

# **OIL ANALYSIS REPORT**

## **Sample Rating Trend**









Machine Id **426026-4675**Component

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.

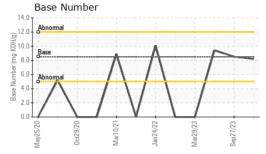
### **Fluid Condition**

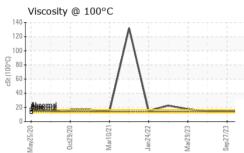
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date	AE 15W40 ( L	TR)	May2020	Oct2020 Mar2021	Jan 2022 Mar 2023 S	m2023	
Cample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   0   37705   37689   37415   Oil Age   hrs   Client Info   0   0   0   0   0   0   Oil Changed   Client Info   Changed   NoRMAL   OIL   NORMAL   NOR	Sample Number		Client Info		GFL0077811	GFL0065058	GFL0077803
Oil Age	Sample Date		Client Info		11 Oct 2023	27 Sep 2023	08 May 2023
Client Info   Changed NORMAL   NORMAL NORMAL   NORMAL NORMAL	Machine Age	hrs	Client Info		37705	37689	37415
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history2   history2     history2   history2     history2   history2     history2   history2     history3     history4     history4     history4     history4     history4     history4     history4     history4   history4     history4   history5   history4   history5   history4   history5   his	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS	CONTAMINATI	ION	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         27         29         18           Chromium         ppm         ASTM D5185m         >20         <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	27	29	18
Description	Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Silver	Nickel	ppm	ASTM D5185m	>5	<1	0	0
Astropage	Titanium	ppm	ASTM D5185m	>2	<1	0	0
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper	Aluminum	ppm	ASTM D5185m	>20	2	1	5
Copper	Lead	ppm	ASTM D5185m	>40	<1	<1	0
Tin	Copper		ASTM D5185m	>330	2	1	0
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         15         6         5           Barium         ppm         ASTM D5185m         10         12         2         0           Molybdenum         ppm         ASTM D5185m         100         60         59         63           Manganese         ppm         ASTM D5185m         100         60         59         63           Manganesium         ppm         ASTM D5185m         450         914         901         1025           Calcium         ppm         ASTM D5185m         3000         1014         1015         1141           Phosphorus         ppm         ASTM D5185m         3000         1173         1160         1346           Sulfur         ppm         ASTM D5185m         >25         6         3         1           CONTAMINANTS         method         limit/base         current         history1	• •				<1	<1	
ADDITIVES							
Soron   ppm   ASTM D5185m   250   15   6   5							
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         100         60         59         63           Manganese         ppm         ASTM D5185m         <1         <1         0           Magnesium         ppm         ASTM D5185m         450         914         901         1025           Calcium         ppm         ASTM D5185m         3000         1014         1015         1141           Phosphorus         ppm         ASTM D5185m         1150         961         978         1098           Zinc         ppm         ASTM D5185m         1350         1173         1160         1346           Sulfur         ppm         ASTM D5185m         4250         2904         2928         3801           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         1           Potassium         ppm         ASTM D5185m         >20         5         <1         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >4         2.7	Boron	ppm	ASTM D5185m	250	15	6	5
Manganese         ppm         ASTM D5185m         <1         <1         0           Magnesium         ppm         ASTM D5185m         450         914         901         1025           Calcium         ppm         ASTM D5185m         3000         1014         1015         1141           Phosphorus         ppm         ASTM D5185m         1150         961         978         1098           Zinc         ppm         ASTM D5185m         1350         1173         1160         1346           Sulfur         ppm         ASTM D5185m         4250         2904         2928         3801           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         1           Sodium         ppm         ASTM D5185m         >158         2         1         <1	Barium	ppm	ASTM D5185m	10	12	2	0
Magnesium         ppm         ASTM D5185m         450         914         901         1025           Calcium         ppm         ASTM D5185m         3000         1014         1015         1141           Phosphorus         ppm         ASTM D5185m         1150         961         978         1098           Zinc         ppm         ASTM D5185m         1350         1173         1160         1346           Sulfur         ppm         ASTM D5185m         4250         2904         2928         3801           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         1           Sodium         ppm         ASTM D5185m         >158         2         1         <1	Molybdenum	ppm	ASTM D5185m	100	60	59	63
Calcium         ppm         ASTM D5185m         3000         1014         1015         1141           Phosphorus         ppm         ASTM D5185m         1150         961         978         1098           Zinc         ppm         ASTM D5185m         1350         1173         1160         1346           Sulfur         ppm         ASTM D5185m         4250         2904         2928         3801           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         1           Sodium         ppm         ASTM D5185m         >158         2         1         <1	Manganese	ppm	ASTM D5185m		<1	<1	0
Calcium         ppm         ASTM D5185m         3000         1014         1015         1141           Phosphorus         ppm         ASTM D5185m         1150         961         978         1098           Zinc         ppm         ASTM D5185m         1350         1173         1160         1346           Sulfur         ppm         ASTM D5185m         4250         2904         2928         3801           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         1           Sodium         ppm         ASTM D5185m         >158         2         1         <1	Magnesium	ppm	ASTM D5185m	450	914	901	1025
Tinc   ppm   ASTM D5185m   1350   1173   1160   1346	Calcium	ppm	ASTM D5185m	3000	1014	1015	1141
Zinc         ppm         ASTM D5185m         1350         1173         1160         1346           Sulfur         ppm         ASTM D5185m         4250         2904         2928         3801           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         1           Sodium         ppm         ASTM D5185m         >158         2         1         <1	Phosphorus	ppm	ASTM D5185m	1150	961	978	1098
Sulfur         ppm         ASTM D5185m         4250         2904         2928         3801           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         3         1           Sodium         ppm         ASTM D5185m         >158         2         1         <1			ASTM D5185m	1350	1173	1160	1346
Silicon         ppm         ASTM D5185m         >25         6         3         1           Sodium         ppm         ASTM D5185m         >158         2         1         <1           Potassium         ppm         ASTM D5185m         >20         5         <1         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         2.7         3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         8.0         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         22.1         19.6           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.3         12.2						2928	
Sodium         ppm         ASTM D5185m         >158         2         1         <1           Potassium         ppm         ASTM D5185m         >20         5         <1         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         2.7         3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         8.0         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         22.1         19.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.3         12.2	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         5         <1         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         2.7         3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         8.0         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         22.1         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.3         12.2	Silicon	ppm	ASTM D5185m	>25	6	3	1
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         2.7         3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         8.0         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         22.1         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.3         12.2	Sodium	ppm	ASTM D5185m	>158	2	1	<1
Soot %         %         *ASTM D7844 >4         2.7         3         1.9           Nitration         Abs/cm         *ASTM D7624 >20         7.9         8.0         6.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         21.7         22.1         19.6           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         12.9         13.3         12.2	Potassium	ppm	ASTM D5185m	>20	5	<1	1
Nitration         Abs/cm         *ASTM D7624         >20         7.9         8.0         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         22.1         19.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.3         12.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         22.1         19.6           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.3         12.2	Soot %	%	*ASTM D7844	>4	2.7	3	1.9
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 12.9 13.3 12.2	Nitration	Abs/cm	*ASTM D7624	>20	7.9	8.0	6.5
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.7	22.1	19.6
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 8.5 <b>8.2</b> 8.5 9.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.9	13.3	12.2
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	8.2	8.5	9.4



## **OIL ANALYSIS REPORT**

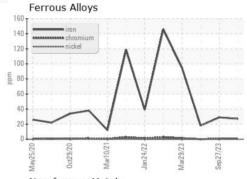


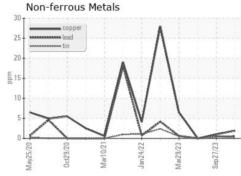


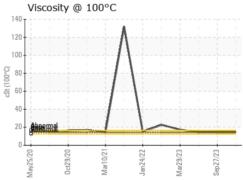
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	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

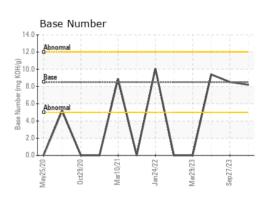
FLUID PROP	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.4	14.4	14.4

## **GRAPHS**













Certificate L2367

Laboratory

Sample No. Lab Number **Unique Number** Test Package : FLEET

: GFL0077811 : 05978795 : 10696090

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 13 Oct 2023 Diagnosed : 16 Oct 2023

Diagnostician : Wes Davis GFL Environmental - 650 - West Point Hauling 7825 Parham Landing Road West Point, VA

US 23181 Contact: Jason Smith

jasonsmith@gflenv.com T:

\* - 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: