

OIL ANALYSIS REPORT

Sample Rating Trend



AUTOCAR 813022

Diesel 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

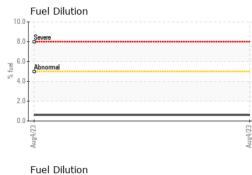
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

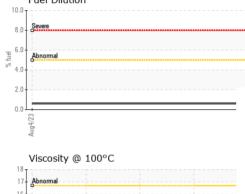
| | | Aug2023 | Aug2023 | Sep2023 Oct2023 | Dec2023 | |
|---|---|--|--|---|---|---|
| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
| Sample Number | | Client Info | | GFL0086255 | GFL0086197 | GFL0086266 |
| Sample Date | | Client Info | | 27 Dec 2023 | 23 Oct 2023 | 06 Sep 2023 |
| Machine Age | hrs | Client Info | | 1064 | 714 | 273 |
| Oil Age | hrs | Client Info | | 0 | 714 | 435 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | | ASTM D5185m | >100 | 35 | 59 | 42 |
| Chromium | ppm | ASTM D5185m | | 35 <1 | 59 1 | 42 <1 |
| Nickel | ppm | ASTM D5185m | >20 | <1 | <1 | <1 |
| Titanium | ppm | | >4 | 0 <1 | <1 | <1 |
| Silver | ppm | ASTM D5185m | . 0 | | | |
| 001 | ppm | ASTM D5185m ASTM D5185m | >3 | 0 16 | 0 | <1 19 |
| Aluminum | ppm | | | - | 24 | |
| Lead | ppm | ASTM D5185m | >40 | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185m | | 7 | 15 | 12 |
| Tin | ppm | ASTM D5185m | >15 | <1 | 1 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | current 16 | history1 22 | history2 32 |
| | ppm ppm | | limit/base | | | |
| Boron | | ASTM D5185m | limit/base | 16 | 22 | 32 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | limit/base | 16 2 | 22 0 | 32 2 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 | 22 0 49 | 32 2 49 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 3 | 22 0 49 7 | 32 2 49 7 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 3 760 | 22 0 49 7 830 | 32 2 49 7 883 |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 3 760 1233 | 22 0 49 7 830 1237 | 32 2 49 7 883 1288 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 3 760 1233 794 | 22 0 49 7 830 1237 693 | 32 2 49 7 883 1288 738 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 3 760 1233 794 1067 | 22 0 49 7 830 1237 693 947 | 32 2 49 7 883 1288 738 982 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 3 760 1233 794 1067 2516 | 22 0 49 7 830 1237 693 947 2137 | 32 2 49 7 883 1288 738 982 2968 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN | ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | 16 2 56 3 760 1233 794 1067 2516 current | 22 0 49 7 830 1237 693 947 2137 history1 | 32 2 49 7 883 1288 738 982 2968 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method | limit/base | 16 2 56 3 760 1233 794 1067 2516 current 9 | 22 0 49 7 830 1237 693 947 2137 history1 18 | 32 2 49 7 883 1288 738 982 2968 history2 16 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m | limit/base >25 >20 | 16 2 56 3 760 1233 794 1067 2516 current 9 3 | 22 0 49 7 830 1237 693 947 2137 history1 18 6 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | limit/base >25 >20 | 16 2 56 3 760 1233 794 1067 2516 <u>current</u> 9 3 3 38 | 22 0 49 7 830 1237 693 947 2137 history1 18 6 52 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 33 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel | ppm ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | limit/base >25 >20 >5 | 16 2 56 3 760 1233 794 1067 2516 <u>current</u> 9 3 3 8 38 < 1.0 | 22 0 49 7 830 1237 693 947 2137 history1 18 6 52 <1.0 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 33 < 1.0 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | limit/base >25 >20 >5 | 16 2 56 3 760 1233 794 1067 2516 <i>current</i> 9 3 3 8 <1.0 <i>current</i> | 22 0 49 7 830 1237 693 947 2137 history1 18 6 52 <1.0 kistory1 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 33 <1.0 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm % | ASTM D5185m ASTM D5185m | limit/base >25 >20 >5 limit/base >3 | 16 2 56 3 760 1233 794 1067 2516 <i>current</i> 9 3 38 <1.0 <i>current</i> 0.6 | 22 0 49 7 830 1237 693 947 2137 history1 18 6 52 <1.0 history1 0.6 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 33 <1.0 history2 0.4 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | limit/base >25 >20 >5 limit/base >3 >20 | 16 2 56 3 760 1233 794 1067 2516 Current 9 3 38 <1.0 Current 0.6 10.2 | 22 0 49 7 830 1237 693 947 2137 history1 18 6 52 <1.0 history1 0.6 12.1 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 33 <1.0 history2 0.4 10.1 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | limit/base >25 >20 >20 >5 limit/base >3 >20 >30 >30 | 16 2 56 3 760 1233 794 1067 2516 <i>current</i> 9 3 3 8 <1.0 <i>current</i> 0.6 10.2 20.9 <i>current</i> | 22 0 49 7 830 1237 693 947 2137 history1 18 6 52 <1.0 history1 0.6 12.1 23.3 history1 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 33 <1.0 history2 0.4 10.1 20.7 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | limit/base >25 >20 >5 limit/base >3 >20 >3 >30 | 16 2 56 3 760 1233 794 1067 2516 <i>current</i> 9 3 3 8 <1.0 <i>current</i> 0.6 10.2 20.9 | 22 0 49 7 830 1237 693 947 2137 history1 18 6 52 <1.0 history1 0.6 12.1 23.3 | 32 2 49 7 883 1288 738 982 2968 history2 16 6 33 <1.0 history2 0.4 10.1 20.7 |

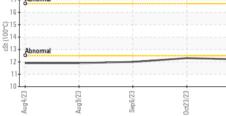


OIL ANALYSIS REPORT

VICLIAI







| | 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 |
| Aug4/23 | Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Au | Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| | Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| | Free Water | scalar | *Visual | | NEG | NEG | NEG |
| | FLUID PROPE | | | limit/base | | history1 | history2 |
| | Visc @ 100°C | cSt | ASTM D445 | | 12.2 | 12.3 | 12.0 |
| | GRAPHS | | | | | | |
| | Ferrous Alloys | | ~ | | | | |
| | 50 - iron chromium | | $\langle \rangle$ | | | | |
| | 40 - | | | | | | |
| | Ē.30- | | | | | | |
| | | | | | | | |
| | 20 - | | | | | | |
| | 10- | | | | | | |
| | | 27 27 | <u></u> | 33 | | | |
| | Aug4/23 Aug9/23 | Sep6/23 | 0ct23/23 | Dec27/23 | | | |
| | ⊲ | | 0 | õ | | | |
| 3/23 - | ¹⁶ T | 15 | | | | | |
| 0ct23/23 | 14- copper | | \wedge | | | | |
| | 12 - tin | \sim | $\langle \rangle$ | | | | |
| | 10- | | | | | | |
| | E 8- | | | | | | |
| | 4 | | | | | | |
| | 2 | | | | | | |
| | | | | Internet | | | |
| | Aug4/23 Aug9/23 | Sep6/23 | 0ct23/23 | Dec27/23 | | | |
| | | _ | 00 | Der | | | |
| | Viscosity @ 100°C | | | | Base Number | - | |
| | 17- Abnormal | | | | 9.0 8.0 | | |
| | 16 | | | | 1 | | |
| ŝ | p ¹⁵ | | | Base Number (mg KOH/g) | 5.0 | | |
| | 15- 00114- 35 13- | | | jer J | 5.0 | | |
| c | Abnormal | | | Numk | 3.0 | | |
| | 12- | | | Base | 2.0 | | |
| | 11 | | | | 1.0 | | |
| | | /23 - | /23 - | | → 33 33 | /23 - | /23- |
| | Aug4/23 Aug9/23 | Sep6/23 | 0ct23/23 | Dec27/23 | Aug4/23 Aug9/23 | Sep6/23 | 0ct23/23 . Dec27/23 . |
| l ab a unta ma | WaarObaali UOA | | | | | | 000 50: |
| Laboratory Sample No. | : WearCheck USA - : : GFL0086255 | SA - 501 Madison Ave., Cary, NC 27513 Recieved : 29 Dec 2023 | | | IS GFLE | nvironmental - 6905 | Roosevelt Hwy |
| Lab Number | : 06048207 | Diagnos | ed : 02 | Jan 2024 | | 0000 | Fairburn, GA |
| Unique Number | | Diagnos | | athan Heste | ər | | US 30213 |
| Test Package | : FLEET (Additional | | | n | | | act: Eric Jones |
| | contact Customer Serv | | | | | | es@gflenv.com |

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)

T: (678)630-9927

F:

Certificate L2367