



OIL ANALYSIS REPORT

Sample Rating Trend

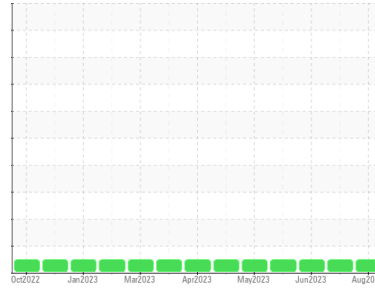
NORMAL



Machine Id
428099

Component
Diesel Engine

Fluid
DIESEL ENGINE OIL SAE 40 (--- 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

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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 condition of the oil is suitable for further service.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | GFL0069121 | GFL0069185 | GFL0068742 |
| Sample Date | Client Info | | 07 Aug 2023 | 17 Jul 2023 | 29 Jun 2023 |
| Machine Age | hrs | Client Info | 13946 | 13805 | 13679 |
| Oil Age | hrs | Client Info | 267 | 126 | 545 |
| Oil Changed | Client Info | | Not Chngd | Not Chngd | Changed |
| Sample Status | | | NORMAL | NORMAL | NORMAL |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| Glycol | WC Method | | NEG | NEG | NEG |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m >120 | 4 | 3 | 7 |
| Chromium | ppm | ASTM D5185m >20 | 0 | 0 | <1 |
| Nickel | ppm | ASTM D5185m >5 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m >2 | <1 | 0 | <1 |
| Silver | ppm | ASTM D5185m >2 | <1 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m >20 | 4 | 1 | <1 |
| Lead | ppm | ASTM D5185m >40 | <1 | 0 | <1 |
| Copper | ppm | ASTM D5185m >330 | 2 | <1 | 3 |
| Tin | ppm | ASTM D5185m >15 | 0 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | 0 | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | 0 | 0 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron | ppm | ASTM D5185m 250 | 6 | 10 | 2 |
| Barium | ppm | ASTM D5185m 10 | 0 | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m 100 | 65 | 64 | 63 |
| Manganese | ppm | ASTM D5185m | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m 450 | 916 | 992 | 963 |
| Calcium | ppm | ASTM D5185m 3000 | 1079 | 1084 | 1125 |
| Phosphorus | ppm | ASTM D5185m 1150 | 1012 | 1063 | 987 |
| Zinc | ppm | ASTM D5185m 1350 | 1198 | 1296 | 1240 |
| Sulfur | ppm | ASTM D5185m 4250 | 3274 | 3851 | 3427 |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|------------------|-----------|----------|----------|
| Silicon | ppm | ASTM D5185m >25 | 5 | 5 | 5 |
| Sodium | ppm | ASTM D5185m >216 | 1 | 2 | 4 |
| Potassium | ppm | ASTM D5185m >20 | 13 | <1 | 3 |

INFRA-RED

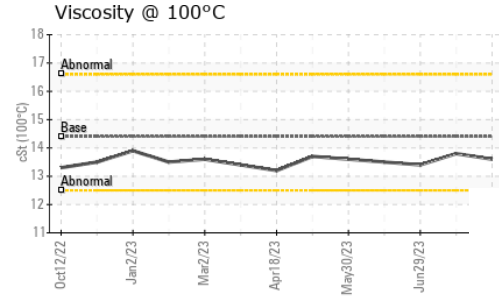
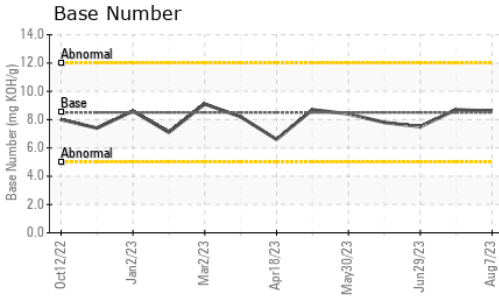
| | method | limit/base | current | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 >4 | 0.2 | 0.1 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 >20 | 6.3 | 5.5 | 7.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | 17.4 | 17.6 | 19.8 |

FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 >25 | 13.5 | 13.6 | 16.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 8.5 | 8.6 | 8.7 | 7.5 |



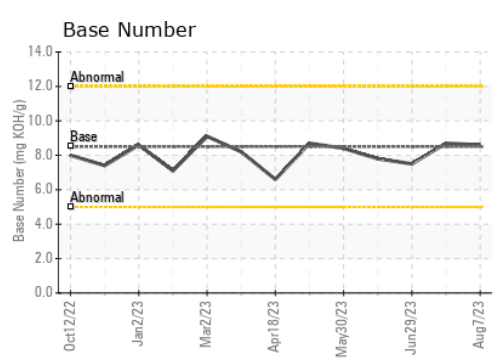
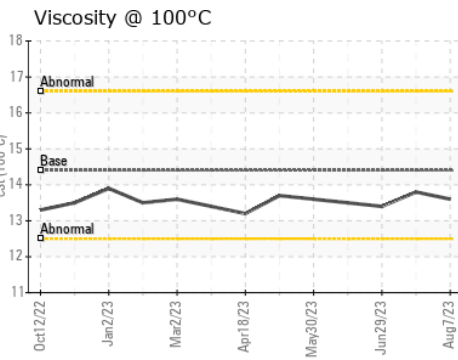
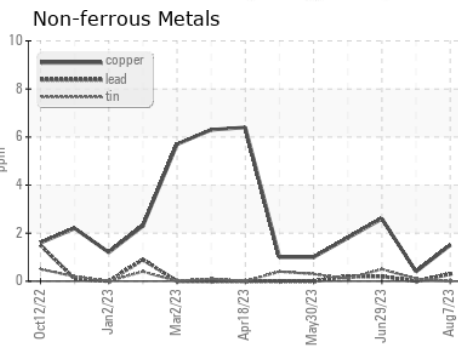
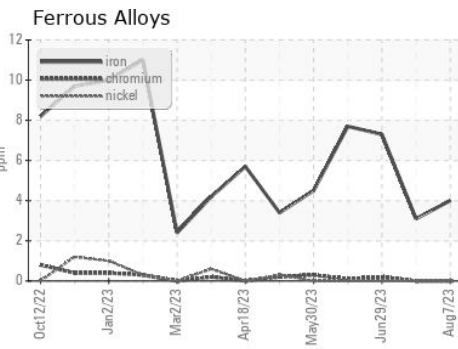
OIL ANALYSIS REPORT



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

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 | |
|------------------|--------|------------|---------|-------------|----------|------|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | 13.6 | 13.8 | 13.4 |

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : GFL0069121 **Received** : 09 Aug 2023
Lab Number : **05920055** **Diagnosed** : 10 Aug 2023
Unique Number : 10591969 **Diagnostician** : Wes Davis
Test Package : FLEET

GFL Environmental - 073 - Warner Robbins - Transwaste
 155 Story Road
 Warner Robbins, GA
 US 31093
 Contact: JOSH MALONEY
 jmaloney@gflenv.com

Certificate L2367
 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)