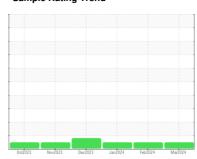


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 1204 Component Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (--- 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 oil

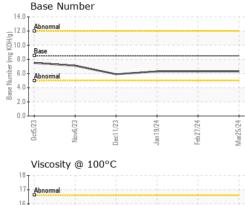
Fluid Condition

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

SAMPLE INFORMATION method limit/base current history1 wc0893981 Sample Number Client Info 25 Mar 2024 27 Feb 2024 19 Jan 2024 Amachine Age mls Client Info 0			0ct2023	Nov2023 Dec2023	Jan 2024 Feb 2024	Mar2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 0 0 0 Oil Age mls Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Description NEG NEG NEG NEG NEG NEG Fuel WC Method >5 <1.0	Sample Number		Client Info		WC0893959	WC0893971	WC0893981
Oil Age mls Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A N/A CONTAMINATION method limit/base current history2 ristory2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 10 11 9 Chromium ppm ASTM D5185m >100 0 <1 1 Nickel ppm ASTM D5185m >3 0 0 <1 1 Silver ppm ASTM D5185m >30 0 0 <1 1 1 Lead ppm ASTM D5185m >40 0 <1 </th <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>25 Mar 2024</th> <th>27 Feb 2024</th> <th>19 Jan 2024</th>	Sample Date		Client Info		25 Mar 2024	27 Feb 2024	19 Jan 2024
Oil Changed Status Client Info N/A NAMAL NORMAL NORMAL <th>Machine Age</th> <th>mls</th> <th>Client Info</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Machine Age	mls	Client Info		0	0	0
Sample Status	Oil Age	mls	Client Info		0	0	0
CONTAMINATION 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 Imitibase current history1 history2 Iron ppm ASTM D5186m >100 10 11 9 Chromium ppm ASTM D5186m >100 10 11 9 Nickel ppm ASTM D5186m >4 0 0 <1 Silver ppm ASTM D5186m >4 0 0 <1 Silver ppm ASTM D5186m >3 0 0 0 <1 Lead ppm ASTM D5186m >30 0 0 <1 1 1 2 2 2 2 1 1 1 2 2 2 1 1 1 1 1 2	Oil Changed		Client Info		N/A	N/A	N/A
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 10 11 9 Chromium ppm ASTM D5185m >20 <1	CONTAMINATIO	N	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 10 11 9 Chromium ppm ASTM D5185m >20 <1 0 1 Nickel ppm ASTM D5185m >20 <1 0 <1 Titanium ppm ASTM D5185m >3 0 0 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 <1 <1 1 Lead ppm ASTM D5185m >20 <1 <1 1 Lead ppm ASTM D5185m >20 <1 <1 <1 Copper ppm ASTM D5185m >330 1 2 2 2 Tin ppm ASTM D5185m >15 0 <1 <1 Cadmium ppm ASTM D5185m 0	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	10	11	9
Titanium ppm ASTM D5185m 0 0 <1	Chromium	ppm	ASTM D5185m	>20	<1	0	1
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 <1	Nickel	ppm	ASTM D5185m	>4	0	0	<1
Aluminum ppm ASTM D5185m >20 <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead ppm ASTM D5185m >40 0 0 <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 1 2 2 Tin ppm ASTM D5185m >15 0 <1 <1 Vanadium ppm ASTM D5185m <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 3 Barium ppm ASTM D5185m 100 0 0 0 Molybdenum ppm ASTM D5185m 100 0 0 0 Marganese ppm ASTM D5185m 100 0 0 <1 Magnesium ppm ASTM D5185m 450 1042 1062 910 Calcium ppm ASTM D5185m 450 1122 1079 1063 Zinc ppm ASTM D5185m 1350 1372 1319 1190	Aluminum	ppm	ASTM D5185m	>20	<1	<1	1
Tin ppm ASTM D5185m >15 0 <1	Lead	ppm	ASTM D5185m	>40	0	0	
Vanadium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>330	1	2	2
Cadmium ppm ASTM D5185m 0 0 <1	Tin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	<1
Boron	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 63 60 59 Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 450 1042 1062 910 Calcium ppm ASTM D5185m 3000 1158 1142 1044 Phosphorus ppm ASTM D5185m 1150 1122 1079 1063 Zinc ppm ASTM D5185m 1350 1372 1319 1190 Sulfur ppm ASTM D5185m 4250 3732 3199 3132 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 100 63 60 59 Manganese ppm ASTM D5185m 0 0 <1	Boron	ppm	ASTM D5185m	250	0	0	3
Manganese ppm ASTM D5185m 0 0 <1	Barium	ppm	ASTM D5185m	10	0	0	0
Magnesium ppm ASTM D5185m 450 1042 1062 910 Calcium ppm ASTM D5185m 3000 1158 1142 1044 Phosphorus ppm ASTM D5185m 1150 1122 1079 1063 Zinc ppm ASTM D5185m 1350 1372 1319 1190 Sulfur ppm ASTM D5185m 4250 3732 3199 3132 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/:nm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	100	63	60	
Calcium ppm ASTM D5185m 3000 1158 1142 1044 Phosphorus ppm ASTM D5185m 1150 1122 1079 1063 Zinc ppm ASTM D5185m 1350 1372 1319 1190 Sulfur ppm ASTM D5185m 4250 3732 3199 3132 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/:nm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION metho	•	ppm			-		
Phosphorus ppm ASTM D5185m 1150 1122 1079 1063 Zinc ppm ASTM D5185m 1350 1372 1319 1190 Sulfur ppm ASTM D5185m 4250 3732 3199 3132 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION met	-						
Zinc ppm ASTM D5185m 1350 1372 1319 1190 Sulfur ppm ASTM D5185m 4250 3732 3199 3132 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm		ppm					
Sulfur ppm ASTM D5185m 4250 3732 3199 3132 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6							
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6	-	ppm					
Silicon ppm ASTM D5185m >25 6 4 5 Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6	Sulfur	ppm	ASTM D5185m	4250	3732	3199	3132
Sodium ppm ASTM D5185m >158 2 1 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6	CONTAMINANTS	8	method		current	history1	•
Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6							
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6		ppm					
Soot % % *ASTM D7844 >3 0.2 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6	Potassium	ppm	ASTM D5185m	>20	0	0	2
Nitration Abs/cm *ASTM D7624 >20 9.4 9.7 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6	INFRA-RED		method	limit/base			
Sulfation Abs/.1mm *ASTM D7415 >30 21.8 22.3 21.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6							
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.1 22.8 21.6				>20			
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.8	22.3	21.3
	FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 8.5 6.3 6.3	Oxidation	Abs/.1mm	*ASTM D7414	>25	22.1	22.8	21.6
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	6.3	6.3	6.3

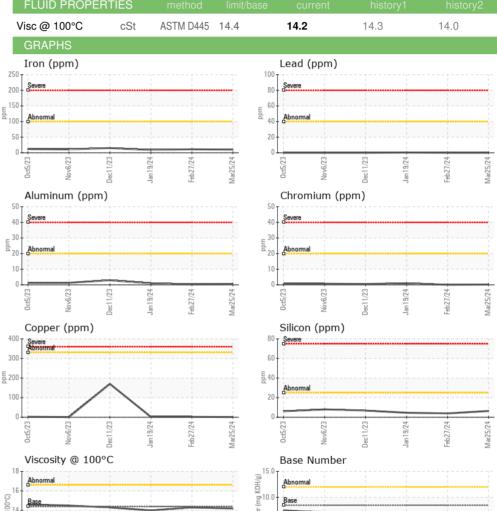


OIL ANALYSIS REPORT



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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	ΓIES	method	limit/base	current	history1	history2

18	sity @ 1				
17 Abnorm					
16					
8 15 Base					
Dase					
Z 14 1					
13					
Abnorm	al				
12					
114	-	-	-	-	
12	7	72	72/	127	
0ct5/2	Nov6/	=	an 19/	eb27	į.
0	2	96	ia .	, as	







Laboratory Sample No.

Lab Number : 06137121 Unique Number: 10956586

:St (100°C)

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0893959 Received **Tested**

Dec11/23

Diagnosed

: 03 Apr 2024 : 04 Apr 2024

: 04 Apr 2024 - Wes Davis

0.0

GO DURHAM - RAPT 1903 FAYETTEVILLE ST DURHAM, NC US 27701

Test Package : MOB 1 (Additional Tests: TBN) To discuss this sample report, contact Customer Service at 1-800-237-1369.

Contact: Robert Iosiniecki Robert.losiniecki@ratpdev.com T:

* - 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)

F: