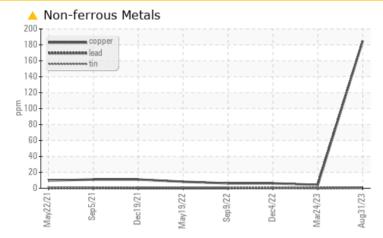


Sample Rating Trend WEAR

Machine Id **217385 []** Component **Diesel Engine** Fluid **DIESEL ENGINE OIL SAE 10W30 (--- QTS)**

OIL DIAGNOSTICS

COMPONENT CONDITION SUMMARY



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.

PROBLEMATIC	C TEST	RESULT	S			
Sample Status				ABNORMAL	NORMAL	NORMAL
Copper	ppm	ASTM D5185m	>330	<u> </u>	4	6

Customer Id: MCLLUB Sample No.: PCA0101239 Lab Number: 05946315 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Don Baldridge +1 <u>don.b505@comcast.net</u>

To change component or sample information: Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u>

RECOMMENDE	ED ACTIONS			
Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.

HISTORICAL DIAGNOSIS



NORMAL

24 Mar 2023 Diag: Angela Borella

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

04 Dec 2022 Diag: Wes Davis

09 Sep 2022 Diag: Don Baldridge



Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

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Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



view report



view report

view report





OIL ANALYSIS REPORT

Sample Rating Trend



Diesel Engine Fluid DIESEL ENGINE OIL SAE 10W30 (--- QTS)

DIAGNOSIS

Machine Id 217385 []

Component

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 copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

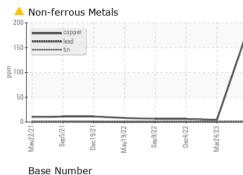
Fluid Condition

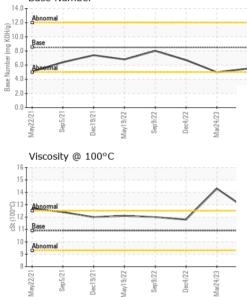
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		May2021 \$	Sep2021 Dec2021 May20	22 Sep2022 Dec2022 Mar2023	Aug2023	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0101239	PCA0073098	PCA0067734
Sample Date		Client Info		31 Aug 2023	24 Mar 2023	04 Dec 2022
Machine Age	mls	Client Info		536338	487546	454986
Oil Age	mls	Client Info		30000	33000	30000
Oil Changed		Client Info		Changed	N/A	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	25	15	17
Chromium	ppm	ASTM D5185m	>20	2	1	2
Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	7	7	7
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm	ASTM D5185m	>330	<u> </u>	4	6
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Vanadium Cadmium	ppm ppm	ASTM D5185m ASTM D5185m		0 0	0	0
			limit/base	-		÷
Cadmium		ASTM D5185m	limit/base 250	0	0	0
Cadmium ADDITIVES	ppm	ASTM D5185m method		0 current	0 history1	0 history2
Cadmium ADDITIVES Boron	ppm ppm	ASTM D5185m method ASTM D5185m	250	0 current 6	0 history1 80	0 history2 <1
Cadmium ADDITIVES Boron Barium	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	250 10	0 current 6 0	0 history1 80 0	0 history2 <1 0
Cadmium ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	250 10	0 current 6 0 60	0 history1 80 0 28	0 history2 <1 0 64
Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	0 current 6 0 60 <1	0 history1 80 0 28 <1	0 history2 <1 0 64 <1
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	0 current 6 0 60 <1 980	0 history1 80 0 28 <1 255	0 history2 <1 0 64 <1 995
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	0 current 6 0 60 <1 980 1694	0 history1 80 0 28 <1 255 1990	0 history2 <1 0 64 <1 995 1185
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	0 current 6 0 60 <1 980 1694 1144	0 history1 80 0 28 <1 255 1990 996	0 history2 <1 0 64 <1 995 1185 1029
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	250 10 100 450 3000 1150 1350	0 current 6 0 60 <1 980 1694 1144 1489	0 history1 80 0 28 <1 255 1990 996 1300	0 history2 <1 0 64 <1 995 1185 1029 1353
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	0 current 6 0 60 <1 980 1694 1144 1489 2989	0 history1 80 0 28 <1 255 1990 996 1300 3919	0 history2 <1 0 64 <1 995 1185 1029 1353 3047
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	0 current 6 0 60 <1 980 1694 1144 1489 2989 current	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	0 current 6 0 60 <1 980 1694 1144 1489 2989 current 7	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1 8	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2 4
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	0 current 6 0 60 <1 980 1694 1144 1489 2989 current 7 2	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1 8 2	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2 4 2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >20 limit/base	0 current 6 0 60 <1 980 1694 1144 1489 2989 current 7 2 5	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1 8 2 5	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2 4 2 0
Cadmium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >20 limit/base >3	0 current 6 0 60 <1 980 1694 1144 1489 2989 current 7 2 5 current	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1 8 2 5 5	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2 4 2 0 history2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >20 limit/base >3	0 current 6 0 60 <1 980 1694 1144 1489 2989 current 7 2 5 current 0.9	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1 8 2 5 5 history1 0.5	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2 4 2 0 history2 0.8
Cadmium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 20 limit/base >3 >20	0 current 6 0 60 <1 980 1694 1144 1489 2989 current 7 2 5 current 0.9 9.8	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1 8 2 5 5 history1 0.5 8.1	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2 4 2 0 history2 0.8 9.3
Cadmium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 20 limit/base >3 >20 >30	0 current 6 0 60 <1 980 1694 1144 1489 2989 current 7 2 5 current 0.9 9.8 22.6	0 history1 80 0 28 <1 255 1990 996 1300 3919 history1 8 2 5 5 history1 0.5 8.1 21.4	0 history2 <1 0 64 <1 995 1185 1029 1353 3047 history2 4 2 0 history2 0.8 9.3 21.3



OIL ANALYSIS REPORT





VISUAL		method	limit/base	current	history1	history
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 PROPE	RTIES	method	limit/base	current	history1	history
Visc @ 100°C	cSt	ASTM D445	10.9	12.6	14.3	11.8
GRAPHS						
Ferrous Alloys						
³⁰						
iron						
- nickel						
		/				
5	· · · · · · · · ·					
0						
5+						
5 -						
5	2	2	10000000000000000000000000000000000000			
0	ri 9/22	sc4/22 24/23	31/23			
May/2/2/1	May19/22 Sep9/22	Dec4/22	Aug31/23			
Dec13/27/17/27/27/27/27/27/27/27/27/27/27/27/27/27	Z	Dec4/22	Aug31/23			
LIZIZIA	Z	Dec4/22	Aug31/23			
Non-ferrous Meta	Z	Dec4/22	Aug31/23			
Non-ferrous Meta	Z	Dec4/22	Aug31/23			
Non-ferrous Meta	Z	Dec4/22	Aug31/23			
Non-ferrous Meta	Z	Dec4/22	Aug31/23			
Non-ferrous Meta	Z	Dec4/22 &	Aug31/23			
Non-ferrous Meta	Z	Dec4/22	Aug31/23			
Non-ferrous Meta	≥ Is	2	/			
Non-ferrous Meta	≥ Is	2	/			
Non-ferrous Meta	Z	Dec4/22 Mar24/23 Mar24/23	Aug31/23			
Non-ferrous Meta	May19/22 59	Dec4/22 lar24/23	ug31/23	Base Number		
Non-ferrous Meta	May19/22 59	Dec4/22 lar24/23	ug31/23	Base Number		
0 12761ae0 12727ew 12727ew 00 0 12727ew 00 0 12727ew	May19/22 59	Dec4/22 lar24/23	14.0	Abnormal		
Non-ferrous Meta	May19/22 59	Dec4/22 lar24/23	14.0	Abnormal		
Non-ferrous Meta Non-ferrous Meta 1275/kew Viscosity @ 100°C	May19/22 59	Dec4/22 lar24/23	14.0	Abnormal		
Non-ferrous Meta Non-ferrous Meta 1275/kew Viscosity @ 100°C	May19/22 59	Dec4/22 lar24/23	14.0	Abnormal		
Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta	May19/22 59	Dec4/22 lar24/23	EZ/IEDNY 14.0	Abnormal		

8.0 6.0 Base N 4 (

> 2.0 0.0

> > Mav22/21

Sep5/21.

Dec19/21

May19/22

Aug31/23 -

:08 Sep 2023

: 12 Sep 2023

Mar24/23



Test Package : FLEET Certificate L2367 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)

Sep 9/22.

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

Received

Diagnosed

May19/22

Dec19/21

Dec4/22 -

Diagnostician : Don Baldridge

10 Abnorma

8

Unique Number : 10642274

Laboratory Sample No.

Lab Number

Mav22/21

Sep5/21

: PCA0101239

: 05946315



Sep9/22

Dec4/22 -

Contact/Location: RITA GARCIA - MCLLUB

Aug31/23

Mar24/23