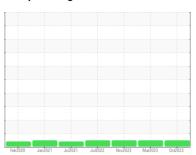


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



LIEBHERR LR1300 CR3303

Component

Diesel Engine

DIESEL ENGINE OIL SAE 5W40 (--- GAL)

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.

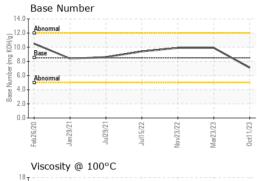
Fluid Condition

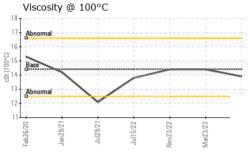
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Feb2020	Jan2021 Jul2021	Jul2022 Nov2022 Mar2023	Oct2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0833371	WC0761796	WC0704502
Sample Date		Client Info		11 Oct 2023	23 Mar 2023	23 Nov 2022
Machine Age	hrs	Client Info		9228	8410	8201
Oil Age	hrs	Client Info		818	478	250
Oil Changed		Client Info		Changed	Changed	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	1	2	2
Chromium	ppm	ASTM D5185m	>5	0	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>15	2	<1	0
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>125	<1	0	<1
Tin	ppm	ASTM D5185m	>5	0	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	81	69	51
Barium	ppm	ASTM D5185m	10	0	0	0
Mark de al accessor	1.1				0	
Molybdenum	ppm	ASTM D5185m	100	6	62	58
Manganese			100	6 <1		
-	ppm	ASTM D5185m	100 450		62	58
Manganese	ppm	ASTM D5185m ASTM D5185m		<1	62 <1	58 <1
Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	450	<1 745	62 <1 1115	58 <1 1049
Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000	<1 745 1409	62 <1 1115 855	58 <1 1049 862
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150	<1 745 1409 784	62 <1 1115 855 1048	58 <1 1049 862 1023
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350	<1 745 1409 784 939	62 <1 1115 855 1048 1297	58 <1 1049 862 1023 1234
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250	<1 745 1409 784 939 3261	62 <1 1115 855 1048 1297 4252	58 <1 1049 862 1023 1234 3755
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm 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 >60	<1 745 1409 784 939 3261 current	62 <1 1115 855 1048 1297 4252 history1	58 <1 1049 862 1023 1234 3755 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m	450 3000 1150 1350 4250 limit/base >60	<1 745 1409 784 939 3261 current	62 <1 1115 855 1048 1297 4252 history1	58 <1 1049 862 1023 1234 3755 history2 3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	450 3000 1150 1350 4250 limit/base >60 >44	<1 745 1409 784 939 3261 current 6 1	62 <1 1115 855 1048 1297 4252 history1 9	58 <1 1049 862 1023 1234 3755 history2 3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	450 3000 1150 1350 4250 limit/base >60 >44 >20	<1 745 1409 784 939 3261 current 6 1	62 <1 1115 855 1048 1297 4252 history1 9 3 <1	58 <1 1049 862 1023 1234 3755 history2 3 1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	450 3000 1150 1350 4250 limit/base >60 >44 >20 limit/base >3	<1 745 1409 784 939 3261 current 6 1 4 current	62 <1 1115 855 1048 1297 4252 history1 9 3 <1	58 <1 1049 862 1023 1234 3755 history2 3 1 1 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m	450 3000 1150 1350 4250 limit/base >60 >44 >20 limit/base >3	<1 745 1409 784 939 3261 current 6 1 4 current 0.1	62 <1 1115 855 1048 1297 4252 history1 9 3 <1 history1 0.1	58
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	450 3000 1150 1350 4250 limit/base >60 >44 >20 limit/base >3 >20	<1 745 1409 784 939 3261 current 6 1 4 current 0.1 8.5	62 <1 1115 855 1048 1297 4252 history1 9 3 <1 history1 0.1 6.5	58 <1 1049 862 1023 1234 3755 history2 3 3 1 history2 0.1 8.7
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	450 3000 1150 1350 4250 limit/base >60 >444 >20 limit/base >3 >20 >30	<1 745 1409 784 939 3261 current 6 1 4 current 0.1 8.5 18.1	62 <1 1115 855 1048 1297 4252 history1 9 3 <1 history1 0.1 6.5 18.8	58 <1 1049 862 1023 1234 3755 history2 3 1 history2 0.1 8.7 20.5
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 ASTM D78185m Method	450 3000 1150 1350 4250 limit/base >60 >44 >20 limit/base >3 >20 >30 limit/base	<1 745 1409 784 939 3261 current 6 1 4 current 0.1 8.5 18.1 current	62 <1 1115 855 1048 1297 4252 history1 9 3 <1 history1 0.1 6.5 18.8 history1	58 <1 1049 862 1023 1234 3755 history2 3 1 history2 0.1 8.7 20.5 history2



OIL ANALYSIS REPORT

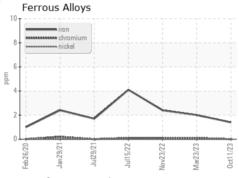


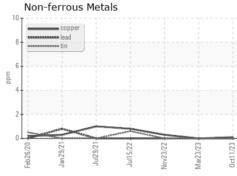


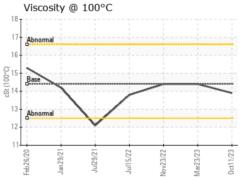
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

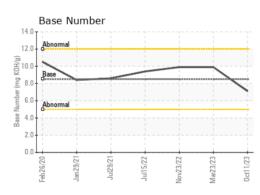
FLUID PROPERTIES		method	ilmii/base		nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	14.4	13.9	14.4	14.4

GRAPHS











Laboratory Sample No. Lab Number Unique Number : 10728006

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0833371 : 05999646

Received Diagnosed

: 06 Nov 2023 : 07 Nov 2023 Diagnostician : Wes Davis Test Package : CONST (Additional Tests: TBN)

US 77378 Contact: JOHN HAWKINS johnh@bucknercompanies.com

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)

WILLIS, TX

T:

F:

BUCKNER - WILLIS

18123 HWY 75 NORTH