



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	ATTENTION
FLUID CONDITION	SEVERE



Machine Id
LIEBHERR R934 EXC 31218 (S/N 017895-924)
Component
Hydraulic System
Fluid
LIEBHERR HYDRAULIC BASIC 68 (--- QTS)

RECOMMENDATION

We recommend that you drain the oil and perform a filter service on this component if not already done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0924421	WC0856746	WC0786494
Sample Date		Client Info		22 May 2024	17 Oct 2023	22 Aug 2023
Machine Age	hrs	Client Info		16230	15470	15500
Oil Age	hrs	Client Info		1500	1000	0
Filter Age	hrs	Client Info		1500	1000	500
Oil Changed		Client Info		Not Changed	Changed	Not Changed
Filter Changed		Client Info		Not Changed	Changed	Changed
Sample Status				SEVERE	ATTENTION	NORMAL

WEAR

The iron level is severe. The copper level is abnormal.

Iron	ppm	ASTM D5185m	>50	▲ 131	11	9
Chromium	ppm	ASTM D5185m	>15	1	3	3
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>8	0	<1	1
Lead	ppm	ASTM D5185m	>5	0	0	<1
Copper	ppm	ASTM D5185m	>15	▲ 22	3	3
Tin	ppm	ASTM D5185m	>5	0	1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

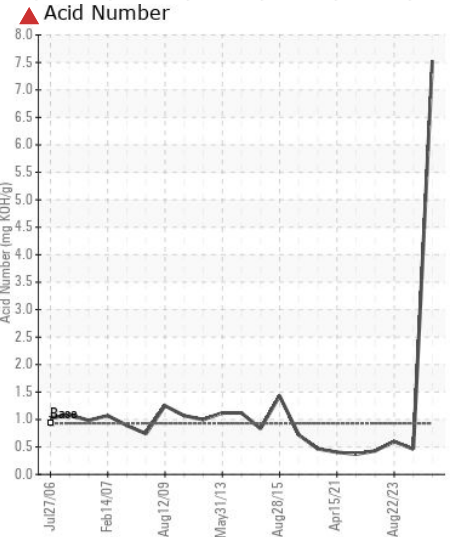
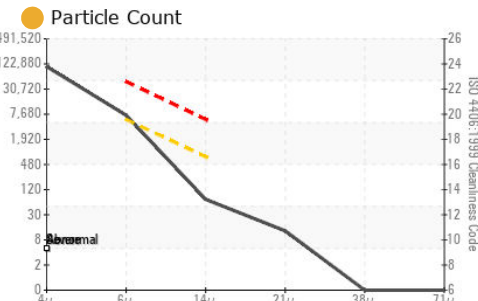
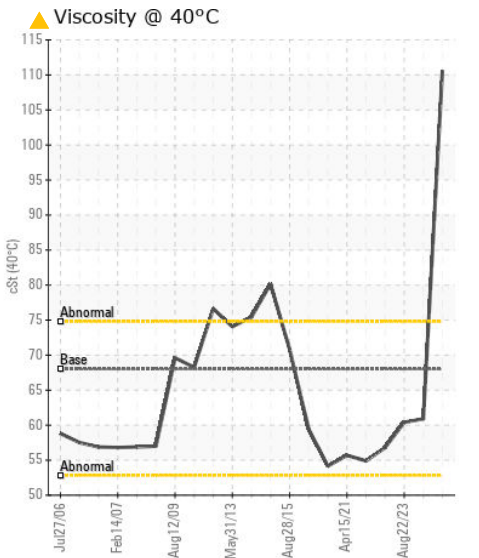
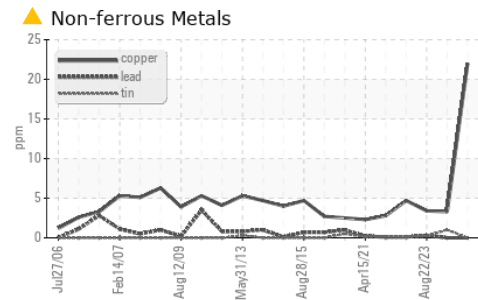
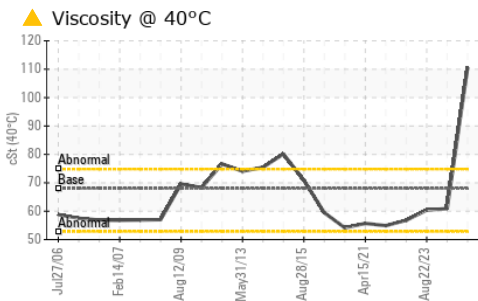
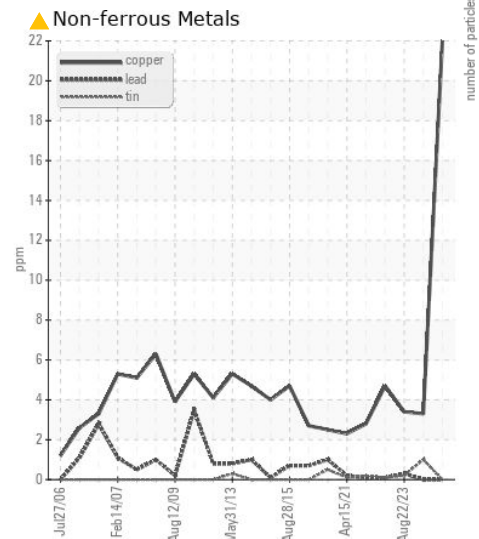
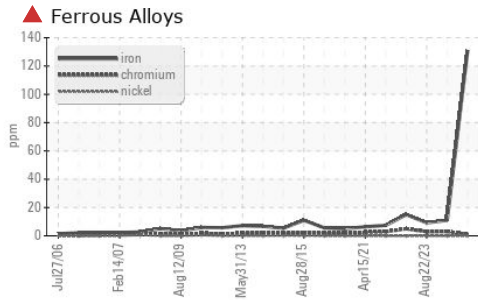
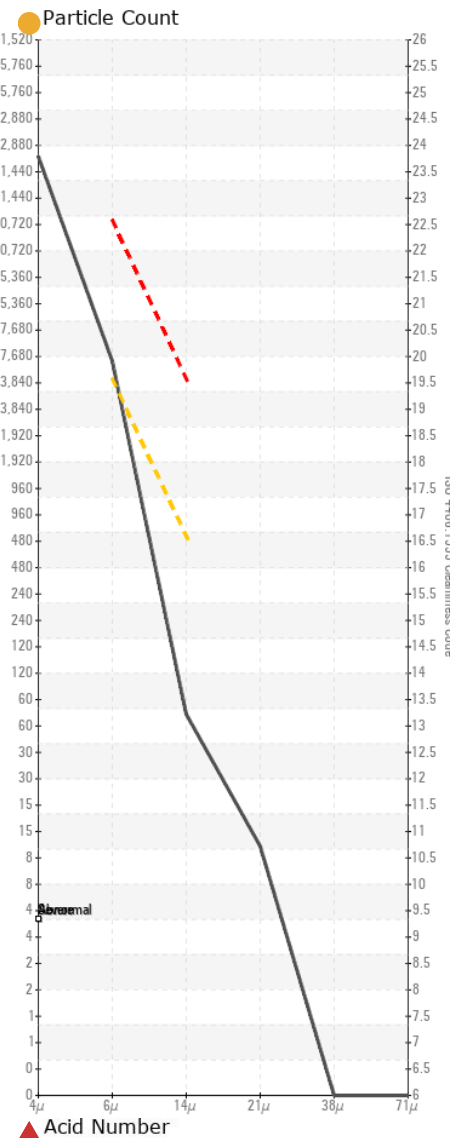
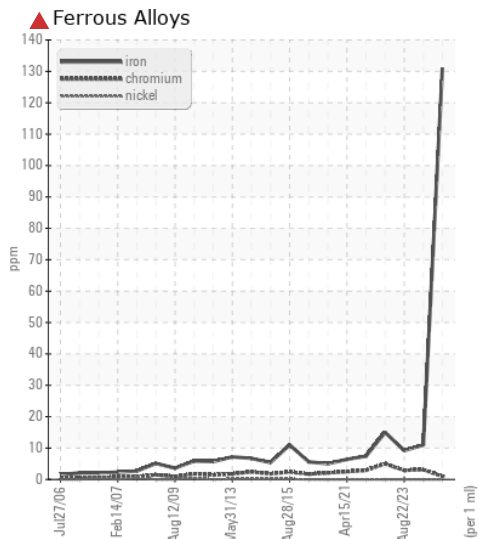
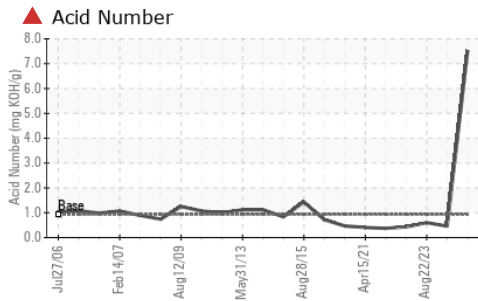
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

Silicon	ppm	ASTM D5185m	>25	3	3	3
Potassium	ppm	ASTM D5185m	>20	0	<1	2
Water		WC Method	>0.1	NEG	NEG	NEG
Particles >4µm		ASTM D7647		91717	16636	3824
Particles >6µm		ASTM D7647	>5000	● 6303	● 5749	498
Particles >14µm		ASTM D7647	>640	62	310	54
Particles >21µm		ASTM D7647	>160	11	39	16
Particles >38µm		ASTM D7647	>40	0	1	1
Particles >71µm		ASTM D7647	>10	0	0	0
Oil Cleanliness		ISO 4406 (c)	>-/19/16	● 24/20/13	● 21/20/15	19/16/13
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	LIGHT	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG

FLUID CONDITION

The AN level is well above the recommended limit. The oil viscosity is higher than normal. Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable.

Sodium	ppm	ASTM D5185m		2	3	0
Boron	ppm	ASTM D5185m	3	● 139	59	58
Barium	ppm	ASTM D5185m	0	<1	20	2
Molybdenum	ppm	ASTM D5185m	0	6	13	14
Manganese	ppm	ASTM D5185m	<1	1	<1	0
Magnesium	ppm	ASTM D5185m	8	21	55	58
Calcium	ppm	ASTM D5185m	1248	● 96	219	276
Phosphorus	ppm	ASTM D5185m	385	● 2913	446	441
Zinc	ppm	ASTM D5185m	429	● 118	492	548
Sulfur	ppm	ASTM D5185m	3431	● 20649	1729	1538
Acid Number (AN)	mg KOH/g	ASTM D8045	0.93	▲ 7.528	0.46	0.60
Visc @ 40°C	cSt	ASTM D445	68	▲ 110.6	60.9	60.4



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0924421 **Received** : 30 May 2024
Lab Number : 06195872 **Tested** : 05 Jun 2024
Unique Number : 11057995 **Diagnosed** : 05 Jun 2024 - Jonathan Hester
Test Package : CONST

SULLIVAN EASTERN INC-LIEBHERR
 2860 C SLATER RD
 MORRISVILLE, NC
 US 27560
 Contact: CHRIS CALTON

Certificate L2367
 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)