

OIL ANALYSIS REPORT

TM 11 TM 11 PRESSURE ROLL REDUCER Component

Gearbox Fluid

ROYAL PURPLE SYNERGY 90/220 (--- GAL)

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

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

Fluid Condition

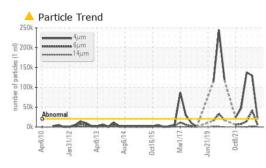
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

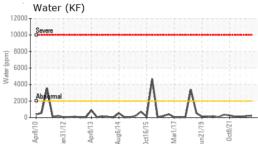


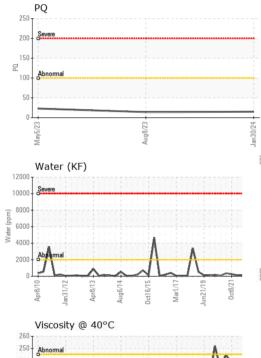
Sample Number Client Info RP0037973 RP0034371 RP002358 Sample Date ins Client Info 0 0 0 0 Machine Age hrs Client Info 0 0 0 0 Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Image Current ATTENTION ABNORMAL SEVERE WEAR METALS method Imit/base current history1 history1 PQ ASTM D5185m >15 <1 <1 0 Chromium ppm ASTM D5185m >15 <1 <1 0 Nickel ppm ASTM D5185m >200 <1 2 <1 0 Silver ppm ASTM D5185m >200 <1 2 <1 0 Copper ppm ASTM D5185m >200 <1 2	-		rzulu Janzu	112 Aprzul3 Augzul4	Uct2015 Mar2017 Jun2019	UCTZUZ I		
Sample Date Client Info 30 Jan 2024 08 Aug 2023 05 May 20 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 Client Info N/A N/A N/A PQ ASTM DB184 15 14 23 Iron ppm ASTM DB185 >15 1 -1 0 Nickel ppm ASTM DB185 >15 0 -1 0 Nickel ppm ASTM DB185 >15 0 -1 0 Nickel ppm ASTM DB185 >20 -1 2 -1 Nickel ppm ASTM DB185 >25 <1 4 2 2 Lead ppm ASTM DB185 >20 -1 2 -1 0 Vanadium ppm ASTM DB185 0	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2	
Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 Oil Age hrs Client Info N/A N/A N/A Sample Status Imit/base current history1 history1 PQ ASTM D5185m >200 7 67 62 Chromium ppm ASTM D5185m >15 1 0 1 Nickel ppm ASTM D5185m >15 0 <1	Sample Number		Client Info		RP0037973	RP0034371	RP0023580	
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Oil Changed Sample Status Client Info N/A N/A N/A N/A N/A WEAR METALS method limit/base current history1 history1 PQ ASTM D5185m >200 7 67 62 62 Chromium ppm ASTM D5185m >15 0 <1	Machine Age	hrs	Client Info		0	0	0	
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WEAR METALS method limit/base current history1 history1 PQ ASTM D8184 15 14 23 Iron ppm ASTM D8186 >200 7 67 62 Chromium ppm ASTM D5185m >15 0 <1	Oil Changed		Client Info		N/A	N/A	N/A	
PQ ASTM D8184 15 14 23 Iron ppm ASTM D5185m >200 7 67 62 Chromium ppm ASTM D5185m >15 0 <1 0 Nickel ppm ASTM D5185m >15 0 <1 0 Silver ppm ASTM D5185m >100 0 0 0 Aluminum ppm ASTM D5185m >200 <1 <1 0 0 Copper ppm ASTM D5185m >200 <1 <1 0 0 0 Vanadium ppm ASTM D5185m >200 <1 <1 0 0 0 Cadmium ppm ASTM D5185m <21 <1 <1 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sample Status				ATTENTION	ABNORMAL	SEVERE	
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Chromium ppm ASTM D5185m >15 <1 <1 <1 0 Nickel ppm ASTM D5185m >15 0 <1	PQ		ASTM D8184		15	14	23	
Nickel ppm ASTM D5185m >15 0 <1 0 Titanium ppm ASTM D5185m <1	Iron	ppm	ASTM D5185m	>200	7	67	62	
Titanium ppm ASTM D5185m <1 0 <1 Silver ppm ASTM D5185m >25 <1	Chromium	ppm	ASTM D5185m	>15	<1	<1	0	
Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m >25 <1	Nickel	ppm	ASTM D5185m	>15	0	<1	0	
Aluminum ppm ASTM D5185m >25 <1 4 2 Lead ppm ASTM D5185m >100 0 0 0 Copper ppm ASTM D5185m >200 <1	Titanium	ppm	ASTM D5185m		<1	0	<1	
Lead ppm ASTM D5185m >100 0 0 0 Copper ppm ASTM D5185m >200 <1	Silver	ppm	ASTM D5185m		0	0	0	
Copper ppm ASTM D5185m >200 <1 2 <1 Tin ppm ASTM D5185m >25 <1	Aluminum	ppm	ASTM D5185m	>25	<1	4	2	
Copper ppm ASTM D5185m >200 <1 2 <1 Tin ppm ASTM D5185m >25 <1	Lead		ASTM D5185m	>100	0	0	0	
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Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 9 22 19 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 60 <1	Tin	ppm	ASTM D5185m	>25	<1	<1	0	
Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 9 22 19 Barium ppm ASTM D5185m 0 19 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 60 -1 0 Calcium ppm ASTM D5185m 600 -1 0 Phosphorus ppm ASTM D5185m 56 26 0 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >50 17 3 3 Sodium ppm ASTM D5185m >20 -1 0 0 Water % ASTM D5185m >20	Vanadium	ppm	ASTM D5185m		<1	0	0	
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Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m <1	137565	Barium	ppm	ASTM D5185m		0	19	0
Manganese ppm ASTM D5185m <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 60 <1	Molybdenum		ASTM D5185m			0	0	
Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 370 401 238 232 Phosphorus ppm ASTM D5185m 370 401 238 232 Zinc ppm ASTM D5185m 370 401 238 232 Zinc ppm ASTM D5185m 370 401 238 232 Zinc ppm ASTM D5185m 56 26 0 0 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >50 17 3 3 Sodium ppm ASTM D5185m >20 <1	-		ASTM D5185m		<1	<1	<1	
Calcium ppm ASTM D5185m 60 <1 0 Phosphorus ppm ASTM D5185m 370 401 238 232 Zinc ppm ASTM D5185m 370 401 238 232 Zinc ppm ASTM D5185m 370 401 238 232 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >50 17 3 3 Sodium ppm ASTM D5185m >50 17 3 3 Potassium ppm ASTM D5185m >20 <1	-		ASTM D5185m		0	0	0	
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Sodium ppm ASTM D5185m 2 3 2 Potassium ppm ASTM D5185m >20 <1 0 0 Water % ASTM D5185m >20 <1 0 0 Water % ASTM D6304 >0.2 0.021 0.016 0.013 ppm Water ppm ASTM D6304 >2000 219 165.1 130.6 FLUID CLEANLINESS method limit/base current history1 history1 Particles >4µm ASTM D7647 >20000 19868 129997 137565 Particles >6µm ASTM D7647 >5000 5005 41343 14216 Particles >14µm ASTM D7647 >640 503 1992 41 Particles >21µm ASTM D7647 >160 130 592 6 Particles >38µm ASTM D7647 >40 8 29 1 Particles >71µm ASTM D7647 >10 1 2 1	CONTAMINANTS		method	limit/base	current	history1	history2	
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Potassium ppm ASTM D5185m >20 <1 0 0 Water % ASTM D6304 >0.2 0.021 0.016 0.013 ppm Water ppm ASTM D6304 >2000 219 165.1 130.6 FLUID CLEANLINESS method limit/base current history1 history1 Particles >4µm ASTM D7647 >20000 19868 129997 137565 Particles >6µm ASTM D7647 >5000 5005 41343 14216 Particles >14µm ASTM D7647 >640 503 1992 41 Particles >21µm ASTM D7647 >160 130 592 6 Particles >38µm ASTM D7647 >40 8 29 1 Particles >71µm ASTM D7647 >10 1 2 1 Oil Cleanliness ISO 4406 (c) >21/19/16 21/20/16 24/23/18 24/21/13								
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Oil Cleanliness ISO 4406 (c) >21/19/16 21/20/16 24/23/18 24/21/13 FLUID DEGRADATION method limit/base current history1 history1								
						4/23/18	• 24/21/13	
Acid Number (AN) mg KOH/g ASTM D8045 1.33 1.26 1.52 1.59	FLUID DEGRADA	TION	method	limit/base	current	history1	history2	
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.33	1.26	1.52	1.59	

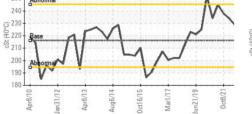


OIL ANALYSIS REPORT







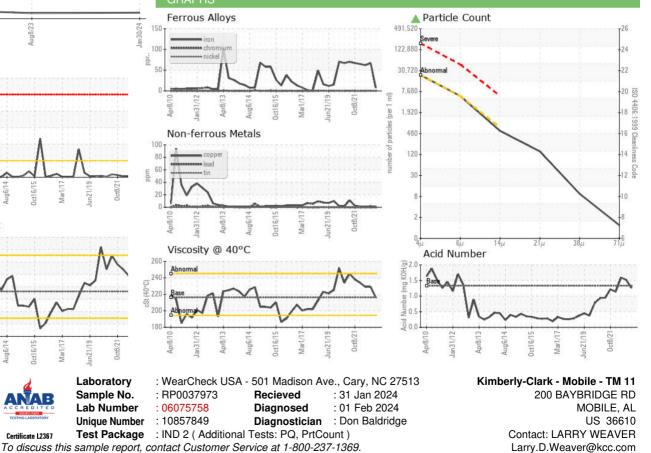


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VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	LIGHT	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 PROPER	TIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	216.1	216	229	229
SAMPLE IMAGE	S	method	limit/base	current	history1	history2
Color						
					1700	

Bottom





* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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T: