

# OIL ANALYSIS REPORT

# VOLVO PENTA

## KATIE VOLVO PENTA 1013932220 - STARBOARD DIESEL ENGINE

**Sample No:** VPA023250  
**Oil Type:** VOLVO VDS-4.5 Premium Motor Oil 15W40

### SAMPLE INFORMATION

Sample Number	<b>VPA023250</b>	VPA038783	VPA038827	---
Sample Date	<b>17 Jul 2023</b>	03 Oct 2022	14 Apr 2022	---
Machine Hours	<b>2689</b>	1980	1189	---
Oil Hours	<b>500</b>	687	1189	---
Oil Changed	<b>Not Changd</b>	Not Changd	Changed	---
Sample Status	<b>ABNORMAL</b>	ABNORMAL	SEVERE	---

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### OIL CONDITION

Visc @ 100°C	cSt	<b>▲ 11.6</b>	▲ 11.3	▲ 10.3	---
Base Number (BN)	mg KOH/g	<b>■ 8.7</b>	■ 10.1	■ 8.6	---
Oxidation (PA)	%	<b>54</b>	63	80	---

### CONTAMINATION

Soot %	%	<b>■ 0.2</b>	■ 0.2	■ 0.3	---
Nitration (PA)	%	<b>48</b>	63	86	---
Sulfation (PA)	%	<b>51</b>	59	63	---
Glycol	%	<b>NEG</b>	NEG	NEG	---
Fuel	%	<b>▲ 6.2</b>	▲ 6.1	■ 12.3	---
Silicon	ppm	<b>■ 3</b>	■ 5	■ 20	---
Sodium	ppm	<b>■ &lt;1</b>	■ <1	■ 4	---
Potassium	ppm	<b>■ 2</b>	■ 7	■ 20	---

### Diagnosis

We advise that you check the fuel injection system. Resample at the next service interval to monitor. All component wear rates are normal. There is a moderate amount of fuel present in the oil. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

### WEAR METALS

Iron	ppm	<b>■ 6</b>	■ 13	■ 33	---
Copper	ppm	<b>■ 4</b>	■ 28	▲ 165	---
Lead	ppm	<b>■ 0</b>	■ <1	■ 1	---
Tin	ppm	<b>■ &lt;1</b>	■ 1	■ 2	---
Aluminum	ppm	<b>■ &lt;1</b>	■ 3	■ 7	---
Chromium	ppm	<b>■ 0</b>	■ <1	■ <1	---
Molybdenum	ppm	<b>■ 55</b>	■ 53	■ 51	---
Nickel	ppm	<b>■ 0</b>	■ <1	■ 0	---
Titanium	ppm	<b>■ &lt;1</b>	■ 0	■ <1	---
Silver	ppm	<b>■ 0</b>	■ 0	■ <1	---
Manganese	ppm	<b>■ &lt;1</b>	■ <1	■ 2	---
Vanadium	ppm	<b>&lt;1</b>	0	0	---

### ADDITIVES

Calcium	ppm	<b>1071</b>	■ 1052	1031	---
Magnesium	ppm	<b>988</b>	■ 926	807	---
Zinc	ppm	<b>■ 1258</b>	■ 1139	■ 967	---
Phosphorus	ppm	<b>■ 974</b>	■ 951	■ 873	---
Barium	ppm	<b>■ 0</b>	■ 0	■ 0	---
Boron	ppm	<b>■ 2</b>	■ 8	8	---

**Depot:** VP99298099  
**Unique No:** 10593016  
**Signed:** Don Baldrige  
**Report Date:** 11 Aug 2023

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**VOLVO  
PENTA**

## GRAPHS

