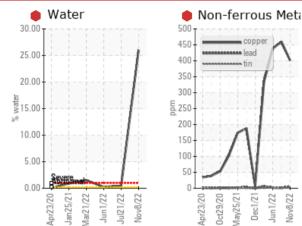


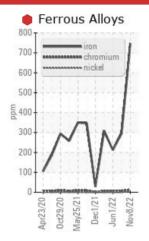
PROBLEM SUMMARY

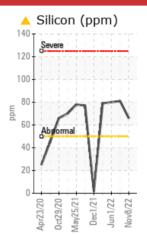
Area [97853728] Machine Id KR-GR-002930 - GRINDER A1 (EAST) (S/N GRIND A - 11513021) Component Gearbox Fluid

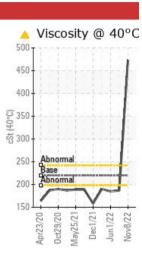
GEAR OIL ISO 220 (6 QTS)

COMPONENT CONDITION SUMMARY









RECOMMENDATION

We advise that you check for the source of water entry. We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS Sample Status SEVERE ABNORMAL ABNORMAL ASTM D5185m >200 747 ▲ 295 A 212 Iron ppm Aluminum ASTM D5185m >25 13 11 ppm 438 Copper ASTM D5185m >200 401 460 ppm Silicon ASTM D5185m >50 66 81 **8**0 ppm Water % ASTM D6304 >0.2 **26.0** ▲ 0.473 ▲ 0.219 ppm Water ppm ASTM D6304 >2000 260000 **4730 2190** NORML NORML Appearance scalar *Visual MILKY NORML **Emulsified Water** *Visual >0.2 ▲ 0.2% 0.2% scalar 0.2% Free Water scalar *Visual 1.0 NEG Visc @ 40°C ASTM D445 220 cSt **473.3** 187 185

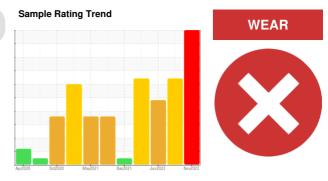
Customer Id: KRAKIR Sample No.: PCA0081591 Lab Number: 05690638 Test Package: IND 1



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 customerservice@wearcheck.com



RECOMMENDE	DED ACTIONS						
Action	Status	Date	Done By	Description			
Inspect Wear Source	MISSED	Feb 28 2023	?	We advise that you inspect for the source(s) of wear.			
Change Fluid	MISSED	Feb 28 2023	?	We recommend that you drain the oil from the component if this has not already been done.			
Resample	MISSED	Feb 28 2023	?	We recommend an early resample to monitor this condition.			
Check Dirt Access	MISSED	Feb 28 2023	?	We advise that you check all areas where dirt can enter the system.			
Check Water Access	MISSED	Feb 28 2023	?	We advise that you check for the source of water entry.			

HISTORICAL DIAGNOSIS

21 Jul 2022 Diag: Don Baldridge

We advise that you check for the source of water entry. We advise that you follow the water drain-off procedure for this component. We recommend an early resample to monitor this condition. Bearing and/or gear wear is indicated. Elemental level of silicon (Si) above normal indicating ingress of seal material. There is a moderate concentration of water present in the oil. Free water present. The condition of the oil is acceptable for the time in service.



01 Jun 2022 Diag: Jonathan Hester

No corrective action is recommended at this time. We recommend an early resample to monitor this condition.Bearing and/or gear wear is indicated. Elemental level of silicon (Si) above normal indicating ingress of seal material. There is a light concentration of water present in the oil. The condition of the oil is acceptable for the time in service.

21 Mar 2022 Diag: Don Baldridge

WATER



We advise that you check for the source of water entry. We advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. Resample at the next service interval to monitor.Bearing and/or gear wear is indicated. Elemental level of silicon (Si) above normal. There is a high concentration of water present in the oil. The condition of the oil is acceptable for the time in service.







OIL ANALYSIS REPORT

Area [97853728] KR-GR-002930 - GRINDER A1 (EAST) (S/N GRIND A - 11513021) Component

Gearbox

GEAR OIL ISO 220 (6 QTS)

DIAGNOSIS

Recommendation

We advise that you check for the source of water entry. We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

🛑 Wear

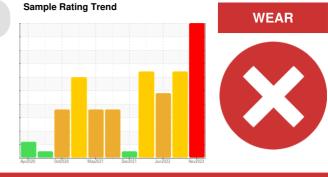
Bearing and/or gear wear is indicated.

Contamination

Appearance is milky. Free water present. There is a high concentration of water present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition

Viscosity of sample indicates oil is within ISO 460 range, advise investigate. Confirm oil type. The oil is no longer serviceable due to the presence of contaminants.



Sample Date Client Info 08 Nov 2022 21 Jul 2022 01 Jun 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 ABNORMAL Sample Status method limit/base current history1 history2 Iron ppm ASTM 05165m >15 4 0 0 Nickel ppm ASTM 05165m >15 4 0 0 Silver ppm ASTM 05165m >15 4 0 0 Muminum ppm ASTM 05165m >25 15 13 11 1 Lead ppm ASTM 05165m >200 401 460 438 Tin ppm ASTM 05165m >200 401 460 438 Tin ppm ASTM 05165m >20 0 0 0 <	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
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 Sample Status Client Info N/A N/A N/A N/A WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5165m >15 13 7 6 Nickel ppm ASTM D5165m >15 13 1 1 Sliver ppm ASTM D5165m >20 401 460 438 Tin ppm ASTM D5165m >25 1 1 1 Vanadium ppm ASTM D5165m >25 1 1 1 Vanadium ppm ASTM D5165m >26 1 0 0 0 Cadmium ppm ASTM D5165m >25 1 1 1 1 1 Vanadium ppm ASTM D5165m >20 0	Sample Number		Client Info		PCA0081591	PCA0078676	PCA0074005
Oil Age Ins Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Imit/base current History1 History2 Iron ppm ASTM D5185m >200 747 295 212 Chromium ppm ASTM D5185m >13 7 6 Nickel ppm ASTM D5185m >15 4 0 0 Silver ppm ASTM D5185m >200 4011 4 60 2 Aluminum ppm ASTM D5185m >200 4011 4 60 4383 Tin ppm ASTM D5185m >200 4011 4 60 4 Vanadium ppm ASTM D5185m >200 4011 1 1 Vanadium ppm ASTM D5185m 50 24 0 8 Barium ppm ASTM D5185m 101 105 11	Sample Date		Client Info		08 Nov 2022	21 Jul 2022	01 Jun 2022
Oil Changed Sample Status Client Info N/A N/A N/A A/A WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >200 747 ▲ 295 ▲ 212 Chromium ppm ASTM D5185m >15 13 7 6 Nickel ppm ASTM D5185m >15 4 0 0 Titanium ppm ASTM D5185m >15 13 11 Silver ppm ASTM D5185m >200 4011 ▲ 4600 ▲ 438 Tin ppm ASTM D5185m >200 4011 ▲ 4600 ▲ 438 Tin ppm ASTM D5185m >200 ● 0 0 0 Cadmium ppm ASTM D5185m >20 ● 0 0 0 Cadmium ppm ASTM D5185m 50 24 0 8 Barium ppm ASTM D5185m 50	Machine Age	hrs	Client Info		0	0	0
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Titanium ppm ASTM D5185m <1	Chromium	ppm	ASTM D5185m	>15	13	7	6
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MagnesiumppmASTM D5185m50200CalciumppmASTM D5185m502123PhosphorusppmASTM D5185m350534650623ZincppmASTM D5185m100264268240SulfurppmASTM D5185m12500157211858215705CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>506668180SodiumppmASTM D5185m>20100PotassiumppmASTM D5185m>20100Water%ASTM D6304>0.226.040.4730.219ppm WaterppmASTM D6304>200026000047302190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONENONENONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNORMLMORMLNORMLNORMLAppearancescalar*VisualNORMLNORMLNORMLNORML	Molybdenum	ppm	ASTM D5185m	15	101	105	115
MagnesiumppmASTM D5185n50200CalciumppmASTM D5185n502123PhosphorusppmASTM D5185n350534650623ZincppmASTM D5185n100264268240SulfurppmASTM D5185n12500157211858215705CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185n>50▲66▲81▲80SodiumppmASTM D5185n>50▲66▲81▲80SodiumppmASTM D5185n>201000PotassiumppmASTM D5185n>201000Water%ASTM D6304>0.2▲26.0▲0.473▲0.219ppm WaterppmASTM D6304>2000▲260000▲4730▲2190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONENONENONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONENONESiltscalar*VisualNONENONENONENONENONEDebrisscalar*Visual <td< td=""><th>Manganese</th><td></td><td>ASTM D5185m</td><td></td><th>3</th><td><1</td><td><1</td></td<>	Manganese		ASTM D5185m		3	<1	<1
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ZincppmASTM D5185m100264268240SulfurppmASTM D5185m12500157211858215705CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>50▲66▲81▲80SodiumppmASTM D5185m>50▲66▲81▲80PotassiumppmASTM D5185m>201000Water%ASTM D6304>0.2▲26.0▲0.473▲0.219ppmWater%ASTM D6304>2000▲260000▲4730▲2190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONENONESiltscalar*VisualNONENONENONENONENONENONEDebrisscalar*VisualNONENONENONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLNORMLCodorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*VisualNORML0.2%0.2%0.2%	Phosphorus	ppm	ASTM D5185m	350	534	650	623
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>50▲66▲81▲80SodiumppmASTM D5185m2000PotassiumppmASTM D5185m>20100Water%ASTM D5185m>20100Water%ASTM D6304>0.226.0▲0.473▲0.219ppm WaterppmASTM D6304>2000260000▲4730▲2190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNORMLMILKYNORMLNORMLAppearancescalar*VisualNORMLNORMLNORMLNORMLCodorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	Zinc	ppm	ASTM D5185m	100	264	268	240
SiliconppmASTM D5185m>50▲ 66▲ 81▲ 80SodiumppmASTM D5185m200PotassiumppmASTM D5185m>20100Water%ASTM D6304>0.226.0▲ 0.473▲ 0.219ppm WaterppmASTM D6304>2000260000▲ 4730▲ 2190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	Sulfur		ASTM D5185m	12500	15721	18582	15705
SodiumppmASTM D5185m200PotassiumppmASTM D5185m>20100Water%ASTM D6304>0.226.0▲0.473▲0.219ppm WaterppmASTM D6304>2000260000▲4730▲2190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNORMLMILKYNORMLNORMLAppearancescalar*VisualNORMLNORMLNORMLNORMLCodorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	CONTAMINAN	TS	method	limit/base	current	history1	history2
PotassiumppmASTM D5185m>20100Water%ASTM D6304>0.226.0△0.473△0.219ppm WaterppmASTM D6304>2000260000△4730△2190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	Silicon	ppm	ASTM D5185m	>50	6 6	8 1	▲ 80
Water%ASTM D6304>0.226.00.4730.219ppm WaterppmASTM D6304>2000260000047302190VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONEMODERDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	Sodium	ppm	ASTM D5185m		2	0	0
ppm Water ppm ASTM D6304 >2000	Potassium	ppm	ASTM D5185m	>20	1	0	0
VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONEMODERDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	Water	%	ASTM D6304	>0.2	e 26.0	0.473	▲ 0.219
White Metalscalar*VisualNONEMODERMODERMODERYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONEMODERDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	ppm Water	ppm	ASTM D6304	>2000	e 260000	4730	2 190
Yellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONEMODERDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	VISUAL		method	limit/base	current	history1	history2
Precipitatescalar*VisualNONENONENONENONENONESiltscalar*VisualNONENONENONEMODERDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	White Metal						
Siltscalar*VisualNONENONENONEMODERDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Debrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	Precipitate						
Sand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%		scalar	*Visual	NONE		NONE	MODER
Appearancescalar*VisualNORMLMILKYNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.20.2%0.2%0.2%	Debris	scalar		NONE		NONE	
Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 • 0.2% • 0.2% 0.2%	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Emulsified Water scalar *Visual >0.2 🌲 0.2% 🔺 0.2% 0.2%	Appearance	scalar	*Visual	NORML	🔺 MILKY	NORML	NORML
·	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Free Water scalar *Visual 🔺 1.0 NEG	Emulsified Water	scalar	*Visual	>0.2	0.2%	▲ 0.2%	0.2%
	Free Water	scalar	*Visual		<u> </u>	1 .0	NEG

Contact/Location: WALLACE WARD - KRAKIR



OIL ANALYSIS REPORT

