

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id MACK R-5 Component

Diesel Engine

10W30 DURON SEMI (--- QTS)

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.

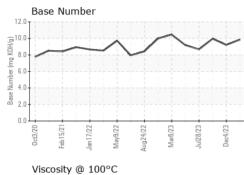
Fluid Condition

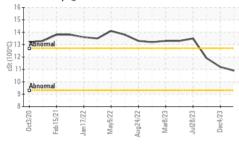
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

GTO)											
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2					
Sample Number		Client Info		LP0001472	LP0001149	LP0000555					
Sample Date		Client Info	18 Mar 2024 04 Dec 20		04 Dec 2023	02 Oct 2023					
Machine Age	hrs	Client Info			20354	19925					
Oil Age	hrs	Client Info			425	410					
Oil Changed		Client Info		Changed	Changed	Changed					
Sample Status				NORMAL	NORMAL	NORMAL					
CONTAMINATION	J	method	limit/base	current	history1	history2					
Fuel		WC Method	>3.0	<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	>120	12	6	8					
Chromium	ppm	ASTM D5185m	>20	0	<1	<1					
Nickel	ppm	ASTM D5185m	>5	<1	0	<1					
Titanium	ppm	ASTM D5185m	>2	0	0	<1					
Silver	ppm	ASTM D5185m	>2	0	0	0					
Aluminum	ppm	ASTM D5185m	>20	5	5	10					
Lead	ppm	ASTM D5185m	>40	0	0	<1					
Copper	ppm	ASTM D5185m	>330	3	3	2					
Tin	ppm	ASTM D5185m	>15	0	0	<1					
Vanadium	maa	ASTM D5185m		0	0	0					
Vanadium Cadmium	ppm ppm	ASTM D5185m ASTM D5185m		0 0	0 0	0					
			limit/base	0							
Cadmium		ASTM D5185m	limit/base	0	0	0					
Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2					
Cadmium ADDITIVES Boron	ppm ppm	ASTM D5185m method ASTM D5185m	limit/base	0 current 5	0 history1 7	0 history2 2					
Cadmium ADDITIVES Boron Barium	ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base	0 current 5 0	0 history1 7 0	0 history2 2 0					
Cadmium ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 5 0 63	0 history1 7 0 58	0 history2 2 0 63					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 5 0 63 0	0 history1 7 0 58 <1	0 history2 2 0 63 <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	limit/base	0 current 5 0 63 0 1015	0 history1 7 0 58 <1 918	0 history2 2 0 63 <1 945					
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	limit/base	0 current 5 0 63 0 1015 1184	0 history1 7 0 58 <1 918 1027	0 history2 2 0 63 <1 945 1042					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 5 0 63 0 1015 1184 1120	0 history1 7 0 58 <1 918 1027 1017	0 history2 2 0 63 <1 945 1042 1049					
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	limit/base	0 current 5 0 63 0 1015 1184 1120 1324	0 history1 7 0 58 <1 918 1027 1017 1235	0 history2 2 0 63 <1 945 1042 1049 1320					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		0 current 5 0 63 0 1015 1184 1120 1324 3758	0 history1 7 0 58 <1 918 1027 1017 1235 3035	0 history2 2 0 63 <1 945 1042 1049 1320 3776					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	limit/base	0 current 5 0 63 0 1015 1184 1120 1324 3758 current	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm 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 ASTM D5185m	limit/base >25	0 current 5 0 63 0 1015 1184 1120 1324 3758 current 4	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1 4	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2 4					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm 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 ASTM D5185m	limit/base >25	0 current 5 0 63 0 1015 1184 1120 1324 3758 current 4 6 8	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1 4 7	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2 4 6					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20	0 current 5 0 63 0 1015 1184 1120 1324 3758 current 4 6 8	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1 4 7 10	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2 4 6 17					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >4	0 current 5 0 63 0 1015 1184 1120 1324 3758 current 4 6 8 Current	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1 4 7 10 10 10 history1	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2 4 6 17 history2					
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >4	0 current 5 0 63 0 1015 1184 1120 1324 3758 current 4 6 8 current 0.3	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1 4 7 10 10 history1 0.4	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2 4 6 17 history2 0.4					
Cadmium ADDITIVES 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 ASTM D5185m	limit/base >25 >20 limit/base >4 >20	0 current 5 0 63 0 1015 1184 1120 1324 3758 current 4 6 8 current 0.3 8.2 18.7	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1 4 7 10 10 history1 0.4 8.0	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2 4 6 17 history2 0.4 7.8					
Cadmium ADDITIVES 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 ASTM D5185m	Imit/base >25 >20 Imit/base >20 >4 >20 >30	0 current 5 0 63 0 1015 1184 1120 1324 3758 current 4 6 8 current 0.3 8.2 18.7	0 history1 7 0 58 <1 918 1027 1017 1235 3035 history1 4 7 10 kistory1 0.4 8.0 18.7	0 history2 2 0 63 <1 945 1042 1049 1320 3776 history2 4 6 17 history2 0.4 7.8 19.2					

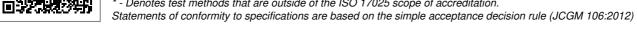


OIL ANALYSIS REPORT





		VISUAL		method	limit/base	current	history1		histo	ory2
$\sim \sim \sim$		White Metal	scalar	*Visual	NONE	NONE	NONE		NONE	Ξ
\vee	~ •	Yellow Metal	scalar	*Visual	NONE	NONE	NONE		NONE	Ξ
		Precipitate	scalar	*Visual	NONE	NONE	NONE		NONE	Ξ
	Silt	scalar	*Visual	NONE	NONE	NONE		NONE	Ξ	
	Debris	scalar	*Visual	NONE	NONE	NONE		NONE	Ξ	
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE		NONE	Ξ
Aug24/22 Mar8/23 Jul28/23 Dec4/23		Appearance	scalar	*Visual	NORML	NORML	NORML		NOR	VL
Aug	De	Odor	scalar	*Visual	NORML	NORML	NORML		NOR	ИL
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG		NEG	
		Free Water	scalar	*Visual		NEG	NEG		NEG	
	_	FLUID PROPERT	IES	method	limit/base	current	history1		histo	ory2
		Visc @ 100°C	cSt	ASTM D445		10.9	11.2		11.9	
		GRAPHS								
		Iron (ppm)			100	Lead (ppm)				
3 5		250 Severe			80	Severe				
Aug24/22 Mar8/23	Jul28/23 Dec4/23	200 -								
Au	r 1	Abnormal			40	Abnormal				
		100			20	-				
		50			0					
		0ct3/20 Feb 15/21 Jan 17/22	Aug24/22 -	Mar8/23 - Jul28/23 -	Dec4/23	0ct3/20 - Feb15/21 - Jan17/22 -	May9/22 - Aug24/22 -	Mar8/23 -	Jul28/23 -	Dec4/23 -
		Dcr Jan1 May	Aug2	Mar Jul2	Dec	0c Febi	May Aug2	Mai	Jul2	Dec
		Aluminum (ppm)			50	Chromium (pp	m)			
		40			40	Severe				
		E 30 20 - Abnormal			³⁰	Abnormal				
		10			10					
		0ct3/20 ct3/20 c	4/22	Mar8/23 + Jul28/23 +	Dec4/23		9/22	Mar8/23	8/23 -	Dec4/23 -
		0ct3/20 Feb 15/21 Jan 17/22 May9/22	Aug24/22	Mari Jul2	Dec	0ct3/20 Feb 15/21 Jan 17/22	May9/22 Aug24/22	Mari	Jul28/23	Dec
		Copper (ppm)			80	Silicon (ppm)				
		300 - Severe			60					
		<u>500-</u>								
					특 40 · 20 ·	Abnormal				1
		100-			ZU		\sim			
		0ct3/20 Feb15/21	Aug24/22 -	Mar8/23 - Jul28/23 -	Dec4/23	0ct3/20 Feb15/21+	May9/22 + wg24/22 +	Mar8/23	Jul28/23	Dec4/23 -
		H 17 4	Aug2	Mai Jul2	Der	<u> </u>	May9/22 Aug24/22	Mai	Jul2	Dec
		Viscosity @ 100°C			12.0	Base Number				
		14			(B)H0.0 B)H0.0 June 4.0 Bayes Bayes Bayes 2.0		~/	~	~	-
		() 001112 23	\sim		ළ 8.0 ස 6.0					
		10			- equin 4.0					
		10 Abnormal			ase 2.0					
		22	22	723	0.0	720	22	23	123	123
		0ct3/20 Feb15/21 Jan17/22 May9/22	Aug24/22	Mar8/23 Jul28/23	Dec4/23	0ct3/20 Feb15/21 Jan17/22	May9/22 Aug24/22	Mar8/23	Jul28/23	Dec4/23
	1 ab c			- Aug - C	NO 07510		-	0.51	F07-	~~··
4	Laboratory Sample No.	: WearCheck USA - 501 : LP0001472		r, NC 27513 1 Mar 2024				.ECT [
CCREDITED	Lab Number		Teste				40 LOWELL R SALEM, N			
TESTING LABORATORY	Unique Number	: 10939973	Diagr		5 Mar 2024 - W	es Davis			US (0307
ertificate L2367	Test Package				^				TAN D	
	sample report	t, contact Customer Servi	ce at 1-8	100-237-136	4	SDOGIL@	SELECTDE	MOSE	RANCES	S CO



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