

Fluid Analysis Laboratory Conwy LL32 8FA

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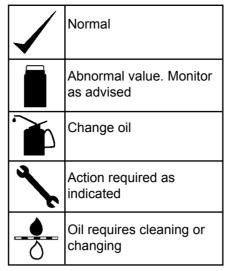
LIEBHERR Sample No: 7568807 Make: R922 **DENBIGHSHIRE** Model: Location: 1486/49965 JOHN KELLY Client: Serial No: LEFT TRAVEL Kit Ref/Bottle No: LIE425621 System: 12105912 **NOT GIVEN** Job No.: Brand: 06/05/21 Grade: Sampled: 10/05/21 Unique No.: 5248885 Received:

Diagnosis Key: Normal Caution Serious Diagnostician: Peter Fo

Wear appears satisfactory. No significant contamination. Advice : Monitor at the recommended sampling period.

Results		Current Sample	Historical Samples	Reference Oil
Sample No		7568807		
Status				
Sampled		06/05/21		
Received		10/05/21		
Fluid Age				
Unit Age		1050		
Fluid Condition				
Viscosity @ 40 °C	mm²/s	195.6		
Appearance	-	Dark		N/A
Neut No.	mg KOH/g	3.47		
Additives				
B (Boron)	mg/kg	0.5		
Ba (Barium)	mg/kg	5.0		
Ca (Calcium)	mg/kg	68		
Mg (Magnesium)	mg/kg	6.8		
P (Phosphorus)	mg/kg	>2000		
Zn (Zinc)	mg/kg	20		
Contamination				
Water	%	<0.1		
Na (Sodium)	mg/kg	7.6		
K (Potassium)	mg/kg	11		
Si (Silicon)	mg/kg	118		
Li (Lithium)	mg/kg	1.8		
Wear Metals				
Ferrous Debris (PQ)	-	44		
Al (Aluminium)	mg/kg	48		
Sn (Tin)	mg/kg	0.0		
Pb (Lead)	mg/kg	0.4		
Cu (Copper)	mg/kg	0.3		
Fe (Iron)	mg/kg	292		
Cr (Chromium)	mg/kg	7.6		
Mo (Molybdenum)	mg/kg	0.3		
Ag (Silver)	mg/kg	0.0		
Ni (Nickel)	mg/kg	0.7		
Mn (Manganese)	mg/kg	3.4		

FLUID ANALYSIS REPORT SYMBOLS & DEFINITIONS



Appearance	All Systems (excl. Engines)
10	Clear & Bright
20	Dark
30	Hazy
40	Cloudy
50	Emulsified
60	Free Water
70	Solid Debris
80	Solid Debris and water

VISCOSITY - the resistance to flow in a capillary tube under WATER - essential to detect coolant leaks or contamination gravity.

FUEL DILUTION - by flash point & viscosity to detect rich mixtures & faulty injectors etc.

OIL CONDITION (OC) - arbitrary scale to measure soot, water and metals etc.

APPEARANCE (App) - arbitrary visual assessment of AN - a measure of corrosive acidic materials in oxidised non-engine oils to identify visible contamination.

SOOT - by infra red light absorption indicates poor OXIDATION & NITRATION - a measure of deterioration of combustion, worn upper cylinders, rings.

SOOT residues to prevent blockages.

FERROUS DEBRIS (P.Q.) - arbitrary scale to detect small and large magnetic particles.

establish failure mode: available on request.

by sea or fresh water.

BN - a measure of reserve alkalinity to protect the crankcase from acidic combustion gases.

SULPHATION - a measure of deterioration of the oil additives by sulphuric acid contamination.

overheated oils.

the oil by reaction with air.

ISO CLEANLINESS CODE - a scale to indicate amount of particles in oils >4, >6 and >14 microns.

WEAR METALS- debris in oil from worn components.

FERROGRAPHY - a microscopic study of wear particles to ADDITIVE METALS - elements added by manufacturer to give particular properties to the oil.

> **CONTAMINATION METALS** - elements indicative of dirt, coal & abrasive coolant residues etc.

ABBREVIATIONS			TEST	Units		
	Ag - Silver	Na - Sodium		Kinematic Viscosity (KV) followed by temperature in °C	Centistoke (cSt)	
	Al - Aluminium	Ni - Nickel		Fuel	Normal Caution Serious	
	B - Boron	P - Phosphorus		Oil Condition (OC)	Arbitrary scale 0-100	
	Ba - Barium	Pb - Lead		Appearance (App)	Arbitrary scale 0-100	
	Ca - Calcium	S = Sulphur		Soot	%	
	Cd - Cadmium	Si = Silicon		Ferrous Debris / P.Q.	Arbitrary Scale 0-10000	
	CI - Chlorine	Sn - Tin		Water	% or ppm. 0.1% = 1000ppm	
	Cr - Chromium	Ti - Titanium		Glycol	Normal Caution Serious, or % in mg KOH / grm	
	Cu - Copper	V - Vanadium		Base Number (TBN)	ing KOH7 gilli	
	Fe - Iron	VI - Viscosity Index		Acid Number (TAN)	mg KOH / grm	
	K - Potassium	Zn - Zinc		Strong Acid Number (SAN)	mg KOH / grm	
	Li - Lithium	RI - Refractive Index		Particle Count (ISO Code)	No. Particles / ml >4, >6, >14 microns Scale 0-14 , 7 = Neutral	
	Mg - Manganese	FAME - Fatty Acid Methyl Ester (Biofuel)		Initial PH	Codio of 14 , 1 - Noulidi	
	Mo - Molybdenum					