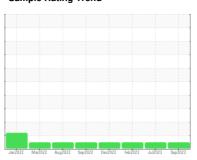


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id 1720 Component

**Diesel Engine** 

**DIESEL ENGINE OIL SAE 15W40 (--- GAL)** 

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D	ıA	СΠ	Vν	$\mathcal{L}$	ю

### Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. 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

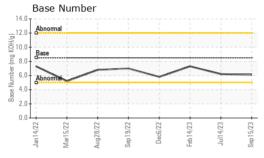
### **Fluid Condition**

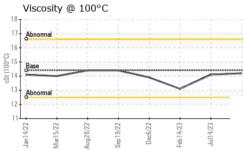
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Jan 2022 N	Mar2022 Aug2022 Sep20	22 Dec2022 Feb2023 Jul2023	Sep2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0844941	WC0827076	WC0766322
Sample Date		Client Info		15 Sep 2023	14 Jul 2023	14 Feb 2023
Machine Age	mls	Client Info		0	180873	169821
Oil Age	mls	Client Info		0	0	6000
Oil Changed		Client Info		N/A	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	7	6	6
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	3
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	2	1	1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/bass	Olivropt .	hiotom/1	biotom/0
ADDITIVES		memou	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	35	17	11
	ppm					
Boron		ASTM D5185m	250	35	17	11
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	35 2	17	11
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	35 2 76	17 2 73	11 0 63
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	35 2 76 <1	17 2 73 <1	11 0 63 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	35 2 76 <1 263	17 2 73 <1 275	11 0 63 <1 319
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	35 2 76 <1 263 1799	17 2 73 <1 275 2041	11 0 63 <1 319 1751
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	35 2 76 <1 263 1799 1008	17 2 73 <1 275 2041 1095	11 0 63 <1 319 1751 972
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	35 2 76 <1 263 1799 1008	17 2 73 <1 275 2041 1095 1387	11 0 63 <1 319 1751 972 1187
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 limit/base	35 2 76 <1 263 1799 1008 1240 3483	17 2 73 <1 275 2041 1095 1387 4284	11 0 63 <1 319 1751 972 1187 3234
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	35 2 76 <1 263 1799 1008 1240 3483	17 2 73 <1 275 2041 1095 1387 4284 history1	11 0 63 <1 319 1751 972 1187 3234 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	35 2 76 <1 263 1799 1008 1240 3483 current	17 2 73 <1 275 2041 1095 1387 4284 history1 8	11 0 63 <1 319 1751 972 1187 3234 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	35 2 76 <1 263 1799 1008 1240 3483 current 7 13	17 2 73 <1 275 2041 1095 1387 4284 history1 8 10	11 0 63 <1 319 1751 972 1187 3234 history2 6 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	35 2 76 <1 263 1799 1008 1240 3483  current 7 13 <1	17 2 73 <1 275 2041 1095 1387 4284 history1 8 10 <1	11 0 63 <1 319 1751 972 1187 3234 history2 6 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS 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 >158 >20 limit/base >3	35 2 76 <1 263 1799 1008 1240 3483 current 7 13 <1	17 2 73 <1 275 2041 1095 1387 4284 history1 8 10 <1	11 0 63 <1 319 1751 972 1187 3234 history2 6 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *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 >158 >20 limit/base	35 2 76 <1 263 1799 1008 1240 3483 current 7 13 <1 current 0.3	17 2 73 <1 275 2041 1095 1387 4284 history1 8 10 <1 history1 0.2	11 0 63 <1 319 1751 972 1187 3234 history2 6 3 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *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 >158 >20 limit/base	35 2 76 <1 263 1799 1008 1240 3483	17 2 73 <1 275 2041 1095 1387 4284 history1 8 10 <1 history1 0.2 10.3	11 0 63 <1 319 1751 972 1187 3234 history2 6 3 2 history2 0.2 9.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method  *ASTM D5185m ASTM D7844  *ASTM D7624  *ASTM D76145	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30	35 2 76 <1 263 1799 1008 1240 3483	17 2 73 <1 275 2041 1095 1387 4284 history1 8 10 <1 history1 0.2 10.3 21.6	11 0 63 <1 319 1751 972 1187 3234 history2 6 3 2 history2 0.2 9.4 20.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm	ASTM D5185m  method  *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m  method  *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7615  method	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30 limit/base >25	35 2 76 <1 263 1799 1008 1240 3483	17 2 73 <1 275 2041 1095 1387 4284 history1 8 10 <1 history1 0.2 10.3 21.6 history1	11 0 63 <1 319 1751 972 1187 3234 history2 6 3 2 history2 0.2 9.4 20.8 history2



## **OIL ANALYSIS REPORT**

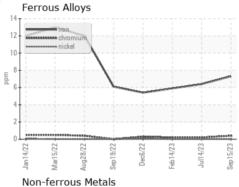


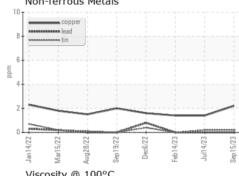


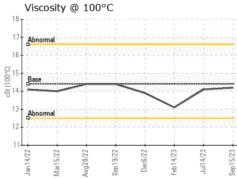
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

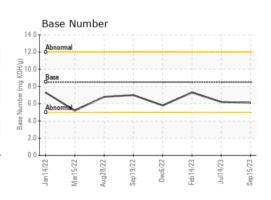
FLUID PROPER	THES	method	ilmit/base		nistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	14.4	14.2	14.1	13.1

### **GRAPHS**













Laboratory Sample No. Test Package : FLEET

Lab Number

: WC0844941 : 05963295 Unique Number : 10669846

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 28 Sep 2023 Diagnosed Diagnostician : Wes Davis

: 28 Sep 2023

**TOWN OF CHAPEL HILL** 6900 MILLHOUSE RD CHAPEL HILL, NC US 27516

Contact: Lisa DePasqua Idepasqua@townofchapelhill.org

T: (919)696-4941

\* - 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)