

# SAFETY BULLETIN

Ref Document No.	SB15004	Issue No.	1
Subject	Unplanned Engine Cranking		
Release Date	9 <sup>th</sup> March 2015		

## Purpose

To advise COALTRAM® owners of an unplanned engine cranking event/incident and component checks that can be undertaken to help prevent it occurring.

## Applicability

All COALTRAM® vehicles.

## Background

An un-isolated COALTRAM® experienced cranking without the operator pushing the STOP/RUN/START switch to the start position.

The abbreviated normal engine start sequence is as follows:

- Turn the main air isolator ON.
- Select the ISOLATE / ISOLATE / POWER switch to the POWER position.
- The MONEx system will perform preliminary checks and energise the Pneumatic Isolation Piezo Valve when complete.
- The MONEx system will then alert the operator to switch the STOP / RUN / START switch to the RUN position (all interlocks must be engaged to proceed).
- The MONEx system will perform statutory vehicle checks and provide power to the Caterpillar Engine Control Unit (CAT ECU).
- The MONEx system will then alert the operator to switch the STOP / RUN / START switch to the START position.
- The Engine Start Piezo Valve will energise and supply pilot air to the Pneumatic Starter Motor which will engage and crank the engine.
- The Pneumatic Starter Motor will disengage when the STOP / RUN / START switch is released from the START position to the RUN position during the engine start cycle.

## Information

For an unplanned engine cranking event to occur, the vehicle would need to be un-isolated, in neutral with the park brake applied, cab door closed and hydraulic door closed. The fault would then need to occur. For the engine to crank and start the ECU is required to be in the run mode which times out if the engine has not been started within 90 seconds of switching the ECU to run and obtaining "ready to start" on the display screen.

Unplanned engine cranking has previously been reported to PPK. The root cause was moisture ingress and corrosion of the control cable (5520002073) in one case and over pressurisation of the start piezo valve (5520001208) in the other. MONEx Product Bulletin ZUQPTY4FSNWN-67-134 and Engineering Bulletin EB13007 respectively were released to address the issues (bulletins attached). PPK recommend reviewing these bulletins in light of the recent unplanned engine cranking. Control Cable 5520002073 is currently available for purchase from PPK.

### Investigation / Findings

The original Control Cables (5520002073) without over-moulding are serial number 11323-0 to 11323-129. Control Cables with the serial number 11323-130 and upwards have the over-moulding.

PPK have audited all stock to ensure all new control cables (5520002073) are supplied with over-moulding mentioned in the MONEx Product Bulletin.

PPK is currently working on a solution to add extra redundancy to the start procedure. This solution will include extra operator input as well as the existing MONEx start switch. A bulletin will be released when ready.

### Recommendations

1. Review MONEx Product Bulletin ZUQPTY4FSNWN-67-134 and Engineering Bulletin EB13007.
2. At the next weekly service interval inspect all control cable installations by removing the multi-pin connector and checking for evidence of corrosion in the pins or sockets. If corrosion is evident, the control cable should be replaced and normal start sequence operation confirmed. Where there are concerns of corrosion in the mating plug, the Power Manager should also be returned for inspection and testing.
3. Control Cable 5520002073 should be installed so the exit of the over-moulding is vertical and down to allow any water to drain as pictured below (some components are removed to allow view of the cable routing).

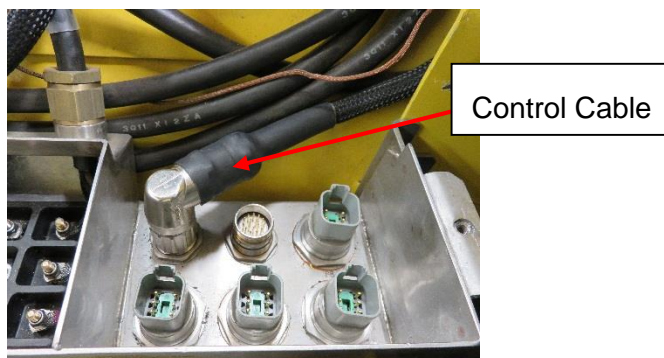
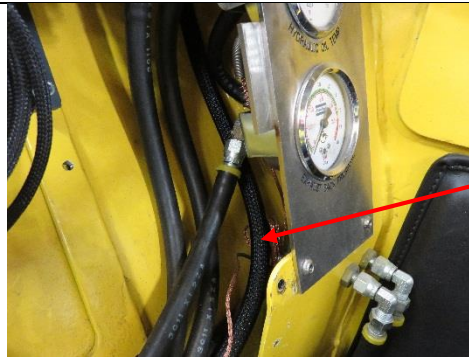
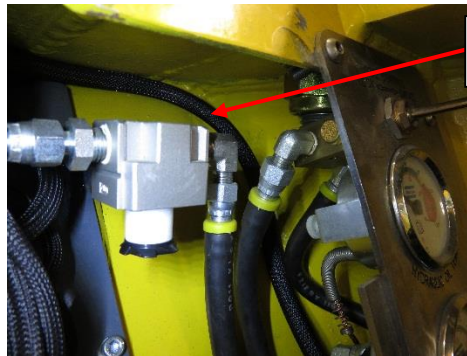


Figure 1: Cable Connected to Power Manager



Control Cable

Figure 2: Cable Running Around Edge Behind Dash



Control Cable

Figure 3: Cable Continuing Around Edge



Cable Tie

Control Cable

Exit of over-molding

Figure 4: Cable Tied in Place With Over-molding Verticle

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