

OIL ANALYSIS REPORT

VOLVO PENTA

SCARLETE RINER VOLVO PENTA 1013935841 - STARBOARD DIESEL ENGINE

Sample No: VPA051767

Oil Type: VOLVO VDS-4.5 Premium Motor Oil 15W40

SAMPLE INFORMATION

Sample Number	VPA051767	VPA051771	VPA034042	VPA038816
Sample Date	01 Oct 2023	19 Jul 2023	22 Feb 2023	05 Aug 2022
Machine Hours	1975	1619	1019	618
Oil Hours	943	589	1019	618
Oil Changed	Changed	Not Changd	Changed	Not Changd
Sample Status	ABNORMAL	ATTENTION	ATTENTION	ATTENTION

NEWT MARINE

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F:

OIL CONDITION

Visc @ 100°C	cSt	▲ 11.8	▲ 11.9	▲ 11.3	▲ 11.78
Base Number (BN)	mg KOH/g	■ 7.3	■ 8.8	■ 8.3	■ 9.6
Oxidation (PA)	%	71	63	91	96

CONTAMINATION

Soot %	%	■ 0.2	■ 0.1	■ 0.2	■ 0.2
Nitration (PA)	%	74	58	75	74
Sulfation (PA)	%	59	55	65	69
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	▲ 2.9
Silicon	ppm	■ 6	■ 5	■ 24	■ 25
Sodium	ppm	■ 3	■ 1	■ 0	■ 4
Potassium	ppm	■ 10	■ 4	■ 35	■ 35

WEAR METALS

Iron	ppm	■ 11	■ 6	■ 18	■ 15
Copper	ppm	▲ 240	■ 12	▲ 107	■ 6
Lead	ppm	■ 3	■ <1	■ 2	■ 2
Tin	ppm	■ <1	■ <1	■ 2	■ 3
Aluminum	ppm	■ 5	■ 2	■ 14	■ 13
Chromium	ppm	■ 0	■ 0	■ <1	■ <1
Molybdenum	ppm	■ 59	■ 58	■ 42	■ 38
Nickel	ppm	■ 0	■ 0	■ 0	■ <1
Titanium	ppm	■ 0	■ <1	■ <1	■ <1
Silver	ppm	■ 0	■ 0	■ 0	■ 0
Manganese	ppm	■ <1	■ <1	■ 2	■ 2
Vanadium	ppm	0	<1	0	<1

ADDITIVES

Calcium	ppm	■ 1063	■ 1148	■ 1557	■ 1532
Magnesium	ppm	■ 992	1016	■ 525	464
Zinc	ppm	■ 1275	■ 1320	■ 1075	■ 1009
Phosphorus	ppm	■ 1008	■ 1013	■ 882	■ 799
Barium	ppm	■ 0	■ 0	■ 0	■ <1
Boron	ppm	■ 0	■ 0	■ 30	■ 47

Diagnosis

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Depot: VP99298099
Unique No: 10709768
Signed: Jonathan Hester
Report Date: 25 Oct 2023

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GRAPHS

