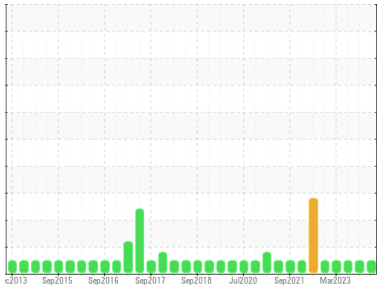
# OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
**[127063]**
Machine Id
## 0038 HILLE 1 MILL POWER PACK
Component
**Hydraulic System**
Fluid
**MONARCH PREMIUM HYDRAULIC OIL AW R&O 46 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

**Wear**
All component wear rates are normal.

**Contamination**
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

**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 | | **WC0378077** | WC0487124 | WC0378089 |
| Sample Date | | Client Info | | **20 Dec 2023** | 25 Sep 2023 | 28 Jun 2023 |
| Machine Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.05 | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >20 | **10** | 11 | 5 |
| Chromium | ppm | ASTM D5185(m) | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185(m) | >20 | **<1** | <1 | <1 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **0** | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | **<1** | <1 | <1 |
| Lead | ppm | ASTM D5185(m) | >20 | **6** | 6 | 4 |
| Copper | ppm | ASTM D5185(m) | >20 | **11** | 11 | 6 |
| Tin | ppm | ASTM D5185(m) | >20 | **4** | 5 | 3 |
| Antimony | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

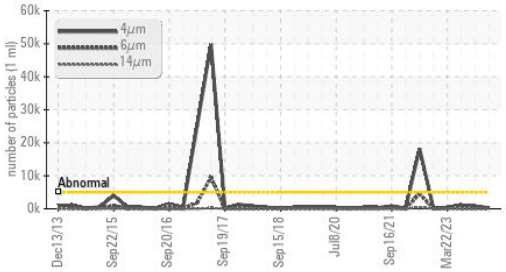
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | | **<1** | 1 | 1 |
| Barium | ppm | ASTM D5185(m) | | **0** | <1 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | | **0** | 0 | <1 |
| Manganese | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | | **37** | 30 | 20 |
| Calcium | ppm | ASTM D5185(m) | | **92** | 88 | 119 |
| Phosphorus | ppm | ASTM D5185(m) | | **437** | 413 | 441 |
| Zinc | ppm | ASTM D5185(m) | | **476** | 466 | 491 |
| Sulfur | ppm | ASTM D5185(m) | | **1339** | 1291 | 1127 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >15 | **<1** | 1 | 1 |
| Sodium | ppm | ASTM D5185(m) | | **2** | 3 | 2 |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | 0 | <1 |

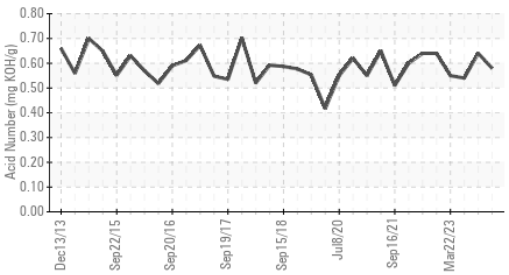
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >5000 | **333** | 784 | 1122 |
| Particles >6µm | | ASTM D7647 | >1300 | **61** | 197 | 155 |
| Particles >14µm | | ASTM D7647 | >160 | **4** | 12 | 13 |
| Particles >21µm | | ASTM D7647 | >40 | **1** | 3 | 5 |
| Particles >38µm | | ASTM D7647 | >10 | **1** | 1 | 0 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | **16/13/9** | 17/15/11 | 17/14/11 |

# OIL ANALYSIS REPORT

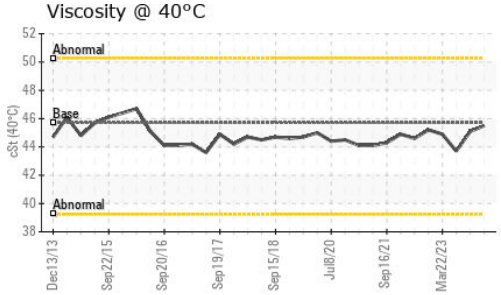
Particle Trend



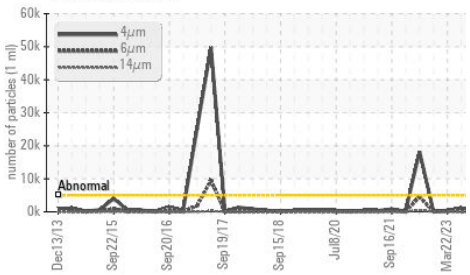

Acid Number




Viscosity @ 40°C




Particle Trend

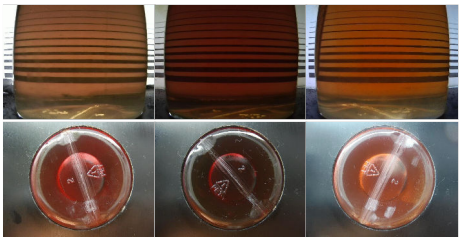



| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | | **0.58** | 0.64 | 0.54 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Silt | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Debris | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Appearance | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Odor | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.05 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

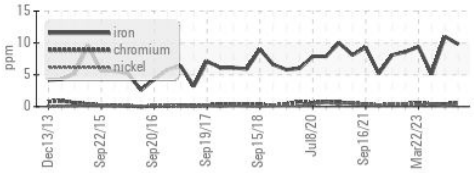
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 45.7 | **45.5** | 45.1 | 43.7 |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |

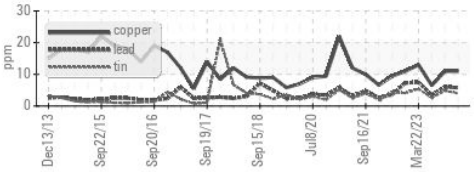


## GRAPHS

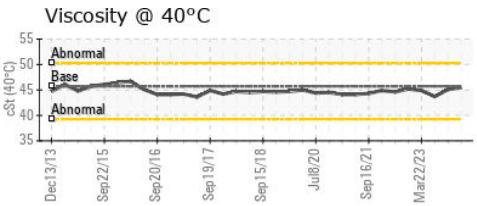
Ferrous Alloys



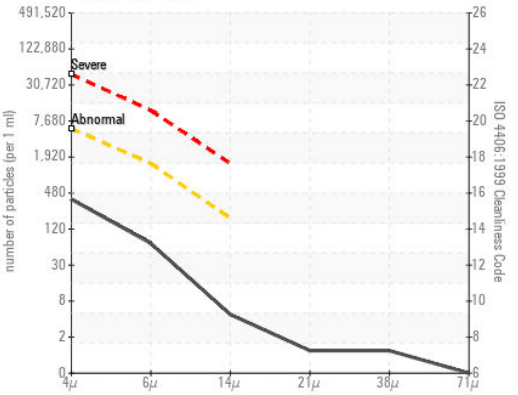

Non-ferrous Metals



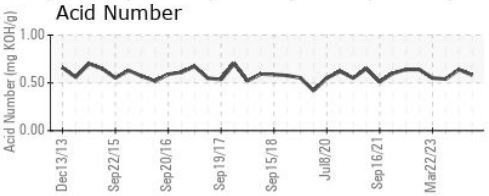

Viscosity @ 40°C




Particle Count




Acid Number




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0378077
**Lab Number** : 02606552
**Unique Number** : 5707638
**Test Package** : IND 2

**Recieved** : 04 Jan 2024
**Diagnosed** : 05 Jan 2024
**Diagnostician** : Wes Davis

*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*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