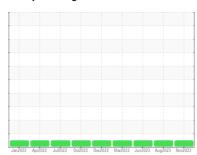


OIL ANALYSIS REPORT

Sample Rating Trend







2001 Component Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. 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.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

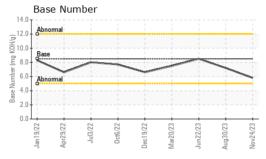
Fluid Condition

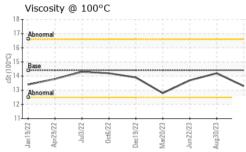
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method limit/base current history1 wc0827055 Sample Number Client Info WC0844929 WC0845021 WC0827055 Sample Date Client Info 82326 77679 72031 Oil Age mls Client Info 83236 Changed Ch	Jan2022 Apr2022 Ju2022 Oct2022 Oct2022 Mar2023 Jun2023 Aug2023 Mor2023						
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		WC0844929	WC0845021	WC0827055
Oil Age mls Client Info 6000 0 0 Oil Changed Client Info Changed NCRMAL NORMAL 1.0<	Sample Date		Client Info		24 Nov 2023	30 Aug 2023	22 Jun 2023
Oil Changed Sample Status Client Info Changed NORMAL Change NoRMAL Change NoRMAL Change NoRMAND NORMAND Change NoRMAND NORMAND NO	Machine Age	mls	Client Info		83236	77679	72031
Sample Status	Oil Age	mls	Client Info		6000	0	0
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limil/base current history1 history2 Iron ppm ASTM D5185m >100 7 8 7 Chromium ppm ASTM D5185m >20 <1 <1 0 Nickel ppm ASTM D5185m >4 0 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method Imit/base current Listory1 history2 Iron ppm ASTM D5185m >10.0 7 8 7 Chromium ppm ASTM D5185m >2.0 <1	CONTAMINATION	١	method	limit/base	current	history1	history2
Silycol WC Method MEG NEG NEG	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 7 8 7 Chromium ppm ASTM D5185m >20 <1 <1 0 Nickel ppm ASTM D5185m >20 <1 <1 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 7 5 2 Lead ppm ASTM D5185m >330 2 2 2 2 Copper ppm ASTM D5185m >15 <1 <1 0 0 Vanadium ppm ASTM D5185m 250	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	7	8	7
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	<1	0
Lead ppm ASTM D5185m >40 <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 2 2 2 Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 0 2 0 Molybdenum ppm ASTM D5185m 10 0 2 0 Manganese ppm ASTM D5185m 100 74 74 58 Magnesium ppm ASTM D5185m 450 321 238 323 Calcium ppm ASTM D5185m 3000 1433 1902 1551 Phosphorus ppm ASTM D5185m 1150 947 1007 824 Zinc ppm ASTM D5185m 1350 1152 1248 <t< th=""><th>Aluminum</th><th>ppm</th><th>ASTM D5185m</th><th>>20</th><th>7</th><th>5</th><th>2</th></t<>	Aluminum	ppm	ASTM D5185m	>20	7	5	2
Tin ppm ASTM D5185m >15 <1	Lead	ppm	ASTM D5185m	>40	<1	<1	0
Vanadium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>330	2	2	2
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 187 16 6 Barium ppm ASTM D5185m 10 0 2 0 Molybdenum ppm ASTM D5185m 100 74 74 58 Manganese ppm ASTM D5185m 100 74 74 58 Magnesium ppm ASTM D5185m 450 321 238 323 Calcium ppm ASTM D5185m 3000 1433 1902 1551 Phosphorus ppm ASTM D5185m 1350 1152 1248 1034 Sulfur ppm ASTM D5185m 250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <th>Tin</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>15</th> <th></th> <th><1</th> <th>0</th>	Tin	ppm	ASTM D5185m	>15		<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m			<1	0
Boron ppm ASTM D5185m 250 187 16 6 Barium ppm ASTM D5185m 10 0 2 0 Molybdenum ppm ASTM D5185m 100 74 74 58 Manganese ppm ASTM D5185m 100 74 74 58 Manganesium ppm ASTM D5185m 100 74 74 58 Magnesium ppm ASTM D5185m 450 321 238 323 Calcium ppm ASTM D5185m 3000 1433 1902 1551 Phosphorus ppm ASTM D5185m 1350 1152 1248 1034 Sulfur ppm ASTM D5185m 4250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 10 0 2 0 Molybdenum ppm ASTM D5185m 100 74 74 58 Manganese ppm ASTM D5185m 100 74 74 58 Manganese ppm ASTM D5185m 100 74 74 58 Manganese ppm ASTM D5185m 450 321 238 323 Calcium ppm ASTM D5185m 3000 1433 1902 1551 Phosphorus ppm ASTM D5185m 3000 1433 1902 1551 Phosphorus ppm ASTM D5185m 1150 947 1007 824 Zinc ppm ASTM D5185m 1350 1152 1248 1034 Sulfur ppm ASTM D5185m 4250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 100 74 74 58 Manganese ppm ASTM D5185m < 1	Boron	ppm	ASTM D5185m	250	187		6
Manganese ppm ASTM D5185m <1		ppm			-		-
Magnesium ppm ASTM D5185m 450 321 238 323 Calcium ppm ASTM D5185m 3000 1433 1902 1551 Phosphorus ppm ASTM D5185m 1150 947 1007 824 Zinc ppm ASTM D5185m 1350 1152 1248 1034 Sulfur ppm ASTM D5185m 4250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.4 9.2 9.1 Sulfation Abs/.1mm *AST	•	ppm		100			
Calcium ppm ASTM D5185m 3000 1433 1902 1551 Phosphorus ppm ASTM D5185m 1150 947 1007 824 Zinc ppm ASTM D5185m 1350 1152 1248 1034 Sulfur ppm ASTM D5185m 4250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.5 Nitration Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method	· ·						-
Phosphorus ppm ASTM D5185m 1150 947 1007 824 Zinc ppm ASTM D5185m 1350 1152 1248 1034 Sulfur ppm ASTM D5185m 4250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.4 9.2 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm<							
Zinc ppm ASTM D5185m 1350 1152 1248 1034 Sulfur ppm ASTM D5185m 4250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.4 9.2 9.1 Nitration Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 15.6 17.6					1.00		
Sulfur ppm ASTM D5185m 4250 3070 3494 3208 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1							
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 9.2 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 15.6 17.6	-						
Silicon ppm ASTM D5185m >25 9 7 3 Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1							
Sodium ppm ASTM D5185m >158 4 6 4 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 9.2 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 15.6 17.6						· ·	
Potassium ppm ASTM D5185m >20 <1							
INFRA-RED							
Soot % % *ASTM D7844 >3 0.4 0.5 0.5 Nitration Abs/cm *ASTM D7624 >20 8.4 9.2 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 15.6 17.6		ppm			<1	<1	
Nitration Abs/cm *ASTM D7624 >20 8.4 9.2 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 15.6 17.6							
Sulfation Abs/.1mm *ASTM D7415 >30 20.7 19.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.7 15.6 17.6							
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2516.715.617.6							
Oxidation Abs/.1mm *ASTM D7414 >25 16.7 15.6 17.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.7	19.5	21.0
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 8.5 5.8 7.2 8.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.7	15.6	17.6
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	5.8	7.2	8.5



OIL ANALYSIS REPORT



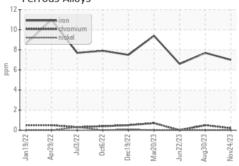


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

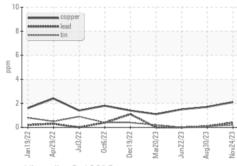
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.3	14.2	13.7

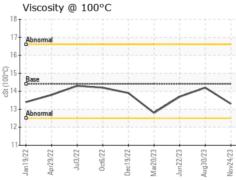
GRAPHS

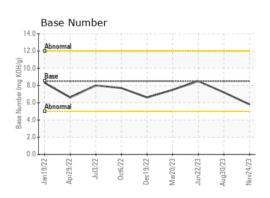
Ferrous Alloys



Non-ferrous Metals











Certificate L2367

Laboratory Sample No. Lab Number Test Package : FLEET

Unique Number : 10777313

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0844929 : 06027522

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

Received Diagnosed

: 07 Dec 2023 : 08 Dec 2023 Diagnostician : Wes Davis

TOWN OF CHAPEL HILL 6900 MILLHOUSE RD CHAPEL HILL, NC US 27516

Contact: Lisa DePasqua Idepasqua@townofchapelhill.org

* - 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) T: (919)696-4941