



LIEBHERR

OIL ANALYSIS REPORT

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

Machine Id
142010 - HW
Component
Winch
Fluid
LIEBHERR GEAR HYPOID 90 EP (--- GAL)

RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|----------|
| Sample Number | | Client Info | | LM0000398 | LM0000823 | --- |
| Sample Date | | Client Info | | 25 Jun 2024 | 22 Feb 2024 | --- |
| Machine Age | hrs | Client Info | | 1151 | 422 | --- |
| Oil Age | hrs | Client Info | | 0 | 422 | --- |
| Filter Age | hrs | Client Info | | 0 | 0 | --- |
| Oil Changed | | Client Info | | Not Chngd | Changed | --- |
| Filter Changed | | Client Info | | N/A | N/A | --- |
| Sample Status | | | | ABNORMAL | ABNORMAL | --- |

WEAR

Gear wear is indicated. All other component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|-------|-----|
| Iron | ppm | ASTM D5185m | >150 | ▲ 205 | ▲ 196 | --- |
| Chromium | ppm | ASTM D5185m | >10 | 2 | 2 | --- |
| Nickel | ppm | ASTM D5185m | >10 | 1 | 0 | --- |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | --- |
| Silver | ppm | ASTM D5185m | | 0 | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >5 | <1 | 0 | --- |
| Lead | ppm | ASTM D5185m | >15 | 0 | 0 | --- |
| Copper | ppm | ASTM D5185m | >80 | 2 | 3 | --- |
| Tin | ppm | ASTM D5185m | | 0 | 0 | --- |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | --- |
| White Metal | scalar | *Visual | NONE | NONE | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | --- |

CONTAMINATION

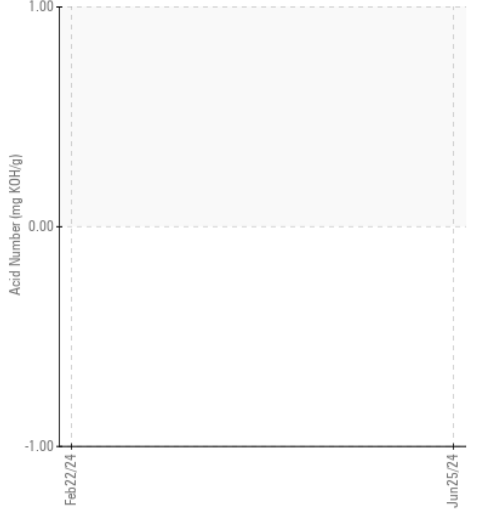
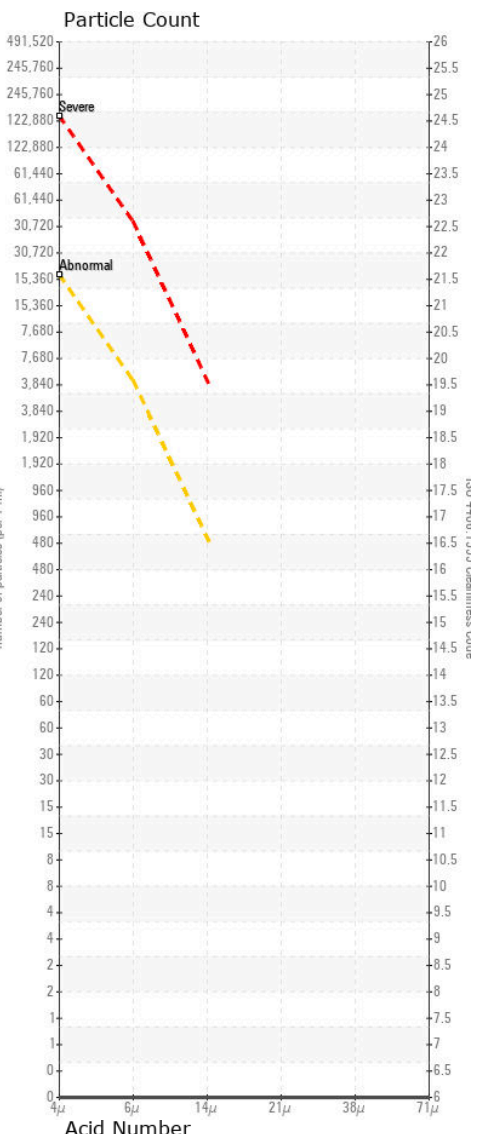
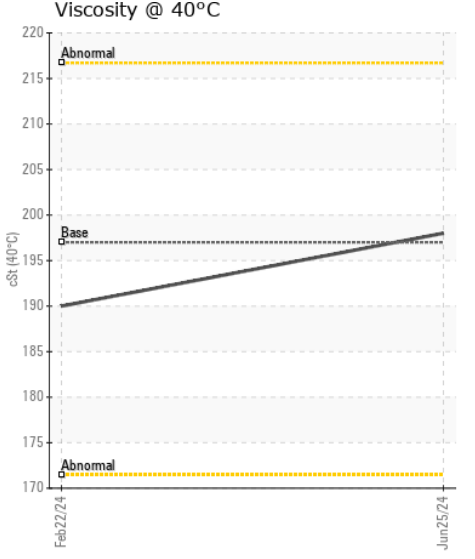
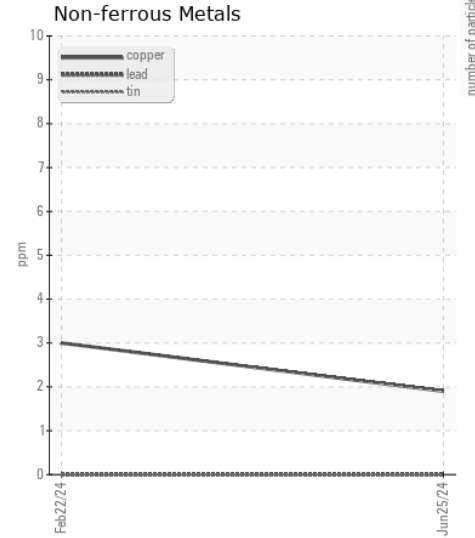
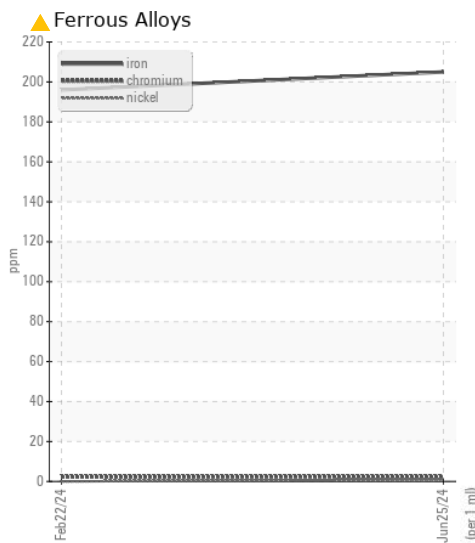
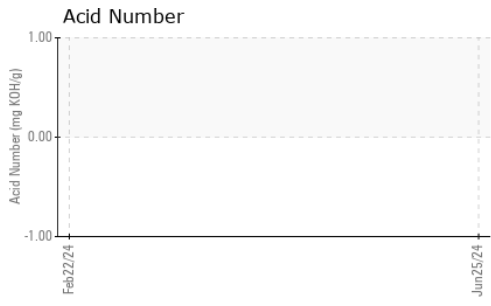
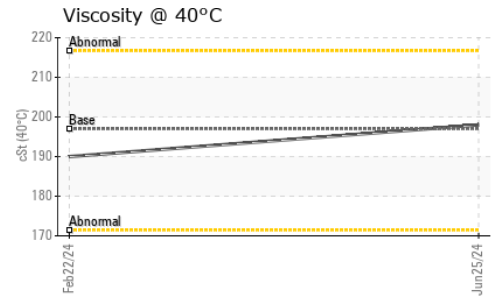
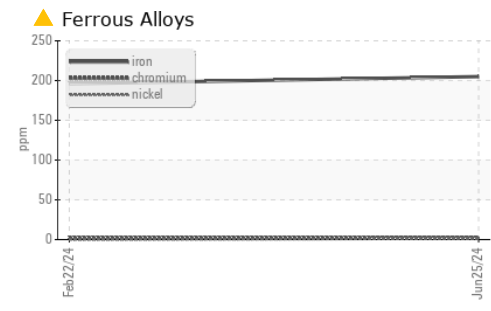
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|--------|-------------|-------|--------------|-------|-----|
| Silicon | ppm | ASTM D5185m | >25 | 1 | 2 | --- |
| Potassium | ppm | ASTM D5185m | >20 | <1 | 0 | --- |
| Water | | WC Method | >0.2 | NEG | NEG | --- |
| Silt | scalar | *Visual | NONE | NONE | MODER | --- |
| Debris | scalar | *Visual | NONE | NONE | NONE | --- |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | --- |
| Appearance | scalar | *Visual | NORML | NORML | NORML | --- |
| Odor | scalar | *Visual | NORML | NORML | NORML | --- |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | --- |

FLUID CONDITION

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

| | | | | | | |
|-------------|-----|-------------|-----|--------------|-------|-----|
| Sodium | ppm | ASTM D5185m | | 2 | 2 | --- |
| Boron | ppm | ASTM D5185m | | 0 | 0 | --- |
| Barium | ppm | ASTM D5185m | | 0 | 0 | --- |
| Molybdenum | ppm | ASTM D5185m | | 0 | <1 | --- |
| Manganese | ppm | ASTM D5185m | | 2 | 2 | --- |
| Magnesium | ppm | ASTM D5185m | | 2 | 0 | --- |
| Calcium | ppm | ASTM D5185m | | 33 | 50 | --- |
| Phosphorus | ppm | ASTM D5185m | | 1107 | 876 | --- |
| Zinc | ppm | ASTM D5185m | | 50 | 22 | --- |
| Sulfur | ppm | ASTM D5185m | | 27956 | 24254 | --- |
| Visc @ 40°C | cSt | ASTM D445 | 197 | 198 | 190 | --- |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LM0000398
Lab Number : 06228471
Unique Number : 11111964
Test Package : CONST (Additional Tests: PrtCount)

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 Contact: RONNY FUNK
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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)