



# LIEBHERR

## OIL ANALYSIS REPORT

|                 |               |
|-----------------|---------------|
| WEAR            | <b>NORMAL</b> |
| CONTAMINATION   | <b>NORMAL</b> |
| FLUID CONDITION | <b>NORMAL</b> |



Machine Id  
**LIEBHERR LH50M 1203-88008**  
Component  
**Diesel Engine**  
Fluid  
**LIEBHERR MOTOROIL 10W-40 (32 LTR)**

### RECOMMENDATION

Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>LH0272191</b>   | LH0229239   | LH0217421   |
| Sample Date    |     | Client Info |           | <b>01 Feb 2024</b> | 20 Jul 2022 | 05 Apr 2022 |
| Machine Age    | hrs | Client Info |           | <b>7000</b>        | 7000        | 6268        |
| Oil Age        | hrs | Client Info |           | <b>6268</b>        | 732         | 500         |
| Filter Age     | hrs | Client Info |           | <b>500</b>         | 732         | 500         |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | Filtered    | Changed     |
| Filter Changed |     | Client Info |           | <b>Changed</b>     | Changed     | Changed     |
| Sample Status  |     |             |           | <b>NORMAL</b>      | NORMAL      | NORMAL      |

### WEAR

All component wear rates are normal.

|              |        |             |      |              |      |      |
|--------------|--------|-------------|------|--------------|------|------|
| Iron         | ppm    | ASTM D5185m | >100 | <b>40</b>    | 56   | 27   |
| Chromium     | ppm    | ASTM D5185m | >5   | <b>&lt;1</b> | 2    | <1   |
| Nickel       | ppm    | ASTM D5185m | >5   | <b>0</b>     | 0    | 0    |
| Titanium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | <1   | 0    |
| Silver       | ppm    | ASTM D5185m | >3   | <b>0</b>     | <1   | 0    |
| Aluminum     | ppm    | ASTM D5185m | >15  | <b>6</b>     | 4    | <1   |
| Lead         | ppm    | ASTM D5185m | >30  | <b>5</b>     | 2    | 5    |
| Copper       | ppm    | ASTM D5185m | >125 | <b>38</b>    | 42   | 17   |
| Tin          | ppm    | ASTM D5185m | >5   | <b>5</b>     | 5    | 2    |
| Vanadium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | 0    | 0    |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |

### CONTAMINATION

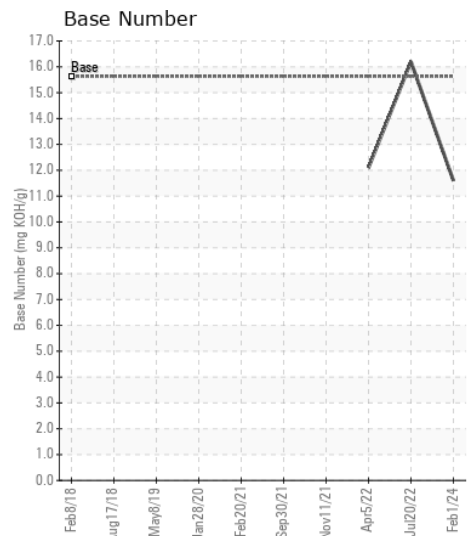
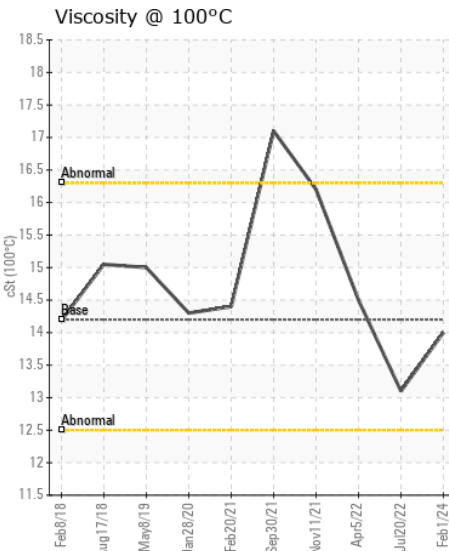
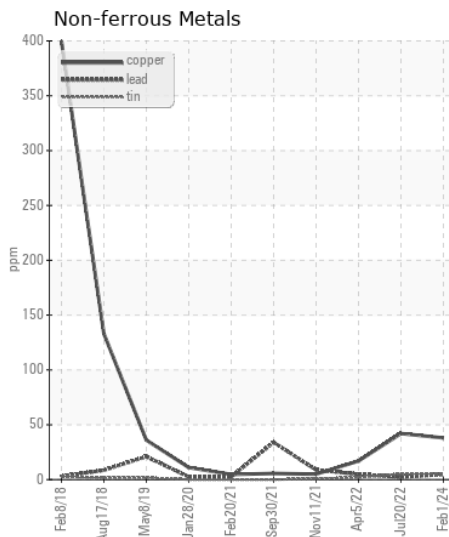
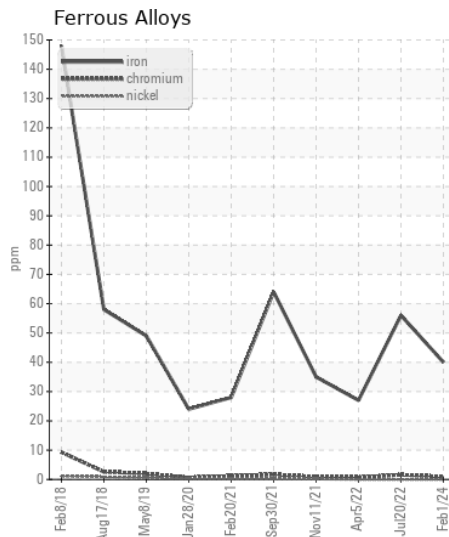
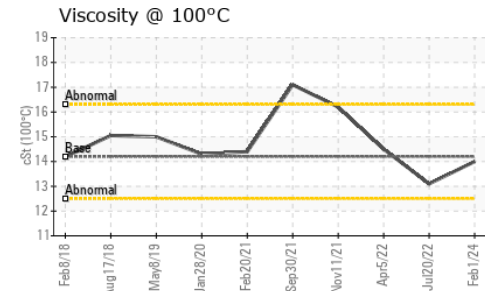
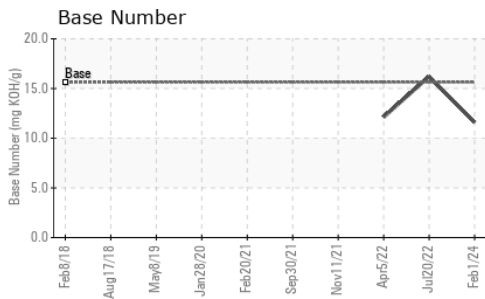
There is no indication of any contamination in the oil.

|                  |          |             |       |                |       |       |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon          | ppm      | ASTM D5185m | >60   | <b>8</b>       | 8     | 6     |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>0</b>       | 2     | 0     |
| Fuel             |          | WC Method   | >5    | <b>&lt;1.0</b> | <1.0  | <1.0  |
| Water            |          | WC Method   | >0.2  | <b>NEG</b>     | NEG   | NEG   |
| Glycol           |          | WC Method   |       | <b>NEG</b>     | NEG   | NEG   |
| Soot %           | %        | *ASTM D7844 | >3    | <b>1.4</b>     | 1.4   | 1     |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>14.8</b>    | 19.9  | 15.4  |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>22.5</b>    | 24.5  | 23.4  |
| Silt             | scalar   | *Visual     | NONE  | <b>NONE</b>    | NONE  | NONE  |
| 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

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

|                  |          |             |       |              |      |      |
|------------------|----------|-------------|-------|--------------|------|------|
| Sodium           | ppm      | ASTM D5185m |       | <b>3</b>     | 2    | 1    |
| Boron            | ppm      | ASTM D5185m | 245   | <b>128</b>   | 192  | 135  |
| Barium           | ppm      | ASTM D5185m | 0     | <b>0</b>     | 0    | 0    |
| Molybdenum       | ppm      | ASTM D5185m | 0     | <b>10</b>    | 4    | 31   |
| Manganese        | ppm      | ASTM D5185m | <1    | <b>&lt;1</b> | <1   | <1   |
| Magnesium        | ppm      | ASTM D5185m | 36    | <b>576</b>   | 84   | 643  |
| Calcium          | ppm      | ASTM D5185m | 4401  | <b>2915</b>  | 4893 | 2372 |
| Phosphorus       | ppm      | ASTM D5185m | 1067  | <b>992</b>   | 1111 | 811  |
| Zinc             | ppm      | ASTM D5185m | 1183  | <b>1154</b>  | 1315 | 914  |
| Sulfur           | ppm      | ASTM D5185m | 2591  | <b>3101</b>  | 3054 | 2025 |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25   | <b>20.1</b>  | 19.8 | 22.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896  | 15.63 | <b>11.6</b>  | 16.2 | 12.1 |
| Visc @ 100°C     | cSt      | ASTM D445   | 14.2  | <b>14.0</b>  | 13.1 | 14.5 |



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : LH0272191 **Received** : 08 Feb 2024  
**Lab Number** : 06084290 **Tested** : 09 Feb 2024  
**Unique Number** : 10871735 **Diagnosed** : 12 Feb 2024 - Don Baldrige  
**Test Package** : CONST ( Additional Tests: TBN )

**JR VINAGRO**  
 2208 PLAINFIELD PIKE  
 JOHNSTON, RI  
 US 02919  
 Contact: Service Manager

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)

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F: