

# **OIL ANALYSIS REPORT**

Sample Rating Trend







Diesel Engine Fluid DIESEL ENGINE OIL SAE 15W40 (--- 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.

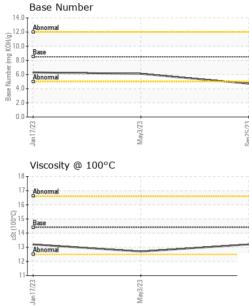
### **Fluid Condition**

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

SAMPLE INFORM	ΛΑΤΙΟΝ	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0784024	WC0783995	WC0758897
Sample Date		Client Info		25 Sep 2023	03 May 2023	17 Jan 2023
Machine Age	hrs	Client Info		7840	6785	6212
Oil Age	hrs	Client Info		628	570	467
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	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	18	9	8
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	1	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	4	2
Lead	ppm	ASTM D5185m	>40	2	0	<1
Copper	ppm	ASTM D5185m	>330	1	1	1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
			11 1. 11			
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	limit/base 250	9	history1 48	history2 23
	ppm ppm					
Boron		ASTM D5185m	250	9	48	23
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	9 0	48 0	23 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	9 0 86	48 0 83	23 0 51
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	9 0 86 <1	48 0 83 0	23 0 51 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	9 0 86 <1 148	48 0 83 0 131	23 0 51 <1 105
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	9 0 86 <1 148 2001	48 0 83 0 131 2126	23 0 51 <1 105 2091
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	250 10 100 450 3000 1150	9 0 86 <1 148 2001 993	48 0 83 0 131 2126 1001	23 0 51 <1 105 2091 887
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	9 0 86 <1 148 2001 993 1226	48 0 83 0 131 2126 1001 1214	23 0 51 <1 105 2091 887 1127
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	9 0 86 <1 148 2001 993 1226 3646	48 0 83 0 131 2126 1001 1214 4108	23 0 51 <1 105 2091 887 1127 4105
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	250 10 100 450 3000 1150 1350 4250 <i>limit/base</i> >25	9 0 86 <1 148 2001 993 1226 3646 current	48 0 83 0 131 2126 1001 1214 4108 history1	23 0 51 <1 105 2091 887 1127 4105 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 <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >158	9 0 86 <1 148 2001 993 1226 3646 <i>current</i> 8	48 0 83 0 131 2126 1001 1214 4108 history1 5	23 0 51 <1 105 2091 887 1127 4105 history2 3
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 <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >158	9 0 86 <1 148 2001 993 1226 3646 <u>current</u> 8 9	48 0 83 0 131 2126 1001 1214 4108 history1 5 4	23 0 51 <1 105 2091 887 1127 4105 history2 3 3 3
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 <b>limit/base</b> >25 >158 >20	9 0 86 <1 148 2001 993 1226 3646 current 8 9 2	48 0 83 0 131 2126 1001 1214 4108 history1 5 4 0	23 0 51 <1 105 2091 887 1127 4105 history2 3 3 3 1
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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	9 0 86 <1 148 2001 993 1226 3646 <u>current</u> 8 9 2 2 <u>current</u>	48 0 83 0 131 2126 1001 1214 4108 history1 5 4 0 0 history1	23 0 51 <1 105 2091 887 1127 4105 history2 3 3 1 1 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 <i>limit/base</i> >25 >158 >20 <i>limit/base</i> >4 >20	9 0 86 <1 148 2001 993 1226 3646 <u>current</u> 8 9 2 2 <u>current</u> 0.8	48 0 83 0 131 2126 1001 1214 4108 history1 5 4 0 0 history1 0.6	23 0 51 <1 105 2091 887 1127 4105 history2 3 3 1 1 history2 0.5
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 <i>limit/base</i> >25 >158 >20 <i>limit/base</i> >4 >20	9 0 86 <1 148 2001 993 1226 3646 <i>current</i> 8 9 2 2 <i>current</i> 0.8 9.8	48 0 83 0 131 2126 1001 1214 4108 history1 5 4 0 0 history1 0.6 9.4	23 0 51 <1 105 2091 887 1127 4105 history2 3 3 3 1 history2 0.5 9.1
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 <i>limit/base</i> >25 >158 >20 <i>limit/base</i> >4 >20 <i>s</i> 4 >20 <i>s</i> 30	9 0 86 <1 148 2001 993 1226 3646 <u>current</u> 8 9 2 2 <u>current</u> 0.8 9.8 22.7	48 0 83 0 131 2126 1001 1214 4108 history1 5 4 0 0 history1 0.6 9.4 19.8 history1	23 0 51 <1 105 2091 887 1127 4105 history2 3 3 3 1 history2 0.5 9.1 18.5
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	250 10 100 450 3000 1150 1350 4250 <b>imit/base</b> >25 >158 >20 <b>imit/base</b> >4 >20 <b>imit/base</b> >30	9 0 86 <1 148 2001 993 1226 3646 <i>current</i> 8 9 2 <i>current</i> 0.8 9.8 2.7	48 0 83 0 131 2126 1001 1214 4108 history1 5 4 0 0 history1 0.6 9.4 19.8	23 0 51 <1 105 2091 887 1127 4105 history2 3 3 3 1 history2 0.5 9.1 18.5 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
3/23	:/23		scalar	*Visual	NORML	NORML	NORML	NORML
May3/23	Sep 25/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	20.L	NEG	NEG	NEG
		FLUID PROPER	RTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	14.4	13.2	12.7	13.2
		GRAPHS						
		Ferrous Alloys						
23		18 16		/	/			
May3/23		14 - nickel						
		12-	/					
		E <sup>10</sup>	_					
		6-						
		4						
		2						
		0	en en	1400.0000000000000000000000000000000000				
		lan 17,23	May3/23		Sep 25/23			
		Jar	M		Sei			
		Non-ferrous Met	als					
		10 copper						
		8 - Internet lead						
		6						
		mdd						
		**						
		2-						
		Constanting of the Constant of the Owner of the Constant of th		STREET, STREET	A STREET, STREE			
		1/23	723		/23			
		Jan 17,	May3/23		Sep 25/			
		Viscosity @ 100	°C			Base Number	-	
		18 17 Abnormal			14.0	Abnormal		
		1/ Abnormal			12.0- Store			
		Q 15			(0)10.0 - (0)10.0 - (0)10.	Base		
		() 0015 8ase 14			per (1			
					E 6.0	Abnormal		
		13 - Abnormal			& 4.0-			
		12-			2.0			
		11				m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
		Jan 17/23	May3/23		Sep 25/23	Jan 17/23	May3/23	
		Jan	Ma		Sep	Jan	W	
	Laboratory	: WearCheck USA -	501 Madi	son Ave Ca	rv_NC 27513	Apple	Valley Waste -	EHT Locatio
NAR	Sample No.	: WC0784024	Receive	d : 03 (	Oct 2023 Oct 2023	чрыс		26 Delilah Roa
REDITED	Lab Number	: 05968284	Diagnos		Egg Harbor Township, N			
ING LABORATORY	Unique Number		Diagnos		s Davis		<b>_</b> .	US 0823
ificate L2367	Test Package				<b>`</b>		Contact: Se	ervice Manag
		contact Customer Ser are outside of the ISO						٦
		cifications are based on				CGM 106:2012	?)	F

Contact/Location: Service Manager - AVWEHT