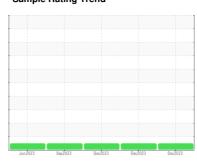


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id **813012**

Component **Diesel Engine**

DIESEL ENGINE OIL SAE 40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

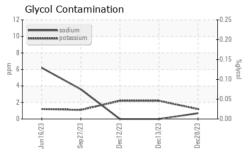
Fluid Condition

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

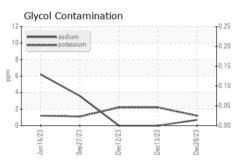
		Jun2023	Sep2023	Dec2023 Dec2023	Dec2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0098207	GFL0098225	GFL0098201
Sample Date		Client Info		28 Dec 2023	13 Dec 2023	12 Dec 2023
Machine Age	hrs	Client Info		3181	2432	3065
Oil Age	hrs	Client Info		3181	2432	3065
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	4	14	13
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	2	2
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	<1	5	4
Tin	ppm	ASTM D5185m	>15	0	1	1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	<1	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES		memou	IIIIIII/Dase	Current	HISTOLAL	riistoryz
Boron	ppm	ASTM D5185m	250	12	6	7
	ppm					
Boron		ASTM D5185m	250	12	6	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	12 0	6 12	7 12
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	12 0 56	6 12 60	7 12 61
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	12 0 56 0	6 12 60 <1	7 12 61 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	12 0 56 0 949	6 12 60 <1 930	7 12 61 <1 937
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	12 0 56 0 949 1102	6 12 60 <1 930 1087	7 12 61 <1 937 1081
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	12 0 56 0 949 1102 1020	6 12 60 <1 930 1087 941	7 12 61 <1 937 1081 973
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	12 0 56 0 949 1102 1020	6 12 60 <1 930 1087 941 1209	7 12 61 <1 937 1081 973 1216
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	12 0 56 0 949 1102 1020 1237 3404	6 12 60 <1 930 1087 941 1209 3129	7 12 61 <1 937 1081 973 1216 3004
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	12 0 56 0 949 1102 1020 1237 3404	6 12 60 <1 930 1087 941 1209 3129 history1	7 12 61 <1 937 1081 973 1216 3004 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	12 0 56 0 949 1102 1020 1237 3404 current	6 12 60 <1 930 1087 941 1209 3129 history1	7 12 61 <1 937 1081 973 1216 3004 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	12 0 56 0 949 1102 1020 1237 3404 current 3 <1	6 12 60 <1 930 1087 941 1209 3129 history1 4 0	7 12 61 <1 937 1081 973 1216 3004 history2 4 0
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	12 0 56 0 949 1102 1020 1237 3404 current 3 <1	6 12 60 <1 930 1087 941 1209 3129 history1 4 0 2	7 12 61 <1 937 1081 973 1216 3004 history2 4 0 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	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	12 0 56 0 949 1102 1020 1237 3404 current 3 <1 1	6 12 60 <1 930 1087 941 1209 3129 history1 4 0 2 NEG	7 12 61 <1 937 1081 973 1216 3004 history2 4 0 2 NEG
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D2982 *Method	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base	12 0 56 0 949 1102 1020 1237 3404 current 3 <1 1 NEG	6 12 60 <1 930 1087 941 1209 3129 history1 4 0 2 NEG history1	7 12 61 <1 937 1081 973 1216 3004 history2 4 0 2 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm	ASTM D5185m *ASTM D2982 *Method *ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base	12 0 56 0 949 1102 1020 1237 3404 current 3 <1 1 NEG current 0.2	6 12 60 <1 930 1087 941 1209 3129 history1 4 0 2 NEG history1 0.5	7 12 61 <1 937 1081 973 1216 3004 history2 4 0 2 NEG history2 0.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base	12 0 56 0 949 1102 1020 1237 3404 current 3 <1 1 NEG current 0.2 5.9	6 12 60 <1 930 1087 941 1209 3129 history1 4 0 2 NEG history1 0.5 8.2	7 12 61 <1 937 1081 973 1216 3004 history2 4 0 2 NEG history2 0.5 7.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >3 >20 >30 limit/base	12 0 56 0 949 1102 1020 1237 3404 current 3 <1 1 NEG current 0.2 5.9 18.0 current	6 12 60 <1 930 1087 941 1209 3129 history1 4 0 2 NEG history1 0.5 8.2 19.5 history1	7 12 61 <1 937 1081 973 1216 3004 history2 4 0 2 NEG history2 0.5 7.8 19.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D2982 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 *Method	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >3 >20 >30	12 0 56 0 949 1102 1020 1237 3404 current 3 <1 1 NEG current 0.2 5.9 18.0	6 12 60 <1 930 1087 941 1209 3129 history1 4 0 2 NEG history1 0.5 8.2 19.5	7 12 61 <1 937 1081 973 1216 3004 history2 4 0 2 NEG history2 0.5 7.8 19.2



OIL ANALYSIS REPORT



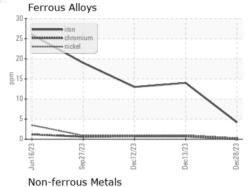
Viscosit	y @ 100°C			
18				
Abnormal				
0 15				
0015 Base				
13				
Abnormal				
11				
6/23	7/23	2/23	3/23	
Jun16,	Sep27/	Decl	Deci	

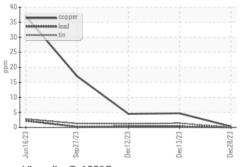


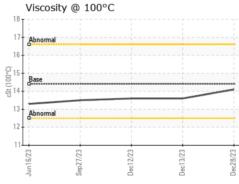
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

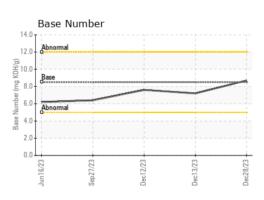
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.1	13.6	13.6

GRAPHS













Laboratory Sample No. Lab Number Unique Number : 10816354

: GFL0098207 : 06050405

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 03 Jan 2024 Diagnosed

Test Package : FLEET (Additional Tests: Glycol)

: 08 Jan 2024 Diagnostician : Jonathan Hester

10954 Houser Drive Fredericksburg, VA US 22408

Contact: TECHNICIAN ACCOUNT catherine.anastasio@wearcheck.com T:

GFL Environmental - 652 - Fredericksburg Hauling

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)

F: