



# LIEBHERR

## OIL ANALYSIS REPORT

WEAR	<b>ABNORMAL</b>
CONTAMINATION	<b>SEVERE</b>
FLUID CONDITION	<b>ABNORMAL</b>



Machine Id  
**LIEBHERR LH60C 106512-1528**  
Component  
**Right Final Drive**  
Fluid  
**LIEBHERR GEAR BASIC 90 LS (--- GAL)**

### RECOMMENDATION

We advise that you check all areas where dirt can enter the system. The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>LH0288229</b>	LH0278581	LH
Sample Date		Client Info		<b>29 Apr 2024</b>	05 Jan 2024	23 Aug 2023
Machine Age	hrs	Client Info		<b>23144</b>	21976	0
Oil Age	hrs	Client Info		<b>0</b>	0	0
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>None</b>	None	None
Sample Status				<b>SEVERE</b>	NORMAL	NORMAL

### WEAR

PQ levels are severe. Chromium and iron and nickel ppm levels are abnormal. Aluminum ppm levels are noted. Gear wear is indicated. The very high ferrous density (PQ) index indicates that severe wear is occurring.

PQ		ASTM D8184*		<b>512</b>	---	---
Iron	ppm	ASTM D5185(m)	>500	<b>▲ 833</b>	<1	62
Chromium	ppm	ASTM D5185(m)	>10	<b>▲ 12</b>	0	<1
Nickel	ppm	ASTM D5185(m)	>10	<b>▲ 8</b>	0	1
Titanium	ppm	ASTM D5185(m)		<b>5</b>	0	<1
Silver	ppm	ASTM D5185(m)		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185(m)	>25	<b>● 70</b>	<1	6
Lead	ppm	ASTM D5185(m)	>25	<b>3</b>	0	<1
Copper	ppm	ASTM D5185(m)	>50	<b>21</b>	0	3
Tin	ppm	ASTM D5185(m)	>10	<b>1</b>	0	0
Vanadium	ppm	ASTM D5185(m)		<b>&lt;1</b>	0	<1
White Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	VLITE
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE

### CONTAMINATION

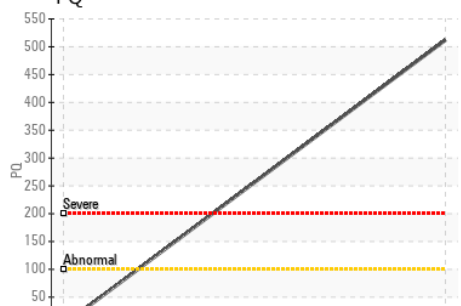
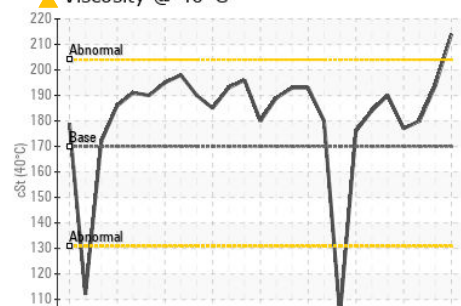
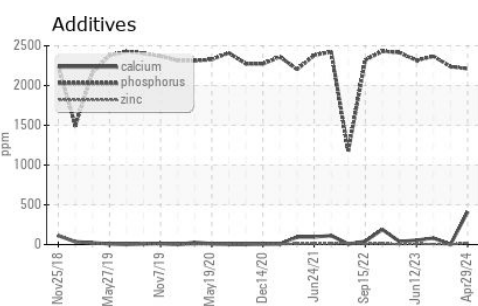
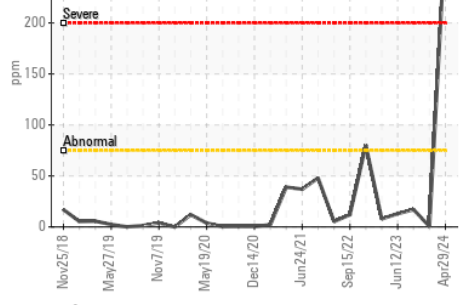
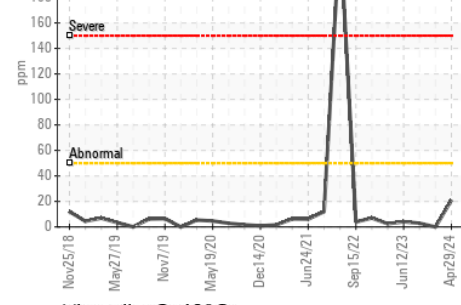
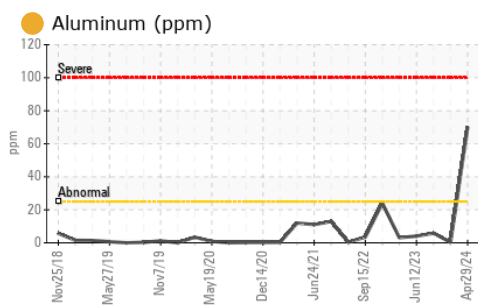
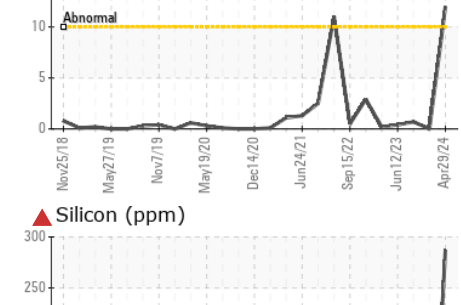
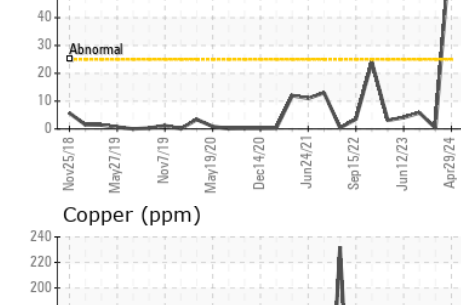
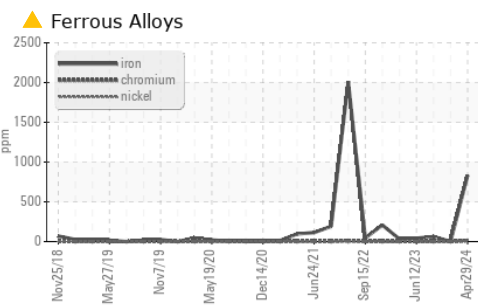
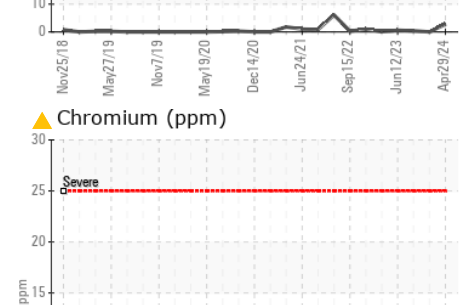
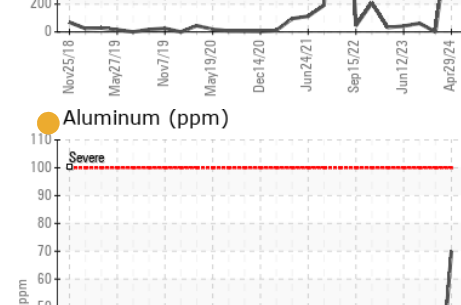
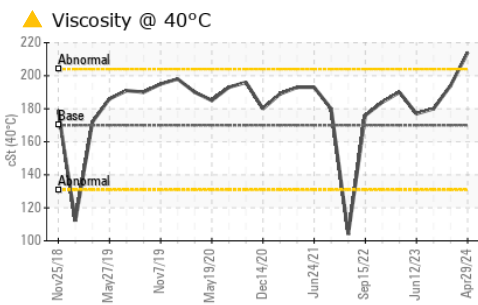
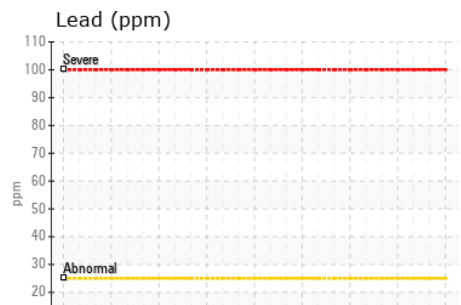
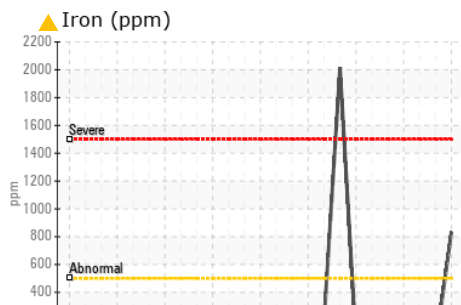
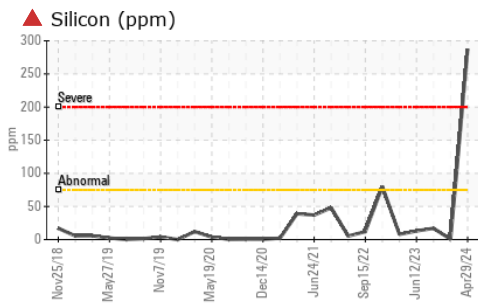
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. High amount of ingressed dirt has caused abrasive wear to the component.

Silicon	ppm	ASTM D5185(m)	>75	<b>▲ 287</b>	<1	17
Potassium	ppm	ASTM D5185(m)	>20	<b>14</b>	<1	1
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Silt	scalar	Visual*	NONE	<b>NONE</b>	NONE	MODER
Debris	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*	>0.2	<b>NEG</b>	NEG	NEG

### FLUID CONDITION

Viscosity of sample indicates oil is within SAE 80W90 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Sodium	ppm	ASTM D5185(m)		<b>12</b>	<1	2
Boron	ppm	ASTM D5185(m)	0	<b>3</b>	<1	2
Barium	ppm	ASTM D5185(m)	0	<b>2</b>	0	0
Molybdenum	ppm	ASTM D5185(m)	0	<b>0</b>	0	0
Manganese	ppm	ASTM D5185(m)	0	<b>29</b>	0	3
Magnesium	ppm	ASTM D5185(m)	<1	<b>140</b>	<1	18
Calcium	ppm	ASTM D5185(m)	<1	<b>412</b>	2	81
Phosphorus	ppm	ASTM D5185(m)	2143	<b>2210</b>	2238	2369
Zinc	ppm	ASTM D5185(m)	<1	<b>19</b>	2	7
Sulfur	ppm	ASTM D5185(m)	23468	<b>23599</b>	23869	26343
Visc @ 40°C	cSt	ASTM D7279(m)	170	<b>▲ 214</b>	194	180



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : LH0288229 **Received** : 03 May 2024  
**Lab Number** : 02633287 **Tested** : 03 May 2024  
**Unique Number** : 5774440 **Diagnosed** : 05 May 2024 - Kevin Marson  
**Test Package** : MOB 1 ( Additional Tests: PQ )

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To discuss this sample report, contact Customer Service at 1-800-268-2131.  
 Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.  
 Validity of results and interpretation are based on the sample and information as supplied.