

# ENGINEERING BULLETIN

Ref Document No.	EB24001	Issue No.	1
Subject	COALTRAM® Service Sheets Update		
Release Date	23 <sup>rd</sup> August 2024		

**Purpose** – Advise COALTRAM® owners and operators of updated mechanical service sheets for maintenance of the COALTRAM®.

**Applicability** – All in service COALTRAM® models – CT08, CT10, CT10LP

## Information

PPKME are continually looking to improve and tailor our OEM service sheets to include necessary tasks and inspections for our equipment.

Selected updates to the COALTRAM® service sheets are summarised on page 2.

## Recommendations

PPK recommend reviewing maintenance procedures against those recommended in the attached service sheets.

## Engineering Department

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Document ID	Version No.	Page Ref.	Description
DD-020 Code A – Daily	8-1023	-	[No changes]
DD-021 Code B - Weekly/50hr	11-0824	8 of 11	Added CT08/CT10LP crowd cylinder checks
		11 of 11	Added autolube grease cartridge P/N 5520001696
DD-022 Code C- Monthly/250hr	11-0824	10 of 14	Added CT08/CT10LP crowd cylinder checks
		14 of 14	Added autolube grease cartridge P/N 5520001696
DD-023 Code C1 – 3 Monthly/500hr	15-0824	10 of 15	Added CT08/CT10LP crowd cylinder checks
		15 of 15	Added autolube grease cartridge P/N 5520001696
DD-024 Code C2 – 6 Monthly/1000hr	16-0824	4 of 17	Added inspection of engine breather hose
		11 of 17	Added CT08/CT10LP crowd cylinder checks
		17 of 17	Added autolube grease cartridge P/N 5520001696
DD-025 Code D - Yearly/2000hr	16-0824	5 of 19	Added inspection of engine breather hose
		12 of 19	Added CT08/CT10LP crowd cylinder checks
		19 of 19	Added autolube grease cartridge P/N 5520001696
DD-026 Code D1 – 2 Yearly/4000hr	16-0824	5 of 19	Added replacement of engine breather hose
		12 of 19	Added CT08/CT10LP crowd cylinder checks
		19 of 19	Added autolube grease cartridge P/N 5520001696
		19 of 19	Added engine breather hose P/N 5520001806
DD-027 Code D2 8000hr-	16-0824	5 of 23	Added replacement of engine breather hose
		15 of 23	Added overhaul/replacement of lift, crowd, hitch cylinders
		22 of 23	Added autolube grease cartridge P/N 5520001696
		22 of 23	Added front frame split cap bolt kits P/N 5520009361 and 5520009362
		22 of 23	Added engine breather hose P/N 5520001806

**COALTRAM® CT08/CT10/CT10LP – CODE A MAINTENANCE – DAILY/10 Hour**

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.  
Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.

VEHICLE PLANT NUMBER		HIRER /OWNER	
VEHICLE SERIAL NUMBER		DATE	
SITE		METHANE HOURS	
PROJECT/JOB NUMBER		MONEx HOURS	

<b>IMMEDIATE REPAIRS COMPLETED:</b>
<b>FUTURE REPAIRS REQUIRED:</b>

**TECHNICIANS**






PRINT NAME(S)		SIGN		DATE	
PRINT NAME(S)		SIGN		DATE	

**SUPERVISORS**

PRINT NAME(S)		SIGN		DATE	
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**COALTRAM MAINTENANCE SAFETY INFORMATION**

- Ensure that all safety information is read and understood before maintenance or repair task is performed
- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<ol style="list-style-type: none"> <li>PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</li> <li>Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</li> <li>All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</li> <li>Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</li> <li>When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</li> <li>Keep clear of suspended loads. Use Safety line to control load when required.</li> <li>Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</li> <li>Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</li> <li>Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</li> <li>Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</li> <li>Warning labels on machine must be observed </li> <li>Prohibition labels on machine must be observed </li> </ol>	<ol style="list-style-type: none"> <li>Information labels on machine must be observed  </li> <li>Service points on machine must be observed </li> <li>Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</li> <li>Hot surfaces. Be aware of hot surfaces when machine has been running.</li> <li>Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</li> <li>Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</li> <li>Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</li> <li>Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</li> <li>Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</li> <li>Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</li> <li>Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</li> </ol>	<ol style="list-style-type: none"> <li>Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</li> <li>Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</li> <li>Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</li> <li>Current information: Ensure current information is available prior to commencing maintenance or repair task.</li> <li>Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</li> <li>Ventilation Ensure adequate ventilation when testing machine</li> <li>Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</li> <li>Stay clear of rotating parts</li> <li>Always use tools that are in good serviceable condition</li> <li>Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</li> <li>Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</li> <li>Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</li> </ol>
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**RECOMMENDED COALTRAM MAINTENANCE AND COMPLIANCE SCHEDULE**

REF. DOCS. AS3584.3, MDG1

<u>MAINTENANCE EXAMINATION CODE</u>	<u>CALENDER BASED REGIME</u>	<u>ENGINE HOURS REGIME</u>
<b>CODE A EXAMINATION - Maintenance</b>	<b>DAILY</b>	<b>10</b>
CODE B EXAMINATION - Maintenance	WEEKLY	50
CODE C EXAMINATION - Maintenance	MONTHLY	250
CODE C1 EXAMINATION - Maintenance	3 MONTHLY	500
CODE C2 EXAMINATION - Maintenance	6 MONTHLY	1000
CODE D EXAMINATION – Maintenance	YEARLY	2000
CODE D1 EXAMINATION - Maintenance	2 YEARLY	4000
CODE D2 EXAMINATION - Maintenance	NOT YEARLY BASED	8000
<p><b>COMPLIANCE OVERHAUL - Mechanical</b></p> <p>CODE D MECHANICAL COMPLIANCE OVERHAUL</p> <p>Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent and are to be aligned with Maintenance Examinations CODE C level or greater</p>		<p><b>2 YEARLY / or 2000 engine hours</b></p> <p>– whichever is achieved first</p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>
<p><b>COMPLIANCE OVERHAUL - Electrical</b></p> <p>CODE D ELECTRICAL COMPLIANCE OVERHAUL</p> <p>Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent</p>		<p><b>4 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>

**ENGINE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Vehicle Hours	<b>check</b> <ul style="list-style-type: none"> <li>• engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>		
Engine	<b>check</b> <ul style="list-style-type: none"> <li>• unusual knocks and noises</li> <li>• oil leaks</li> <li>• starter motor is secure</li> <li>• oil level</li> <li>• for damage or loose items</li> </ul>		
Engine Air Intake	<b>inspect</b> <ul style="list-style-type: none"> <li>• air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>• system for security and leaks</li> </ul>		
Cooling System	<b>inspect</b> <ul style="list-style-type: none"> <li>• water pump FRAS V-belt tension and condition</li> <li>• engine cooling fan FRAS V-belts tension and condition</li> <li>• water pump belt tensioner pulley bearings</li> <li>• for leaks</li> <li>• fan blade condition/integrity</li> <li>• for blockages in cores on both sides of the radiator</li> <li>• radiator and pulley guards are in place and secure</li> <li>• check coolant is in sight glass on header tank</li> <li>•</li> </ul>		<p>Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations</p> <p>Recommended to use pre-mixed Caterpillar ELC (Extra Long life Coolant) or equivalent.</p>
Fuel System	<b>inspect</b> <ul style="list-style-type: none"> <li>• fuel hoses and fittings</li> <li>• fuel lines for contact on any hot components</li> <li>• fuel tank cap and strainer condition</li> <li>• for leaks</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>water/contaminants from air tank</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>leaks on system and repair/report</li> </ul>		
Electronic Engine Management System	<p><b>check /Test</b></p> <ul style="list-style-type: none"> <li>scrubber water shutdown system via the upper ball valve test point – isolate supply line and drain to its shutdown level.</li> <li>coolant loss operation via test valve</li> <li>engine oil pressure loss via test valve</li> </ul> <p><b>inspect</b></p> <p>condition and integrity of all MONEx electronic components.</p>		Note -Scrubber water must still be draining from test valve after engine shuts down for a positive test.
Mechanical Flameproof System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>scrubber tank by fully draining at the lower socket to remove built up exhaust residue. If a ball valve is used in this port, a plug must accompany it to comply with safety regulations.</li> </ul> <p><b>inspect.</b></p> <ul style="list-style-type: none"> <li>all items for integrity, security, and damage</li> <li>fasteners on the mechanical flameproof joints – visual only</li> <li>add water conditioner to scrubber make up tank (if applicable to site). Note ; do not over dose the scrubber water with conditioner</li> </ul>		<p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>
Particulate Filter System (Option 1)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition, integrity and security of housing /components</li> <li>exhaust particulate filter and replace if required (if applicable to site) &gt;</li> </ul>		Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) or Cosway (5520010707)
Ceramic Wall-Flow Filter System (CWFF) (Option 2)	<p><b>Inspect</b></p> <ul style="list-style-type: none"> <li>Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>Inlet &amp; Outlet Temperature Sensors</li> <li>Electrical Cables</li> <li>HA110 (inc. push button, window, etc) (Visual)</li> <li>Junction box (Visual)</li> <li>HA116-H (Visual)</li> <li>Antenna</li> </ul> <p><b>Check</b></p> <ul style="list-style-type: none"> <li>Check filter element differential pressure using hi-idle test procedure &gt;</li> </ul>		Hi-Idle Test Procedure (Ref. SWP CT 1.35) Pass Differential Pressure = < 15kPa @ High Idle If > 15 kPa then Filter Regen Required

**VEHICLE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<b>inspect</b> <ul style="list-style-type: none"> <li>• steering articulation lock</li> <li>• boom safety support locks</li> <li>• air, water and hydraulic hoses for damage</li> <li>• safety triangles</li> <li>• wheel chocks</li> </ul>		
Drive Train General	<b>inspect</b> <ul style="list-style-type: none"> <li>• integrity of breather hoses/lines</li> <li>• security of axle mounting bolts and potential movement between housings and frame &gt;</li> </ul>		
Drive Train Shafts	<b>inspect</b> <ul style="list-style-type: none"> <li>• all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>• all driveline fasteners, shafts and universals for security and damage.</li> </ul>		
Drive Train Lubrication	<b>inspect</b> <ul style="list-style-type: none"> <li>• transmission oil level with engine idling</li> <li>• upbox oil level</li> <li>• for oil leaks</li> </ul>		
Wheels and Tyres	<b>inspect</b> <ul style="list-style-type: none"> <li>• for loose and missing wheel nuts</li> <li>• tyres for damage</li> </ul>		
Hydraulic General	<b>inspect</b> <ul style="list-style-type: none"> <li>• for damage</li> <li>• for oil leaks</li> <li>• visually check accessible hydraulic hoses, fittings and components</li> <li>• functionality of all hydraulics</li> </ul>		
Hydraulic Lubrication	<b>inspect</b> <ul style="list-style-type: none"> <li>• oil level at front swing open tank sight glass with engine stopped.</li> <li>• oil level at rear main tank sight glass with engine running</li> </ul>		
Braking System	<b>inspect</b> <ul style="list-style-type: none"> <li>• for leaks</li> <li>• brake operation by practical test &gt;</li> </ul>		Refer site compliance



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Frame	<b>inspect</b> <ul style="list-style-type: none"> <li>• for damage and missing parts</li> <li>• all towing points</li> <li>• all covers, guards, latches and hinges for operation, damage and wear</li> <li>• ROPS/FOPS canopy for security, damage.</li> </ul>		
Vehicle Safety Interlocks	<b>check</b> <ul style="list-style-type: none"> <li>• door interlock valve is operational - park brake applies when door opened</li> <li>• neutral start valve is operational - vehicle will not start in FWD or REV</li> <li>• door alarm latch function - when Park Brake is released, partly open-door latch for audible horn response</li> <li>• steering is isolated when park brake is applied</li> </ul>		
Cab Section	<b>inspect</b> <ul style="list-style-type: none"> <li>• gauges are all operational</li> <li>• seat condition, seat suspension for operation, airbag and shock absorber condition and operation</li> <li>• horn operation via button on dash</li> <li>• brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>• emergency brake operation function by applying park brake while moving slowly</li> <li>• service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>• operation of all hydraulic functions</li> <li>• steering operations</li> <li>• door handle operation</li> <li>• pinch point prevention lever on top of the door</li> <li>• master hitch removal function isolates until door mounted twist knob is operated</li> <li>• for operational interference around all control levers, brake and accelerator pedals</li> <li>• condition and security of rubber boot on stick steering lever</li> <li>• condition and security of rubber boot on main hydraulic lever</li> </ul>		
Vehicle Flameproof Electrical Systems	<b>inspect</b> <ul style="list-style-type: none"> <li>• operation of all lights (including directional lighting if applicable)</li> <li>• positioning of light directions/ projections</li> <li>• check camera display and directional switching is operational (if applicable)</li> <li>• Fifth light functionality if fitted</li> </ul>		Note! Do not hose water directly on alternator when at operating temperatures

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<b>check</b> condition/integrity of following items <ul style="list-style-type: none"> <li>• hosing and cabling</li> <li>• installation and mounting areas for potential hazards</li> </ul>		
Manual Greasing	<b>grease</b> <ul style="list-style-type: none"> <li>• all points on vehicle, check all are receiving grease</li> </ul> <b>inspect</b> <ul style="list-style-type: none"> <li>• grease lines for damage/leaks</li> </ul>		
Auto lube System (If Applicable)	<b>inspect</b> <ul style="list-style-type: none"> <li>• operation of auto lube greaser</li> <li>• grease lines for leaks</li> </ul> <b>replace</b> <ul style="list-style-type: none"> <li>• grease cartridges</li> </ul> <b>check</b> <ul style="list-style-type: none"> <li>• visual evidence of grease at all joints</li> </ul> <b>grease</b> <ul style="list-style-type: none"> <li>• all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<b>check</b> <ul style="list-style-type: none"> <li>• fire extinguisher indicator gauge(s) are in the green zone</li> <li>• bottle(s) condition</li> <li>• condition of fire extinguisher brackets/clamps</li> <li>• tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<b>check</b> <ul style="list-style-type: none"> <li>• fire suppression system indicator gauge is in the green zone</li> <li>• condition/integrity of fire suppression bottle, lines and nozzles</li> </ul>		

<b>LUBRICANTS</b>									
<b>COMPONENT</b>			<b>FLUID TYPE</b>				<b>CAPACITY</b>		
ENGINE			SAE 15W40				30L		
RADIATOR/ENGINE			PRE-MIX 100% SAE COOLANT				68L - FILL VERY SLOWLY, BLEED AIR FROM EXHAUST COOLING LINES		
UP BOX			90W				2L - FILL VERY SLOWLY		
TRANSVERTER/TRANSMISSION			10W/30				25L - CHECK WITH ENGINE RUNNING		
DIFFERENTIALS			85W140				18L EACH		
PLANETARIES			85W140				3.7L EACH		
HYDRAULIC TANK			10W/30 - WET BRAKE COMPLIANT				160L - CHECK MAIN REAR TANK LEVEL WITH ENGINE RUNNING, AND FRONT TANK WITH ENGINE STOPPED		
<b>FILTERS AND SERVICE ITEM PART NUMBERS</b>				<b>MAINTENANCE INTERVAL REQUIREMENTS</b>					
<b>DESCRIPTION</b>		<b>PART NUMBER</b>	<b>QTY</b>	<b>CODE B</b>					
<b>SERVICE KIT PART NUMBER</b>				<b>5520000240</b>					
<b>FILTERS</b>				<b>Weekly / 50Hr</b>					
Air Filter (Outer)		5520000240	1	•					

## COALTRAM® CT08/CT10/CT10LP – CODE B MAINTENANCE – Weekly / 50 Hour

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.  
Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.

VEHICLE PLANT NUMBER		HIRER /OWNER	
VEHICLE SERIAL NUMBER		DATE	
SITE		METHANE HOURS	
PROJECT/JOB NUMBER		MONEx HOURS	

**IMMEDIATE REPAIRS COMPLETED:**


**FUTURE REPAIRS REQUIRED:**


**TECHNICIANS**





PRINT NAME(S)		SIGN		DATE	
PRINT NAME(S)		SIGN		DATE	

**SUPERVISORS**

PRINT NAME(S)		SIGN		DATE	
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- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<p>1. PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</p> <p>2. Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</p> <p>3. All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</p> <p>4. Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</p> <p>5. When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</p> <p>6. Keep clear of suspended loads. Use Safety line to control load when required.</p> <p>7. Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</p> <p>8. Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</p> <p>9. Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</p> <p>10. Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</p> <p>11. Warning labels on machine must be observed</p>  <p>12. Prohibition labels on machine must be observed</p> 	<p>13. Information labels on machine must be observed</p>  <p>14. Service points on machine must be observed</p>  <p>15. Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</p> <p>16. Hot surfaces. Be aware of hot surfaces when machine has been running.</p> <p>17. Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</p> <p>18. Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</p> <p>19. Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</p> <p>20. Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</p> <p>21. Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</p> <p>22. Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</p> <p>23. Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</p>	<p>24. Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</p> <p>25. Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</p> <p>26. Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</p> <p>27. Current information: Ensure current information is available prior to commencing maintenance or repair task.</p> <p>28. Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</p> <p>29. Ventilation Ensure adequate ventilation when testing machine</p> <p>30. Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</p> <p>31. Stay clear of rotating parts</p> <p>32. Always use tools that are in good serviceable condition</p> <p>33. Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</p> <p>34. Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</p> <p>35. Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</p>
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REF. DOCS. AS3584.3, MDG1

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CODE C2 EXAMINATION - Maintenance	6 MONTHLY	1000
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CODE D1 EXAMINATION - Maintenance	2 YEARLY	4000
CODE D2 EXAMINATION - Maintenance	NOT YEARLY BASED	8000
<p><b>COMPLIANCE OVERHAUL - Mechanical</b></p> <p>CODE D MECHANICAL COMPLIANCE OVERHAUL</p> <p>Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent and are to be aligned with Maintenance Examinations CODE C level or greater</p>		<p><b>2 YEARLY / or 2000 engine hours</b></p> <p>– whichever is achieved first</p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>
<p><b>COMPLIANCE OVERHAUL - Electrical</b></p> <p>CODE D ELECTRICAL COMPLIANCE OVERHAUL</p> <p>Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent</p>		<p><b>4 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>

ENGINE SYSTEMS

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Vehicle Hours	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>		<p>* This symbol beside an instruction indicates there may be other activities to complete in conjunction with this task, potentially in a different area of this document. Eg. When the top engine cover is removed, you need to clean the engine side of the radiator, inspect the belts, wash out the engine bay etc.*</p>
Engine	<p><b>remove</b></p> <ul style="list-style-type: none"> <li>• covers and guards as required</li> </ul> <p><b>wash</b></p> <ul style="list-style-type: none"> <li>• vehicle after fitting wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices. Wash complete engine system and all engine bay areas of excessive coal, dust, oil, mud, and debris.</li> <li>• accumulated materials from the engine bay in a forward direction away from the radiator</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>• unusual knocks and noises</li> <li>• oil leaks</li> <li>• starter motor is secure</li> <li>• oil level</li> <li>• for damage or loose items</li> </ul>		
Engine Air Intake	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• air cleaner outer filter element</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>• system for security and leaks</li> <li>• hosing/pipe integrity</li> <li>• air charge pipe doesn't contact/rub on other components</li> <li>• air cleaner housing integrity</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Cooling System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• radiator thoroughly from the rear side and the front engine bay side with a high flow hose and detergent. Note! High pressure water at close range diagonally across radiator may fold over fins and restrict air flow</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• water pump FRAS V-belt tension and condition</li> <li>• engine cooling fan FRAS V-belts tension and condition</li> <li>• water pump belt tensioner pulley bearings</li> <li>• for leaks</li> <li>• fan blade condition/integrity</li> <li>• for blockages in cores on both sides of the radiator</li> <li>• radiator and pulley guards are in place and secure</li> <li>• check coolant is in sight glass on header tank</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• fan and idler pulley</li> </ul>		<p>Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations</p> <p>Recommended to use pre-mixed Caterpillar ELC (Extra Long life Coolant) or equivalent.</p>
Fuel System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments and potential water from the bottom of the primary fuel filter – record any contamination or water in the filter</li> <li>• sediments and potential water from fuel tank drain plug – record any contamination or water in the fuel tank</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• fuel hoses and fittings</li> <li>• fuel lines for contact on any hot components</li> <li>• fuel tank cap and strainer condition</li> <li>• for leaks</li> </ul>		
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• water/contaminants from air tank</li> <li>• water/contaminants from primary in-line water trap bowl in the articulation (no oil to be added)</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• leaks on system and repair/report</li> <li>• condition of all hoses and fittings</li> <li>• scrubber make up tank pressure – 5-7psi (35-50kPa)</li> </ul>		
Electronic Engine Management System	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• both scrubber water shutdown sensor responses using test buttons – hold in to see the MONEx display to communicate low water. Longer than a few seconds will trigger a shutdown event</li> <li>• scrubber water shutdown system via the upper ball valve drain point – isolate supply line and drain to this shutdown level</li> <li>• coolant loss operation via test valve</li> </ul>		<p>Do not apply high pressure water directly on electronic components</p>



	<ul style="list-style-type: none"> <li>engine oil pressure loss via test valve</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition and integrity of all MONEx electronic components.</li> <li>the following for incorrect parts, unauthorised modifications, missing parts/guards/covers, loss of identifying labels, cracks, missing seals, damage, erosion, corrosion, deterioration, loose items, fatigue and contamination             <ul style="list-style-type: none"> <li>a) temperature sensors</li> <li>b) pressure sensors</li> <li>c) timing sensors</li> <li>d) water level sensors</li> <li>e) display screen</li> <li>f) throttle</li> <li>g) battery unit</li> <li>h) solenoids</li> <li>i) fasteners</li> <li>j) mountings</li> <li>k) connectors</li> <li>l) protective boots</li> <li>m) glands</li> <li>n) cable management and routing</li> </ul> </li> <li>connectors for tamper proof cable tie. If missing cable tie, plugs and receptacles are uncoupled and inspected. Ensure connectors are clean, dry and seals are in place. Clean both male and female connectors with approved electrical cleaner/lubricant. Clean pin holes. Check for cracking insulators or discolouring. Ensure earthing is correct, the integrity of moisture and dust barriers intact, locking pins and fasteners are functional and secure. After reconnection, install tamper proof cable tie around connection.</li> </ul> <p><b>Test</b></p> <ul style="list-style-type: none"> <li>operation of the redundant path watchdog system (if fitted). Refer SWP CT2.24.</li> </ul>		
Mechanical Flameproof System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>scrubber tank by fully draining at the lower socket to remove built up exhaust residue. If a ball valve is used in this port, a plug must accompany it to comply with safety regulations.</li> <li>scrubber tank internally by hosing out with drain plug removed (use appropriate detergent as required)</li> <li>exhaust back pressure sensor adaptor by removing sensor from tank (use appropriate detergent as required)</li> </ul> <p><b>inspect.</b></p>		<p>Note! All parts, gaskets and fasteners relating the Code D mechanical integrity inspection must be genuine <b>COALTRAM®</b> parts to maintain approval compliance</p>

	<ul style="list-style-type: none"> <li>scrubber vibration mounts for wear or damage and ensure area is free from debris</li> <li>compliance labels, present, secure and in date</li> <li>all items for integrity, security and damage</li> <li>fasteners on the mechanical flameproof joints</li> <li>turbo mount for looseness or evidence of broken studs</li> <li>inlet system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>exhaust system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>check for excessive blue exhaust smoke and irritating fumes at varying load and rev ranges.</li> <li>add water conditioner to scrubber make up tank (if applicable to site). Note ; do not over dose the scrubber water with conditioner</li> </ul>		<p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>
Particulate Filter System (Option 1)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition, integrity and security of housing /components</li> <li>exhaust particulate filter and replace if required (If applicable to site) &gt;</li> </ul>		<p>Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) or Cosway (5520010707)</p>
Ceramic Wall-Flow Filter System (CWFF) (Option 2)	<p><b>Inspect</b></p> <ul style="list-style-type: none"> <li>Safety Isolation Valve x 2</li> <li>Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>Inlet &amp; Outlet Temperature Sensors</li> <li>Flame Trap – Pressure sensor x 2</li> <li>Electrical Cables</li> <li>HA110 (inc. push button, window, etc) (Visual)</li> <li>Junction box (Visual)</li> <li>HA116-H (Visual)</li> <li>Antenna</li> </ul> <p><b>Check</b></p> <ul style="list-style-type: none"> <li>Check filter element differential pressure using hi-idle test procedure &gt;</li> </ul>		<p>Hi-Idle Test Procedure (Ref. SWP CT 1.35) Pass Differential Pressure = &lt; 15kPa @ High Idle If &gt; 15 kPa then Filter Regen Required</p>

## VEHICLE SYSTEMS

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<p><b>wash</b></p> <ul style="list-style-type: none"> <li>entire vehicle thoroughly. Fit wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>steering articulation lock</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>boom safety support locks</li> <li>air, water and hydraulic hoses for damage</li> <li>safety triangles</li> <li>wheel chocks</li> </ul>		
Drive Train General	<b>inspect</b> <ul style="list-style-type: none"> <li>integrity of breather hoses/lines</li> <li>security of axle mounting bolts and potential movement between housings and frame &gt;</li> </ul>		
Drive Train Shafts	<b>inspect</b> <ul style="list-style-type: none"> <li>all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>all driveline fasteners, shafts and universals for security and damage.</li> </ul>		
Drive Train Lubrication	<b>inspect</b> <ul style="list-style-type: none"> <li>transmission oil level with engine idling</li> <li>upbox oil level</li> <li>for oil leaks</li> <li>hub seals for leaks</li> </ul>		
Wheels and Tyres	<b>inspect</b> <ul style="list-style-type: none"> <li>for loose and missing wheel nuts</li> <li>tyres for damage</li> <li>for flat tyres</li> </ul>		<p>Note! Always refer to tyre manufacturers for specific tyre pressures. Always follow site requirements for tyre inspections. Specs below are general ranges only</p> <p><b>Air filled - Front</b> 8.0 Bar / 116 psi <b>Air filled - Rear</b> 6.0 Bar / 87 psi</p>
Hydraulic General	<b>inspect</b> <ul style="list-style-type: none"> <li>for damage</li> <li>for oil leaks</li> <li>visually check accessible hydraulic hoses, fittings and components</li> <li>functionality of all hydraulics</li> <li>discolouration or aeration of the oil</li> <li>crowd cylinder (CT08/CT10LP only) - inspect for signs that the rod clevis has moved - look for gap between rod shoulder and clevis.</li> <li>crowd cylinder (CT08/CT10LP only) - Inspect all the clevis clamp bolts are in place and secure with no visible signs of movement.</li> </ul>		
Hydraulic Lubrication	<b>inspect</b> <ul style="list-style-type: none"> <li>return filter restriction indicator– if extended and protruding, replace filters and check again after running.</li> <li>oil level at front swing open tank sight glass with engine stopped</li> <li>oil level at rear main tank sight glass with engine running</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Braking System	<b>inspect</b> <ul style="list-style-type: none"> <li>for leaks</li> <li>brake operation by practical test &gt;</li> </ul>		Refer site compliance
Frame	<b>inspect</b> <ul style="list-style-type: none"> <li>for damage and missing parts</li> <li>all towing points</li> <li>all covers, guards, latches and hinges for operation, damage and wear</li> <li>ROPS/FOPS canopy for security, damage and compliance plate</li> </ul>		
Vehicle Safety Interlocks	<b>check</b> <ul style="list-style-type: none"> <li>door interlock valve is operational - park brake applies when door opened</li> <li>neutral start valve is operational - vehicle will not start in FWD or REV</li> <li>door alarm latch function - when Park Brake is released, partly open door latch for audible horn response</li> <li>steering is isolated when park brake is applied</li> </ul>		
Cab Section	<b>inspect</b> <ul style="list-style-type: none"> <li>gauges are all operational</li> <li>seat condition, seat suspension for operation, airbag and shock absorber condition and operation</li> <li>horn operation via button on dash</li> <li>brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>emergency brake operation function by applying park brake while moving slowly</li> <li>service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>operation of all hydraulic functions</li> <li>steering operations</li> <li>door handle operation</li> <li>pinch point prevention lever on top of the door</li> <li>master hitch removal function isolates until door mounted twist knob is operated</li> <li>for operational interference around all control levers, brake and accelerator pedals</li> <li>condition and security of rubber boot on stick steering lever</li> <li>condition and security of rubber boot on main hydraulic lever</li> </ul>		
Vehicle Flameproof Electrical Systems	<b>inspect</b> <ul style="list-style-type: none"> <li>operation of all lights (including directional lighting if applicable)</li> <li>positioning of light directions/ projections</li> <li>clean light lenses and any other enclosure windows</li> </ul>		Note! Do not hose water directly on alternator when at operating temperatures

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• check camera display and directional switching is operational (if applicable)</li> <li>• Fifth light functionality if fitted</li> </ul> <p><b>check</b> condition/integrity of following items</p> <ul style="list-style-type: none"> <li>• hosing and cabling</li> <li>• installation and mounting areas for potential hazards</li> <li>• fastener security</li> <li>• alternators mountings and surrounding area for excessive debris. Clean as required &gt;</li> <li>• alternator bearings, mounts, drive covers and drive couplings for wear, noise or damage</li> </ul>		
Manual Greasing	<p><b>grease</b></p> <ul style="list-style-type: none"> <li>• all points on vehicle, check all are receiving grease</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• grease lines for damage/leaks</li> </ul>		
Autolube System (If Applicable)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• operation of autolube greaser</li> <li>• grease lines for leaks</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• grease cartridges</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>• visual evidence of grease at all joints</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• fire extinguisher indicator gauge(s) are in the green zone</li> <li>• bottle(s) condition</li> <li>• condition of fire extinguisher brackets/clamps</li> <li>• tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• fire suppression system indicator gauge is in the green zone</li> <li>• condition/integrity of fire suppression bottle, lines and nozzles</li> <li>• relevant statutory inspections have been completed (system to be tagged/dated)</li> </ul>		
Site Compliance	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• brake test has been carried out as per site regulations</li> <li>• gas test has been carried out as per site regulations</li> </ul>		

<b>LUBRICANTS</b>									
<b>COMPONENT</b>			<b>FLUID TYPE</b>				<b>CAPACITY</b>		
ENGINE			SAE 15W40				30L		
RADIATOR/ENGINE			PRE-MIX 100% SAE COOLANT				68L - FILL VERY SLOWLY, BLEED AIR FROM EXHAUST COOLING LINES		
UP BOX			90W				2L - FILL VERY SLOWLY		
TRANVERTER/TRANSMISSION			10W/30				25L - CHECK WITH ENGINE RUNNING		
DIFFERENTIALS			85W140				18L EACH		
PLANETARIES			85W140				3.7L EACH		
HYDRAULIC TANK			10W/30 - WET BRAKE COMPLIANT				160L - CHECK MAIN REAR TANK LEVEL WITH ENGINE RUNNING, AND FRONT TANK WITH ENGINE STOPPED		
<b>FILTERS AND SERVICE ITEM PART NUMBERS</b>				<b>MAINTENANCE INTERVAL REQUIREMENTS</b>					
<b>DESCRIPTION</b>		<b>PART NUMBER</b>	<b>QTY</b>	<b>CODE B</b>					
<b>SERVICE KIT PART NUMBER</b>				<b>5520000240</b>					
<b>FILTERS</b>				<b>Weekly / 50Hr</b>					
Air Filter (Outer)		5520000240	1	•					

**Additional Parts not included in service kit**

<b>DESCRIPTION</b>	<b>PART NUMBER</b>	<b>QTY</b>
Autolube grease cartridge 450gm	5520001696	2

**COALTRAM® CT08/CT10/CT10LP – CODE C MAINTENANCE – Monthly /250 Hour**

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.  
Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.





<b>VEHICLE PLANT NUMBER</b>		<b>HIRER /OWNER</b>	
<b>VEHICLE SERIAL NUMBER</b>		<b>DATE</b>	
<b>SITE</b>		<b>METHANE HOURS</b>	
<b>PROJECT/JOB NUMBER</b>		<b>MONEx HOURS</b>	

<b>IMMEDIATE REPAIRS COMPLETED:</b>	
<b>FUTURE REPAIRS REQUIRED:</b>	

<b>Technician ID</b>	<b>Initials</b>		<b>Print Name</b>		<b>Sign</b>		<b>Date</b>	
<b>Technician ID</b>	<b>Initials</b>		<b>Print Name</b>		<b>Sign</b>		<b>Date</b>	
<b>Supervisor ID</b>	<b>Initials</b>		<b>Print Name</b>		<b>Sign</b>		<b>Date</b>	

**COALTRAM MAINTENANCE SAFETY INFORMATION**

- Ensure that all safety information is read and understood before maintenance or repair task is performed
- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<p>1. PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</p> <p>2. Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</p> <p>3. All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</p> <p>4. Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</p> <p>5. When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</p> <p>6. Keep clear of suspended loads. Use Safety line to control load when required.</p> <p>7. Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</p> <p>8. Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</p> <p>9. Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</p> <p>10. Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</p> <p>11. Warning labels on machine must be observed</p>  <p>12. Prohibition labels on machine must be observed</p> 	<p>13. Information labels on machine must be observed</p>  <p>14. Service points on machine must be observed</p>  <p>15. Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</p> <p>16. Hot surfaces. Be aware of hot surfaces when machine has been running.</p> <p>17. Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</p> <p>18. Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</p> <p>19. Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</p> <p>20. Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</p> <p>21. Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</p> <p>22. Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</p> <p>23. Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</p>	<p>24. Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</p> <p>25. Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</p> <p>26. Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</p> <p>27. Current information: Ensure current information is available prior to commencing maintenance or repair task.</p> <p>28. Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</p> <p>29. Ventilation Ensure adequate ventilation when testing machine</p> <p>30. Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</p> <p>31. Stay clear of rotating parts</p> <p>32. Always use tools that are in good serviceable condition</p> <p>33. Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</p> <p>34. Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</p> <p>35. Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</p>
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**RECOMMENDED COALTRAM MAINTENANCE AND COMPLIANCE SCHEDULE**

REF. DOCS. AS3584.3, MDG1

<u>MAINTENANCE EXAMINATION CODE</u>	<u>CALENDER BASED REGIME</u>	<u>ENGINE HOURS REGIME</u>
CODE A EXAMINATION - Maintenance	DAILY	10 Nominal
CODE B EXAMINATION - Maintenance	WEEKLY	50 Nominal
<b>CODE C EXAMINATION - Maintenance</b>	<b>MONTHLY</b>	<b>250 Nominal</b>
CODE C1 EXAMINATION - Maintenance	3 MONTHLY	500 Nominal
CODE C2 EXAMINATION - Maintenance	6 MONTHLY	1000 Nominal
CODE D EXAMINATION – Maintenance	2 YEARLY	2000 - 2500
CODE D1 EXAMINATION - Maintenance	4 YEARLY	4000 - 5000
CODE D2 EXAMINATION - Maintenance	NOT YEARLY BASED	8000

<p><b>COMPLIANCE OVERHAUL - Mechanical</b></p> <p>CODE D MECHANICAL COMPLIANCE OVERHAUL</p> <p>Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent and are to be aligned with Maintenance Examinations CODE C level or greater</p>	<p><b>2 YEARLY / or 2000 engine hours</b></p> <p>– whichever is achieved first</p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>
<p><b>COMPLIANCE OVERHAUL - Electrical</b></p> <p>CODE D ELECTRICAL COMPLIANCE OVERHAUL</p> <p>Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent</p>	<p><b>4 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>

**COALTRAM® ENGINE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS									
Vehicle Hours	<p><b>check</b></p> <ul style="list-style-type: none"> <li>engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>											
Engine	<p><b>remove</b></p> <ul style="list-style-type: none"> <li>covers and guards as required</li> </ul> <p><b>wash</b></p> <ul style="list-style-type: none"> <li>vehicle after fitting wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices. Wash complete engine system and all engine bay areas of excessive coal, dust, oil, mud, and debris.</li> <li>accumulated materials from the engine bay in a forward direction away from the radiator</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>unusual knocks and noises</li> <li>oil leaks</li> <li>engine mounts and bolts</li> <li>starter motor is secure</li> <li>sump security / integrity and corrosion</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>engine oil</li> <li>engine oil filter</li> <li>turbo saviour oil filter</li> </ul> <p><b>re-check</b></p> <ul style="list-style-type: none"> <li>after running engine</li> <li>oil level</li> <li>leaks</li> <li>oil pressure &gt; Record result at operating temperature</li> <li>idle, flight rpm &gt; Record result</li> </ul>		<p>Tensions -</p> <ul style="list-style-type: none"> <li>engine mount bolts. 189 Nm (139 ft/lbs)</li> </ul> <p>Record results with engine at operating temp –</p> <p>Oil Pressure (Min 140 kPa / 20psi) – Idle _____</p> <p>Oil Pressure (550± 140 kPa / 80± 20psi) - Max Revs _____</p> <p>Idle &amp; flight RPM results</p> <table border="1" data-bbox="1459 938 1885 1045"> <thead> <tr> <th>RPM</th> <th>Spec</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Idle</td> <td>830-880</td> <td></td> </tr> <tr> <td>Flight</td> <td>2220 +/- 50</td> <td></td> </tr> </tbody> </table>	RPM	Spec	Result	Idle	830-880		Flight	2220 +/- 50	
RPM	Spec	Result										
Idle	830-880											
Flight	2220 +/- 50											
Engine Air Intake	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>air cleaner outer filter element</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>system for security and leaks</li> <li>hosing/pipe integrity</li> <li>air charge pipe doesn't contact/rub on other components</li> <li>air cleaner housing integrity</li> </ul>											

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Cooling System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>radiator thoroughly from the rear side and the front engine bay side with a high flow hose and detergent. Note! High pressure water at close range diagonally across radiator may fold over fins and restrict air flow</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>water pump FRAS V-belt - ensure correct tension after test running for a short period of time</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>engine cooling fan FRAS V-belts tension and condition</li> <li>water pump belt tensioner pulley bearings</li> <li>condition and security of radiator hoses</li> <li>for leaks</li> <li>fan hub and tensioner bearings for excessive movement</li> <li>radiator mounting bolts</li> <li>fan blade condition/integrity</li> <li>fan position in shroud (ensure centralised and correct protrusion 18mm to 22mm of blade protruding past shroud towards engine</li> <li>for blockages in cores on both sides of the radiator</li> <li>radiator and pulley guards are in place and secure</li> <li>coolant is correct mix - coloured pre-mix &gt;</li> <li>check coolant is in sight glass on header tank</li> <li>radiator cap condition and ensure 13psi rating</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>fan and idler pulley</li> </ul>		<p>Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations</p> <p>Recommended to use pre-mixed Caterpillar ELC (Extra Long life Coolant) or equivalent.</p>
Fuel System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>sediments and potential water from fuel tank drain plug – record any contamination or water in the fuel tank</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>all fuel filters</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>fuel hoses and fittings</li> <li>fuel lines for contact on any hot components</li> <li>fuel tank cap and strainer condition</li> <li>fuel gauge level/operation/condition</li> <li>for leaks</li> </ul>		
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>water/contaminants from air tank</li> <li>water/contaminants from primary in-line water trap bowl in the articulation (no oil to be added)</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• water/contaminants from secondary in-line water trap bowl behind the MONEx display dash panel (no oil to be added)</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• air charge Y strainer</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• air compressor delivery hose condition – ensure it's a braided steel PTFE type</li> <li>• air tank relief valve operation (pull ring to ensure releases air and reseals)</li> <li>• leaks on system and repair/report</li> <li>• compressor cut out pressure 115-120psi (800– 850 kPa)</li> <li>• condition of all hoses and fittings</li> <li>• scrubber make up tank pressure – 5-7psi (35-50kPa)</li> <li>• safety circuit reduced pressure – 90-100psi (620– 690 kPa) – located behind the MONEx display dash panel</li> <li>• air compressor braided steel PTFE delivery line and fittings internally for any accumulated carbon – replace parts if carbon build up present</li> </ul>		
Electronic Engine Management System	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• both scrubber water shutdown sensor responses using test buttons – hold in to see the MONEx display to communicate low water. Longer than a few seconds will trigger a shutdown event</li> <li>• scrubber water shutdown system via the upper ball valve drain point – isolate supply line and drain to this shutdown level</li> <li>• coolant loss operation via test valve</li> <li>• engine oil pressure loss via test valve</li> <li>• MONEx start sequence function is correct. Apart from other visual inspections this would indicate safety controls and cabling are serviceable at time of inspection</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition and integrity of all MONEx electronic components.</li> <li>• the following for incorrect parts, unauthorised modifications, missing parts/guards/covers, loss of identifying labels, cracks, missing seals, damage, erosion, corrosion, deterioration, loose items, fatigue and contamination               <ol style="list-style-type: none"> <li>a) temperature sensors</li> <li>b) pressure sensors</li> <li>c) timing sensors</li> <li>d) water level sensors</li> <li>e) display screen</li> </ol> </li> </ul>		<p>These mechanical inspections do not negate recommended 4 yearly regional and site statutory electrical inspection regimes.</p> <p>Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Refer separate statutory electrical inspection sheet.</p> <p>Do not apply high pressure water directly on electronic components</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>f) throttle</li> <li>g) battery unit</li> <li>h) solenoids</li> <li>i) fasteners</li> <li>j) mountings</li> <li>k) connectors</li> <li>l) protective boots</li> <li>m) glands</li> <li>n) cable management and routing</li> </ul> <ul style="list-style-type: none"> <li>• connectors for tamper proof cable tie. If missing cable tie, plugs and receptacles are to be uncoupled and inspected. Ensure connectors are clean, dry and seals are in place. Clean both male and female connectors with approved electrical cleaner/lubricant. Clean pin holes. Check for cracking insulators or discolouring. Ensure earthing is correct, the integrity of moisture and dust barriers intact, locking pins and fasteners are functional and secure. After reconnection, install tamper proof cable tie around connection.</li> </ul> <p><b>Test</b> operation of the redundant path watchdog system (if fitted). Refer SWP CT2.24.</p> <p><b>record</b></p> <ul style="list-style-type: none"> <li>• MONEx Fault Log history – manual screen search and record problematic events and/or historic concerns of interest AND/OR electronic upload and capture of data using the MONEx LRS (Log Retrieval System) &gt;</li> </ul>		<p>Earlier MONEx versions do not have the ability to use the LRS electronic upload</p>
<p>Mechanical Flameproof System</p>	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• scrubber tank by fully draining at the lower socket to remove built up exhaust residue. If a ball valve is used in this port, a plug must accompany it to comply with safety regulations.</li> <li>• scrubber tank internally by hosing out with drain plug removed (use appropriate detergent as required)</li> <li>• y-piece strainer in scrubber fill line</li> </ul> <p><b>inspect.</b></p> <ul style="list-style-type: none"> <li>• scrubber vibration mounts for wear or damage and ensure area is free from debris</li> <li>• compliance labels, present, secure and in date</li> <li>• all items for integrity, security and damage</li> <li>• fasteners on the mechanical flameproof joints</li> <li>• turbo mount for looseness or evidence of broken studs</li> </ul>		<p><b>DES Explosion Protected Joint Torque Spec</b></p> <ul style="list-style-type: none"> <li>- All M8 : 22Nm / 16lbft ( wet)</li> <li>- All M10 : 44Nm / 32lbft ( wet)</li> <li>- All 3/8"unc : 51Nm / 38lbft ( wet)</li> </ul>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>inlet system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>exhaust system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>check for excessive blue exhaust smoke and irritating fumes at varying load and rev ranges.</li> <li>add water conditioner to scrubber make up tank (if applicable to site). Note; do not over dose the scrubber water with conditioner</li> <li>scrubber static water level when stopped using the scrubber dipstick</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>sediments/contamination from the scrubber make-up tank via the tanks bottom drain plug – remove cap to depressurise first</li> </ul>		<p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>
Particulate Filter System (Option 1)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition, integrity and security of housing /components</li> <li>for exhaust leaks</li> <li>exhaust particulate filter and replace if required (If applicable to site) &gt;</li> </ul>		<p>Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) or Cosway (5520010707)</p>
Ceramic Wall-Flow Filter System (CWFF) (Option 2)	<p><b>Inspect</b></p> <ul style="list-style-type: none"> <li>Safety Isolation Valve x 2</li> <li>Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>Inlet &amp; Outlet Temperature Sensors</li> <li>Ex Gland, adapters, spigots, conduits, etc (Monitor and Shutdown System, CWFF)</li> <li>Flame Trap – Pressure sensor x 2</li> <li>Electrical Cables</li> <li>HA110 (inc. push button, window, etc) (Visual)</li> <li>Junction box (Visual)</li> <li>HA116-H (Visual)</li> <li>Antenna</li> </ul> <p><b>Check</b></p> <ul style="list-style-type: none"> <li>Check filter element differential pressure using hi-idle test procedure &gt;</li> <li></li> </ul>		<p>Hi-Idle Test Procedure (Ref. SWP CT 1.35) Pass Differential Pressure = &lt; 15kPa @ High Idle If &gt; 15 kPa then Filter Regen Required</p>

COALTRAM® VEHICLE SYSTEMS

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<p><b>wash</b></p> <ul style="list-style-type: none"> <li>entire vehicle thoroughly. Fit wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>steering articulation lock</li> <li>boom safety support locks</li> <li>air, water and hydraulic hoses for damage</li> <li>safety triangles</li> <li>wheel chocks</li> </ul>		
Drive Train General	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all component breathers (transmission, differentials, upbox)</li> <li>integrity of breather hoses/lines</li> <li>security of upbox mounting bolts</li> <li>security of transverter mounts and bolts</li> <li>security of axle mounting bolts and potential movement between housings and frame &gt;</li> </ul>		<p>Front axle bolts - 633Nm (467ftlb) Rear axle bolts - 366Nm (270ftlb)</p>
Drive Train Shafts	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>front axle driveshaft universals/slip joint for wear</li> <li>rear axle driveshaft universals/slip joint for wear</li> <li>driveline centre bearings x 2</li> <li>transverter to centre bearing universals/slip joint for wear</li> <li>upbox / transverter drive shaft universals/slip joint for wear</li> <li>all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>all driveline fasteners, check they are all tight by using appropriate tools</li> </ul>		
Drive Train Lubrication	<p><b>Replace</b></p> <ul style="list-style-type: none"> <li>transmission filter</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>transmission oil level with engine idling</li> <li>all four wheel ends/planetary oil levels</li> <li>front and rear differential centre oil levels</li> <li>upbox oil level</li> <li>for oil leaks after test driving</li> <li>hub seals for leaks</li> </ul>		
Wheels and Tyres	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>for loose and missing wheel nuts</li> <li>tyres for damage and record condition and % of tread remaining &gt;</li> </ul>		<p>Note! Always refer to tyre manufacturers for specific tyre pressures. Always follow site requirements for tyre inspections. Specs below are nominal ranges only</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>tyre pressures with gauge (if pneumatic or air/water filled) &gt;</li> <li>tyre ID labels are in place (e.g. foam filled/solid/ water filled)</li> <li>for compliance labels if pneumatic</li> <li>wheel rim and lock ring for damage/ missing parts</li> </ul>		<p><b>Air filled - Front</b> 7 - 8.0 Bar / 100 -116 psi</p> <p><b>Air filled - Rear</b> 5 - 6.0 Bar / 70 -87 psi</p>
Hydraulic General	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition of all cylinders</li> <li>crowd cylinder (CT08/CT10LP only) - inspect for signs that the rod clevis has moved - look for gap between rod shoulder and clevis.</li> <li>crowd cylinder (CT08/CT10LP only) - Inspect all the clevis clamp bolts are in place and secure with no visible signs of movement.</li> <li>for oil leaks</li> <li>visually check accessible hydraulic hoses, fittings and components</li> <li>functionality of all hydraulics</li> <li>discolouration or aeration of the oil</li> </ul>		
Hydraulic Lubrication	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>return filter restriction indicator– if extended and protruding, replace filters and check again after running.</li> <li>oil level at front swing open tank sight glass with engine stopped</li> <li>oil level at rear main tank sight glass with engine running</li> <li>hydraulic tank breather condition and security</li> <li>air operated oil fill pump for operation</li> </ul>		
Braking System	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all accessible brake hoses.</li> <li>brake functions using either the NSW MDG39 or QLD Brake Test Form &gt;</li> </ul>		Refer site compliance section below
Frame	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all towing, lifting, tie down points and safety chains</li> <li>integrity of crowd cylinder clevises, bolts and bosses</li> <li>all covers, guards, latches and hinges for operation, damage and wear</li> <li>master hitch lock cylinder operation. Check eject/retract direction is correct</li> <li>ROPS/FOPS canopy for security, damage and compliance plate</li> <li>implement /attachment profile with template or against approved GA drawings.</li> <li>master hitch cradle profile with template or against approved GA drawings.</li> <li>security of oscillation/bolster mount bolts</li> <li>inspect all split caps trunnion fasteners on the articulation, boom, cylinders, master hitch and steering</li> </ul>		<p><b>CT08 /10 Common Torque Specifications</b></p> <ul style="list-style-type: none"> <li>Hitch / QDS cap bolt 1480Nm (1092ftlb)</li> <li>Steer cylinder cap bolt 366Nm (270ftlb)</li> <li>Articulation cap bolt 633Nm (467ftlb)</li> <li>Canopy M22 499Nm (368ftlb)</li> <li>Canopy M30 1253Nm (924ftlb)</li> </ul> <p><b>CT08 Specific Torque Specifications</b></p> <ul style="list-style-type: none"> <li>Crowd cylinder cap bolt 1480Nm (1092ftlb)</li> </ul> <p><b>CT10 Specific Torque Specifications</b></p> <ul style="list-style-type: none"> <li>Lift cylinder cap bolt 633Nm (467ftlb)</li> </ul>



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• bucket tongue fasteners</li> </ul> <p><b>check</b> correct operation and record wear in -</p> <ul style="list-style-type: none"> <li>• articulation points</li> <li>• lift arm</li> <li>• bucket pins</li> <li>• steering pins</li> <li>• bolster (axle oscillation points)</li> <li>• tilt/crowd cylinder</li> <li>• lift cylinders</li> <li>• master hitch cylinder(s)</li> </ul>		<ul style="list-style-type: none"> <li>• Crowd cylinder cap bolt 633Nm (467ftlb)</li> <li>• Boom Pivot cap bolt 1480Nm (1092ftlb)</li> <li>• Z Bar Pivot cap bolt 1562Nm (1152ftlb)</li> <li>• Dog bones cap bolt 1480Nm (1092ftlb)</li> </ul>
Vehicle Safety Interlocks	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• door interlock valve is operational - park brake applies when door opened</li> <li>• neutral start valve is operational - vehicle will not start in FWD or REV</li> <li>• door alarm latch function - when Park Brake is released, partly open door latch for audible horn response</li> <li>• hydraulic door interlock valve function - park brake will not release when hydraulic door is opened</li> <li>• rig bolter/hydraulics – boom hydraulic functions will not operate whilst MONEx rig bolter mode engaged</li> <li>• Steering is isolated when park brake is applied</li> </ul>		<p>Delay Time _____</p>
Cab Section	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• gauges are all operational</li> <li>• all gauge pressures and temps at operating temperature – record results &gt;</li> <li>• seat condition, seat suspension for operation, airbag and shock absorber condition and operation</li> <li>• seat base, swivel and mountings for security/integrity</li> <li>• all upholstery in cabin</li> <li>• horn operation via button on dash</li> <li>• brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>• emergency brake operation function by applying park brake while moving slowly</li> <li>• service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>• operation of all hydraulic functions</li> <li>• steering operations</li> <li>• door handle operation</li> <li>• pinch point prevention lever on top of the door</li> </ul>		<p>Coolant Temp _____</p> <p>Transmission Temp _____</p> <p>Hydraulic Temp _____</p> <p>Brake Accum Pressure _____</p> <p>Brake Release Pressure _____</p> <p>Transmission Pressure _____</p> <p>Eng. Oil Pressure _____</p> <p>Air Pressure _____</p> <p>Back Pressure _____</p>



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>visual evidence of grease at all joints</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<p><b>check</b></p> <ul style="list-style-type: none"> <li>fire extinguisher indicator gauge(s) are in the green zone</li> <li>bottle(s) condition</li> <li>condition of fire extinguisher brackets/clamps</li> <li>tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<p><b>check</b></p> <ul style="list-style-type: none"> <li>fire suppression system indicator gauge is in the green zone</li> <li>condition/integrity of fire suppression bottle, lines and nozzles</li> <li>relevant statutory inspections have been completed (system to be tagged/dated)</li> </ul>		
Site Compliance	<p><b>check</b></p> <ul style="list-style-type: none"> <li>brake test has been carried out as per site regulations</li> <li>gas test has been carried out as per site regulations</li> <li>exhaust gas emissions are within baseline testing specification limits &gt;</li> </ul>		>Refer to the vehicles approval documents for base line gas testing >Test with engine at operating temperature

<b>LUBRICANTS</b>		
<b>COMPONENT</b>	<b>FLUID TYPE</b>	<b>CAPACITY</b>
ENGINE	SAE 15W40	23L
RADIATOR/ENGINE	PRE-MIX 100% SAE COOLANT	68L - Fill Very Slowly, Bleed Air From Exhaust Cooling Lines
UP BOX	90W( Alternatively 80W/90 or 85W/90 or similar)	2L – Fill Very Slowly
TRANSVERTER/TRANSMISSION	10W/30	25L – Check With Engine Running
DIFFERENTIALS	85W140 (Alternatively HLS 90W)	18L Each
PLANETARIES	85W140 (Alternatively HLS 90W)	3.7L Each
HYDRAULIC TANK	10W/30 – WET BRAKE COMPLIANT (Alternatively Tellus 68 or equivalent)	160L – Check Main Rear Tank Level With Engine Running. And Front Tank With Engine Stopped

<b>FILTERS AND SERVICE ITEM PART NUMBERS</b>			<b>MAINTENANCE INTERVAL REQUIREMENTS</b>						
<b>DESCRIPTION</b>	<b>PART NUMBER</b>	<b>QTY</b>			<b>CODE C</b>				
<b>SERVICE KIT PART NUMBER</b>					<b>5520001777</b>				
<b>FILTERS</b>									
Air Filter (Outer)	5520000240	1			•				
Engine Oil Filter	5520000494	1			•				
Turbo Saviour Filter	5520000177	1			•				
Fuel Filter – Primary Water Separator	5520000648	1			•				
Fuel Filter – Secondary	5520001765	1			•				
Transverter Filter	5520001237	1			•				
Transverter Filter Housing O Ring	9236201751	1			•				
<b>PARTS</b>					•				
Water Pump Belt	5520000384	1			•				
Water Pump Belt (Relocated Tensioner)	5520011040	1 #			#				

#Item not included in standard kit.

#### Additional Parts not included in service kit

<b>DESCRIPTION</b>	<b>PART NUMBER</b>	<b>QTY</b>
Autolube grease cartridge 450gm	5520001696	2

**COALTRAM® CT08/CT10/CT10LP – CODE C1 MAINTENANCE – 3 Monthly / 500 hour**

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.

Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.





VEHICLE PLANT NUMBER		HIRER /OWNER	
VEHICLE SERIAL NUMBER		DATE	
SITE		METHANE HOURS	
PROJECT/JOB NUMBER		MONEx HOURS	

<b>IMMEDIATE REPAIRS COMPLETED:</b>	
<b>FUTURE REPAIRS REQUIRED:</b>	

Technician ID	Initials	Print Name	Sign	Date
Technician ID	Initials	Print Name	Sign	Date
Supervisor ID	Initials	Print Name	Sign	Date

**COALTRAM MAINTENANCE SAFETY INFORMATION**

- Ensure that all safety information is read and understood before maintenance or repair task is performed
- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<p>1. PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</p> <p>2. Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</p> <p>3. All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</p> <p>4. Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</p> <p>5. When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</p> <p>6. Keep clear of suspended loads. Use Safety line to control load when required.</p> <p>7. Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</p> <p>8. Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</p> <p>9. Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</p> <p>10. Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</p> <p>11. Warning labels on machine must be observed</p>  <p>12. Prohibition labels on machine must be observed</p> 	<p>13. Information labels on machine must be observed</p>  <p>14. Service points on machine must be observed</p>  <p>15. Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</p> <p>16. Hot surfaces. Be aware of hot surfaces when machine has been running.</p> <p>17. Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</p> <p>18. Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</p> <p>19. Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</p> <p>20. Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</p> <p>21. Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</p> <p>22. Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</p> <p>23. Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</p>	<p>24. Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</p> <p>25. Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</p> <p>26. Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</p> <p>27. Current information: Ensure current information is available prior to commencing maintenance or repair task.</p> <p>28. Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</p> <p>29. Ventilation Ensure adequate ventilation when testing machine</p> <p>30. Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</p> <p>31. Stay clear of rotating parts</p> <p>32. Always use tools that are in good serviceable condition</p> <p>33. Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</p> <p>34. Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</p> <p>35. Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</p>
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**RECOMMENDED COALTRAM MAINTENANCE AND COMPLIANCE SCHEDULE**

REF. DOCS. AS3584.3, MDG1

<u>MAINTENANCE EXAMINATION CODE</u>	<u>CALENDER BASED REGIME</u>	<u>ENGINE HOURS REGIME</u>
CODE A EXAMINATION - Maintenance	DAILY	10 Nominal
CODE B EXAMINATION - Maintenance	WEEKLY	50 Nominal
CODE C EXAMINATION - Maintenance	MONTHLY	250 Nominal
<b>CODE C1 EXAMINATION - Maintenance</b>	<b>3 MONTHLY</b>	<b>500 Nominal</b>
CODE C2 EXAMINATION - Maintenance	6 MONTHLY	1000 Nominal
CODE D EXAMINATION – Maintenance	2 YEARLY	2000 - 2500
CODE D1 EXAMINATION - Maintenance	4 YEARLY	4000 - 5000
CODE D1 EXAMINATION - Maintenance	NOT YEARLY BASED	8000

<p><b>COMPLIANCE OVERHAUL - Mechanical</b></p> <p>CODE D MECHANICAL COMPLIANCE OVERHAUL</p> <p>Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent and are to be aligned with Maintenance Examinations CODE C level or greater</p>	<p><b>2 YEARLY / or 2000 engine hours</b></p> <p>– whichever is achieved first</p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>
<p><b>COMPLIANCE OVERHAUL - Electrical</b></p> <p>CODE D ELECTRICAL COMPLIANCE OVERHAUL</p> <p>Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent</p>	<p><b>4 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>

COALTRAM® ENGINE SYSTEMS

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS									
Vehicle Hours	<p><b>check</b></p> <ul style="list-style-type: none"> <li>engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>											
Engine	<p><b>remove</b></p> <ul style="list-style-type: none"> <li>covers and guards as required</li> </ul> <p><b>wash</b></p> <ul style="list-style-type: none"> <li>vehicle after fitting wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices. Wash complete engine system and all engine bay areas of excessive coal, dust, oil, mud, and debris.</li> <li>accumulated materials from the engine bay in a forward direction away from the radiator</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>unusual knocks and noises</li> <li>oil leaks</li> <li>engine mounts and bolts</li> <li>starter motor is secure</li> <li>sump security / integrity and corrosion</li> <li>water ingress into engine flywheel housing – remove bottom plug and record contents</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>engine breather</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>engine oil</li> <li>engine oil filter</li> <li>turbo saviour oil filter</li> </ul> <p><b>re-check</b></p> <ul style="list-style-type: none"> <li>after running engine</li> <li>oil level</li> <li>leaks</li> <li>oil pressure &gt; Record result at operating temperature</li> <li>idle, flight rpm &gt; Record result</li> </ul>		<p>Tensions -</p> <ul style="list-style-type: none"> <li>engine mount bolts. 189 Nm(139 ft/lbs)</li> </ul> <p>Record results with engine at operating temp –</p> <p>Oil Pressure (Min 140 kPa / 20psi) – Idle _____</p> <p>Oil Pressure (550± 140 kPa / 80± 20psi) - Max Revs _____</p> <p>Idle &amp; flight RPM results</p> <table border="1"> <thead> <tr> <th>RPM</th> <th>Spec</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Idle</td> <td>830-880</td> <td></td> </tr> <tr> <td>Flight</td> <td>2220 +/- 50</td> <td></td> </tr> </tbody> </table>	RPM	Spec	Result	Idle	830-880		Flight	2220 +/- 50	
RPM	Spec	Result										
Idle	830-880											
Flight	2220 +/- 50											
Engine Air Intake	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>air cleaner inner and outer filter elements</li> </ul>											



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>• system for security and leaks</li> <li>• hosing/pipe integrity</li> <li>• air charge pipe doesn't contact/rub on other components</li> <li>• air cleaner housing integrity</li> <li>• test operation of choker/strangler valve as per workplace instructions</li> </ul>		<p>Refer to Standard Work Procedures or the Service Manual for detailed Choker test instructions. Incorrect choker testing can cause engine damage</p>
Cooling System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• radiator thoroughly from the rear side and the front engine bay side with a high flow hose and detergent. Note! High pressure water at close range diagonally across radiator may fold over fins and restrict air flow</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• water pump belt tensioner pulley bearing (not required until 1,000hr service if greaseable pulley installed)</li> <li>• water pump FRAS V-belt - ensure correct tension after test running for a short period of time</li> <li>• engine cooling fan FRAS V-belts - ensure correct tension after test running for a short period of time</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition and security of radiator hoses</li> <li>• for leaks</li> <li>• fan hub and tensioner bearings for excessive movement</li> <li>• radiator mounting bolts</li> <li>• fan blade condition/integrity</li> <li>• fan position in shroud (ensure centralised and correct protrusion 18mm to 22mm of blade protruding past shroud towards engine</li> <li>• for blockages in cores on both sides of the radiator</li> <li>• radiator and pulley guards are in place and secure</li> <li>• coolant is correct mix - coloured pre-mix &gt;</li> <li>• check coolant is in sight glass on header tank</li> <li>• radiator cap condition and ensure 13psi rating</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• fan and idler pulley</li> </ul>		<p>Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations</p> <p>Recommended to use pre-mixed Caterpillar ELC (Extra Long life Coolant) or equivalent.</p>
Fuel System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments and potential water from fuel tank drain plug – record any contamination or water in the fuel tank</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• all fuel filters</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• fuel hoses and fittings</li> <li>• fuel lines for contact on any hot components</li> <li>• fuel tank cap and strainer condition</li> <li>• fuel gauge level/operation/condition</li> <li>• for leaks</li> </ul>		
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• water/contaminants from air tank</li> <li>• water/contaminants from primary in-line water trap bowl in the articulation (no oil to be added)</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• air charge Y strainer</li> <li>• filter located inside the primary in-line water trap bowl in the articulation (no oil to be added)</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• sensor manifold air filter located inside the secondary in-line water trap bowl behind the MONEx display dash panel (no oil to be added)</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• air compressor braided steel PTFE delivery line and fittings internally for any accumulated carbon – replace parts if carbon build up present</li> <li>• air tank relief valve operation (pull ring to ensure releases air and reseals)</li> <li>• leaks on system and repair/report</li> <li>• compressor cut out pressure 115-120psi (800– 850 kPa)</li> <li>• condition of all hoses and fittings</li> <li>• scrubber make up tank pressure – 5-7psi (35-50kPa)</li> <li>• safety circuit reduced pressure – 90-100psi (620– 690 kPa) – located behind the MONEx display dash panel</li> </ul>		
Electronic Engine Management System	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• both scrubber water shutdown sensor responses using test buttons – hold in to see the MONEx display communicate low water. Longer than a few seconds will trigger a shutdown event</li> <li>• scrubber water shutdown system via the upper ball valve drain point – isolate supply line and drain to this shutdown level</li> <li>• coolant loss operation via test valve</li> <li>• engine oil pressure loss via test valve</li> <li>• MONEx start sequence function is correct. Apart from other visual inspections this would indicate safety controls and cabling are serviceable at time of inspection</li> </ul>		<p>These mechanical inspections do not negate recommended 4 yearly regional and site statutory electrical inspection regimes.</p> <p>Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Refer separate statutory electrical inspection sheet.</p>



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• scrubber tank internally by hosing out with drain plug removed (use appropriate detergent as required)</li> <li>• y-piece strainer in scrubber fill line</li> </ul> <p><b>inspect.</b></p> <ul style="list-style-type: none"> <li>• intake flametrap condition - Remove MONEx sensors on intake nose cone and through access holes visually inspect flametrap element. May require use of a light to view clearly. If surface shows signs of contamination, remove and clean air inlet flametrap, fitting new gaskets on assembly. Note in comments column if item required cleaning</li> <li>• scrubber operating linkages and floats</li> <li>• scrubber vibration mounts for wear or damage and ensure area is free from debris</li> <li>• compliance labels, present, secure and in date</li> <li>• all items for integrity, security and damage</li> <li>• fasteners on the mechanical flameproof joints</li> <li>• turbo mount for looseness or evidence of broken studs</li> <li>• inlet system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• exhaust system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• check for excessive blue exhaust smoke and irritating fumes at varying load and rev ranges.</li> <li>• add water conditioner to scrubber make up tank (if applicable to site). Note; do not over dose the scrubber water with conditioner</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments/contamination from the scrubber make-up tank via the tanks bottom drain plug – remove cap to depressurise first</li> </ul>		<p><b>DES Explosion Protected Joint Torque Spec</b></p> <ul style="list-style-type: none"> <li>- All M8 : 22Nm / 16lbf ( wet)</li> <li>- All M10: 44Nm / 32lbf (wet)</li> <li>- All 3/8" UNC: 51Nm / 38lbf (wet)</li> </ul> <p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>
Particulate Filter System (Option 1)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition, integrity and security of housing /components</li> <li>• exhaust particulate filter and replace if required (If applicable to site) &gt;</li> <li>• housing door/lid seals; replace if not sealing</li> </ul>		<p>Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) Cosway (5520010707)</p>
Ceramic Wall-Flow Filter System (CWFF) (Option 2)	<p><b>Inspect</b></p> <ul style="list-style-type: none"> <li>• Safety Isolation Valve x 2</li> <li>• Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>• Inlet &amp; Outlet Temperature Sensors</li> <li>• Diesel Oxidation Catalyst element - remove and inspect for damage&gt;</li> <li>• Filter element – remove and inspect for damage&gt;</li> </ul>		<p>Filter removal requires opening flameproof joints. Only to be conducted by competent, authorised persons. Ensure new gaskets are available prior to reassembly. Ref. SWP CT 3.53</p> <p>Hi-Idle Test Procedure (REF. SWP CT 1.35)</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>Ex Gland, adapters, spigots, conduits, etc (Monitor and Shutdown System, CWFF)</li> <li>Electrical Cables</li> <li>HA110 (inc. push button, window, etc) (Visual)</li> <li>Junction box (Visual)</li> <li>HA116-H (Visual)</li> <li>Antenna</li> </ul> <p><b>Check</b></p> <ul style="list-style-type: none"> <li>Check filter element differential pressure using hi-idle test procedure</li> </ul> <p><b>Remove + Clean</b></p> <ul style="list-style-type: none"> <li>Flame Trap – Pressure sensor x 2</li> <li></li> </ul>		<p>Pass Differential Pressure = &lt; 15 kPa @ High Idle</p> <p>If &gt; 15 kPa then Filter Regen Required</p> <p>Filter removal requires opening flameproof joints. Only to be conducted by competent, authorised persons. Ensure new gaskets are available prior to reassembly. Ref. SWP CT 3.53</p> <p>Flame traps must be cleaned as per OEM recommendations</p>

**COALTRAM® VEHICLE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<p><b>wash</b></p> <ul style="list-style-type: none"> <li>entire vehicle thoroughly. Fit wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>steering articulation lock</li> <li>boom safety support locks</li> <li>air, water and hydraulic hoses for damage</li> <li>safety triangles</li> <li>wheel chocks</li> </ul>		
Drive Train General	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>all component breathers (transmission, differentials, upbox)</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>integrity of breather hoses/lines</li> <li>security of upbox mounting bolts</li> <li>security of transverter mounts and bolts</li> <li>security of axle mounting bolts and potential movement between housings and frame. Check if 0.2mm feeler gauge can pass between mating faces &gt;</li> <li>differential centre fasteners</li> </ul>		<p>Front axle bolts - 633Nm (467ftlb)</p> <p>Rear axle bolts - 366Nm (270ftlb)</p> <p>If feeler gauge passes between faces, remove bolts, lower axle clean mating faces and install new bolts</p>
Drive Train Shafts	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>front axle driveshaft universals/slip joint for wear</li> <li>rear axle driveshaft universals/slip joint for wear</li> <li>driveline centre bearings x 2</li> <li>transverter to centre bearing universals/slip joint for wear</li> <li>upbox / transverter drive shaft universals/slip joint for wear</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>all driveline fasteners, check they are all tight by using appropriate tools</li> </ul>		
Drive Train Lubrication	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>transmission oil level with engine idling</li> <li>all four wheel ends/planetary oil levels</li> <li>front and rear differential centre oil levels</li> <li>upbox oil level</li> <li>for oil leaks after test driving</li> <li>hub seals for leaks</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>transverter suction screen - record contents if foreign/excessive</li> </ul>		
Wheels and Tyres	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>for loose and missing wheel nuts</li> <li>tyres for damage and record condition and % of tread remaining &gt;</li> <li>tyre pressures with gauge (if pneumatic or air/water filled) &gt;</li> <li>tyre ID labels are in place (e.g. foam filled/solid/ water filled)</li> <li>for compliance labels if pneumatic</li> <li>wheel rim and lock ring for damage/ missing parts</li> </ul> <p><b>tension</b></p> <ul style="list-style-type: none"> <li>all wheel nuts 343Nm (253ftlb)</li> </ul>		<p>DSF                      ODSF DSR                      ODSR</p> <p>Note! Always refer to tyre manufacturers for specific tyres pressures. Always follow site requirements for tyre inspections. Specs below are nominal ranges only</p> <p><b>Air filled - Front</b> 7 - 8.0 Bar / 100 -116 psi <b>Air filled - Rear</b> 5 - 6.0 Bar / 70 -87 psi</p>
Hydraulic General	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition of all cylinders</li> <li>crowd cylinder (CT08/CT10LP only) - inspect for signs that the rod clevis has moved - look for gap between rod shoulder and clevis.</li> <li>crowd cylinder (CT08/CT10LP only) - Inspect all the clevis clamp bolts are in place and secure with no visible signs of movement.</li> <li>for oil leaks</li> <li>visually check accessible hydraulic hoses, fittings and components</li> <li>functionality of all hydraulics</li> <li>discolouration or aeration of the oil</li> </ul>		
Hydraulic Lubrication	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>steer and brake pressure filters</li> <li>hydraulic pressure and return filters</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>oil level at front swing open tank sight glass with engine stopped</li> <li>oil level at rear main tank sight glass with engine running -</li> <li>hydraulic tank breather condition and security</li> <li>air operated oil fill pump for operation</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS														
Braking System	<b>inspect</b> <ul style="list-style-type: none"> <li>all accessible brake hoses.</li> <li>brake functions using either the NSW MDG39 or QLD Brake Test Form &gt;</li> </ul>		Refer site compliance section below														
Frame	<b>inspect</b> <ul style="list-style-type: none"> <li>all towing, lifting, tie down points and safety chains</li> <li>integrity of crowd cylinder clevises, bolts and bosses</li> <li>all covers, guards, latches and hinges for operation, damage and wear</li> <li>master hitch lock cylinder operation. Check eject/retract direction is correct</li> <li>ROPS/FOPS canopy for security, damage and compliance plate</li> <li>implement /attachment profile with template or against approved GA drawings.</li> <li>master hitch cradle profile with template or against approved GA drawings.</li> <li>security of oscillation/bolster mount bolts</li> <li>inspect all split caps trunnion fasteners on the articulation, boom, cylinders, master hitch and steering</li> <li>bucket tongue fasteners</li> <li>visually for cracks, the vehicles accessible critical stress points</li> </ul> <b>check</b> correct operation and record wear in - <ul style="list-style-type: none"> <li>articulation points</li> <li>lift arm</li> <li>bucket pins</li> <li>steering pins</li> <li>bolster (axle oscillation points)</li> <li>tilt/crowd cylinder</li> <li>lift cylinders</li> <li>master hitch cylinder(s)</li> </ul>		<b>CT08 /10 Common Torque Specifications</b> <ul style="list-style-type: none"> <li>Hitch / QDS cap bolt 1480Nm (1092ftlb)</li> <li>Steer cylinder cap bolt 366Nm (270ftlb)</li> <li>Articulation cap bolt 633Nm (467ftlb)</li> <li>Canopy M22 499Nm (368ftlb)</li> <li>Canopy M30 1253Nm (924ftlb)</li> </ul> <b>CT08 Specific Torque Specifications</b> <ul style="list-style-type: none"> <li>Crowd cylinder cap bolt 1480Nm (1092ftlb)</li> </ul> <b>CT10 Specific Torque Specifications</b> <ul style="list-style-type: none"> <li>Lift cylinder cap bolt 633Nm (467ftlb)</li> <li>Crowd cylinder cap bolt 633Nm (467ftlb)</li> <li>Boom Pivot cap bolt 1480Nm (1092ftlb)</li> <li>Z Bar Pivot cap bolt 1562Nm (1152ftlb)</li> <li>Dog bones cap bolt 1480Nm (1092ftlb)</li> </ul> <table border="0" style="width: 100%;"> <tr> <td style="width: 60%;">Item</td> <td style="width: 40%;">Wear Result (mm)</td> </tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </table>	Item	Wear Result (mm)	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
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Vehicle Safety Interlocks	<b>check</b> <ul style="list-style-type: none"> <li>door interlock valve is operational - park brake applies when door opened</li> <li>neutral start valve is operational - vehicle will not start in FWD or REV</li> <li>door alarm latch function - when Park Brake is released, partly open door latch for audible horn response</li> </ul>																

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>hydraulic door interlock valve function - park brake will not release when hydraulic door is opened</li> </ul>		
Cab Section	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>gauges are all operational</li> <li>all gauge pressures and temps at operating temperature – record results &gt;</li> <li>seat condition and seat suspension for operation</li> <li>seat base, swivel and mountings for security/integrity</li> <li>all upholstery in cabin</li> <li>horn operation via button on dash</li> <li>brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>emergency brake operation function by applying park brake while moving slowly</li> <li>service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>operation of all hydraulic functions</li> <li>door handle operation</li> <li>pinch point prevention lever on top of the door</li> <li>master hitch removal function isolates until door mounted twist knob is operated</li> <li>for operational interference around all control levers, brake and accelerator pedals</li> <li>steering operations – wheel and stick steer</li> <li>steering column bearing condition, operation and longitudinal movement</li> <li>condition and security of rubber boot on stick steering lever</li> <li>condition and security of the boot covering the joystick. If the boot is in a good condition and is cable tied securely in position no further action is required. If there are any tears in the boot, use contact cleaner to remove all contamination from the body. Inspect plungers for damage &amp; lubricate (valve/o ring grease only). Inspect actuation disk for secureness and match marking to the lock nut. Check gap between plungers and actuation disk is greater than 0.2mm. Replace rubber boot &amp; secure with cable tie.</li> </ul>		<p>Coolant Temp _____</p> <p>Transmission Temp _____</p> <p>Hydraulic Temp _____</p> <p>Brake Accum Pressure _____</p> <p>Brake Release Pressure _____</p> <p>Transmission Pressure _____</p> <p>Eng. Oil Pressure _____</p> <p>Air Pressure _____</p> <p>Backpressure _____</p>
Vehicle Flameproof Electrical Systems	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>operation of all lights (including directional lighting if applicable)</li> <li>check camera display and directional switching is operational (if applicable)</li> <li>Methane system for damage</li> <li>Fifth light functionality if fitted</li> </ul> <p><b>check</b></p>		<p>These inspections do not negate regional and site statutory electrical inspection regimes. Electrical Statutory Inspections must be performed by trained and authorised personnel.</p>



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>cabling properly secured, well routed and clear from drive shafts and pinch points</li> <li>installation and mounting areas for potential hazards</li> <li>alternators mountings and surrounding area for excessive debris. Clean as required &gt;</li> <li>alternator bearings, mounts, drive covers and drive couplings for wear, noise or damage</li> </ul>		<p>Electrical Flameproof enclosures are recommended to be re-certified every 4 years as a minimum.</p> <p>Code D electrical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Use your local <b>COALTRAM®</b> Agent for this process.</p> <p>Refer separate statutory electrical inspection sheet.</p> <p>Note! Do not hose water directly on alternator when at operating temperatures</p>
Manual Greasing	<p><b>grease</b></p> <ul style="list-style-type: none"> <li>all points on vehicle, check all are receiving grease</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>grease lines for damage/leaks</li> <li>all points are receiving grease</li> </ul>		
Autolube System (If Applicable)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>operation of autolube greaser</li> <li>grease lines for leaks</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>grease cartridges</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>visual evidence of grease at all joints</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<p><b>check</b></p> <ul style="list-style-type: none"> <li>fire extinguisher indicator gauge(s) are in the green zone</li> <li>bottle(s) condition</li> <li>condition of fire extinguisher brackets/clamps</li> <li>tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<p><b>check</b></p> <ul style="list-style-type: none"> <li>fire suppression system indicator gauge is in the green zone</li> <li>condition/integrity of fire suppression bottle, lines and nozzles</li> <li>relevant statutory inspections have been completed (system to be tagged/dated)</li> </ul>		
Site Compliance	<p><b>check</b></p> <ul style="list-style-type: none"> <li>brake test has been carried out as per site regulations</li> </ul>		>Refer to the vehicles approval documents for base line gas testing

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>gas test has been carried out as per site regulations</li> <li>exhaust gas emissions are within baseline testing specification limits &gt;</li> </ul>		>Test with engine at operating temperature

LUBRICANTS		
COMPONENT	FLUID TYPE	CAPACITY
ENGINE	SAE 15W40	30L
RADIATOR/ENGINE	PRE-MIX 100% SAE COOLANT	68L - Fill Very Slowly, Bleed Air from Exhaust Cooling Lines
UP BOX	90W (Alternatively 80W/90 or 85W/90 or similar)	2L – Fill Very Slowly
TRANSVERTER/TRANSMISSION	10W/30	25L – Check with Engine Running
DIFFERENTIALS	85W140 (Alternatively HLS 90W)	18L Each
PLANETARIES	85W140 (Alternatively HLS 90W)	3.7L Each
HYDRAULIC TANK	10W/30 – WET BRAKE COMPLIANT (Alternatively Tellus 68 or equivalent)	160L – Check Main Rear Tank Level with Engine Running, And Front Tank With Engine Stopped

FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS							
DESCRIPTION	PART NUMBER	QTY				CODE C1				
SERVICE KIT PART NUMBER						5520001778				
FILTERS										

Air Filter (Outer)	5520000240	1					•				
Engine Oil Filter	5520000494	1					•				
Turbo Saviour Filter	5520000177	1					•				
Fuel Filter – Primary Water Separator	5520000648	1					•				
Fuel Filter – Secondary	5520001765	1					•				
Transverter Filter	5520001237	1					•				
Transverter Filter Housing O Ring	9236201751	1					•				
Air Filter (Inner)	5520000241	1					•				
Hydraulic Steer Filter – Pressure	5520010556	1					•				
Hydraulic Brake Filter – Pressure	5520000278	1					•				
Hydraulic Return Filter	5541300800	1					•				
Hydraulic Steer Filter O Ring	5520002217	1					•				
Hydraulic Brake Filter O Ring	5520002218	1					•				
Hydraulic Return Filter O Ring	5520002219	1					•				
Hydraulic Return Filter O Ring	5520009059	1					•				
Sensor Manifold Air Filter Element	5520010490	1					•				
<b>PARTS</b>											
Fan Belts CT08 / CT10	5520000350	2					•				
Water Pump Belt	5520000384	1					•				
Water Pump Belt (Relocated Tensioner)	5520011040	1 #					#				
Flametrapp Gasket	5520000093	2					•				
Transverter Screen Gasket	5533358300	1					•				
Water Pump Tensioner Pulley Bearing	5520000037	2					•				
Water Pump Tensioner Pulley Bearing Circlip	5520001802	1					•				

#Item not included in standard kit.

**Additional Parts not included in service kit**

DESCRIPTION	PART NUMBER	QTY
Autolube grease cartridge 450gm	5520001696	2

**COALTRAM® CT08/CT10/CT10LP – CODE C2 MAINTENANCE – 6 Monthly / 1000 Hour**

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.

Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.

<b>VEHICLE PLANT NUMBER</b>		<b>HIRER /OWNER</b>	
<b>VEHICLE SERIAL NUMBER</b>		<b>DATE</b>	
<b>SITE</b>		<b>METHANE HOURS</b>	
<b>PROJECT/JOB NUMBER</b>		<b>MONEx HOURS</b>	

<b>IMMEDIATE REPAIRS COMPLETED:</b>
<b>FUTURE REPAIRS REQUIRED:</b>

**TECHNICIANS**





PRINT NAME(S)		SIGN		DATE	
PRINT NAME(S)		SIGN		DATE	

**SUPERVISORS**

PRINT NAME(S)		SIGN		DATE	
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**COALTRAM MAINTENANCE SAFETY INFORMATION**

- Ensure that all safety information is read and understood before maintenance or repair task is performed
- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<p>1. PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</p> <p>2. Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</p> <p>3. All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</p> <p>4. Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</p> <p>5. When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</p> <p>6. Keep clear of suspended loads. Use Safety line to control load when required.</p> <p>7. Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</p> <p>8. Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</p> <p>9. Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</p> <p>10. Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</p> <p>11. Warning labels on machine must be observed</p>  <p>12. Prohibition labels on machine must be observed</p> 	<p>13. Information labels on machine must be observed</p>  <p>14. Service points on machine must be observed</p>  <p>15. Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</p> <p>16. Hot surfaces. Be aware of hot surfaces when machine has been running.</p> <p>17. Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</p> <p>18. Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</p> <p>19. Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</p> <p>20. Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</p> <p>21. Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</p> <p>22. Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</p> <p>23. Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</p>	<p>24. Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</p> <p>25. Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</p> <p>26. Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</p> <p>27. Current information: Ensure current information is available prior to commencing maintenance or repair task.</p> <p>28. Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</p> <p>29. Ventilation Ensure adequate ventilation when testing machine</p> <p>30. Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</p> <p>31. Stay clear of rotating parts</p> <p>32. Always use tools that are in good serviceable condition</p> <p>33. Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</p> <p>34. Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</p> <p>35. Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</p>
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## RECOMMENDED COALTRAM MAINTENANCE AND COMPLIANCE SCHEDULE

REF. DOCS. AS3584.3, MDG1

<u>MAINTENANCE EXAMINATION CODE</u>	<u>CALENDER BASED REGIME</u>	<u>ENGINE HOURS REGIME</u>
CODE A EXAMINATION - Maintenance	DAILY	10
CODE B EXAMINATION - Maintenance	WEEKLY	50
CODE C EXAMINATION - Maintenance	MONTHLY	250
CODE C1 EXAMINATION - Maintenance	3 MONTHLY	500
<b>CODE C2 EXAMINATION - Maintenance</b>	<b>6 MONTHLY</b>	<b>1000</b>
CODE D EXAMINATION – Maintenance	YEARLY	2000
CODE D1 EXAMINATION - Maintenance	2 YEARLY	4000
CODE D2 EXAMINATION - Maintenance	NOT YEARLY BASED	8000
<b>COMPLIANCE OVERHAUL - Mechanical</b> CODE D MECHANICAL COMPLIANCE OVERHAUL  Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent  and are to be aligned with Maintenance Examinations CODE C level or greater		<b>2 YEARLY / or 2000 engine hours</b>  – whichever is achieved first  OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent
<b>COMPLIANCE OVERHAUL - Electrical</b> CODE D ELECTRICAL COMPLIANCE OVERHAUL  Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent		<b>4 YEARLY</b>  OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent

**COALTRAM® ENGINE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS									
Vehicle Hours	<p><b>check</b></p> <ul style="list-style-type: none"> <li>engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>		<p><b>* This symbol beside an instruction indicates there may be other activities to complete in conjunction with this task in a different area of this document.</b></p> <p><b>Eg. When the planetary wheel ends are drained, you need to measure the brake wear before refilling with oil*</b></p>									
Engine	<p><b>remove</b></p> <ul style="list-style-type: none"> <li>covers and guards as required</li> </ul> <p><b>wash</b></p> <ul style="list-style-type: none"> <li>vehicle after fitting wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices. Wash complete engine system and all engine bay areas of excessive coal, dust, oil, mud, and debris.</li> <li>accumulated materials from the engine bay in a forward direction away from the radiator</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>unusual knocks and noises</li> <li>oil leaks</li> <li>engine mounts and bolts.</li> <li>starter motor is secure</li> <li>sump security / integrity and corrosion</li> <li>water ingress into engine flywheel housing – remove bottom plug and record contents</li> </ul> <p><b>sample</b></p> <ul style="list-style-type: none"> <li>oil from engine x 1 for analysis</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>engine breather</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>engine breather hose internal and external condition</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>engine oil</li> <li>engine oil filter</li> <li>turbo saviour oil filter</li> </ul> <p><b>re-check</b></p> <ul style="list-style-type: none"> <li>after running engine</li> <li>oil level</li> </ul>		<p>Tensions -</p> <ul style="list-style-type: none"> <li>engine mount bolts. 189Nm (139 ft/lbs)</li> </ul> <p>Record results with engine at operating temp –</p> <p>Oil Pressure (Min 20psi) – Idle _____</p> <p>Oil Pressure (80± 20psi) - Max Revs _____</p> <table border="1" data-bbox="1459 1015 1885 1123"> <thead> <tr> <th>RPM</th> <th>Spec</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Idle</td> <td>830-880</td> <td></td> </tr> <tr> <td>Flight</td> <td>2220 +/- 50</td> <td></td> </tr> </tbody> </table>	RPM	Spec	Result	Idle	830-880		Flight	2220 +/- 50	
RPM	Spec	Result										
Idle	830-880											
Flight	2220 +/- 50											

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>leaks</li> <li>oil pressure &gt; Record result at operating temperature</li> <li>idle, flight rpm &gt; Record result</li> </ul>		
Engine Air Intake	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>air cleaner inner and outer filter elements</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>system for security and leaks</li> <li>hosing/pipe integrity</li> <li>air charge pipe doesn't contact/rub on other components</li> <li>air cleaner housing integrity</li> <li>test operation of choker/strangler valve as per workplace instructions &gt;</li> </ul>		Refer to Standard Work Procedures or the Service Manual for detailed Choker test instructions. Incorrect choker testing can cause engine damage
GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Cooling System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>radiator thoroughly from the rear side and the front engine bay side with a high flow hose and detergent. Note! High pressure water at close range diagonally across radiator may fold over fins and restrict air flow</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>water pump FRAS V-belt - ensure correct tension after test running for a short period of time</li> <li>engine cooling fan FRAS V-belts - ensure correct tension after test running for a short period of time</li> <li>water pump belt tensioner pulley bearings and seals</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition and security of radiator hoses</li> <li>for leaks</li> <li>fan hub and tensioner bearings for excessive movement</li> <li>radiator mounting bolts</li> <li>fan blade condition/integrity</li> <li>fan position in shroud (ensure centralised and correct protrusion 18mm to 22mm of blade protruding past shroud towards engine</li> <li>for blockages in cores on both sides of the radiator</li> <li>radiator and pulley guards are in place and secure</li> <li>coolant is correct mix - coloured pre-mix &gt;</li> <li>check coolant is in sight glass on header tank</li> <li>radiator cap condition and ensure 13psi rating</li> </ul> <p><b>grease</b></p>		<p>Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations</p> <p>Recommended to use pre-mixed Caterpillar ELC (Extra Long life Coolant) or equivalent.</p>



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>fan and idler pulley</li> </ul>		
Fuel System	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>fuel from tank x 1 for analysis</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>sediments and potential water from fuel tank drain plug – record any contamination or water in the fuel tank</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>all fuel filters</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>fuel hoses and fittings</li> <li>fuel lines for contact on any hot components</li> <li>fuel tank cap and strainer condition</li> <li>fuel gauge level/operation/condition</li> <li>for leaks</li> </ul>		
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>water/contaminants from air tank</li> <li>water/contaminants from primary in-line water trap bowl in the articulation (no oil to be added)</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>air charge Y strainer</li> <li>filter located inside the primary in-line water trap bowl in the articulation (no oil to be added)</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>sensor manifold air filter located inside the secondary in-line water trap bowl behind the MONEx display dash panel (no oil to be added)</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>air compressor delivery hose condition – ensure it's a braided steel PTFE type</li> <li>air tank relief valve operation (pull ring to ensure releases air and reseals)</li> <li>leaks on system and repair/report</li> <li>compressor cut out pressure 115-120psi (800– 850 kPa)</li> <li>condition of all hoses and fittings</li> <li>scrubber make up tank pressure – 5-7psi (35-50kPa)</li> <li>safety circuit reduced pressure – 90-100psi (620– 690 kPa) – located behind the MONEx display dash panel</li> <li>air compressor braided steel PTFE delivery line and fittings internally for any accumulated carbon – replace parts if carbon build up present</li> </ul>		
Electronic Engine	<p><b>check</b></p>		These mechanical inspections do not negate recommended 4 yearly

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Management System	<ul style="list-style-type: none"> <li>• both scrubber water shutdown sensor responses using test buttons – hold in to see the MONEx display to communicate low water. Longer than a few seconds will trigger a shutdown event</li> <li>• scrubber water shutdown system via the upper ball valve drain point – isolate supply line and drain to this shutdown level</li> <li>• coolant loss operation via test valve</li> <li>• engine oil pressure loss via test valve</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition and integrity of all MONEx electronic components.</li> <li>• the following for incorrect parts, unauthorised modifications, missing parts/guards/covers, loss of identifying labels, cracks, damage, erosion, corrosion, deterioration, loose items, fatigue and contamination               <ul style="list-style-type: none"> <li>a) temperature sensors</li> <li>b) pressure sensors</li> <li>c) timing sensors</li> <li>d) water level sensors</li> <li>e) display screen</li> <li>f) throttle</li> <li>g) battery unit</li> <li>h) solenoids</li> <li>i) fasteners</li> <li>j) mountings</li> <li>k) connectors</li> <li>l) protective boots</li> <li>m) glands</li> <li>n) cable management and routing</li> </ul> </li> <li>• connectors for tamper proof cable tie. If missing plugs and receptacles are uncoupled and inspected. Ensure connectors are clean, dry and seals are in place. Clean both male and female connectors with approved electrical cleaner/lubricant. Clean pin holes. Check for cracking insulators or discolouring. Ensure earthing is correct, the integrity of moisture and dust barriers intact, locking pins and fasteners are functional and secure. After reconnection, install tamper proof cable tie around connection.</li> <li>• throttle pedal torsion spring for evidence of corrosion, pitting, damage or cracking. If evident, return pedal assembly to PPK for torsion spring replacement.</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• operation of the redundant path watchdog system (if fitted). Refer SWP CT2.24.</li> </ul>		<p>regional and site statutory electrical inspection regimes.</p> <p>Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Refer separate statutory electrical inspection sheet.</p> <p>Do not apply high pressure water directly on electronic components</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>record</b></p> <ul style="list-style-type: none"> <li>• MONEx Fault Log history – manual screen search and record problematic events and/or historic concerns of interest AND/OR electronic upload and capture of data using the MONEx LRS (Log Retrieval System) &gt;</li> <li>• engine configuration files via ET Tool to capture the engines current electronic signature</li> </ul>		<p>Earlier MONEx versions do not have the ability to use the LRS electronic upload</p>
<p>Mechanical Flameproof System</p>	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• scrubber tank by fully draining at the lower socket to remove built up exhaust residue. If a ball valve is used in this port, a plug must accompany it to comply with safety regulations.</li> <li>• scrubber tank internally by hosing out with drain plug removed (use appropriate detergent as required)</li> <li>• y-piece strainer in scrubber fill line</li> </ul> <p><b>inspect.</b></p> <ul style="list-style-type: none"> <li>• intake flametrap condition - Remove MONEx sensors on intake nose cone and through access holes visually inspect flametrap element. May require use of a light to view clearly. If surface shows signs of contamination, remove and clean air inlet flametrap, fitting new gaskets on assembly. Note in comments column if item required cleaning</li> <li>• scrubber vibration mounts for wear or damage and ensure area is free from debris</li> <li>• compliance labels, present, secure and in date</li> <li>• all items for integrity, security and damage</li> <li>• fasteners on the mechanical flameproof joints</li> <li>• turbo mount for looseness or evidence of broken studs</li> <li>• inlet system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• exhaust system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• check for excessive blue exhaust smoke and irritating fumes at varying load and rev ranges.</li> <li>• add water conditioner to scrubber make up tank (if applicable to site). Note; do not over dose the scrubber water with conditioner</li> <li>• scrubber static water level when stopped using the scrubber dipstick</li> </ul>		<p>Code D mechanical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Use your local <b>COALTRAM®</b>Agent for this purpose</p> <p>Note! All parts, gaskets and fasteners relating the Code D mechanical integrity inspection must be genuine <b>COALTRAM®</b>parts to maintain approval compliance</p> <p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Particulate Filter System (Option 1)	<b>inspect</b> <ul style="list-style-type: none"> <li>condition, integrity and security of housing /components</li> <li>for exhaust leaks</li> <li>housing door/lid seal; replace if not sealing</li> </ul>		Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) or Cosway (5520010707)
Ceramic Wall-Flow Filter System (CWFF) (Option 2)	<b>Inspect</b> <ul style="list-style-type: none"> <li>Safety Isolation Valve x 2</li> <li>Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>Inlet &amp; Outlet Temperature Sensors</li> <li>Diesel Oxidation Catalyst element - remove and inspect for damage &gt;</li> <li>Filter element – remove and inspect for damage &gt;</li> <li>Heat Shield Rubber, Turbo Inlet Flange, CWFF</li> <li>Heat Shield Rubber, Exhaust Manifold, CWFF</li> <li>Ex Gland, adapters, spigots, conduits, etc (Monitor and Shutdown System, CWFF)</li> <li>Electrical Cables</li> <li>HA110 (inc. push button, window, etc) (Visual)</li> <li>Junction box (Visual)</li> <li>I.S. interfaces inside HA110 (Visual)</li> <li>HA116-H</li> <li>Antenna</li> </ul> <b>Check</b> <ul style="list-style-type: none"> <li>Check filter element differential pressure using hi-idle test procedure</li> </ul> <b>Remove + Clean</b> <ul style="list-style-type: none"> <li>Flame Trap – Pressure sensor x 2</li> </ul> <b>Replace</b> <ul style="list-style-type: none"> <li>Internal sealing gaskets (5520011006)</li> </ul>		<p>Filter removal requires opening flameproof joints. Only to be conducted by competent, authorised persons. Ensure new gaskets are available prior to reassembly. Ref. SWP CT 3.53</p> <p>Hi-Idle Test Procedure (REF. SWP CT 1.35) Pass Differential Pressure = &lt; 15 kPa @ High Idle If &gt; 15 kPa then Filter Regen Required Filter removal requires opening flameproof joints. Only to be conducted by competent, authorised persons. Ensure new gaskets are available prior to reassembly. Ref. SWP CT 3.53</p> <p>Flame traps must be cleaned as per OEM recommendations</p>

**COALTRAM® VEHICLE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<b>wash</b> <ul style="list-style-type: none"> <li>entire vehicle thoroughly. Fit wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices</li> </ul> <b>inspect</b> <ul style="list-style-type: none"> <li>steering articulation lock</li> <li>boom safety support locks</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>safety triangles</li> <li>wheel chocks</li> </ul>		
Drive Train General	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>all component breathers (transmission, differentials, upbox)</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>integrity of breather hoses/lines</li> <li>security of upbox mounting bolts</li> <li>security of transverter mounts and bolts</li> <li>security of axle mounting bolts and potential movement between housings and frame. Check if 0.2mm feeler gauge can pass between mating faces &gt;</li> <li>differential centre fasteners</li> <li>condition and adjustment of transmission F.N.R selector and gear lever linkages and cables</li> </ul>		<p>Front axle bolts - 633Nm (467ftlb) Rear axle bolts - 366Nm (270ftlb) If feeler gauge passes between faces, remove bolts, lower axle clean mating faces and install new bolts</p>
Drive Train Shafts	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>front axle driveshaft universals/slip joint for wear</li> <li>rear axle driveshaft universals/slip joint for wear</li> <li>driveline centre bearings x 2</li> <li>transverter to centre bearing universals/slip joint for wear</li> <li>upbox / transverter drive shaft universals/slip joint for wear</li> <li>all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>all driveline fasteners, check they are all tight by using appropriate tools</li> </ul>		
Drive Train Lubrication	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>oil from transverter x 1 for analysis</li> <li>oil from differentials x 2 for analysis</li> <li>oil from planetaries x 4 for analysis</li> <li>oil from upbox x 1 for analysis</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>transverter oil</li> <li>transverter oil filter</li> <li>both differential oils</li> <li>all four planetary oils</li> <li>upbox oil</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>oil levels after allowing vehicle to stand for 5 minutes after filling</li> <li>transmission oil level with engine idling</li> <li>all four wheel ends/planetary oil levels</li> <li>front and rear differential centre oil levels</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>upbox oil level</li> <li>for oil leaks after test driving</li> <li>hub seals for leaks</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>transverter suction screen - record contents if foreign/excessive</li> </ul>		
Wheels and Tyres	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>for loose and missing wheel nuts</li> <li>tyres for damage and record condition and % of tread remaining &gt;</li> <li>tyre pressures with gauge (if pneumatic or air/water filled) &gt;</li> <li>tyre ID labels are in place (e.g. foam filled/solid/ water filled)</li> <li>for compliance labels if pneumatic</li> <li>wheel rim and lock ring for damage/ missing parts</li> </ul> <p><b>tension</b></p> <ul style="list-style-type: none"> <li>all wheel nuts 343Nm (253ftlb)</li> </ul>		<p>DSF                      ODSF DSR                      ODSR</p> <p>Note! Always refer to tyre manufacturers for specific tyres pressures. Always follow site requirements for tyre inspections. Specs below are general ranges only</p> <p><b>Air filled - Front</b> 8.0 Bar / 116 psi <b>Air filled - Rear</b> 6.0 Bar / 87 psi</p>
Hydraulic General	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>condition of all cylinders</li> <li>crowd cylinder (CT08/CT10LP only) - inspect for signs that the rod clevis has moved - look for gap between rod shoulder and clevis.</li> <li>crowd cylinder (CT08/CT10LP only) - Inspect all the clevis clamp bolts are in place and secure with no visible signs of movement.</li> <li>for oil leaks</li> <li>visually check accessible hydraulic hoses, fittings and components</li> <li>functionality of all hydraulics</li> <li>discolouration or aeration of the oil</li> <li>CT10 only – crowd cylinder gland retaining bolts. If any are found to be loose, replace all. &gt;</li> </ul>		<p>Old style crowd cylinder with M12 socket head cap screw – check tension to 143 Nm New style crowd cylinder with M16 socket head cap screw – check tension to 330 Nm</p>
Hydraulic Lubrication	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>steer and brake pressure filters</li> <li>hydraulic pressure and return filters</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>return filter restriction indicator– if extended and protruding, investigate reason</li> <li>oil level at front swing open tank sight glass with engine stopped</li> <li>oil level at rear main tank sight glass with engine running -</li> <li>hydraulic tank breather condition and security</li> <li>air operated oil fill pump for operation</li> </ul>		
Braking System	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all accessible brake hoses.</li> <li>brake functions using either the NSW MDG39 or QLD Brake Test Form &gt;</li> <li>multi-disc wet brake wear and record results- use the genuine service tool only &gt;</li> </ul>		<p>Refer site compliance section below</p> <p>Brake wear results (PASS/FAIL) –</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>test</b></p> <ul style="list-style-type: none"> <li>operation of primary and secondary brake dump valves by isolating the pilot pressure - brakes should not release with this pilot isolated.</li> </ul>		<p>DSF ODSF</p> <p>DSR ODSR</p>
Frame	<p><b>tension</b></p> <ul style="list-style-type: none"> <li>all split caps trunnion fasteners on the articulation, boom, cylinders, master hitch and steering</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all towing, lifting and tie down points</li> <li>integrity of crowd cylinder clevises and bosses</li> <li>all covers, guards, latches and hinges for operation, damage and wear</li> <li>master hitch lock cylinder operation. Check eject/retract direction is correct</li> <li>ROPS/FOPS canopy for security, damage and compliance plate</li> <li>implement /attachment profile with template or against approved GA drawings.</li> <li>master hitch cradle profile with template or against approved GA drawings.</li> <li>security of oscillation/bolster mount bolts</li> <li>bucket tongue fasteners</li> <li>visually for cracks, the vehicles accessible critical stress points</li> </ul> <p><b>check</b></p> <p>correct operation and record wear in -</p> <ul style="list-style-type: none"> <li>articulation points</li> <li>lift arm</li> <li>bucket pins</li> <li>steering pins</li> <li>bolster (axle oscillation points)</li> <li>tilt/crowd cylinder</li> <li>lift cylinders</li> <li>master hitch cylinder(s)</li> </ul>		<p>Torque Specifications</p> <ul style="list-style-type: none"> <li>Crowd cylinder cap bolt 1480Nm (1092ftlb)</li> <li>Hitch QDS cap bolt 1480Nm (1092ftlb)</li> <li>Steer cylinder cap bolt 366Nm (270ftlb)</li> <li>Articulation cap bolt 633Nm (467ftlb)</li> </ul> <p>- Canopy M22 499Nm (368ftlb)</p> <p>- Canopy M30 1253Nm (924ftlb)</p>
Vehicle Safety Interlocks	<p><b>check</b></p> <ul style="list-style-type: none"> <li>door interlock valve is operational - park brake applies when door opened</li> <li>neutral start valve is operational - vehicle will not start in FWD or REV</li> <li>door alarm latch function - when Park Brake is released, partly open door latch for audible horn response</li> <li>hydraulic door interlock valve function - park brake will not release when hydraulic door is opened</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Cab Section	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• gauges are all operational</li> <li>• all gauge pressures and temps at operating temperature – record results &gt;</li> <li>• seat condition and seat suspension for operation</li> <li>• seat base, swivel and mountings for security/integrity</li> <li>• all upholstery in cabin</li> <li>• horn operation via button on dash</li> <li>• brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>• emergency brake operation function by applying park brake while moving slowly</li> <li>• service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>• operation of all hydraulic functions</li> <li>• door handle operation</li> <li>• pinch point prevention on door</li> <li>• master hitch removal function isolates until door mounted twist knob is operated</li> <li>• for operational interference around all control levers, brake and accelerator pedals</li> <li>• steering operations – wheel and stick steer</li> <li>• steering is isolated when park brake is applied</li> <li>• steering column bearing condition, operation and longitudinal movement</li> <li>• condition and security of rubber boot on stick steering lever</li> <li>• lift rubber boot on main hydraulic lever, use contact cleaner to remove all contamination from the body. Inspect plungers for damage &amp; lubricate (valve/o ring grease only). Inspect actuation disk for secureness and match marking to the lock nut. Check gap between plungers and actuation disk is greater than 0.2mm. Re-secure rubber boot with cable tie.</li> </ul>		<p>Coolant Temp</p> <hr/> <p>Transmission Temp</p> <hr/> <p>Hydraulic Temp</p> <hr/> <p>Brake Accum Pressure</p> <hr/> <p>Brake Release Pressure</p> <hr/> <p>Transmission Pressure</p> <hr/> <p>Eng. Oil Pressure</p> <hr/> <p>Air Pressure</p> <hr/> <p>Backpressure</p> <hr/>
Vehicle Flameproof Electrical Systems	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• operation of all lights (including directional lighting if applicable)</li> <li>• positioning of light directions/ projections</li> <li>• clean light lenses and any other enclosure windows</li> <li>• check camera display and directional switching is operational (if applicable)</li> <li>• Methane system for damage</li> <li>• Fifth light functionality (if fitted)</li> </ul> <p><b>check</b></p>		<p>These inspections do not negate regional and site statutory electrical inspection regimes. Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Electrical Flameproof enclosures are recommended to be re-certified every 4 years as a minimum.</p>



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	condition/integrity of following items <ul style="list-style-type: none"> <li>• hosing and cabling</li> <li>• installation and mounting areas for potential hazards</li> <li>• fastener security</li> <li>• alternators mountings and surrounding area for excessive debris. Clean as required &gt;</li> <li>• alternator bearings, mounts, drive covers and drive couplings for wear, noise or damage</li> </ul>		Code D electrical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Use your local <b>COALTRAM®</b> Agent for this process.  Refer separate statutory electrical inspection sheet.  Note! Do not hose water directly on alternator when at operating temperatures
Manual Greasing	<b>grease</b> <ul style="list-style-type: none"> <li>• all points on vehicle, check all are receiving grease</li> </ul> <b>inspect</b> <ul style="list-style-type: none"> <li>• grease lines for damage/leaks</li> <li>• all points are receiving grease</li> </ul>		
Autolube System (If Applicable)	<b>inspect</b> <ul style="list-style-type: none"> <li>• operation of autolube greaser</li> <li>• grease lines for leaks</li> </ul> <b>replace</b> <ul style="list-style-type: none"> <li>• grease cartridges</li> </ul> <b>check</b> <ul style="list-style-type: none"> <li>• visual evidence of grease at all joints</li> </ul> <b>grease</b> <ul style="list-style-type: none"> <li>• all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<b>check</b> <ul style="list-style-type: none"> <li>• fire extinguisher indicator gauge(s) are in the green zone</li> <li>• bottle(s) condition</li> <li>• condition of fire extinguisher brackets/clamps</li> <li>• tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<b>check</b> <ul style="list-style-type: none"> <li>• fire suppression system indicator gauge is in the green zone</li> <li>• condition/integrity of fire suppression bottle, lines and nozzles</li> <li>• relevant statutory inspections have been completed (system to be tagged/dated)</li> </ul>		
Site Compliance	<b>check</b> <ul style="list-style-type: none"> <li>• brake test has been carried out as per site regulations</li> <li>• gas test has been carried out as per site regulations</li> <li>• exhaust gas emissions are within baseline testing specification limits &gt;</li> </ul>		>Refer to the vehicles approval documents for base line gas testing >Test with engine at operating temperature

<b>LUBRICANTS</b>		
<b>COMPONENT</b>	<b>FLUID TYPE</b>	<b>CAPACITY</b>
ENGINE	SAE 15W40	30L
RADIATOR/ENGINE	PRE-MIX 100% SAE COOLANT	68L - FILL VERY SLOWLY, BLEED AIR FROM EXHAUST COOLING LINES
UP BOX	90W	2L - FILL VERY SLOWLY
TRANSVERTER/TRANSMISSION	10W/30	25L - CHECK WITH ENGINE RUNNING
DIFFERENTIALS	85W140	18L EACH
PLANETARIES	85W140	3.7L EACH
HYDRAULIC TANK	10W/30 - WET BRAKE COMPLIANT	160L - CHECK MAIN REAR TANK LEVEL WITH ENGINE RUNNING, AND FRONT TANK WITH ENGINE STOPPED

FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS						
DESCRIPTION	PART NUMBER	QTY					CODE C2		
SERVICE KIT PART NUMBER							5520001779		
<b>FILTERS</b>							<b>6 Monthly / 1000Hr</b>		
Air Filter (Outer)	5520000240	1					•		
Engine Oil Filter	5520000494	1					•		
Turbo Saviour Filter	5520000177	1					•		
Fuel Filter – Primary Water Separator	5520000648	1					•		
Fuel Filter – Secondary	5520001765	1					•		
Transverter Filter	5520001237	1					•		
Transverter Filter Housing O Ring	9236201751	1					•		
Air Filter (Inner)	5520000241	1					•		
Hydraulic Steer Filter – Pressure	5520010556	1					•		
Hydraulic Brake Filter – Pressure	5520000278	1					•		
Hydraulic Return Filter	5541300800	1					•		
Hydraulic Steer Filter O Ring	5520002217	1					•		
Hydraulic Brake Filter O Ring	5520002218	1					•		
Hydraulic Return Filter O Ring	5520002219	1					•		
Hydraulic Return Filter O Ring	5520009059	1					•		
Sensor Manifold Air Filter Element	5520010490	1					•		
<b>PARTS</b>									
SOS Sample Bottle	5520001865	11					•		
Fan Belts 168kw	5520000350	2					•		
Water Pump Belt	5520000384	1					•		
Flametrapp Gasket	5520000093	2					•		
Transverter Screen Gasket	5533358300	1					•		
Diff Breather	5534307200	2					•		
Upbox Breather	5534307200	1					•		
Transverter Breather	5541501500	1					•		
Hydraulic Tank Breather	5537168400	1					•		
Brake Wear Indicator Tool	5520000387	1					•		
Water Pump Tensioner Pulley Bearing	5520000037	2					•		
Water Pump Tensioner Pulley Seal	5520009346	2					•		

**Additional Parts not included in service kit**

DESCRIPTION	PART NUMBER	QTY
Autolube grease cartridge 450gm	5520001696	2

**Ceramic Wall-Flow Filter System (CWFF) (if fitted)**

DESCRIPTION	PART NUMBER	QTY
Water Pump Belt (Relocated Tensioner)	5520011040	1
Gasket – CWF inner shell to downpipe	5520011004	1
Gasket – CWF element internal	5520011006	2

**COALTRAM® CT08/CT10/CT10LP – CODE D MAINTENANCE –Yearly / 2000 Hour**

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.  
Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.

VEHICLE PLANT NUMBER		HIRER /OWNER	
VEHICLE SERIAL NUMBER		DATE	
SITE		METHANE HOURS	
PROJECT/JOB NUMBER		MONEx HOURS	

<b>IMMEDIATE REPAIRS COMPLETED:</b>	
<b>FUTURE REPAIRS REQUIRED:</b>	
<b>TECHNICAL BULLETINS AND SAFETY ALERTS</b>	<p>It's the Owner's responsibility to ensure compliance. Supervisor to circle Yes/No and initial</p> <p style="text-align: center;"> <input type="checkbox"/> Yes         <span style="margin-left: 200px;"><input type="checkbox"/> No</span> </p>
<p>It's recommended that a complete TBGAS (Technical Bulletin and General Alerts Sheet) Audit is conducted at Code D level and above to ensure the vehicle and Diesel Engine System complies with OEM and industry requirements.</p>	

**TECHNICIANS**





PRINT NAME(S)		SIGN		DATE	
PRINT NAME(S)		SIGN		DATE	

**SUPERVISORS**

PRINT NAME(S)		SIGN		DATE	
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**COALTRAM MAINTENANCE SAFETY INFORMATION**

- Ensure that all safety information is read and understood before maintenance or repair task is performed
- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<p>1. PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</p> <p>2. Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</p> <p>3. All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</p> <p>4. Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</p> <p>5. When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</p> <p>6. Keep clear of suspended loads. Use Safety line to control load when required.</p> <p>7. Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</p> <p>8. Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</p> <p>9. Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</p> <p>10. Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</p> <p>11. Warning labels on machine must be observed</p>  <p>12. Prohibition labels on machine must be observed</p> 	<p>13. Information labels on machine must be observed</p>  <p>14. Service points on machine must be observed</p>  <p>15. Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</p> <p>16. Hot surfaces. Be aware of hot surfaces when machine has been running.</p> <p>17. Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</p> <p>18. Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</p> <p>19. Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</p> <p>20. Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</p> <p>21. Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</p> <p>22. Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</p> <p>23. Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</p>	<p>24. Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</p> <p>25. Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</p> <p>26. Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</p> <p>27. Current information: Ensure current information is available prior to commencing maintenance or repair task.</p> <p>28. Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</p> <p>29. Ventilation Ensure adequate ventilation when testing machine</p> <p>30. Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</p> <p>31. Stay clear of rotating parts</p> <p>32. Always use tools that are in good serviceable condition</p> <p>33. Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</p> <p>34. Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</p> <p>35. Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</p>
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**RECOMMENDED COALTRAM MAINTENANCE AND COMPLIANCE SCHEDULE**

REF. DOCS. AS3584.3, MDG1

<u>MAINTENANCE EXAMINATION CODE</u>	<u>CALENDER BASED REGIME</u>	<u>ENGINE HOURS REGIME</u>
CODE A EXAMINATION - Maintenance	DAILY	10
CODE B EXAMINATION - Maintenance	WEEKLY	50
CODE C EXAMINATION - Maintenance	MONTHLY	250
CODE C1 EXAMINATION - Maintenance	3 MONTHLY	500
CODE C2 EXAMINATION - Maintenance	6 MONTHLY	1000
<b>CODE D EXAMINATION – Maintenance</b>	<b>YEARLY</b>	<b>2000</b>
CODE D1 EXAMINATION - Maintenance	2 YEARLY	4000
CODE D2 EXAMINATION - Maintenance	NOT YEARLY BASED	8000
<p><b>COMPLIANCE OVERHAUL - Mechanical</b></p> <p>CODE D MECHANICAL COMPLIANCE OVERHAUL</p> <p>Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent and are to be aligned with Maintenance Examinations CODE C level or greater</p>		<p><b>2 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>
<p><b>COMPLIANCE OVERHAUL - Electrical</b></p> <p>CODE D ELECTRICAL COMPLIANCE OVERHAUL</p> <p>Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent</p>		<p><b>4 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>

**Notes:**

- If completing this service in conjunction with a code D, some tasks will be duplicated on the TDES paperwork. There is no requirement for the tasks to be repeated, though, both sets of paperwork should be completed.
- When replacing safety critical components attach tag (5520010495) to identify install date. Tag can be attached with cable tie or suitable adhesive

**COALTRAM® ENGINE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS											
Vehicle Hours	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>		<p><b>* This symbol beside an instruction indicates there may be other activities to complete in conjunction with this task in a different area of this document.</b></p> <p><b>Eg. When the planetary wheel ends are drained, you need to measure the brake wear before refilling with oil*</b></p>											
Engine	<p><b>remove</b></p> <ul style="list-style-type: none"> <li>• covers and guards as required</li> </ul> <p><b>wash</b></p> <ul style="list-style-type: none"> <li>• vehicle after fitting wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices. Wash complete engine system and all engine bay areas of excessive coal, dust, oil, mud, and debris</li> <li>• accumulated materials from the engine bay in a forward direction away from the radiator</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>• unusual knocks and noises</li> <li>• oil leaks</li> <li>• engine mounts and bolts.</li> <li>• starter motor is secure</li> <li>• sump security / integrity and corrosion</li> <li>• water ingress into engine flywheel housing – remove bottom plug and record contents</li> <li>• turbo charger impellor and turbine shaft bearings for excessive wear – Turbo charger has a 4000 hour recommended service life.</li> <li>• bolts mounting engine to cradle</li> </ul> <p><b>sample</b></p> <ul style="list-style-type: none"> <li>• oil from engine x 1 for analysis</li> </ul>		<p>Tensions -</p> <ul style="list-style-type: none"> <li>• engine mount bolts - 189Nm (139 ft/lbs)</li> </ul> <p>Pressures when engine is at operating temperature –</p> <p>Oil Pressure ( Min 20psi) – Idle _____</p> <p>Oil Pressure (80± 20psi ) - Max Revs _____</p> <table border="1" data-bbox="1457 1138 1919 1451"> <tr> <td data-bbox="1457 1138 1556 1300"></td> <td data-bbox="1556 1138 1688 1300"><b>CT08/10/10LP with 49" diameter tyres and larger</b></td> <td data-bbox="1688 1138 1820 1300"><b>CT08/10LP with 45" diameter low profile tyres only</b></td> <td data-bbox="1820 1138 1919 1300"></td> </tr> <tr> <td data-bbox="1457 1300 1556 1451">RPM</td> <td data-bbox="1556 1300 1688 1451">Standard Spec - 13.7 ratio Converter</td> <td data-bbox="1688 1300 1820 1451">Modified Spec - 13.1 ration Converter</td> <td data-bbox="1820 1300 1919 1451">Results</td> </tr> </table>					<b>CT08/10/10LP with 49" diameter tyres and larger</b>	<b>CT08/10LP with 45" diameter low profile tyres only</b>		RPM	Standard Spec - 13.7 ratio Converter	Modified Spec - 13.1 ration Converter	Results
	<b>CT08/10/10LP with 49" diameter tyres and larger</b>	<b>CT08/10LP with 45" diameter low profile tyres only</b>												
RPM	Standard Spec - 13.7 ratio Converter	Modified Spec - 13.1 ration Converter	Results											



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS			
	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• engine oil</li> <li>• engine oil filter</li> <li>• turbo saviour oil filter</li> <li>• engine breather</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• engine breather hose internal and external condition</li> </ul> <p><b>re-check</b> after running engine</p> <ul style="list-style-type: none"> <li>• oil level</li> <li>• leaks</li> <li>• oil pressure &gt; Record result at operating temperature</li> <li>• idle, flight and stall rpm &gt; Record result</li> </ul>		Idle	860-880	860-880	
			Flight	2220± 50	2220± 50	
			Trans stall	1980± 50	2120± 50	
			Hyd and Trans stall	1730± 50	1800± 50	
Engine Air Intake	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• air cleaner inner and outer filter elements</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>• system for security and leaks</li> <li>• hosing/pipe integrity</li> <li>• air charge pipe doesn't contact/rub on other components</li> <li>• air cleaner housing integrity</li> <li>• test operation of choker/strangler valve as per workplace instructions &gt;</li> </ul>		Refer to Standard Work Procedures or the Service Manual for detailed Choker test instructions. Incorrect choker testing can cause engine damage			
Cooling System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• radiator thoroughly from the rear side and the front engine bay side with a high flow hose and detergent. Note! High pressure water at close range diagonally across radiator may fold over fins and restrict air flow</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• water pump FRAS V-belt - ensure correct tension after test running for a short period of time</li> <li>• engine cooling fan FRAS V-belts - ensure correct tension after test running for a short period of time</li> <li>• water pump belt tensioner pulley bearings and seals</li> <li>• upper and lower radiator hoses and clamps</li> <li>• exhaust manifold head bypass hose and clamps</li> <li>• exhaust manifold /water pump bypass hose and clamps</li> <li>• engine coolant &gt;</li> </ul>		<p>Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations</p> <p>Recommended to use pre-mixed Caterpillar ELC (Extra Long life Coolant) or equivalent.</p>			

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• all ¾, ½ and ¼ engine system cooling hoses with U/G coal mines approved items as required</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition and security of radiator hoses</li> <li>• for leaks</li> <li>• fan hub and tensioner bearings for excessive movement</li> <li>• radiator mounting bolts</li> <li>• fan blade condition/integrity</li> <li>• fan position in shroud (ensure centralised and correct protrusion 18mm to 22mm of blade protruding past shroud towards engine</li> <li>• for blockages in cores on both sides of the radiator</li> <li>• radiator and pulley guards are in place and secure</li> <li>• coolant is correct mix - coloured pre-mix &gt;</li> <li>• check coolant is in sight glass on header tank</li> <li>• radiator cap condition and ensure 13psi rating</li> <li>• radiator air flow (ensure average is within limits/guidelines) &gt;</li> <li>• all air is removed from the cooling system after refilling – test at small hoses at the highest points in the system</li> <li>• system for leaks after new hoses and coolant refill. Pressurise entire system to operating pressure of 13psi</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• fan and idler pulley</li> </ul>		<p>Radiator Air flow is measured with a wind meter (anemometer) to check for blockages and/or incorrect fan position/performance – refer SWP CT 3.24</p>
Fuel System	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>• fuel from tank x 1 for analysis</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments and potential water from fuel tank drain plug – record any contamination or water in the fuel tank</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• all fuel filters</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• fuel hoses and fittings</li> <li>• fuel lines for contact on any hot components</li> <li>• fuel tank cap and strainer condition</li> <li>• fuel gauge level/operation/condition</li> <li>• for leaks</li> </ul>		
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• water/contaminants from air tank</li> </ul>		

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	<ul style="list-style-type: none"> <li>• water/contaminants from primary in-line water trap bowl in the articulation (no oil to be added)</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• air charge Y strainer</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• leaks on system and repair/report</li> <li>• compressor cut out pressure 115-120psi (800– 850 kPa)</li> <li>• condition of all hoses and fittings</li> <li>• scrubber make up tank pressure – 5-7psi (35-50kPa)</li> <li>• safety circuit reduced pressure – 90-100psi (620– 690 kPa) – located behind the MONEx display dash panel</li> <li>• air compressor and delivery fittings internally for any accumulated carbon – replace parts if carbon build up present</li> <li>• annual pressure vessel testing is current for the air receiver</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• air compressor delivery hose – ensure it's a genuine braided steel PTFE type</li> <li>• filter located inside the primary in-line water trap bowl in the articulation (no oil to be added)</li> <li>• air tank relief valve</li> <li>• pneumatic check valve on air tank/compressor system</li> <li>• sensor manifold air filter located inside the secondary in-line water trap bowl behind the MONEx display dash panel (no oil to be added)</li> </ul>		
Electronic Engine Management System	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• both scrubber water shutdown sensor responses using test buttons – hold in to see the MONEx display to communicate low water. Longer than a few seconds will trigger a shutdown event</li> <li>• scrubber water shutdown system via the upper ball valve drain point – isolate supply line and drain to this shutdown level</li> <li>• coolant loss operation via test valve</li> <li>• engine oil pressure loss via test valve</li> <li>• deputy bypass Fob functionality (Red Fob) – this confirms fob reader integrity, and checks non-safety bypasses. Alternatively check reader with latching re-set Fob function (Black Fob)</li> <li>• rig throttle function via the MONEx screen, dial up RPM to 1800rpm, switch to engage, ensure engine audible response and rpm represents</li> </ul>		<p>These mechanical inspections do not negate recommended 4 yearly regional and site statutory electrical inspection regimes.</p> <p>Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Refer separate statutory electrical inspection sheet.</p>

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	<p>a hydraulic load is introduced. To check safety cut out, break the pneumatic circuit by individually releasing the park brake, opening the door, and selecting forward or reverse.</p> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• ECUEx – remove hinged top cover and inspect cable management, foreign ingress and cooling water leaks – reverse flush ECUEx cooling line back into the scrubber make-up tank</li> <li>• scrubber level sensor operating linkages and floats</li> <li>• condition and integrity of all MONEx electronic components</li> <li>• the following for incorrect parts, unauthorised modifications, missing parts/guards/covers, loss of identifying labels, cracks, damage, erosion, corrosion, deterioration, loose items, fatigue and contamination               <ul style="list-style-type: none"> <li>a) temperature sensors</li> <li>b) pressure sensors</li> <li>c) timing sensors</li> <li>d) water level sensors</li> <li>e) display screen</li> <li>f) throttle</li> <li>g) battery unit</li> <li>h) solenoids</li> <li>i) fasteners</li> <li>j) mountings</li> <li>k) connectors</li> <li>l) protective boots</li> <li>m) glands</li> <li>n) cable management and routing</li> </ul> </li> <li>• connectors for tamper proof cable tie. If missing plugs and receptacles are uncoupled and inspected. Ensure connectors are clean, dry and seals are in place. Clean both male and female connectors with approved electrical cleaner/lubricant. Clean pin holes. Check for cracking insulators or discolouring. Ensure earthing is correct, the integrity of moisture and dust barriers intact, locking pins and fasteners are functional and secure. After reconnection, install tamper proof cable tie around connection.</li> <li>• throttle pedal torsion spring for evidence of corrosion, pitting, damage or cracking. If evident, return pedal assembly to PPK for torsion spring replacement.</li> </ul> <p><b>test</b></p>		<p>Do not apply high pressure water directly on electronic components</p>

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	<ul style="list-style-type: none"> <li>• operation of the redundant path watchdog system (if fitted). Refer SWP CT2.24.</li> </ul> <p><b>record</b></p> <ul style="list-style-type: none"> <li>• MONEx Fault Log history – manual screen search and record problematic events and/or historic concerns of interest AND/OR electronic upload and capture of data using the MONEx LRS (Log Retrieval System) &gt;</li> <li>• engine configuration files via ET Tool to capture the engines current electronic signature</li> </ul>		<p>Earlier MONEx versions do not have the ability to use the LRS electronic upload</p>
<p>Mechanical Flameproof System</p>	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• scrubber tank by fully draining at the lower socket to remove built up exhaust residue. If a ball valve is used in this port, a plug must accompany it to comply with safety regulations.</li> <li>• scrubber tank internally by hosing out with drain plug removed (use appropriate detergent as required)</li> <li>• y-piece strainer in scrubber fill line</li> <li>• air inlet flametrap, remove and wash in soapy water, dry with compressed air and fit new gaskets on assembly</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• scrubber vibration mounts for wear or damage and ensure area is free from debris</li> <li>• compliance labels, present, secure and in date</li> <li>• all items for integrity, security and damage</li> <li>• fasteners on the mechanical flameproof joints</li> <li>• turbo mount for looseness or evidence of broken studs</li> <li>• inlet system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• exhaust system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• check for excessive blue exhaust smoke and irritating fumes at varying load and rev ranges.</li> <li>• add water conditioner to scrubber make up tank (if applicable to site). Note; do not over dose the scrubber water with conditioner</li> <li>• scrubber static water level when stopped using the scrubber dipstick</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments/contamination from the scrubber make-up tank via the tanks bottom drain plug – remove cap to depressurise first</li> </ul>		<p>Code D mechanical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Ref. AS/NZS 3584.3 Use your local <b>COALTRAM®</b>Agent for this purpose.</p> <p>Note! All parts, gaskets and fasteners relating to the flameproof integrity must be genuine <b>COALTRAM®</b> parts to maintain approval compliance. All flameproof components should be removed from the engine system and inspected to ensure compliance. All fasteners should be replaced with correct parts. Ref. AS/NZS 3584.3</p> <p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>

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Particulate Filter System (Option 1)	<b>inspect</b> <ul style="list-style-type: none"> <li>condition, integrity and security of housing /components</li> <li>housing door/lid seal; replace if not sealing</li> <li>scrubber tank spike valve and operation via hand</li> </ul>		Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) or Cosway (5520010707)
Ceramic Wall-Flow Filter System (CWFF) (Option 2)	<b>Inspect</b> <ul style="list-style-type: none"> <li>Safety Isolation Valve x 2</li> <li>Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>Inlet &amp; Outlet Temperature Sensors</li> <li>Diesel Oxidation Catalyst element – remove and inspect for damage &gt;</li> <li>Filter element – remove and inspect for damage &gt;</li> <li>Heat Shield Rubber, Turbo Inlet Flange, CWFF</li> <li>Heat Shield Rubber, Exhaust Manifold, CWFF</li> <li>Ex Gland, adapters, spigots, conduits, etc (Monitor and Shutdown System, CWFF)</li> <li>Electrical Cables</li> <li>HA110 (inc. push button, window, etc) (Visual)</li> <li>Junction box (Visual)</li> <li>HA116-H (Visual)</li> <li>Antenna</li> </ul> <b>Calibrate</b> <ul style="list-style-type: none"> <li>Differential &amp; Back Pressure Sensors (5520011028)</li> </ul> <b>Remove + Clean</b> <ul style="list-style-type: none"> <li>Flame Trap – Pressure sensor x 2</li> <li>Filter element</li> </ul> <b>Replace</b> <ul style="list-style-type: none"> <li>Internal sealing gaskets (5520011006)</li> </ul>		Filter removal requires opening flameproof joints. Only to be conducted by competent, authorised persons. Ensure new gaskets are available prior to reassembly. Ref. SWP CT 3.53  Flame traps must be cleaned as per OEM recommendations

### COALTRAM® VEHICLE SYSTEMS

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<b>wash</b> <ul style="list-style-type: none"> <li>entire vehicle thoroughly. Fit wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices</li> </ul> <b>inspect</b> <ul style="list-style-type: none"> <li>steering articulation lock</li> <li>boom safety support locks</li> <li>safety triangles</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>wheel chocks</li> <li>decals, stickers and warning labels</li> </ul>		
Drive Train General	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>all component breathers (transmission, differentials, upbox)</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>integrity of breather hoses/lines</li> <li>security of upbox mounting bolts</li> <li>security of transverter mounts and bolts</li> <li>security of axle mounting bolts and potential movement between housings and frame. Check if 0.2mm feeler gauge can pass between mating faces &gt;</li> <li>differential centre fasteners</li> <li>condition and adjustment of transmission F.N.R selector and gear lever linkages and cables</li> </ul>		<p>Front axle bolts - 633Nm (467ftlb) Rear axle bolts - 366Nm (270ftlb) If feeler gauge passes between faces, remove bolts, lower axle clean mating faces and install new bolts</p>
Drive Train Shafts	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>front axle driveshaft universals/slip joint for wear</li> <li>rear axle driveshaft universals/slip joint for wear</li> <li>driveline centre bearings x 2</li> <li>transverter to centre bearing universals/slip joint for wear</li> <li>upbox / transverter drive shaft universals/slip joint for wear</li> <li>all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>all driveline fasteners, check they are all tight by using appropriate tools</li> </ul>		
Drive Train Lubrication	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>oil from transverter x1 for analysis</li> <li>oil from differentials x2 for analysis</li> <li>oil from planetaries x4 for analysis</li> <li>oil from upbox x1 for analysis</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>transverter oil</li> <li>transverter oil filter</li> <li>both differential oils</li> <li>all four planetary oils</li> <li>upbox oil</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>oil levels after allowing vehicle to stand for 5 minutes after filling</li> <li>transmission oil level with engine idling</li> <li>all four wheel ends/planetary oil levels</li> <li>front and rear differential centre oil levels</li> </ul>		

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	<ul style="list-style-type: none"> <li>• upbox oil level</li> <li>• for oil leaks after test driving</li> <li>• hub seals for leaks</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• transverter suction screen - record contents if foreign/excessive</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• transverter clutch pressures, check using gauge in dash&gt;</li> <li>• transmission cooling system rate is sufficient – stall system and heat to approx. 110°C, select neutral and hold at mid-range rpm. Temperature should drop quickly to below 100°C within a few minutes</li> </ul>		<p>Transverter clutch pressures – 240-280 psi All clutch pressures to be within 5psi of each other</p>
Wheels and Tyres	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• for loose and missing wheel nuts</li> <li>• tyres for damage and record condition and % of tread remaining &gt;</li> <li>• tyre pressures with gauge (if pneumatic or air/water filled) &gt;</li> <li>• tyre ID labels are in place (e.g. foam filled/solid/ water filled)</li> <li>• for compliance labels if pneumatic</li> <li>• wheel rim and lock ring for damage/ missing parts</li> </ul> <p><b>tension</b></p> <ul style="list-style-type: none"> <li>• all wheel nuts 343Nm (253ftlb)</li> </ul>		<p>DSF                    ODSF DSR                    ODSR</p> <p>Note! Always refer to tyre manufacturers for specific tyres pressures. Always follow site requirements for tyre inspections. Specs below are general ranges only <b>Air filled - Front</b> 8.0 Bar / 116 psi <b>Air filled - Rear</b> 6.0 Bar / 87 psi</p>
Hydraulic General	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition of all cylinders</li> <li>• crowd cylinder (CT08/CT10LP only) - inspect for signs that the rod clevis has moved - look for gap between rod shoulder and clevis.</li> <li>• crowd cylinder (CT08/CT10LP only) - Inspect all the clevis clamp bolts are in place and secure with no visible signs of movement. The correct tension of all clamp bolts must be confirmed &gt;</li> <li>• for oil leaks</li> <li>• visually check accessible hydraulic hoses, fittings and components</li> <li>• functionality of all hydraulics</li> <li>• discolouration or aeration of the oil</li> <li>• Auxiliary cooling fan condition and system operation</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• Master hitch release valve cartridge</li> </ul>		<p>Ref SWP CT 6.72</p>
Hydraulic Lubrication	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• steer and brake pressure filters</li> <li>• hydraulic pressure and return filters</li> <li>• hydraulic tank breather</li> </ul>		



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	<ul style="list-style-type: none"> <li>• hydraulic oil – confirm with customer (drain both tanks from bottom drain points)</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• If tanks are drained clean both hydraulic tanks internally via the two access covers – wipe out contaminants/sediments with lint free rag</li> <li>• internally placed magnets in the bottom of each tank</li> </ul> <p><b>inspect</b> after re-starting</p> <ul style="list-style-type: none"> <li>• return filter restriction indicator– if extended and protruding, investigate reason</li> <li>• oil level at front swing open tank sight glass with engine stopped</li> <li>• oil level at rear main tank sight glass with engine running</li> <li>• air operated oil fill pump for operation</li> </ul>		
Steering System	<p><b>test</b></p> <ul style="list-style-type: none"> <li>• Pilot pressure to steering orbital &gt;</li> <li>• bypass test steer cylinders</li> </ul>		Pilot pressure 30 bar ± 4 (435PSI ± 60)
Braking System	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• all brake hoses/fittings and replace worn or damaged items</li> <li>• air pilot vent on the park brake dump valve is orientated towards the ground</li> <li>• park brake actuation valve integrity, rotate valve shaft via the knob while released and check for binding.</li> <li>• multi-disc wet brake wear and record results- use the genuine service tool only &gt;</li> </ul> <p><b>bleed</b></p> <ul style="list-style-type: none"> <li>• air from the brake circuits after replacing hydraulic tank oil</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• secondary brake dump valve air pilot and cartridge</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• brake system pressure settings and re-set if required.</li> <li>• accumulator nitrogen charge pressure by watching the accumulator charge gauge reading after engine shutdown. When pressure starts to drop rapidly it needs to be 1200psi ± 50.</li> <li>• operation of primary and secondary brake dump valve by isolating the pilot pressure - brakes should not release with this pilot isolated.</li> <li>• brake functions using either the NSW MDG39 or QLD Brake Test Form &gt;</li> </ul>		<p>Brake wear results (PASS/FAIL) –</p> <p>DSF                      ODSF</p> <p>DSR                      ODSR</p> <p>Brake accumulator pressure 10.5 -14.5 MPa (+/- 0.2) 1530 - 2100psi (+/- 30)</p> <p>Brake release pressure 9.2-10.3 MPa (+/- 0.2) 1330 - 1495psi (+/- 30)</p> <p>(1600±50psi following EB18006 upgrade)</p> <p>Refer site compliance section below</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Frame	<p><b>tension</b></p> <ul style="list-style-type: none"> <li>all split caps trunnion fasteners on the articulation, boom, cylinders, master hitch and steering &gt;</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all towing, lifting and tie down points</li> <li>integrity of crowd cylinder clevises and bosses</li> <li>all covers, guards, latches and hinges for operation, damage and wear</li> <li>master hitch lock cylinder operation. Check eject/retract direction is correct</li> <li>ROPS/FOPS canopy for security, damage and compliance plate</li> <li>implement /attachment profile with template or against approved GA drawings.</li> <li>master hitch cradle profile with template or against approved GA drawings.</li> <li>security of oscillation/bolster mount bolts</li> <li>bucket tongue fasteners</li> <li>visually for cracks and if required confirm via NDT / crack testing, the vehicles accessible critical stress points</li> </ul> <p><b>check</b></p> <p>correct operation and record wear in -</p> <ul style="list-style-type: none"> <li>articulation points</li> <li>lift arm</li> <li>bucket pins</li> <li>steering pins</li> <li>bolster (axle oscillation points)</li> <li>tilt/crowd cylinder</li> <li>lift cylinders</li> <li>master hitch cylinder(s)</li> </ul>		<p>Torque Specifications</p> <ul style="list-style-type: none"> <li>Crowd cylinder cap bolt 1480Nm (1092ftlb)</li> <li>Hitch QDS cap bolt 1480Nm (1092ftlb)</li> <li>Steer cylinder cap bolt 366Nm (270ftlb)</li> <li>Articulation cap bolt 633Nm (467ftlb)</li> <li>Canopy M22 499Nm (368ftlb)</li> <li>Canopy M30 1253Nm (924ftlb)</li> </ul>
Vehicle Safety Interlocks	<p><b>check</b></p> <ul style="list-style-type: none"> <li>door interlock valve is operational - park brake applies when door opened</li> <li>neutral start valve is operational - vehicle will not start in FWD or REV</li> <li>door alarm latch function - when Park Brake is released, partly open door latch for audible horn response</li> <li>hydraulic door interlock valve function - park brake will not release when hydraulic door is opened</li> </ul>		
Cab Section	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>gauges are all operational</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• all gauge pressures and temps at operating temperature – record results &gt;</li> <li>• seat condition and seat suspension for operation</li> <li>• seat base, swivel and mountings for security/integrity</li> <li>• all upholstery in cabin</li> <li>• horn operation via button on dash</li> <li>• brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>• emergency brake operation function by applying park brake while moving slowly</li> <li>• service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>• operation of all hydraulic functions</li> <li>• door handle operation</li> <li>• pinch point prevention on door</li> <li>• master hitch removal function isolates until door mounted twist knob is operated</li> <li>• for operational interference around all control levers, brake and accelerator pedals</li> <li>• steering operations – wheel and stick steer</li> <li>• steering is isolated when park brake is applied</li> <li>• steering wheel and spinner condition and operation</li> <li>• steering column bearing condition, operation and longitudinal movement</li> <li>• remove rubber boot on stick steering lever check integrity, lubricate linkage (valve/o ring grease only)</li> <li>• lift rubber boot on main hydraulic lever, use contact cleaner to remove all contamination from the body. Inspect plungers for damage &amp; lubricate (valve/o ring grease only). Inspect actuation disk for secureness and match marking to the lock nut. Check gap between plungers and actuation disk is greater than 0.2mm. Re-secure rubber boot with cable tie.</li> </ul>		Coolant Temp <hr/> Transmission Temp <hr/> Hydraulic Temp <hr/> Brake Accumulator Pressure <hr/> Brake Release Pressure <hr/> Transmission Pressure <hr/> Eng. Oil Pressure <hr/> Air Pressure <hr/> Backpressure <hr/>
GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Vehicle Flameproof Electrical Systems	<b>inspect</b> <ul style="list-style-type: none"> <li>• operation of all lights (including directional lighting if applicable)</li> <li>• positioning of light directions/ projections</li> <li>• clean light lenses and any other enclosure windows</li> <li>• check camera display and directional switching is operational (if applicable)</li> <li>• Methane system for damage</li> </ul>		These inspections do not negate regional and site statutory electrical inspection regimes. Electrical Statutory Inspections must be performed by trained and authorised personnel.

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• Fifth light functionality if fitted</li> </ul> <p><b>check</b></p> <p>condition/integrity of following items</p> <ul style="list-style-type: none"> <li>• hosing and cabling</li> <li>• installation and mounting areas for potential hazards</li> <li>• fastener security</li> <li>• alternators mountings and surrounding area for excessive debris. Clean as required &gt;</li> <li>• alternator bearings, mounts, drive covers and drive couplings for wear, noise or damage</li> </ul>		<p>Electrical Flameproof enclosures are recommended to be re-certified every 4 years as a minimum.</p> <p>Code D electrical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Use your local <b>COALTRAM®</b> Agent for this process.</p> <p>Refer separate statutory electrical inspection sheet.</p> <p>Note! Do not hose water directly on alternator when at operating temperatures</p>
Manual Greasing	<p><b>grease</b></p> <ul style="list-style-type: none"> <li>• all points on vehicle, check all are receiving grease</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• grease lines for damage/leaks</li> <li>• all points are receiving grease</li> </ul>		
Autolube System (If Applicable)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• operation of autolube greaser</li> <li>• grease lines for leaks</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• grease cartridges</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>• visual evidence of grease at all joints</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• fire extinguisher indicator gauge(s) are in the green zone</li> <li>• bottle(s) condition</li> <li>• condition of fire extinguisher brackets/clamps</li> <li>• tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• fire suppression system indicator gauge is in the green zone</li> <li>• condition/integrity of fire suppression bottle, lines and nozzles</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>relevant statutory inspections have been completed (system to be tagged/dated)</li> </ul>		
Site Compliance	<p><b>check</b></p> <ul style="list-style-type: none"> <li>brake test has been carried out as per site regulations</li> <li>gas test has been carried out as per site regulations</li> <li>exhaust gas emissions are within baseline testing specification limits &gt;</li> </ul>		>Refer to the vehicles approval documents for base line gas testing >Test with engine at operating temperature

LUBRICANTS		
COMPONENT	FLUID TYPE	CAPACITY
ENGINE	SAE 15W40	30L
RADIATOR/ENGINE	PRE-MIX 100% SAE COOLANT	68L - FILL VERY SLOWLY, BLEED AIR FROM EXHAUST COOLING LINES
UP BOX	90W	2L - FILL VERY SLOWLY
TRANSVERTER/TRANSMISSION	10W/30	25L - CHECK WITH ENGINE RUNNING
DIFFERENTIALS	85W140	18L EACH
PLANETARIES	85W140	3.7L EACH
HYDRAULIC TANK	10W/30 - WET BRAKE COMPLIANT	160L - CHECK MAIN REAR TANK LEVEL WITH ENGINE RUNNING, AND FRONT TANK WITH ENGINE STOPPED

FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS							
DESCRIPTION	PART NUMBER	QTY						CODE D		
SERVICE KIT PART NUMBER								5520001780		
FILTERS								Yearly / 2000 hr		

Air Filter (Outer)	5520000240	1							•		
Engine Oil Filter	5520000494	1							•		
Turbo Saviour Filter	5520000177	1							•		
Fuel Filter – Primary Water Separator	5520000648	1							•		
Fuel Filter – Secondary	5520001765	1							•		
Transverter Filter	5520001237	1							•		
Transverter Filter Housing O Ring	9236201751	1							•		
Air Filter (Inner)	5520000241	1							•		
Hydraulic Steer Filter – Pressure	5520010556	1							•		
Hydraulic Brake Filter – Pressure	5520000278	1							•		
Hydraulic Return Filter	5541300800	1							•		
Hydraulic Steer Filter O Ring	5520002217	1							•		
Hydraulic Brake Filter O Ring	5520002218	1							•		
Hydraulic Return Filter O Ring Kit	5520002219	1							•		
Sensor Manifold Air Filter Element	5520010490	1							•		
<b>PARTS</b>											
SOS Sample Bottle	5520001865	11							•		
Engine Breather Assembly	5520000214	1							•		
Engine Breather O Ring	5520000217	1							•		
Fan Belts 168kw	5520000350	2							•		
Water Pump Belt	5520000384	1							•		
Flametrap Gasket	5520000093	2							•		
Transverter Screen Gasket	5533358300	1							•		
Diff Breather	5534307200	2							•		
Upbox Breather	5534307200	1							•		
Transverter Breather	5541501500	1							•		
Hydraulic Tank Breather	5537168400	1							•		
Brake Wear Indicator Tool	5520000387	1							•		
Water Pump Tensioner Pulley Bearing	5520000037	2							•		
Water Pump Tensioner Pulley Seal	5520009346	2							•		
Coolant	5520000644	80L							•		
Compressor Delivery Hose	5520000427	1							•		
Air Tank Check Valve	5520000174	1							•		
Air Tank Relief Valve	5520000150	1							•		
Air Separator Filter Element	5520001864	1							•		
Radiator Hose – Upper	5520001233	2							•		
Radiator Hose Clamp	5520000454	4							•		
Radiator Hose – Lower ODS	5520001232	1							•		
Radiator Hose – Lower DS	5520001686	1							•		

Hose Clamp – Suit Lower Hoses	5520000659	4							•		
Exhaust Manifold Head Bypass Hose	5520001234	1							•		
Exhaust Manifold Water Pump Bypass Hose	5520001235	1							•		
Hose Clamp – Suit Bypass Hoses	5520001703	4							•		
Secondary brake dump valve cartridge	5520000318	1							•		
Secondary brake dump valve pilot	5520002159	1							•		
Master hitch release valve cartridge	5520002021	1							•		

**Additional Parts not included in service kit**

DESCRIPTION	PART NUMBER	QTY
Autolube grease cartridge 450gm	5520001696	2

**Ceramic Wall-Flow Filter System (CWFF) (if fitted)**

DESCRIPTION	PART NUMBER	QTY
Water Pump Belt (Relocated Tensioner)	5520011040	1
Gasket – Intake cone to flametrap /Flametrap to inlet manifold	5520011005	2
Gasket – CWF inner shell to downpipe	5520011004	1
Gasket – CWF element internal	5520011006	2

**COALTRAM® CT08/CT10/CT10LP – CODE D1 MAINTENANCE – 2 Yearly / 4000 Hour**

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.  
Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.

VEHICLE PLANT NUMBER		HIRER /OWNER	
VEHICLE SERIAL NUMBER		DATE	
SITE		METHANE HOURS	
PROJECT/JOB NUMBER		MONEx HOURS	

<b>IMMEDIATE REPAIRS COMPLETED:</b>	
<b>FUTURE REPAIRS REQUIRED:</b>	
<b>TECHNICAL BULLETINS AND SAFETY ALERTS</b>	It's the Owner's responsibility to ensure compliance. Supervisor to circle Yes/No and initial <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span><input type="checkbox"/> Yes</span> <span><input type="checkbox"/> No</span> </div>
It's recommended that a complete TBGAS (Technical Bulletin and General Alerts Sheet) Audit is conducted at Code D level and above to ensure the vehicle and Diesel Engine System complies with OEM and industry requirements.	

**TECHNICIANS**

PRINT NAME(S)		SIGN		DATE	
PRINT NAME(S)		SIGN		DATE	

**SUPERVISORS**

PRINT NAME(S)		SIGN		DATE	
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**COALTRAM MAINTENANCE SAFETY INFORMATION**

- Ensure that all safety information is read and understood before maintenance or repair task is performed
- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<p>1. PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</p> <p>2. Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</p> <p>3. All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</p> <p>4. Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</p> <p>5. When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</p> <p>6. Keep clear of suspended loads. Use Safety line to control load when required.</p> <p>7. Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</p> <p>8. Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</p> <p>9. Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</p> <p>10. Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</p>	<p>13. Information labels on machine must be observed</p> <p>14. Service points on machine must be observed</p> <p>15. Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</p> <p>16. Hot surfaces. Be aware of hot surfaces when machine has been running.</p> <p>17. Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</p> <p>18. Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</p> <p>19. Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</p> <p>20. Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</p>	<p>24. Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</p> <p>25. Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</p> <p>26. Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</p> <p>27. Current information: Ensure current information is available prior to commencing maintenance or repair task.</p> <p>28. Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</p> <p>29. Ventilation Ensure adequate ventilation when testing machine</p> <p>30. Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</p> <p>31. Stay clear of rotating parts</p> <p>32. Always use tools that are in good serviceable condition</p> <p>33. Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</p> <p>34. Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</p> <p>35. Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</p>
<p>11. Warning labels on machine must be observed</p> <p>12. Prohibition labels on machine must be observed</p>	<p>21. Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</p> <p>22. Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</p> <p>23. Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</p>	



**RECOMMENDED COALTRAM MAINTENANCE AND COMPLIANCE SCHEDULE**

REF. DOCS. AS3584.3, MDG1

<u>MAINTENANCE EXAMINATION CODE</u>	<u>CALENDER BASED REGIME</u>	<u>ENGINE HOURS REGIME</u>
CODE A EXAMINATION - Maintenance	DAILY	10
CODE B EXAMINATION - Maintenance	WEEKLY	50
CODE C EXAMINATION - Maintenance	MONTHLY	250
CODE C1 EXAMINATION - Maintenance	3 MONTHLY	500
CODE C2 EXAMINATION - Maintenance	6 MONTHLY	1000
CODE D EXAMINATION – Maintenance	YEARLY	2000
<b>CODE D1 EXAMINATION - Maintenance</b>	<b>2 YEARLY</b>	<b>4000</b>
CODE D2 EXAMINATION - Maintenance	NOT YEARLY BASED	8000
<p><b>COMPLIANCE OVERHAUL - Mechanical</b></p> <p>CODE D MECHANICAL COMPLIANCE OVERHAUL</p> <p>Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent and are to be aligned with Maintenance Examinations CODE C level or greater</p>		<p><b>2 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>
<p><b>COMPLIANCE OVERHAUL - Electrical</b></p> <p>CODE D ELECTRICAL COMPLIANCE OVERHAUL</p> <p>Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent</p>		<p><b>4 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>

**Notes:**

- If completing this service in conjunction with a code D, some tasks will be duplicated on the TDES paperwork. There is no requirement for the tasks to be repeated, though, both sets of paperwork should be completed.
- If using 4,000 hour service as basis for 12,000 hour, refer to critical component list for additional safety critical component requirements.
- When replacing safety critical components attach tag (5520010495) to identify install date. Tag can be attached with cable tie or suitable adhesive

**COALTRAM® ENGINE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS											
Vehicle Hours	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>		<p><b>* This symbol beside an instruction indicates there may be other activities to complete in conjunction with this task in a different area of this document.</b></p> <p><b>Eg. When the planetary wheel ends are drained, you need to measure the brake wear before refilling with oil*</b></p>											
Engine	<p><b>remove</b></p> <ul style="list-style-type: none"> <li>• covers and guards as required*</li> </ul> <p><b>wash</b></p> <ul style="list-style-type: none"> <li>• vehicle after fitting wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices. Wash complete engine system and all engine bay areas of excessive coal, dust, oil, mud, and debris</li> <li>• accumulated materials from the engine bay in a forward direction away from the radiator</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>• unusual knocks and noises</li> <li>• oil leaks</li> <li>• engine mounts and bolts.</li> <li>• starter motor is secure</li> <li>• sump security / integrity and corrosion</li> <li>• water ingress into engine flywheel housing – remove bottom plug and record contents</li> <li>• engine intake and exhaust valve clearances, adjust as required</li> <li>• bolts mounting engine to cradle</li> </ul> <p><b>sample</b></p> <ul style="list-style-type: none"> <li>• oil from engine x 1 for analysis</li> </ul>		<p>Tensions -</p> <ul style="list-style-type: none"> <li>• engine mount bolts - 189Nm (139 ft/lbs)</li> </ul> <p>Pressures when engine is at operating temperature –</p> <p>Oil Pressure (Min 20psi) – Idle _____</p> <p>Oil Pressure (80± 20psi) - Max Revs _____</p> <table border="1" data-bbox="1396 1198 1866 1513"> <tr> <td data-bbox="1396 1198 1493 1360"></td> <td data-bbox="1493 1198 1625 1360">CT08/10/10LP with 49" diameter tyres and larger</td> <td data-bbox="1625 1198 1757 1360">CT08/10LP with 45" diameter low profile tyres only</td> <td data-bbox="1757 1198 1866 1360"></td> </tr> <tr> <td data-bbox="1396 1360 1493 1513">RPM</td> <td data-bbox="1493 1360 1625 1513">Standard Spec - 13.7 ratio Converter</td> <td data-bbox="1625 1360 1757 1513">Modified Spec - 13.1 ration Converter</td> <td data-bbox="1757 1360 1866 1513">Results</td> </tr> </table>					CT08/10/10LP with 49" diameter tyres and larger	CT08/10LP with 45" diameter low profile tyres only		RPM	Standard Spec - 13.7 ratio Converter	Modified Spec - 13.1 ration Converter	Results
	CT08/10/10LP with 49" diameter tyres and larger	CT08/10LP with 45" diameter low profile tyres only												
RPM	Standard Spec - 13.7 ratio Converter	Modified Spec - 13.1 ration Converter	Results											

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS			
	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• engine oil</li> <li>• engine oil filter</li> <li>• turbo saviour oil filter</li> <li>• engine breather</li> <li>• engine breather hose</li> </ul> <p><b>re-check</b> after running engine</p> <ul style="list-style-type: none"> <li>• oil level</li> <li>• leaks</li> <li>• oil pressure &gt; Record result at operating temperature</li> <li>• idle, flight and stall rpm &gt; Record result</li> </ul>		Idle	860-880	860-880	
			Flight	2220± 50	2220± 50	
			Trans stall	1980± 50	2120± 50	
			Hyd and Trans stall	1730± 50	1800± 50	
Engine Air Intake	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• air cleaner inner and outer filter elements</li> <li>• Intake choker valve assembly if vehicle history shows service life is due – Choker has a 4000 hour recommended service life</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>• system for security and leaks</li> <li>• hosing/pipe integrity</li> <li>• air charge pipe doesn't contact/rub on other components</li> <li>• air cleaner housing integrity</li> <li>• test operation of choker/strangler valve as per workplace instructions &gt;</li> </ul>		Refer to Standard Work Procedures or the Service Manual for detailed Choker test instructions. Incorrect choker testing can cause engine damage			
GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS			
Cooling System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• radiator thoroughly from the rear side and the front engine bay side with a high flow hose and detergent. Note! High pressure water at close range diagonally across radiator may fold over fins and restrict air flow</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• water pump FRAS V-belt - ensure correct tension after test running for a short period of time</li> <li>• engine cooling fan FRAS V-belts - ensure correct tension after test running for a short period of time</li> <li>• water pump belt tensioner pulley bearings and seals</li> <li>• upper and lower radiator hoses and clamps</li> <li>• exhaust manifold head bypass hose and clamps</li> <li>• exhaust manifold /water pump bypass hose and clamps</li> <li>• engine coolant &gt;</li> </ul>		Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations			

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• engine thermostat and gasket</li> <li>• all ¾, ½ and ¼ engine system cooling hoses with U/G coal mines approved items</li> <li>• radiator cap with new item – 13psi only</li> <li>• radiator cap neck and gasket</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• water pump tell-tale hole for signs of leakage</li> <li>• fan hub and tensioner bearings for excessive movement</li> <li>• radiator mounting bolts</li> <li>• fan blade condition/integrity</li> <li>• fan position in shroud (ensure centralised and correct protrusion 18mm to 22mm of blade protruding past shroud towards engine</li> <li>• for blockages in cores on both sides of the radiator</li> <li>• radiator and pulley guards are in place and secure</li> <li>• coolant is correct mix - coloured pre-mix &gt;</li> <li>• check coolant is in sight glass on header tank</li> <li>• radiator air flow (ensure average is within limits/guidelines) &gt;</li> <li>• all air is removed from the cooling system after refilling – test at small hoses at the highest points in the system</li> <li>• system for leaks after new hoses and coolant refill. Pressurise entire system to operating pressure of 13 psi</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• fan and idler pulley</li> </ul>		<p>Recommended to use pre-mixed Caterpillar ELC (Extra Long Life Coolant) or equivalent.</p> <p>Radiator Air flow is measured with a wind meter (anemometer) to check for blockages and/or incorrect fan position/performance – refer SWP 3.24</p>
Fuel System	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>• fuel from tank x 1 for analysis</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments and potential water from fuel tank drain plug – record any contamination or water in the fuel tank</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• all fuel filters</li> <li>• emergency fuel shut off valve</li> <li>• all fuel hoses</li> <li>• fuel tank check valve</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• fuel lines for contact on any hot components</li> <li>• fuel tank cap and strainer condition</li> <li>• fuel gauge level/operation/condition</li> <li>• for leaks</li> </ul>		
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• water/contaminants from air tank</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• air charge Y strainer</li> <li>• choker flow control valve (item 22 pneumatic schematic)</li> <li>• choker application valve (item 21 pneumatic schematic), remove, clean, replace breather and check operation</li> <li>• safety circuit pilot valve (item 12A pneumatic circuit), remove, clean, replace breather and check operation</li> <li>• additional start valve (item 89 pneumatic circuit), remove, clean, replace breather and check operation</li> <li>• relief valve (item 88 pneumatic schematic), remove, clean and check operation</li> <li>• cab door interlock valve, remove, clean, replace breather and check operation</li> <li>• isolation transmission declutch valve (item 12 pneumatic schematic), remove, clean and check operation</li> <li>• transmission declutch valve (item 13 pneumatic schematic), remove, clean, check piston seal, lubricate (valve/o ring grease) and check operation</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• leaks on system and repair/report</li> <li>• compressor cut out pressure 115-120psi (800– 850 kPa)</li> <li>• condition of all hoses and fittings</li> <li>• scrubber make up tank pressure – 5-7psi (35-50kPa)</li> <li>• safety circuit reduced pressure – 90-100psi (620– 690 kPa) – located behind the MONEx display dash panel</li> <li>• air compressor and delivery fittings internally for any accumulated carbon – replace parts if carbon build up present</li> <li>• annual pressure vessel testing is current for the air receiver</li> <li>• main isolation valve for leaks when in isolated position</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• air compressor delivery hose – ensure it's a genuine braided steel PTFE type</li> <li>• filter located inside the primary in-line water trap bowl in the articulation (no oil to be added)</li> <li>• air tank relief valve</li> <li>• pneumatic check valve on air tank/compressor system</li> <li>• sensor manifold air filter located inside the secondary in-line water trap bowl behind the MONEx display dash panel (no oil to be added)</li> <li>• Neutral start adaptor O ring</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
<p>Electronic Engine Management System</p>	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• both scrubber water shutdown sensor responses using test buttons – hold in to see the MONEx display to communicate low water. Longer than a few seconds will trigger a shutdown event</li> <li>• scrubber water shutdown system via the upper ball valve drain point – isolate supply line and drain to this shutdown level</li> <li>• coolant loss operation via test valve</li> <li>• engine oil pressure loss via test valve</li> <li>• deputy bypass Fob functionality (Red Fob) – this confirms fob reader integrity, and checks non-safety bypasses. Alternatively check reader with latching re-set Fob function (Black Fob)</li> <li>• rig throttle function via the MONEx screen, dial up RPM to 1800rpm, switch to engage, ensure engine audible response and rpm represents a hydraulic load is introduced. To check safety cut out, break the pneumatic circuit by individually releasing the park brake, opening the door, and selecting forward or reverse.</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• ECUEx – remove hinged top cover and inspect cable management, foreign ingress and cooling water leaks – reverse flush ECUEx cooling line back into the scrubber make-up tank</li> <li>• scrubber level sensor operating linkages and floats</li> <li>• condition and integrity of all MONEx electronic components</li> <li>• the following for incorrect parts, unauthorised modifications, missing parts/guards/covers, loss of identifying labels, cracks, missing seals, damage, erosion, corrosion, deterioration, loose items, fatigue and contamination</li> <li>• temperature sensors</li> <li>• pressure sensors</li> <li>• timing sensors</li> <li>• water level sensors</li> <li>• display screen</li> <li>• throttle</li> <li>• battery unit</li> <li>• solenoids</li> <li>• fasteners</li> <li>• mountings</li> <li>• connectors</li> <li>• protective boots</li> <li>• glands</li> </ul>		<p>These mechanical inspections do not negate recommended 4 yearly regional and site statutory electrical inspection regimes.</p> <p>Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Refer separate statutory electrical inspection sheet.</p> <p>Do not apply high pressure water directly on electronic components</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• cable management and routing</li> <li>• connectors for tamper proof cable tie. If missing plugs and receptacles are uncoupled and inspected. Ensure connectors are clean, dry and seals are in place. Clean both male and female connectors with approved electrical cleaner/lubricant. Clean pin holes. Check for cracking insulators or discolouring. Ensure earthing is correct, the integrity of moisture and dust barriers intact, locking pins and fasteners are functional and secure. After reconnection, install tamper proof cable tie around connection.</li> <li>• Unbolt pedal assembly from floor plate, clean and inspect throttle pedal torsion spring for evidence of corrosion, pitting, damage or cracking. If evident, return pedal assembly to PPK for torsion spring replacement.</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• Main Wiring harness</li> <li>• Solenoid valves x 3 (isolation, start, rig bolter)</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• operation of the redundant path watchdog system (if fitted). Refer SWP CT2.24.</li> </ul> <p><b>record</b></p> <ul style="list-style-type: none"> <li>• MONEx Fault Log history – manual screen search and record problematic events and/or historic concerns of interest AND/OR electronic upload and capture of data using the MONEx LRS (Log Retrieval System) &gt;</li> <li>• engine configuration files via ET Tool to capture the engines current electronic signature</li> </ul>		<p>Earlier MONEx versions do not have the ability to use the LRS electronic upload</p>
<p>Mechanical Flameproof System</p>	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• scrubber tank by fully draining at the lower socket to remove built up exhaust residue. If a ball valve is used in this port, a plug must accompany it to comply with safety regulations.</li> <li>• scrubber tank internally by hosing out with drain plug removed (use appropriate detergent as required)</li> <li>• y-piece strainer in scrubber fill line</li> <li>• air inlet flametrap, remove and wash in soapy water, dry with compressed air and fit new gaskets on assembly</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• scrubber vibration mounts for wear or damage and ensure area is free from debris</li> <li>• compliance labels, present, secure and in date</li> <li>• all items for integrity, security and damage</li> <li>• fasteners on the mechanical flameproof joints</li> <li>• turbo mount for looseness or evidence of broken studs</li> </ul>		<p>Code D mechanical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Ref. AS/NZS 3584.3 Use your local <b>COALTRAM®</b> Agent for this purpose.</p> <p>Note! All parts, gaskets and fasteners relating to the flameproof integrity must be genuine <b>COALTRAM®</b> parts to maintain approval compliance. All flameproof components should be removed from the engine system and inspected to ensure compliance. All fasteners should be replaced with correct parts. Ref. AS/NZS 3584.3</p>



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• inlet system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• exhaust system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>• check for excessive blue exhaust smoke and irritating fumes at varying load and rev ranges.</li> <li>• add water conditioner to scrubber make up tank (if applicable to site). Note; do not over dose the scrubber water with conditioner</li> <li>• scrubber static water level when stopped using the scrubber dipstick</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments/contamination from the scrubber make-up tank via the tanks bottom drain plug – remove cap to depressurise first</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• scrubber water fill valve seal</li> <li>• replace or overhaul turbo charger assembly if vehicle history shows service life is due – Turbo charger has a 4000 hour recommended service life – if replaced engrave date of replacement and current engine hours on exhaust section.</li> </ul>		<p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>
<p>Particulate Filter System (Option 1)</p>	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition, integrity and security of housing /components</li> <li>• Inspect housing door/lid seals; replace if not sealing</li> <li>• scrubber tank spike valve and its operation via removal and bench testing</li> </ul>		<p>Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) or Cosway (5520010707)</p>
<p>Ceramic Wall-Flow Filter System (CWFF) (Option 2)</p>	<p><b>Inspect</b></p> <ul style="list-style-type: none"> <li>• Safety Isolation Valve x 2</li> <li>• Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>• Inlet &amp; Outlet Temperature Sensors</li> <li>• Diesel Oxidation Catalyst</li> <li>• Filter element – remove and inspect for damage.</li> <li>• Heat Shield Rubber, Turbo Inlet Flange, CWFF</li> <li>• Heat Shield Rubber, Exhaust Manifold, CWFF</li> <li>• Ex Gland, adapters, spigots, conduits, etc (Monitor and Shutdown System, CWFF)</li> <li>• Electrical Cables</li> <li>• HA110 (inc. push button, window, etc) (Visual)</li> <li>• Junction box (Visual)</li> <li>• HA116-H (Visual)</li> <li>• Antenna</li> </ul> <p><b>Remove + Clean</b></p> <ul style="list-style-type: none"> <li>• Flame Trap – Pressure sensor x 2</li> <li>• Filter element &gt;</li> </ul> <p><b>Replace</b></p> <ul style="list-style-type: none"> <li>• Internal sealing gaskets (5520011006)</li> </ul>		<p>Filter removal requires opening flameproof joints. Only to be conducted by competent, authorised persons. Ensure new gaskets are available prior to reassembly. Ref. SWP CT 3.53</p> <p>Flame traps must be cleaned as per OEM recommendations</p>

**COALTRAM® VEHICLE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<p><b>wash</b></p> <ul style="list-style-type: none"> <li>• entire vehicle thoroughly. Fit wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• steering articulation lock</li> <li>• boom safety support locks</li> <li>• safety triangles</li> <li>• wheel chocks</li> <li>• decals, stickers and warning labels</li> </ul>		
Drive Train General	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• all component breathers (transmission, differentials, upbox)</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• integrity of breather hoses/lines</li> <li>• security of upbox mounting bolts</li> <li>• security of transverter mounts and bolts</li> <li>• security of axle mounting bolts and potential movement between housings and frame. Check if 0.2mm feeler gauge can pass between mating faces &gt;</li> <li>• differential centre fasteners</li> <li>• condition and adjustment of transmission F.N.R selector and gear lever linkages and cables</li> </ul>		<p>Front axle bolts - 633Nm (467ftlb) Rear axle bolts - 366Nm (270ftlb) If feeler gauge passes between faces, remove bolts, lower axle clean mating faces and install new bolts</p>
Drive Train Shafts	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• front axle driveshaft universals/slip joint for wear</li> <li>• rear axle driveshaft universals/slip joint for wear</li> <li>• driveline centre bearings x 2</li> <li>• transverter to centre bearing universals/slip joint for wear</li> <li>• upbox / transverter drive shaft universals/slip joint for wear</li> <li>• all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>• all driveline fasteners, check they are all tight by using appropriate tools</li> </ul>		
Drive Train Lubrication	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>• oil from transverter x1 for analysis</li> <li>• oil from differentials x2 for analysis</li> <li>• oil from planetaries x4 for analysis</li> <li>• oil from upbox x1 for analysis</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• transverter oil</li> <li>• transverter oil filter</li> <li>• both differential oils</li> <li>• all four planetary oils</li> <li>• upbox oil</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• oil levels after allowing vehicle to stand for 5 minutes after filling</li> <li>• transmission oil level with engine idling</li> <li>• all four wheel ends/planetary oil levels</li> <li>• front and rear differential centre oil levels</li> <li>• upbox oil level</li> <li>• for oil leaks after test driving</li> <li>• hub seals for leaks</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• transverter suction screen - record contents if foreign/excessive</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• transverter clutch pressures, check using gauge in dash &gt;</li> <li>• transmission cooling system rate is sufficient – stall system and heat to approx. 110°C, select neutral and hold at mid-range rpm. Temperature should drop quickly to below 100°C within a few minutes</li> </ul>		<p>Transverter clutch pressures – 240-280 psi All clutch pressures to be within 5psi of each other</p>
Wheels and Tyres	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• for loose and missing wheel nuts</li> <li>• tyres for damage and record condition and % of tread remaining &gt;</li> <li>• tyre pressures with gauge (if pneumatic or air/water filled) &gt;</li> <li>• tyre ID labels are in place (e.g. foam filled/solid/ water filled)</li> <li>• for compliance labels if pneumatic</li> <li>• wheel rim and lock ring for damage/ missing parts</li> </ul> <p><b>tension</b></p> <ul style="list-style-type: none"> <li>• all wheel nuts 343Nm (253ftlb)</li> </ul>		<p>DSF                    ODSF DSR                    ODSR</p> <p>Note! Always refer to tyre manufacturers for specific tyres pressures. Always follow site requirements for tyre inspections. Specs below are general ranges only</p> <p><b>Air filled - Front</b> 8.0 Bar / 116 psi <b>Air filled - Rear</b> 6.0 Bar / 87 psi</p>
Hydraulic General	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition of all cylinders</li> <li>• crowd cylinder (CT08/CT10LP only) - inspect for signs that the rod clevis has moved - look for gap between rod shoulder and clevis.</li> <li>• crowd cylinder (CT08/CT10LP only) - Inspect all the clevis clamp bolts are in place and secure with no visible signs of movement. The correct tension of all clamp bolts must be confirmed &gt;</li> <li>• for oil leaks</li> <li>• visually check accessible hydraulic hoses, fittings and components</li> <li>• functionality of all hydraulics</li> <li>• discolouration or aeration of the oil</li> </ul>		<p>Ref SWP CT 6.72</p> <p>Ref SR - Hydraulic Test CT08/10/LP.</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• Auxiliary cooling fan condition and system operation</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• master hitch release valve cartridge</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• and record all circuit pressure settings &gt;</li> <li>• and record all pump flows</li> <li>• cylinder piston bypass and cylinder valve operations</li> </ul>		
Hydraulic Lubrication	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>• steer and brake pressure filters</li> <li>• hydraulic pressure and return filters</li> <li>• hydraulic tank breather</li> <li>• hydraulic oil – confirm with customer (drain both tanks from bottom drain points)</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• If oil is drained clean both hydraulic tanks internally via the two access covers – wipe out contaminants/sediments with lint free rag</li> <li>• internally placed magnets in the bottom of each tank</li> </ul> <p><b>inspect</b> after re-starting</p> <ul style="list-style-type: none"> <li>• return filter restriction indicator– if extended and protruding, investigate reason</li> <li>• oil level at front swing open tank sight glass with engine stopped</li> <li>• oil level at rear main tank sight glass with engine running</li> <li>• air operated oil fill pump for operation</li> </ul>		
Steering System	<p><b>overhaul or replace</b></p> <ul style="list-style-type: none"> <li>• steer amplifier &gt;</li> <li>• steer cylinders &gt;</li> </ul>		Steer amplifier part #5520004498 Steer cylinder part #5520002016
Braking System	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• all brake hoses/fittings and replace worn or damaged items</li> <li>• air pilot vent on the park brake dump valve is orientated towards the ground</li> <li>• multi-disc wet brake wear and record results- use the genuine service tool only &gt;</li> <li>• park brake valve assembly for installation hours, recommendation to replace after 4,000 hours</li> </ul> <p><b>bleed</b></p> <ul style="list-style-type: none"> <li>• air from the brake circuits after replacing hydraulic tank oil</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• secondary brake dump valve air pilot and cartridge</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• brake system pressure settings and re-set if required.</li> </ul>		Brake wear results (PASS/FAIL) – DSF                    ODSF DSR                    ODSR  Brake accumulator pressure 10.5 -14.5 MPa (+/- 0.2) 1530 - 2100psi (+/- 30)  Brake release pressure

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>accumulator nitrogen charge pressure by watching the accumulator charge gauge reading after engine shutdown. When pressure starts to drop rapidly it needs to be 1200psi ± 50.</li> <li>operation of primary and secondary brake dump valve by isolating the pilot pressure - brakes should not release with this pilot isolated.</li> <li>brake functions using either the NSW MDG39 or QLD Brake Test Form &gt;</li> <li>operation of check valve (item 87 pneumatic schematic) - with engine running, park brake applied and forward or reverse selected, isolate main air to create shutdown. Ensure transmission does not engage and drive against the brake during shutdown.</li> </ul>		<p>9.2-10.3 MPa (+/- 0.2) 1330 - 1495psi (+/- 30) (1600±50psi following EB18006 upgrade)</p> <p>Refer site compliance section below</p>
Frame	<p><b>tension</b></p> <ul style="list-style-type: none"> <li>all split caps trunnion fasteners on the articulation, boom, cylinders, master hitch and steering &gt;</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all towing, lifting and tie down points</li> <li>integrity of crowd cylinder clevises and bosses</li> <li>all covers, guards, latches and hinges for operation, damage and wear</li> <li>master hitch lock cylinder operation. Check eject/retract direction is correct</li> <li>ROPS/FOPS canopy for security, damage and compliance plate</li> <li>implement /attachment profile with template or against approved GA drawings.</li> <li>master hitch cradle profile with template or against approved GA drawings.</li> <li>security of oscillation/bolster mount bolts</li> <li>bucket tongue fasteners</li> <li>visually for cracks and via NDT / crack testing, the vehicles critical stress points as per vehicle specific drawing&gt;</li> </ul> <p><b>check</b></p> <p>correct operation and record wear in -</p> <ul style="list-style-type: none"> <li>articulation points</li> <li>lift arm</li> <li>bucket pins</li> <li>steering pins</li> <li>bolster (axle oscillation points)</li> <li>tilt/crowd cylinder</li> <li>lift cylinders</li> <li>master hitch cylinder(s)</li> </ul>		<p>Torque Specifications</p> <ul style="list-style-type: none"> <li>Crowd cylinder cap bolt 1480Nm (1092ftlb)</li> <li>Hitch QDS cap bolt 1480Nm (1092ftlb)</li> <li>Steer cylinder cap bolt 366Nm (270ftlb)</li> <li>Articulation cap bolt 633Nm (467ftlb)</li> <li>Canopy M22 499Nm (368ftlb)</li> <li>Canopy M30 1253Nm (924ftlb)</li> </ul> <p><b>NDT drawing</b> CT08/10LP – 5520006489 CT10 - 5520006490</p>
Vehicle Safety Interlocks	<p><b>check</b></p> <ul style="list-style-type: none"> <li>door interlock valve is operational - park brake applies when door opened</li> <li>neutral start valve is operational - vehicle will not start in FWD or REV</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>door alarm latch function - when Park Brake is released, partly open door latch for audible horn response</li> <li>hydraulic door interlock valve function - park brake will not release when hydraulic door is opened</li> </ul>		
Cab Section	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>gauges are all operational</li> <li>all gauge pressures and temps at operating temperature – record results &gt;</li> <li>seat condition and seat suspension for operation</li> <li>seat base, swivel and mountings for security/integrity</li> <li>all upholstery in cabin</li> <li>horn operation via button on dash</li> <li>brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>emergency brake operation function by applying park brake while moving slowly</li> <li>service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>operation of all hydraulic functions</li> <li>door handle operation</li> <li>pinch point prevention on door</li> <li>master hitch removal function isolates until door mounted twist knob is operated</li> <li>for operational interference around all control levers, brake and accelerator pedals</li> <li>steering operations – wheel and stick steer</li> <li>steering is isolated when park brake is applied</li> <li>steering wheel and spinner condition and operation</li> <li>steering column bearing condition, operation and longitudinal movement</li> <li>remove rubber boot on stick steering lever check integrity, lubricate linkage (valve/o ring grease only)</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>main hydraulic control joystick &gt;</li> </ul>		<p>Coolant Temp _____</p> <p>Transmission Temp _____</p> <p>Hydraulic Temp _____</p> <p>Brake Accum Pressure _____</p> <p>Brake Release Pressure _____</p> <p>Transmission Pressure _____</p> <p>Eng. Oil Pressure _____</p> <p>Air Pressure _____</p> <p>Backpressure _____</p> <p>Joystick part #5520000299</p>
Vehicle Flameproof Electrical Systems	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>operation of all lights (including directional lighting if applicable)</li> <li>positioning of light directions/ projections</li> <li>clean light lenses and any other enclosure windows</li> <li>check camera display and directional switching is operational (if applicable)</li> <li>Methane system for damage</li> <li>Fifth light functionality (if fitted)</li> </ul>		<p>These inspections do not negate regional and site statutory electrical inspection regimes. Electrical Statutory Inspections must be performed by trained and authorised personnel.</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>check</b></p> <p>condition/integrity of following items</p> <ul style="list-style-type: none"> <li>• hosing and cabling</li> <li>• installation and mounting areas for potential hazards</li> <li>• fastener security</li> <li>• alternators mountings and surrounding area for excessive debris. Clean as required &gt;</li> <li>• alternator bearings, mounts, drive covers and drive couplings for wear, noise or damage</li> </ul>		<p>Electrical Flameproof enclosures are recommended to be re-certified every 4 years as a minimum.</p> <p>Code D electrical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Use your local <b>COALTRAM®</b> Agent for this process.</p> <p>Refer separate statutory electrical inspection sheet.</p> <p>Note! Do not hose water directly on alternator when at operating temperatures</p>
Manual Greasing	<p><b>grease</b></p> <ul style="list-style-type: none"> <li>• all points on vehicle, check all are receiving grease</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• grease lines for damage/leaks</li> <li>• all points are receiving grease</li> </ul>		
Autolube System (If Applicable)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• operation of autolube greaser</li> <li>• grease lines for leaks</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• grease cartridges</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>• visual evidence of grease at all joints</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• fire extinguisher indicator gauge(s) are in the green zone</li> <li>• bottle(s) condition</li> <li>• condition of fire extinguisher brackets/clamps</li> <li>• tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• fire suppression system indicator gauge is in the green zone</li> <li>• condition/integrity of fire suppression bottle, lines and nozzles</li> <li>• relevant statutory inspections have been completed (system to be tagged/dated)</li> </ul>		
Site Compliance	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• brake test has been carried out as per site regulations</li> <li>• gas test has been carried out as per site regulations</li> <li>• exhaust gas emissions are within baseline testing specification limits &gt;</li> </ul>		<p>&gt;Refer to the vehicles approval documents for base line gas testing</p> <p>&gt;Test with engine at operating temperature</p>

<b>LUBRICANTS</b>		
<b>COMPONENT</b>	<b>FLUID TYPE</b>	<b>CAPACITY</b>
ENGINE	SAE 15W40	30L
RADIATOR/ENGINE	PRE-MIX 100% SAE COOLANT	68L - FILL VERY SLOWLY, BLEED AIR FROM EXHAUST COOLING LINES
UP BOX	90W	2L - FILL VERY SLOWLY
TRANSVERTER/TRANSMISSION	10W/30	25L - CHECK WITH ENGINE RUNNING
DIFFERENTIALS	85W140	18L EACH
PLANETARIES	85W140	3.7L EACH
HYDRAULIC TANK	10W/30 - WET BRAKE COMPLIANT	160L - CHECK MAIN REAR TANK LEVEL WITH ENGINE RUNNING, AND FRONT TANK WITH ENGINE STOPPED

<b>FILTERS AND SERVICE ITEM PART NUMBERS</b>			<b>MAINTENANCE INTERVAL REQUIREMENTS</b>						
<b>DESCRIPTION</b>	<b>PART NUMBER</b>	<b>QTY</b>							<b>CODE D1</b>
<b>SERVICE KIT PART NUMBER</b>									<b>5520003334</b>
<b>FILTERS</b>									<b>4 yearly / 4000hr</b>
Air Filter (Outer)	5520000240	1							•
Engine Oil Filter	5520000494	1							•
Turbo Saviour Filter	5520000177	1							•
Fuel Filter - Primary Water Separator	5520000648	1							•
Fuel Filter - Secondary	5520001765	1							•
Transverter Filter	5520001237	1							•
Transverter Filter Housing O Ring	9236201751	1							•
Air Filter (Inner)	5520000241	1							•
Hydraulic Steer Filter - Pressure	5520010556	1							•
Hydraulic Brake Filter - Pressure	5520000278	1							•
Hydraulic Return Filter	5541300800	1							•
Hydraulic Steer Filter O Ring	5520002217	1							•
Hydraulic Brake Filter O Ring	5520002218	1							•
Hydraulic Return Filter O Ring	5520002219	1							•
Hydraulic Return Filter O Ring	5520009059	1							•
Sensor Manifold Air Filter Element	5520010490	1							•
<b>PARTS</b>									



FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS						
DESCRIPTION	PART NUMBER	QTY							CODE D1
SOS Sample Bottle	5520001865	11							•
Engine Breather Assembly	5520000214	1							•
Engine Breather O Ring	5520000217	1							•
Fan Belts 168kw	5520000350	2							•
Water Pump Belt	5520000384	1							•
Flametrapp Gasket	5520000093	2							•
Transverter Screen Gasket	5533358300	1							•
Diff Breather	5534307200	2							•
Upbox Breather	5534307200	1							•
Transverter Breather	5541501500	1							•
Hydraulic Tank Breather	5537168400	1							•
Brake Wear Indicator Tool	5520000387	1							•
Water Pump Tensioner Pulley Bearing	5520000037	2							•
Water Pump Tensioner Pulley Seal	5520009346	1							•
Coolant	5520000644	80L							•
Thermostat (Regulator)	5520001984	2							•
Thermostat Gasket	5520000390	1							•
Tappet Cover Gasket	5520000211	2							•
Compressor Delivery Hose	5520000427	1							•
Air Tank Check Valve	5520000174	1							•
Air Tank Relief Valve	5520000150	1							•
Air Separator Filter Element	5520001864	1							•
Radiator Hose - Upper	5520001233	2							•
Radiator Hose Clamp	5520000454	4							•
Radiator Hose – Lower ODS	5520001232	1							•
Radiator Hose – Lower DS	5520001686	1							•
Hose Clamp – Suit Lower Hoses	5520000659	4							•
Exhaust Manifold Head Bypass Hose	5520001234	1							•
Exhaust Manifold Water Pump Bypass Hose	5520001235	1							•
Hose Clamp – Suit Bypass Hoses	5520001703	4							•
Manual Fuel Isolation Valve	5520000430	1							•
Scrubber Water Supply Valve Seal	5520000061	1							•
Turbo Charger Assembly	5520001754NFO	1							•
Choker Actuator Assembly	5520003333	1							•
Radiator Cap – 13 psi	5520000386	1							•
Radiator Cap Neck	5520000698	1							•
Radiator Neck Gasket	5520000104	1							•
MONEx Main Harness	5520001218	1							•
Solenoid Valves	5520000592	3							•

FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS						
DESCRIPTION	PART NUMBER	QTY							CODE D1
Secondary brake dump valve cartridge	5520000318	1							•
Secondary brake dump valve pilot	5520002159	1							•
Neutral start adaptor o ring	5520001103	1							•
Fuel tank check valve	5520000172	1							•
Master hitch release valve	5520002021	1							•

**Additional Parts not included in service kit**

DESCRIPTION	PART NUMBER	QTY
Main Hydraulic Control Joystick	5520000299	1
Steer amplifier valve	5520004498	1
Steer cylinder	5520002016	2
Park brake valve	5520000166	1
Water Pump Belt (Relocated Tensioner)	5520011040	1
Autolube grease cartridge 450gm	5520001696	2
Engine breather hose	5520001806	1

**Ceramic Wall-Flow Filter System (CWFF) (if fitted)**

DESCRIPTION	PART NUMBER	QTY
Safety Isolation Valve	5520000592	2
Water Pump Belt (Relocated Tensioner)	5520011040	1
Gasket – Intake cone to flametrap /Flametrap to inlet manifold	5520011005	2
Gasket – CWFF inner shell to downpipe	5520011004	1
Gasket – CWFF element internal	5520011006	2

**COALTRAM® CT08/CT10/10LP – CODE D2 MAINTENANCE – 8000 Hour**

For detailed maintenance instructions refer to the Service Manual and relevant Workplace Instructions.  
Regularly check compliance and upgrades relating to Industry Bulletins and Alerts.

<b>VEHICLE PLANT NUMBER</b>		<b>HIRER /OWNER</b>	
<b>VEHICLE SERIAL NUMBER</b>		<b>DATE</b>	
<b>SITE</b>		<b>METHANE HOURS</b>	
<b>PROJECT/JOB NUMBER</b>		<b>MONEx HOURS</b>	

<b>IMMEDIATE REPAIRS COMPLETED:</b>	
<b>FUTURE REPAIRS REQUIRED:</b>	
<b>TECHNICAL BULLETINS AND SAFETY ALERTS</b>	<p>It's the Owner's responsibility to ensure compliance. Supervisor to circle Yes/No and initial</p> <p style="text-align: center;"> <input type="checkbox"/> Yes         <span style="margin-left: 200px;"><input type="checkbox"/> No</span> </p>
<p>It's recommended that a complete TBGAS (Technical Bulletin and General Alerts Sheet) Audit is conducted at Code D level and above to ensure the vehicle and Diesel Engine System complies with OEM and industry requirements.</p>	

**TECHNICIANS**





PRINT NAME(S)		SIGN		DATE	
PRINT NAME(S)		SIGN		DATE	

**SUPERVISORS**

PRINT NAME(S)		SIGN		DATE	
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**COALTRAM MAINTENANCE SAFETY INFORMATION**

- Ensure that all safety information is read and understood before maintenance or repair task is performed
- The person who is undertaking the repair or maintenance task must be qualified and competent to complete the task being undertaken

<p>1. PPE. Appropriate PPE must be worn including Hi Visibility Clothing, Safety glasses, Protective Footwear, Hand Protection (as required) Hearing Protection (as required), hard hat (as required), Dust Masks (as required).</p> <p>2. Isolation locks, Danger Tags and Out of Service tags MUST be used in accordance with site requirements and machine specific isolation procedure.</p> <p>3. All lifting gear must have current inspection tag, be suitably rated for item being lifted, and be in good condition.</p> <p>4. Lifts requiring mechanical aids must only be conducted by trained and competent personnel.</p> <p>5. When lifting objects with mechanical aid, keep clear of all potential crush or pinch points.</p> <p>6. Keep clear of suspended loads. Use Safety line to control load when required.</p> <p>7. Manual Handling. Do not lift or move objects by hand that are too heavy to do so. When manual handling objects use correct manual handling techniques.</p> <p>8. Pinch Points. Keep all body parts clear of pinch points. Ensure hands and feet are clear when lifting and lowering objects</p> <p>9. Machine support stands. Ensure machine support stands are of suitable capacity and in serviceable condition.</p> <p>10. Slips, trips, falls. Ensure work area is clear of objects that could cause a slip, trip, Fall hazard.</p> <p>11. Warning labels on machine must be observed</p>  <p>12. Prohibition labels on machine must be observed</p> 	<p>13. Information labels on machine must be observed</p>  <p>14. Service points on machine must be observed</p>  <p>15. Climbing on top of machine. Always maintain 3 point contact when climbing on top of machine.</p> <p>16. Hot surfaces. Be aware of hot surfaces when machine has been running.</p> <p>17. Hot fluids. Be aware hot pressurised fluids. This includes engine coolant, hydraulic oil, transmission oil, diesel fuel.</p> <p>18. Chemical injuries: ensure that Material Safety Data Sheets are available and understood for all fluids used on machine.</p> <p>19. Stored energy. Ensure all stored energy has been depleted and raised cylinders supported before conducting repairs or maintenance.</p> <p>20. Accumulator pre-charge pressure. When all stored energy has been depleted the Nitrogen Pressure in the Brake Accumulator is 83 Bar (1,200 psi). DO NOT attempt to release pressure without correct equipment. DO NOT disassemble accumulator without releasing Nitrogen pressure to zero.</p> <p>21. Falling objects. Do not work under unsupported roof or in area where there is risk of falling objects.</p> <p>22. Live Testing: Live testing must only be done after a task specific risk assessment (take 5 or similar) and in accordance with site requirements. The person operating the machine during live testing must be competent to operate the machine.</p> <p>23. Crush points: Ensure that Articulation lock is fitted when conducting maintenance or repairs in crush zones.</p>	<p>24. Working under boom: Do not enter under boom unless boom rated, designed for purpose supports have been fitted, boom has been lowered onto supports and machine is isolated.</p> <p>25. Hydraulic injection: Ensure that all stored hydraulic energy has been depleted before disconnecting hydraulic hose or fitting. Do not use your hand to find a hydraulic leak. Use a piece of Cardboard or similar to check for leaks. In the event of a suspected hydraulic injection refer to site specific procedure for fluid injection</p> <p>26. Compressed air: Ensure air receiver has been isolated before conducting repairs on air system. If working on air receiver the air receiver must be depressurised before commencing work. NOTE: The accumulator on the transmission declutches valve will maintain a small volume of compressed air. Follow instructions on how to remove air accumulator pressure (behind gauge panel) to discharge.</p> <p>27. Current information: Ensure current information is available prior to commencing maintenance or repair task.</p> <p>28. Guards: Ensure all guards and covers removed during maintenance or repairs are replaced prior to starting machine.</p> <p>29. Ventilation Ensure adequate ventilation when testing machine</p> <p>30. Do not conduct electric welding on machine unless the battery has been removed and Alternator disconnected by competent and authorised person.</p> <p>31. Stay clear of rotating parts</p> <p>32. Always use tools that are in good serviceable condition</p> <p>33. Take care to not damage wiring, hydraulic or air lines during repairs and maintenance.</p> <p>34. Ensure all electrical cables are placed in positions away from any possible mechanical damage and away from fuel lines.</p> <p>35. Gas Struts. (used on covers) contain compressed gas even when fully extended. Before removing, check for damage. Damage may cause an uncontrolled release of energy or exploding parts when removing strut.</p>
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**RECOMMENDED COALTRAM MAINTENANCE AND COMPLIANCE SCHEDULE**

REF. DOCS. AS3584.3, MDG1

<u>MAINTENANCE EXAMINATION CODE</u>	<u>CALENDER BASED REGIME</u>	<u>ENGINE HOURS REGIME</u>
CODE A EXAMINATION - Maintenance	DAILY	10
CODE B EXAMINATION - Maintenance	WEEKLY	50
CODE C EXAMINATION - Maintenance	MONTHLY	250
CODE C1 EXAMINATION - Maintenance	3 MONTHLY	500
CODE C2 EXAMINATION - Maintenance	6 MONTHLY	1000
CODE D EXAMINATION – Maintenance	YEARLY	2000
CODE D1 EXAMINATION - Maintenance	2 YEARLY	4000
<b>CODE D2 EXAMINATION - Maintenance</b>	<b>NOT YEARLY BASED</b>	<b>8000</b>
<p><b>COMPLIANCE OVERHAUL - Mechanical</b></p> <p>CODE D MECHANICAL COMPLIANCE OVERHAUL</p> <p>Mechanical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent and are to be aligned with Maintenance Examinations CODE C level or greater</p>		<p><b>2 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>
<p><b>COMPLIANCE OVERHAUL - Electrical</b></p> <p>CODE D ELECTRICAL COMPLIANCE OVERHAUL</p> <p>Electrical Compliance Overhauls are recommended to be completed by an accredited COALTRAM Agent</p>		<p><b>4 YEARLY</b></p> <p>OR as approved by Site Manager using site historical evidence and risk assessments in conjunction with the COALTRAM Agent</p>

**Notes:**

- **If completing this service in conjunction with a code D, some tasks will be duplicated on the TDES paperwork. There is no requirement for the tasks to be repeated, though, both sets of paperwork should be completed.**
- **When replacing safety critical components attach tag (5520010495) to identify install date. Tag can be attached with cable tie or suitable adhesive**

**COALTRAM® ENGINE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Vehicle Hours	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• engine hours and record on page 1. Record both MONEx screen and Methane display hours</li> </ul>		<p><b>* This symbol beside an instruction indicates there may be other activities to complete in conjunction with this task in a different area of this document.</b></p> <p><b>Eg. When the planetary wheel ends are drained, you need to measure the brake wear before refilling with oil*</b></p>
Engine	<p><b>remove</b></p> <ul style="list-style-type: none"> <li>• covers and guards as required*</li> </ul> <p><b>wash</b></p> <ul style="list-style-type: none"> <li>• vehicle after fitting wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices. Wash complete engine system and all engine bay areas of excessive coal, dust, oil, mud, and debris</li> <li>• accumulated materials from the engine bay in a forward direction away from the radiator</li> </ul> <p><b>check</b> <u>prior to engine removal</u></p> <ul style="list-style-type: none"> <li>• all running checks in this document that may affect work scope before disabling vehicle</li> <li>• bolts mounting engine to cradle</li> </ul> <p><b>remove</b></p> <ul style="list-style-type: none"> <li>• the complete diesel engine system from the vehicle &gt;</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• oil leaks</li> <li>• engine mounts and bolts</li> <li>• starter motor is secure</li> <li>• sump security / integrity and corrosion</li> <li>• water ingress into engine flywheel housing – remove bottom plug and record contents</li> </ul>		<p>Note – The Coaltram Diesel Engine System is modular by design and mounted in a common frame designed to easily remove from the vehicle as a sub assembly. It is recommended to remove this Diesel Engine System from the vehicle chassis to carry out this Code D2 examination.</p> <p>Tensions -</p> <ul style="list-style-type: none"> <li>• engine mount bolts - 189Nm (139 ft/lbs)</li> </ul> <p>Pressures when engine is at operating temperature –</p> <p>Oil Pressure (Min 20psi) – Idle _____</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS																											
	<ul style="list-style-type: none"> <li>engine intake and exhaust valve clearances, adjust as required</li> <li>starter ring gear condition at all points</li> <li>starter motor pinion gear and bearing condition</li> <li>bolts mounting engine to cradle</li> </ul> <p><b>sample</b></p> <ul style="list-style-type: none"> <li>oil from engine x 1 for analysis</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>engine oil</li> <li>engine oil filter</li> <li>turbo saviour oil filter</li> <li>engine breather</li> <li>engine breather hose</li> <li>all consumable items including any worn perished or corroded items</li> </ul> <p><b>re-check</b> after running engine</p> <ul style="list-style-type: none"> <li>oil level</li> <li>leaks</li> <li>oil pressure &gt; Record result at operating temperature</li> <li>idle, flight and stall rpm &gt; Record result</li> <li>for unusual knocks or noises</li> </ul>		<p>Oil Pressure (80± 20psi) - Max Revs _____</p> <table border="1" data-bbox="1457 488 1919 1094"> <thead> <tr> <th data-bbox="1457 488 1556 647"></th> <th data-bbox="1556 488 1692 647">CT08/10/10LP with 49" diameter tyres and larger</th> <th data-bbox="1692 488 1822 647">CT08/10LP with 45" diameter low profile tyres only</th> <th data-bbox="1822 488 1919 647"></th> </tr> </thead> <tbody> <tr> <td data-bbox="1457 647 1556 807">RPM</td> <td data-bbox="1556 647 1692 807">Standard Spec - 13.7 ratio Converter</td> <td data-bbox="1692 647 1822 807">Modified Spec - 13.1 ration Converter</td> <td data-bbox="1822 647 1919 807">Results</td> </tr> <tr> <td data-bbox="1457 807 1556 855">Idle</td> <td data-bbox="1556 807 1692 855">860-880</td> <td data-bbox="1692 807 1822 855">860-880</td> <td data-bbox="1822 807 1919 855"></td> </tr> <tr> <td data-bbox="1457 855 1556 912">Flight</td> <td data-bbox="1556 855 1692 912">2220± 50</td> <td data-bbox="1692 855 1822 912">2220± 50</td> <td data-bbox="1822 855 1919 912"></td> </tr> <tr> <td data-bbox="1457 912 1556 976">Trans stall</td> <td data-bbox="1556 912 1692 976">1980± 50</td> <td data-bbox="1692 912 1822 976">2120± 50</td> <td data-bbox="1822 912 1919 976"></td> </tr> <tr> <td data-bbox="1457 976 1556 1094">Hyd and Trans stall</td> <td data-bbox="1556 976 1692 1094">1730± 50</td> <td data-bbox="1692 976 1822 1094">1800± 50</td> <td data-bbox="1822 976 1919 1094"></td> </tr> </tbody> </table>					CT08/10/10LP with 49" diameter tyres and larger	CT08/10LP with 45" diameter low profile tyres only		RPM	Standard Spec - 13.7 ratio Converter	Modified Spec - 13.1 ration Converter	Results	Idle	860-880	860-880		Flight	2220± 50	2220± 50		Trans stall	1980± 50	2120± 50		Hyd and Trans stall	1730± 50	1800± 50	
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Engine Air Intake	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>air cleaner inner and outer filter elements</li> <li>Intake choker valve assembly if vehicle history shows service life is due – Choker has a 4000 hour recommended service life</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>air cleaner restriction indicators x 2 are serviceable and in the correct zone</li> <li>system for security and leaks</li> <li>hosing/pipe integrity</li> <li>air charge pipe doesn't contact/rub on other components</li> <li>air cleaner housing integrity</li> <li>test operation of choker/strangler valve as per workplace instructions &gt;</li> </ul>		<p>Refer to Standard Work Procedures or the Service Manual for detailed Choker test instructions. Incorrect choker testing can cause engine damage</p>																											

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Cooling System	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>• radiator thoroughly after removing from the engine system. Inspect condition internally and externally by recommended means, repair/replace as required.</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• water pump FRAS V-belt - ensure correct tension after test running for a short period of time</li> <li>• engine cooling fan FRAS V-belts - ensure correct tension after test running for a short period of time</li> <li>• water pump belt tensioner pulley bearings and seals</li> <li>• upper and lower radiator hoses and clamps</li> <li>• exhaust manifold head bypass hose and clamps</li> <li>• exhaust manifold /water pump bypass hose and clamps</li> <li>• engine coolant &gt;</li> <li>• engine thermostat and gasket</li> <li>• all ¾, ½ and ¼ engine system cooling hoses with U/G coal mines approved items</li> <li>• radiator cap with new item – 13psi only</li> <li>• radiator cap neck gasket</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• radiator cap neck for damage or corrosion and replace as required.</li> <li>• water pump tell-tale hole for signs of leakage</li> <li>• fan hub and tensioner bearings for excessive movement</li> <li>• radiator mounting bolts</li> <li>• fan blade condition/integrity</li> <li>• fan position in shroud; ensure centralised and correct protrusion 18mm to 22mm of blade protruding past shroud towards engine</li> <li>• for blockages in cores on both sides of the radiator</li> <li>• radiator and pulley guards are in place and secure</li> <li>• coolant is correct mix - coloured pre-mix &gt;</li> <li>• check coolant is in sight glass on header tank</li> <li>• radiator air flow (ensure average is within limits/guidelines) &gt;</li> <li>• all air is removed from the cooling system after refilling – test at small hoses at the highest points in the system</li> <li>• system for leaks after new hoses and coolant refill. Pressurise entire system to operating pressure of 13 psi</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>• fan and idler pulley</li> </ul>		<p>Note – All V-Belts and fan blades must be FRAS rated to comply with U/G coal regulations</p> <p>Recommended to use pre-mixed Caterpillar ELC (Extra Long life Coolant) or equivalent.</p> <p>Radiator Air flow is measured with a wind meter (anemometer) to check for blockages and/or incorrect fan position/performance – refer SWP 3.24</p>
Fuel System	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>• fuel from tank x 1 for analysis</li> </ul>		



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• sediments and potential water from fuel tank drain plug – record any contamination or water in the fuel tank</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• all fuel filters</li> <li>• emergency fuel shut off valve</li> <li>• fuel tank check valve</li> <li>• all fuel hoses</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• fuel lines for contact on any hot components</li> <li>• fuel tank cap and strainer condition</li> <li>• fuel gauge level/operation/condition</li> <li>• for leaks</li> </ul>		
GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
Pneumatic System	<p><b>drain</b></p> <ul style="list-style-type: none"> <li>• water/contaminants from air tank</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• air charge Y strainer</li> <li>• choker flow control valve (item 22 pneumatic schematic)</li> <li>• choker application valve (item 21 pneumatic schematic), remove, clean, replace breather and check operation</li> <li>• safety circuit pilot valve (item 12A pneumatic circuit), remove, clean, replace breather and check operation</li> <li>• additional start valve (item 89 pneumatic circuit), remove, clean, replace breather and check operation</li> <li>• relief valve (item 88 pneumatic schematic), remove, clean and check operation</li> <li>• cab door interlock valve, remove, clean, replace breather and check operation</li> <li>• isolation transmission declutch valve (item 12 pneumatic schematic), remove, clean and check operation</li> <li>• transmission declutch valve (item 13 pneumatic schematic), remove, clean, check piston seal, lubricate (valve/o ring grease) and check operation</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• leaks on system and repair/report</li> <li>• compressor cut out pressure 115-120psi (800– 850 kPa)</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• condition of all hoses and fittings</li> <li>• scrubber make up tank pressure – 5-7psi (35-50kPa)</li> <li>• safety circuit pressure regulator – 90-100psi (620– 690 kPa) – located behind the MONEx display dash panel</li> <li>• air compressor delivery fittings internally for any accumulated carbon – replace parts if carbon build up present</li> <li>• annual pressure vessel testing is current for the air receiver</li> <li>• main isolation valve for leaks when in isolated position</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• air compressor delivery hose – ensure it's a genuine braided steel PTFE type</li> <li>• filter located inside the primary in-line water trap bowl in the articulation (no oil to be added)</li> <li>• air tank relief valve</li> <li>• pneumatic check valve on air tank/compressor system</li> <li>• sensor manifold air filter located inside the secondary in-line water trap bowl behind the MONEx display dash panel (no oil to be added)</li> <li>• Neutral start adaptor O ring</li> </ul>		
Electronic Engine Management System	<p><b>check</b></p> <ul style="list-style-type: none"> <li>• both scrubber water shutdown sensor responses using test buttons – hold in to see the MONEx display to communicate low water. Longer than a few seconds will trigger a shutdown event</li> <li>• scrubber water shutdown system via the upper ball valve drain point – isolate supply line and drain to this shutdown level</li> <li>• coolant loss operation via test valve</li> <li>• engine oil pressure loss via test valve</li> <li>• deputy bypass Fob functionality (Red Fob) – this confirms fob reader integrity, and checks non-safety bypasses. Alternatively check reader with latching re-set Fob function (Black Fob)</li> <li>• rig throttle function via the MONEx screen, dial up RPM to 1800rpm, switch to engage, ensure engine audible response and rpm represents a hydraulic load is introduced. To check safety cut out, break the pneumatic circuit by individually releasing the park brake, opening the door, and selecting forward or reverse.</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• ECUEX – remove hinged top cover and inspect cable management, foreign ingress and cooling water leaks – reverse flush ECUEX cooling line back into the scrubber make-up tank</li> </ul>		<p>These mechanical inspections do not negate recommended 4 yearly regional and site statutory electrical inspection regimes.</p> <p>Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Refer separate statutory electrical inspection sheet.</p> <p>Do not apply high pressure water directly on electronic components</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• scrubber level sensor operating linkages and floats</li> <li>• condition and integrity of all MONEx electronic components</li> <li>• the following for incorrect parts, unauthorised modifications, missing parts/guards/covers, loss of identifying labels, cracks, damage, erosion, corrosion, deterioration, loose items, fatigue and contamination               <ul style="list-style-type: none"> <li>○ temperature sensors</li> <li>○ pressure sensors</li> <li>○ timing sensors</li> <li>○ water level sensors</li> <li>○ display screen</li> <li>○ throttle</li> <li>○ battery unit</li> <li>○ solenoids</li> <li>○ fasteners</li> <li>○ mountings</li> <li>○ connectors</li> <li>○ protective boots</li> <li>○ glands</li> <li>○ cable management and routing</li> </ul> </li> <li>• connectors for tamper proof cable tie. If missing plugs and receptacles are uncoupled and inspected. Ensure connectors are clean, dry and seals are in place. Clean both male and female connectors with approved electrical cleaner/lubricant. Clean pin holes. Check for cracking insulators or discolouring. Ensure earthing is correct, the integrity of moisture and dust barriers intact, locking pins and fasteners are functional and secure. After reconnection, install tamper proof cable tie around connection.</li> <li>• Unbolt pedal assembly from floor plate, clean and inspect throttle pedal torsion spring for evidence of corrosion, pitting, damage or cracking. If evident, return pedal assembly to PPK for torsion spring replacement.</li> </ul> <p><b>Replace</b></p> <ul style="list-style-type: none"> <li>• main wiring harness</li> <li>• solenoid valves x 3 (isolation, start, rig bolter)</li> <li>• control cable (power manager&lt;&gt;sensor/valves)</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• operation of the redundant path watchdog system (if fitted). Refer SWP CT2.24.</li> </ul> <p><b>record</b></p> <ul style="list-style-type: none"> <li>• MONEx Fault Log history – manual screen search and record problematic events and/or historic concerns of interest AND/OR</li> </ul>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<p>electronic upload and capture of data using the MONEx LRS (Log Retrieval System) &gt;</p> <ul style="list-style-type: none"> <li>engine configuration files via ET Tool to capture the engines current electronic signature</li> </ul>		<p>Earlier MONEx versions do not have the ability to use the LRS electronic upload</p>
<p>Mechanical Flameproof System</p>	<p><b>clean</b></p> <ul style="list-style-type: none"> <li>scrubber tank by fully draining at the lower socket to remove built up exhaust residue. If a ball valve is used in this port, a plug must accompany it to comply with safety regulations.</li> <li>scrubber tank internally by hosing out with drain plug removed (use appropriate detergent as required)</li> <li>y-piece strainer in scrubber fill line</li> <li>air inlet flametrap, remove and wash in soapy water, dry with compressed air and fit new gaskets on assembly</li> <li>exhaust catalyst internally (if fitted) Note - Do not use degreaser/solvents or high pressure for cleaning. Soak core with mild detergent (dish soap) and wash in opposite direction of gas flow with low pressure water to remove carbon build up</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>scrubber vibration mounts for wear or damage and ensure area is free from debris</li> <li>compliance labels, present, secure and in date</li> <li>all items for integrity, security and damage</li> <li>fasteners on the mechanical flameproof joints</li> <li>turbo mount for looseness or evidence of broken studs</li> <li>inlet system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>exhaust system for leaks by spraying joints with soapy water whilst under load at high idle&gt;</li> <li>check for excessive blue exhaust smoke and irritating fumes at varying load and rev ranges</li> <li>add water conditioner to scrubber make up tank (if applicable to site). Note; do not over dose the scrubber water with conditioner</li> <li>scrubber static water level when stopped using the scrubber dipstick</li> </ul> <p><b>drain</b></p> <ul style="list-style-type: none"> <li>sediments/contamination from the scrubber make-up tank via the tanks bottom drain plug – remove cap to depressurise first</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>scrubber water fill valve seal</li> <li>replace or overhaul turbo charger assembly if vehicle history shows service life is due – Turbo charger has a 4000 hour recommended</li> </ul>		<p>Code D mechanical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Ref. AS/NZS 3584.3 Use your local <b>COALTRAM®</b>Agent for this purpose.</p> <p>Note! All parts, gaskets and fasteners relating to the flameproof integrity must be genuine <b>COALTRAM®</b> parts to maintain approval compliance. All flameproof components should be removed from the engine system and inspected to ensure compliance. All fasteners should be replaced with correct parts. Ref. AS/NZS 3584.3</p> <p>To check intake/exhaust system for leaks operate engine/vehicle when at operating temperature so max turbo boost is achieved. This can be achieved at converter / torque stall. Spray intake joints with soapy water and check for bubbles while under this load.</p> <p>Note - bubbles or exhaust carbon near gaskets/joints indicate bypass/leaks on the exhaust system, bubbles only will appear on air intake leaks.</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	service life – if replaced engrave date of replacement and current engine hours on exhaust section.		
Particulate Filter System (Option 1)	<p><b>Inspect</b></p> <ul style="list-style-type: none"> <li>• condition, integrity and security of housing /components</li> <li>• housing door/lid seal; replace if not sealing</li> <li>• scrubber tank spike valve and its operation via removal and bench testing</li> </ul>		Note! Replace filters as per site specific procedure – only approved filter elements to be fitted – Microfresh (5520000086) or Cosway (5520010707)
Ceramic Wall-Flow Filter System (CWFF) (Option 2)	<p><b>Inspect</b></p> <ul style="list-style-type: none"> <li>• Differential &amp; Back Pressure Sensors, Hosing &amp; Fittings</li> <li>• Inlet &amp; Outlet Temperature Sensors</li> <li>• Safety Isolation Valve x 2</li> <li>• Junction box (Visual)</li> <li>• Antenna</li> </ul> <p><b>Calibrate</b></p> <ul style="list-style-type: none"> <li>• Differential &amp; Back Pressure Sensors (5520011028)</li> <li>• Inlet &amp; Outlet Temperature Sensors (5520011029)</li> </ul> <p><b>Remove + Clean</b></p> <ul style="list-style-type: none"> <li>• Diesel Oxidation Catalyst</li> </ul> <p><b>Replace</b></p> <ul style="list-style-type: none"> <li>• Differential &amp; Back Pressure Sensors (5520011028) Hosing &amp; Fittings</li> <li>• Inlet &amp; Outlet Temperature Sensors (5520011029)</li> <li>• Internal sealing gaskets (5520011006)</li> <li>• Safety Isolation Valve x 2 (5520000592)</li> <li>• Filter Element (5520010930)</li> <li>• Heat Shield Rubber – Turbo Inlet Flange (5520011019)</li> <li>• Heat Shield Rubber – Exhaust Manifold (5520011027)</li> <li>• Ex Gland, adapters, spigots, conduits, etc (Monitor and Shutdown System, CWFF) (5520011034)</li> <li>• Flame Trap – Pressure sensor x 2</li> <li>• Electrical Cables</li> <li>• Inner Shell thermal insulation</li> </ul> <p><b>Overhaul</b></p> <ul style="list-style-type: none"> <li>• HA110 (inc. push button, window, etc)</li> <li>• HA116-H</li> </ul>		<p>Filter removal requires opening flameproof joints. Only to be conducted by competent, authorised persons. Ensure new gaskets are available prior to reassembly. Ref. SWP CT 3.53</p> <p>Flame traps must be cleaned as per OEM recommendations</p>

**COALTRAM® VEHICLE SYSTEMS**

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
General	<p><b>wash</b></p> <ul style="list-style-type: none"> <li>entire vehicle thoroughly. Fit wash down cover to MONEx display screen and avoid direct high pressure water on electrical devices</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>steering articulation lock</li> <li>boom safety support locks</li> <li>safety triangles</li> <li>wheel chocks</li> <li>decals, stickers and warning labels</li> </ul>		
Drive Train General	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>all component breathers (transmission, differentials &amp; upbox)</li> <li>all axle retaining bolts &gt;</li> <li>upbox flange</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>integrity of breather hoses/lines</li> <li>security of upbox mounting bolts</li> <li>security of transverter mounts and bolts</li> <li>security of axle mounting bolts and potential movement between housings and frame. Check if 0.2mm feeler gauge can pass between mating faces &gt;</li> <li>differential centre fasteners</li> <li>condition and adjustment of transmission F.N.R selector and gear lever linkages and cables</li> </ul>		<p>Front axle bolts - 633Nm (467ftlb) Rear axle bolts - 366Nm (270ftlb)</p> <p>If feeler gauge passes between faces, remove bolts, lower axle clean mating faces and install new bolts</p>
Drive Train Shafts	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>front axle driveshaft universals/slip joint for wear</li> <li>rear axle driveshaft universals/slip joint for wear</li> <li>driveline centre bearings x 2</li> <li>transverter to centre bearing universals/slip joint for wear</li> <li>upbox / transverter drive shaft universals/slip joint for wear</li> <li>all drive shafts for clearance with hydraulic hoses and cables – through the full steering cycle lock to lock</li> <li>all driveline fasteners, check they are all tight by using appropriate tools</li> </ul>		
Drive Train Lubrication	<p><b>sample</b></p> <ul style="list-style-type: none"> <li>oil from transverter x 1 for analysis</li> <li>oil from differentials x 2 for analysis</li> <li>oil from planetaries x 4 for analysis</li> <li>oil from upbox x 1 for analysis</li> </ul> <p><b>replace</b></p>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• transverter oil</li> <li>• transverter oil filter</li> <li>• both differential oils</li> <li>• all four planetary oils</li> <li>• upbox oil</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• oil levels after allowing vehicle to stand for 5 minutes after filling</li> <li>• transmission oil level with engine idling</li> <li>• all four wheel ends/planetary oil levels</li> <li>• front and rear differential centre oil levels</li> <li>• upbox oil level</li> <li>• for oil leaks after test driving</li> <li>• hub seals for leaks</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>• transverter suction screen - record contents if foreign/excessive</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>• transverter clutch pressures, check using gauge in dash &gt;</li> <li>• transmission cooling system rate is sufficient – stall system and heat to approx. 110°C, select neutral and hold at mid-range rpm. Temperature should drop quickly to below 100°C within a few minutes</li> </ul>		<p>Transverter clutch pressures – 240-280 psi All clutch pressures to be within 5psi of each other</p>
Wheels and Tyres	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• for loose and missing wheel nuts</li> <li>• tyres for damage and record condition and % of tread remaining &gt;</li> <li>• tyre pressures with gauge (if pneumatic or air/water filled) &gt;</li> <li>• tyre ID labels are in place (e.g. foam filled/solid/ water filled)</li> <li>• for compliance labels if pneumatic</li> <li>• wheel rim and lock ring for damage/ missing parts</li> </ul> <p><b>tension</b></p> <ul style="list-style-type: none"> <li>• all wheel nuts 343Nm (253ftlb)</li> </ul>		<p>DSF                      ODSF DSR                      ODSR</p> <p>Note! Always refer to tyre manufacturers for specific tyre pressures. Always follow site requirements for tyre inspections. Specs below are general ranges only</p> <p><b>Air filled - Front</b> 8.0 Bar / 116 psi <b>Air filled - Rear</b> 6.0 Bar / 87 psi</p>
Hydraulic General	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• condition of all cylinders</li> <li>• for oil leaks</li> <li>• visually check accessible hydraulic hoses, fittings and components</li> <li>• functionality of all hydraulics</li> <li>• discolouration or aeration of the oil</li> <li>• auxiliary cooling fan condition and system operation</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• master hitch release valve cartridge</li> </ul> <p><b>test</b></p>		

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>and record all circuit pressure settings &gt;</li> <li>and record all pump flows</li> <li>cylinder piston bypass and cylinder valve operations</li> </ul>		
Hydraulic Lubrication	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>steer and brake pressure filters</li> <li>hydraulic pressure and return filters</li> <li>hydraulic tank breather</li> <li>hydraulic oil – check with customer (drain both tanks from bottom drain points)</li> </ul> <p><b>clean</b></p> <ul style="list-style-type: none"> <li>if tanks drained clean both hydraulic tanks internally via the two access covers – wipe out contaminants/sediments with lint free rag</li> <li>internally placed magnets in the bottom of each tank</li> </ul> <p><b>inspect</b> after re-starting</p> <ul style="list-style-type: none"> <li>return filter restriction indicator– if extended and protruding, investigate reason</li> <li>oil level at front swing open tank sight glass with engine stopped</li> <li>oil level at rear main tank sight glass with engine running</li> <li>air operated oil fill pump for operation</li> </ul>		
Steering System	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>steer amplifier &gt;</li> <li>steer cylinders &gt;</li> <li>steer dump valve cartridge and pilot valve</li> </ul>		Steer amplifier part #5520004498 Steer cylinder part #5520002016
Braking System	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>all brake hoses/fittings and replace worn or damaged items</li> <li>air pilot vent on the park brake dump valve is orientated towards the ground</li> <li>multi-disc wet brake wear and record results- use the genuine service tool only &gt;</li> <li>park brake valve assembly for installation hours, recommendation to replace after 4,000 hours</li> </ul> <p><b>bleed</b></p> <ul style="list-style-type: none"> <li>air from the brake circuits after replacing hydraulic tank oil</li> </ul> <p><b>test</b></p> <ul style="list-style-type: none"> <li>brake system pressure settings and re-set if required.</li> <li>accumulator nitrogen charge pressure by watching the accumulator charge gauge reading after engine shutdown. When pressure starts to drop rapidly it needs to be 1200psi ± 50.</li> <li>operation of primary and secondary brake dump valves by isolating the pilot pressure - brakes should not release with this pilot isolated.</li> </ul>		Brake wear results (PASS/FAIL) –  DSF                      ODSF  DSR                      ODSR  Brake accumulator pressure 10.5 -14.5 MPa (+/- 0.2) 1530 - 2100psi (+/- 30)  Brake release pressure 9.2-10.3 MPa (+/- 0.2) 1330 - 1495psi (+/- 30) (1600±50psi following EB18006 upgrade)



GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• brake functions using either the NSW MDG39 or QLD Brake Test Form &gt;</li> <li>• operation of check valve (item 87 pneumatic schematic) - with engine running, park brake applied and forward or reverse selected, isolate main air to create shutdown. Ensure transmission does not engage and drive against the brake during shutdown.</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• service brake foot valve</li> <li>• brake check valve</li> <li>• brake hoses - item numbers from circuit drawing - 136, 139, 163, 164, 173, 174, 175, 176, 177, 179, 233, 265</li> <li>• primary brake dump valve</li> <li>• secondary brake dump valve air pilot and cartridge</li> </ul>		<p>Refer site compliance section below</p>
<p>Frame</p>	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• all towing, lifting and tie down points</li> <li>• integrity of crowd cylinder clevises and bosses</li> <li>• all covers, guards, latches and hinges for operation, damage and wear</li> <li>• master hitch lock cylinder operation. Check eject/retract direction is correct</li> <li>• ROPS/FOPS canopy for security, damage and compliance plate</li> <li>• implement /attachment profile with template or against approved GA drawings.</li> <li>• master hitch cradle profile with template or against approved GA drawings.</li> <li>• security of oscillation/bolster mount bolts</li> <li>• bucket tongue fasteners</li> <li>• visually for cracks and via NDT / crack testing, the vehicles critical stress points as per vehicle specific drawing&gt;</li> </ul> <p><b>check</b></p> <p>correct operation and record wear in -</p> <ul style="list-style-type: none"> <li>• articulation points</li> <li>• lift arm</li> <li>• bolster (axle oscillation points)</li> </ul> <p><b>overhaul/replace</b></p> <ul style="list-style-type: none"> <li>• tilt/crowd cylinder</li> <li>• lift cylinders</li> <li>• master hitch cylinder(s)</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>• all load frame and steering pins and split cap bolts &gt;</li> </ul> <p><b>tension</b></p>		<p><b>NDT drawing</b> CT08/10LP – 5520006489 CT10 - 5520006490</p> <p>Lift cylinder – CT10 – 5520004484 Crowd Cylinder - CT10 - 5520004486</p> <p>Lift cylinder DS – CT08 – 5520003189 Lift cylinder ODS – CT08 - 5520003376</p> <p>Lift cylinder DS – CT10LP – 5520009146 Lift cylinder ODS – CT10LP - 5520009148</p> <p>Crowd Cylinder – CT08/10LP - 5520003190</p> <p>QDS lock tongue cylinder – 5520000247</p> <p>CT08/CT10LP pin and bush kit – 5520009580 CT08/CT10LP front frame split cap bolt kit – 5520009361 CT10 pin and bush kit – 5520009581 CT10 front frame split cap bolt kit – 5520009362</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>all split caps trunnion fasteners on the articulation, boom, cylinders, master hitch and steering &gt;</li> </ul>		<p><b>CT08/10/10LP Common Torque Specifications</b></p> <ul style="list-style-type: none"> <li>Hitch / QDS cap bolt 1480Nm (1092ftlb)</li> <li>Steer cylinder cap bolt 366Nm (270ftlb)</li> <li>Articulation cap bolt 633Nm (467ftlb)</li> <li>Canopy M22 499Nm (368ftlb)</li> <li>Canopy M30 1253Nm (924ftlb)</li> </ul> <p><b>CT08 Specific Torque Specifications</b></p> <ul style="list-style-type: none"> <li>Crowd cylinder cap bolt 1480Nm (1092ftlb)</li> </ul> <p><b>CT10 Specific Torque Specifications</b></p> <ul style="list-style-type: none"> <li>Lift cylinder cap bolt 633Nm (467ftlb)</li> <li>Crowd cylinder cap bolt 633Nm (467ftlb)</li> <li>Boom Pivot cap bolt 1480Nm (1092ftlb)</li> <li>Z Bar Pivot cap bolt 1562Nm (1152ftlb)</li> <li>Dog bones cap bolt 1480Nm (1092ftlb)</li> </ul>
Vehicle Safety Interlocks	<p><b>check</b></p> <ul style="list-style-type: none"> <li>door interlock valve is operational - park brake applies when door opened</li> <li>neutral start valve is operational - vehicle will not start in FWD or REV</li> <li>door alarm latch function - when Park Brake is released, partly open door latch for audible horn response</li> <li>hydraulic door interlock valve function - park brake will not release when hydraulic door is opened</li> </ul>		
Cab Section	<p><b>replace</b></p> <ul style="list-style-type: none"> <li>main hydraulic control joystick &gt;</li> <li>stick steer valve&gt;</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>gauges are all operational</li> <li>all gauge pressures and temps at operating temperature – record results &gt;</li> <li>seat condition and seat suspension for operation</li> <li>seat base, swivel and mountings for security/integrity</li> <li>all upholstery in cabin</li> <li>horn operation via button on dash</li> </ul>		<p>Joystick part #5520000299 Stick steer valve part # 5520002026</p> <p>Coolant Temp _____ Transmission Temp _____ Hydraulic Temp _____ Brake Accum Pressure _____</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
	<ul style="list-style-type: none"> <li>• brake gauge is dropping rapidly to zero when service and/or park brake is applied</li> <li>• emergency brake operation function by applying park brake while moving slowly</li> <li>• service brake operation against full engine power in 2<sup>nd</sup> gear</li> <li>• operation of all hydraulic functions</li> <li>• door handle operation</li> <li>• pinch point prevention on door</li> <li>• master hitch removal function isolates until door mounted twist knob is operated</li> <li>• for operational interference around all control levers, brake and accelerator pedals</li> <li>• steering operations – wheel and stick steer</li> <li>• steering is isolated when park brake is applied</li> <li>• steering wheel and spinner condition and operation</li> <li>• steering column bearing condition, operation and longitudinal movement</li> <li>• remove rubber boot on stick steering lever check integrity, lubricate linkage (valve/o ring grease only)</li> </ul>		<hr/> Brake Release Pressure <hr/> Transmission Pressure <hr/> Eng. Oil Pressure <hr/> Air Pressure <hr/> Backpressure <hr/>
Vehicle Flameproof Electrical Systems	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>• operation of all lights (including directional lighting if applicable)</li> <li>• positioning of light directions/ projections</li> <li>• clean light lenses and any other enclosure windows</li> <li>• check camera display and directional switching is operational (if applicable)</li> <li>• Methane system for damage</li> <li>• Fifth light functionality (if fitted)</li> </ul> <p><b>check</b> condition/integrity of following items</p> <ul style="list-style-type: none"> <li>• hosing and cabling</li> <li>• installation and mounting areas for potential hazards</li> <li>• fastener security</li> <li>• alternators mountings and surrounding area for excessive debris. Clean as required &gt;</li> <li>• alternator bearings, mounts, drive covers and drive couplings for wear, noise or damage</li> </ul>		<p>These inspections do not negate regional and site statutory electrical inspection regimes. Electrical Statutory Inspections must be performed by trained and authorised personnel.</p> <p>Electrical Flameproof enclosures are recommended to be re-certified every 4 years as a minimum.</p> <p>Code D electrical integrity inspections and testing must be carried out by a quality assured, certified and registered company. Use your local <b>COALTRAM®</b> Agent for this process.</p> <p>Refer separate statutory electrical inspection sheet.</p>

GROUP	MAINTENANCE / COMPLIANCE CHECKS	INITIAL	COMMENTS / RESULTS / ACTIONS
			Note! Do not hose water directly on alternator when at operating temperatures
Manual Greasing	<p><b>grease</b></p> <ul style="list-style-type: none"> <li>all points on vehicle, check all are receiving grease</li> </ul> <p><b>inspect</b></p> <ul style="list-style-type: none"> <li>grease lines for damage/leaks</li> <li>all points are receiving grease</li> </ul>		
Autolube System (If Applicable)	<p><b>inspect</b></p> <ul style="list-style-type: none"> <li>operation of autolube greaser</li> <li>grease lines for leaks</li> </ul> <p><b>replace</b></p> <ul style="list-style-type: none"> <li>grease cartridges</li> </ul> <p><b>check</b></p> <ul style="list-style-type: none"> <li>visual evidence of grease at all joints</li> </ul> <p><b>grease</b></p> <ul style="list-style-type: none"> <li>all lines manually via individual purge points</li> </ul>		
Fire System – Manual	<p><b>check</b></p> <ul style="list-style-type: none"> <li>fire extinguisher indicator gauge(s) are in the green zone</li> <li>bottle(s) condition</li> <li>condition of fire extinguisher brackets/clamps</li> <li>tags are fitted and in date on all fire extinguishers</li> </ul>		
Fire Suppression (If Applicable)	<p><b>check</b></p> <ul style="list-style-type: none"> <li>fire suppression system indicator gauge is in the green zone</li> <li>condition/integrity of fire suppression bottle, lines and nozzles</li> <li>relevant statutory inspections have been completed (system to be tagged/dated)</li> </ul>		
Site Compliance	<p><b>check</b></p> <ul style="list-style-type: none"> <li>brake test has been carried out as per site regulations</li> <li>gas test has been carried out as per site regulations</li> <li>exhaust gas emissions are within baseline testing specification limits &gt;</li> </ul>		>Refer to the vehicles approval documents for base line gas testing >Test with engine at operating temperature

<b>LUBRICANTS</b>		
<b>COMPONENT</b>	<b>FLUID TYPE</b>	<b>CAPACITY</b>
ENGINE	SAE 15W40	30L
RADIATOR/ENGINE	PRE-MIX 100% SAE COOLANT	68L - FILL VERY SLOWLY, BLEED AIR FROM EXHAUST COOLING LINES
UP BOX	90W	2L – FILL VERY SLOWLY
TRANSVERTER/TRANSMISSION	10W/30	25L – CHECK WITH ENGINE RUNNING
DIFFERENTIALS	85W140	18L EACH
PLANETARIES	85W140	3.7L EACH
HYDRAULIC TANK	10W/30 – WET BRAKE COMPLIANT	160L – CHECK MAIN REAR TANK LEVEL WITH ENGINE RUNNING, AND FRONT TANK WITH ENGINE STOPPED

FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS							
DESCRIPTION	PART NUMBER	QTY								CODE D2
SERVICE KIT PART NUMBER										5520001776
FILTERS										4 yearly / 8000hr
Air Filter (Outer)	5520000240	1								•
Engine Oil Filter	5520000494	1								•
Turbo Saviour Filter	5520000177	1								•
Fuel Filter – Primary Water Separator	5520000648	1								•
Fuel Filter – Secondary	5520001765	1								•
Transverter Filter	5520001237	1								•
Transverter Filter Housing O Ring	9236201751	1								•
Air Filter (Inner)	5520000241	1								•
Hydraulic Steer Filter – Pressure	5520010556	1								•
Hydraulic Brake Filter – Pressure	5520000278	1								•
Hydraulic Return Filter	5541300800	1								•
Hydraulic Steer Filter O Ring	5520002217	1								•
Hydraulic Brake Filter O Ring	5520002218	1								•
Hydraulic Return Filter O Ring	5520002219	1								•
Hydraulic Return Filter O Ring	5520009059	1								•
Sensor Manifold Air Filter Element	5520010490	1								•
PARTS										
SOS Sample Bottle	5520001865	11								•
Engine Breather Assembly	5520000214	1								•
Engine Breather O Ring	5520000217	1								•
Fan Belts 168kw	5520000350	2								•

FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS							
DESCRIPTION	PART NUMBER	QTY								CODE D2
Water Pump Belt	5520000384	1								•
Flametrap Gasket	5520000093	2								•
Transverter Screen Gasket	5533358300	1								•
Diff Breather	5534307200	2								•
Upbox Breather	5534307200	1								•
Transverter Breather	5541501500	1								•
Hydraulic Tank Breather	5537168400	1								•
Differential Breather	5540589400	2								•
Differential Breather	5537885300	2								•
Air Compressor Breather	5534307200	1								•
Driveline Centre Bearing Breather	5532823700	1								•
Brake Wear Indicator Tool	5520000387	1								•
Water Pump Tensioner Pulley Bearing	5520000037	2								•
Water Pump Tensioner Pulley Seals	5520009346	2								•
Coolant	5520000644	80L								•
Thermostat (Regulator)	5520001984	2								•
Thermostat Gasket	5520000390	1								•
Tappet Cover Gasket	5520000211	2								•
Compressor Delivery Hose	5520000427	1								•
Air Tank Check Valve	5520000174	1								•
Air Tank Relief Valve	5520000150	1								•
Air Separator Filter Element	5520001864	1								•
Radiator Hose - Upper	5520001233	2								•
Radiator Hose Clamp	5520000454	4								•
Radiator Hose – Lower ODS	5520001232	1								•
Radiator Hose – Lower DS	5520001686	1								•
Hose Clamp – Suit Lower Hoses	5520000659	4								•
Exhaust Manifold Head Bypass Hose	5520001234	1								•
Exhaust Manifold Water Pump Bypass Hose	5520001235	1								•
Hose Clamp – Suit Bypass Hoses	5520001703	4								•
Manual Fuel Isolation Valve	5520000430	1								•
Scrubber Water Supply Valve Seal	5520000061	1								•
Turbo Charger Assembly	5520001754NFO	1								•
Choker Actuator Assembly	5520003333	1								•
Radiator Cap – 13 psi	5520000386	1								•
Radiator Neck Gasket	5520000104	1								•
Fuel tank check valve	5520000172	1								•
Brake Check Valve	5520000229	1								•

FILTERS AND SERVICE ITEM PART NUMBERS			MAINTENANCE INTERVAL REQUIREMENTS							
DESCRIPTION	PART NUMBER	QTY								CODE D2
Hose 136	5520001389	1								•
Hose 139	5520001392	1								•
Hose 163	5520001416	1								•
Hose 164	5520001417	1								•
Hose 173	5520001426	1								•
Hose 174	5520001427	1								•
Hose 175	5520001428	1								•
Hose 176	5520001429	1								•
Hose 177	5520001430	1								•
Hose 179	5520001432	1								•
Hose 233	5520001486	1								•
Hose 265	5520002027	1								•
Service Brake Foot Valve	5580003985	1								•
MONEx Main Harness	5520001218	1								•
Solenoid Valves	5520000592	3								•
Control cable (pwr mgr<>sensors/valves)	5520002073	1								•
Secondary brake dump valve & steer dump valve cartridge	5520000318	2								•
Secondary brake dump pilot valve	5520002159	1								•
Steer dump pilot valve	5520002152	1								•
Neutral start adaptor o ring	5520001103	1								•
Primary brake dump valve	5520000167	1								•
Upbox flange	5580005619	1								•
Master hitch release valve	5520002021	1								•

**Additional Parts not included in service kit**

DESCRIPTION	PART NUMBER	QTY
Main Hydraulic Control Joystick	5520000299	1
Steer amplifier valve	5520004498	1
Steer cylinder	5520002016	2
Park brake valve	5520000166	1
Stick steer valve	5520002026	1
Radiator Cap Neck	5520000698	1
Water Pump Belt (Relocated Tensioner)	5520011040	1
Autolube grease cartridge 450gm	5520001696	2
CT08/CT10LP front frame split cap bolt kit	5520009361	1
CT10 front frame split cap bolt kit	5520009362	1
Engine breather hose	5520001806	1



**Axle retaining bolts**

CT10	PART NUMBER	QTY
Front axle bolts	5541092300	8
Front axle washers	5540112900	14
Front axle nuts	0291112844	6
Rear axle bolts	5540417700	16
Rear axle washers	5540112800	32
Rear axle nuts	0291112843	16
CT08/CT10LP		
Front axle bolts	5541092300	8
Front axle bolts	5541067700	8
Front axle washers	5520000056	32
Front axle nuts	029112844	16
Rear axle bolts	5540417700	16
Rear axle washers	5540112800	32
Rear axle nuts	0291112843	16

**Ceramic Wall-Flow Filter System (CWFF) (if fitted)**

DESCRIPTION	PART NUMBER	QTY
Safety Isolation Valve	5520000592	2
Filter Element	5520010930	1
Heat Shield Rubber – Turbo Inlet Flange	5520011019	1
Heat Shield Rubber – Exhaust Manifold	5520011027	1
Thermal Insulation around Inner Shell	5520011007	1
Water Pump Belt (Relocated Tensioner)	5520011040	1
Gasket – Intake cone to flametrap /Flametrap to inlet manifold	5520011005	2
Gasket – CWF inner shell to downpipe	5520011004	1
Gasket – CWF element internal	5520011006	2
Flame Trap – Pressure sensor (PPK-E Version)	5520011038	2*
Flame Trap – Pressure sensor (SICK Version)	5520011037	2*