

OIL ANALYSIS REPORT

Sample Rating Trend



Area 166 Machine Id 414059 Component Front Diese Fluid DIESEL EN

Component Front Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (--- LTR)

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.

SAMPLE INFORM		methoa	limit/base	current	nistory i	nistory2
Sample Number		Client Info		GFL0087882	GFL0087857	GFL0091214
Sample Date		Client Info		11 Sep 2023	22 Aug 2023	11 Aug 2023
Machine Age	hrs	Client Info		3123	451	3123
Oil Age	hrs	Client Info		600	50	600
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<10	<10	<10
Glycol		WC Method	20.0	NEG	NEG	NEG
					HEG	NEG.
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	6	4	29
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	<1
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	<1	<1	<1
Aluminum	ppm	ASTM D5185m	>20	2	4	9
Lead	ppm	ASTM D5185m	>40	<1	0	2
Copper	ppm	ASTM D5185m	>330	18	13	89
Tin	ppm	ASTM D5185m	>15	<1	<1	2
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
		and the second	limit/booo			le tester un co
ADDITIVE5		method	iimii/base	current	history1	nistory2
Boron	ppm	ASTM D5185m	250	15	history1 21	268
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	250 10	15 2	history1 21 0	268 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	15 2 69	21 0 68	268 0 109
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	15 2 69 <1	history1 21 0 68 <1	nistory2 268 0 109 3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	Current 15 2 69 <1 941	nistory1 21 0 68 <1 1020	Nistory2 268 0 109 3 687
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	15 2 69 <1 941 1120	nistory1 21 0 68 <1 1020 1148	Nistory2 268 0 109 3 687 1535
ADDITIVES 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 ASTM D5185m	250 10 100 450 3000 1150	15 2 69 <1 941 1120 1058	history1 21 0 68 <1 1020 1148 1124	Alistory2 268 0 109 3 687 1535 727
ADDITIVES 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 1350	15 2 69 <1 941 1120 1058 1260	nistory1 21 0 68 <1 1020 1148 1124 1340	Nistory2 268 0 109 3 687 1535 727 877
ADDITIVES 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	250 10 100 450 3000 1150 1350 4250	15 2 69 <1 941 1120 1058 1260 3592	nistory1 21 0 68 <1 1020 1148 1124 1340 4031	Nistory2 268 0 109 3 687 1535 727 877 2885
ADDITIVES 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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	15 2 69 <1 941 1120 1058 1260 3592	history1 21 0 68 <1 1020 1148 1124 1340 4031 history1	Pristory2 268 0 109 3 687 1535 727 877 2885 history2
ADDITIVES 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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	current 15 2 69 <1 941 1120 1058 1260 3592 current 13	nistory1 21 0 68 <1 1020 1148 1124 1340 4031 history1 11	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1	nistory1 21 0 68 <1 1020 1148 1124 1340 4031 history1 11 2	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5
ADDITIVES 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	250 10 100 450 3000 1150 1350 4250 <i>limit/base</i> >25 >158 >20	15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4	nistory1 21 0 68 <1 1020 1148 1124 1340 4031 history1 11 2 2	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 Iimit/base	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4	nistory1 21 0 68 <1 1020 1148 1124 1340 4031 history1 11 2 2 history1	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	Method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 25 >25 >158 >20 Limit/base >4	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4 current 0.1	nistory1 21 0 68 <1 1020 1148 1124 1340 4031 history1 11 2 history1 0.1	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24 history2 0.2
ADDITIVES 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 TS ppm ppm ppm	Method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4 current 0.1 5.7	nistory1 21 0 68 <1 1020 1148 1124 1340 4031 history1 11 2 history1 0.1 4.8	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24 0.2 7.7
ADDITIVES 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	method ASTM D5185m ASTM D7624 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20 >20 >30	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4 current 0.1 5.7 18.7	nistory1 21 0 68 <1 1020 1148 1340 4031 history1 11 2 history1 0.1 4.8 18.0	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24 0.2 7.7 24.0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >25 >158 >20 imit/base >4 >20 >30	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4 current 0.1 5.7 18.7 current	nistory1 21 0 68 <1 1020 1148 1124 1340 4031 history1 11 2 history1 0.1 4.8 18.0 history1	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24 history2 0.2 7.7 24.0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	method ASTM D5185m ASTM D7844 *ASTM D7415 method *ASTM D7414	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20 >30 limit/base >30	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4 current 0.1 5.7 18.7 current 14.5	nistory1 21 0 68 <1 1020 1148 1340 4031 history1 11 2 history1 0.1 4.8 18.0 history1 14.0	 Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24 history2 0.2 7.7 24.0 history2 19.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation Base Number (BN)	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7414 ASTM D7414	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >158 >20 Imit/base >4 >20 >30 Imit/base >30 Imit/base >20	current 15 2 69 <1 941 1120 1058 1260 3592 current 13 1 4 current 0.1 5.7 18.7 current 14.5 8.8	nistory1 21 0 68 <1 1020 1148 1340 4031 history1 11 2 history1 0.1 4.8 18.0 history1 14.0 9.2	Nistory2 268 0 109 3 687 1535 727 877 2885 history2 ▲ 84 5 24 0.2 7.7 24.0 history2 19.9 8.5



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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.7	14.0	▲ 9.9
GRAPHS						
Ferrous Alloys						
³⁰						
25 - chromium						
20		1				
Ear						
813						
10		·····				
5-			*****			
		and the state of t				
8/23 -	1/23 -	2/23 -	1/23 -			
Jul Jul2	Aug1	Aug2	Sep 1			
Non-ferrous Meta	s					
90 copper 1						
70	/					
60-	/					
E 50						
^E 40						
30-		· · · · ·				
20						
8/23	1/23 -	2/23	1/23 -			
Jul Jul2 Auo	Aug1	Aug2	Sep 1			
Viscosity @ 100°C	2			Base Number		
17 - Abnormal		1	14.0	Abnormal	1 I 1 I	
16			12.0	Aonoma		-
15 Base			H0.0	Base		
0 13 Abnomal			<u>ال</u> 8.0	0		
312-		/	0.0 g	Abnormal		
11-		/	₩ ₩ 4.0		· · · · · · · · · · · · · · · · · · ·	
10			2.0			
9		· · · · · · · · · · ·	2.0			
5/23	/23 -	2/23 -	0.0	5/23 -	4/23 -	2/23 -
Julf Jul28	Aug11	Aug 22	Sep11	Jul2	Aug ⁴ Aug11	Aug 22 Sep 11



Unique Number : 10654983 Diagnostician : Wes Davis Test Package : FLEET Contact: DEAN PEACE JR Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. dean.peace@gflenv.com * - 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)

: GFL0087882

: 05953770

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

: 18 Sep 2023

: 19 Sep 2023

Received

Diagnosed

Laboratory Sample No.

Lab Number

Submitted By: DARRIN WRIGHT

GFL Environmental - 166 - Phenix City

18 Old Brickyard Rd

Phenix City, AL

US 36869

T:

F: