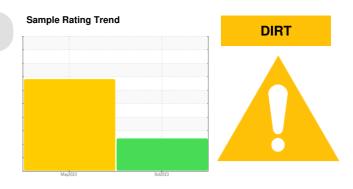


PROBLEM SUMMARY

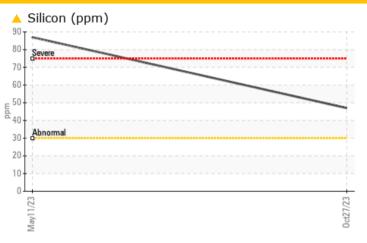
(LZC160) SAPP BROS PETROLEUM - LINCOLN Machine Id 98226

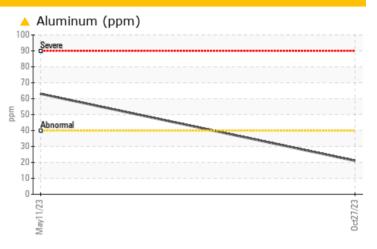
Component **Gasoline Engine**

NOT GIVEN (--- GAL)









RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

PROBLEMATIC TEST RESULTS											
Sample Status				ABNORMAL	SEVERE						
Aluminum	ppm	ASTM D5185m	>40	<u> </u>	△ 63						
Silicon	mqq	ASTM D5185m	>30	47	8 7						

Customer Id: SAPPLIN Sample No.: SBP0004868 Lab Number: 05999776 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 jhester@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS Action Date Done By Description **Status** Change Fluid ? Oil and filter change at the time of sampling has been noted. Change Filter ? Oil and filter change at the time of sampling has been noted. ? Information Required Please specify the brand, type, and viscosity of the oil on your next sample. We advise that you check the air filter, air induction system, and any areas **Check Dirt Access** ? where dirt may enter the component.

HISTORICAL DIAGNOSIS

11 May 2023 Diag: Jonathan Hester

DIRT



We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Cylinder, crank, or cam shaft wear is indicated. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. The BN level is low.





OIL ANALYSIS REPORT

Area (LZC160) SAPP BROS PETROLEUM - LINCOLN

98226

Component

Gasoline Engine

NOT GIVEN (--- GAL)

Sample Rating Trend



DIAGNOSIS

Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. 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

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

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 INFORMATION method limit/base current history1 history2				May2023	Oct2023		
Sample Date Client Info 27 Oct 2023 11 May 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 27 Oct 2023 11 May 2023	Sample Number		Client Info		SBP0004868	SBP0003934	
Machine Age mls Client Info 102069 91238 Oil Age mls Client Info 8847 90994 Oil Changed Client Info Changed Changed Sample Status Image: Control Info ABNORMAL SEVERE CONTAMINATION method Imitibase current history1 history2 Glycol WC Method NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >150 87 395 Chromium ppm ASTM D5185m >20 4 13 Iron ppm ASTM D5185m >20 4 13 Chromium ppm ASTM D5185m >20 4 13 Ilvarianium ppm ASTM D5185m >21 1 63 Sil			Client Info		27 Oct 2023	11 May 2023	
Oil Age mls Client Info 8847 90994	•	mls	Client Info		102069	,	
Oil Changed Sample Status Client Info Changed ABNORMAL SEVERE		mls	Client Info		8847	90994	
CONTAMINATION method limit/base current history1 history2 Glycol WC Method NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >150 87 395 Chromium ppm ASTM D5185m >20 4 13 Nickel ppm ASTM D5185m >5 1 3 Silver ppm ASTM D5185m >5 1 3 Silver ppm ASTM D5185m >40 21 63 Aluminum ppm ASTM D5185m >40 21 63 Lead ppm ASTM D5185m >50 <1 0 Copper ppm ASTM D5185m >10 0 <1 Caparium ppm ASTM D5185m >10 0 <1 <	-		Client Info		Changed	Changed	
WEAR METALS	Sample Status				ABNORMAL	_	
Iron	CONTAMINATION	١	method	limit/base	current	history1	history2
Iron	Glycol		WC Method		NEG	NEG	
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >20 4 13 Nickel ppm ASTM D5185m < 1	Iron	ppm	ASTM D5185m	>150	87	▲ 395	
Nickel	Chromium		ASTM D5185m	>20	4	13	
Titanium	Nickel				1		
Silver ppm ASTM D5185m >2 0 0 Aluminum ppm ASTM D5185m >40 21 ▲ 63 Lead ppm ASTM D5185m >50 <1 0 Copper ppm ASTM D5185m >155 7 12 Tin ppm ASTM D5185m >10 0 <1 Vanadium ppm ASTM D5185m 0 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 17 30 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 192 59 ADDITIVES method limit/base current history1 history2	Titanium		ASTM D5185m		<1	1	
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Copper ppm ASTM D5185m >155 7 12 Tin ppm ASTM D5185m >10 0 <1							
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Sulfur ppm ASTM D5185m 2387 2777 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 47 87 Sodium ppm ASTM D5185m >400 4 17 Potassium ppm ASTM D5185m >20 7 14 Fuel % ASTM D3524 >4.0 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 Nitration Abs/.1mm *ASTM D7624 >20 14.6 21.0 Sulfation Abs/.1mm *ASTM D7415 >30 26.5 34.0 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		2 434 1220	5 485 945	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 ▲ 47 ● 87 Sodium ppm ASTM D5185m >400 4 17 Potassium ppm ASTM D5185m >20 7 14 Fuel % ASTM D3524 >4.0 <1.0	Manganese Magnesium Calcium Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		2 434 1220 661	5 485 945 624	
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Sodium ppm ASTM D5185m >400 4 17 Potassium ppm ASTM D5185m >20 7 14 Fuel % ASTM D3524 >4.0 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 14.6 ≥1.0 Sulfation Abs/.1mm *ASTM D7415 >30 26.5 34.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 24.3 38.9	Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		2 434 1220 661 720	5 485 945 624 725	
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Sulfation Abs/.1mm *ASTM D7415 >30 26.5 34.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 24.3 38.9	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	>30 >400 >20 >4.0	2 434 1220 661 720 2387 current 47 4 7 <1.0	5 485 945 624 725 2777 history1 87 17 14 <<1.0	history2
Sulfation Abs/.1mm *ASTM D7415 >30 26.5 34.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 24.3 38.9	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D3524	>30 >400 >20 >4.0	2 434 1220 661 720 2387 current 47 4 7 <1.0 current	5 485 945 624 725 2777 history1 87 17 14 <1.0 history1	history2 history2
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	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624	>30 >400 >20 >4.0 limit/base	2 434 1220 661 720 2387	5 485 945 624 725 2777 history1 ■ 87 17 14 <1.0 history1 0.1 ■ 21.0	history2 history2
	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7614	>30 >400 >20 >4.0 limit/base >20 >30	2 434 1220 661 720 2387	5 485 945 624 725 2777 history1 87 17 14 <1.0 history1 0.1 21.0 34.0	history2 history2
	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m Method ASTM D5185m ASTM D7624 *ASTM D7624 *ASTM D7615 Method	>30 >400 >20 >4.0 limit/base >20 >30 limit/base	2 434 1220 661 720 2387 current 47 4 7 <1.0 current 0.1 14.6 26.5 current	5 485 945 624 725 2777 history1 87 17 14 <1.0 history1 0.1 21.0 34.0 history1	history2 history2 history2 history2



OIL ANALYSIS REPORT

