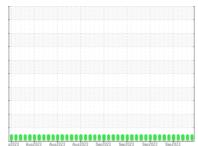


OIL ANALYSIS REPORT

Sample Rating Trend







QC230213IND2

Component

Hydraulic System

AW HYDRAULIC OIL ISO 68 (--- GAL)

DIAGNOSIS

Recommendation

Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable.

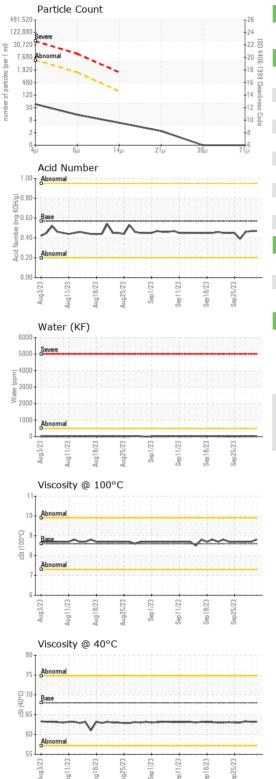
Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method limit/base current history1 history2	g2023 Aug2023 Aug2023 Aug2023 Smp2023 Smp2023 Smp2023 Smp2023									
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2			
Machine Age hrs Client Info 0 0 0 0 0 0 0 0 0	Sample Number		Client Info		WC0865570	WC0865569	WC0851526			
Oil Age hrs Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A WEAR METALS method limit/base current history1 history2 Iron ppm ASTM DS185(m) >20 0 0 0 Chromium ppm ASTM DS185(m) >20 0 0 0 Nickel ppm ASTM DS185(m) >20 0 0 0 Silver ppm ASTM DS185(m) >20 0 0 0 Aluminum ppm ASTM DS185(m) >20 0 0 0 Aluminum ppm ASTM DS185(m) >20 <1	Sample Date		Client Info		03 Oct 2023	02 Oct 2023	28 Sep 2023			
Oil Changed Status Client Info N/A N/A N/A N/A N/A N/A N/A NAMAL NORMAL NORMAL	Machine Age	hrs	Client Info		0	0	0			
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		0	0	0			
WEAR METALS	Oil Changed		Client Info		N/A	N/A	N/A			
Iron	Sample Status				NORMAL	NORMAL	NORMAL			
Chromium ppm ASTM D5185(m) ≥20 0 0 0 Nickel ppm ASTM D5185(m) ≥20 0 0 <1 Titanium ppm ASTM D5185(m) ≥20 0 0 0 Silver ppm ASTM D5185(m) >20 0 0 0 Aluminum ppm ASTM D5185(m) >20 <1 <1 <1 Aluminum ppm ASTM D5185(m) >20 <1 <1 <1 Copper ppm ASTM D5185(m) >20 0 0 0 Antimony ppm ASTM D5185(m) >20 0 0 0 Antimony ppm ASTM D5185(m) >20 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Barium ppm ASTM D5185(m) 5 <1<	WEAR METALS		method	limit/base	current	history1	history2			
Nickel ppm ASTM D5185(m) >20 0 0 <1 Titanium ppm ASTM D5185(m) 0 0 0 0 Silver ppm ASTM D5185(m) <1	Iron	ppm	ASTM D5185(m)	>20	0	0	0			
Titanium ppm ASTM D5185(m) 0 0 0 0 0 0	Chromium	ppm	ASTM D5185(m)	>20	0	0	0			
Silver ppm ASTM D5185(m) <1 <1 <1 0 Aluminum ppm ASTM D5185(m) >20 0 0 0 Lead ppm ASTM D5185(m) >20 <1	Nickel	ppm	ASTM D5185(m)	>20	0	0	<1			
Aluminum	Titanium	ppm	ASTM D5185(m)		0	0	0			
Lead	Silver	ppm	ASTM D5185(m)		<1	<1	0			
Copper	Aluminum	ppm	ASTM D5185(m)	>20	0	0	0			
Tin ppm ASTM D5185(m) >20 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) 5 <1 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 5 <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 </td <td>Lead</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td>>20</td> <th><1</th> <td><1</td> <td><1</td>	Lead	ppm	ASTM D5185(m)	>20	<1	<1	<1			
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 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 5 <1	Copper	ppm	ASTM D5185(m)	>20	<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) 5 <1 <1 <1 <1 Barium ppm ASTM D5185(m) 5 <1 <1 <1 0 Molybdenum ppm ASTM D5185(m) 5 <1 <1 0 0 Magnesium ppm ASTM D5185(m) 25 0 0 0 0 Calcium ppm ASTM D5185(m) 20 43 44 42 2 Phosphorus ppm ASTM D5185(m) 200 436 423 339 32 36 348 339 Zinc ppm ASTM D5185(m) 2500 693 707 687	Tin	ppm	ASTM D5185(m)	>20	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) 5 <1	Vanadium	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) 5 <1	Beryllium	ppm	ASTM D5185(m)		0	0	0			
Boron ppm ASTM D5185(m) 5 <1 <1 <1 <1 <1 <1 O Molybdenum ppm ASTM D5185(m) 5 <1 <1 O A A 4 4 4 2 P P ASTM D5185(m) D O O A A A A A A A A A A A A <td>-</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	-	ppm	ASTM D5185(m)		0	0	0			
Barium ppm ASTM D5185(m) 5 <1	ADDITIVES		method	limit/base	current	history1	history2			
Molybdenum ppm ASTM D5185(m) 5 0 0 0 Manganese ppm ASTM D5185(m) 25 0 0 0 Magnesium ppm ASTM D5185(m) 25 0 0 0 Calcium ppm ASTM D5185(m) 200 43 44 42 Phosphorus ppm ASTM D5185(m) 300 336 348 339 Zinc ppm ASTM D5185(m) 370 430 436 423 Sulfur ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >15 0 0 0 Potassium ppm ASTM D5185(m)	Boron	ppm	ASTM D5185(m)	5	<1	<1	<1			
Manganese ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 25 0 0 0 Calcium ppm ASTM D5185(m) 200 43 44 42 Phosphorus ppm ASTM D5185(m) 300 336 348 339 Zinc ppm ASTM D5185(m) 370 430 436 423 Sulfur ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) >15 0 0 0 Solicon ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >20	Barium	ppm	ASTM D5185(m)	5	<1	<1	0			
Magnesium ppm ASTM D5185(m) 25 0 0 0 Calcium ppm ASTM D5185(m) 200 43 44 42 Phosphorus ppm ASTM D5185(m) 300 336 348 339 Zinc ppm ASTM D5185(m) 370 430 436 423 Sulfur ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) 2500 693 707 687 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >20 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304* >0.05 0.003 0.002 0.002 ppm Water ppm ASTM D6304*	Molybdenum	ppm	ASTM D5185(m)	5	0	0	0			
Calcium ppm ASTM D5185(m) 200 43 44 42 Phosphorus ppm ASTM D5185(m) 300 336 348 339 Zinc ppm ASTM D5185(m) 370 430 436 423 Sulfur ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >15 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304*	Manganese	ppm	ASTM D5185(m)		0	0	0			
Phosphorus ppm ASTM D5185(m) 300 336 348 339 Zinc ppm ASTM D5185(m) 370 430 436 423 Sulfur ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) 2500 693 707 687 CONTAMINANTS method limit/base current history1 history2 Sodium ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >15 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304* >0.05 0.003 0.002 0.002 Ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Part	Magnesium	ppm	ASTM D5185(m)	25	0	0	0			
Zinc	Calcium	ppm	ASTM D5185(m)	200	43	44	42			
Sulfur ppm ASTM D5185(m) 2500 693 707 687 Lithium ppm ASTM D5185(m) 2500 693 707 687 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >15 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D5185(m) >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >1300 12	Phosphorus	ppm	ASTM D5185(m)	300	336	348	339			
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >20 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304* >0.05 0.003 0.002 0.002 ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >21μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0<	Zinc	ppm	ASTM D5185(m)	370	430	436	423			
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) >20 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304* >0.05 0.003 0.002 0.002 ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >71μm ASTM D7647 >3 0 0	Sulfur	ppm	ASTM D5185(m)	2500	693	707	687			
Silicon ppm ASTM D5185(m) >15 0 0 0 Sodium ppm ASTM D5185(m) 0 0 0 Potassium ppm ASTM D63185(m) >20 0 0 0 Water % ASTM D6304* >0.05 0.003 0.002 0.002 ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Lithium	ppm	ASTM D5185(m)		<1	<1	<1			
Sodium ppm ASTM D5185(m) 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304* >0.005 0.003 0.002 0.002 ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >71μm ASTM D7647 >3 0 0 0	CONTAMINANTS	;	method	limit/base	current	history1	history2			
Sodium ppm ASTM D5185(m) 0 0 0 Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304* >0.005 0.003 0.002 0.002 ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >71μm ASTM D7647 >3 0 0 0	Silicon	ppm	ASTM D5185(m)	>15	0	0	0			
Potassium ppm ASTM D5185(m) >20 0 0 0 Water % ASTM D6304* >0.05 0.003 0.002 0.002 ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >71μm ASTM D7647 >3 0 0 0	Sodium				0	0	0			
Water % ASTM D6304* >0.05 0.003 0.002 0.002 ppm Water ppm ASTM D6304* >500 27.5 21.7 23.0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Potassium			>20	0	0	0			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Water		ASTM D6304*	>0.05	0.003	0.002	0.002			
Particles >4μm ASTM D7647 >5000 39 51 91 Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	ppm Water	ppm	ASTM D6304*	>500	27.5	21.7	23.0			
Particles >6μm ASTM D7647 >1300 12 15 32 Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2			
Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Particles >4µm		ASTM D7647	>5000	39	51	91			
Particles >14μm ASTM D7647 >160 5 4 8 Particles >21μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Particles >6µm		ASTM D7647	>1300	12	15	32			
Particles >21μm ASTM D7647 >40 2 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0							8			
Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0										
Particles >71μm ASTM D7647 >3 0 0										



OIL ANALYSIS REPORT



FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.57	0.47	0.47	0.46
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*	>0.05	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	68	63.2	63.2	63.3
Visc @ 100°C	cSt	ASTM D7279(m)	8.6	8.8	8.7	8.7
Viscosity Index (VI)	Scale	ASTM D2270*	96	113	110	110
SAMPLE IMAGES		method	limit/base	current	history1	history2
				E		
Color						
00101						
Bottom						



CALA ISO 17025:2017 Accredited

Laboratory

Laboratory Sample No. Lab Number **Unique Number**

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 WearCheck Quality Control Sample Results : WC0865570 : 02586426

: 5655492

Received Diagnosed

: 03 Oct 2023

: 04 Oct 2023 Diagnostician : Wes Davis

Burlington, ON CA

Contact: Dorian Anderson

Test Package : IND 2 (Additional Tests: KF, KV100, VI) To discuss this sample report, contact Customer Service at 1-800-268-2131.

dorian.anderson@wearcheck.com T: (289)291-4652

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

F: (905)569-8605