

# **OIL ANALYSIS REPORT**

### Sample Rating Trend



## NOVA BUS 1633 Component

**Natural Gas Engine** 

VALVOLINE PREMIUM BLUE 9200 15W40 (--- GAL)

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

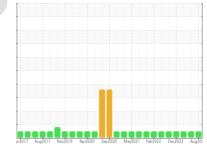
All component wear rates are normal.

#### Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

## Fluid Condition

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

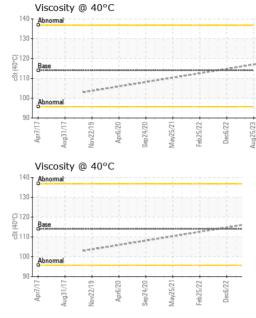




SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0849881	WC0811481	WC0748319
Sample Date		Client Info		25 Aug 2023	29 May 2023	17 Feb 2023
Machine Age	kms	Client Info		0	425146	405368
Oil Age	kms	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Glycol		WC Method				
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>50	15	12	9
Chromium	ppm	ASTM D5185(m)		1	1	<1
Nickel	ppm	ASTM D5185(m)	>2	0	<1	<1
Titanium	ppm	ASTM D5185(m)		<1	1	3
Silver	ppm	ASTM D5185(m)	>3	0	0	0
Aluminum	ppm	ASTM D5185(m)		2	2	2
Lead	ppm	ASTM D5185(m)	>30	9	7	2
Copper	ppm	ASTM D5185(m)		ر <1	<1	<1
Tin	ppm	ASTM D5185(m)	>4	<1	<1	<1
Antimony	ppm	ASTM D5185(m)	~ 1	0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
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			limit/baco		-	bistory?
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	method ASTM D5185(m)	limit/base	current 5	history1 8	15
Boron Barium	ppm	method ASTM D5185(m) ASTM D5185(m)	limit/base	current 5 0	history1 8 0	15 0
Boron Barium Molybdenum	ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	current 5 0 53	history1 8 0 55	15 0 51
Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	current 5 0 53 <1	history1 8 0 55 <1	15 0 51 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	current 5 0 53 <1 884	history1 8 0 55 <1 880	15 0 51 <1 813
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	current           5           0           53           <1           884           1294	history1 8 0 55 <1 880 1364	15 0 51 <1 813 1316
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	current           5           0           53           <1           884           1294           748	history1 8 0 55 <1 880 1364 756	15 0 51 <1 813 1316 739
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	limit/base	current           5           0           53           <1           884           1294           748           913	history1 8 0 55 <1 880 1364 756 905	15 0 51 <1 813 1316 739 856
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	current           5           0           53           <1           884           1294           748           913           1953	history1 8 0 55 <1 880 1364 756 905 1978	15 0 51 <1 813 1316 739 856 1967
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	limit/base	current           5           0           53           <1           884           1294           748           913	history1 8 0 55 <1 880 1364 756 905	15 0 51 <1 813 1316 739 856
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	current           5           0           53           <1           884           1294           748           913           1953	history1 8 0 55 <1 880 1364 756 905 1978	15 0 51 <1 813 1316 739 856 1967
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)		Current 5 0 53 <1 884 1294 748 913 1953 <1	history1 8 0 55 <1 880 1364 756 905 1978 <1	15 0 51 <1 813 1316 739 856 1967 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	limit/base	current         5         0         53         <1         884         1294         748         913         1953         <1         xurrent	history1         8         0         55         <1         880         1364         756         905         1978         <1         history1	15 0 51 <1 813 1316 739 856 1967 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	limit/base	current           5           0           53           <1           884           1294           748           913           1953           <1           current           6	history1           8           0           55           <1           880           1364           756           905           1978           <1           history1	15 0 51 <1 813 1316 739 856 1967 <1 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	limit/base >+100	current         5         0         53         <1         884         1294         748         913         1953         <1         current         6         5	history1         8         0         55         <1         880         1364         756         905         1978         <1         history1         5         4	15 0 51 <1 813 1316 739 856 1967 <1 <b>history2</b> 5 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	limit/base >+100 >20	current           5           0           53           <1           884           1294           748           913           1953           <1           current           6           5           6           5           6	history1         8         0         55         <1         880         1364         756         905         1978         <1         history1         5         4         6	15 0 51 <1 813 1316 739 856 1967 <1 <b>history2</b> 5 5 5 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)           ASTM D5185(m)	limit/base >+100 >20	current         5         0         53         <1         884         1294         748         913         1953         <1         current         6         5         6         5         6         5         6         5         6         5         6         5         6	history1           8           0           55           <1           880           1364           756           905           1978           <1           bistory1           5           4           6           history1           0	15 0 51 <1 813 1316 739 856 1967 <1 <b>bistory2</b> 5 5 6 4 <b>bistory2</b>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)           ASTM D5185(m)	limit/base >+100 >20 limit/base	current         5         0         53         <1         884         1294         748         913         1953         <1         6         5         6         5         6         5         6         5         6         5         6         5         6         5         6         5         6	history1         8         0         55         <1         880         1364         756         905         1978         <1         history1         5         4         6         history1	15 0 51 <1 813 1316 739 856 1967 <1 <b>history2</b> 5 5 5 6 <b>history2</b> 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)           ASTM D7844*           ASTM D7624*           ASTM D7415*	imit/base >+100 >20  imit/base  >20  imit/base	current         5         0         53         <1         884         1294         748         913         1953         <1 <i>current</i> 6         5         6         5         6         13.9         26.9	history1         8         0         55         <1         880         1364         756         905         1978         <1         history1         5         4         6         history1         0         13.4         25.5	15 0 51 <1 813 1316 739 856 1967 <1 <b>history2</b> 5 5 5 6 <b>history2</b> 0 6.0 17.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)           ASTM D5185(m)	limit/base >+100 >20 limit/base	current         5         0         53         <1         884         1294         748         913         1953         <1         current         6         5         6         5         6         5         6         10         0         13.9	history1           8           0           55           <1           880           1364           756           905           1978           <1           history1           5           4           6           history1           0           13.4	15 0 51 <1 813 1316 739 856 1967 <1 history2 5 5 6 6 history2 0 6.0



# **OIL ANALYSIS REPORT**



Odor scalar Visual* NORML NORM
Free Water scalar Visual* NEG NEG NEG Free Water scalar Visual* NEG NEG NEG FLUID PROPERTIES method initbase current history1 history2 Visc @ 100°C cSt ASTM D2270 m 114 117 Visc @ 100°C cSt ASTM D2270 m 114 117 GRAPHS Ton (ppm) duminum (ppm) duminu
$\frac{FLUID PROPERTIES{method} \operatorname{method}}{method} \operatorname{method} \operatorname{mitibase} \operatorname{current} \operatorname{history1} \operatorname{history2} \operatorname{history2} \operatorname{mitibase} \operatorname{method} \operatorname{mitibase} mitibase$
$ \begin{array}{c} \text{Visc} @ 40^{\circ}\text{C} & \text{cSi} & \text{ASIM D2273(m)} & 114 & 117 & \cdots & \cdots \\ \hline \text{Visc} @ 100^{\circ}\text{C} & \text{cSi} & \text{ASIM D2270(m)} & 114 & 14.8 & 14.9 & 14.7 & 14.5 \\ \hline \text{Viscosity Index (VI)} & \text{Scale} & \text{ASIM D2270(m)} & 133 & 129 & \cdots & \cdots \\ \hline \text{CAPPHS} & & & & & & & & & & & & & & & & & & &$
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Viscosity @ 100°C Additives
Viscosity @ 100°C Additives
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calcium
20- 1500
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12 Abnormal
Apr7/17 Aug31/17 Nov22/19 Apr6/20 Sep24/20 Sep24/20 Dec6/22 Aug25/23 Aug25/23 Aug25/23 Aug25/23 Aug25/23 Aug25/23 Aug25/23
A N N H A A A N N H A A A A A A A A A A
Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 CITY OF HAMILTON
Sample No.: WC0849881Received: 30 Aug 20232200 UPPER JAMES, MOUNTAIN TRANSIT STOREROOMLab Number: 02579288Diagnosed: 30 Aug 2023MOUNT HOPE, ON
Unique Number : 5632348 Diagnostician : Kevin Marson CA LOR 1W0

Test Package : MOB 1 (Additional Tests: KV40, VI, Visual) To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

Contact: Jeff Parr jeff.parr@hamilton.ca T: (905)546-2424 F: (905)679-4502



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