



LIEBHERR

OIL ANALYSIS REPORT

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

Machine Id
141701-WHEEL SET 34
Component
Gearbox
Fluid
LIEBHERR GEAR HYPOID 90 EP (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|-------------|----------|----------|
| Sample Number | | Client Info | | LM0000121 | --- | --- |
| Sample Date | | Client Info | | 19 Mar 2024 | --- | --- |
| Machine Age | hrs | Client Info | | 12015 | --- | --- |
| Oil Age | hrs | Client Info | | 2000 | --- | --- |
| Filter Age | hrs | Client Info | | 0 | --- | --- |
| Oil Changed | | Client Info | | Changed | --- | --- |
| Filter Changed | | Client Info | | N/A | --- | --- |
| Sample Status | | | | NORMAL | --- | --- |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|------|-----|-----|
| Iron | ppm | ASTM D5185m | >200 | 22 | --- | --- |
| Chromium | ppm | ASTM D5185m | >10 | <1 | --- | --- |
| Nickel | ppm | ASTM D5185m | >10 | 0 | --- | --- |
| Titanium | ppm | ASTM D5185m | | <1 | --- | --- |
| Silver | ppm | ASTM D5185m | | 0 | --- | --- |
| Aluminum | ppm | ASTM D5185m | >25 | 1 | --- | --- |
| Lead | ppm | ASTM D5185m | >50 | 0 | --- | --- |
| Copper | ppm | ASTM D5185m | >200 | 10 | --- | --- |
| Tin | ppm | ASTM D5185m | >10 | 0 | --- | --- |
| Vanadium | ppm | ASTM D5185m | | 0 | --- | --- |
| White Metal | scalar | *Visual | NONE | NONE | --- | --- |
| Yellow Metal | scalar | *Visual | NONE | NONE | --- | --- |

CONTAMINATION

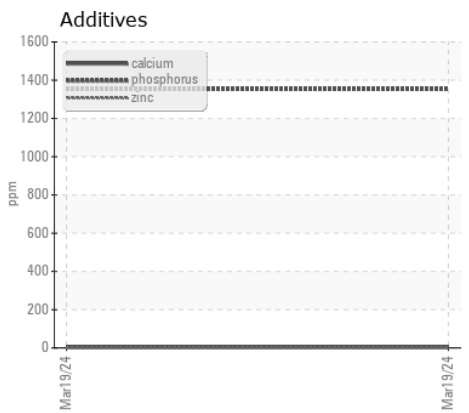
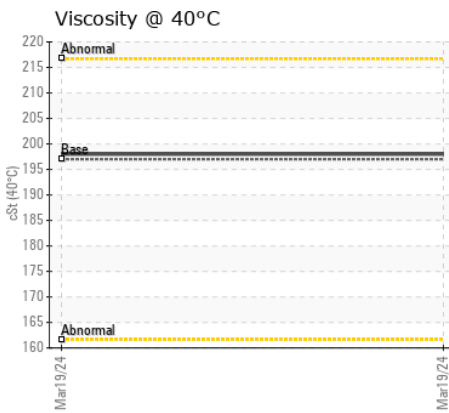
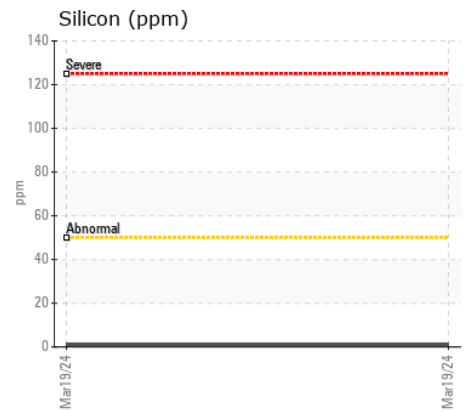
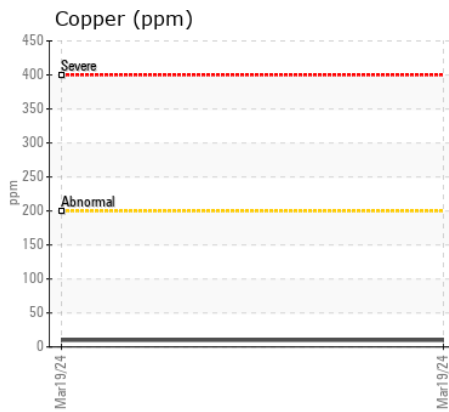
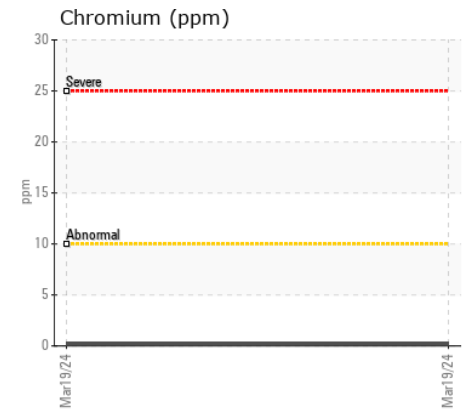
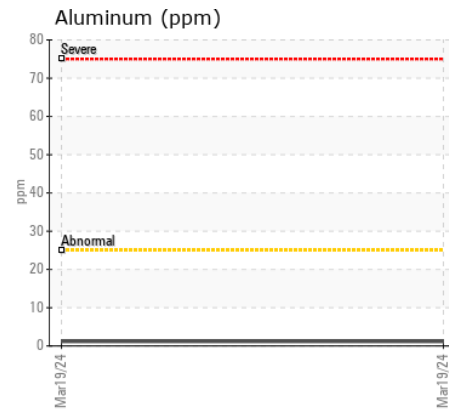
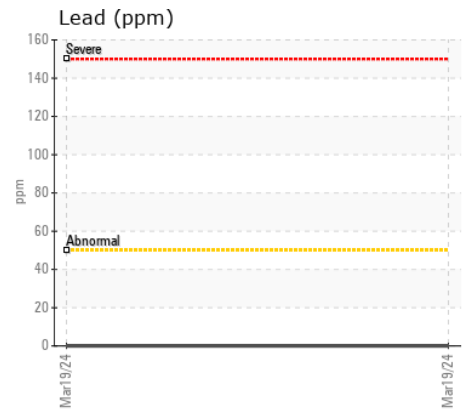
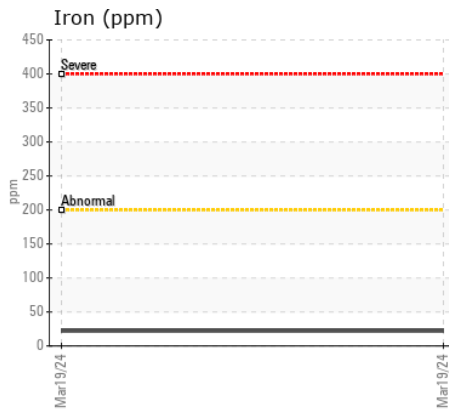
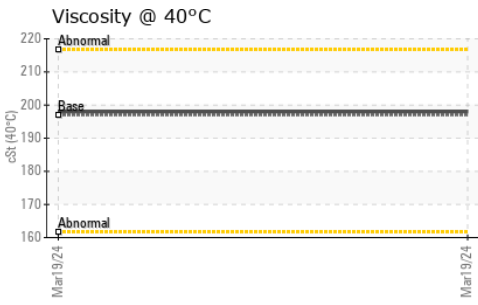
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|--------|-------------|-------|-------|-----|-----|
| Silicon | ppm | ASTM D5185m | >50 | 1 | --- | --- |
| Potassium | ppm | ASTM D5185m | >20 | 2 | --- | --- |
| Water | | WC Method | >0.2 | NEG | --- | --- |
| Silt | scalar | *Visual | NONE | LIGHT | --- | --- |
| Debris | scalar | *Visual | NONE | NONE | --- | --- |
| Sand/Dirt | scalar | *Visual | NONE | NONE | --- | --- |
| Appearance | scalar | *Visual | NORML | NORML | --- | --- |
| Odor | scalar | *Visual | NORML | NORML | --- | --- |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | --- | --- |

FLUID CONDITION

The condition of the oil is acceptable for the time in service.

| | | | | | | |
|-------------|-----|-------------|-----|-------|-----|-----|
| Sodium | ppm | ASTM D5185m | | <1 | --- | --- |
| Boron | ppm | ASTM D5185m | | 2 | --- | --- |
| Barium | ppm | ASTM D5185m | | 0 | --- | --- |
| Molybdenum | ppm | ASTM D5185m | | 0 | --- | --- |
| Manganese | ppm | ASTM D5185m | | 0 | --- | --- |
| Magnesium | ppm | ASTM D5185m | | 4 | --- | --- |
| Calcium | ppm | ASTM D5185m | | 5 | --- | --- |
| Phosphorus | ppm | ASTM D5185m | | 1353 | --- | --- |
| Zinc | ppm | ASTM D5185m | | 1 | --- | --- |
| Sulfur | ppm | ASTM D5185m | | 29357 | --- | --- |
| Visc @ 40°C | cSt | ASTM D445 | 197 | 198 | --- | --- |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LM0000121
Lab Number : 06151365
Unique Number : 10981443
Test Package : MOBCE

Received : 16 Apr 2024
Tested : 18 Apr 2024
Diagnosed : 19 Apr 2024 - Sean Felton

LIEBHERR USA CO - Maritime Cranes
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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)