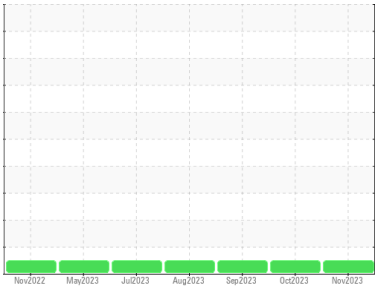
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
**5509 CHAMPIONS DR**
Machine Id
**MRC-292**
Component
**Natural Gas Engine**
Fluid
**NOT GIVEN (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

**Wear**
All component wear rates are normal.

**Contamination**
There is no indication of any contamination in the oil.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **TO60001756** | TO60001667 | TO60001441 |
| Sample Date | | Client Info | | **05 Nov 2023** | 12 Oct 2023 | 05 Sep 2023 |
| Machine Age | hrs | Client Info | | **6777** | 6541 | 6129 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | Not Changd | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | **5** | 6 | 7 |
| Chromium | ppm | ASTM D5185m | >4 | **0** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >9 | **<1** | 2 | <1 |
| Lead | ppm | ASTM D5185m | >30 | **12** | 17 | 12 |
| Copper | ppm | ASTM D5185m | >35 | **2** | 3 | 2 |
| Tin | ppm | ASTM D5185m | >4 | **<1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | <1 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **85** | 111 | 99 |
| Barium | ppm | ASTM D5185m | | **0** | 10 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **0** | 2 | <1 |
| Manganese | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | | **13** | 15 | 16 |
| Calcium | ppm | ASTM D5185m | | **1284** | 1549 | 1417 |
| Phosphorus | ppm | ASTM D5185m | | **195** | 352 | 283 |
| Zinc | ppm | ASTM D5185m | | **298** | 377 | 324 |
| Sulfur | ppm | ASTM D5185m | | **1192** | 1757 | 1490 |

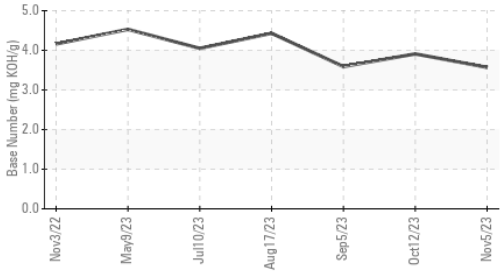
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >+100 | **1** | 2 | 2 |
| Sodium | ppm | ASTM D5185m | | **3** | 0 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 3 | 1 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0** | 0 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.2** | 10.3 | 11.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **17.6** | 17.4 | 20.5 |

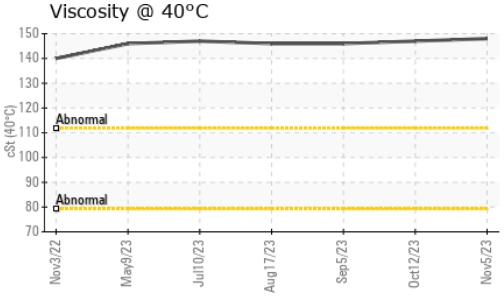
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **16.9** | 17.0 | 18.9 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **1.23** | 1.46 | 1.32 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **3.57** | 3.91 | 3.59 |

# OIL ANALYSIS REPORT

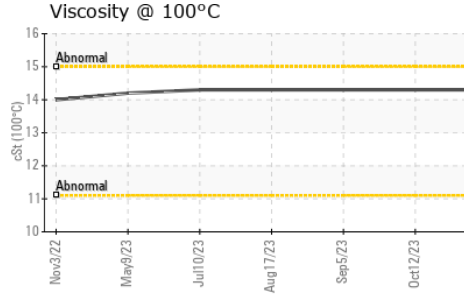
Base Number



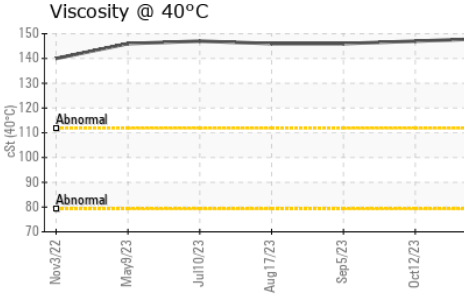

Viscosity @ 40°C




Viscosity @ 100°C




Viscosity @ 40°C

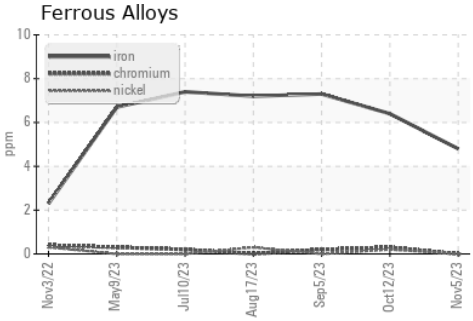



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | 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 |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

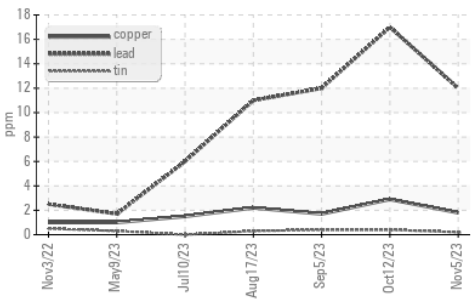
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | | **148** | 147 | 146 |
| Visc @ 100°C | cSt | ASTM D445 | | **14.3** | 14.3 | 14.3 |
| Viscosity Index (VI) | Scale | ASTM D2270 | | **93** | 94 | 95 |

## GRAPHS

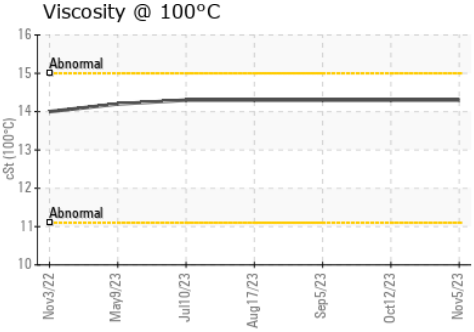
Ferrous Alloys



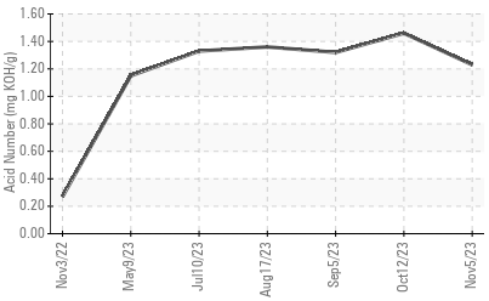

Non-ferrous Metals




Viscosity @ 100°C




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : TO60001756 **Received** : 15 Nov 2023
**Lab Number** : 06008534 **Diagnosed** : 17 Nov 2023
**Unique Number** : 10742296 **Diagnostician** : Wes Davis
**Test Package** : IND 2 ( Additional Tests: FT-IR, KV40, VI )

*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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