

OIL ANALYSIS REPORT

Sample Rating Trend





LIEBHERR LH60M 149270-1217 Component **Diesel Engine**

Fluid

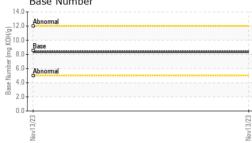
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

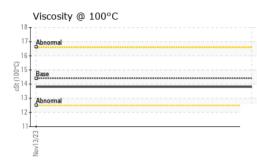
DIAGNOSIS	SAMPLE INFORM	ΛΑΤΙΟΝ	method	limit/base	current		history2
Recommendation	Sample Number		Client Info		DJJ0020513		
Resample at the next service interval to monitor.	Sample Date		Client Info		13 Nov 2023		
Please specify the brand, type, and viscosity of the	Machine Age	hrs	Client Info		875		
oil on your next sample.	Oil Age	hrs	Client Info		0		
Wear	Oil Changed		Client Info		N/A		
Metal levels are typical for a new component breaking in.	Sample Status				NORMAL		
Contamination	CONTAMINATIO	Ν	method	limit/base		history1	history2
There is no indication of any contamination in the oil.	Fuel Glycol		WC Method WC Method	>5	<1.0 NEG		
Fluid Condition	-						
The BN result indicates that there is suitable	WEAR METALS		method	limit/base	current	history1	history2
alkalinity remaining in the oil. The condition of the	Iron	ppm	ASTM D5185m		<1		
oil is suitable for further service.	Chromium	ppm	ASTM D5185m		<1		
	Nickel	ppm	ASTM D5185m	>5	0		
	Titanium	ppm	ASTM D5185m		0		
	Silver	ppm	ASTM D5185m	>3	0		
	Aluminum	ppm	ASTM D5185m	>15	1		
	Lead	ppm	ASTM D5185m	>30	0		
	Copper	ppm	ASTM D5185m	>125	30		
	Tin	ppm	ASTM D5185m	>5	0		
	Vanadium	ppm	ASTM D5185m		0		
	Cadmium	ppm	ASTM D5185m		0		
	ADDITIVES			11 11 11		In the transmission	
	ADDITIVES		method	limit/base	current	history1	history2
	Boron	ppm		limit/base	current 2	nistory i	history2
		ppm ppm		250		,	,
	Boron Barium	ppm	ASTM D5185m	250 10	2		
	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	2 2 50		
	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	2 2 50 <1		
	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	2 2 50 <1 852		
	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	2 2 50 <1 852 1040		
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	2 2 50 <1 852 1040 948	 	
	Boron Barium Molybdenum Manganese Magnesium Calcium	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 1350	2 2 50 <1 852 1040	 	
	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	250 10 100 450 3000 1150 1350	2 2 50 <1 852 1040 948 1127 2694		
	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	2 2 50 <1 852 1040 948 1127 2694		
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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 limit/base >60	2 2 50 <1 852 1040 948 1127 2694 current	 history1	
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	250 10 100 450 3000 1150 1350 4250 limit/base >60 >158	2 2 50 <1 852 1040 948 1127 2694 <i>current</i> 5	 history1	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	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 >60 >158	2 2 50 <1 852 1040 948 1127 2694 current 5 0 2	 history1	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >60 >158 >20	2 2 50 <1 852 1040 948 1127 2694 current 5 0 2	 history1 	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Imit/base >60 >158 >20 Imit/base >3	2 2 50 <1 852 1040 948 1127 2694 current 5 0 2 2	 history1 history1	 history2 history2
	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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >60 >158 >20 limit/base >3 >20	2 2 50 <1 852 1040 948 1127 2694 <i>current</i> 5 0 2 2 <i>current</i> 0.1	 history1 history1	 history2 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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >60 >158 >20 limit/base >3 >20	2 2 50 <1 852 1040 948 1127 2694 <u>current</u> 5 0 2 2 <u>current</u> 0.1 6.8 19.3	 history1 history1 history1	history2 history2 history2
	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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >60 >158 >20 Iimit/base >3 >20 >30	2 2 50 <1 852 1040 948 1127 2694 <i>current</i> 5 0 2 <i>current</i> 0.1 6.8 19.3 <i>current</i>	 history1 history1	 history2 history2 history2
	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 ASTM D7844 *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 Iimit/base >60 >158 >20 20 Iimit/base >3 >20 >30 < Iimit/base	2 2 50 <1 852 1040 948 1127 2694 <u>current</u> 5 0 2 2 <u>current</u> 0.1 6.8 19.3	 history1 history1 history1 history1	history2 history2 history2 history2 history2 history2



OIL ANALYSIS REPORT

Base Number





VISUAL		method	limit/base	current	history1	history2
Vhite Metal	scalar	*Visual	NONE	NONE		
ellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Ddor	scalar	*Visual	NORML	NORML		
mulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
FLUID PROPERT	IES	method	limit/base	current	history1	history2
/isc @ 100°C	cSt	ASTM D445	14.4	13.8		
GRAPHS						
Ferrous Alloys						
iron chromium						
nessesses nickel						
Nov13/23			Nov13/23			
Non-ferrous Metals						
Non-ferrous Metals						
Non-ferrous Metals						
Non-ferrous Metals						
Non-ferrous Metals						
Non-ferrous Metals						
Non-ferrous Metals						
Non-ferrous Metals						
Non-ferrous Metals			Nov13/23			
Non-ferrous Metals						
Non-ferrous Metals			Nov13/23			
Non-ferrous Metals			Nov13/23	Base Number		
Non-ferrous Metals			EZ/E1/vol	Abnormal		
Non-ferrous Metals			EZ/E[JA00	Abnormal		
Non-ferrous Metals			EZ/E[JA00	Abnormal Base		
Non-ferrous Metals			EZ/E[JA00	Abnormal Base		
Non-ferrous Metals			EZ/E[JA00	Abnormal Base Abnormal		
Non-ferrous Metals			EZ/E[JooN 14.0 (0,HO) 10.0 8.0 0 8.0	Abnormal Base Abnormal		
Non-ferrous Metals			EZ/E[JA00	Abnormal Base Abnormal		
Non-ferrous Metals			EZ/E[JAON 14.0 ()/HOJ Du 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0	Abnormal Base Abnormal		
Non-ferrous Metals			EZ/ELANON 14.0 12.0 12.0 12.0 10.0 10.0 10.0 10.0 10	Abnormal Base Abnormal		



 Unique Number
 : 10749153
 Diagnostician
 : Wes Davis

 Certificate L2367
 Test Package
 : CONST (Additional Tests: TBN)

 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)

Diagnosed

: 17 Nov 2023

Laboratory

Sample No.

Lab Number

: 06010009

US 33916

T:

F:

FORT MYERS, FL

Contact: Service Manager