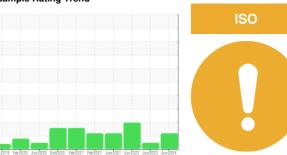


OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

KAESER BSD 60 6799151 (S/N 1507)

Component Compressor

KAESER SIGMA (OEM) S-460 (--- GAL)

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of particulates present in the oil.

Fluid Condition

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

Machine Age hrs Client Info 24899 19851 14091 1			Jun2019 Feb2	020 Jun2020 Oct2020 Feb.	2021 Feb2021 Jun2021 Jun2022 Jun	2023 Jun2024	
Sample Number Client Info KC129817 KC110681 KC106099 Sample Date Client Info 06 Jun 2024 09 Jun 2023 22 Jun 2022 Machine Age hrs Client Info 5000 2391 5416 Changed ATTENTION NORMAL ABNORMAI ABNORMAI ABNORMAI WEAR METALS method Imit/base current history1 history2 Mischell Ppm ASTM 05185m >50 <1 <1 <1 <1 <1 <1 <1 <		44 TION					
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info							
Dil Age	•						22 Jun 2022
Coli Changed Changed Changed Changed ATTENTION NORMAL ABNORMAI							
MEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 <1	•	hrs					
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >50 <1	-		Client Info		_		_
Chromium					ATTENTION	NORMAL	ABNORMAL
Chromium ppm ASTM D5185m >10 <1 0 <1 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >3	Iron	ppm	ASTM D5185m	>50	<1		<1
Ditanium		ppm					
Silver	Nickel	ppm	ASTM D5185m	>3	-		0
Aluminum ppm ASTM D5185m >10 2 0 <1 Lead ppm ASTM D5185m >10 <1 0 0 Copper ppm ASTM D5185m >50 9 8 8 8 Tin ppm ASTM D5185m >10 <1 0 <1 0 Capper ppm ASTM D5185m >10 <1 0 <1 Cadamium ppm ASTM D5185m 0 0 0 0 0 0 Cadamium ppm ASTM D5185m 0 0 0 0 0 0 Cadamium ppm ASTM D5185m 0 0 0 0 0 0 Cadamium ppm ASTM D5185m 0 0 0 0 0 0 0 Cadamium ppm ASTM D5185m 0 0 0 0 0 0 0 Cadamium ppm ASTM D5185m 0 0 0 0 0 0 0 Cadamium ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Titanium	ppm	ASTM D5185m	>3	<1		0
Lead ppm ASTM D5185m >10 <1 0 0 Copper ppm ASTM D5185m >50 9 8 8 Tin ppm ASTM D5185m >10 <1 0 <1 Antimony ppm ASTM D5185m 0 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Barium 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 0 0 0 0 Magnesium ppm ASTM D5185m 20 4 26 11 Calcium ppm ASTM D5185m 2 0 <1 1	Silver	ppm	ASTM D5185m	>2			0
Copper ppm ASTM D5185m >50 9 8 8 Tin ppm ASTM D5185m >10 <1	Aluminum	ppm	ASTM D5185m	>10	2	0	<1
Tin ppm ASTM D5185m >10 <1 0 <1 Antimony ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>10	<1	0	0
Antimony ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 1 1 1 1 Calcium ppm ASTM D5185m 2 0 <1 0 Phosphorus ppm ASTM D5185m 0 0 0 4 Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m > 25 <1 <1 <1 <1 <1 State of the current history1 history2 ASTM D5185m > 20 4 1 20 <1 <1 <1 State of the current history1 history2 Particles > 4µm ASTM D5185m > 20 4 1 20 <1 <1 <2 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Copper	ppm	ASTM D5185m	>50	9	8	8
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 0 Barium ppm ASTM D5185m 90 0 0 0 0 Molybdenum ppm ASTM D5185m 90 0 0 0 0 Magnesium ppm ASTM D5185m 90 24 26 11 1 Magnesium ppm ASTM D5185m 90 24 26 11 0 Phosphorus ppm ASTM D5185m 90 24 26 11 0 Phosphorus ppm ASTM D5185m 7 0 5 1 1 1 1 1 1 1 1 1 1 1 1 2 2 1	Tin	ppm	ASTM D5185m	>10	<1	0	<1
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 90 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 1 1 1 1 Magnesium ppm ASTM D5185m 90 24 26 11 Calcium ppm ASTM D5185m 90 24 26 11 Calcium ppm ASTM D5185m 2 0 <1	Antimony	ppm	ASTM D5185m				
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 90 24 26 11 1 Magnesium ppm ASTM D5185m 90 24 26 11 0 Phosphorus ppm ASTM D5185m 90 24 26 11 0 Phosphorus ppm ASTM D5185m 90 0 4 1 0 4 Zinc ppm ASTM D5185m 7 0 5 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 <1 <1 Sodium ppm ASTM D5185m >25 <1 <1 <1 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 1 1 1 Magnesium ppm ASTM D5185m 90 24 26 11 Calcium ppm ASTM D5185m 90 24 26 11 Calcium ppm ASTM D5185m 2 0 -1 0 Phosphorus ppm ASTM D5185m 2 0 -1 0 Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 1 1 1 Magnesium ppm ASTM D5185m 90 24 26 11 Calcium ppm ASTM D5185m 2 0 <1 0 Phosphorus ppm ASTM D5185m 2 0 <4 0 Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >25 <1 <1 <1 <1 Sodium ppm ASTM D5185m >25 <1 <1 <1 <1 Sodium ppm ASTM D5185m >20 4 1 2 Water % ASTM D5185m >20 4 1 2 </td <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td>0</td> <td>0</td>	Boron	ppm	ASTM D5185m		0	0	0
Manganese ppm ASTM D5185m 1 1 1 1 Magnesium ppm ASTM D5185m 90 24 26 11 Calcium ppm ASTM D5185m 2 0 <1 0 Phosphorus ppm ASTM D5185m 0 0 4 Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 <1 Sodium ppm ASTM D5185m >25 <1 <1 <1 <2 Water % ASTM D5185m >20 4 1 2 Water % ASTM D6185m >20 4 1 2 Water % ASTM D6185m >20 4 1 2 Water % ASTM D6304 >500 19	Barium	ppm	ASTM D5185m	90	0	0	0
Magnesium ppm ASTM D5185m 90 24 26 11 Calcium ppm ASTM D5185m 2 0 <1 0 Phosphorus ppm ASTM D5185m 2 0 0 4 Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 <1 <1 <1 <1 <1 <1 <2 <1 <1 <1 <2 <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	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m 2 0 <1 0 Phosphorus ppm ASTM D5185m 0 0 4 Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 <1 Sodium ppm ASTM D5185m >25 <1 <1 <1 <1 <1 <1 <2 <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	Manganese	ppm	ASTM D5185m		1	1	1
Phosphorus ppm ASTM D5185m 0 0 4 Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >20 4 1 2 Water % ASTM D5185m >20 4 1 2 Water % ASTM D6304 >0.05 0.018 0.022 0.013 ppm Water ppm ASTM D6304 >500 190 226.2 139.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >80 118 19 4 126 Particles >21μm ASTM D7647 >80 118 19 4 182 Particles >38μm ASTM D7647 >4 0 0 <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>90</td> <td>24</td> <td>26</td> <td>11</td>	Magnesium	ppm	ASTM D5185m	90	24	26	11
Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >20 4 1 2 Water % ASTM D6304 >0.05 0.018 0.022 0.013 opm Water ppm ASTM D6304 >500 190 226.2 139.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 5491 1424 48817 Particles >6μm ASTM D7647 >1300 1672 264 15169 Particles >21μm ASTM D7647 >20 19 4 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 1 18/15/11 23/21/17	Calcium	ppm	ASTM D5185m	2	0	<1	0
Zinc ppm ASTM D5185m 7 0 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >20 4 1 2 Water % ASTM D6304 >0.05 0.018 0.022 0.013 ppm Water ppm ASTM D6304 >500 190 226.2 139.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >1300 1672 264 ▲ 15169 Particles >14μm ASTM D7647 >80 118 19 ▲ 1126 Particles >21μm ASTM D7647 >20 19 4 ▲ 182 Particles >71μm ASTM D7647 >3 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 <td>Phosphorus</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td>0</td> <td>4</td>	Phosphorus	ppm	ASTM D5185m		0	0	4
Solition ppm ASTM D5185m >25 <1 <1 <1 <1 <1 <1 <1 <	Zinc	ppm	ASTM D5185m		7	0	5
Solition ppm ASTM D5185m >25 <1 <1 <1 <1 <1 <1 <1 <	CONTAMINANTS	3	method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m 15 8 4 Potassium ppm ASTM D5185m >20 4 1 2 Water % ASTM D6304 >0.05 0.018 0.022 0.013 opm Water ppm ASTM D6304 >500 190 226.2 139.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 5491 1424 48817 Particles >6μm ASTM D7647 >1300 1672 264 Δ 15169 Particles >14μm ASTM D7647 >80 118 19 Δ 1126 Particles >21μm ASTM D7647 >20 19 4 Δ 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Dil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Potassium ppm ASTM D5185m >20 4 1 2 Water % ASTM D6304 >0.05 0.018 0.022 0.013 opm Water ppm ASTM D6304 >500 190 226.2 139.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 5491 1424 48817 Particles >6μm ASTM D7647 >1300 1672 264 Δ 15169 Particles >14μm ASTM D7647 >80 118 19 Δ 1126 Particles >21μm ASTM D7647 >20 19 4 Δ 182 Particles >38μm ASTM D7647 >4 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Dil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 Δ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2 </td <td></td> <td></td> <td></td> <td>7 = 0</td> <td></td> <td></td> <td></td>				7 = 0			
Water % ASTM D6304 >0.05 0.018 0.022 0.013 opm Water ppm ASTM D6304 >500 190 226.2 139.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 5491 1424 48817 Particles >6μm ASTM D7647 >1300 1672 264 ▲ 15169 Particles >14μm ASTM D7647 >80 118 19 ▲ 1126 Particles >21μm ASTM D7647 >20 19 4 ▲ 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Dil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 ▲ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2				>20	_		
Opm Water ppm ASTM D6304 >500 190 226.2 139.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 5491 1424 48817 Particles >6μm ASTM D7647 >1300 1672 264 Δ 15169 Particles >14μm ASTM D7647 >80 118 19 Δ 1126 Particles >21μm ASTM D7647 >20 19 4 Δ 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Poil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 Δ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2							
Particles >4μm ASTM D7647 5491 1424 48817 Particles >6μm ASTM D7647 >1300 1672 264 15169 Particles >14μm ASTM D7647 >80 118 19 1126 Particles >21μm ASTM D7647 >20 19 4 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	opm Water						
Particles >6μm ASTM D7647 >1300 1672 264 ▲ 15169 Particles >14μm ASTM D7647 >80 118 19 ▲ 1126 Particles >21μm ASTM D7647 >20 19 4 ▲ 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Dil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 ▲ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >80 118 19 ▲ 1126 Particles >21μm ASTM D7647 >20 19 4 ▲ 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Dil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 ▲ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >4µm		ASTM D7647		5491	1424	48817
Particles >14μm ASTM D7647 >80 118 19 ▲ 1126 Particles >21μm ASTM D7647 >20 19 4 ▲ 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Dil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 ▲ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >6µm		ASTM D7647	>1300	1672	264	15169
Particles >21μm ASTM D7647 >20 19 4 ▲ 182 Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 ▲ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >14µm			>80			<u> 1126</u>
Particles >38μm ASTM D7647 >4 0 0 9 Particles >71μm ASTM D7647 >3 0 0 1 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >21µm		ASTM D7647	>20			
Particles >71µm ASTM D7647 >3 0 0 1 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 ▲ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >38µm						
Oil Cleanliness ISO 4406 (c) >/17/13 20/18/14 18/15/11 ▲ 23/21/17 FLUID DEGRADATION method limit/base current history1 history2	· ·						
	Oil Cleanliness						<u>\$\text{23/21/17}\$</u>
Acid Number (AN) mg KOH/g ASTM D8045 0.4 0.38 0.38 0.38	FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	0.4	0.38	0.38	0.38



OIL ANALYSIS REPORT







Certificate 12367

Laboratory Sample No.

: KC129817 Lab Number : 06207837 Unique Number : 11075298

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 12 Jun 2024 **Tested** : 13 Jun 2024

Diagnosed : 14 Jun 2024 - Angela Borella

Test Package : IND 2

To discuss this sample report, contact Customer Service at 1-800-237-1369. st - 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)

Report Id: BOYGAF [WUSCAR] 06207837 (Generated: 06/14/2024 11:47:35) Rev: 1

Contact/Location: SERVICE MANAGER ? - BOYGAF

BOYSEN

LIS

T:

F:

GAFFNEY, SC

Contact: SERVICE MANAGER