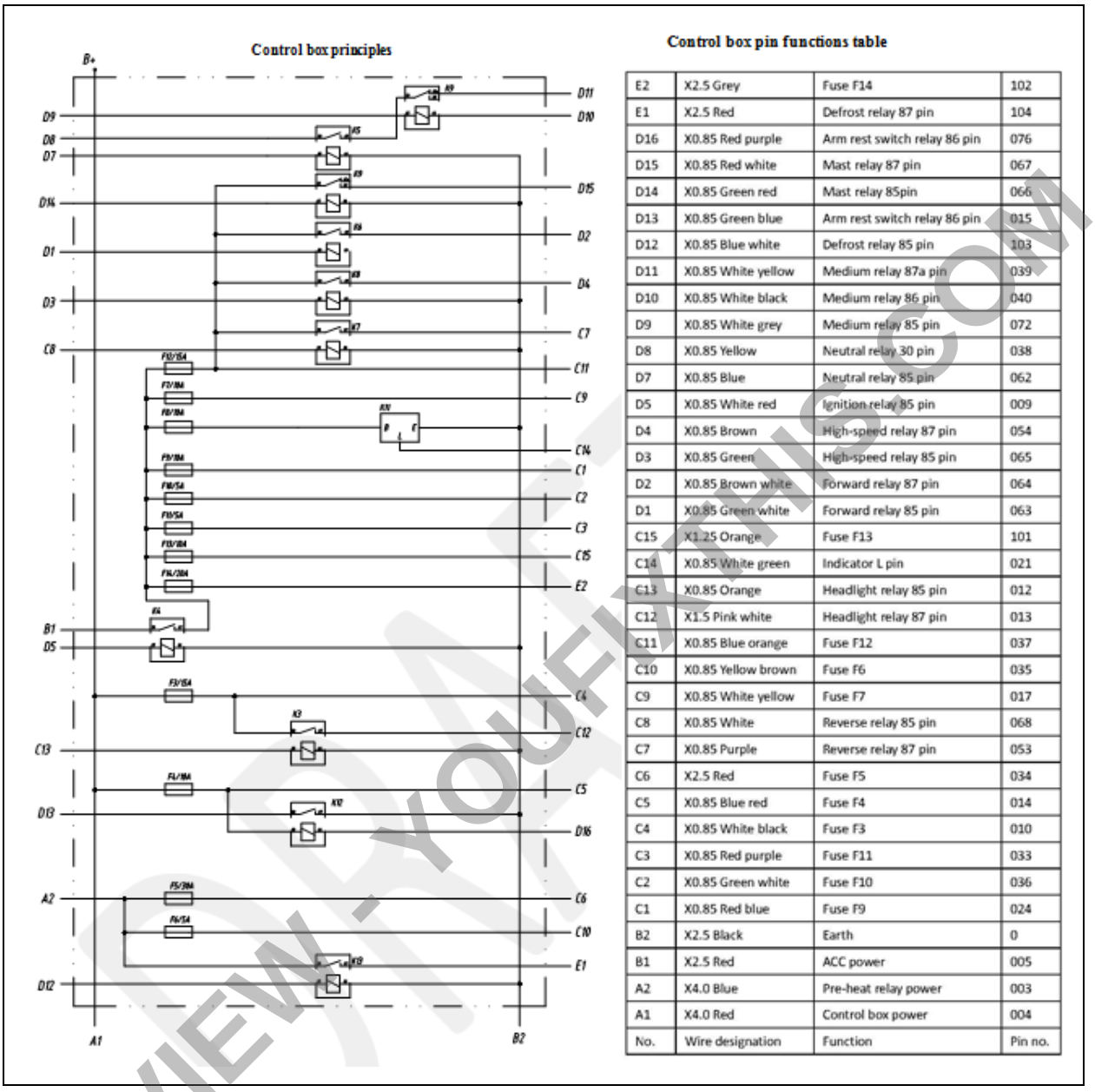


Control box pin functions table

E2	X2.5 Grey	Fuse F14	102
E1	X2.5 Red	Defrost relay 87 pin	104
D16	X0.85 Red purple	Arm rest switch relay 86 pin	076
D15	X0.85 Red white	Mast relay 87 pin	067
D14	X0.85 Green red	Mast relay 85pin	066
D13	X0.85 Green blue	Arm rest switch relay 86 pin	015
D12	X0.85 Blue white	Defrost relay 85 pin	103
D11	X0.85 White yellow	Medium relay 87a pin	039
D10	X0.85 White black	Medium relay 86 pin	040
D9	X0.85 White grey	Medium relay 85 pin	072
D8	X0.85 Yellow	Neutral relay 30 pin	038
D7	X0.85 Blue	Neutral relay 85 pin	062
D5	X0.85 White red	Ignition relay 85 pin	009
D4	X0.85 Brown	High-speed relay 87 pin	054
D3	X0.85 Green	High-speed relay 85 pin	065
D2	X0.85 Brown white	Forward relay 87 pin	064
D1	X0.85 Green white	Forward relay 85 pin	063
C15	X1.25 Orange	Fuse F13	101
C14	X0.85 White green	Indicator L pin	021
C13	X0.85 Orange	Headlight relay 85 pin	012
C12	X1.5 Pink white	Headlight relay 87 pin	013
C11	X0.85 Blue orange	Fuse F12	037
C10	X0.85 Yellow brown	Fuse F6	035
C9	X0.85 White yellow	Fuse F7	017
C8	X0.85 White	Reverse relay 85 pin	068
C7	X0.85 Purple	Reverse relay 87 pin	053
C6	X2.5 Red	Fuse F5	034
C5	X0.85 Blue red	Fuse F4	014
C4	X0.85 White black	Fuse F3	010
C3	X0.85 Red purple	Fuse F11	033
C2	X0.85 Green white	Fuse F10	036
C1	X0.85 Red blue	Fuse F9	024
B2	X2.5 Black	Earth	0
B1	X2.5 Red	ACC power	005
A2	X4.0 Blue	Pre-heat relay power	003
A1	X4.0 Red	Control box power	004
No.	Wire designation	Function	Pin no.

Fig 10-2

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9. Schematic Diagram of Hydraulic System

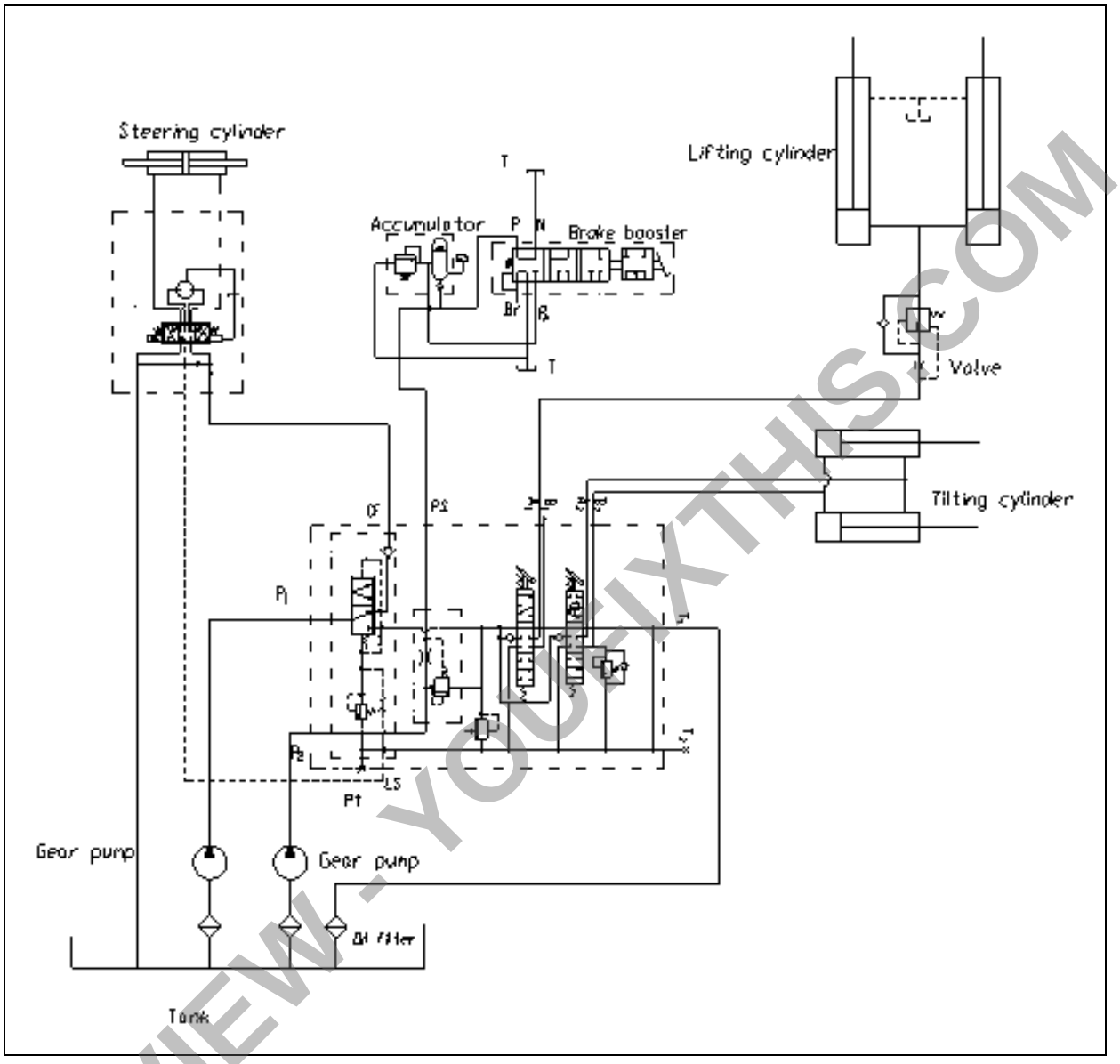


Figure 7-7 Schematic Diagram of Hydraulic System

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FAULT CODE [FAULT INDICATOR LAMP]	J1587 PID (P) SID (S) [FMI]	J1939 SPN (S) [FMI]	CAUSE	POSSIBLE EFFECTS
111	S254 {12}	629 {12}	Severe internal fault in the electronic control module (ECM) - smart device or components damaged, ECM error connected to a memory fault, or internal ECM power circuit fault.	There may be no noticeable effect, engine may die, or become difficult to start.
115	P190 {2}	612 {2}	Engine Magnetic Crankshaft Speed/ Position Lost Both of Two Signals - Data Erratic, Intermittent, or Incorrect. The Electronic Control Module (ECM) identified signal reversal of the main and backup speed sensors.	Oil is not being supplied to the injector, the engine may not start.
122	P102 {3}	102 {3}	Intake Manifold 1 Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage identified in intake manifold pressure sensor.	Engine output power will reduce.
123	P102 {4}	102 {4}	Intake Manifold 1 Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage or short circuit identified in intake manifold pressure circuit.	Engine output power will reduce.
124	P102 {0}	102 {16}	Intake Manifold 1 Pressure Sensor Circuit - Data Valid but Below Normal Operational Range - Moderately Severe Level. Intake manifold pressure exceeds maximum engine specifications.	Engine output power will reduce.
131	P091 {3}	091 {3}	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage identified in pedal level sensor circuit.	Sharp reduction in engine output. Limp home power Only.
132	P091 {4}	091 {4}	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage identified in the remote accelerator pedal position sensor circuit.	Sharp reduction in engine output. Limp home power Only.
133	P029 {3}	974 {3}	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage identified in the remote accelerator pedal position sensor circuit.	Remote accelerator pedal will not work. Remote accelerator pedal position set to 0%.
134	P029 {4}	974 {4}	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. Low voltage identified in the remote accelerator pedal position circuit.	Remote accelerator pedal will not work. Remote accelerator pedal position set to 0%.
135	P100 {3}	100 {3}	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage identified in the engine oil rifle pressure circuit.	Performance is not affected. No engine protection for oil pressure.

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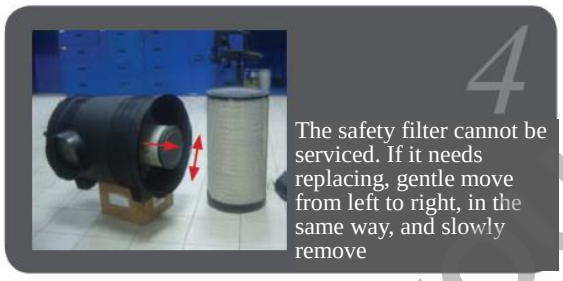
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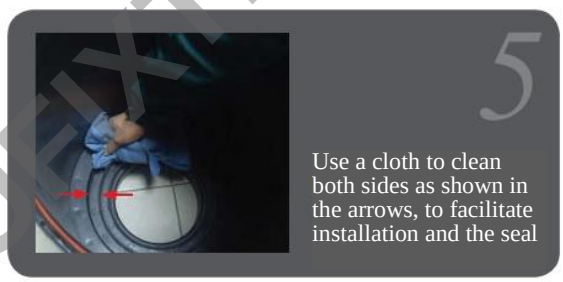
Procedure for Replacing the Air Filter



















ATTENTION: Contact an authorized service technician or dealer for maintenance information or to replace parts.

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1. Assembly and Commissioning Data

Commissioning data

Mast type		Standard, lift height 2.5-4m	Lift height > 4-5 m	Lift height > 5-6m
Mast tilt angle	Forward	6^0	6^0	3^0
	Backward	12^0	6^0	6^0
Carriage rollers		Adopts lift rollers and side rollers		

Inspection and adjustment

Inspection point	Assembly Clearance (mm)	Repair Clearance (without replacement parts) (mm)
Mast to lift rollers	0.3-1.25	0.4-1.4
Mast to support guide board	0.2-1.0	0.3-1.2
Inner mast to carriage side rollers	0.3-1.25	0.4-1.4
Lifting chain slack	25-30mm	

Tightening torque of main components

Position	Unit: N.m
Lift chain lock nut	933-1244 (M27x2)
Bearing cap between mast and drive axle	245-314 (M20 x 1.5)
Lift cylinder bolt	638-850 (M24)
Lift cylinder mounting bolts (U-shaped bolts)	45-58 (M10)

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5. Precautions for Fitting and Use

① Before installing this product, first clean any oil from the surface of the seals. The gearbox must not be randomly removed or disassembled, so as to prevent oil leakage during use.

② To achieve precise fitting and operation, prevent knocks or impact with the installation surfaces or torque converter.

③ Check that the run out of the central mounting hole on the engine flywheel is no greater than 0.15mm, the flywheel face run out is no greater than 0.1mm; and the mounting face of the flywheel housing is no greater than 0.2mm.

④ The forklift operating mechanism provides accurate travel and reliable positioning of the control valve stem and inching valve stem. The inching valve stem should return to its original position when the operator releases the pedal. Gear shift should only occur once clutch pressure is maintained at over 1.2 MPa.

⑤ Keep the gearbox level when lifting to prevent the torque converter from sliding out.

⑥ Never modify the gearbox oil line system. Lubricate the gearbox thoroughly to ensure correct operation. Gearbox oil cannot be used for other purposes. Motor oil grade should meet requirements.

⑦ Gearbox oil should be kept clean and free of impurities. Replace with new oil 50 hours after first use and then every 1,000 hours or after a long period without use.

⑧ Add gearbox oil, run engine in neutral for 5 minutes, then check that the oil level is between the upper and lower marks on the dipstick. The filler cap also functions as a vent cap.

⑨ New gearboxes should be worn for 50 hours, during which time load should not exceed 70%. Pay particular attention to the oil temperature, pressure and the tightness of bolts during this time. Once wearing in process is complete, change the oil.

6. Troubleshooting

Fault	Cause	Remedy
Efficiency drops and temperature is too high	1. Friction plate stuck or worn; 2. Insufficient supply of oil to the torque converter; 3. Bearing damaged; 4. Check lubricant lines for blockages; 5. One-way clutch in torque converter seized;	1. Check friction plates for sticking, uneven contact or warping; 2. Check condition of oil pump and check oil level; 3. Replace bearing; 4. Clear lubricant lines; 5. Replace torque converter;
Oil leak	1. Seal ring damaged; 2. Rubber parts perished or damaged; 3. Components damaged or cracked;	1. Replace worn seal ring; 2. Replace parts; 3. Replace;
Clutch pressure low, excessive rocking	1. Oil level too low; 2. Rotating seal rings on clutch shaft and piston worn; 3. Oil pump worn; 4. Oil filter strainer blocked with debris; 5. Inching valve stem fails to return to original position;	1. Check oil level, top up oil to proper level; 2. Replace rotating seal rings; 3. Replace oil pump; 4. Clean or replace oil filter; 5. Restore inching valve stem to its original position;

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1. Engine

1.1 Power Configuration

Model	QSB4.5 (Cummins)
Displacement (L)	4.5
Rated power (kW)	82
Rated revolutions per minute (r/min)	2200
Maximum torque/RPM (N m/rpm)	488/1500
Cylinders (No.)	4
Cylinder diameter x stroke (mm)	107x124
Engine oil capacity (L)	8-12
Cooling fluid capacity (L)	8.5
Intake system	Supercharged
Dry weight (kg)	371

1.2 Cummins Engine Use and Maintenance

1.2.1 Basic Operation Requirements

◆ Before starting the engine, check engine oil and cooling fluid levels and check for:

- Leaks
- Loose or broken parts
- Any changes to the engine exterior

◆ Starting the engine:

- Ensure the hydraulic control levers and transmission is in neutral.
- Do not press the accelerator pedal (electronically-controlled engines).
- Turn the ignition key to the “ON” position, and wait for the pre-heat indicator to go off before starting the engine (electronically-controlled engines).
- Stop the engine after it has run for no more than 30 seconds, then start the engine for the second time no more than 2 seconds later.
- Resolve any faults before starting the engine again (electronically-controlled engines).
- Check the electric and fuel systems if the engine fails to start after 3 attempts.
- Stop the engine and check the lubrication system if there is still no oil pressure after 15 seconds.

◆ After starting the engine:

- Leave to idle for at least 3-5 minutes before loading to ensure normal lubrication.
- Do not leave the engine idling for too long (no more than 10 minutes).
- When the engine is running at less than peak torque (refer to the peak torque indicator on the engine plate), do not fully open the accelerator for more than 30 seconds. Failure do so may shorten the interval between major services and severely damage the engine.
- To avoid severe damage, do not allow the engine to run at more than the maximum RPM.
- The engine may be damaged if cooling fluid temperatures during engine operation are continually higher or lower than the range specified in the service manual.

◆ Promptly report any of the following engine faults: misfire, vibration, unusual sounds, leakages, sudden changes in water temperature or oil pressure, smoke, reduced power output, lack of power, engine oil or petrol consumption increases.

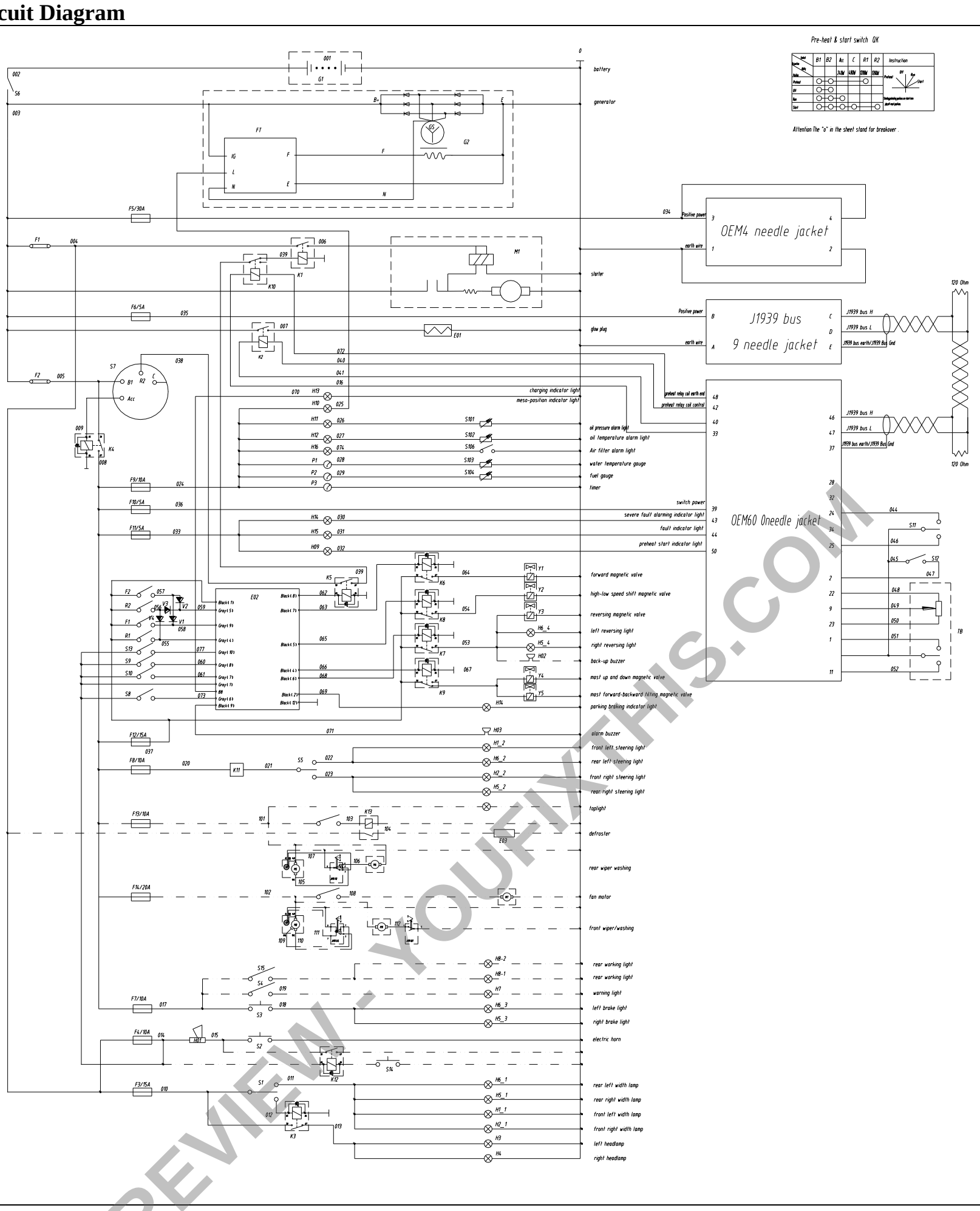
◆ After operating engine at full load:

- Leave idling for 3-5 minutes.
- Keep the key in the ON position for a further 10 seconds after turning the engine off, before finally turning off the ignition (electronically-controlled engines).
- Do not use water to clean the engine (electronically-controlled engines).

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9. Circuit Diagram



Schematic for the Ⓐ UT80-100P DSL electrical system

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