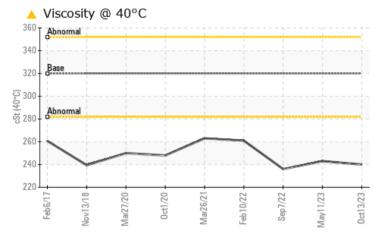


PROBLEM SUMMARY

Area MELT SHOP - SGP Machine Id NORTHSIDE GRINDER NORTH GEARBOX (S/N 15-4000-0820) Component Component

Gearbox Fluid EP 320 (--- QTS)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS							
Sample Status				ATTENTION	ATTENTION	ATTENTION	
Visc @ 40°C	cSt	ASTM D445	320	A 240	2 43	2 36	

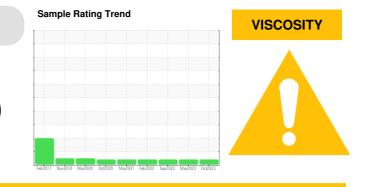
Customer Id: OUTCALAL Sample No.: RP0038603 Lab Number: 05979828 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 <u>jhester@wearcheckusa.com</u>

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



RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

11 May 2023 Diag: Don Baldridge



Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. Viscosity of sample indicates oil is within ISO 220 range, advise investigate. Confirm oil type. The AN level is acceptable for this fluid.



07 Sep 2022 Diag: Doug Bogart

10 Feb 2022 Diag: Angela Borella

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. Viscosity of sample indicates oil is within ISO 220 range, advise investigate. Confirm oil type. The AN level is acceptable for this fluid.





Resample at the next service interval to monitor.All component wear rates are normal. The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. Confirm oil type. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

MELT SHOP - SGP NORTHSIDE GRINDER NORTH GEARBOX (S/N 15-4000-0820) Component

Gearbox Fluid EP 320 (--- QTS)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

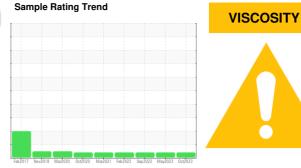
All component wear rates are normal.

Contamination

The water content is negligible. There is no indication of any contamination in the oil.

Fluid Condition

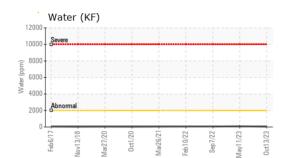
Viscosity of sample indicates oil is within ISO 220 range, advise investigate. Confirm oil type. The AN level is acceptable for this fluid.

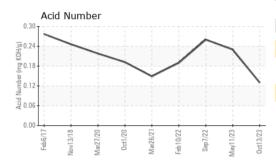


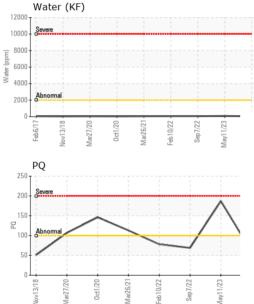
Sample Number Client Info RP0038603 RP0034445 RP0029744 Sample Date Client Info 13 Oct 2023 11 May 2023 07 Sep 2022 Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A WEAR METALS method Imit/base current History1 history2 PQ ASTM D8184 59 187 69 Iron ppm ASTM D5185m >15 <1 1 <1 Nickel ppm ASTM D5185m >15 <1 <1 0 Nickel ppm ASTM D5185m >5 <0 0 0 0 Silver ppm ASTM D5185m >20 <1 4 5 Copper ppm ASTM D5185m >20 <1 0 0 Copper ppm <			ing a the state	live it /le e e e		la la tament	history O
Sample Date Client Info 13 Oct 2023 11 May 2023 07 Sep 2022 Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info N/A N/A N/A N/A N/A Sample Status method limit/base current history1 history2 PQ ASTM D8184 59 187 69 Iron ppm ASTM D5185 >15 <1 1 <1 Nickel ppm ASTM D5185 >15 <1 1 <1 0 Silver ppm ASTM D5185 >100 0 0 0 Aluminum ppm ASTM D5185 >200 <1 4 5 Tin ppm ASTM D5185 >200 <1 0 0 Antimony ppm ASTM D5185 >0 0 0 0 Antimony	SAMPLE INFORM	ATION	method	limit/base		history1	history2
Machine Age Oil Age Oil Age Oil Age I Age Oil ChangedrisClient Info Client Info000Oil ChangedClient InfoN/AN/AN/AN/ASample StatusIImit/basecurrenthistory1history2PQASTM D81845918769IronppmASTM D8185>2009610086ChromiumppmASTM D5185>15<1	Sample Number						
Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A ATTENTION ATTENTION ATTENTION WEAR METALS method limit/base current history1 history2 PQ ASTM D5185m >200 96 100 86 Chromium ppm ASTM D5185m >15 <1	Sample Date					11 May 2023	07 Sep 2022
Oil Changed Client Info N/A N/A N/A Sample Status Client Info N/A ATTENTION ATTENTION ATTENTION WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 59 187 69 Iron ppm ASTM D5185m >200 96 100 86 Chromium ppm ASTM D5185m >15 <1	Machine Age				-		
Sample Status Image Status Method Imit/base current ATTENTION ATTENTION ATTENTION WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 59 187 69 Iron ppm ASTM D5185m >200 96 100 86 Chromium ppm ASTM D5185m >15 <1	Oil Age	hrs			-	÷	÷
WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 59 187 69 Iron ppm ASTM D8185m<>200 96 100 86 Chromium ppm ASTM D5185m >200 96 100 86 Chromium ppm ASTM D5185m >15 <1	Oil Changed		Client Info				
PQ ASTM D8184 59 187 69 Iron ppm ASTM D5185m >200 96 100 86 Chromium ppm ASTM D5185m >15 <1 1 <1 Nickel ppm ASTM D5185m >15 <1 1 <1 0 Nickel ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m >25 0 2 <1 Lead ppm ASTM D5185m >200 <1 0 0 Copper ppm ASTM D5185m >200 <1 0 0 Copper ppm ASTM D5185m >25 0 <1 0 Antimony ppm ASTM D5185m >25 0 <1 0 Antimony ppm ASTM D5185m 0 0 0 0 Chamadium ppm ASTM D5185m 0 0 0 0	Sample Status				ATTENTION	ATTENTION	ATTENTION
Iron ppm ASTM D5185m >200 96 100 86 Chromium ppm ASTM D5185m >15 <1 1 <1 Nickel ppm ASTM D5185m >15 <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >15 <1 1 <1 Nickel ppm ASTM D5185m >15 <1	PQ		ASTM D8184		59	187	69
Nickel ppm ASTM D5185m >15 <1 <1 0 Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m >25 0 2 <1	Iron	ppm	ASTM D5185m	>200	96	100	86
Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >25 0 2 <1	Chromium	ppm	ASTM D5185m	>15	<1	1	<1
Silver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m >25 0 2 <1	Nickel	ppm	ASTM D5185m	>15	<1	<1	0
Aluminum ppm ASTM D5185m >25 0 2 <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >100 <1 0 0 Copper ppm ASTM D5185m >200 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >200 <1 4 5 Tin ppm ASTM D5185m >25 0 <1	Aluminum	ppm	ASTM D5185m	>25	0	2	<1
Tin ppm ASTM D5185m >25 0 <1 0 Antimony ppm ASTM D5185m >5 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 2 2 1 0 Magnesium ppm ASTM D5185m 90 121 105 Phosphorus ppm ASTM D5185m 210 27.9 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Sil	Lead	ppm	ASTM D5185m	>100	<1	0	0
Antimony ppm ASTM D5185m >5 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 2 2 1 Magnesium ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 50 3 4 4	Copper	ppm	ASTM D5185m	>200	<1	4	5
Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 2 2 1 105 Magnesium ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 3 4 4 Sodium <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>25</td> <th>0</th> <td><1</td> <td>0</td>	Tin	ppm	ASTM D5185m	>25	0	<1	0
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m000BariumppmASTM D5185m300MolybdenumppmASTM D5185m000ManganeseppmASTM D5185m221MagnesiumppmASTM D5185m<1	Antimony	ppm	ASTM D5185m	>5			
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m000BariumppmASTM D5185m000MolybdenumppmASTM D5185m000ManganeseppmASTM D5185m221MagnesiumppmASTM D5185m<1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 3 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 2 2 1 Magnesium ppm ASTM D5185m 210 0 0 Calcium ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >20 1 1 0 Water % ASTM D5185m >20 1 0.008	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 3 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 2 2 1 Magnesium ppm ASTM D5185m <1 0 0 Calcium ppm ASTM D5185m <1 0 0 Calcium ppm ASTM D5185m 900 121 105 Phosphorus ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >20 1 1 0 Water % ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >200	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 2 2 1 Magnesium ppm ASTM D5185m 21 0 0 Calcium ppm ASTM D5185m <1	Boron	ppm	ASTM D5185m		0	0	0
Manganese ppm ASTM D5185m 2 2 1 Magnesium ppm ASTM D5185m <1	Barium	ppm	ASTM D5185m		3	0	0
Magnesium ppm ASTM D5185m <1 0 0 Calcium ppm ASTM D5185m 90 121 105 Phosphorus ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >20 1 1 0 Water % ASTM D5185m >20 1 1 0 Water % ASTM D5185m >20 1 0.008 0.006 ppm Water ppm ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >2000 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m 90 121 105 Phosphorus ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >20 1 1 0 Water % ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >2000 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2	Manganese	ppm	ASTM D5185m		2	2	1
Phosphorus ppm ASTM D5185m 210 279 249 Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >20 3 4 4 Sodium ppm ASTM D5185m >20 1 1 0 Water % ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >200 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2	Magnesium	ppm	ASTM D5185m		<1	0	0
Zinc ppm ASTM D5185m 51 85 97 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m >20 1 1 0 Potassium ppm ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >2000 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2	Calcium	ppm	ASTM D5185m		90	121	105
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>50344SodiumppmASTM D5185m032PotassiumppmASTM D5185m>20110Water%ASTM D6304>0.20.0040.0080.006ppm WaterppmASTM D6304>200045.786.360.5FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Phosphorus	ppm	ASTM D5185m		210	279	249
Silicon ppm ASTM D5185m >50 3 4 4 Sodium ppm ASTM D5185m 0 3 2 Potassium ppm ASTM D5185m >20 1 1 0 Water % ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >2000 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2	Zinc	ppm	ASTM D5185m		51	85	97
Sodium ppm ASTM D5185m 0 3 2 Potassium ppm ASTM D5185m >20 1 1 0 Water % ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >2000 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 1 0 Water % ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >2000 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2	Silicon	ppm	ASTM D5185m	>50	3	4	4
Water % ASTM D6304 >0.2 0.004 0.008 0.006 ppm Water ppm ASTM D6304 >2000 45.7 86.3 60.5 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185m		0	3	2
ppm WaterppmASTM D6304>200045.786.360.5FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Potassium	ppm	ASTM D5185m	>20	1	1	0
FLUID DEGRADATION method limit/base current history1 history2	Water	%	ASTM D6304	>0.2	0.004	0.008	0.006
	ppm Water	ppm	ASTM D6304	>2000	45.7	86.3	60.5
Acid Number (AN) mg KOH/g ASTM D8045 0.13 0.23 0.26	FLUID DEGRADA		method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045		0.13	0.23	0.26



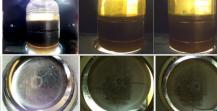
OIL ANALYSIS REPORT



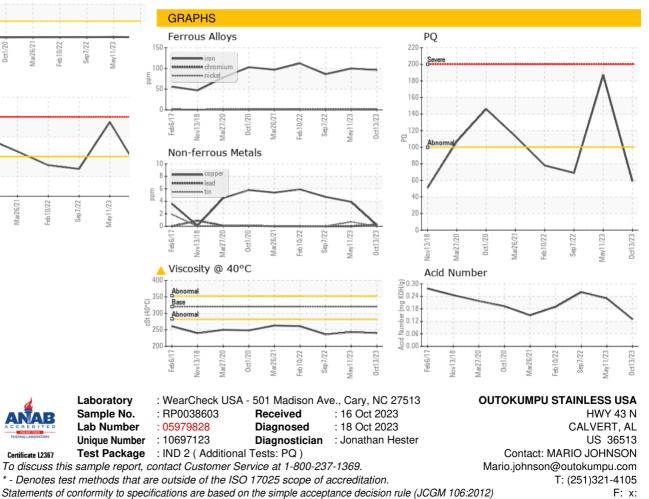




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	MODER	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	LIGHT
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	A 240	2 43	2 36
SAMPLE IMAGES		method	limit/base	current	history1	history2
Color Color						



Bottom



Report Id: OUTCALAL [WUSCAR] 05979828 (Generated: 10/18/2023 14:27:57) Rev: 1

Submitted By: DALE ROBINSON

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