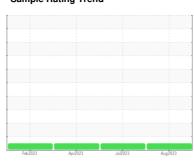


## **OIL ANALYSIS REPORT**

### Sample Rating Trend







# **AUTOCAR 812012**

Component

**Diesel Engine** 

**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.

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.

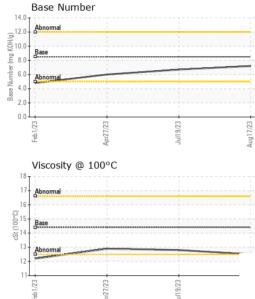
### **Fluid Condition**

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

		Feb 202	3 Apr2023	Jul2023 Au	g2023	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086277	GFL0086234	GFL0057652
Sample Date		Client Info		17 Aug 2023	19 Jul 2023	27 Apr 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	3842	3250
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	16	13	23
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	8	10	4
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	4	1	1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES						1:
ADDITIVES		method				history2
Boron	ppm	method ASTM D5185m	limit/base	current 20	history1 13	nistory2 15
	ppm					
Boron Barium	ppm	ASTM D5185m	250	20	13	15
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	250 10	20 0	13	15 0
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	20 0 60	13 0 63	15 0 66
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	20 0 60 1	13 0 63 <1	15 0 66 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	20 0 60 1 813	13 0 63 <1 771	15 0 66 <1 817
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	20 0 60 1 813 1136	13 0 63 <1 771 1077	15 0 66 <1 817 1091
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	20 0 60 1 813 1136 892	13 0 63 <1 771 1077 927	15 0 66 <1 817 1091 982
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 ASTM D5185m	250 10 100 450 3000 1150	20 0 60 1 813 1136 892 1093	13 0 63 <1 771 1077 927 1126	15 0 66 <1 817 1091 982 1193
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	250 10 100 450 3000 1150 1350 4250	20 0 60 1 813 1136 892 1093 3208	13 0 63 <1 771 1077 927 1126 2667	15 0 66 <1 817 1091 982 1193 2597
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	20 0 60 1 813 1136 892 1093 3208	13 0 63 <1 771 1077 927 1126 2667 history1	15 0 66 <1 817 1091 982 1193 2597 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	20 0 60 1 813 1136 892 1093 3208 current	13 0 63 <1 771 1077 927 1126 2667 history1	15 0 66 <1 817 1091 982 1193 2597 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216	20 0 60 1 813 1136 892 1093 3208 current 5	13 0 63 <1 771 1077 927 1126 2667 history1 3	15 0 66 <1 817 1091 982 1193 2597 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20	20 0 60 1 813 1136 892 1093 3208 current 5 3	13 0 63 <1 771 1077 927 1126 2667 history1 3 0 22	15 0 66 <1 817 1091 982 1193 2597 history2 4 2 17
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >6	20 0 60 1 813 1136 892 1093 3208 current 5 3 20	13 0 63 <1 771 1077 927 1126 2667 history1 3 0 22 history1 0.4	15 0 66 <1 817 1091 982 1193 2597 history2 4 2 17
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >6	20 0 60 1 813 1136 892 1093 3208 current 5 3 20 current 0.3	13 0 63 <1 771 1077 927 1126 2667 history1 3 0 22 history1	15 0 66 <1 817 1091 982 1193 2597 history2 4 2 17 history2 0.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method  ASTM D5185m  Method  *ASTM D7844  *ASTM D7624  *ASTM D76145	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base	20 0 60 1 813 1136 892 1093 3208 current 5 3 20 current 0.3 7.5	13 0 63 <1 771 1077 927 1126 2667 history1 3 0 22 history1 0.4 8.2	15 0 66 <1 817 1091 982 1193 2597 history2 4 2 17 history2 0.5 8.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m  METHOD  *ASTM D5185m  *ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  *ASTM D5185m  METHOD  *ASTM D7844  *ASTM D7844  *ASTM D7844  *ASTM D7844  *ASTM D7844  *ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >6 >20 >30 limit/base	20 0 60 1 813 1136 892 1093 3208 current 5 3 20 current 0.3 7.5 18.6 current	13 0 63 <1 771 1077 927 1126 2667 history1 3 0 22 history1 0.4 8.2 18.9 history1	15 0 66 <1 817 1091 982 1193 2597 history2 4 2 17 history2 0.5 8.5 17.9 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method  ASTM D5185m  Method  *ASTM D7844  *ASTM D7624  *ASTM D76145	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >6 >20 >30 limit/base >5 >25	20 0 60 1 813 1136 892 1093 3208 current 5 3 20 current 0.3 7.5 18.6	13 0 63 <1 771 1077 927 1126 2667 history1 3 0 22 history1 0.4 8.2 18.9	15 0 66 <1 817 1091 982 1193 2597 history2 4 2 17 history2 0.5 8.5 17.9



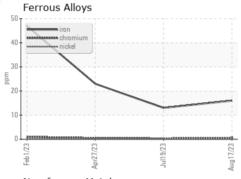
# **OIL ANALYSIS REPORT**

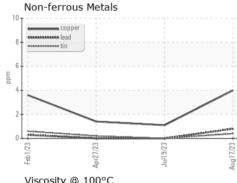


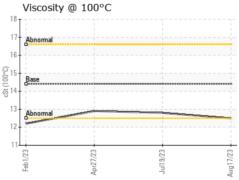
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

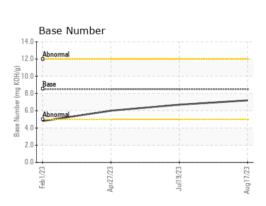
FLUID PROPERTIES		memod			HISTORY	riistoryz
Visc @ 100°C	cSt	ASTM D445	14.4	12.5	12.8	12.9

### **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10607982 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0086277 : 05928035

Received : 18 Aug 2023 Diagnosed : 21 Aug 2023 Diagnostician : Wes Davis

GFL Environmental - 009 - Fairburn

6905 Roosevelt Hwy Fairburn, GA US 30213 Contact: Eric Jones erjones@gflenv.com

T: (678)630-9927

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)