

**Inspection has to be done by a person that is qualified to examine the machine. This person is willing to examine the machine in a safe manner, and has the knowledge and tools to do these inspections safely.**

First Inspection Date: 2018-09-25	Last inspection Date: 2018-09-25
Carried Out By: Andrej Ovasko, Sandvik Mining and Construction Sverige AB	Signature:

*Machine and customer:*

Customer: Strabag Sverige AB	Address: Funbo Lövsta 126, Uppsala
Contact Person: Andreas Ryler	Phone No.: +46 70 292 52 80

Machine Serial No.: L017D259	Customer Plant No.:
Level No.:	

Other Details:

Konto 700AR05

Inventarienummer: 700.2957

**Component Hours:**

Engine Hours: 7180	Transmission Hours: 5428
Torque Converter Hours: 7180	
Front Diff Hours: 7183	Rear Diff Hours: 7183
Front Wheel Ends: RH; N/A      LH; N/A	Rear Wheel Ends: RH; N/A      LH; N/A

Other Notice:

Important: ANSUL Automatic fire extinguishing system: No alarms when machine is powered on, but reserve battery (inside ANSUL control unit) is empty and need replacement. Otherwise no automatic fire protection, when machine's main switch is OFF.

I suspect the engine wiring set is of the older type, PENTA upgraded wiring to heavy duty version, instead of existing in plastic protecting tubes. Machine has sporadic alarm on crank case pressure, but after some checks and conversation with the site mechanic I came to conclusion it can be wiring related and there are known cases of strange DTC's on Penta engines, even everything was functioning correctly due to failed wiring on the engine.

FYI: Hydraulic pressure readings are taken on cold oil (17C), values can be slightly higher than tolerances.

**Risk: Throttle pedal is very stiff and gets stuck when stepped on!**

*Bucket*

**Search for wear, cracks and condition in**

Type:	Comment:	Require Attention:
Lip Plate and G.E.T:	Good condition	
Bucket Sides:	Good condition	
Inner Liner Plates:	Good condition	

Protection Strips, Heel Shrouds	Decent condition	Small cracks under/front strip
Level indicator and rock guards:	OK	
Bosses and Retainer Plates:	OK	

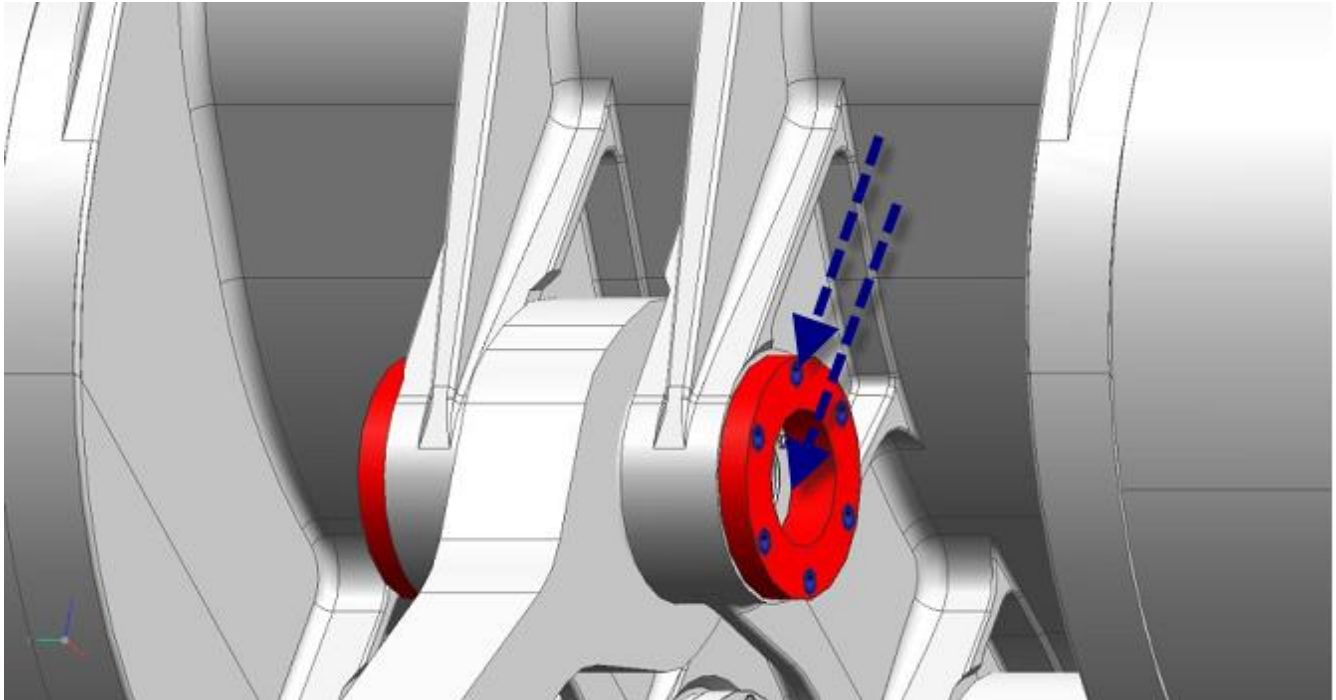
**Check for condition and adjustment of**

Type:	Comment:	Require Attention:
Bucket Stoppers:	OK	
Check the stone guide plate for play:	OK	

**Lift Arms Bucket**

**Search for play and movement in pins and bushings in**

Type:	Comment:	Require Attention:
Dogbone:  Check pin and bushes for play. Check retaining plates, screws, grease lines and dogbone for damage.	OK	



***Lift Arms Bucket***

**Search for play and movement in pins and bushings in**

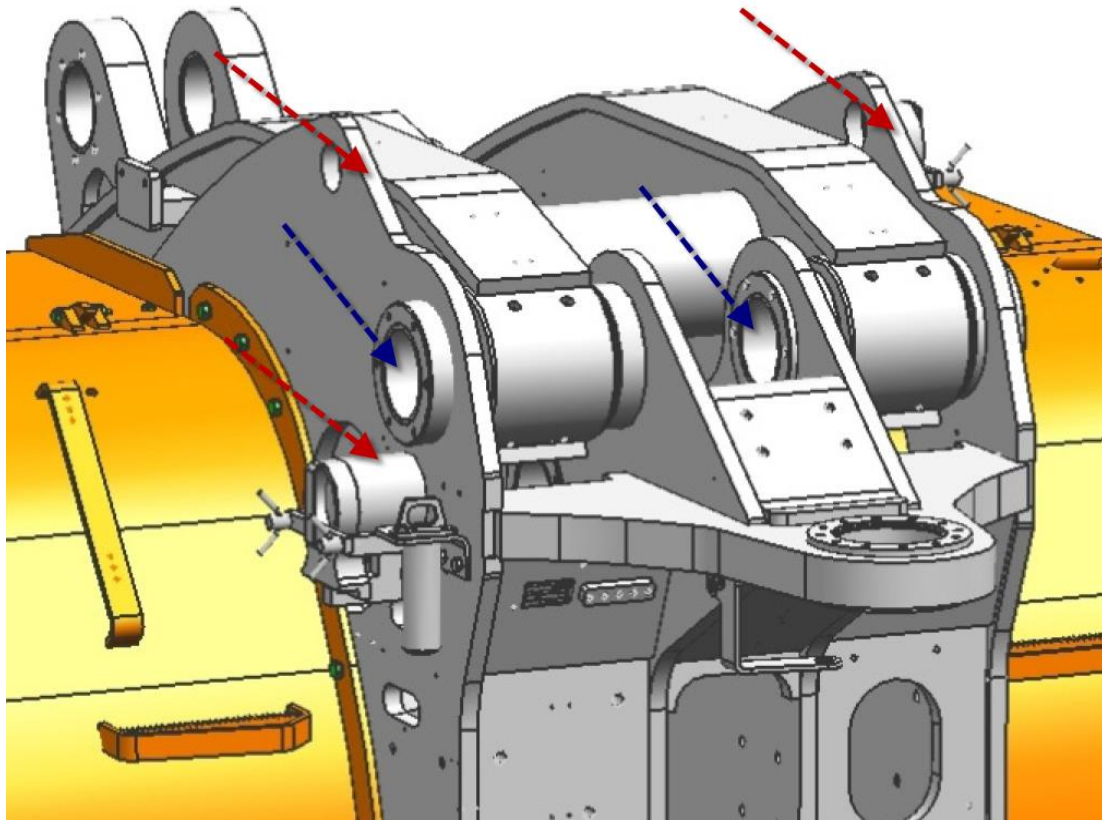
Type:	Comment:	Require Attention:
Bucket:  Check pins and bushes for play. Check retaining plates, screws, grease lines and dogbone for damage.	OK	Worn/noticeable play in bushings.



**Lift Arms Boom**

**Search for play and movement in pins and bushings in**

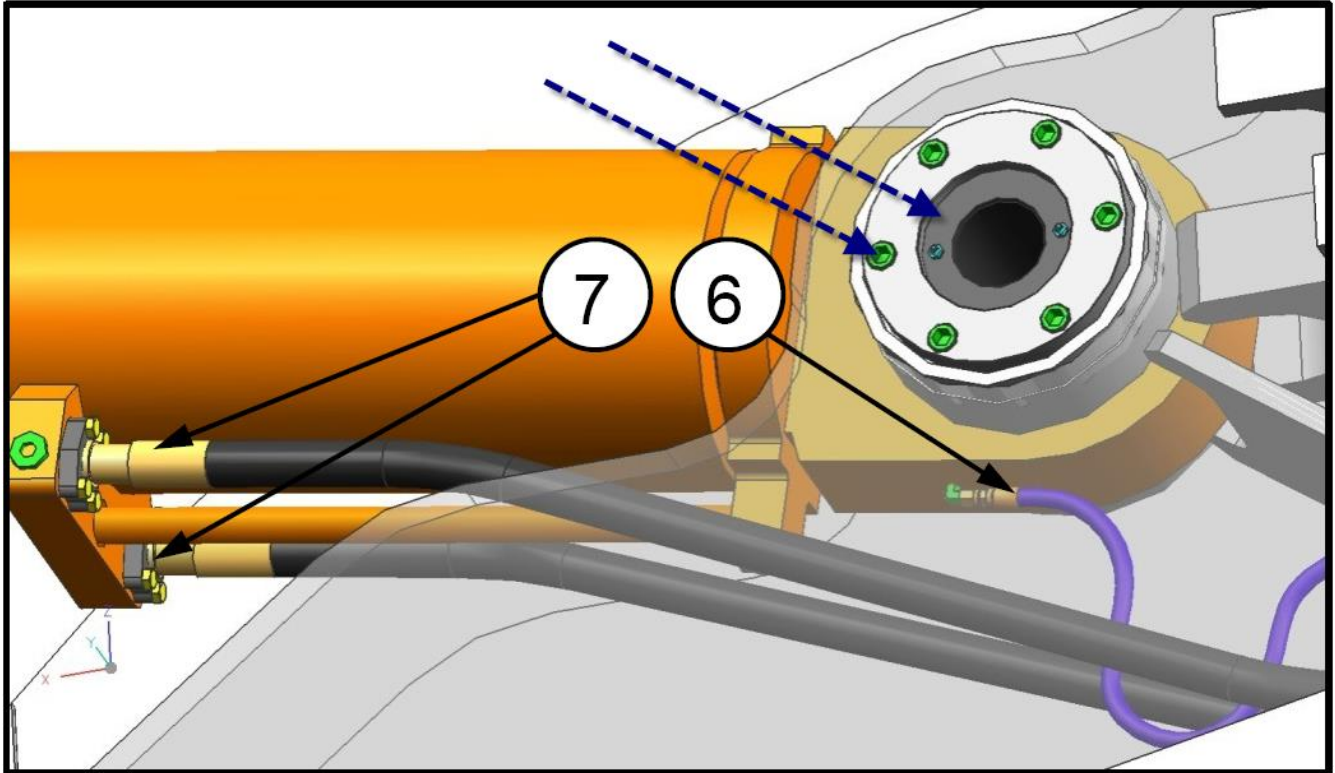
Type:	Comment:	Require Attention:
Boom Pivot:  Check pins and bushes for play. Check retaining plates, screws, grease lines for damage. (blue)	OK	
Locking Pins:  Check damage on the pins and damage on the front frame. (red)	OK	



**Lift Arms Bucket**

**Search for play and movement in pins and bushings in**

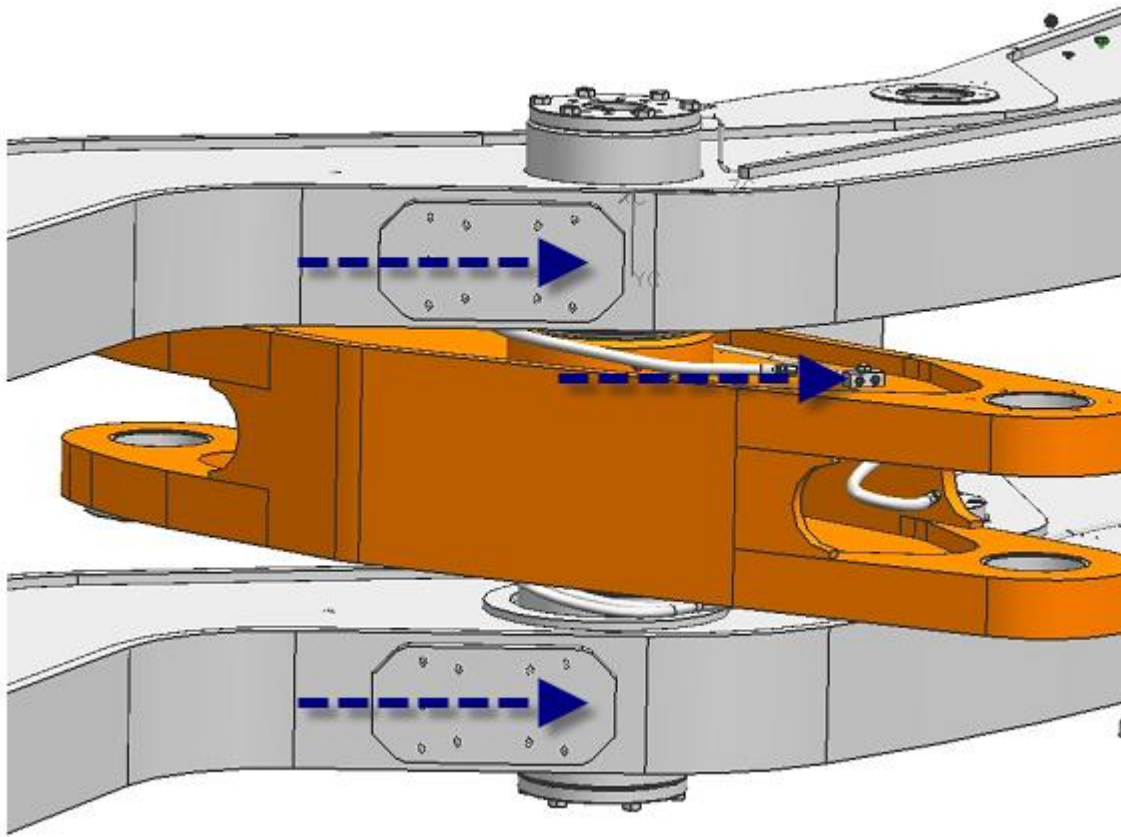
Type:	Comment:	Require Attention:
Tilt Cylinder:  Check pins and bushes for play. Check retaining plates and screws in both ends of the cylinder (blue)	OK	
Check leaking in cylinder and hoses (7). Check leaking in grease line (6)	OK	



**Lift Arms Boom**

**Search for play and movement in pins and bushings in**

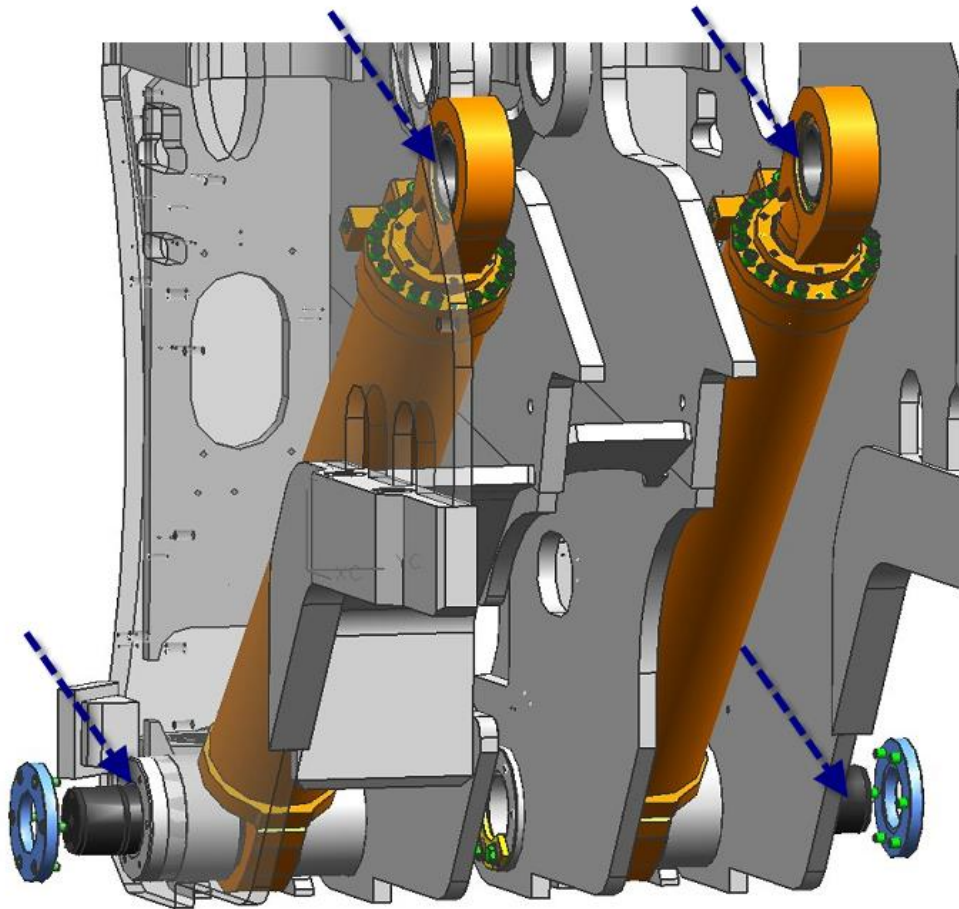
Type:	Comment:	Require Attention:
Swing Lever:  Check pins and bushes for play. Check retaining plates, screws, grease lines for damage.	OK	
Check damage and cracks in swing lever.	OK	



**Lift Arms Boom**

**Search for play and movement in pins and bushings in**

Type:	Comment:	Require Attention:
Lift Cylinders:  Check pins and bushes for play. Check retaining plates, screws, grease lines for damage.	OK	
Check leaking in cylinders and hoses. Check leaking in grease line.	OK	

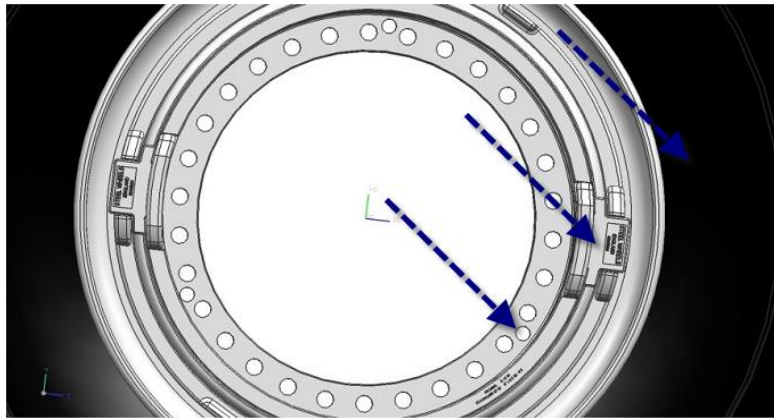


**Wheels, Axels & Drivetrain**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
<p>Tires and Rims:</p> <p>Check for wear and damage on tires and cracks and damage on rims, lock pieces, sealing rings and jacking lugs</p>	<p>LHF: OK</p> <p>RHF: Minor dents on rim/OK</p> <p>LHR: OK</p> <p>RHR: OK</p>	
<p>Wheel studs &amp; nuts or bolts:</p> <p>Check all are in place, tight and good condition. Kessler 650Nm Dana 500Nm</p>	<p>LHF: OK</p> <p>RHF: OK</p> <p>LHR: One bolt missing</p> <p>RHR: OK</p>	

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**Wheels, Axels & Drivetrain**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
<p>Axels:</p> <p>Check for Leaks in duo cone seals, planetary wheels, diff center and pinion seal. Check drain, level plugs and breather condition.</p>	<p>LHF: OK</p> <p>RHF: OK</p> <p>LHR: OK</p> <p>RHR: OK</p>	
<p>Measure brakes with an indicator; inspect brake line housing and axel mounting bolts. Check park brake for leaks and condition, when independent.</p>	<p>LHF: OK</p> <p>RHF: OK</p> <p>LHR: OK</p> <p>RHR: OK</p>	

**Wheels, Axels & Drivetrain**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
Drivetrain:  Check slip joint, uni joints and retaining bolts condition. Check grease line for leakage and functionality	OK	
Check centre bearing for play Check driveline alignment and phase.	OK	

**Wheels, Axels & Drivetrain**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
Transmission:  Check dipstick, filler cap, breather condition. Check filters condition and hoses for leakage.	OK	Transmission oil level is incorrectly filled, should show between Min – Max when engine is running, <b>not</b> Max. when engine is OFF.
Check mounting for tightness and condition. Check input and output shaft for play and leakage.  24mm - 650Nm	OK	

**Wheels, Axels & Drivetrain**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
Drivetrain:  Check slip joint, uni joints and retaining bolts condition. Check grease line for leakage and functionality	OK	
Check centre bearing end float and that driveline is in phase.	OK	

**Wheels, Axels & Drivetrain**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
Converter:  Check breather condition. Check hoses and pumps for leakage. Check converter tell tale hole for leak.	OK	
Check mounting for tightness and condition. Check output shaft for play and leakage. Check converter housing for cracks and damage.	OK	

**Articulation area**

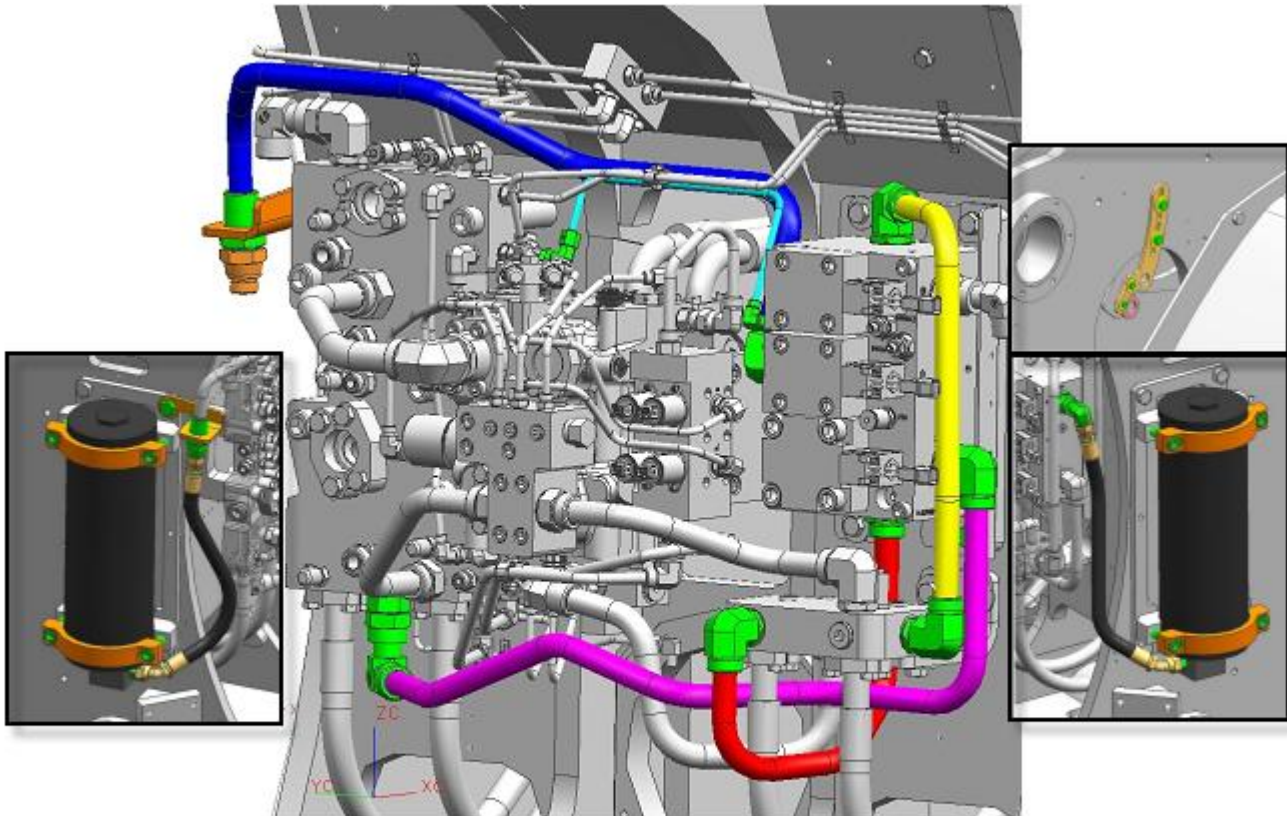
**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
<p>Boom and Bucket Control:</p> <p>Check hoses across the center articulation for leakage. Check that control valve wiring and servo valves are in good condition and functioning.</p>	<p>Boom is slowly lowering itself while raised, same happens faster when Ride control is active, noticed during the test. That requires troubleshooting on ride control valve block. When hydraulic lines to ride control are disconnected, then only bucket is creeping open, two leaking measuring points replaced, but slight creeping is still noticed, in this case either tilt cylinder is worn out and/or worn out boom/bucket valve.</p>	
<p>Check central lubrication grease pump, grease lines and dose units for leaks and damage</p>	<p>No pressure/grease empty alarm.</p>	

**Articulation area**

**Search for damage, leaks and wear in**

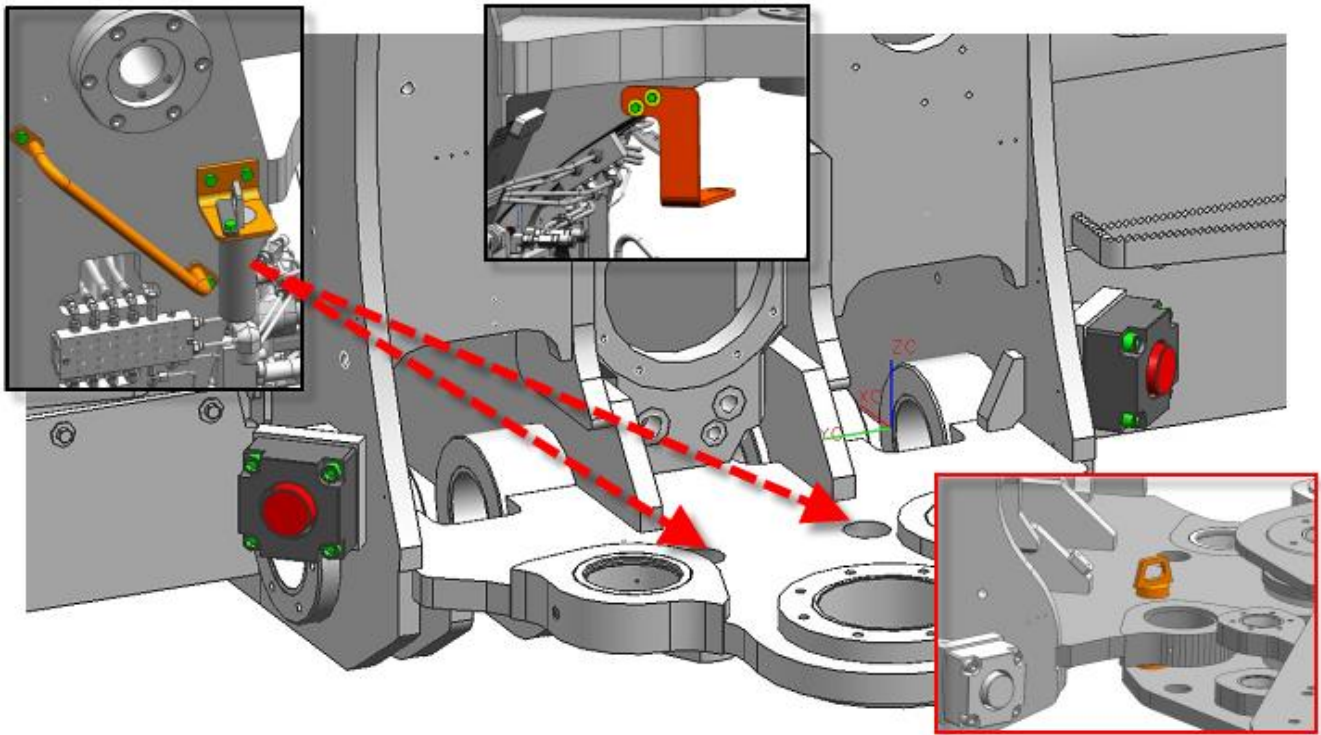
Type:	Comment:	Require Attention:
<p>Ride Control:</p> <p>Check pipes, hoses and accumulators for leakage and damage. Check pressure in accumulators.</p>	<p>Pressure in accumulators measured OK. Ride control needs troubleshooting/repair. Boom is lowering by itself when ride control is active and it gets worst, when ride control switches to 80 bar accumulator (heavy side)</p>	
<p>Check control valve and sensor wiring. Check that servo valves are in good condition and functioning.</p>	<p>Needs troubleshooting.</p>	



**Steering**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
Steering Stops and Centre Articulation locking pin:  Check Steering stops and rests for wear and damage. Check rods and transfer tube condition and required clearance between frames.	LH: OK  RH: OK	
Check locking pin and holes for wear and damage. Check articulation end attenuation sensor wiring and functionality. Apply articulation locking pin.	LH: OK  RH: OK	



**Steering**

**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
Steering Cylinders:  Check cylinders, pipes, hoses and grease lines for leakage and damage. Ensure grease lines are functional.	LH: OK  RH: OK	

**Steering**

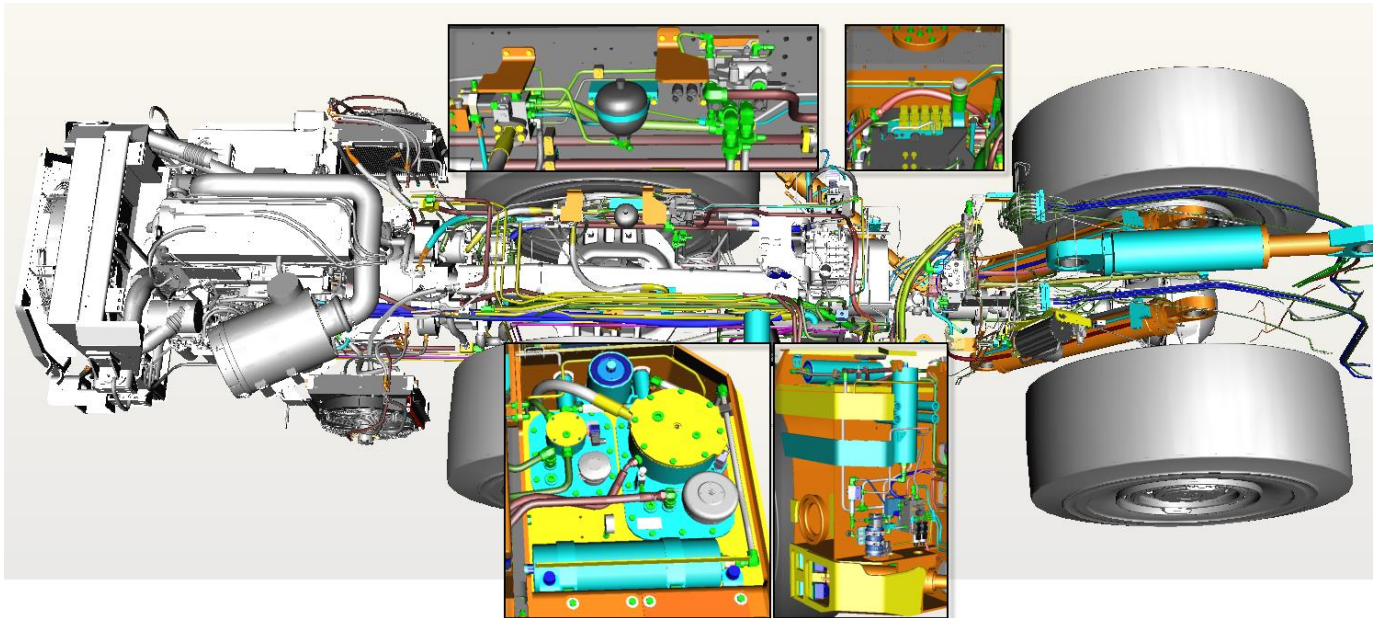
**Search for damage, leaks and wear in**

Type:	Comment:	Require Attention:
Centre Articulation:	OK	

**Hydraulics**

**Search for damage, leaks and wear in**

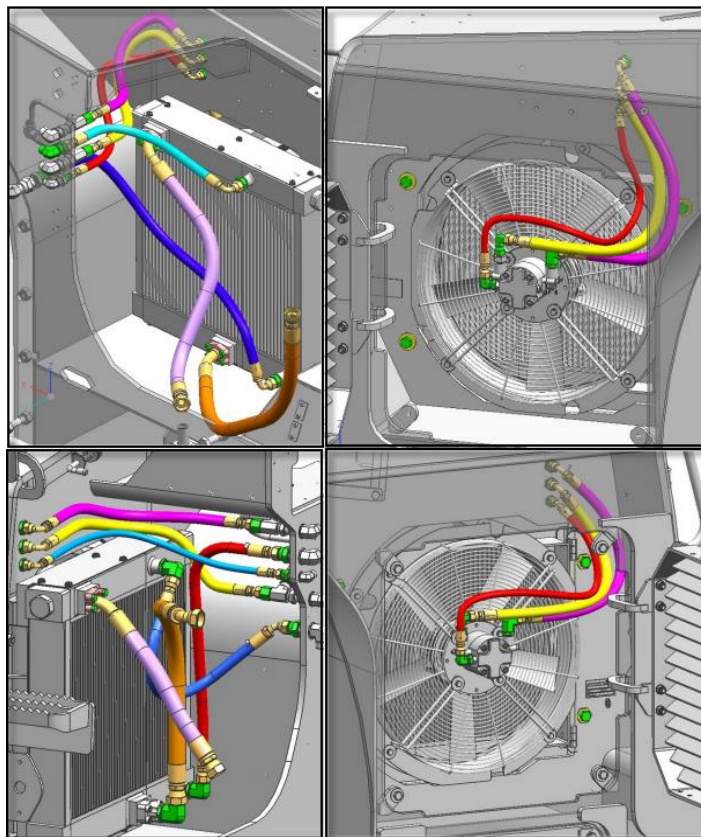
Type:	Comment:	Require Attention:
<p>Components:</p> <p>Check valves, pipes, hoses and grease lines for leakage and damage.</p>	<p>OK</p>	
<p>Check accumulators for leak and damage. Check filters for condition and dirt.</p>	<p>OK, no alarms on filters when hydraulic is operated. Filters not opened.</p>	



**Cooling**

**Search for damage, leaks and wear in**

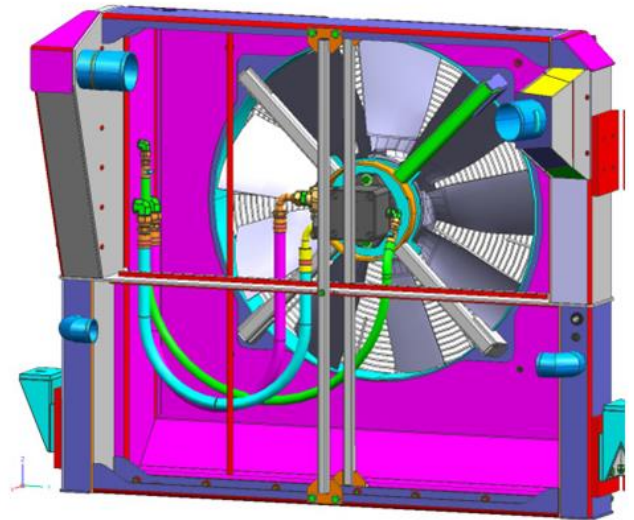
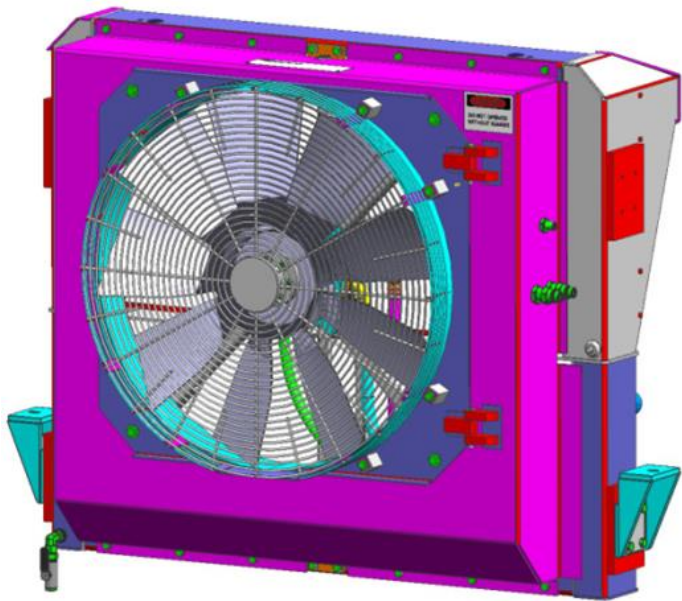
Type:	Comment:	Require Attention:
Oil Coolers and Fan Motors:  Check hoses and fittings for leakage and damage. Check radiator condition and cleanness.	OK	
Check fan motor housing and shaft for leakage. Check fins condition and fastening.	OK	



**Cooling**

**Search for damage, leaks and wear in**

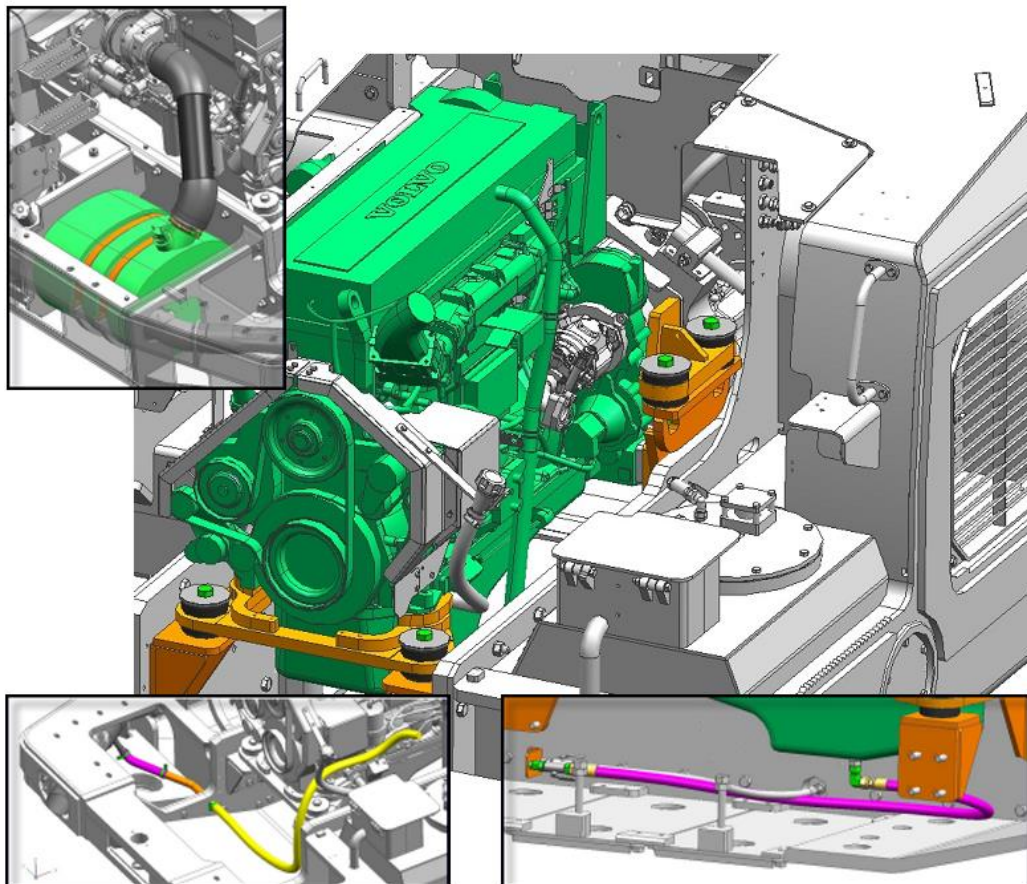
Type:	Comment:	Require Attention:
Radiator, Intercooler and Fan Motors:  Check hoses, tubes and fittings for leakage and damage. Check radiator general condition and cleanness.	OK	
Check fan motor housing and shaft for leakage. Check fins condition and fastening.	OK	



**Engine**

**Search for damage, leaks and wear in**

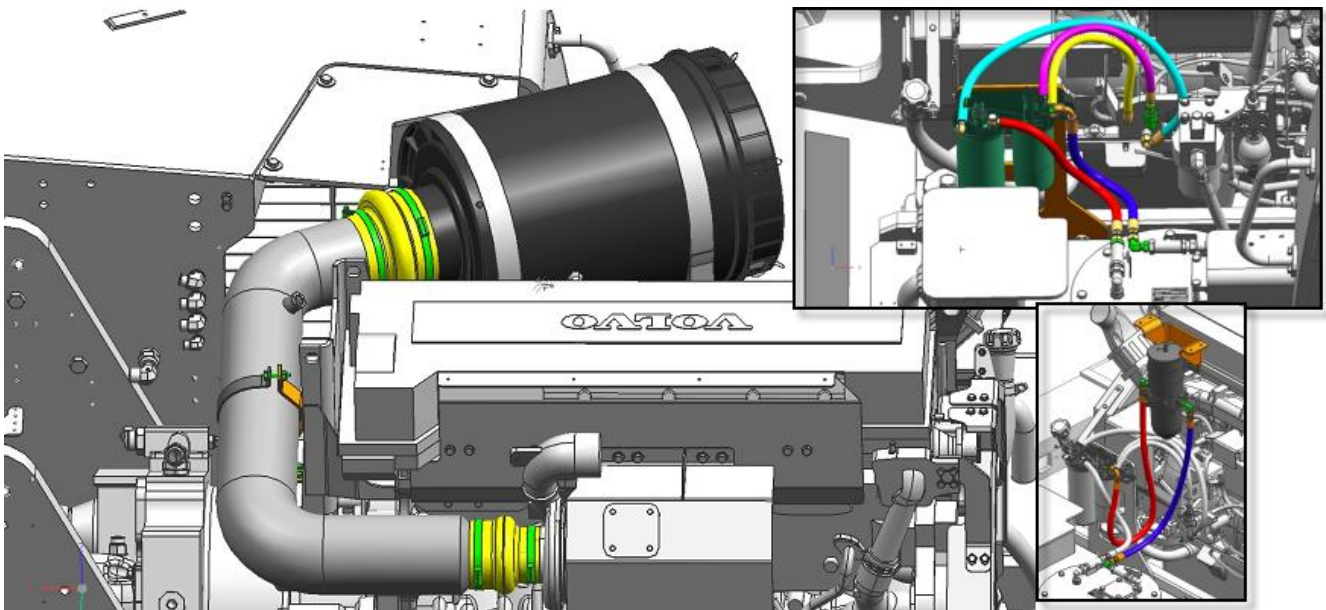
Type:	Comment:	Require Attention:
Engine and Components.	OK	
Check engine mounts, oil and fuel leaks, Check Brake pump for leaks and condition.	OK	
Check purifier, lagging, and muffler, manifold and tail pipe condition. Check ejector pipe condition and it is functioning.	OK	



**Engine**

**Search for damage, leaks and wear in**

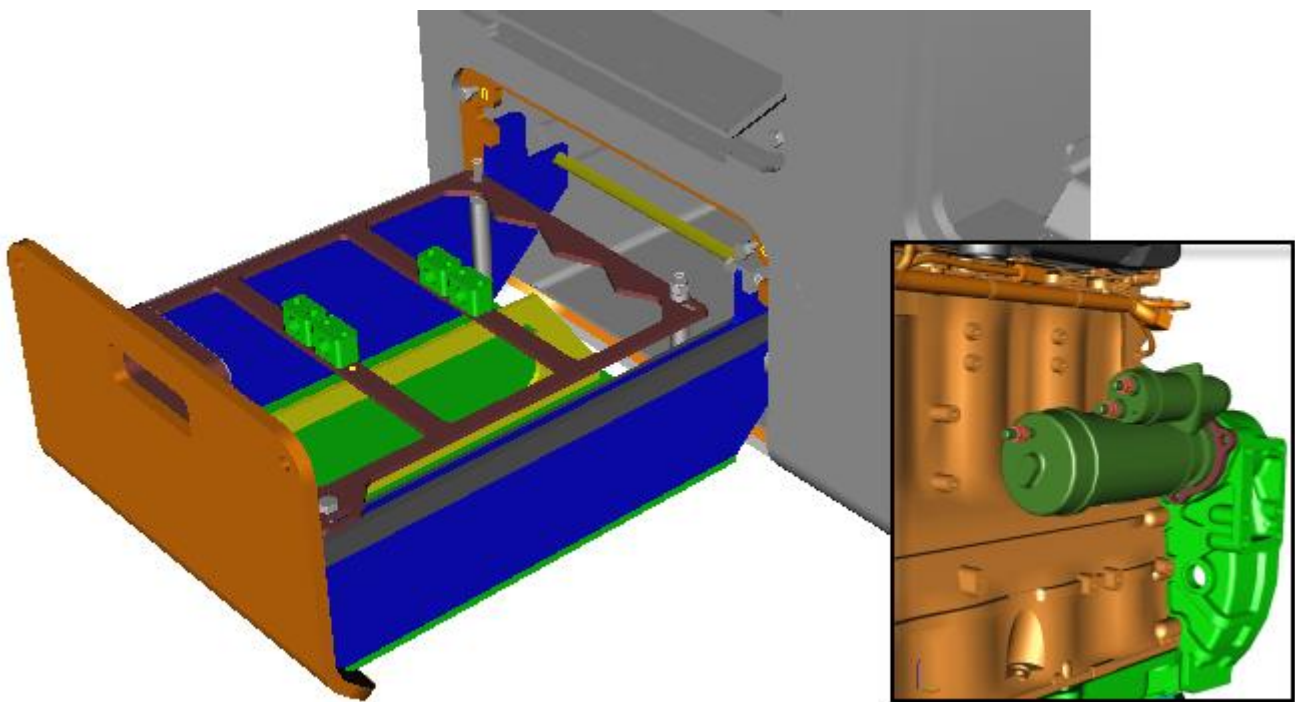
Type:	Comment:	Require Attention:
<p>Engine and Components.</p> <p>Check air, oil, and fuel filter(s), hoses, intake pipe and surroundings for leaks and damage.</p>	<p>OK</p>	
<p>Check Turbo is secure, V-belt tension and Idler bearings condition.</p>	<p>OK</p>	



**Electrics**

**Search for damage and wear in**

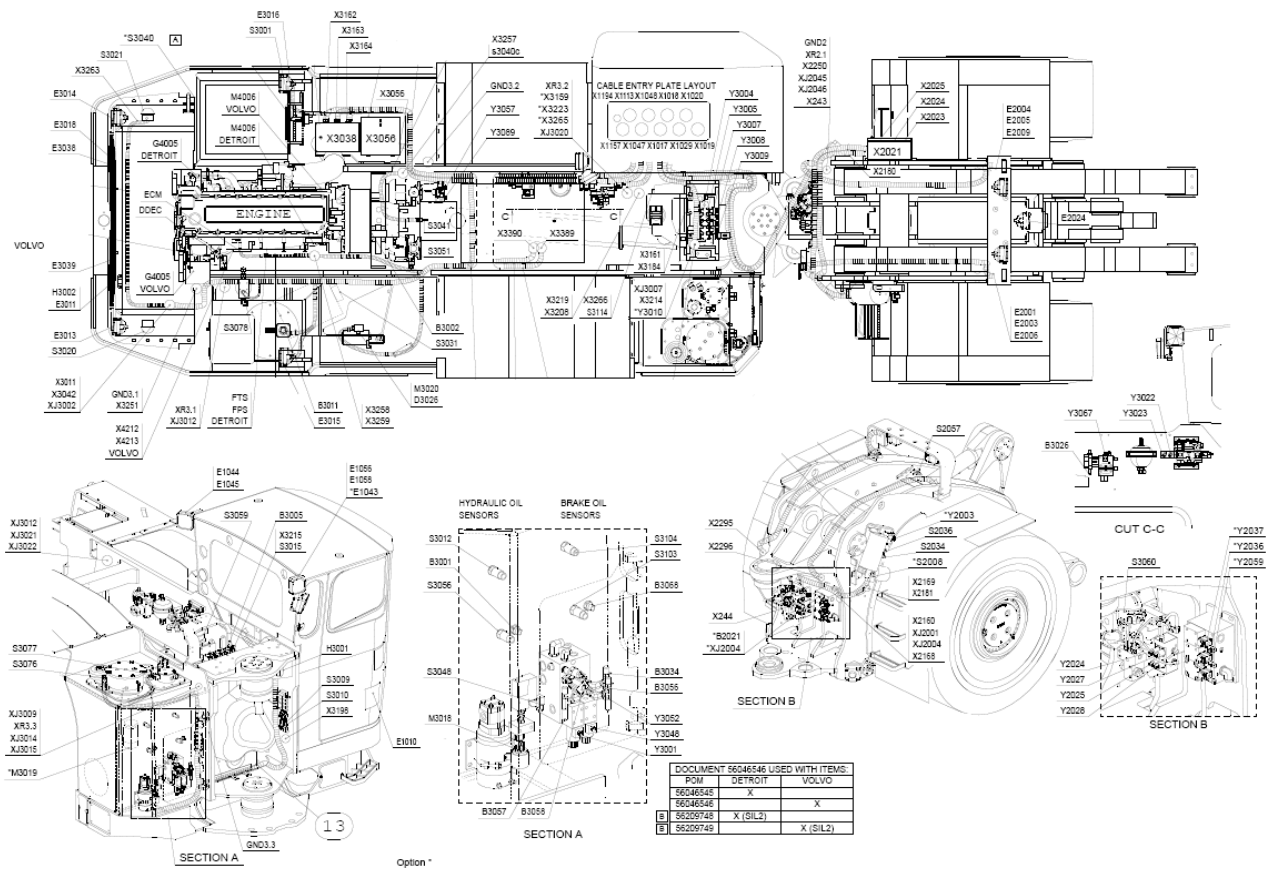
Type:	Comment:	Require Attention:
<p>Engine and Components.</p> <p>Check start motor, alternator, alternator mountings. Check sensor wirings and power cables are connected and functioning.</p>	<p>OK</p>	<p>Notices regarding engine wiring in the beginning of this report.</p>
<p>Check main switch and Batteries condition. Check batteries tightness and electrolyte level.</p>	<p>OK</p>	



**Electrics**

Search for damage and wear in

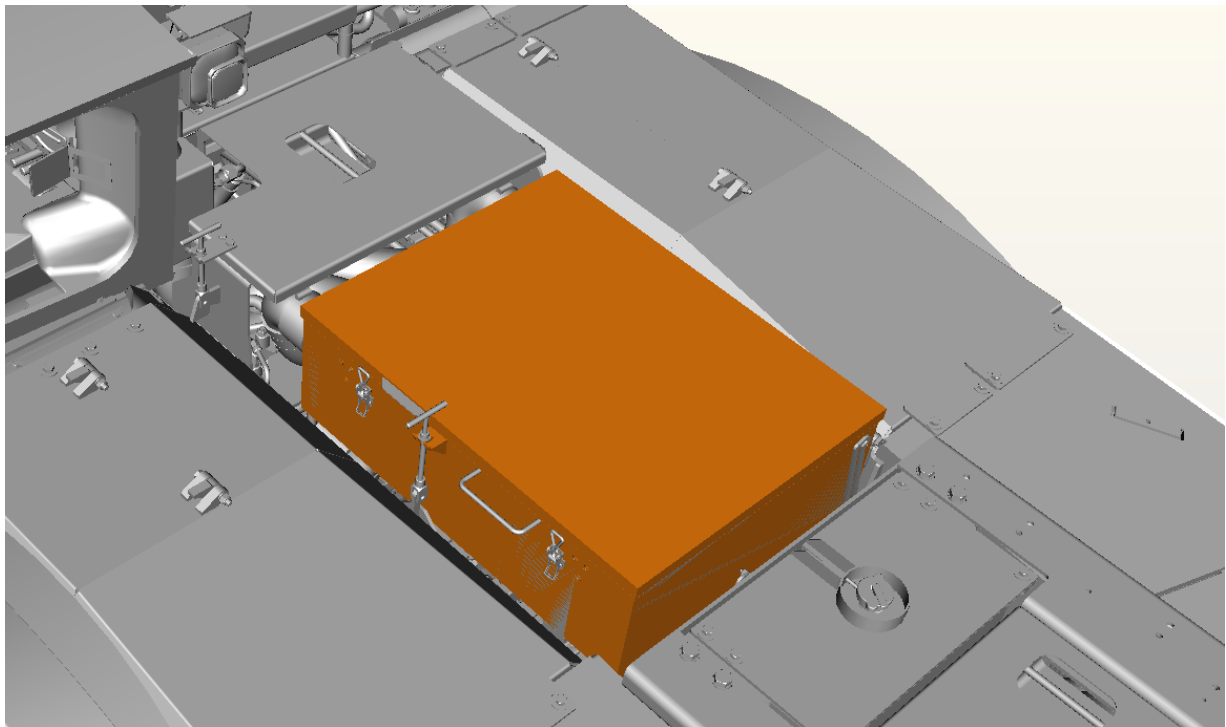
Type:	Comment:	Require Attention:
<p>Frame wiring harnesses and Components.</p> <p>Check connectors, sensor wirings and power cables are connected and functioning. Check sensors condition and function.</p>	OK	
<p>Check electrical housing, wiring and connectors for corrosion and damage.</p>	OK	



**Air conditioner unit**

**Search for damage, leaks and wear in**

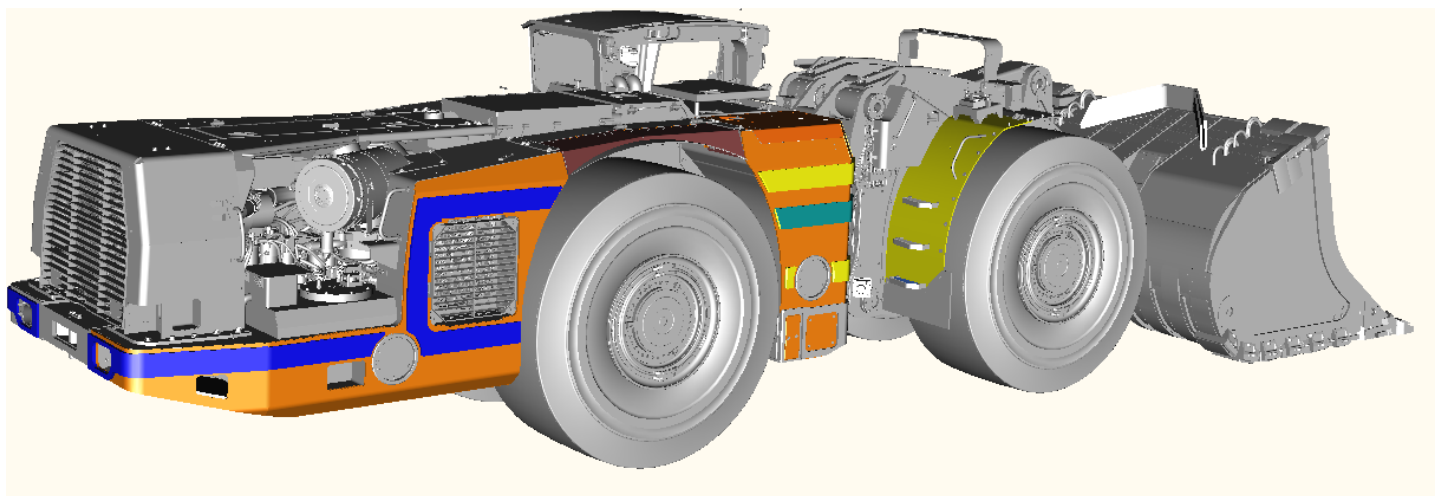
Type:	Comment:	Require Attention:
Compressor, Motor and Components.  Check connectors, sensor wirings, electrical housing and power cables are connected and functioning. Check insulated ventilation line.	A/C not working, blows only hot air. Requires troubleshooting.	
Check filters, housing, fan motor and compressor condition and leaks. Check operation (warm & cool), measure temperature in/outside cabin.	Troubleshooting & repair, as well maintenance is needed.	



**General Condition**

**Search for damage and wear in**

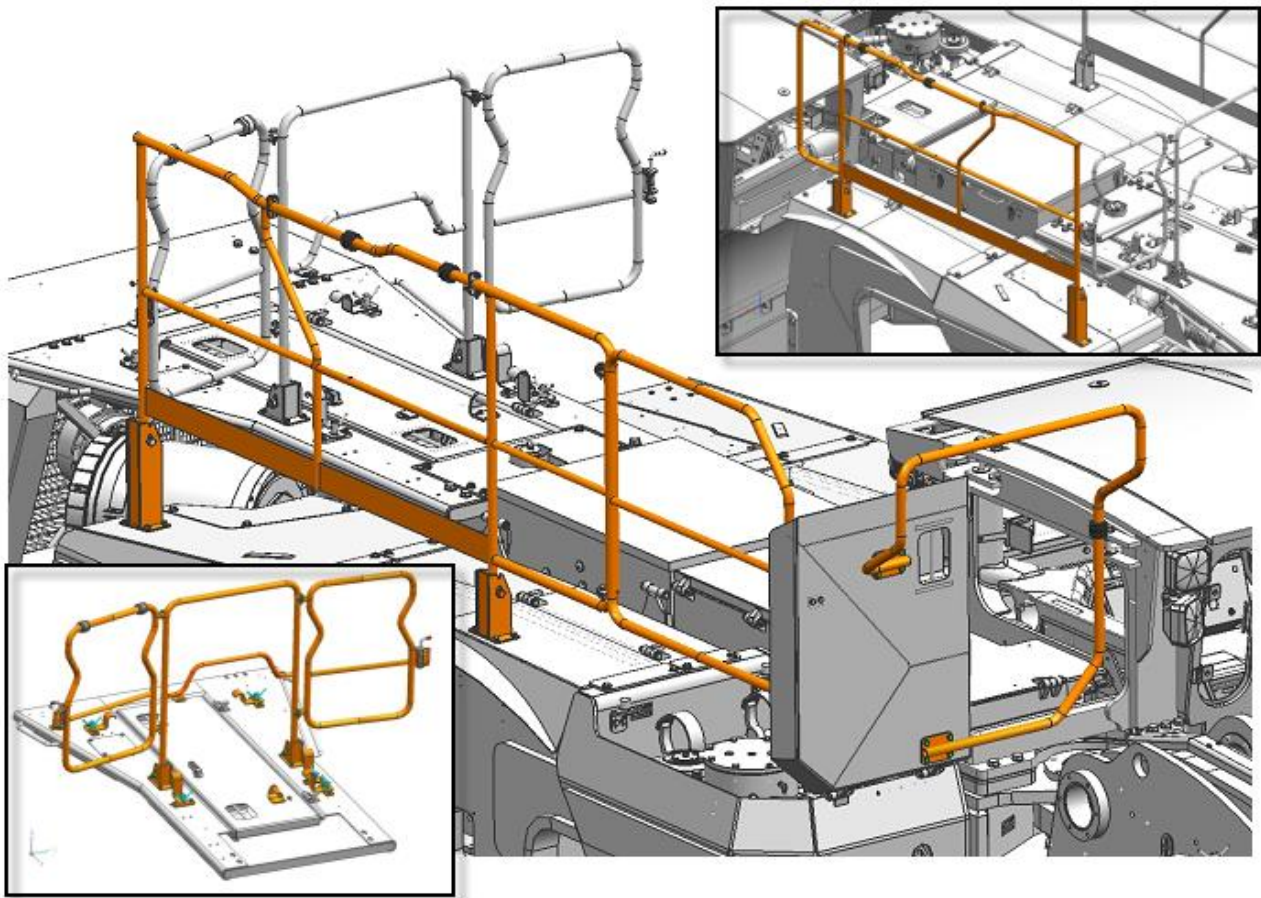
Type:	Comment:	Require Attention:
<p>Tanks and Frame Condition.</p> <p>Check tanks, wiggins, mud guards and frame for cracks, damage and leaks. Check covers, anti-slip tapes and hinges for alignment and condition.</p>	<p>OK</p>	
<p>Check driving and loading lights, cabin lights, directional lights and emergency stop buttons condition and fastening.</p>	<p>Brake and position lights are broken / out of function</p>	



**General Condition**

**Search for damage and wear in**

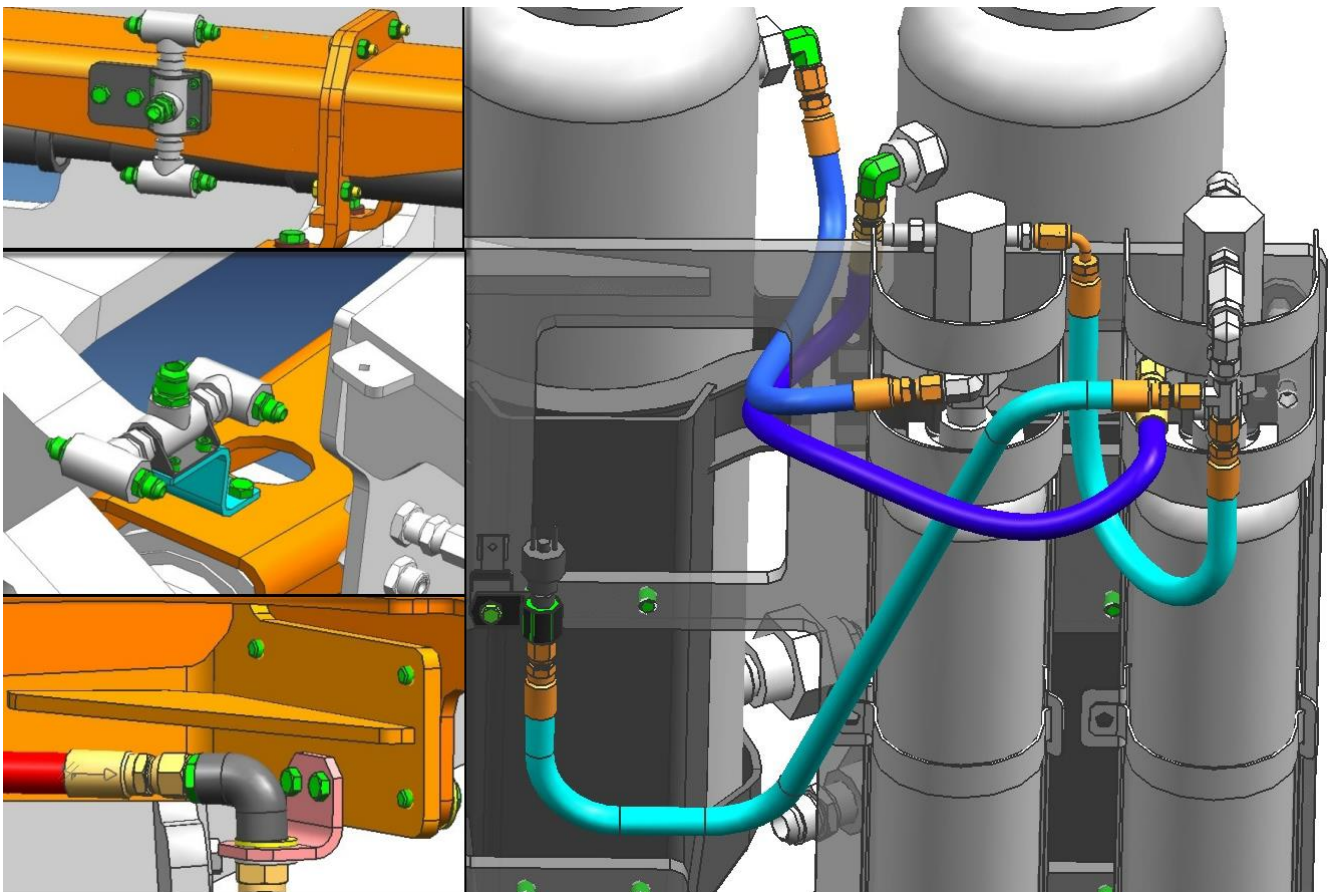
Type:	Comment:	Require Attention:
Safety rails. Check general condition of the rails and proper function	Not installed	
Check hinges for proper alignment and function.	N/A	



**General Condition**

**Search for damage and wear in**

Type:	Comment:	Require Attention:
<p>Fire suppression systems.</p> <p>Check general condition of the all hoses, nozzles and branching.</p>	<p>Visually OK</p>	<p>See notice regarding control panel backup power in the beginning of this report.</p>
<p>Check hinges for proper alignment and function.</p> <p>Check pressures and pressure bottle condition.</p>	<p>Takes effort to fold bottles out.</p> <p>Lock which suppose to hold the open, is broken missing too.</p>	



**General Condition**

**Search for damage and wear in**

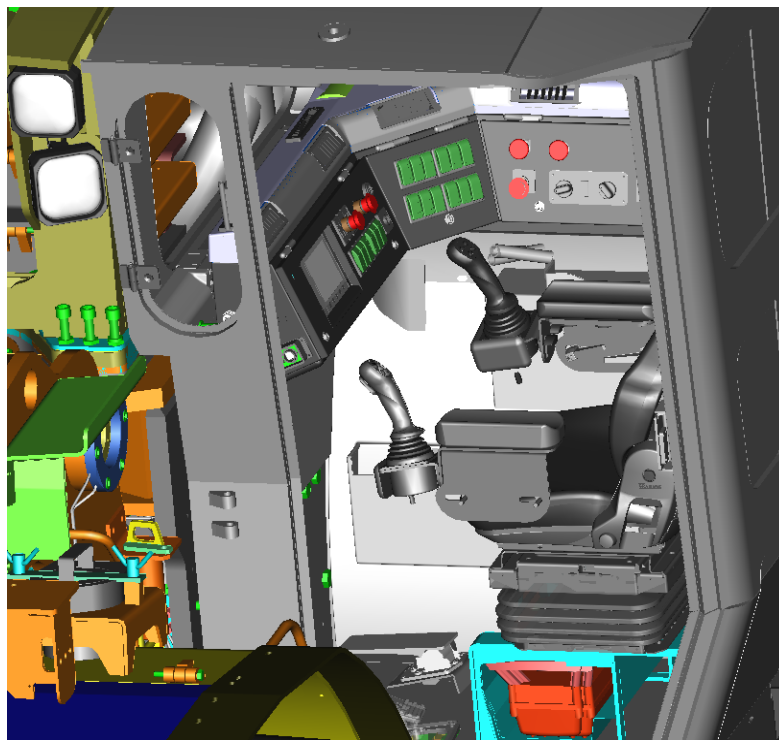
Type:	Comment:	Require Attention:
Cabin/Canopy and Functions.  Check general condition of windows, windows seals, cabin mounts, reaction arms and fops/rops certification.	In common OK. Cabin mounts (rubber) needs replacement (not cushioning well)	
Check cabin door operation and access step condition. Check footwall light condition and fastening	Cabin door gas spring not working.	



**General Condition**

**Search for damage and wear in**

Type:	Comment:	Require Attention:
<p>Cabin/Canopy and Functions.</p> <p>Check instrument panel condition and functions. Test all buttons, gauges and joysticks for proper function and condition. Check wipers &amp; washer</p>	<p>OK</p>	
<p>Check emergency stop button for proper function. Test all the movements. Check reverse light/horn. Check upholstery, seat and seat belt condition.</p>	<p>Reverse horn is out of function. Seat is very worn out. One of the trim panels on the door is missing.</p>	



**Test Drive**

Check electrical equipments are working properly.

<b>Diagnostic tests</b>	<b>Check</b>
Alarm light, red	OK
Warning light, yellow	OK
Parking brake switch light	OK
Blown fuse - signal light, dashboard fuses	OK
Blown fuse - signal light, front frame electric box	OK
Blown fuse - signal light, rear frame box	OK
Power train oil filter vacuum indicator light	VCM/OK
Hydraulic oil return filter vacuum indicator light	VCM/OK
Brake oil return filter vacuum indicator light	VCM/OK
Brake oil pressure filter vacuum indicator light	VCM/OK
Engine air filter vacuum indicator light	VCM/OK
Hydraulic oil level alarm	OK
Hydraulic oil level warning	OK
Brake oil level alarm	OK
Brake oil level warning	OK
Transmission oil pressure	OK
Front & rear brake circuit pressure	122 bar
Brake circuit charging pressure	192 bar
Brake pedal pressure (Only 5 mod. machine)	127 bar
Central lubrication line pressure switches 1 & 2	Not OK
Central lubrication "grease empty" - switch	OK
Fuel/AdBlue level	OK
Transmission oil temperature	OK
Hydraulic oil temperature	OK
Brake hydraulic oil temperature	OK
Steering pump pressure measuring	OK
Bucket pump pressure measuring	OK
Bucket limit switches	Missing
Boom angle sensor (Only Automine)	N/A
Boom pressure sensor, related to boom suspension	N/A
Boom lower limit switch	OK
Boom lower limit switch for boom suspension (option)	OK
Odometer sensor(s)	OK
Converter rotation speed sensor	Not OK
Steering limit switch	OK

**Test Drive**

Check Hydraulics are working properly.

Hydraulic pressure measurements (bar)				
Hydr. Oil temp. 60°C Engine low idle		Value	Measured	
Flushing pressure	Min rpm.	MIN 0,2	1,5 bar	
Flushing pressure	MAX rpm.	MAX 2,5	3 bar	
Bucket pump stand-by pressure		35 ± 5	40 bar	
Bucket pump maximum pressure		295 ± 8	303 bar	
Steering pump dp pressure		25 ± 2	28 bar	
Steering pump maximum pressure		280 ± 8	287 bar	
Brake pump dp pressure		14 ± 1	N/A	
Brake pump maximum pressure		280 ± 8	275 bar	
Brake/Transmission cooling fan Max RPM		2700 - 3200	N/A	
Transmission/hydraulics cooling fan Max RPM		2700 - 3200	N/A	
Engine fan pump stand-by pressure		25 ± 5	N/A	
Engine fan pump maximum pressure		280 ± 8	N/A	
Engine cooling fan Max RPM		1700-1900	N/A	
Brake charging pressure (EPEC)		190 ± 5	192 bar	
Brake charging pressure warning light (EPEC)		110 ± 3	105 bar	
Brake charging pressure, emergency (EPEC)		100 ± 3	95 bar	
Brake light, wheel brake (EPEC)		85 ± 2	85 bar	
Brake pedal pressure,	Front axle circuit (EPEC)	100 - 137	122 bar	
Brake pedal pressure,	Rear axle circuit (EPEC)	100 - 137	122 bar	
Brake release pump pressure switch (EPEC)		140 ± 5	N/A	
Brake accumulator precharge pressure (EPEC)		90 ± 5	70 bar	
Engine oil pressure (EPEC)	idle:	min 0,83	2,9 bar	
Engine oil pressure (EPEC)	MAX rpm.	min 3,45	4,7 bar	
Transmission pressure:	Forward 4th gear:	12,7 - 15,4	13,5 bar	
	Forward 3rd gear:	12,7 - 15,4	13,5 bar	
	Forward 2nd gear:	12,7 - 15,4	13,5 bar	
	Forward 1st gear:	12,7 - 15,4	13,5 bar	
	(Max.difference between gears: 0,4bar)	Neutral:	12,7 - 15,4	13,8 bar
		Reverse 1st gear:	12,7 - 15,4	13,5 bar
		Reverse 2nd gear:	12,7 - 15,4	13,5 bar
		Reverse 3rd gear:	12,7 - 15,4	13,5 bar
	Reverse 4th gear:	12,7 - 15,5	13,5 bar	

**Test Drive**



