



LIEBHERR

OIL ANALYSIS REPORT



Area
[KIMMER]
Machine Id
LIEBHERR LH50M 1216-117615
Component
Diesel Engine
Fluid
LIEBHERR MOTOROIL 5W30 (--- GAL)

| | |
|-----------------|---------------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | LH0268511 | LH06072677 | LH0243203 |
| Sample Date | | Client Info | | 20 Mar 2024 | 28 Jan 2024 | 14 Apr 2023 |
| Machine Age | hrs | Client Info | | 5510 | 1216 | 6895 |
| Oil Age | hrs | Client Info | | 500 | 0 | 1000 |
| Filter Age | hrs | Client Info | | 500 | 0 | 0 |
| Oil Changed | | Client Info | | Not Changd | N/A | Not Changd |
| Filter Changed | | Client Info | | Not Changd | N/A | Not Changd |
| Sample Status | | | | NORMAL | NORMAL | ABNORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >66 | 7 | 5 | 13 |
| Chromium | ppm | ASTM D5185m | >4 | <1 | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | <1 | 0 | <1 |
| Silver | ppm | ASTM D5185m | >3 | <1 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >8 | 3 | 2 | <1 |
| Lead | ppm | ASTM D5185m | >10 | <1 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >74 | 1 | <1 | 3 |
| Tin | ppm | ASTM D5185m | >4 | <1 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

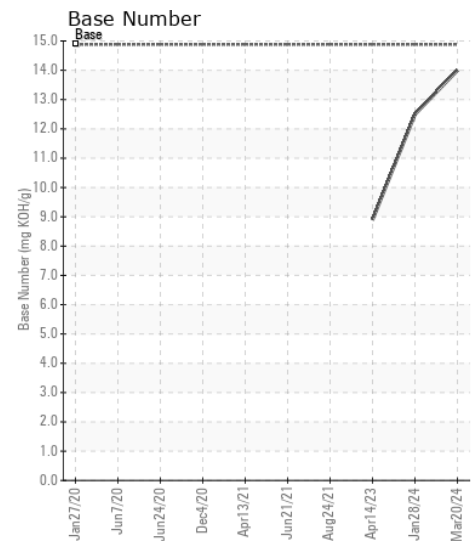
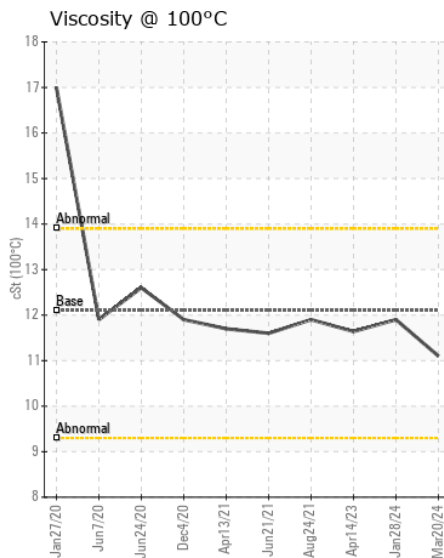
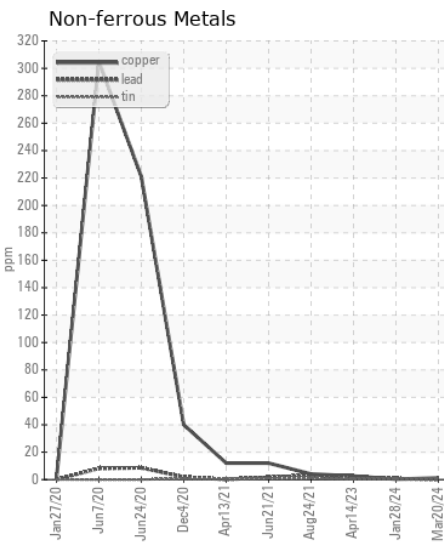
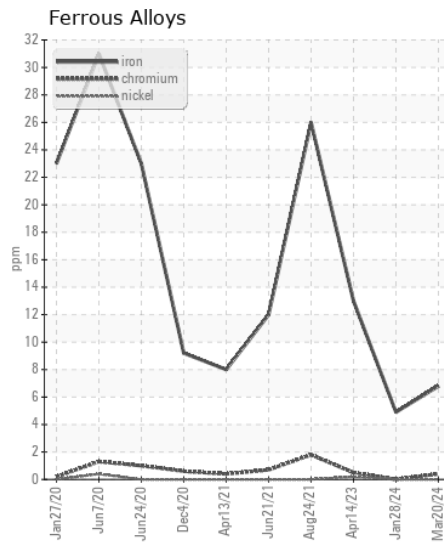
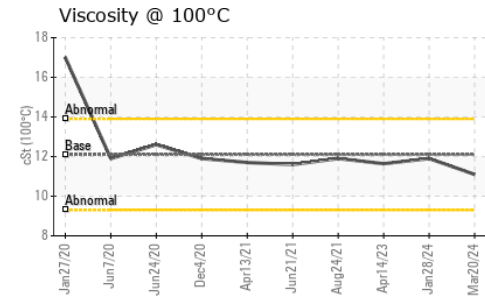
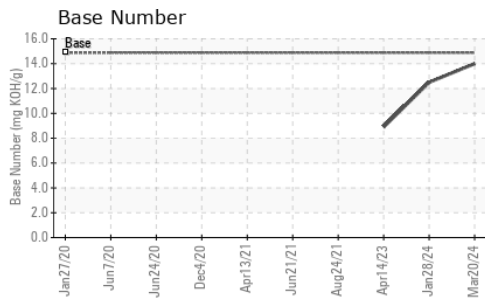
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|--------|
| Silicon | ppm | ASTM D5185m | >15 | 8 | 7 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | 3 | 3 | 4 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.1 | 0.1 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 13.7 | 13.4 | 15.0 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 16.3 | 17.9 | 22.2 |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE | 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 | >0.2 | NEG | NEG | ▲ 0.2% |

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|-------|--------------|------|-------|
| Sodium | ppm | ASTM D5185m | | 0 | 2 | 2 |
| Boron | ppm | ASTM D5185m | 236 | 245 | 274 | 174 |
| Barium | ppm | ASTM D5185m | 0 | 1 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 0 | <1 | <1 | <1 |
| Manganese | ppm | ASTM D5185m | <1 | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 25 | 20 | 29 | 19 |
| Calcium | ppm | ASTM D5185m | 4298 | 4414 | 3908 | 3590 |
| Phosphorus | ppm | ASTM D5185m | 1020 | 1067 | 1076 | 1023 |
| Zinc | ppm | ASTM D5185m | 1164 | 1198 | 1218 | 1177 |
| Sulfur | ppm | ASTM D5185m | 2460 | 3250 | 3017 | 3842 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 12.7 | 14.5 | 20.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 14.88 | 14.0 | 12.5 | 8.9 |
| Visc @ 100°C | cSt | ASTM D445 | 12.1 | 11.1 | 11.9 | 11.64 |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : LH0268511

Lab Number : 06124741

Unique Number : 10938892

Test Package : CONST (Additional Tests: TBN)

Received : 21 Mar 2024

Tested : 22 Mar 2024

Diagnosed : 22 Mar 2024 - Wes Davis

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)

RECO EQUIPMENT INC

10461 GRAND RIVER RD

BRIGHTON, MI

US 48116

Contact: MATT VISEL

MVISEL@RECOEQUIP.COM

T: (810)299-1731

F: