

OIL ANALYSIS REPORT

Sample Rating Trend





Area Bernardsville Machine Id MACK 2437

Component Diesel Engine Fluid

GIBRALTAR 15W/40 SUPER S-3 LX (11)

DIAGNOSIS	

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

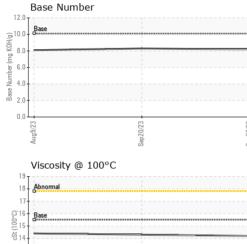
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	ATION	method	limit/base	current		history2
Sample Number		Client Info		WC0830894	WC0830897	WC0831067
Sample Date		Client Info		27 Sep 2023	20 Sep 2023	09 Aug 2023
Machine Age	hrs	Client Info		0	17636	235486
Oil Age	hrs	Client Info		0	0	17360
Oil Changed		Client Info		N/A	Not Changd	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	4	3	6
Chromium	ppm	ASTM D5185m	>20	<1	0	0
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	2	<1
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Tin	ppm		>15	<1	<1	0
Vanadium	ppm	ASTM D5185m	210	<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
	ppm				-	
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	limit/base	8	6	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m		8 12	6 0	5 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	66	8 12 61	6 0 64	5 0 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66	8 12 61 <1	6 0 64 0	5 0 63 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000	8 12 61 <1 830	6 0 64 0 780	5 0 63 <1 849
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050	8 12 61 <1 830 1148	6 0 64 0 780 1146	5 0 63 <1 849 1263
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050 1150	8 12 61 <1 830 1148 989	6 0 64 0 780 1146 1001	5 0 63 <1 849 1263 987
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050	8 12 61 <1 830 1148 989 1196	6 0 64 0 780 1146 1001 1213	5 0 63 <1 849 1263 987 1227
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	66 1000 1050 1150	8 12 61 <1 830 1148 989	6 0 64 0 780 1146 1001	5 0 63 <1 849 1263 987
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	66 1000 1050 1150	8 12 61 <1 830 1148 989 1196	6 0 64 0 780 1146 1001 1213	5 0 63 <1 849 1263 987 1227
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	66 1000 1050 1150 1270	8 12 61 <1 830 1148 989 1196 3106	6 0 64 0 780 1146 1001 1213 3716	5 0 63 <1 849 1263 987 1227 3659
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 ASTM D5185m	66 1000 1050 1150 1270 limit/base	8 12 61 <1 830 1148 989 1196 3106 current	6 0 64 0 780 1146 1001 1213 3716 history1	5 0 63 <1 849 1263 987 1227 3659 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	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 method	66 1000 1050 1150 1270 limit/base	8 12 61 <1 830 1148 989 1196 3106 current 4	6 0 64 0 780 1146 1001 1213 3716 history1 3	5 0 63 <1 849 1263 987 1227 3659 history2 4
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 method ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >25	8 12 61 <1 830 1148 989 1196 3106 Current 4 1	6 0 64 0 780 1146 1001 1213 3716 history1 3 0	5 0 63 <1 849 1263 987 1227 3659 history2 4 1
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	66 1000 1050 1150 1270 limit/base >25 >20	8 12 61 <1 830 1148 989 1196 3106 Current 4 1 2	6 0 64 0 780 1146 1001 1213 3716 history1 3 0 <1	5 0 63 <1 849 1263 987 1227 3659 history2 4 1 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >25 >20	8 12 61 <1 830 1148 989 1196 3106 Current 4 1 2 Current	6 0 64 0 780 1146 1001 1213 3716 history1 3 0 <1 history1	5 0 63 <1 849 1263 987 1227 3659 history2 4 1 0 0 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	66 1000 1050 1150 1270 limit/base >25 >20 limit/base >20	8 12 61 <1 830 1148 989 1196 3106 <u>current</u> 4 1 2 <u>current</u> 0.3	6 0 64 0 780 1146 1001 1213 3716 history1 3 0 <1 history1 0.2	5 0 63 <1 849 1263 987 1227 3659 history2 4 1 0 history2 0.4
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	66 1000 1050 1150 1270 limit/base >25 >20 limit/base >4 >20	8 12 61 <1 830 1148 989 1196 3106 current 4 1 2 current 0.3 6.8	6 0 64 0 780 1146 1001 1213 3716 history1 3 0 <1 history1 0.2 6.7	5 0 63 <1 849 1263 987 1227 3659 history2 4 1 0 history2 0.4 7.5
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	66 1000 1050 1150 1270 imit/base >25 >20 imit/base >4 >20 >30	8 12 61 <1 830 1148 989 1196 3106 <u>current</u> 4 1 2 <u>current</u> 0.3 6.8 17.4	6 0 64 0 780 1146 1001 1213 3716 history1 3 0 <1 history1 0.2 6.7 18.0	5 0 63 <1 849 1263 987 1227 3659 history2 4 1 0 <u>history2</u> 0.4 7.5 18.2
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	66 1000 1050 1150 1270 225 225 220 220 1imit/base >4 >20 >30 20 30	8 12 61 <1 830 1148 989 1196 3106 Current 4 1 2 Current 0.3 6.8 17.4 Current	6 0 64 0 780 1146 1001 1213 3716 history1 3 0 <1 history1 0.2 6.7 18.0 history1	5 0 63 <1 849 1263 987 1227 3659 history2 4 1 0 0 history2 0.4 7.5 18.2 history2



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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
0/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep 20/23 Sep 27/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPER	RTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.5	14.2	14.3	14.4
	GRAPHS						
	Ferrous Alloys						
m	10 iron						
Sep 20/23	8 - chromium						
S							
	udd						
	° 4-						
	2						
	0						
	Aug9/23	Sep 20/23		Sep27/23			
		••		Set			
	Non-ferrous Met	als					
	copper						
	8 - tin						
	6 -						
	udd						
	4						
	2						
		/23		/23			
	Aug9/23	Sep 20/23		Sep27/23			
	Viscosity @ 100°	°C			Base Number		
	18 - Abnormal			12.0	Base		
	17-						
	C 16 Base			Q 8.0)		
	e 15-			0.8 K0H(d) Base Number (mg K0H(d)	•		
				2 4.0) -		
				60			
	13 - Abnormal) 🗕 🗄		
	10			2.0			
	13 - Abnormal 12 -	V23		2.0) 	//23	
	13 - Abnormal	Sep20/23		2.0		Sep20/23	
Laboratory Sample No. Lab Number Unique Number Test Package discuss this sample report,	: WearCheck USA - : WC0830894 : 05978690 : 10695985 : FLEET	501 Madia Received Diagnos Diagnosi	d :130 ed :160 tician :Wes	2.0 0.0 ry, NC 27513 Oct 2023 Oct 2023 S Davis	B INTERS	TATE WASTE-B 33 OLD C BERNA	ERNARDSVILL UARRY ROA RDSVILLE, N US 0792 Pablo Chardo



Contact/Location: Pablo Chardon - INTBER