



LIEBHERR

OIL ANALYSIS REPORT

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



Machine Id
LIEBHERR LR636 022550-1725
Component
Hydraulic System
Fluid
LIEBHERR HYDRAULIC HVI (190 LTR)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | LH0273236 | LHMC100328 | LHMC79979 |
| Sample Date | | Client Info | | 02 Jan 2024 | 21 Dec 2022 | 14 Sep 2022 |
| Machine Age | hrs | Client Info | | 1232 | 501 | 282 |
| Oil Age | hrs | Client Info | | 1232 | 501 | 282 |
| Filter Age | hrs | Client Info | | 1232 | 501 | 282 |
| Oil Changed | | Client Info | | Not Changed | Not Changed | Not Changed |
| Filter Changed | | Client Info | | Not Changed | Not Changed | Changed |
| Sample Status | | | | NORMAL | ABNORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|-------------|------|------|
| Iron | ppm | ASTM D5185m | >30 | 7 | 14 | 9 |
| Chromium | ppm | ASTM D5185m | >5 | 0 | 1 | <1 |
| Nickel | ppm | ASTM D5185m | >10 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | | 0 | 0 | 1 |
| Aluminum | ppm | ASTM D5185m | >5 | 0 | 1 | 0 |
| Lead | ppm | ASTM D5185m | >8 | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >25 | 7 | 7 | 5 |
| Tin | ppm | ASTM D5185m | >4 | 0 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

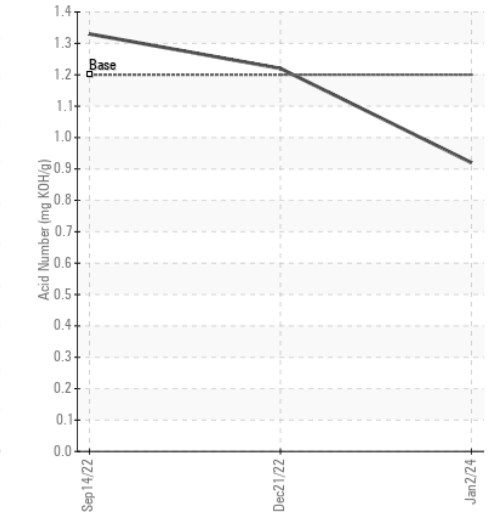
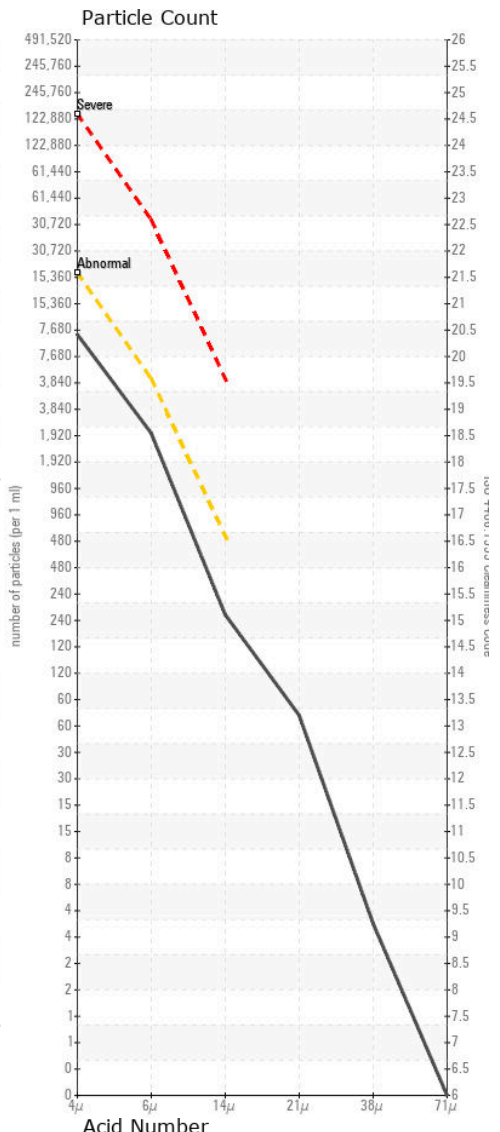
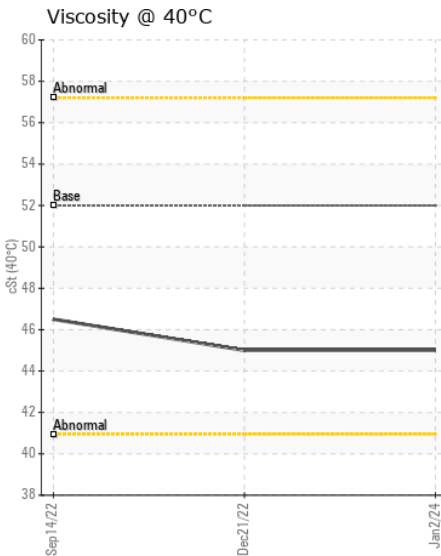
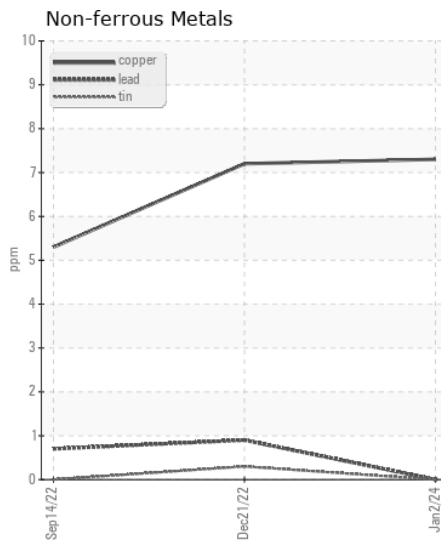
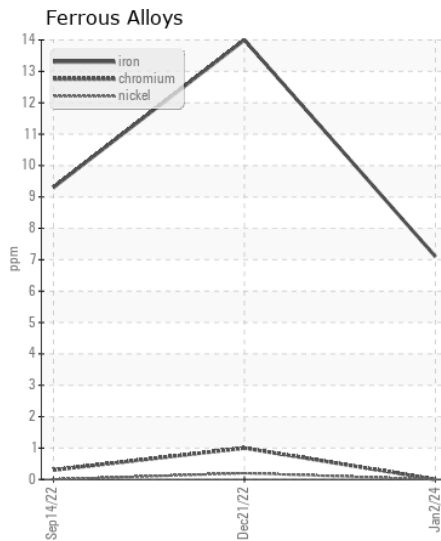
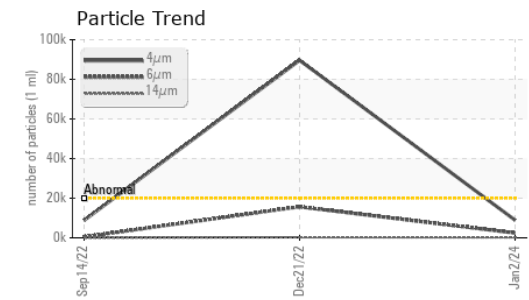
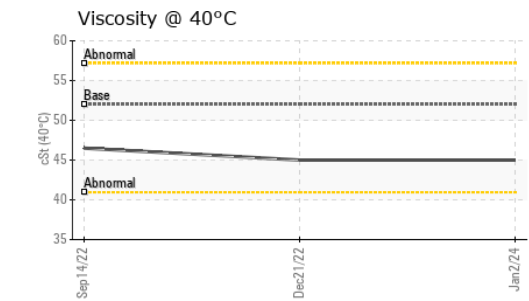
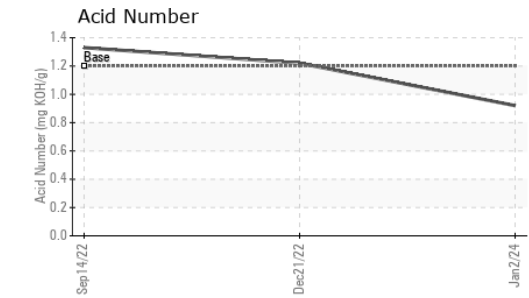
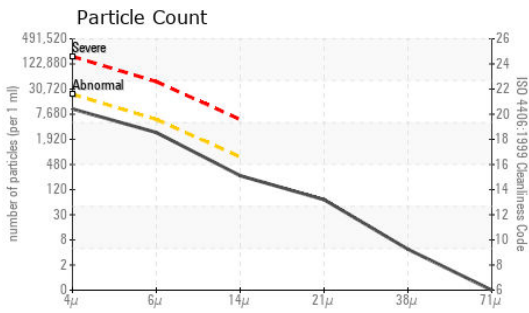
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

| | | | | | | |
|------------------|--------|--------------|-----------|-----------------|------------|----------|
| Silicon | ppm | ASTM D5185m | >25 | 2 | 6 | 5 |
| Potassium | ppm | ASTM D5185m | >20 | 0 | <1 | 0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Particles >4µm | | ASTM D7647 | >20000 | 8921 | ▲ 89608 | 8843 |
| Particles >6µm | | ASTM D7647 | >5000 | 2447 | ▲ 15662 | 453 |
| Particles >14µm | | ASTM D7647 | >640 | 228 | 283 | 47 |
| Particles >21µm | | ASTM D7647 | >160 | 61 | 46 | 10 |
| Particles >38µm | | ASTM D7647 | >40 | 4 | 2 | 2 |
| Particles >71µm | | ASTM D7647 | >10 | 0 | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | 20/18/15 | ▲ 24/21/15 | 20/16/13 |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | LIGHT | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | NEG | NEG | NEG |

FLUID CONDITION

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|-------------|------|------|
| Sodium | ppm | ASTM D5185m | | 9 | 7 | 3 |
| Boron | ppm | ASTM D5185m | | 0 | <1 | <1 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Manganese | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Magnesium | ppm | ASTM D5185m | 7 | 9 | 4 | 3 |
| Calcium | ppm | ASTM D5185m | 1500 | 1136 | 1394 | 1323 |
| Phosphorus | ppm | ASTM D5185m | 750 | 529 | 595 | 563 |
| Zinc | ppm | ASTM D5185m | 820 | 551 | 706 | 671 |
| Sulfur | ppm | ASTM D5185m | 4000 | 3439 | 5263 | 5207 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 1.2 | 0.92 | 1.22 | 1.33 |
| Visc @ 40°C | cSt | ASTM D445 | 52 | 45.0 | 45.0 | 46.5 |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LH0273236 **Received** : 08 Jan 2024
Lab Number : 06054750 **Diagnosed** : 09 Jan 2024
Unique Number : 10820699 **Diagnostician** : Wes Davis
Test Package : CONST

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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