

OIL ANALYSIS REPORT

Oui



VOLVO L90G 617046

Diesel Engine

VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

The aluminum level is abnormal. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the

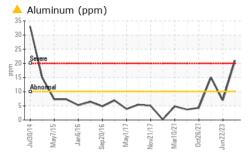
Fluid Condition

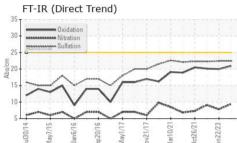
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

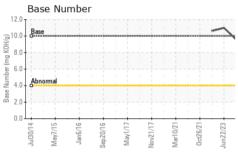
Sample Number Client Info ML0001723 VCP408310 VCP365748 Sample Date Client Info 06 Jun 2024 22 Jun 2023 17 Jan 2023 17 Jan 2023 17 Jan 2023 18 Jun 2024 22 Jun 2023 17 Jan 2023 18 Jun 2024 28 Jun 2024 28 Jun 2024 28 Jun 2024 28 Jun 2025 17 Jan 2023 18 Jun 2025 30 Jun 2024 32 Jun 2023 17 Jan 2023 30 Jun 2024 32 Jun 2023 30 Jun 2024 32 Jun 2023 30 Jun 2024 32 Jun 2023 30 Jun 2024 30 Jun 2024 32 Jun 2023 31 Jun 2023 30 Jun 2024 32 Jun 2023 31	L OIL 131140 VDO-0 (- /					
Sample Date	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 14745 13603 13020	Sample Number		Client Info		ML0001723	VCP408310	VCP365748
Dil Age	Sample Date		Client Info		06 Jun 2024	22 Jun 2023	17 Jan 2023
Coli Changed Changed Changed Changed ABNORMAL NORMAL ABNORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2 history2 history2 current history1 history2 history2 history2 current history1 history2 current history3 current history4 current history5 current history5 current history6 current history6 current history6 current history6 current history7 current history8 cu	Machine Age	hrs	Client Info		14745	13603	13020
ABNORMAL CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		1000	500	500
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				ABNORMAL	NORMAL	ABNORMAL
Water WC Method >0.1 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM DS185m >100 36 34 60 Chromium ppm ASTM DS185m >10 0 0 <1 Nickel ppm ASTM DS185m >10 0 0 <1 Titanium ppm ASTM DS185m >0 0 0 <1 Silver ppm ASTM DS185m >20 <1 0 4 Copper ppm ASTM DS185m >10 <1 0 4 Copper ppm ASTM DS185m >10 <1 0 1 Tin ppm ASTM DS185m >10 <1 0 1 Action ppm ASTM DS185m 0 0 0 0	CONTAMINATION	J	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>6.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 36 34 60 Chromium ppm ASTM D5185m >10 0 0 <1	Water		WC Method	>0.1	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >10 1 <1 2 Nickel ppm ASTM D5185m >10 0 0 <1 Titanium ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 4 Copper ppm ASTM D5185m >10 2 1 0 4 Copper ppm ASTM D5185m >10 <1 0 4 Copper ppm ASTM D5185m >10 <1 0 1 Antimony ppm ASTM D5185m 0 <1 0 1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 0 0 Barium ppm ASTM D5185m 0.0 0	WEAR METALS		method	limit/base	current	history1	history2
STM D5185m No No No No No No No N	ron	ppm	ASTM D5185m	>100	36	34	60
Citanium ppm ASTM D5185m 0 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1 7 ●15 Lead ppm ASTM D5185m >10 ▲ 21 7 ●15 Copper ppm ASTM D5185m >10 ✓ 1 ✓ Pin ppm ASTM D5185m >10 ✓ 1 ✓ Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185m 0.0 0 0 0 Barium ppm ASTM D5185m 0.0 1 <1 <1 <t< td=""><td>Chromium</td><td>ppm</td><td>ASTM D5185m</td><td>>10</td><td>1</td><td><1</td><td>2</td></t<>	Chromium	ppm	ASTM D5185m	>10	1	<1	2
Silver	Nickel	ppm	ASTM D5185m	>10	0	0	<1
Aluminum	Titanium	ppm	ASTM D5185m		0	0	<1
Lead ppm ASTM D5185m >20 <1 0 4 Copper ppm ASTM D5185m >15 2 2 9 Tin ppm ASTM D5185m >10 <1 0 1 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0.0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0.0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0.0 0 0 0	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >15 2 2 9 Tin ppm ASTM D5185m >10 <1	Aluminum	ppm	ASTM D5185m	>10	<u>^</u> 21	7	1 5
Trin	Lead	ppm	ASTM D5185m	>20	<1	0	4
Antimony ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Cadmium ppm ASTM D5185m 0.0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 1 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 1 0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 1 0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 1 0 0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 0 0 0 0 0 0 0 0 Cadmium ppm ASTM D5185m 0.0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Copper	ppm	ASTM D5185m	>15	2	2	9
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2.5 23 40 24 Barium ppm ASTM D5185m 0.0 0 0 0 Molybdenum ppm ASTM D5185m 0.0 1 <1 <1 Magnesium ppm ASTM D5185m 0.0 1 <1 <1 Magnesium ppm ASTM D5185m 256 554 618 548 Calcium ppm ASTM D5185m 2057 1732 1821 1630 Phosphorus ppm ASTM D5185m 935 1017 1049 933 Zinc ppm ASTM D5185m 1223 1207 1285 1147 Sulfur ppm ASTM D5185m >20 10 11	Tin	ppm	ASTM D5185m	>10	<1	0	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2.5 23 40 24 Barium ppm ASTM D5185m 0.0 0 0 0 Molybdenum ppm ASTM D5185m 0.7 40 47 43 Manganese ppm ASTM D5185m 0.0 1 <1	Antimony	ppm	ASTM D5185m				
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2.5 23 40 24 Barium ppm ASTM D5185m 0.0 0 0 0 Molybdenum ppm ASTM D5185m 0.7 40 47 43 Manganese ppm ASTM D5185m 0.0 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 2.5 23 40 24 Barium ppm ASTM D5185m 0.0 0 0 0 Molybdenum ppm ASTM D5185m 0.7 40 47 43 Manganese ppm ASTM D5185m 0.0 1 <1 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0.0 1 <1 <1 <1 Magnesium ppm ASTM D5185m 0.0 1 1 <1 <1 <1 Magnesium ppm ASTM D5185m 0.554 618 548 Calcium ppm ASTM D5185m 0.57 1732 1821 1630 Phosphorus ppm ASTM D5185m 935 1017 1049 933 Zinc ppm ASTM D5185m 1223 1207 1285 1147 Sulfur ppm ASTM D5185m 4079 3393 3818 3278 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 10 11	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ADDITIVES		method	limit/base	current	history1	history2
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Manganese ppm ASTM D5185m 0.0 1 <1 <1 Magnesium ppm ASTM D5185m 256 554 618 548 Calcium ppm ASTM D5185m 2057 1732 1821 1630 Phosphorus ppm ASTM D5185m 935 1017 1049 933 Zinc ppm ASTM D5185m 1223 1207 1285 1147 Sulfur ppm ASTM D5185m 4079 3393 3818 3278 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 10 11 △ 24 Sodium ppm ASTM D5185m >20 2 <1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.9 Nitration Abs/:1mm *ASTM D7815<	Barium	ppm	ASTM D5185m	0.0	0	0	0
Magnesium ppm ASTM D5185m 256 554 618 548 Calcium ppm ASTM D5185m 2057 1732 1821 1630 Phosphorus ppm ASTM D5185m 935 1017 1049 933 Zinc ppm ASTM D5185m 1223 1207 1285 1147 Sulfur ppm ASTM D5185m 4079 3393 3818 3278 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m >20 2 <1	Molybdenum	ppm	ASTM D5185m	0.7	40	47	43
Calcium ppm ASTM D5185m 2057 1732 1821 1630 Phosphorus ppm ASTM D5185m 935 1017 1049 933 Zinc ppm ASTM D5185m 1223 1207 1285 1147 Sulfur ppm ASTM D5185m 4079 3393 3818 3278 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m >20 2 <1	Manganese	ppm	ASTM D5185m	0.0	1	<1	<1
Phosphorus ppm ASTM D5185m 935 1017 1049 933 Zinc ppm ASTM D5185m 1223 1207 1285 1147 Sulfur ppm ASTM D5185m 4079 3393 3818 3278 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m >20 2 <1	Magnesium	ppm	ASTM D5185m	256	554	618	548
Zinc ppm ASTM D5185m 1223 1207 1285 1147 Sulfur ppm ASTM D5185m 4079 3393 3818 3278 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m 3 3 2 Potassium ppm ASTM D5185m >20 2 <1	Calcium	ppm	ASTM D5185m	2057	1732	1821	1630
Sulfur ppm ASTM D5185m 4079 3393 3818 3278 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m 3 3 2 Potassium ppm ASTM D5185m >20 2 <1	Phosphorus	ppm	ASTM D5185m	935	1017	1049	933
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m 3 3 2 Potassium ppm ASTM D5185m >20 2 <1	Zinc	ppm	ASTM D5185m	1223	1207	1285	1147
Silicon ppm ASTM D5185m >20 10 11 ▲ 24 Sodium ppm ASTM D5185m 3 3 2 Potassium ppm ASTM D5185m >20 2 <1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 9.4 7.8 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 22.4 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 20.0 20.1	Sulfur	ppm	ASTM D5185m	4079	3393	3818	3278
Sodium ppm ASTM D5185m 3 2 Potassium ppm ASTM D5185m >20 2 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 <1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 9.4 7.8 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 22.4 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 20.0 20.1	Silicon	ppm	ASTM D5185m	>20	10	11	<u> </u>
INFRA-RED	Sodium	ppm	ASTM D5185m		3	3	2
Soot % *ASTM D7844 >3 0.7 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 9.4 7.8 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 22.4 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 20.0 20.1	Potassium	ppm	ASTM D5185m	>20	2	<1	0
Nitration Abs/cm *ASTM D7624 >20 9.4 7.8 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 22.4 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 20.0 20.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 22.4 22.4 22.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 20.0 20.1	Soot %	%		>3	0.7	0.6	0.9
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 20.0 20.1	Nitration	Abs/cm	*ASTM D7624	>20	9.4	7.8	9.1
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.4	22.4	22.3
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10 9.6 11.0 10.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.9	20.0	20.1
	Base Number (BN)	mg KOH/g	ASTM D2896	10	9.6	11.0	10.6

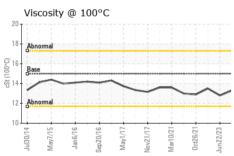


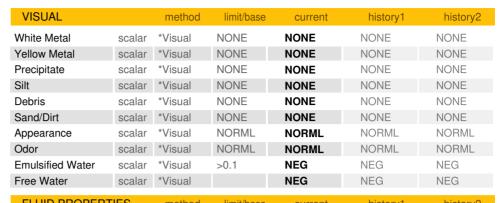
OIL ANALYSIS REPORT







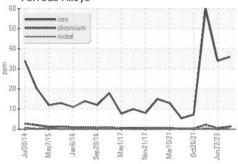


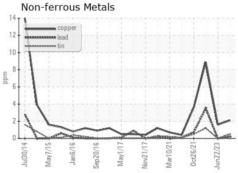


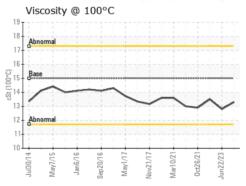
FLUID PHOPENITES		method	iiiiii/base	current	riistory i	HIStory2	
Visc @ 100°C	cSt	ASTM D445	15.0	13.3	12.8	13.5	

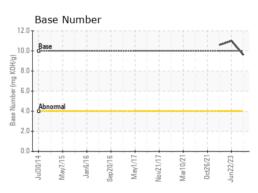
GRAPHS

Ferrous Alloys













Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

: ML0001723 Lab Number : 06220484 Unique Number : 11098681

Received **Tested** Diagnosed

: 25 Jun 2024 : 26 Jun 2024

: 27 Jun 2024 - Don Baldridge

IAA - INSURANCE AUTO AUCTIONS - SUFFOLK

1389 PORTSMOUTH BLVD SUFFOLK, VA US 23434

Contact: Service Manager

Certificate 12367

Test Package : CONST (Additional Tests: TBN)

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: IAASUF [WUSCAR] 06220484 (Generated: 06/27/2024 13:00:45) Rev: 1

Contact/Location: Service Manager - IAASUF

T:

F: