of four (4) times. Readings were sampled from each sensor at a frequency of 25Hz.

Results:

Over the four fill/drain cycles the readings from the sensor with the new float design very closely matched those from the old float design. Noticeable deviation is observed at the upper limits of the float range, where the old float arm design hits on the tank deflector earlier than the new float holder. At water levels around the statutory low water shutdown point a maximum deviation of 0.6% was observed.

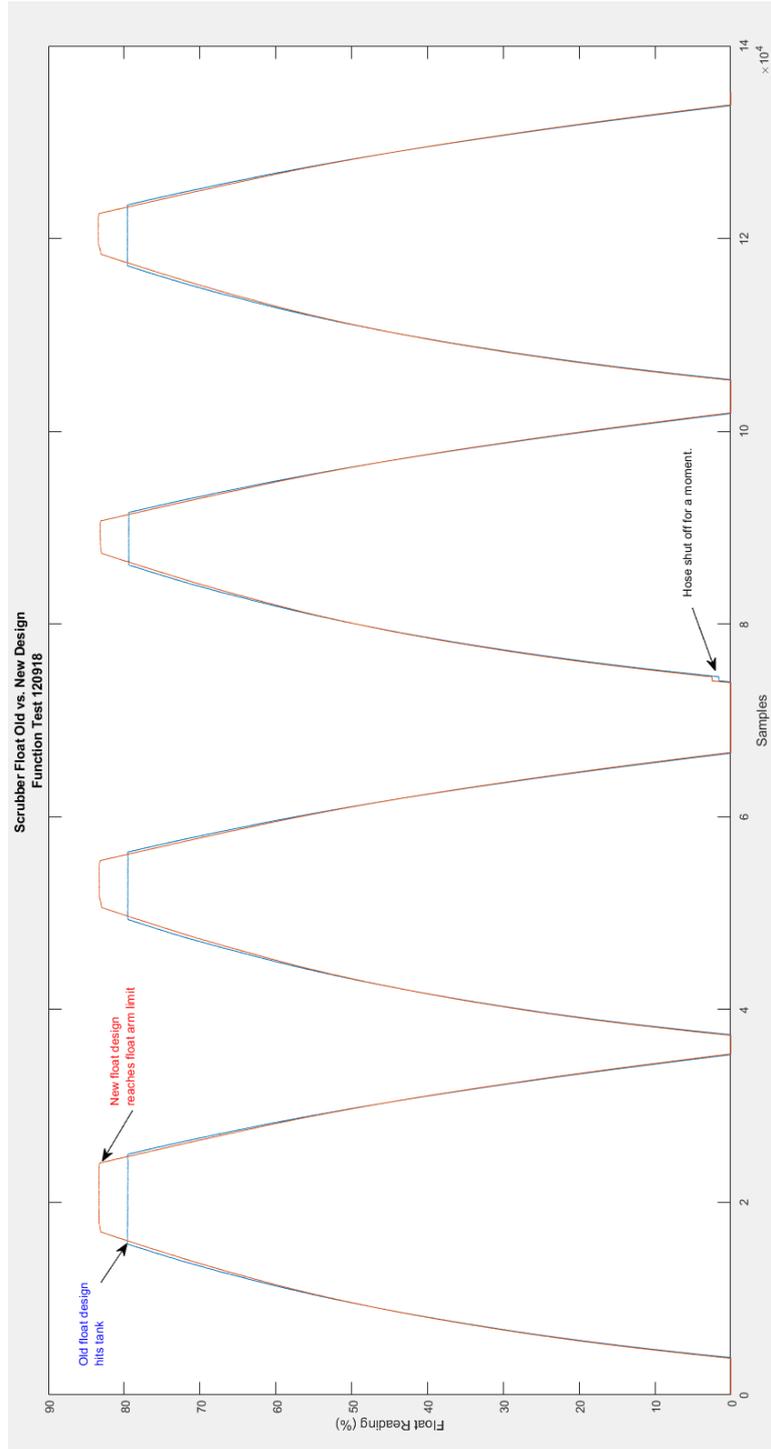


Figure 5- Exhaust Conditioner Old vs. New Floats Measurement

Recommendations

Testing has shown that the updated float and holder design closely matches the original in both form and function.

Owners and operators should be aware that the exhaust conditioner static water level float (PPK P/N **5520000070**) will now use the new float design. The static water level valve and arm have not been changed.

Customers should also be aware that the exhaust conditioner low water shutdown sensor (PPK Part Number **5520000058**) will now utilise the new float and arm design.

It should be noted that the exhaust conditioner low water shutdown sensor is not a field-serviceable item; all servicing must be performed by PPK due to certification and calibration requirements.

Existing level sensors and static water level valve assemblies using the original float are still fit for purpose, provided that recommended calibration and maintenance is being performed.

Engineering Department

PPK Mining Equipment Pty Ltd

T: +612 4964 5400

www.ppkgroup.com.au

