

PROBLEM SUMMARY

Sample Rating Trend

WEAR

3632C AUTOCAR

Component

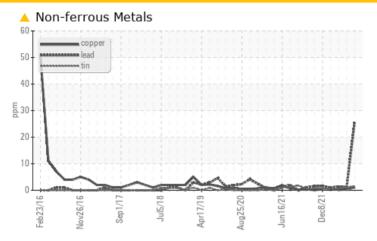
Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (48 QTS)





COMPONENT CONDITION SUMMARY



RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS									
Sample Status				ATTENTION	NORMAL	NORMAL			
Lead	mag	ASTM D5185m	>30	^ 26	1	1			

Customer Id: GFL001 **Sample No.:** GFL0056669 Lab Number: 05736547 Test Package: FLEET

To manage this report scan the QR code

To discuss the diagnosis or test data: Sean Felton +1 919-379-4092 sfelton@wearcheckusa.com

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

RECOMMENDED 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

12 Apr 2022 Diag: Doug Bogart

NORMAL



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.



02 Mar 2022 Diag: Don Baldridge

NORMAL



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

27 Jan 2022 Diag: Wes Davis

NORMAL



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.





OIL ANALYSIS REPORT

Sample Rating Trend

WEAR



3632C AUTOCAR

Component

Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (48 QTS)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

An increase in the lead level is noted. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the

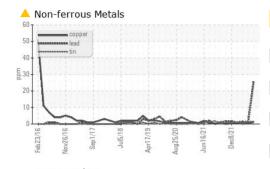
Fluid Condition

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

SAMPLE INFORMATION method limit/base current history 1 history 2 Sample Number Client Info GFL0056669 GFL0048499 GFL0046184 Sample Date Client Info 21973 20113 19760 Machine Age hrs Client Info 21973 353 288 Oil Changed Client Info Changed Not Changd Changed Changed Sample Status method Imit/base Current history 1 history 1 Iron ppm ASTM 05185m >50 20 6 6 Chromium ppm ASTM 05185m >4 3 -1 -1 Nickel ppm ASTM 05185m >2 <1 -1 0 Silver ppm ASTM 05185m >3 0 <1 0 Silver ppm ASTM 05185m >3 1 -1 -1 Copper ppm ASTM 05185m >3 0 -1 0	10 410,		12016 Nov20	016 Sep2017 Jul2018	Apr2019 Aug2020 Jun2021 I	Dec2021	
Sample Date Client Info 10 Jan 2023 12 Apr 2022 02 Mar 2022 Machine Age hrs Client Info 21973 20113 19760 Oil Age hrs Client Info 2213 353 288 Oil Changed Client Info Changed Not Changed Changed Sample Status Client Info Changed Not Changed Changed WEAR METALS method limit/base current history 1 history 2 Iron ppm ASTM D5185m >50 20 6 6 Chromium ppm ASTM D5185m >50 20 6 6 Chromium ppm ASTM D5185m >2 -1 -1 0 Cilient Info ppm ASTM D5185m >3 0 -1 0 Iron ppm ASTM D5185m >3 0 -1 0 Alluminum ppm ASTM D5185m >3 1 1 -1 Ca	SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2
Machine Age hrs Client Info 21973 20113 19760 Oil Age hrs Client Info 2213 353 288 Oil Changed Client Info Changed Not Changed NORMAL Sample Status method limit/base current history 1 history 2 Iron ppm ASTM D5185m >50 20 6 6 Chromium ppm ASTM D5185m >50 20 6 6 Chromium ppm ASTM D5185m >50 20 6 6 Chromium ppm ASTM D5185m >2 <1	Sample Number		Client Info		GFL0056669	GFL0048499	GFL0046184
Oil Age hrs Client Info 2213 353 288 Oil Changed Sample Status Client Info Changed ATTENTION Not Changed Not Changed North Changed North Changed North Changed North Changed North Changed Changed North Changed	Sample Date		Client Info		10 Jan 2023	12 Apr 2022	02 Mar 2022
Oil Changed Sample Status Client Info Changed ATTENTION Not Changed NormAL Changed NORMAL Changed NORMAL A 1<	Machine Age	hrs	Client Info		21973	20113	19760
WEAR METALS method limit/base current history 1 history 2 Iron ppm ASTM D5185m >50 20 6 6 Chromium ppm ASTM D5185m >4 3 <1	Oil Age	hrs	Client Info		2213	353	288
WEAR METALS method limit/base current history 1 history 2 Iron ppm ASTM D5185m >50 20 6 6 Chromium ppm ASTM D5185m >4 3 <1	Oil Changed		Client Info		Changed	Not Changd	Changed
Iron	Sample Status				ATTENTION	NORMAL	NORMAL
Chromium ppm ASTM D5185m >4 3 <1	WEAR METAL	S	method	limit/base	current	history 1	history 2
Nickel	Iron	ppm	ASTM D5185m	>50	20	6	6
Titanium	Chromium	ppm	ASTM D5185m	>4	3	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Aluminum ppm ASTM D5185m >9 3 1 1 Lead ppm ASTM D5185m >30 ▲ 26 1 1 Copper ppm ASTM D5185m >35 1 <1	Titanium	ppm	ASTM D5185m		0	<1	0
Lead ppm ASTM D5185m >30 ▲ 26 1 1 Copper ppm ASTM D5185m >35 1 <1 <1 Tin ppm ASTM D5185m >4 2 1 <1 Antimony ppm ASTM D5185m 0 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 50 8 31 28 Barium ppm ASTM D5185m 50 64 49 48 Manganese ppm ASTM D5185m 50 64 49 48 Magnesium ppm ASTM D5185m 50 659 623 599 Phosphorus ppm ASTM D5185m 1510 2021 1559 1609	Silver	ppm	ASTM D5185m	>3	0	<1	0
Copper ppm ASTM D5185m >35 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Aluminum	ppm	ASTM D5185m	>9	3	1	
Tin ppm ASTM D5185m >4 2 1 <1 <1 Antimony ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>30		1	1
Antimony	Copper	ppm		>35	1	<1	
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 50 8 31 28 Barium ppm ASTM D5185m 50 0 0 0 Molydenum ppm ASTM D5185m 50 64 49 48 Manganese ppm ASTM D5185m 50 64 49 48 Magnesium ppm ASTM D5185m 560 659 623 599 Calcium ppm ASTM D5185m 560 659 623 599 Calcium ppm ASTM D5185m 780 898 824 791 Zinc ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m >+100 6 4 6				>4		1	
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 50 8 31 28 Barium ppm ASTM D5185m 50 0 0 0 Molybdenum ppm ASTM D5185m 50 64 49 48 Manganese ppm ASTM D5185m 50 64 49 48 Magnesium ppm ASTM D5185m 0 <1	•	ppm					
ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 50 8 31 28 Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 50 64 49 48 Manganese ppm ASTM D5185m 0 <1							
Boron	Cadmium	ppm	ASTM D5185m		0	<1	0
Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 50 64 49 48 Manganese ppm ASTM D5185m 50 64 49 48 Manganese ppm ASTM D5185m 560 659 623 599 Calcium ppm ASTM D5185m 760 659 623 599 Calcium ppm ASTM D5185m 780 898 824 791 Phosphorus ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history 1</th> <th>history 2</th>	ADDITIVES		method	limit/base	current	history 1	history 2
Molybdenum ppm ASTM D5185m 50 64 49 48 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 560 659 623 599 Calcium ppm ASTM D5185m 780 898 824 791 Phosphorus ppm ASTM D5185m 780 898 824 791 Zinc ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history 1 history 2 Soot % *ASTM D7624 >20 <t< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td>50</td><th></th><td></td><td></td></t<>	Boron	ppm	ASTM D5185m	50			
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 560 659 623 599 Calcium ppm ASTM D5185m 1510 2021 1559 1609 Phosphorus ppm ASTM D5185m 780 898 824 791 Zinc ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >20 2 1 <1	Barium	ppm	ASTM D5185m	5	0	0	0
Magnesium ppm ASTM D5185m 560 659 623 599 Calcium ppm ASTM D5185m 1510 2021 1559 1609 Phosphorus ppm ASTM D5185m 780 898 824 791 Zinc ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >20 2 1 <1	Molybdenum	ppm			64	49	
Calcium ppm ASTM D5185m 1510 2021 1559 1609 Phosphorus ppm ASTM D5185m 780 898 824 791 Zinc ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >20 2 1 <1	•	ppm					
Phosphorus ppm ASTM D5185m 780 898 824 791 Zinc ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >20 2 1 <1							
Zinc ppm ASTM D5185m 870 1160 966 890 Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m >20 2 1 <1		ppm					
Sulfur ppm ASTM D5185m 2040 2579 2390 2113 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m 13 5 4 Potassium ppm ASTM D5185m >20 2 1 <1	•						
CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m 13 5 4 Potassium ppm ASTM D5185m >20 2 1 <1		ppm					
Silicon ppm ASTM D5185m >+100 6 4 6 Sodium ppm ASTM D5185m 13 5 4 Potassium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 12.8 8.5 8.4 Sulfation Abs/.1mm *ASTM D7415 >30 28.5 20.8 19.2 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	Sulfur	ppm	ASTM D5185m	2040	2579	2390	2113
Sodium ppm ASTM D5185m 13 5 4 Potassium ppm ASTM D5185m >20 2 1 <1	CONTAMINAN	ITS	method	limit/base	current	history 1	history 2
Potassium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 12.8 8.5 8.4 Sulfation Abs/.1mm *ASTM D7415 >30 28.5 20.8 19.2 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	Silicon	ppm	ASTM D5185m	>+100			
INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 12.8 8.5 8.4 Sulfation Abs/.1mm *ASTM D7415 >30 28.5 20.8 19.2 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	Sodium	ppm	ASTM D5185m			5	4
Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 12.8 8.5 8.4 Sulfation Abs/.1mm *ASTM D7415 >30 28.5 20.8 19.2 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	Potassium	ppm	ASTM D5185m	>20	2	1	<1
Nitration Abs/cm *ASTM D7624 >20 12.8 8.5 8.4 Sulfation Abs/.1mm *ASTM D7415 >30 28.5 20.8 19.2 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	INFRA-RED		method	limit/base	current	history 1	history 2
Sulfation Abs/.1mm *ASTM D7415 >30 28.5 20.8 19.2 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	Soot %	%	*ASTM D7844		0.1	0.1	0.1
FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	Nitration	Abs/cm	*ASTM D7624	>20	12.8	8.5	8.4
Oxidation Abs/.1mm *ASTM D7414 >25 24.5 17.6 15.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	28.5	20.8	19.2
	FLUID DEGRAI	DATION	method	limit/base	current	history 1	history 2
Base Number (BN) mg KOH/g ASTM D2896 10.2 3.0 8.4 7.2	Oxidation	Abs/.1mm	*ASTM D7414	>25	24.5	17.6	15.9
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	3.0	8.4	7.2



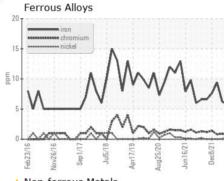
OIL ANALYSIS REPORT



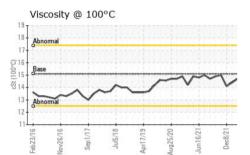
VISUAL		method	limit/base	current	history 1	history 2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	LIGHT	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

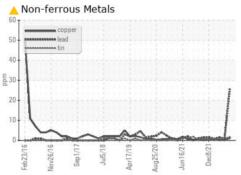
0.0 - Base							
0.0 - Base 8.0 - 4.0 -						٨	^
6.0					N	12	Ψ.
4.0-					/ ۷ -		
2.0-							
		7	00	6	0.0	-12	-12
Feb23/16	Nov26/16				Aug25/2	Jun16/	Dec8/

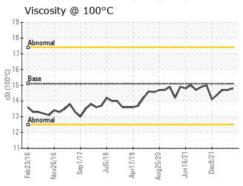
FLUID PROPE	ERTIES	method	limit/base	current	history 1	history
Visc @ 100°C	cSt	ASTM D445	15.1	14.8	14.7	14.7

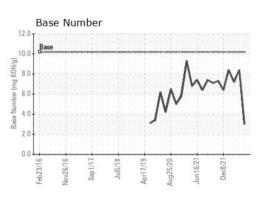


GRAPHS













Laboratory Sample No. Lab Number Unique Number : 10286145

: GFL0056669 : 05736547

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 11 Jan 2023 Diagnosed : 12 Jan 2023 Diagnostician : Sean Felton

3741 Conquest Drive Garner, NC US 27529 Contact: Craig Johnson craig.johnson@gflenv.com

T: (919)662-7100 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: (919)662-7130

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.