



OIL ANALYSIS REPORT

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

Machine Id
LIEBHERR 31249
 Component
Left Final Drive
 Fluid
GEAR OIL SAE 80W90 (--- QTS)

RECOMMENDATION

We advise that you check all areas where dirt can enter the system. The oil change at the time of sampling has been noted. Resample at the next service interval to monitor.

WEAR

The chromium level is abnormal. All other component wear rates are normal.

CONTAMINATION

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

FLUID CONDITION

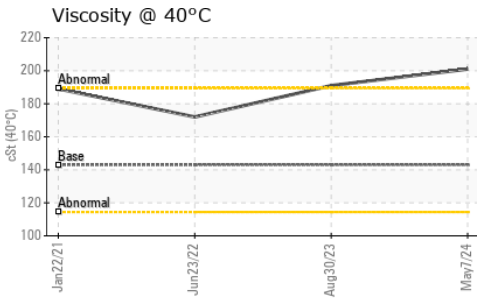
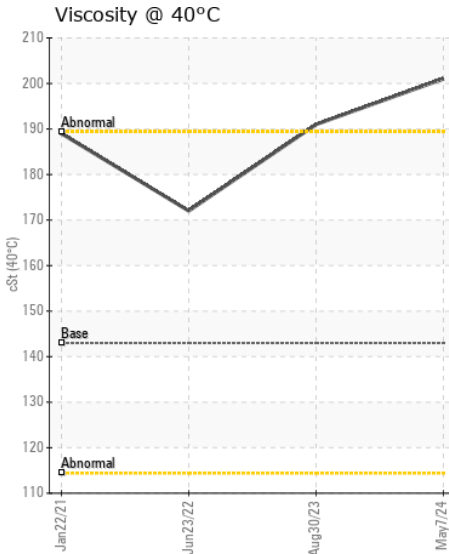
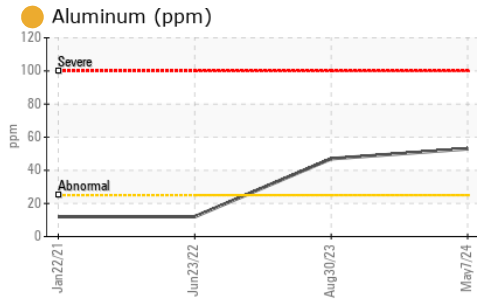
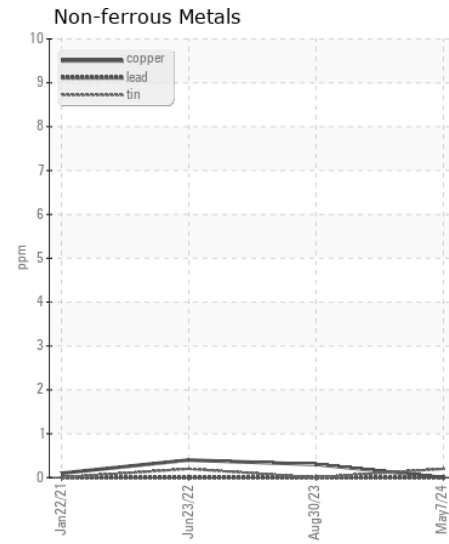
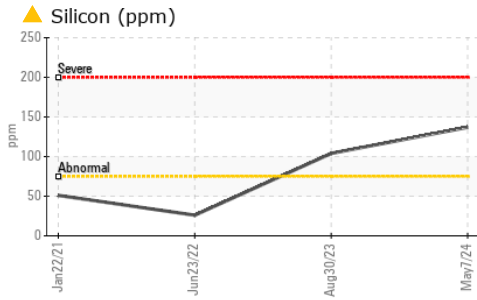
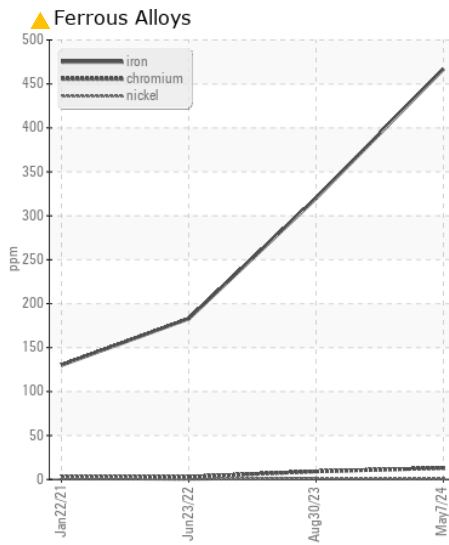
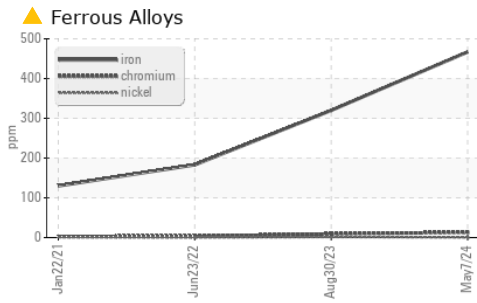
The condition of the oil is acceptable for the time in service.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | WC0905160 | WC0716246 | WC0689327 |
| Sample Date | | Client Info | | 07 May 2024 | 30 Aug 2023 | 23 Jun 2022 |
| Machine Age | hrs | Client Info | | 3966 | 3075 | 2402 |
| Oil Age | hrs | Client Info | | 1500 | 500 | 500 |
| Filter Age | hrs | Client Info | | 1500 | 0 | 0 |
| Oil Changed | | Client Info | | Changed | Not Changd | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | ABNORMAL | ABNORMAL | ATTENTION |

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >500 | 467 | 320 | 183 |
| Chromium | ppm | ASTM D5185m | >10 | ▲ 13 | 9 | 3 |
| Nickel | ppm | ASTM D5185m | >10 | <1 | 1 | 0 |
| Titanium | ppm | ASTM D5185m | | 3 | 2 | <1 |
| Silver | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >25 | ● 53 | ● 47 | 12 |
| Lead | ppm | ASTM D5185m | >25 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >50 | 0 | <1 | <1 |
| Tin | ppm | ASTM D5185m | >10 | <1 | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

| | | | | | | |
|------------------|--------|-------------|-------|--------------|-------|---------|
| Silicon | ppm | ASTM D5185m | >75 | ▲ 137 | ▲ 104 | 26 |
| Potassium | ppm | ASTM D5185m | >20 | 6 | 2 | 2 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Silt | scalar | *Visual | NONE | NONE | NONE | MODER |
| Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML | ● SOLID |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |

| | | | | | | |
|-------------|-----|-------------|-------|--------------|-------|-------|
| Sodium | ppm | ASTM D5185m | >170 | 5 | 4 | 4 |
| Boron | ppm | ASTM D5185m | 400 | 13 | 15 | 27 |
| Barium | ppm | ASTM D5185m | 200 | 4 | 0 | 2 |
| Molybdenum | ppm | ASTM D5185m | 12 | 0 | 1 | 2 |
| Manganese | ppm | ASTM D5185m | | 5 | 3 | 2 |
| Magnesium | ppm | ASTM D5185m | 12 | 7 | 8 | 8 |
| Calcium | ppm | ASTM D5185m | 150 | 21 | 18 | 50 |
| Phosphorus | ppm | ASTM D5185m | 1650 | 2292 | 2392 | 2312 |
| Zinc | ppm | ASTM D5185m | 125 | 25 | 23 | 41 |
| Sulfur | ppm | ASTM D5185m | 22500 | 31959 | 25056 | 27583 |
| Visc @ 40°C | cSt | ASTM D445 | 143 | 201 | 191 | 172 |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0905160
Lab Number : 06177575
Unique Number : 11023628
Test Package : CONST

SULLIVAN EASTERN INC-LIEBHERR
 2860 C SLATER RD
 MORRISVILLE, NC
 US 27560
 Contact: CHRIS CALTON

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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