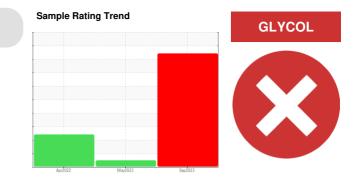
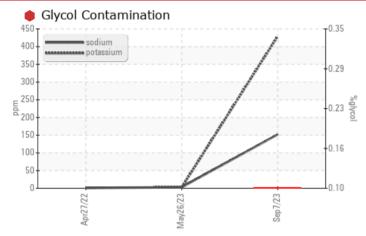
# **PROBLEM SUMMARY**



Machine Id **712019** Component **Diesel Engine** Fluid **DIESEL ENGINE OIL SAE 40 (--- GAL)** 

# COMPONENT CONDITION SUMMARY



# RECOMMENDATION

We advise that you check for the source of the coolant leak. We recommend that you drain the oil from the component if this has not already been done. We advise that you flush the component thoroughly before re-filling with oil. We recommend an early resample to monitor this condition. Please specify the brand, type, and viscosity of the oil on your next sample.

PROBLEMATIC TEST RESULTS								
Sample Status				SEVERE	NORMAL	ABNORMAL		
Sodium	ppm	ASTM D5185m	>216	<u> </u>	3	2		
Potassium	ppm	ASTM D5185m	>20	<b>429</b>	3	<1		
Glycol	%	*ASTM D2982		0.10	NEG	NEG		

Customer Id: GFL019 Sample No.: GFL0058868 Lab Number: 05946431 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Wes Davis +1 905-569-8600 x223 wesd@wearcheck.ca

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			?	We recommend that you drain the oil from the component if this has not already been done.				
Flush System			?	We advise that you flush the component thoroughly before re-filling with oil.				
Resample			?	We recommend an early resample to monitor this condition.				
Information Requ	uired		?	Please specify the brand, type, and viscosity of the oil on your next sample.				
Check Glycol Ac	cess		?	We advise that you check for the source of the coolant leak.				

## HISTORICAL DIAGNOSIS

26 May 2023 Diag: Wes Davis



NORMAL

Resample at the next service interval to monitor. The fluid was not specified, however, a fluid match indicates that this fluid is (GENERIC) DIESEL ENGINE OIL SAE 40. Please confirm. 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.



We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.All component wear rates are normal. Fuel content negligible. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. 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

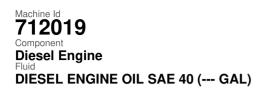




# **OIL ANALYSIS REPORT**

Sample Rating Trend

GLYCOL



## DIAGNOSIS

#### Recommendation

We advise that you check for the source of the coolant leak. We recommend that you drain the oil from the component if this has not already been done. We advise that you flush the component thoroughly before re-filling with oil. We recommend an early resample to monitor this condition. Please specify the brand, type, and viscosity of the oil on your next sample.

#### Wear

All component wear rates are normal.

#### Contamination

Test for glycol is positive. There is a high concentration of glycol present in the oil.

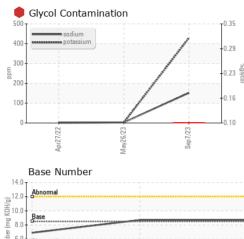
### Fluid Condition

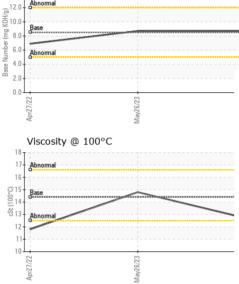
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

			2022	May2023 Sep20	22	
SAMPLE INFORI	MATION		limit/base	current	history1	history2
Sample Number		Client Info		GFL0058868	GFL0048084	GFL0039443
Sample Date		Client Info		07 Sep 2023	26 May 2023	27 Apr 2022
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				SEVERE	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	0.9
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	43	52	60
Chromium	ppm	ASTM D5185m	>20	1	2	1
Nickel	ppm	ASTM D5185m	>4	0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	1	6	<b>1</b> 0
Lead	ppm	ASTM D5185m	>40	5	8	4
Copper	ppm	ASTM D5185m	>330	22	8	210
Tin	ppm	ASTM D5185m	>15	2	3	4
Vanadium	ppm	ASTM D5185m		- <1	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/bass		11 A. A.	la ta ta mu O
ADDITIVES		methou	limit/base	current	history1	history2
	ppm	ASTM D5185m	250	6	history1	nistory2 22
Boron	ppm ppm				-	
Boron Barium	ppm	ASTM D5185m	250	6	7	22
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	250 10	6 0	7 0	22 <1
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	6 0 92 1	7 0 69 1	22 <1 37
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	6 0 92 1 1030	7 0 69 1 1048	22 <1 37 2 460
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	6 0 92 1 1030 1376	7 0 69 1 1048 1353	22 <1 37 2 460 1240
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	6 0 92 1 1030 1376 1012	7 0 69 1 1048 1353 1157	22 <1 37 2 460 1240 973
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	6 0 92 1 1030 1376	7 0 69 1 1048 1353	22 <1 37 2 460 1240
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	6 0 92 1 1030 1376 1012 1348	7 0 69 1 1048 1353 1157 1510	22 <1 37 2 460 1240 973 1205
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	6 0 92 1 1030 1376 1012 1348 3548	7 0 69 1 1048 1353 1157 1510 3280	22 <1 37 2 460 1240 973 1205 2448
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	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 <b>limit/base</b> >25	6 0 92 1 1030 1376 1012 1348 3548 current	7 0 69 1 1048 1353 1157 1510 3280 history1	22 <1 37 2 460 1240 973 1205 2448 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25	6 0 92 1 1030 1376 1012 1348 3548 <u>current</u> 21	7 0 69 1 1048 1353 1157 1510 3280 history1 9	22 <1 37 2 460 1240 973 1205 2448 history2 ▲ 28
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216	6 0 92 1 1030 1376 1012 1348 3548 <u>current</u> 21 ▲ 152	7 0 69 1 1048 1353 1157 1510 3280 history1 9 3	22 <1 37 2 460 1240 973 1205 2448 history2 ▲ 28 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216	6 0 92 1 1030 1376 1012 1348 3548 Current 21 ▲ 152 ▲ 152 ▲ 429	7 0 69 1 1048 1353 1157 1510 3280 history1 9 3 3 3	22 <1 37 2 460 1240 973 1205 2448 ► 1205 2448 ► 28 2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >25 >216 >20 20	6 0 92 1 1030 1376 1012 1348 3548 Current 21 ▲ 152 ▲ 152 ▲ 429 ● 0.10	7 0 69 1 1048 1353 1157 1510 3280 history1 9 3 3 3 NEG	22 <1 37 2 460 1240 973 1205 2448 ► 1205 2448 ► 28 2 <1 ► 28 2 <1 ► 10 ► 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >216 >20 <b>Imit/base</b> >3	6 0 92 1 1030 1376 1012 1348 3548 Current 21 ▲ 152 ▲ 152 ▲ 429 ● 0.10	7 0 69 1 1048 1353 1157 1510 3280 history1 9 3 3 3 NEG history1	22 <1 37 2 460 1240 973 1205 2448 ► 1205 2448 ► 1205 245 ► 1205 =
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm %	ASTM D5185m ASTM D5185m *ASTM D2982 <b>method</b>	250 10 100 450 3000 1150 1350 4250 <b>Iimit/base</b> >25 >216 >20 <b>Iimit/base</b> >3 >20	6 0 92 1 1030 1376 1012 1348 3548 <b>current</b> 21 ▲ 152 ▲ 429 ● 0.10 <b>current</b> 1.5	7 0 69 1 1048 1353 1157 1510 3280 history1 9 3 3 3 NEG history1 1.9	22 <1 37 2 460 1240 973 1205 2448 ► 1205 2448 ► 1205 245 245 ► 1205 245 ► 1205 245 ► 1205 245 ► 1205 245 ► 1205 245 ► 1205 245 ► 1205 = 1205
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	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 *ASTM D5185m *ASTM D2982 <b>method</b> *ASTM D7844 *ASTM D7824	250 10 100 450 3000 1150 1350 4250 <b>Iimit/base</b> >25 >216 >20 <b>Iimit/base</b> >3 >20	6 0 92 1 1030 1376 1012 1348 3548 Current 21 ▲ 152 429 ● 0.10 Current 1.5 13.4	7 0 69 1 1048 1353 1157 1510 3280 history1 9 3 3 NEG NEG history1 1.9 1.9	22 <1 37 2 460 1240 973 1205 2448 ► 124 ► 1205 2448 ► 1205 2448 ► 1205 0.8 12.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	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 *ASTM D5185m *ASTM D2982 <b>method</b> *ASTM D7844 *ASTM D7824	250 10 100 450 3000 1150 1350 4250 <b>binit/base</b> >25 >216 >20 <b>binit/base</b> >3 >20 >30	6 0 92 1 1030 1376 1012 1348 3548 <b>Current</b> 21 ▲ 152 ▲ 429 ● 0.10 <b>Current</b> 1.5 13.4 22.4	7 0 69 1 1048 1353 1157 1510 3280 history1 9 3 3 3 NEG history1 1.9 1.5 5 27.3	22 <1 37 2 460 1240 973 1205 2448 ► 1205 2448 ► 1205 2448 ► 1205 ► 1205 ■ 12



# **OIL ANALYSIS REPORT**





n	- <b>-</b> 0.35	VISUAL		method	limit/base	current	history1	history2
يقى		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	-0.29	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	-0.23 g	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
/		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	-0.16	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	0.10	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
layzb/23 - Sep7/23 -	0.10	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Niay zb/23 Sep7/23		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	history2
		Visc @ 100°C	cSt	ASTM D445		12.7	14.8	11.8
		GRAPHS	001				11.0	11.0
		Ferrous Alloys						
		<sup>60</sup>						
May26/23		50 - chromium						
May		40						
	E							
	0	30-						
		20						
		10						
		22	6/23 -		Sep7/23 .			
		Apr27/	May26/23		Sep			
		Non-ferrous Metal	s					
May26/23	1	250 copper 1						
May	:	200						
		annine tin						
		150						
	bbw	100						
		50	<hr/>					
		0	<u></u>					
		7/22	lay26/23		Sep7/23.			
		Apr27	May2		Sep			
		Viscosity @ 100°C				Base Number		
		18			14.0			
		17 Abnormal			12.0	Abnormal		
		16			( <sup>D</sup> H 10.0-			
	0.01	Base			<u> </u>	Base		
	St (10	Base 14 13 13 Abnormal	1		(0/H0.0 H0 X Bull 10.0 0.0.0 Mumper Mumper 4.0			
		Guilding			N 93 4.0	Abnormal		
		12			2.0			
		11						
			3/23		-0.0	1/22	3/23 +	23
		Apr27/22	May26/23		Sep7/23	Apr27/22	May26/23	C (/ Lung)
rtificate L2367 Test P discuss this sample	le No. umber Number Package e report, co	: 05946431 I : 10642390 I : FLEET ( Additional ontact Customer Servi	Received Diagnos Diagnos Diagnos Tests: Gl Ce at 1-8	d : 08 3 ed : 12 3 tician : We ycol ) 800-237-1368	Sep 2023 Sep 2023 s Davis 9.	GFL Envi	Contact: S	Greenville/TriEas 5 Staton Road Greenville, NC US 27834 Spencer Liggor on@gflenv.con
Denotes test metho	ds that ar	e outside of the ISO 1	7025 scc	pe of accred	litation.	ICOM togooto	T:	(800)207-6618
rtificate 12367 Test P discuss this sample Denotes test metho	Package e report, co ods that ar	: FLEET ( Additional ontact Customer Servi	Tests: Gl ce at 1-8 7025 sco	ycol ) 300-237-1369 ope of accred	litation.	ICGM 106:2012	spencer.liggo T:	