

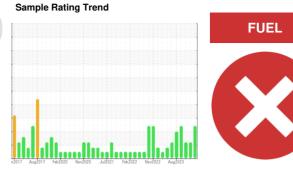
# **OIL ANALYSIS REPORT**



Machine Id **NEW FLYER 1105** 

**Diesel Engine** 

SAFETY-KLEEN PERFORMANCE PLUS XHD-7 15W40 (--- GAL)



## DIAGNOSIS

#### Recommendation

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

#### ▲ Contamination

There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

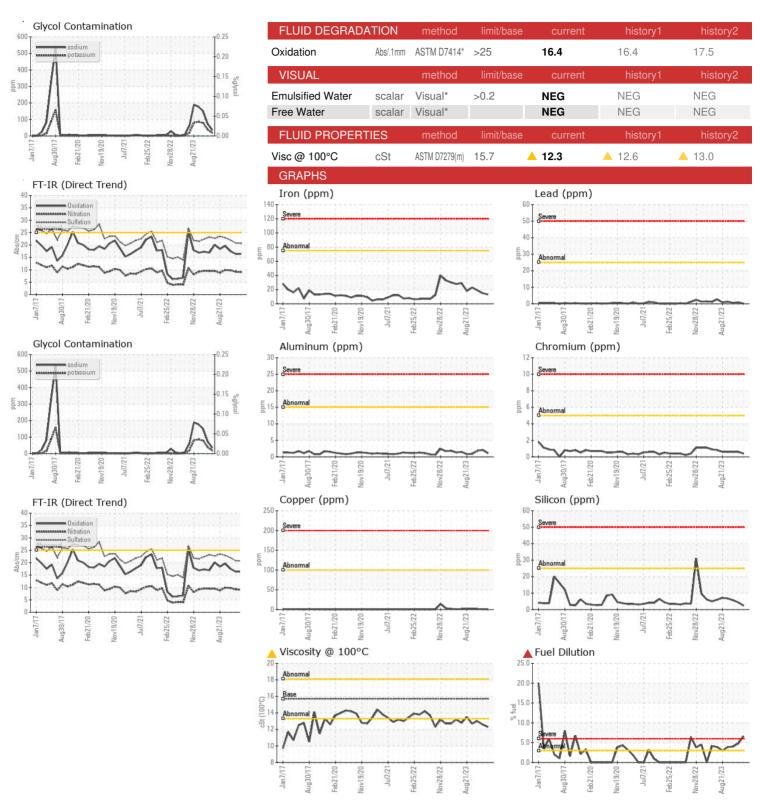
### Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

Sample Date   Client Info   08 Apr 2024   27 Feb 2024   11 Jan 2024   Machine Age   kms   Client Info   825170   816575   806812   2018   Age   kms   Client Info   0   0   0   0   0   0   0   0   0							
Sample Date   Client Info   08 Apr 2024   27 Feb 2024   11 Jan 2024   Machine Age   kms   Client Info   825170   816575   806812   2018   Age   kms   Client Info   0   0   0   0   0   0   0   0   0	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age   kms	Sample Number		Client Info		WC0877884	WC0878094	WC0891079
Dil Age	Sample Date		Client Info		08 Apr 2024	27 Feb 2024	11 Jan 2024
Dil Changed   Client Info   Ni/A   SEVERE   ABNORMAL   ABNORMAL	Machine Age	kms	Client Info		825170	816575	806812
Several   Abroradal   Abror	Oil Age	kms	Client Info		0	0	0
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >75         13         15         19           Chromium         ppm         ASTM D5185(m)         >5         <1         <1         <1         <1           Nickel         ppm         ASTM D5185(m)         >4         0         <1         0           Silver         ppm         ASTM D5185(m)         >2         0         0         0           Alluminum         ppm         ASTM D5185(m)         >2         0         0         0           Action         ppm         ASTM D5185(m)         >2         0         <1         <1           Lead         ppm         ASTM D5185(m)         >2         0         <1         <1         <1           Copper         ppm         ASTM D5185(m)         >2         0         <1         <1         <1           Capitium         ppm         ASTM D5185(m)<	Oil Changed		Client Info			N/A	Changed
Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM DS18Sim)         >75         13         15         19           Chromium         ppm         ASTM DS18Sim)         >4         0         <1	Sample Status				SEVERE	ABNORMAL	ABNORMAL
WEAR METALS	CONTAMINATION		method	limit/base	current	history1	history2
Chromium	Water		WC Method	>0.2	NEG	NEG	NEG
Description	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185(m)	>75	13	15	19
Silver	Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185(m)	>4	0	<1	0
Aluminum   ppm   ASTM D5185(m)   >15   1   2   2   2   Lead   ppm   ASTM D5185(m)   >25   0   <1   <1   Copper   ppm   ASTM D5185(m)   >100   <1   <1   Tin   ppm   ASTM D5185(m)   >4   0   0   0   Antimony   ppm   ASTM D5185(m)   0   0   0   Antimony   ppm   ASTM D5185(m)   0   0   0   Cadmium   ppm   ASTM D5185(m)   0   0   0   ADDITIVES   method   limit/base   current   history1   history2   Barium   ppm   ASTM D5185(m)   57   59   66   Molybdenum   ppm   ASTM D5185(m)   57   59   66   Manganese   ppm   ASTM D5185(m)   0   0   0   Magnesium   ppm   ASTM D5185(m)   886   878   899   Calcium   ppm   ASTM D5185(m)   939   908   969   Phosphorus   ppm   ASTM D5185(m)   923   970   955   Zinc   ppm   ASTM D5185(m)   923   970   955   Zinc   ppm   ASTM D5185(m)   923   970   955   Zinc   ppm   ASTM D5185(m)   1092   1090   1094   Sulfur   ppm   ASTM D5185(m)   2385   2522   2545   Lithium   ppm   ASTM D5185(m)   <1   <1   <1    CONTAMINANTS   method   limit/base   current   history1   history2   Soldium   ppm   ASTM D5185(m)   >25   2   4   6   Soldium   ppm   ASTM D5185(m)   >20   19   38   79   Fuel   % ASTM D7624*   >20   9.1   9.2   9.8	Titanium	ppm	ASTM D5185(m)	>2	0	0	0
Lead         ppm         ASTM D5185(m)         >2.5         0         <1         <1           Copper         ppm         ASTM D5185(m)         >10.0         <1         <1         1           Fin         ppm         ASTM D5185(m)         >4         0         0         0           AAntimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0         0           Boron         ppm         ASTM D5185(m)         4         1         1         1           Barium         ppm         ASTM D5185(m)         0         0         0         0           Wanganese         ppm         ASTM D5185(m)         57         59         66         6           Wanganesium         ppm         ASTM D5185(m)         939         908         969           Phosphorus         ppm         ASTM D5185(m)         923         970         955 <th>Silver</th> <td>ppm</td> <td>ASTM D5185(m)</td> <td>&gt;2</td> <th>0</th> <td>0</td> <td></td>	Silver	ppm	ASTM D5185(m)	>2	0	0	
Copper         ppm         ASTM D5185(m)         >100         <1         <1         1           Tin         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0           Barium         ppm         ASTM D5185(m)         0         0         0           Barium         ppm         ASTM D5185(m)         57         59         66           Manganese         ppm         ASTM D5185(m)         0         0         0           Magnesium         ppm         ASTM D5185(m)         939         908         969           Phosphorus         ppm         ASTM D5185(m)         923         970         955           Zinc         ppm         ASTM D5185(m)         2385         2522         2545<	Aluminum	ppm	ASTM D5185(m)	>15	1	2	2
Trin	Lead	ppm	ASTM D5185(m)	>25	0	<1	<1
Antimony   ppm   ASTM D5185(m)   0   0   0   0   0   0   0   0   0	Copper	ppm	ASTM D5185(m)	>100	<1	<1	1
Vanadium         ppm         ASTM D5185(m)         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         0         0         0           Barium         ppm         ASTM D5185(m)         0         0         0         0           Molybdenum         ppm         ASTM D5185(m)         57         59         66           Manganese         ppm         ASTM D5185(m)         0         0         0           Manganesium         ppm         ASTM D5185(m)         886         878         899           Calcium         ppm         ASTM D5185(m)         939         908         969           Phosphorus         ppm         ASTM D5185(m)         923         970         955           Zinc         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         >25	Tin	ppm	ASTM D5185(m)	>4	0	0	0
Beryllium	Antimony	ppm	ASTM D5185(m)		0	0	0
Cadmium         ppm         ASTM D5185(m)         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1	Vanadium	ppm					
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1	•	ppm	ASTM D5185(m)				0
Soron   ppm   ASTM D5185(m)	Cadmium	ppm	ASTM D5185(m)		0	0	0
Description	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185(m)         57         59         66           Manganese         ppm         ASTM D5185(m)         0         0         0           Magnesium         ppm         ASTM D5185(m)         886         878         899           Calcium         ppm         ASTM D5185(m)         939         908         969           Phosphorus         ppm         ASTM D5185(m)         923         970         955           Zinc         ppm         ASTM D5185(m)         1092         1090         1094           Sulfur         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         6.6         4.8         4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/	Boron	ppm	ASTM D5185(m)		<1	<1	1
Manganese         ppm         ASTM D5185(m)         0         0         0           Magnesium         ppm         ASTM D5185(m)         886         878         899           Calcium         ppm         ASTM D5185(m)         939         908         969           Phosphorus         ppm         ASTM D5185(m)         923         970         955           Zinc         ppm         ASTM D5185(m)         1092         1090         1094           Sulfur         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         <1	Barium	ppm	ASTM D5185(m)		0	0	0
Magnesium         ppm         ASTM D5185(m)         886         878         899           Calcium         ppm         ASTM D5185(m)         939         908         969           Phosphorus         ppm         ASTM D5185(m)         923         970         955           Zinc         ppm         ASTM D5185(m)         1092         1090         1094           Sulfur         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         <1	Molybdenum	ppm	ASTM D5185(m)				
Calcium         ppm         ASTM D5185(m)         939         908         969           Phosphorus         ppm         ASTM D5185(m)         923         970         955           Zinc         ppm         ASTM D5185(m)         1092         1090         1094           Sulfur         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         <1	Manganese	ppm	ASTM D5185(m)		0	0	0
Phosphorus         ppm         ASTM D5185(m)         923         970         955           Zinc         ppm         ASTM D5185(m)         1092         1090         1094           Sulfur         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         6.6         4.8         4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7624*         >6         0.7         0.7         0.9	Magnesium	ppm	. ,				
Zinc         ppm         ASTM D5185(m)         1092         1090         1094           Sulfur         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7932*         >3.0         6.6         4.8         4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8		ppm	( )				
Sulfur         ppm         ASTM D5185(m)         2385         2522         2545           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         >25         2         4         6           Potassium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         6.6         4.8         4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8			. , ,				
Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         >25         73         150           Potassium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         6.6         4.8         4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8		ppm					
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         35         73         150           Potassium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         6.6         4.8         4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8			. ,				
Silicon         ppm         ASTM D5185(m)         >25         2         4         6           Sodium         ppm         ASTM D5185(m)         35         73         150           Potassium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         6.6         4.8         4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium         ppm         ASTM D5185(m)         35         73         150           Potassium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         ▲ 6.6         ▲ 4.8         ▲ 4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185(m)         >20         19         38         79           Fuel         %         ASTM D7593*         >3.0         ♠ 6.6         ♠ 4.8         ♠ 4           Glycol         %         ASTM D7922*         0.0         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8				>25			
Fuel         %         ASTM D7593*         >3.0         ▲ 6.6         ▲ 4.8         ▲ 4           Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8		ppm	( )				
Glycol         %         ASTM D7922*         0.0         0.0         0.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8			. ,				
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8				>3.0			
Soot %         %         ASTM D7844*         >6         0.7         0.7         0.9           Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8		%			0.0		
Nitration         Abs/cm         ASTM D7624*         >20         9.1         9.2         9.8	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	ASTM D7844*	>6	0.7	0.7	0.9
Sulfation         Abs/.1mm         ASTM D7415*         >30         20.7         20.8         22.0	Nitration	Abs/cm	ASTM D7624*	>20	9.1	9.2	9.8
	Sulfation	Abs/.1mm	ASTM D7415*	>30	20.7	20.8	22.0



## **OIL ANALYSIS REPORT**





CALA ISO 17025:2017 Accredited Laboratory

Laboratory

Sample No.

: WC0877884 Lab Number : 02627653 Unique Number : 5760785

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received **Tested** 

Validity of results and interpretation are based on the sample and information as supplied.

: 10 Apr 2024 Diagnosed

: 10 Apr 2024 - Wes Davis

: 09 Apr 2024

Test Package : MOB 1 ( Additional Tests: Glycol, PercentFuel ) To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

CA LOR 1W0 Contact: Jeff Parr jeff.parr@hamilton.ca T: (905)546-2424

F: (905)679-4502

**CITY OF HAMILTON** 

MOUNT HOPE, ON

2200 UPPER JAMES,, MOUNTAIN TRANSIT STOREROOM