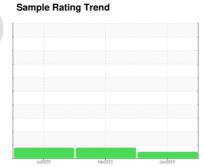


OIL ANALYSIS REPORT









Machine Id **VOLVO A45G 342044**

Component
Brake Cooling System
Fluid
VOLVO WB 102 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the fluid.

Fluid Condition

The condition of the fluid is acceptable for the time in service.

Oil Age Oil Changed Sample Status CONTAMINATION Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	hrs hrs	Client Info Client Info Client Info Client Info Client Info Client Info Method WC Method Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >0.2 limit/base >50 >20 >10 >20 >10	current ML0002788 12 Jun 2024 10882 2149 N/A NORMAL current 33 <1 <1 <1 <1 0 2 <1 83	history1 VCP401331 02 Feb 2023 8248 0 Changed ABNORMAL history1 NEG history1 4 <1 0 2 0 166	history2 VCP276070 10 Jul 2020 4237 0 Changed ABNORMAL history2 NEG history2 36 <1 5 <1 0 1 <1
Sample Date Machine Age Oil Age Oil Changed Sample Status CONTAMINATION Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info Client Info Client Info Method WC Method ASTM D5185m	limit/base >0.2 limit/base >50 >20 >10 >20 >10	12 Jun 2024 10882 2149 N/A NORMAL current NEG current 33 <1 <1 <1 <1 0 2 <1 83	02 Feb 2023 8248 0 Changed ABNORMAL history1 NEG history1 4 <1 0 2 0	10 Jul 2020 4237 0 Changed ABNORMAL history2 NEG history2 36 <1 5 <1 0
Sample Date Machine Age Oil Age Oil Changed Sample Status CONTAMINATION Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info Method WC Method ASTM D5185m	limit/base >0.2 limit/base >50 >20 >10 >20 >10	10882 2149 N/A NORMAL current NEG current 33 <1 <1 <1 <1 <1 0 2 <1 83	8248 0 Changed ABNORMAL history1 NEG history1 4 <1 0 2 0	4237 0 Changed ABNORMAL history2 NEG history2 36 <1 5 <1 0 1
Machine Age Oil Age Oil Age Oil Changed Sample Status CONTAMINATION Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info method WC Method ASTM D5185m	limit/base >0.2 limit/base >50 >20 >10 >20 >10	2149 N/A NORMAL current NEG current 33 <1 <1 <1 <1 2 <1 83	0 Changed ABNORMAL history1 NEG history1 1 1 4 <1 0 2 0	0 Changed ABNORMAL history2 NEG history2 36 <1 5 <1 0 1
Oil Age Oil Changed Sample Status CONTAMINATION Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	Method WC Method ASTM D5185m	limit/base >0.2 limit/base >50 >20 >10 >20 >10	N/A NORMAL current NEG current 33 <1 <1 <1 <1 <2 <1 0 2 <1 83	Changed ABNORMAL history1 NEG history1 1 1 4 < 1 0 2 0	Changed ABNORMAL history2 NEG history2 36 <1 5 <1 0 1
Oil Changed Sample Status CONTAMINATION Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method WC Method Method ASTM D5185m	>0.2 limit/base >50 >20 >10 >30 >50 >200 >20 >200 >200 >200 >200	NORMAL current NEG current 33 <1 <1 <1 <1 0 2 <1 83	ABNORMAL history1 NEG history1 4 <1 0 2 0	ABNORMAL history2 NEG history2 36 <1 5 <1 0 1
Sample Status CONTAMINATION Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	MC Method method ASTM D5185m	>0.2 limit/base >50 >20 >10 >30 >50 >200 >20 >200 >200 >200 >200	current NEG current 33 <1 <1 <1 0 2 <1 83	ABNORMAL history1 NEG history1 4 <1 0 2 0	ABNORMAL history2 NEG history2 36 <1 5 <1 0 1
Water WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	MC Method method ASTM D5185m	>0.2 limit/base >50 >20 >10 >30 >50 >200 >20 >200 >200 >200 >200	NEG current 33 <1 <1 <1 21 0 2 <1 83	NEG history1 51 1 4 <1 0 2 0	NEG history2 36 <1 5 <1 0 1
WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base >50 >20 >10	current 33 <1 <1 <1 0 2 <1 83	history1 51 1 4 <1 0 2 0	history2 36 <1 5 <1 0 1
Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	>50 >20 >10 >30 >50 >200 >20	33 <1 <1 <1 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0	51 1 4 <1 0 2 0	36 <1 5 <1 0 1
Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm 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	>20 >10 >30 >50 >200 >20	<1 <1 <1 0 2 <1 83	1 4 <1 0 2 0	<1 5 <1 0
Nickel Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>10 >30 >50 >200 >20	<1 <1 0 2 <1 83	4 <1 0 2 0	5 <1 0
Titanium Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES 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	>30 >50 >200 >20	<1 0 2 <1 83	<1 0 2 0	<1 0
Silver Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>50 >200 >20	0 2 <1 83	0 2 0	0
Aluminum Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>50 >200 >20	2 <1 83	2	1
Lead Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>50 >200 >20	<1 83	0	
Copper Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>200 >20	83		<1
Tin Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm	ASTM D5185m ASTM D5185m	>20		166	
Antimony Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm	ASTM D5185m		_	100	<u>^</u> 236
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm		>5	0	0	0
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc		ASTM D5185m				0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm			<1	0	0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc		ASTM D5185m		0	0	0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc		method	limit/base	current	history1	history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm	ASTM D5185m		113	140	102
Manganese Magnesium Calcium Phosphorus Zinc	ppm	ASTM D5185m		0	0	0
Manganese Magnesium Calcium Phosphorus Zinc	ppm	ASTM D5185m		0	0	0
Magnesium Calcium Phosphorus Zinc	ppm	ASTM D5185m		<1	1	1
Phosphorus Zinc	ppm	ASTM D5185m		12	12	7
Phosphorus Zinc	ppm	ASTM D5185m		3264	3776	3567
Zinc	ppm	ASTM D5185m		1112	1243	1156
	ppm	ASTM D5185m		1455	1493	1436
	ppm	ASTM D5185m		4296	4159	3628
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	16	16	16
	ppm	ASTM D5185m		3	2	6
	ppm	ASTM D5185m	>20	<1	1	2
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		*Visual	NONE	NONE	NONE	NONE
	scalar	Violai		NONE	NONE	NONE
Debris		*Visual	NONE	NONE		IVOIVE
	scalar		NONE NONE	NONE	NONE	NONE
Sand/Dirt :	scalar scalar	*Visual				
Sand/Dirt spearance	scalar scalar scalar	*Visual *Visual	NONE	NONE	NONE	NONE

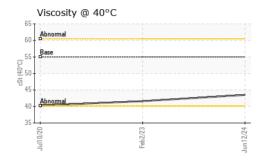
ted By Service - Alex Anderson

NEG

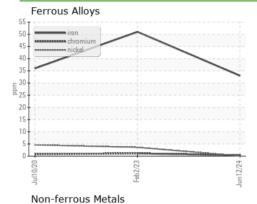
scalar *Visual

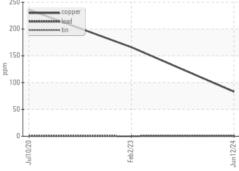


OIL ANALYSIS REPORT

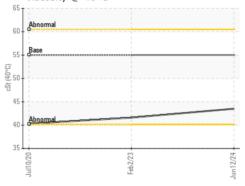


FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	55	43.5	41.6	40.3
SAMPLE IMAGES		method	limit/base	current	history1	history2
Color				no image	no image	no image
Bottom				no image	no image	no image





Viscosity @ 40°C







Certificate 12367

Laboratory Sample No.

: ML0002788 Lab Number : 06210992 Unique Number : 11083856

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 14 Jun 2024

Tested : 18 Jun 2024 Diagnosed : 18 Jun 2024 - Sean Felton

MCCLUNG-LOGAN EQUIPMENT CO - RICHMOND 1345 MOUNTAIN ROAD

GLEN ALLEN, VA US 23060

Test Package : CONST To discuss this sample report, contact Customer Service at 1-800-237-1369.

Contact: KYLE RATLIFFE KRATLIFFE@MCCLUNG-LOGAN.COM

* - 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: VOLVO8882 [WUSCAR] 06210992 (Generated: 06/22/2024 05:03:03) Rev: 1

Submitted By: Service - Alex Anderson

F: (804)266-1611