

PROBLEM SUMMARY

Sample Rating Trend

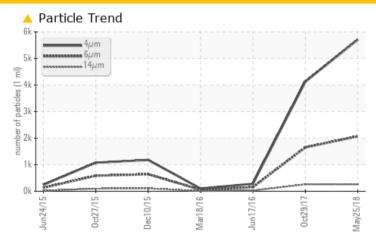
ISO

Area [9596252] KAESER C-1 (S/N 1044)

Compressor

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

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We recommend you service the filters on this component. Resample at the next service interval to monitor.

| PROBLEMATIC TEST I | RESULTS | | | | |
|--------------------|--------------|---------|-----------------|---------------|----------|
| Sample Status | | | ABNORMAL | ABNORMAL | NORMAL |
| Particles >6µm | ASTM D7647 | >1300 | <u>2071</u> | <u>▲</u> 1651 | 153 |
| Particles >14μm | ASTM D7647 | >80 | 260 | <u>^</u> 261 | 26 |
| Particles >21µm | ASTM D7647 | >20 | A 89 | 4 99 | 8 |
| Oil Cleanliness | ISO 4406 (c) | >/17/13 | 20/18/15 | 19/18/15 | 15/14/12 |

Customer Id: WESLONWC Sample No.: WCI2288182 Lab Number: 04498436 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:

Don Baldridge +1 don.b505@comcast.net

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---------------|--------|-------------|---------|---|
| Change Filter | MISSED | Sep 21 2018 | ? | We recommend you service the filters on this component. |

HISTORICAL DIAGNOSIS

29 Oct 2017 Diag: Don Baldridge





We recommend you service the filters on this component. Resample at the next service interval to monitor. All component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



17 Jun 2016 Diag: Don Baldridge

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



18 Mar 2016 Diag: Jonathan Hester

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



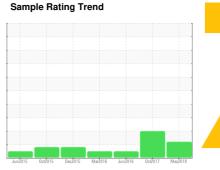


OIL ANALYSIS REPORT

Area [9596252] KAESER C-1 (S/N 1044)

Compressor

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





DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

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 INFORMATION | | | Jun2015 | Oct2015 Dec2015 | Mar2016 Jun2016 Oct2017 | May2018 | |
|---|------------------|----------|-------------|-----------------|-------------------------|--------------|-------------|
| Sample Date Client Info 25 May 2018 29 Oct 2017 17 Jun 2016 Machine Age hrs Client Info 0 0 0 0 0 0 0 0 0 | SAMPLE INFORM | MATION | method | limit/base | current | history 1 | history 2 |
| Machine Age Oil Age hrs Client Info 0 | Sample Number | | Client Info | | WCI2288182 | WCI2328237 | WCI2290853 |
| Oil Age hrs 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 limit/base current history 1 history 2 Iron ppm ASTM D5185m >50 0 0 0 Chromium ppm ASTM D5185m >50 0 0 0 Chromium ppm ASTM D5185m >3 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >10 <1 | Sample Date | | Client Info | | 25 May 2018 | 29 Oct 2017 | 17 Jun 2016 |
| Oil Changed Sample Status Client Info N/A ABNORMAL NORMAL NORMAL <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>17248</th> <th>14016</th> <th>3159</th> | Machine Age | hrs | Client Info | | 17248 | 14016 | 3159 |
| Sample Status method limit/base current history 1 history 2 Iron ppm ASTM D5185m >50 0 0 0 Chromium ppm ASTM D5185m >3 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Siliver ppm ASTM D5185m >3 0 0 0 Siliver ppm ASTM D5185m >10 <1 0 0 Aluminum ppm ASTM D5185m >10 <1 0 0 Lead ppm ASTM D5185m >10 0 1 0 Copper ppm ASTM D5185m >10 0 <1 0 Tin ppm ASTM D5185m >10 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 <t< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>0</th><th>0</th><th>0</th></t<> | Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| WEAR METALS method limit/base current history 1 history 2 Iron ppm ASTM D5185m >50 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >10 <1 0 0 Lead ppm ASTM D5185m >10 0 1 0 Copper ppm ASTM D5185m >10 0 1 0 Tin ppm ASTM D5185m >10 0 <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 <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>N/A</th> <th>N/A</th> <th>N/A</th> | Oil Changed | | Client Info | | N/A | N/A | N/A |
| Iron | Sample Status | | | | ABNORMAL | ABNORMAL | NORMAL |
| Chromium | WEAR METALS | | method | limit/base | current | history 1 | history 2 |
| Nickel ppm ASTM D5185m >3 0 0 0 0 0 Titanium ppm ASTM D5185m >3 0 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 0 Aluminum ppm ASTM D5185m >10 <1 0 0 Lead ppm ASTM D5185m >10 0 1 0 Copper ppm ASTM D5185m >10 0 1 0 Copper ppm ASTM D5185m >10 0 1 0 Copper ppm ASTM D5185m >10 0 1 0 Antimony ppm ASTM D5185m >10 0 0 <1 0 Antimony ppm ASTM D5185m 2 0 0 0 Antimony ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Flosphorus ppm ASTM D5185m 0 0 0 0 0 Sulfur ppm ASTM D5185m 0 0 0 0 0 Sulfur ppm ASTM D5185m 0 0 0 0 0 Flosphorus ppm ASTM D5185m 0 0 0 0 0 CONTAMINANTS method limit/base current history 1 history 2 FLUID CLEANLINESS method limit/base current history 1 history 2 Particles >6µm ASTM D7647 >20 | Iron | ppm | ASTM D5185m | >50 | 0 | 0 | 0 |
| Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >10 <1 | Chromium | ppm | ASTM D5185m | >10 | 0 | 0 | 0 |
| Stilver | Nickel | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum ppm ASTM D5185m >10 <1 | Titanium | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Lead ppm ASTM D5185m >10 0 1 0 Copper ppm ASTM D5185m >50 7 8 6 Tin ppm ASTM D5185m >10 0 <1 | Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Copper ppm ASTM D5185m >50 7 8 6 Tin ppm ASTM D5185m >10 0 <1 0 Antimony ppm ASTM D5185m 2 0 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 Boron ppm ASTM D5185m 90 0 0 0 Barium ppm ASTM D5185m <1 <1 0 0 Molybdenum ppm ASTM D5185m <1 <1 <1 0 0 Mangaesium ppm ASTM D5185m <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 | Aluminum | ppm | ASTM D5185m | >10 | <1 | 0 | 0 |
| Tin | Lead | ppm | ASTM D5185m | >10 | 0 | 1 | 0 |
| Antimony ppm ASTM D5185m 2 0 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m 90 0 0 0 Magnesium ppm ASTM D5185m <1 | Copper | ppm | ASTM D5185m | >50 | 7 | 8 | 6 |
| Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m <1 | Tin | ppm | ASTM D5185m | >10 | 0 | <1 | 0 |
| Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m <1 | Antimony | ppm | ASTM D5185m | | 2 | 0 | 0 |
| ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m <1 <1 0 0 Magnesium ppm ASTM D5185m 90 <1 0 0 0 Calcium ppm ASTM D5185m 2 0 0 0 0 0 Phosphorus ppm ASTM D5185m 2 0 1 1422 0 0 0 0 1 1422 0 | 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 <1 | Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m <1 <1 0 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 90 <1 0 0 Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 1 0 46 Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 6435 5145 11422 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 3 2 <1 Sodium ppm ASTM D5185m 0 0 <1 <2 FLUID CLEANLINESS method limit/base current history 1 history 2 Particles > | ADDITIVES | | method | limit/base | current | history 1 | history 2 |
| Molybdenum ppm ASTM D5185m <1 | Boron | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Manganese ppm ASTM D5185m <1 | Barium | ppm | ASTM D5185m | 90 | 0 | 0 | 0 |
| Magnesium ppm ASTM D5185m 90 <1 | Molybdenum | ppm | ASTM D5185m | | <1 | <1 | 0 |
| Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 1 0 46 Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 6435 5145 11422 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m 25 3 2 <1 Sodium ppm ASTM D5185m 0 0 <1 <1 Potassium ppm ASTM D5185m >20 <1 <1 2 FLUID CLEANLINESS method limit/base current history 1 history 2 Particles >4μm ASTM D7647 >1300 2071 4127 282 Particles >21μm ASTM D7647 >80 260 261 26 Particles >38μm ASTM D7647 >4 3 15 1 | Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Phosphorus ppm ASTM D5185m 1 0 46 Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 6435 5145 11422 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 3 2 <1 Sodium ppm ASTM D5185m >20 <1 <1 2 Potassium ppm ASTM D5185m >20 <1 <1 2 FLUID CLEANLINESS method limit/base current history 1 history 2 Particles >4μm ASTM D7647 >1300 2071 4127 282 Particles >6μm ASTM D7647 >80 260 261 26 Particles >21μm ASTM D7647 >20 89 99 8 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanline | Magnesium | ppm | ASTM D5185m | 90 | <1 | 0 | 0 |
| Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 6435 5145 11422 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 3 2 <1 Sodium ppm ASTM D5185m 0 0 <1 <1 Potassium ppm ASTM D5185m >20 <1 <1 2 FLUID CLEANLINESS method limit/base current history 1 history 2 Particles >4µm ASTM D7647 >1300 2071 4127 282 Particles >6µm ASTM D7647 >80 260 261 26 Particles >21µm ASTM D7647 >4 3 15 1 Particles >38µm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/15 19/18/15 15/14/12 <tr< th=""><th>Calcium</th><th>ppm</th><th>ASTM D5185m</th><th>2</th><th>0</th><th>0</th><th>0</th></tr<> | Calcium | ppm | ASTM D5185m | 2 | 0 | 0 | 0 |
| Sulfur ppm ASTM D5185m 6435 5145 11422 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 3 2 <1 Sodium ppm ASTM D5185m >0 0 <1 Potassium ppm ASTM D5185m >20 <1 <1 2 FLUID CLEANLINESS method limit/base current history 1 history 2 Particles >4μm ASTM D7647 5711 4127 282 Particles >6μm ASTM D7647 >80 2071 4 1651 153 Particles >14μm ASTM D7647 >80 260 261 26 Particles >21μm ASTM D7647 >20 89 99 8 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/15 19/18/15 15/14/12 FLUID DEGRADATIO | Phosphorus | ppm | ASTM D5185m | | 1 | 0 | 46 |
| CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 3 2 <1 Sodium ppm ASTM D5185m 0 0 <1 Potassium ppm ASTM D5185m >20 <1 <1 2 FLUID CLEANLINESS method limit/base current history 1 history 2 Particles >4μm ASTM D7647 5711 4127 282 Particles >6μm ASTM D7647 >1300 2071 ▲ 1651 153 Particles >14μm ASTM D7647 >80 260 △ 261 26 Particles >21μm ASTM D7647 >20 ▲ 89 △ 99 8 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 20/18/15 ▲ 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 < | Zinc | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silicon ppm ASTM D5185m >25 3 2 <1 | Sulfur | ppm | ASTM D5185m | | 6435 | 5145 | 11422 |
| Sodium ppm ASTM D5185m 0 0 <1 | CONTAMINANTS |) | method | limit/base | current | history 1 | history 2 |
| Potassium ppm ASTM D5185m >20 <1 | Silicon | ppm | ASTM D5185m | >25 | 3 | 2 | <1 |
| FLUID CLEANLINESS method limit/base current history 1 history 2 Particles >4μm ASTM D7647 5711 4127 282 Particles >6μm ASTM D7647 >1300 2071 1651 153 Particles >14μm ASTM D7647 >80 260 261 26 Particles >21μm ASTM D7647 >20 89 99 8 Particles >38μm ASTM D7647 >4 3 15 1 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/15 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | Sodium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Particles >4μm ASTM D7647 5711 4127 282 Particles >6μm ASTM D7647 >1300 2071 1651 153 Particles >14μm ASTM D7647 >80 260 261 26 Particles >21μm ASTM D7647 >20 89 99 8 Particles >38μm ASTM D7647 >4 3 15 1 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/15 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | Potassium | ppm | ASTM D5185m | >20 | <1 | <1 | 2 |
| Particles >6μm ASTM D7647 >1300 2071 1651 153 Particles >14μm ASTM D7647 >80 260 261 26 Particles >21μm ASTM D7647 >20 89 99 8 Particles >38μm ASTM D7647 >4 3 15 1 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/15 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | FLUID CLEANLIN | IESS | method | limit/base | current | history 1 | history 2 |
| Particles >14μm ASTM D7647 >80 Δ 260 Δ 261 26 Particles >21μm ASTM D7647 >20 Δ 89 Δ 99 8 Particles >38μm ASTM D7647 >4 3 Δ 15 1 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 Δ 20/18/15 Δ 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | Particles >4µm | | ASTM D7647 | | 5711 | 4127 | 282 |
| Particles >21μm ASTM D7647 >20 489 99 8 Particles >38μm ASTM D7647 >4 3 15 1 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/15 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | Particles >6µm | | ASTM D7647 | >1300 | <u>^</u> 2071 | <u> 1651</u> | 153 |
| Particles >21μm ASTM D7647 >20 489 99 8 Particles >38μm ASTM D7647 >4 3 15 1 Particles >71μm ASTM D7647 >3 0 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 20/18/15 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | Particles >14µm | | ASTM D7647 | >80 | ^ 260 | <u>^</u> 261 | 26 |
| Particles >38μm ASTM D7647 >4 3 1 15 1 Particles >71μm ASTM D7647 >3 0 6 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 4 20/18/15 4 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | | | ASTM D7647 | >20 | A 89 | 4 99 | 8 |
| Particles >71μm ASTM D7647 >3 0 △ 6 0 Oil Cleanliness ISO 4406 (c) >/17/13 △ 20/18/15 △ 19/18/15 15/14/12 FLUID DEGRADATION method limit/base current history 1 history 2 | Particles >38µm | | ASTM D7647 | >4 | 3 | <u>15</u> | |
| FLUID DEGRADATION method limit/base current history 1 history 2 | | | ASTM D7647 | >3 | 0 | <u>^</u> 6 | 0 |
| | • | | | >/17/13 | | ▲ 19/18/15 | 15/14/12 |
| | FLUID DEGRADA | TION | method | limit/base | current | history 1 | history 2 |
| | Acid Number (AN) | mg KOH/g | | | 0.506 | | |



OIL ANALYSIS REPORT







Laboratory Sample No. Lab Number **Unique Number**

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : 04498436

: 8247247

: WCI2288182

Received : 26 Jun 2018 Diagnosed : 27 Jun 2018 : Don Baldridge Diagnostician

Test Package : IND 2 (Additional Tests: PrtCount) Certificate L2367 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) **WESTLAKE CHEMICAL**

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