

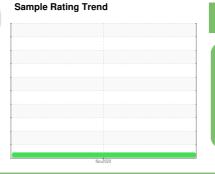
OIL ANALYSIS REPORT

ISO

Machine Id KAESER AS 20 6521559 (S/N 1098)

Compressor

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





Recommendation

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

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 INFORMATION method limit/base current history1 history2							
Sample Number Client Info KC91475 Sample Date Client Info 09 Nov 2020 Machine Age hrs Client Info 15987 Oil Age hrs Client Info 4000 Oil Changed Client Info Not Changd Sample Status method Imbase current history1 history2 Iron ppm ASTM 05185m >50 0 Chromium ppm ASTM 05185m >10 0 Nickel ppm ASTM 05185m >3 0 Silver ppm ASTM 05185m >3 0 Aluminum ppm ASTM 05185m >10 0 Copper ppm ASTM 05185m >10 0 Tin ppm ASTM 05185m >10			-		Nov2020		
Sample Date Client Info 15987	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 15987 Oil Change hrs Client Info 4000 Sample Status ATTENTION WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 Chromium ppm ASTM D5185m >10 0 Nickel ppm ASTM D5185m >3 0 Silver ppm ASTM D5185m >3 0 Aluminum ppm ASTM D5185m >10 0 Lead ppm ASTM D5185m >10 0 Copper ppm ASTM D5185m >10 0 Tin ppm ASTM D5185m >0 <	Sample Number		Client Info		KC91475		
Oil Age Oil Changed Sample Status hrs Client Info 4000 Not Changd ATTENTION	Sample Date		Client Info		09 Nov 2020		
Oil Changed Sample Status Client Info Not Changd ATTENTION	Machine Age	hrs	Client Info		15987		
Sample Status ATTENTION WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 Nickel ppm ASTM D5185m >3 0 Titanium ppm ASTM D5185m >3 0 Silver ppm ASTM D5185m >3 0 Aluminum ppm ASTM D5185m >10 0 Lead ppm ASTM D5185m >10 0 Copper ppm ASTM D5185m >10 0 Antimony ppm ASTM D5185m >10 0 Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 <	Oil Age	hrs	Client Info		4000		
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 Nickel ppm ASTM D5185m >3 0 Titanium ppm ASTM D5185m >2 0 Silver ppm ASTM D5185m >2 0 Aluminum ppm ASTM D5185m >10 0 Lead ppm ASTM D5185m >10 0 Copper ppm ASTM D5185m >10 0 Tin ppm ASTM D5185m 0 0 Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 </th <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Not Changd</th> <th></th> <th></th>	Oil Changed		Client Info		Not Changd		
Iron	Sample Status				ATTENTION		
Chromium ppm ASTM D5185m >10 0 Nickel ppm ASTM D5185m >3 0 Titanium ppm ASTM D5185m >3 0 Silver ppm ASTM D5185m >2 0 Aluminum ppm ASTM D5185m >10 0 Lead ppm ASTM D5185m >10 0 Copper ppm ASTM D5185m >10 0 Antimony ppm ASTM D5185m 0 0 Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 Barium ppm ASTM D5185m 0 <	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >3 0	Iron	ppm	ASTM D5185m	>50	0		
Titanium	Chromium	ppm	ASTM D5185m	>10	0		
Silver	Nickel	ppm	ASTM D5185m	>3	0		
Aluminum ppm ASTM D5185m >10 0	Titanium	ppm	ASTM D5185m	>3	0		
Lead ppm ASTM D5185m >10 0 Copper ppm ASTM D5185m >50 7 Tin ppm ASTM D5185m >10 0 Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 90 0 Barium ppm ASTM D5185m 90 0 Magnesium ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 90 <1	Silver	ppm	ASTM D5185m	>2	0		
Copper ppm ASTM D5185m >50 7 Tin ppm ASTM D5185m >10 0 Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 Barium ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 90 <1 Magnesium ppm ASTM D5185m 0 Phosphorus ppm ASTM D5185m 2 0 Zinc ppm ASTM D5185m 2 <th>Aluminum</th> <td>ppm</td> <td>ASTM D5185m</td> <td>>10</td> <th>0</th> <td></td> <td></td>	Aluminum	ppm	ASTM D5185m	>10	0		
Tin ppm ASTM D5185m >10 0	Lead	ppm	ASTM D5185m	>10	0		
Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 Barium ppm ASTM D5185m 90 0 Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 90 <1	Copper	ppm	ASTM D5185m	>50	7		
Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 Barium ppm ASTM D5185m 90 0 Molybdenum ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 0 Calcium ppm ASTM D5185m 2 0 Calcium ppm ASTM D5185m 2 0 Phosphorus ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 5 5 CONTAMINANTS method limit/base current history1 history2 </th <th>Tin</th> <td>ppm</td> <td>ASTM D5185m</td> <td>>10</td> <th>0</th> <td></td> <td></td>	Tin	ppm	ASTM D5185m	>10	0		
Cadmium ppm ASTM D5185m 0 Boron ppm ASTM D5185m 0 Barium ppm ASTM D5185m 90 0 Molybdenum ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 90 <1	Antimony	ppm	ASTM D5185m		0		
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 Barium ppm ASTM D5185m 90 0 Molybdenum ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 90 <1 Calcium ppm ASTM D5185m 2 0 Phosphorus ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 5 Zinc ppm ASTM D5185m >25 2 Silicon ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m >25 2 Potassium ppm ASTM D5185m >20 0 <	Vanadium	ppm	ASTM D5185m		0		
Boron ppm ASTM D5185m 0 Barium ppm ASTM D5185m 90 0 Molybdenum ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 90 <1 Calcium ppm ASTM D5185m 2 0 Phosphorus ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 0 Zinc ppm ASTM D5185m 22 2 Zinc ppm ASTM D5185m >25 2 Silicon ppm ASTM D5185m >25 2	Cadmium	ppm	ASTM D5185m		0		
Barium ppm ASTM D5185m 90 0 Molybdenum ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 90 <1 Magnesium ppm ASTM D5185m 2 0 Calcium ppm ASTM D5185m 5 Phosphorus ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 0 Zinc ppm ASTM D5185m >25 2 Zinc ppm ASTM D5185m >25 2 Zinc ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m >20 0 Potassium <	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 90 <1	Boron	ppm	ASTM D5185m		0		
Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 90 <1 Calcium ppm ASTM D5185m 5 Phosphorus ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 0 Zinc ppm ASTM D5185m >25 2 Zilicon ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D5185m >20 0 Water % ASTM D6304 >0.05 0.006 ppm Water ppm ASTM D6304 >500 62.6 FLUID CLEANLINESS method limit/base current history1 history2	Barium	ppm	ASTM D5185m	90	0		
Magnesium ppm ASTM D5185m 90 <1	Molybdenum	ppm	ASTM D5185m		0		
Calcium ppm ASTM D5185m 2 0 Phosphorus ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D6185m >20 0 Water % ASTM D6304 >0.05 0.006 ppm Water ppm ASTM D6304 >500 62.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >1300 1498 Particles >21µm ASTM D7647 >20 16	Manganese	ppm	ASTM D5185m		0		
Phosphorus ppm ASTM D5185m 5 Zinc ppm ASTM D5185m 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D5185m >20 0 Water % ASTM D6304 >0 0.006 Particles >4µm ASTM D7647 9331 Particles >6µm ASTM D7647 >80 62 <	Magnesium	ppm	ASTM D5185m	90	<1		
Zinc ppm ASTM D5185m 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D6304 >0.05 0.006 Water % ASTM D6304 >500 62.6 ppm Water ppm ASTM D6304 >500 62.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >1300 1498 Particles >6μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >20 16 Particles >71μm ASTM D7647 >3 0 <th>Calcium</th> <th>ppm</th> <th>ASTM D5185m</th> <th>2</th> <th>0</th> <th></th> <th></th>	Calcium	ppm	ASTM D5185m	2	0		
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D6304 >0.05 0.006 Water % ASTM D6304 >500 62.6 ppm Water ppm ASTM D6304 >500 62.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 9331 Particles >6μm ASTM D7647 >1300 1498 Particles >14μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 <th>Phosphorus</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>5</th> <th></th> <th></th>	Phosphorus	ppm	ASTM D5185m		5		
Silicon ppm ASTM D5185m >25 2 Sodium ppm ASTM D5185m <1	Zinc	ppm	ASTM D5185m		0		
Sodium ppm ASTM D5185m <1	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m <1	Silicon	ppm	ASTM D5185m	>25	2		
Water % ASTM D6304 >0.05 0.006 ppm Water ppm ASTM D6304 >500 62.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 9331 Particles >6μm ASTM D7647 >1300 1498 Particles >14μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >20 16 Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 18/13	Sodium		ASTM D5185m		<1		
ppm Water ppm ASTM D6304 >500 62.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 9331 Particles >6μm ASTM D7647 >1300 1498 Particles >14μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >20 16 Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 18/13	Potassium	ppm	ASTM D5185m	>20	0		
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 9331 Particles >6μm ASTM D7647 >1300 1498 Particles >14μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >20 16 Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 18/13	Water	%	ASTM D6304	>0.05	0.006		
Particles >4μm ASTM D7647 9331 Particles >6μm ASTM D7647 >1300 1498 Particles >14μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >20 16 Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 18/13	ppm Water	ppm	ASTM D6304	>500	62.6		
Particles >6μm ASTM D7647 >1300 ▲ 1498 Particles >14μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >20 16 Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 18/13	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >80 62 Particles >21μm ASTM D7647 >20 16 Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 18/13	Particles >4μm		ASTM D7647		9331		
Particles >21μm ASTM D7647 >20 16 Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 18/13	Particles >6µm		ASTM D7647	>1300	1498		
Particles >38μm ASTM D7647 >4 1 Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 18/13	Particles >14µm		ASTM D7647	>80	62		
Particles >71μm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 18/13	Particles >21µm		ASTM D7647	>20	16		
Oil Cleanliness ISO 4406 (c) >/17/13 18/13	Particles >38µm		ASTM D7647	>4	1		
· · · · · · · · · · · · · · · · · · ·	Particles >71µm		ASTM D7647	>3	0		
FLUID DEGRADATION method limit/base current history1 history2	Oil Cleanliness		ISO 4406 (c)	>/17/13	18/13		
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2

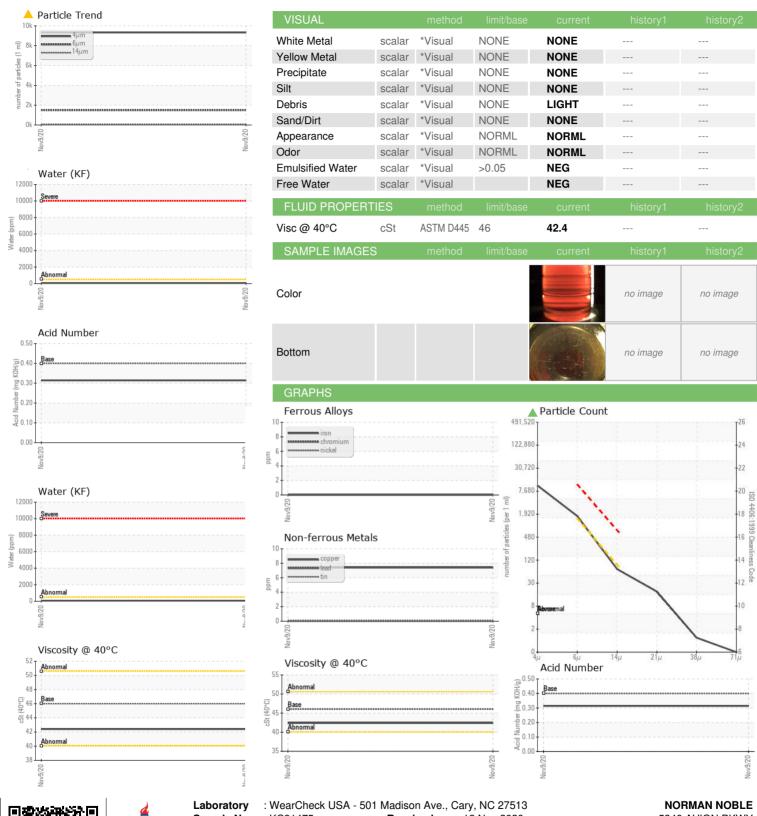
Acid Number (AN)

mg KOH/g ASTM D8045 0.4

0.314



OIL ANALYSIS REPORT





ANABACCE ED TESTING LABORATORY

Certificate L2367

Laboratory
Sample No.
Lab Number
Unique Number

mple No. : KC91475

Number : 05114269

Lab Number : 05114269 Unique Number : 9254533 Test Package : IND 2 Received : 12 Nov 2020
Tested : 16 Nov 2020
Diagnosed : 16 Nov 2020 - Ar

nosed : 16 Nov 2020 - Angela Borella

NORMAN NOBLE 5340 AVION PKWY HIGHLAND HEIGHTS, OH

US 44143 Contact: Service Manager

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

* - 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)

T:

F: