



Cummins South Pacific Pty. Ltd.

WORKSHOP TAX INVOICE

ABN NO. 42006332949
Newcastle
1 Epsom Drive
Tomago NSW 2322
Ph: 02 4964 8466

INVOICE NUMBER

1876401

INVOICE DATE

05/02/26

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COPY

Invoice To
Account Number

Customer

Engine Model:	SIGNATURE/ISX/QSX	Eng No:	79981495	Equip Make:	KENWORTH
FleetNo:		Reg No:	XP57KX	Cust Ord NO:	7392
Date in Service:	05/01/18	KLMS:		HRS:	
Repair Date:	05/02/26	Chassis NO:	459334	Currency:	AUD
C.O.No.	6814390	Work ordNo.		Facility	212

Complaint:

Coolant in Oil

Cause:

Leaking #5 liner O'ring

Correction:

Vehicle moved into workshop. Engine ECM download obtained. Work area set up and Job Safety Analysis (JSA) and Lock-Out Tag-Out (LOTO) procedures completed. Performed cooling system block dye test to check for exhaust gases in the cooling system no issues found. Inspected oil filler cap and found engine oil to be milky indicating coolant contamination. Pressurised cooling system to 15 psi to investigate coolant ingress into oil. System failed to hold pressure. Inspected engine for external coolant leaks found. Removed sump, oil pick-up tube and stiffener plate. Inspection revealed coolant leaking from liner O-ring on exhaust side at cylinder #5. Removed intake-side, front-side, exhaust-side, rear-side and top-side engine components and removed cylinder head. No evidence of dropped liners or cylinder head gasket failure found. Removed piston cooling nozzles, pistons and #5 cylinder liner. Found fretting on lower counterbore O-ring sealing surface causing liner O-ring leak. Removed remaining five liners and found fretting present on all lower counterbore O-ring sealing surfaces as well as fretting on all six count erbore ledges. Set up counterbore cutting tool and machined all cylinder counterbores to 0.020". Performed block repair as requested by customer and allowed to cure. Removed oil pump to access bearings. Replaced main bearings and torqued to specification per QSOL. Measured crankshaft end float at 0.010". Reinstalled oil pump and measured gear backlash at 0.010". Installed new cylinder liners and measured liner

All goods and services provided in line with Cummins Terms and Conditions of Sale

Payment Terms 30 Days from End of Month

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protrusion at 0.012". Reassembled engine and installed new reconditioned cylinder head as requested by customer. Replaced front crankshaft seal due to oil leak. Replaced oil pressure sensor due to internal oil leak. Replaced rear idler bearings due to noise. Reinstalled intake piping, coolant pipes and radiator support brackets. Filled cooling system, primed and started engine. Pressure tested cooling system and confirmed system holds pressure. Washed engine bay, installed calibration update and checked for fault codes. Found active aftertreatment fault codes 1711 and 2771. Checked power supply and load-tested batteries

all OK. Inspect earth leads OK.

Checked resistance, power supply and earth circuits to dosing unit data link all OK.

Load-tested key switch supply and found voltage dropping from 11.5 V to 0.5 V under load. Same voltage drop found at outlet NOx sensor. Applied direct battery power and faults became inactive. Removed aftertreatment harness and conduit. Inspected harness and found corrosion in terminal crimps. Cut out corrosion, re-crimped terminals, re-conduited and reinstalled harness. Secured and tidied harness. Confirmed fault codes inactive. Attempted dosing pump flow test and found airflow low at 10 ml/min. Flushed system. Airflow present but no fluid delivery. Retested and confirmed no fluid output, indicating faulty dosing unit.

Replaced dosing unit and performed flow tests (initial flow approx. 75 ml). Removed dosing injector and thoroughly cleaned. Re-tested and confirmed correct flow of 100 ml. Reinstalled injector into exhaust system and cleared fault codes. Test AdBlue and found water contamination in tanks. Checked DEF tank and found pick-up tube contacting bottom of dented tank and a crack 1/3 way up the tank. Drained water from tank. Removed tank and repaired by removing dent and welding crack in tank. Reinstalled.

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Refilled with fresh AdBlue. Completed road test and engine run-in procedure. Performed High NOx reset - passed. During road test, cooling fan found to be running continuously. Diagnosed faulty wiring at pressure switch, found wiring chafed near thermostat housing. Repaired wiring and confirmed correct fan operation. Completed final road test and confirmed vehicle operating correctly. Vehicle returned to service.
Cummins has provided goodwill support toward this repair due to nature of failure and several failures in customer fleet. 50% of labour required to repair coolant in oil failure including machining counterbore ledges and 100% of parts related to failure including Cylinder liner repair kit, Cylinder head gasket and Shims.

Banking Details
Cummins South Pacific Pty Ltd
Australia and New Zealand Banking Group Limited
(ANZ) Level 4, 100 Queen Street, Melbourne VIC
3000 Account No: 836551902 BSB:013 479
Swift Code: ANZBAU3M

Include Account and Invoice Numbers in Payment Reference

<i>Extension</i>	<i>Description</i>	<i>Unit price</i>	<i>Qty</i>	
<i>Labour</i>				
7447.20	3	214.00	34.80	
7447.20		<i>LABOUR TOTAL</i>		
<i>Material</i>				
CSP05407	CONTACT CLEANER-FLAMMABLE	25.52	2	51.04
5406110	KIT, MAIN BEARING	1115.56	1	1115.56
6511105RX	RECON, CYLINDER HEAD	8367.56	1	8367.56
7260	PYROIL CIT BRAKE PART CNR	13.25	2	26.50

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CustomerN J ASHTON PTY LTD

Description	Operation	Unit price	Qty	Extension
2882087	SET, ROD BEARING (STD)	262.79	6	1576.74
4921517 90318027	SENSOR PRESSURE	329.83	1	329.83
3391271	LOCTITE 518	30.21	1	30.21
3823258	LUBRIPLATE 105 GREASE 100	16.35	1	16.35
3680324	PAD CLEANING SCOTCHBRITE	6.13	2	12.26
6594896	GASKET FLANGE OIL DRAIN	29.91	1	29.91
4918990	SEAL, OIL	250.09	1	250.09
HYTDCT110HIRK2	SCREW, SELF TAPPING METAL	35.58	6	213.48
3935013	DUAL CLAMP CABLE TIE	1.95	30	58.50
6303LLUNTN	SHIELD DUST	34.68	2	69.36
1324.20	17X47X14MM BEARING PREMIUM	29.25	4	117.00
WF2127 LF14000NN	BLUE 8600 20L OIL ESI	87.98	1	87.98
PGXLVITAL-WSHOP	WATER FILTER BLANK OIL	52.69	1	52.69
1324.01	FILTER COMBO SPINON PGXL	55.79	1	55.79
DEFSFQC9-0403	VITAL ADVANCED COOLA	4.17	60	250.20
5273337RX	PREMIUM BLUE 8600 OIL (W/	5.83	30	174.90
4026684	CONNECTION INJ 90D 3MM DE	13.22	2	26.44
4907447	RECON DOSER PUMP 12V	3177.01	1	3177.01
4907448	GASKET OIL PAN	797.04	1	797.04
3163075	GASKET EXHAUST MANIFOLD	38.82	4	155.28
3966976	GASKET EXHAUST MANIFOLD	57.62	1	57.62
4318947	PAINT APEX RED" 12. SCREW	70.10	1	70.10
	,HEX FLANGE HEAD CA	16.04	3	48.12
	THERMOSTAT	248.78	1	248.78
MATERIAL TOTAL				17466.34

Subcontract
5595495

192.02 192.02 OEM Bits 192.02 1

SUBCONTRACT TOTAL

Miscellaneous

Environmental Levy 25.00 1.00 25.00
Consumables 45.00 45.00

MISC TOTAL 70.00

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<i>Description</i>	<i>Operation</i>	<i>Unit price</i>	<i>Qty</i>	<i>Extension</i>
<i>SUB-TOTAL</i>				25175.56
<i>G.S.T</i>				2517.56
<i>INVOICE TOTAL</i>				27693.12