



# LIEBHERR

## OIL ANALYSIS REPORT

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



Machine Id  
**LIEBHERR L566 048172-1484**  
Component  
**Diesel Engine**  
Fluid  
**LIEBHERR MOTOROIL 5W-30 LOW ASH (11 GAL)**

### RECOMMENDATION

Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>LH0204322</b>   | LH0184975   | LH0157248   |
| Sample Date    |     | Client Info |           | <b>04 Oct 2021</b> | 18 Mar 2021 | 09 Dec 2019 |
| Machine Age    | hrs | Client Info |           | <b>2922</b>        | 2536        | 1920        |
| Oil Age        | hrs | Client Info |           | <b>400</b>         | 1000        | 900         |
| Filter Age     | hrs | Client Info |           | <b>400</b>         | 1000        | 900         |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | Changed     | 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>5</b>     | 10   | 10   |
| Chromium     | ppm    | ASTM D5185m | >5   | <b>&lt;1</b> | 1    | <1   |
| Nickel       | ppm    | ASTM D5185m | >5   | <b>0</b>     | <1   | 0    |
| Titanium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | <1   | <1   |
| Silver       | ppm    | ASTM D5185m |      | <b>1</b>     | <1   | <1   |
| Aluminum     | ppm    | ASTM D5185m | >15  | <b>1</b>     | 2    | 2    |
| Lead         | ppm    | ASTM D5185m | >30  | <b>&lt;1</b> | 1    | <1   |
| Copper       | ppm    | ASTM D5185m | >125 | <b>2</b>     | 4    | 6    |
| Tin          | ppm    | ASTM D5185m | >5   | <b>&lt;1</b> | 2    | 0    |
| Vanadium     | ppm    | ASTM D5185m |      | <b>0</b>     | <1   | 0    |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |

### CONTAMINATION

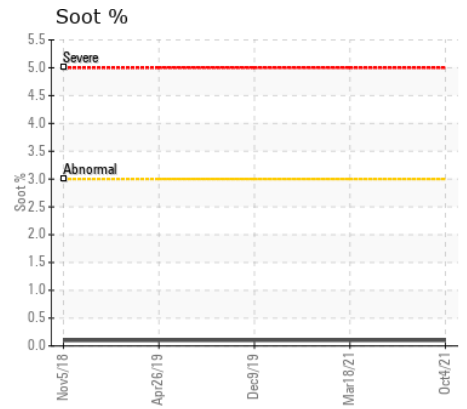
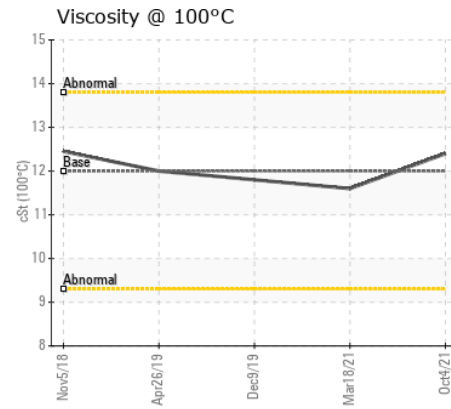
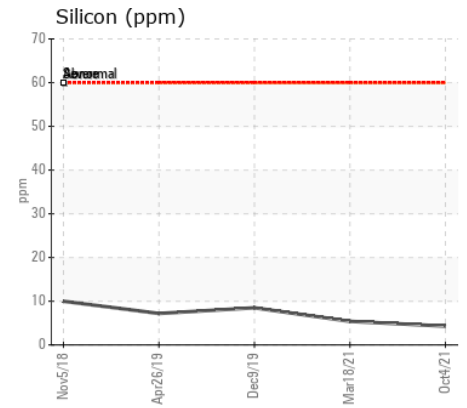
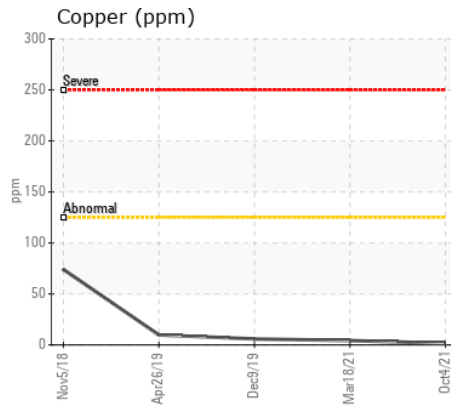
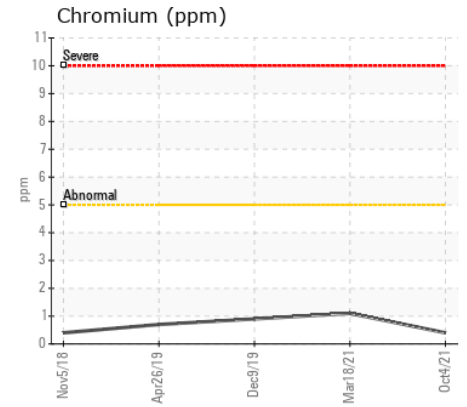
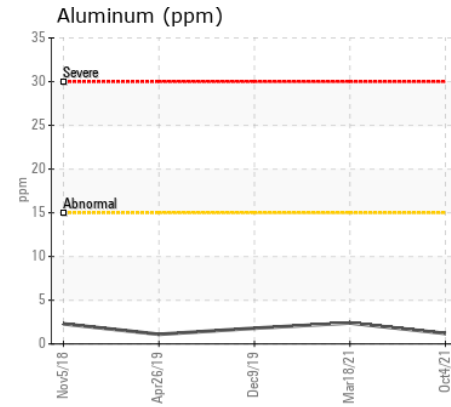
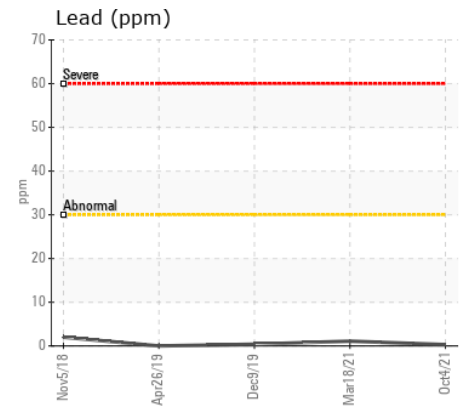
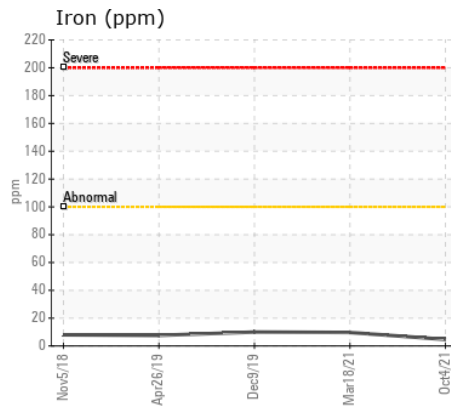
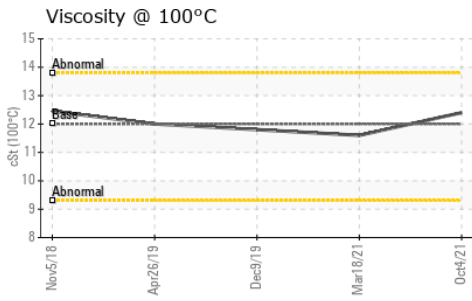
There is no indication of any contamination in the oil.

|                  |          |             |       |                |       |       |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon          | ppm      | ASTM D5185m | >60   | <b>4</b>       | 5     | 8     |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>2</b>       | 3     | 4     |
| 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>0.1</b>     | 0.1   | 0.1   |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>9.2</b>     | 13.2  | 12.1  |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>18.5</b>    | 17.4  | 16.8  |
| 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 condition of the oil is acceptable for the time in service.

|              |          |             |      |              |      |      |
|--------------|----------|-------------|------|--------------|------|------|
| Sodium       | ppm      | ASTM D5185m |      | <b>2</b>     | 4    | 4    |
| Boron        | ppm      | ASTM D5185m | 2    | <b>95</b>    | 231  | 178  |
| Barium       | ppm      | ASTM D5185m | 0    | <b>0</b>     | 0    | 3    |
| Molybdenum   | ppm      | ASTM D5185m | <1   | <b>1</b>     | 3    | 14   |
| Manganese    | ppm      | ASTM D5185m | <1   | <b>&lt;1</b> | <1   | <1   |
| Magnesium    | ppm      | ASTM D5185m | 12   | <b>669</b>   | 42   | 65   |
| Calcium      | ppm      | ASTM D5185m | 2224 | <b>1770</b>  | 4217 | 4055 |
| Phosphorus   | ppm      | ASTM D5185m | 635  | <b>774</b>   | 1010 | 1030 |
| Zinc         | ppm      | ASTM D5185m | 718  | <b>893</b>   | 1188 | 1167 |
| Sulfur       | ppm      | ASTM D5185m | 1694 | <b>2762</b>  | 2676 | 2495 |
| Oxidation    | Abs/.1mm | *ASTM D7414 | >25  | <b>13.8</b>  | 12.8 | 13.2 |
| Visc @ 100°C | cSt      | ASTM D445   | 12.0 | <b>12.4</b>  | 11.6 | 11.8 |



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : LH0204322 **Received** : 07 Oct 2021  
**Lab Number** : 05368788 **Tested** : 08 Oct 2021  
**Unique Number** : 9687894 **Diagnosed** : 08 Oct 2021 - Wes Davis  
**Test Package** : MOBCE

**JOHNSON BROTHERS PAVING**  
 1924 N MAIN ST  
 LILLINGTON, NC  
 US 27546  
 Contact: SEAN

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: