



LIEBHERR

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	SEVERE
FLUID CONDITION	ABNORMAL

Machine Id
141255
Component
Diesel Engine
Fluid
LIEBHERR MOTOROIL 10W-40 (--- GAL)

RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LM0001183	---	---
Sample Date		Client Info		24 Jun 2024	---	---
Machine Age	hrs	Client Info		0	---	---
Oil Age	hrs	Client Info		200	---	---
Filter Age	hrs	Client Info		200	---	---
Oil Changed		Client Info		N/A	---	---
Filter Changed		Client Info		N/A	---	---
Sample Status				SEVERE	---	---

WEAR

Bearing and/or bushing wear is indicated.

Iron	ppm	ASTM D5185m	>50	66	---	---
Chromium	ppm	ASTM D5185m	>10	6	---	---
Nickel	ppm	ASTM D5185m	>5	5	---	---
Titanium	ppm	ASTM D5185m	>2	<1	---	---
Silver	ppm	ASTM D5185m	>2	<1	---	---
Aluminum	ppm	ASTM D5185m	>20	7	---	---
Lead	ppm	ASTM D5185m	>20	▲ 24	---	---
Copper	ppm	ASTM D5185m	>15	▲ 398	---	---
Tin	ppm	ASTM D5185m	>10	2	---	---
Vanadium	ppm	ASTM D5185m		<1	---	---
White Metal	scalar	*Visual	NONE	NONE	---	---
Yellow Metal	scalar	*Visual	NONE	NONE	---	---

CONTAMINATION

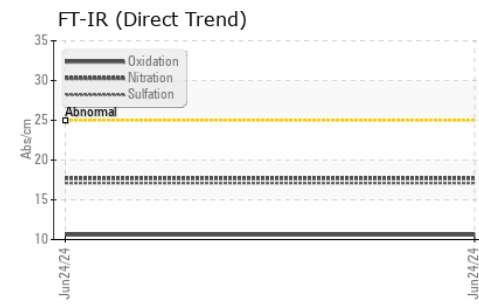
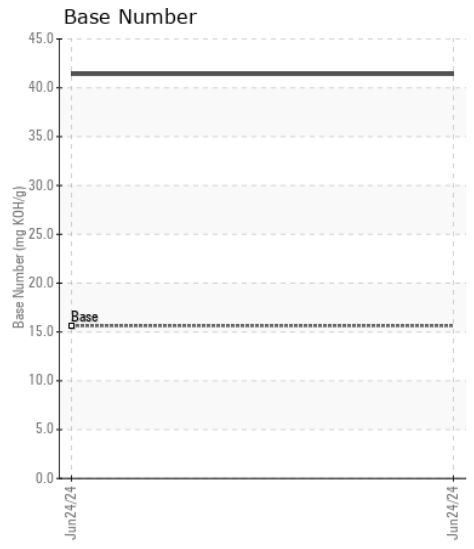
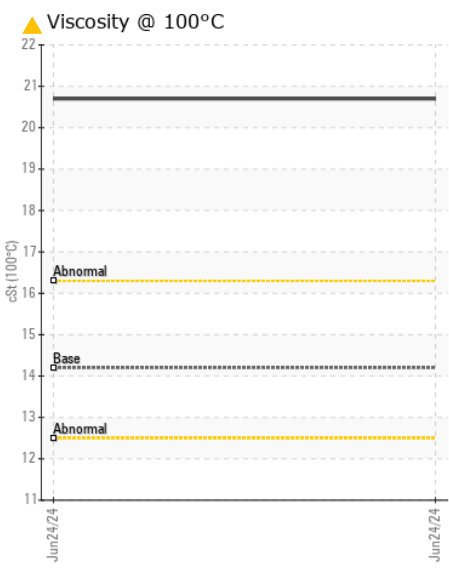
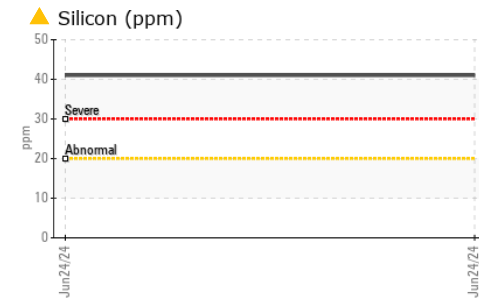
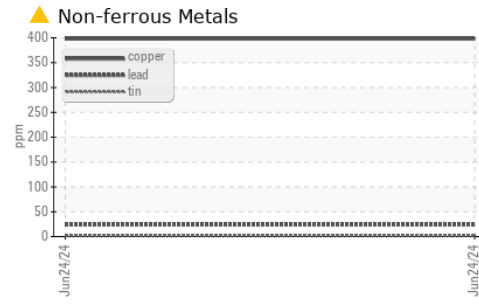
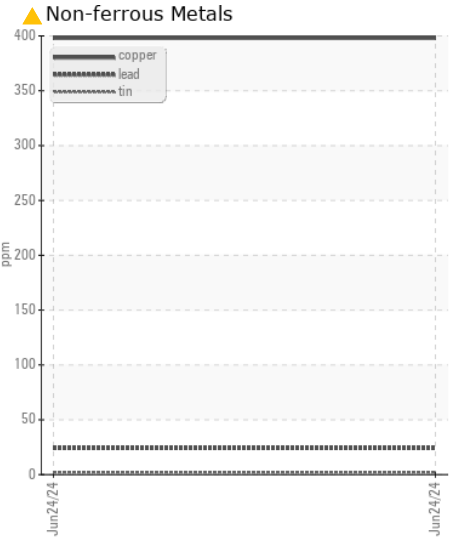
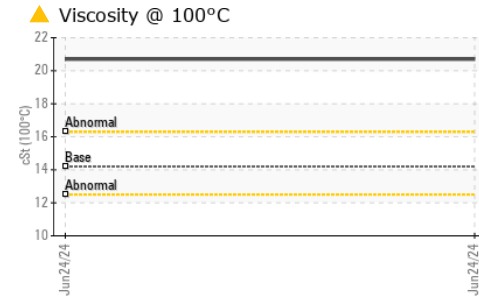
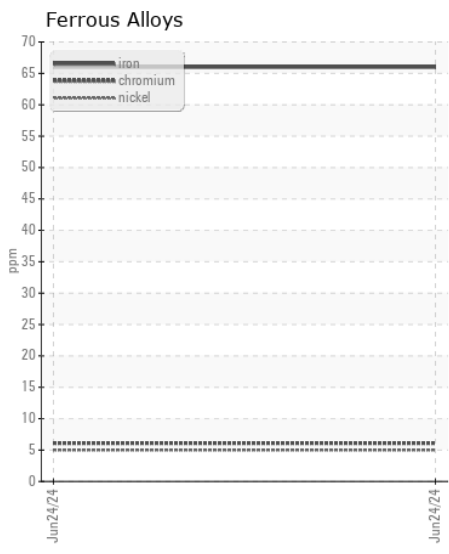
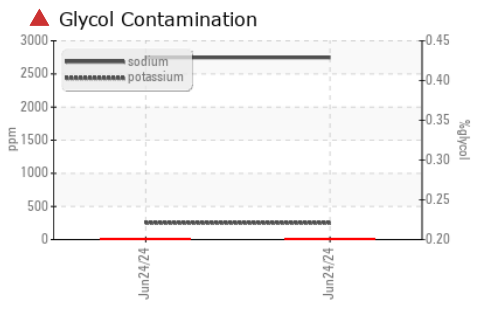
Sodium and/or potassium levels are high. There is a high concentration of glycol present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material.

Silicon	ppm	ASTM D5185m	>20	▲ 41	---	---
Potassium	ppm	ASTM D5185m	>20	▲ 251	---	---
Fuel		WC Method	>4.0	<1.0	---	---
Water		WC Method	>0.1	NEG	---	---
Glycol	%	*ASTM D2982		▲ 0.20	---	---
Soot %	%	*ASTM D7844	>1.5	1	---	---
Nitration	Abs/cm	*ASTM D7624	>20	17.7	---	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.1	---	---
Silt	scalar	*Visual	NONE	NONE	---	---
Debris	scalar	*Visual	NONE	NONE	---	---
Sand/Dirt	scalar	*Visual	NONE	NONE	---	---
Appearance	scalar	*Visual	NORML	NORML	---	---
Odor	scalar	*Visual	NORML	NORML	---	---
Emulsified Water	scalar	*Visual	>0.1	NEG	---	---

FLUID CONDITION

The oil viscosity is higher than normal. The oil is no longer serviceable due to the presence of contaminants.

Sodium	ppm	ASTM D5185m		▲ 2747	---	---
Boron	ppm	ASTM D5185m	245	103	---	---
Barium	ppm	ASTM D5185m	0	<1	---	---
Molybdenum	ppm	ASTM D5185m	0	<1	---	---
Manganese	ppm	ASTM D5185m	<1	4	---	---
Magnesium	ppm	ASTM D5185m	36	37	---	---
Calcium	ppm	ASTM D5185m	4401	4380	---	---
Phosphorus	ppm	ASTM D5185m	1067	1076	---	---
Zinc	ppm	ASTM D5185m	1183	1261	---	---
Sulfur	ppm	ASTM D5185m	2591	3402	---	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	10.6	---	---
Base Number (BN)	mg KOH/g	ASTM D2896	15.63	41.4	---	---
Visc @ 100°C	cSt	ASTM D445	14.2	▲ 20.7	---	---



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LM0001183 **Received** : 28 Jun 2024
Lab Number : 06223351 **Tested** : 01 Jul 2024
Unique Number : 11101548 **Diagnosed** : 01 Jul 2024 - Jonathan Hester
Test Package : CONST (Additional Tests: Glycol, KV40, TBN)

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To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)