

# TECHNICAL BULLETIN

Ref Document No.	TB14002	Issue No.	Rev 1
Subject	Throttle Sensor		
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**Purpose**

To advise COALTRAM® owners of how the throttle responds when there is a fault causing a loss of signal from the throttle sensor.

**Applicability**

Applies to all COALTRAM® CT08, CT10 and CT13 vehicles.

**Background**

A COALTRAM® experienced a loss of signal from the throttle sensor and when the operator removed their foot from the throttle the engine rev's did not immediately return to idle. The operator was able to bring the vehicle to a stop without incident. The MONEx engine management system has the built in feature that in the event of a loss of signal from the throttle sensor, the system will register the fault in the event log, give an audible alarm and display the disconnect on the MONEx screen within 2 seconds. The engine will return to idle within another 8 seconds. During these 10 seconds the MONEx System restarts the sensor three times to try and re-establish the connection. If the throttle sensor signal is re-established the engine will follow the input given by the throttle.

If the throttle sensor experiences a short circuit the COALTRAM® will shut down applying the park brake. An audible alarm will sound and the MONEx screen will give a visual fault response.

PPK has been issued with an Improvement Notice to investigate the time delay between registering the sensor disconnect and the engine returning to idle.

The Diesel engine system used in the COALTRAM® has been approved for use in underground coal mines for over five years. There are currently 98 vehicles in the industry with combined engine hours in excess of 360,000. The feature spoken about in this Technical Bulletin has been in place throughout the engine systems approval.

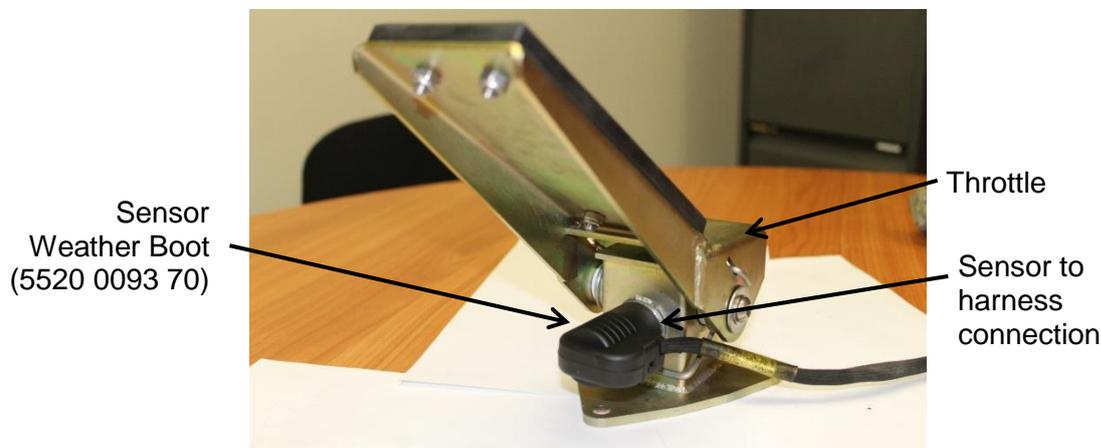
### Investigations/ Findings

The investigation found the root cause of the throttle disconnection to be a loose connection at the deutsch plug connection between the throttle and the cable harness.

A FMEA was carried out on the COALTRAM® Throttle Assembly with the resulting Risk Priority Number (the combined weighting of severity, likelihood and detectability) indicating that the throttle failing due to a mechanical issue such as sticking results in a far greater risk priority number than the throttle failing through an electrical fault. The consequences created from a throttle failure due to a mechanical issue would be similar to those on any vehicle and are accepted by the industry.

Agreed action from the FMEA has resulted in the following actions and results:

- PPK will continue to investigate a reduction in time to return engine to idle if the signal between the throttle sensor and ECUEX is lost.
- OEM service sheets call for the inspecting condition and integrity of all MONEx electrical components (existing).
- The throttle sensor to wiring harness connection can be fitted with a Sensor Weather Boot to assist in providing an increase in protection to the connector and cable. This cap is similar to that used on other sensor connections though includes a drain hole so it cannot act as a reservoir (part number 5520009370). This is shown in the image below.



- PPK will investigate the installation of an extension cable that can be added to the throttle so the connection is relocated to an area less susceptible to the ingress of contaminant and mechanical damage.
- The throttle when connected with the wiring harness has a rating of IP67.

### Recommendations

PPK recommends raising the COALTRAM® throttle sensor responses at the next Toolbox meeting with appropriate staff to ensure that the operators are aware what will happen if a fault occurs. In the event of a throttle disconnection the system will give an audible alarm and display the disconnect on the MONEx screen within 2 seconds and the engine will return to idle within another 8 seconds.

So far there has been only the one instance of the throttle disconnect occurring engaging the MONEx system to bring the COALTRAM® back to idle.

The existing controls for bringing the COALTRAM® to a stop if a throttle disconnect does occur whilst travelling at speed with the operator having removed their foot from the throttle are:

- the service brakes;
- the park emergency brake (which will de-clutch the transmission and apply the park brake);
- the gear selector can be moved into the neutral position; and
- the emergency shutdown button (which will apply the park brake and shut off the engine).

PPK recommend checking all COALTRAMs® for throttle disconnect issues follow procedure below:

1. Review the event log for the past two months to check for any throttle sensor failures.
  - When using the MONEx display the event log is under Menu → System → Event Log then use the up and down buttons to look through log.
  - If a sensor failure has occurred the log will display as:



- If fault is found tag machine out and inform supervisor. It is recommended that PPK is contacted.
2. Check throttle operation to ensure that throttle inputs are followed by the engine.
  3. Check operation of service brakes.
  4. Check operation of park brake.
  5. Check emergency shutdown of engine.
  6. If all above checks are passed continue to use COALTRAM®.

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