

OIL ANALYSIS REPORT

Sample Rating Trend

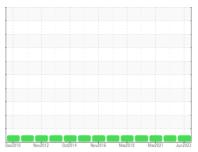




Carleton Univ. LOEB Ch#1 Machine Id CARRIER 0909Q18793

Component Chiller

CASTROL AIRCOL SW 68 (--- GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Moor

All component wear rates are normal.

Contamination

The water content is negligible. There is no indication of any contamination 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 imit/base current history1 history2 | | | D852010 | NOVZU1Z UCtZU14 | Nov2016 Mar2019 Mar2021 | Junzuza | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|---------------|-----------------|-------------------------|-------------|-------------|
| Sample Date Client Info 15 Jun 2023 07 Dec 2021 01 Mar 2021 | SAMPLE INFORM | NOITAN | method | limit/base | current | history1 | history2 |
| Machine Age hrs Client Info 0 Oil Age hrs Client Info 0 Oil Changed Client Info N/A N/A N/A Sample Status NORMAL NORMAL NORMAL WEAR METALS Iron ppm ASTM D5185(m) >8 0 <1 | Sample Number | | Client Info | | GTT0001327 | GTT2784 | GTT2785 |
| Oil Age hrs Client Info N/A N/A N/A N/A Oil Changed Client Info N/A N/A N/A N/A Sample Status method limit/base current history1 history2 Iron ppm ASTM 05185(m) >8 0 <1 <1 Chromium ppm ASTM 05185(m) >2 0 <1 <1 Nickel ppm ASTM 05185(m) >2 0 <1 <1 Nickel ppm ASTM 05185(m) >2 0 <1 <1 Titanium ppm ASTM 05185(m) >2 0 <1 <1 Silver ppm ASTM 05185(m) >2 0 <1 <1 Lead ppm ASTM 05185(m) >3 <1 <1 <1 Copper ppm ASTM 05185(m) >2 <1 <1 <1 Capper ppm ASTM 05185(m) 0 <-1 | Sample Date | | Client Info | | 15 Jun 2023 | 07 Dec 2021 | 01 Mar 2021 |
| Oil Changed Sample Status Client Info N/A N/A <t< td=""><td>Machine Age</td><td>hrs</td><td>Client Info</td><td></td><th>0</th><td></td><td></td></t<> | Machine Age | hrs | Client Info | | 0 | | |
| NORMAL NORMAL NORMAL WEAR METALS method limit/base current history1 history2 | Oil Age | hrs | Client Info | | 0 | | |
| WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185(m) >8 0 <1 | Oil Changed | | Client Info | | N/A | N/A | N/A |
| Iron | Sample Status | | | | NORMAL | NORMAL | NORMAL |
| Chromium ppm ASTM D5185(m) >2 0 <1 | WEAR METALS | | method | limit/base | current | history1 | history2 |
| Chromium ppm ASTM D5185(m) >2 0 <1 <1 Nickel ppm ASTM D5185(m) 0 Tittanium ppm ASTM D5185(m) >2 0 Silver ppm ASTM D5185(m) >2 0 Aluminum ppm ASTM D5185(m) >2 <1 | Iron | ppm | ASTM D5185(m) | >8 | 0 | <1 | <1 |
| Titanium | Chromium | | ASTM D5185(m) | >2 | 0 | <1 | <1 |
| Titanium | Nickel | ppm | ASTM D5185(m) | | 0 | | |
| Silver | Titanium | | ASTM D5185(m) | | 0 | | |
| Lead | Silver | ppm | ASTM D5185(m) | >2 | 0 | | |
| Lead | Aluminum | ppm | ASTM D5185(m) | >3 | <1 | <1 | <1 |
| Copper ppm ASTM D5185(m) >8 2 <1 <1 Tin ppm ASTM D5185(m) >4 0 <1 | Lead | ppm | | | <1 | <1 | <1 |
| Tin ppm ASTM D5185(m) >4 0 <1 <1 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 0 Barium ppm ASTM D5185(m) 0 0 Molybdenum ppm ASTM D5185(m) 0 0 Magnaese ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 800 1854 <t< td=""><td>Copper</td><td></td><td>ASTM D5185(m)</td><td>>8</td><th>2</th><td><1</td><td><1</td></t<> | Copper | | ASTM D5185(m) | >8 | 2 | <1 | <1 |
| Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 0 Barium ppm ASTM D5185(m) 0 0 Molybdenum ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 5 5 <1 | | | . , | >4 | 0 | <1 | |
| Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 0 Barium ppm ASTM D5185(m) 0 0 Barium ppm ASTM D5185(m) 0 0 Molybdenum ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 5 5 <1 <1 Sulfur ppm ASTM D5185(m) <5 5 <1 <1 <td>Antimony</td> <td></td> <td>ASTM D5185(m)</td> <td></td> <th>0</th> <td></td> <td></td> | Antimony | | ASTM D5185(m) | | 0 | | |
| Beryllium | Vanadium | | . , | | 0 | | |
| Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 0 Barium ppm ASTM D5185(m) 0 0 Molybdenum ppm ASTM D5185(m) 0 0 Manganese ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 5 5 <1 | Beryllium | | . , | | 0 | | |
| Boron | • | | , , | | 0 | | |
| Barium ppm ASTM D5185(m) 0 0 Molybdenum ppm ASTM D5185(m) 0 0 Manganese ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 800 1854 Zinc ppm ASTM D5185(m) 5 5 <1 <1 Sulfur ppm ASTM D5185(m) 10 0 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 2 Sodium ppm ASTM D5185(m) >20< | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185(m) 0 0 Manganese ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 <1 Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 800 1854 Zinc ppm ASTM D5185(m) 5 5 <1 <1 Sulfur ppm ASTM D5185(m) 10 0 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 2 Sodium ppm ASTM D5185(m) >20 0 Potassium ppm ASTM D6304* >100 | Boron | ppm | ASTM D5185(m) | 0 | 0 | | |
| Manganese ppm ASTM D5185(m) 0 Magnesium ppm ASTM D5185(m) 0 <1 | Barium | ppm | ASTM D5185(m) | 0 | 0 | | |
| Magnesium ppm ASTM D5185(m) 0 <1 Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 800 1854 Zinc ppm ASTM D5185(m) 5 5 <1 | Molybdenum | ppm | | | 0 | | |
| Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 800 1854 Zinc ppm ASTM D5185(m) 5 5 <1 | Manganese | ppm | ASTM D5185(m) | 0 | 0 | | |
| Phosphorus ppm ASTM D5185(m) 800 1854 Zinc ppm ASTM D5185(m) 5 5 <1 | Magnesium | ppm | ASTM D5185(m) | 0 | <1 | | |
| Phosphorus ppm ASTM D5185(m) 800 1854 Zinc ppm ASTM D5185(m) 5 5 <1 <1 Sulfur ppm ASTM D5185(m) 10 0 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 2 Sodium ppm ASTM D5185(m) >20 0 Potassium ppm ASTM D6304* >100 177 159 124 FLUID DEGRADATION method limit/base current history1 history2 | Calcium | ppm | ASTM D5185(m) | 0 | 0 | | |
| Sulfur ppm ASTM D5185(m) 10 0 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 2 Sodium ppm ASTM D5185(m) <1 | Phosphorus | | ASTM D5185(m) | 800 | 1854 | | |
| Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 2 Sodium ppm ASTM D5185(m) <1 | Zinc | ppm | ASTM D5185(m) | 5 | 5 | <1 | <1 |
| CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 2 Sodium ppm ASTM D5185(m) <1 | Sulfur | ppm | ASTM D5185(m) | 10 | 0 | | |
| Silicon ppm ASTM D5185(m) >15 2 Sodium ppm ASTM D5185(m) <1 | Lithium | | ASTM D5185(m) | | <1 | | |
| Sodium ppm ASTM D5185(m) <1 | CONTAMINANTS | ; | method | limit/base | current | history1 | history2 |
| Sodium ppm ASTM D5185(m) <1 Potassium ppm ASTM D5185(m) >20 0 ppm Water ppm ASTM D6304* >100 177 159 124 FLUID DEGRADATION method limit/base current history1 history2 | Silicon | ppm | ASTM D5185(m) | >15 | 2 | | |
| Potassium ppm ASTM D5185(m) >20 0 ppm Water ppm ASTM D6304* >100 177 159 124 FLUID DEGRADATION method limit/base current history1 history2 | Sodium | | ` , | | <1 | | |
| ppm Water ppm ASTM D6304* >100 177 159 124 FLUID DEGRADATION method limit/base current history1 history2 | Potassium | | () | >20 | | | |
| | ppm Water | | . , | | | 159 | 124 |
| Acid Number (AN) mg KOH/g ASTM D974* 0.05 0.03 0.023 0.025 | FLUID DEGRADA | ATION | method | limit/base | current | history1 | history2 |
| | Acid Number (AN) | mg KOH/g | ASTM D974* | 0.05 | 0.03 | 0.023 | 0.025 |



OIL ANALYSIS REPORT

| VISUAL | | method | limit/base | current | history1 | history2 |
|---------------|--------|---------------|------------|---------|----------|----------|
| White Metal | scalar | Visual* | NONE | NONE | | |
| Yellow Metal | scalar | Visual* | NONE | NONE | | |
| Precipitate | scalar | Visual* | NONE | NONE | | |
| Silt | scalar | Visual* | NONE | NONE | | |
| Debris | scalar | Visual* | NONE | NONE | | |
| Sand/Dirt | scalar | Visual* | NONE | NONE | | |
| Appearance | scalar | Visual* | NORML | NORML | | |
| Odor | scalar | Visual* | NORML | NORML | | |
| FLUID PROPERT | IES | method | limit/base | current | history1 | history2 |
| Visc @ 40°C | cSt | ASTM D7279(m) | 68 | 62.4 | | |
| SAMPLE IMAGES | 3 | method | limit/base | current | history1 | history2 |
| Color | | | | | no image | no image |
| Bottom | | | | | no image | no image |
| | | | | | | |



 Sample No.
 : GTT0001327
 Recieved
 : 28 Dec 2023

 Lab Number
 : 02605678
 Diagnosed
 : 06 Jan 2024

 Unique Number
 : 5698763
 Diagnostician
 : Bill Quesnel

 Test Package
 : IND 2 (Additional Tests: KV40)

To discuss this sample report, contact Customer Service at 1-905-847-9300 Ext 26.

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

Damages: Seller shall in no event be liable for special, incidental, or consequential damages, of a commercial nature, resulting from any cause.

Carrier Commerical Service

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nature, resulting from any cause.