

# **OIL ANALYSIS REPORT**

# MACHINE SHOP 0-5939-0000 DEC MANIPULATOR

**Diesel Engine** 

**ROYAL PURPLE 15W40 CI-4 (HD) (22 QTS)** 

# 

Sample Rating Trend



# DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

## Contamination

There is no indication of any contamination in the

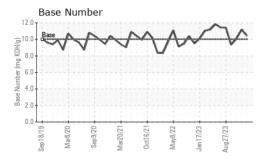
## **Fluid Condition**

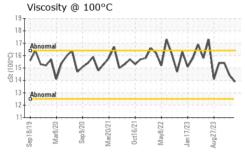
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0903661	WC0867040	WC0864211
Sample Date		Client Info		11 Feb 2024	21 Jan 2024	03 Dec 2023
Machine Age	hrs	Client Info		37585	37160	36522
Oil Age	hrs	Client Info		37585	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINATION	V	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	24	70	<u>^</u> 109
Chromium	ppm	ASTM D5185m	>20	2	3	4
Nickel	ppm	ASTM D5185m		<1	<1	2
Titanium	ppm	ASTM D5185m		1	1	<1
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m		1	4	3
Lead	ppm	ASTM D5185m	>40	2	3	9
Copper	ppm	ASTM D5185m		3	9	11
Tin	ppm	ASTM D5185m		<1	<1	1
Vanadium	ppm	ASTM D5185m	7.0	<1	<1	<1
Cadmium	ppm	ASTM D5185m		<1	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	mag	method ASTM D5185m	limit/base			history2
	ppm		limit/base	2	history1 0 0	· ·
Boron Barium	ppm	ASTM D5185m ASTM D5185m		2 5	0	<1 <1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 5 87	0 0 96	<1 <1 79
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m		2 5 87 <1	0 0 96 <1	<1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	120	2 5 87 <1 14	0 0 96	<1 <1 79 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	120	2 5 87 <1 14 3024	0 0 96 <1 15	<1 <1 79 <1 20 3729
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	120 3000 1150	2 5 87 <1 14	0 0 96 <1 15 3497	<1 <1 79 <1 20
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	120	2 5 87 <1 14 3024 961	0 0 96 <1 15 3497 1134	<1 <1 79 <1 20 3729 1166
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	3000 1150 1250	2 5 87 <1 14 3024 961 1182	0 96 <1 15 3497 1134 1369	<1 <1 79 <1 20 3729 1166 1497
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	3000 1150 1250 16000	2 5 87 <1 14 3024 961 1182 17539	0 96 <1 15 3497 1134 1369 19792	<1 <1 79 <1 20 3729 1166 1497 15008
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	3000 1150 1250 16000 limit/base	2 5 87 <1 14 3024 961 1182 17539 current	0 96 <1 15 3497 1134 1369 19792 history1	<1 <1 79 <1 20 3729 1166 1497 15008 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	3000 1150 1250 16000 limit/base	2 5 87 <1 14 3024 961 1182 17539 current	0 96 <1 15 3497 1134 1369 19792 history1	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	3000 1150 1250 16000 limit/base >25	2 5 87 <1 14 3024 961 1182 17539 current 5	0 96 <1 15 3497 1134 1369 19792 history1 5	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	3000 1150 1250 16000 limit/base >25 >20	2 5 87 <1 14 3024 961 1182 17539 current 5 0 2	0 0 96 <1 15 3497 1134 1369 19792 history1 5 2	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method  *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	3000 1150 1250 16000 limit/base >25 >20 limit/base	2 5 87 <1 14 3024 961 1182 17539 current 5 0 2	0 0 96 <1 15 3497 1134 1369 19792 history1 5 2 4 history1 1.2	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8 3 2 history2 2.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	3000 1150 1250 16000 limit/base >25 >20	2 5 87 <1 14 3024 961 1182 17539 current 5 0 2	0 0 96 <1 15 3497 1134 1369 19792 history1 5 2 4 history1	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8 3 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  MEthod  *ASTM D5185m ASTM D5185m	3000 1150 1250 16000 limit/base >25 >20 limit/base	2 5 87 <1 14 3024 961 1182 17539 current 5 0 2 current 0.6 6.4	0 0 96 <1 15 3497 1134 1369 19792 history1 5 2 4 history1 1.2 8.0	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8 3 2 history2 2.1 10.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  METHOD  ASTM D5185m ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  METHOD  *ASTM D7844  *ASTM D7624  *ASTM D7415  METHOD	3000 1150 1250 16000 limit/base >25 >20 limit/base >3 >20 >30 limit/base	2 5 87 <1 14 3024 961 1182 17539 current 5 0 2 current 0.6 6.4 26.5	0 0 96 <1 15 3497 1134 1369 19792 history1 5 2 4 history1 1.2 8.0 29.6 history1	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8 3 2 history2 2.1 10.8 34.9 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method  *ASTM D5185m ASTM D7844  *ASTM D7624  *ASTM D76145	3000 1150 1250 16000 limit/base >25 >20 limit/base >3 >20 >30	2 5 87 <1 14 3024 961 1182 17539 current 5 0 2 current 0.6 6.4 26.5	0 0 96 <1 15 3497 1134 1369 19792 history1 5 2 4 history1 1.2 8.0 29.6	<1 <1 79 <1 20 3729 1166 1497 15008 history2 8 3 2 history2 2.1 10.8 34.9



## **OIL ANALYSIS REPORT**

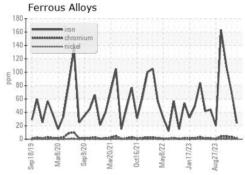


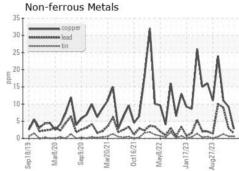


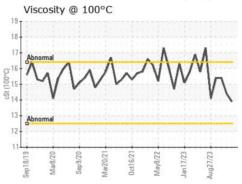
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

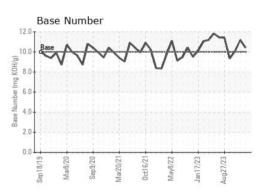
FLUID PROPER	TIES	method			history2
Visc @ 100°C	cSt	ASTM D445	13.9	14.4	15.4

## **GRAPHS**













Certificate L2367

Laboratory Sample No.

Lab Number : 06099302 Unique Number : 10897532 Test Package : IND 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0903661 Received : 23 Feb 2024

**Tested** Diagnosed

: 26 Feb 2024 : 27 Feb 2024 - Sean Felton **ALLVAC - MACHINE SHOP** 2020 ASHCRAFT AVE

MONROE, NC US 28110

Contact: mark eilerman

mark.eilerman@atimaterials.com

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

T: (704)292-4051

\* - 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)

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