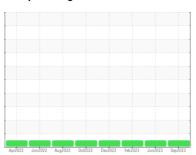


OIL ANALYSIS REPORT

Sample Rating Trend







1801 Component

Diesel Engine

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

DIAGNOSIS

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

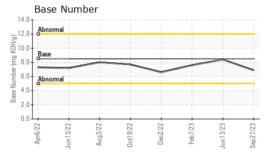
Fluid Condition

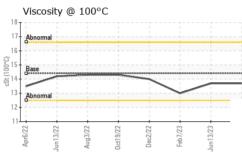
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Apr2022 J	un2022 Aug2022 Oct20	22 Dec2022 Feb2023 Jun2023	Sep 2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0844944	WC0827020	WC0766305
Sample Date		Client Info		27 Sep 2023	13 Jun 2023	07 Feb 2023
Machine Age	mls	Client Info		162355	156926	146144
Oil Age	mls	Client Info		6000	0	6000
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	٧	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	6	5	6
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	5	2	3
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	2	<1	1
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	15	7	8
Barium	ppm	ASTM D5185m	10	2	0	0
Molybdenum	ppm	ASTM D5185m	100	83	71	63
Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m	100	83 <1	71 0	63 <1
•	• •		100 450			
Manganese	ppm	ASTM D5185m		<1	0	<1
Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m	450	<1 255	0 407	<1 308
Manganese Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	450 3000	<1 255 1857	0 407 1851	<1 308 1745
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150	<1 255 1857 973	0 407 1851 1025	<1 308 1745 960
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350	<1 255 1857 973 1186	0 407 1851 1025 1286	<1 308 1745 960 1179
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250	<1 255 1857 973 1186 3247	0 407 1851 1025 1286 4008	<1 308 1745 960 1179 3556
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base	<1 255 1857 973 1186 3247	0 407 1851 1025 1286 4008 history1	<1 308 1745 960 1179 3556 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m	450 3000 1150 1350 4250 limit/base	<1 255 1857 973 1186 3247 current 8	0 407 1851 1025 1286 4008 history1	<1 308 1745 960 1179 3556 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base >25 >158	<1 255 1857 973 1186 3247 current 8 6	0 407 1851 1025 1286 4008 history1 5	<1 308 1745 960 1179 3556 history2 6
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m MEthod ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base >25 >158 >20	<1 255 1857 973 1186 3247 current 8 6 0	0 407 1851 1025 1286 4008 history1 5 5	<1 308 1745 960 1179 3556 history2 6 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	<1 255 1857 973 1186 3247 current 8 6 0 current	0 407 1851 1025 1286 4008 history1 5 1	<1 308 1745 960 1179 3556 history2 6 0 1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m	450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3	<1 255 1857 973 1186 3247 current 8 6 0 current 0.4	0 407 1851 1025 1286 4008 history1 5 1 history1 0.3	<1 308 1745 960 1179 3556 history2 6 0 1 history2
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	450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20	<1 255 1857 973 1186 3247 current 8 6 0 current 0.4 9.0	0 407 1851 1025 1286 4008 history1 5 5 1 history1 0.3 8.8	<1 308 1745 960 1179 3556 history2 6 0 1 history2 0.3 8.9
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 D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D7415	450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30	<1 255 1857 973 1186 3247 current 8 6 0 current 0.4 9.0 19.1	0 407 1851 1025 1286 4008 history1 5 1 history1 0.3 8.8 20.6	<pre><1 308 1745 960 1179 3556 history2 6 0 1 history2 0.3 8.9 20.0</pre>
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	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 Method *ASTM D7844 *ASTM D7624 *ASTM D7415 Method	450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30 limit/base	<1 255 1857 973 1186 3247 current 8 6 0 current 0.4 9.0 19.1 current	0 407 1851 1025 1286 4008 history1 5 1 history1 0.3 8.8 20.6 history1	<1 308 1745 960 1179 3556 history2 6 0 1 history2 0.3 8.9 20.0 history2



OIL ANALYSIS REPORT

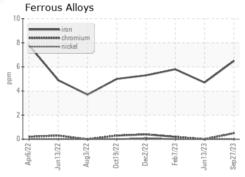


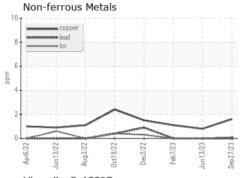


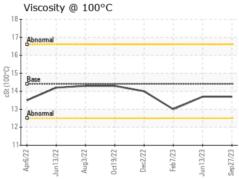
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

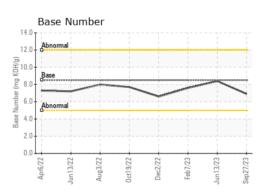
FLUID PROPERTIES		metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	14.4	13.7	13.7	13.0

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Test Package : FLEET

: WC0844944 : 05963291 Unique Number : 10669842

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

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

Contact: Lisa DePasqua Idepasqua@townofchapelhill.org

* - 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)

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

Report Id: TOWCHANC [WUSCAR] 05963291 (Generated: 09/28/2023 18:30:39) Rev: 1

Contact/Location: Lisa DePasqua - TOWCHANC

T: (919)696-4941