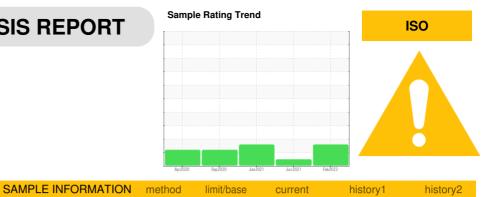


OIL ANALYSIS REPORT



^{Machine Id} 5300706 (S/N 1005) Component

Compressor

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

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. 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 high 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.

Sample Date Info 16 Feb 2023 02 Jun 2021 28 Jan 2021 Machine Age hrs Client Info 33579 32812 32791 Oil Age hrs Client Info 58 21 0 Oil Changed Client Info 58 21 0 0 Oil Changed Client Info Changed Not Changed Not Changed Sample Status method limit/base current history1 history2 Iron ppm ASTM D5185m >3 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >10 0 0 0 Auminum ppm ASTM D5185m >10 0 0 0 0 Auminum ppm ASTM D5185m 0 0 0 0 0 Auminum ppm ASTM D5185m 0 0 0 0 0	SAMPLE INFORM	ATION	method	limit/base	current	nistory i	nistory2
Machine Age hrs Client Info 33579 32812 32791 Oil Age hrs Client Info 58 21 0 Oil Changed Client Info Changed NoRMAL ABNORMAL NoRMAL ABNORMAL WEAR METALS method Imit/base current history1 History2 Iron ppm ASTM DS185m >50 <1	Sample Number		Client Info		KCP49193	KCP32841	KCP32522
Oil Age hrs Client Info 58 21 0 Oil Changed Client Info Changed ABNORMAL Not Changed Not Changed ABNORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185m >50 <1	Sample Date		Client Info		16 Feb 2023	02 Jun 2021	28 Jan 2021
Oll Changed Sample StatusClient InfoChanged ABNORMALChanged ABNORMALNot Changed ABNORMALWEAR METALSmethodlimit/basecurrenthistory1Mistory2IronppmASTM 05185m>50<1	Machine Age	hrs	Client Info		33579	32812	32791
Oll Changed Sample StatusClient InfoChanged ABNORMALChanged ABNORMALNot Changed ABNORMALWEAR METALSmethodlimit/basecurrenthistory1Mistory2IronppmASTM 05185m>50<1	Oil Age	hrs	Client Info		58	21	0
Sample Status method Imit/base current history1 ABNORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 <1	Oil Changed		Client Info		Changed	Changed	Not Changd
Iron ppm ASTM D5185m >50 <1 <1 <1 Chromium ppm ASTM D5185m >30 0 0 0 Nickel ppm ASTM D5185m >33 0 0 0 Silver ppm ASTM D5185m >22 0 <1	Sample Status				ABNORMAL	NORMAL	ABNORMAL
Iron ppm ASTM D5185m >50 <1 <1 <1 Chromium ppm ASTM D5185m >30 0 0 0 Nickel ppm ASTM D5185m >33 0 0 0 Silver ppm ASTM D5185m >22 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >10 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >2 0 <1	Iron	ppm	ASTM D5185m	>50	د1		
Nickel ppm ASTM D5185m >3 0 0 0 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >2 0 <1	-						
Intanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >2 0 <1							
Silver ppm ASTM D5185m >2 0 <1 0 Aluminum ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 7 3 0 Antimony ppm ASTM D5185m >10 0 0 Antimony ppm ASTM D5185m 0 0 0 Antimony ppm ASTM D5185m 0 0 0 0 Antimony ppm ASTM D5185m 0 0 <11							
Aluminum ppm ASTM D5185m >10 <1 0 <1 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 7 3 5 Tin ppm ASTM D5185m >10 <1							
Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 7 3 5 Tin ppm ASTM D5185m >10 <1							
Copper ppm ASTM D5185m >500 7 3 5 Tin ppm ASTM D5185m >10 <1							
Tin ppm ASTM D5185m >10 <1 <1 <1 0 Antimony ppm ASTM D5185m 0 0 0 0 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 <11 12 Barium ppm ASTM D5185m 0 0 <11 12 Barium ppm ASTM D5185m 0 0 <11 0 Magnesium ppm ASTM D5185m 0 0 <11 0 Magnesium ppm ASTM D5185m 100 <1 13 2 Calcium ppm ASTM D5185m 0 10 6 8 Zinc ppm ASTM D5185m 2350 17852 17063 18065 CONTAMINANTS method limit/base current							
Antimony ppm ASTM D5185m 0 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1							
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 2 11 0 Molybdenum ppm ASTM D5185m 0 0 0 <1 12 Barium ppm ASTM D5185m 0 0 0 <1 0 Magnesium ppm ASTM D5185m 0 0 <1 0 <1 0 Magnesium ppm ASTM D5185m 0 100 <1 0 0 <1 0 Calcium ppm ASTM D5185m 0 10 6 8 2 Sulfur ppm ASTM D5185m 2.25 <1 <1 <1 <1 Sodium ppm ASTM D5185m 2.0 <1 <1				>10			
Cadmium pm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1	•						
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1							
Boron ppm ASTM D5185m 0 0 <1 12 Barium ppm ASTM D5185m 90 2 11 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 100 <1		ppm			U		-
Barium ppm ASTM D5185m 90 2 11 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 100 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 100 <1	Boron	ppm	ASTM D5185m	0	0	<1	12
Manganese ppm ASTM D5185m 0 <1 0 Magnesium ppm ASTM D5185m 100 <1	Barium	ppm	ASTM D5185m	90	2	11	0
Magnesium ppm ASTM D5185m 100 <1 13 2 Calcium ppm ASTM D5185m 0 0 0 <10 6 8 Zinc ppm ASTM D5185m 0 4 0 0 Sulfur ppm ASTM D5185m 23500 17852 17063 18065 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >20 <1 <1 <1 Sodium ppm ASTM D5185m >20 <1 <1 0 Water % ASTM D5185m >20 <1 <1 0 Water % ASTM D6304 >0.05 0.003 0.009 0.006 ppm ASTM D7647 9352 2838 25715 Paticles >4µm ASTM D7647 >1300 2721 618 9946 Patricles >51µm ASTM D7647 >20 31	Molybdenum	ppm	ASTM D5185m	0	0	0	0
Colum ppm ASTM D5185m 0 0 <1 0 Phosphorus ppm ASTM D5185m 0 10 6 8 Zinc ppm ASTM D5185m 0 4 0 0 Sulfur ppm ASTM D5185m 23500 17852 17063 18065 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1	Manganese	ppm	ASTM D5185m		0	<1	0
Phosphorus ppm ASTM D5185m 0 10 6 8 Zinc ppm ASTM D5185m 0 4 0 0 Sulfur ppm ASTM D5185m 23500 17852 17063 18065 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >20 <1 <1 <1 Potassium ppm ASTM D5185m >20 <1 <1 0 Water % ASTM D5044 >0.05 0.003 0.009 0.006 ppm Water ppm ASTM D7647 9352 2838 25715 Particles >4µm ASTM D7647 >80 152 40 1451 Particles >1µm ASTM D7647 20 31 10	Magnesium	ppm	ASTM D5185m	100	<1	13	2
Zinc ppm ASTM D5185m 0 4 0 0 Sulfur ppm ASTM D5185m 23500 17852 17063 18065 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1	Calcium	ppm	ASTM D5185m	0	0	<1	0
Sulfur ppm ASTM D5185m 23500 17852 17063 18065 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m >20 <1 <1 <1 Potassium ppm ASTM D5185m >20 <1 <1 0 Water % ASTM D6304 >0.05 0.003 0.009 0.006 ppm Water ppm ASTM D6304 >500 33.8 90.6 62.5 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 9352 2838 25715 Particles >6µm ASTM D7647 >1300 2721 618 9946 Particles >1µm ASTM D7647 >20 31 10 492 Particles >21µm ASTM D7647 20 31 10	Phosphorus	ppm	ASTM D5185m	0	10	6	8
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1	Zinc	ppm	ASTM D5185m	0	4	0	0
Silicon ppm ASTM D5185m >25 <1 <1 <1 Sodium ppm ASTM D5185m 0 2 <1 <1 Potassium ppm ASTM D5185m >20 <1 <1 0 Water % ASTM D6304 >0.05 0.003 0.009 0.006 ppm Water ppm ASTM D6304 >500 33.8 90.6 62.5 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 9352 2838 25715 Particles >6µm ASTM D7647 >1300 2721 618 9946 Particles >1µm ASTM D7647 >80 152 40 1451 Particles >21µm ASTM D7647 >20 31 10 492 Particles >38µm ASTM D7647 >3 0 0 2 Particles >71µm ASTM D7647 >3 0 2 2 Particles >71µm ASTM D7647 >3 0 2 2	Sulfur	ppm	ASTM D5185m	23500	17852	17063	18065
Sodium ppm ASTM D5185m 0 2 <1 Potassium ppm ASTM D5185m >20 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 <1 0 Water % ASTM D6304 >0.05 0.003 0.009 0.006 ppm Water ppm ASTM D6304 >500 33.8 90.6 62.5 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 9352 2838 25715 Particles >6µm ASTM D7647 >1300 2721 618 9946 Particles >14µm ASTM D7647 >80 152 40 1451 Particles >21µm ASTM D7647 >20 31 10 492 Particles >38µm ASTM D7647 >3 0 2 2 Particles >71µm ASTM D7647 >3 0 2 2018 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg/K0H/g ASTM D8045 1.0 0.40 0.387 0.421<	Silicon	ppm	ASTM D5185m	>25	<1	<1	<1
Water % ASTM D6304 >0.05 0.003 0.009 0.006 ppm Water ppm ASTM D6304 >500 33.8 90.6 62.5 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 9352 2838 25715 Particles >6µm ASTM D7647 >1300 2721 618 9946 Particles >14µm ASTM D7647 >80 152 40 1451 Particles >21µm ASTM D7647 >20 31 10 492 Particles >38µm ASTM D7647 >4 2 0 22 Particles >71µm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 20/19/14 16/12 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg K0H/g ASTM D8045 1.0 0.40 0.387 0.4	Sodium	ppm	ASTM D5185m		0	2	<1
ppm Water ppm ASTM D6304 >500 33.8 90.6 62.5 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 9352 2838 25715 Particles >6µm ASTM D7647 >1300 2721 618 9946 Particles >14µm ASTM D7647 >80 152 40 1451 Particles >21µm ASTM D7647 >20 31 10 492 Particles >38µm ASTM D7647 >4 2 0 22 Particles >71µm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 20/19/14 16/12 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Potassium	ppm	ASTM D5185m	>20	<1	<1	0
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 9352 2838 25715 Particles >6µm ASTM D7647 >1300 2721 618 9946 Particles >6µm ASTM D7647 >80 152 40 1451 Particles >14µm ASTM D7647 >20 31 10 492 Particles >21µm ASTM D7647 >20 31 0 492 Particles >38µm ASTM D7647 >4 2 0 22 Particles >71µm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 20/19/14 16/12 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Water	%			0.003	0.009	0.006
Particles >4µm ASTM D7647 9352 2838 25715 Particles >6µm ASTM D7647 >1300 2721 618 9946 Particles >14µm ASTM D7647 >80 152 40 1451 Particles >21µm ASTM D7647 >20 31 10 492 Particles >21µm ASTM D7647 >4 2 0 22 Particles >38µm ASTM D7647 >4 2 0 22 Particles >71µm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 20/19/14 16/12 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	ppm Water	ppm	ASTM D6304	>500	33.8	90.6	62.5
Particles >6µm ASTM D7647 >1300 ▲ 2721 618 ▲ 9946 Particles >14µm ASTM D7647 >80 ▲ 152 40 ▲ 1451 Particles >21µm ASTM D7647 >20 ▲ 31 10 ▲ 492 Particles >38µm ASTM D7647 >4 2 0 ▲ 22 Particles >38µm ASTM D7647 >3 0 0 2 Particles >71µm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 20/19/14 16/12 ▲ 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14µm ASTM D7647 >80 ▲ 152 40 ▲ 1451 Particles >21µm ASTM D7647 >20 ▲ 31 10 ▲ 492 Particles >38µm ASTM D7647 >4 2 0 ▲ 22 Particles >71µm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 20/19/14 16/12 ▲ 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Particles >4µm		ASTM D7647		9352	2838	25715
Particles >21µm ASTM D7647 >20 ▲ 31 10 ▲ 492 Particles >38µm ASTM D7647 >4 2 0 22 Particles >38µm ASTM D7647 >3 0 0 2 Particles >71µm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 20/19/14 16/12 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Particles >6µm		ASTM D7647	>1300	<u> </u>	618	▲ 9946
Particles >38μm ASTM D7647 >4 2 0 ▲ 22 Particles >71μm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 20/19/14 16/12 ▲ 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Particles >14µm		ASTM D7647	>80	<u> </u>	40	🔺 1451
Particles >71μm ASTM D7647 >3 0 0 2 Oil Cleanliness ISO 4406 (c) >/17/13 20/19/14 16/12 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Particles >21µm		ASTM D7647	>20	<u> </u>	10	4 92
Oil Cleanliness ISO 4406 (c) >/17/13 20/19/14 16/12 20/18 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Particles >38µm		ASTM D7647	>4	2	0	<u> </u>
FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Particles >71µm		ASTM D7647	>3	0	0	2
Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.40 0.387 0.421	Oil Cleanliness		ISO 4406 (c)	>/17/13	20/19/14	16/12	▲ 20/18
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.40	0.387	0.421
					Contact/Loca	tion: CHRIS BA	LIAN - KARFR

Report Id: KARFRA [WUSCAR] 05778286 (Generated: 02/27/2024 11:15:11) Rev: 1



Built for a lifetime

140k 120k

=100

12000

800 (maa)

6000 Water 4000

200

(B/H0) E0.72 Ê 0.4 Pice 0.2

0.00

10000

600 Water (

4000

200

60

55

() 50 50

3 45

40

35

ŕ5

S

nr28

muu

Severe 10000

Acid 1.20

OIL ANALYSIS REPORT

limit/base

NONE

NONE

NONE

NONE

NONE

NONE

NORML

NORML

limit/base

>0.05

45

current

NONE

NONE

NONE

NONE

VLITE

NONE

NORML

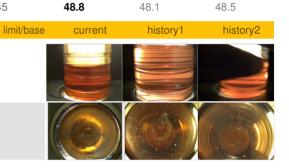
NORML

current

NEG

NEG

A Particle Trend	VISUAL		method
120k - 4μm 6μm	White Metal	scalar	*Visual
100k	Yellow Metal	scalar	*Visual
80k	Precipitate	scalar	*Visual
60k	Silt	scalar	*Visual
40k 20k	Debris	scalar	*Visual
0k	Sand/Dirt	scalar	*Visual
Apr28/20 Sep 25/20 Jan 28/21	Appearance	scalar	*Visual
Aprá Jani	Odor	scalar	*Visual
Water (KF)	Emulsified Water	scalar	*Visual
2000	Free Water	scalar	*Visual
0000 - Severe	FLUID PROPER	FIES	method
8000	Visc @ 40°C	cSt	ASTM D445
4000 -	SAMPLE IMAGE	SAMPLE IMAGES	
2000 - Abnormal			
Apr28/20 Sep 25/20 Jan28/21 Jan28/21 .	Color		
Acid Number			



history1

NONE

NONE

NONE

NONE

NONE

NONE

NORML

NORML

history

NEG

NEG

history2

NONE

NONE

NONE

NONE

NONE

NONE

NORML

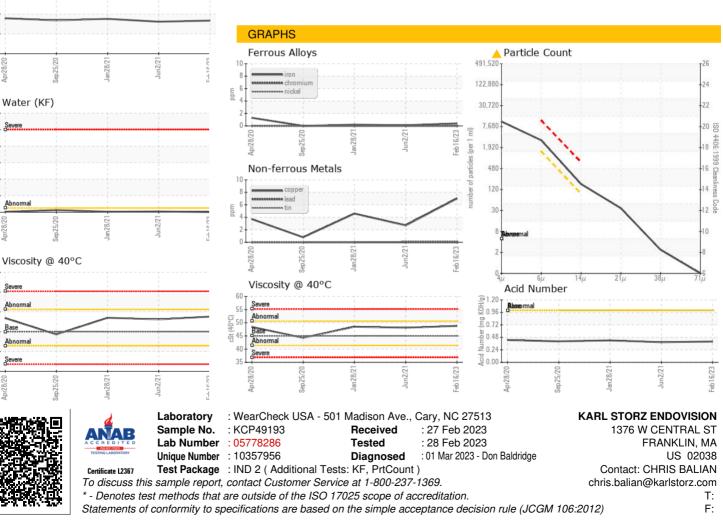
NORML

history2

NEG

NEG

Bottom



Contact/Location: CHRIS BALIAN - KARFRA