PROBLEM SUMMARY

Area [226.998.1008] Machine Id MULTIPLAS OM2 Component

Hydraulic System Fluid SHELL TELLUS 46 (200 GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

PROBLEMATIC TEST RESULTS

| Sample Status | | | SEVERE | SEVERE | ABNORMAL |
|-----------------|--------------|-----------|-------------------|---------------|-------------------|
| Particles >4µm | ASTM D7647 | >5000 | 4 57092 | 4 2550 | 🔺 14494 |
| Particles >6µm | ASTM D7647 | >1300 | 🔺 8969 | 6985 | 1469 |
| Particles >14µm | ASTM D7647 | >160 | <u> </u> | 4 36 | 55 |
| Particles >21µm | ASTM D7647 | >40 | A 152 | 125 | 17 |
| Oil Cleanliness | ISO 4406 (c) | >19/17/14 | 4 23/20/16 | ▲ 23/20/16 | A 21/18/13 |

Customer Id: LEGLON Sample No.: WC0790185 Lab Number: 02624944 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Wes Davis +1 905-569-8600 x223 wesd@wearcheck.ca

To change component or sample information: Gloria Gonzalez +1 (289)291-4643 x4643 <u>gloria.gonzalez@wearcheck.com</u>

| RECOMINIENDED ACTIONS | | | | | | | |
|-----------------------|--------|------|---------|--|--|--|--|
| Action | Status | Date | Done By | Description | | | |
| Change Filter | | | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. | | | |
| Resample | | | ? | Resample in 30-45 days to monitor this situation. | | | |
| Check Breathers | | | ? | The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. | | | |
| Check Dirt Access | | | ? | We advise that you check all areas where contaminants can enter the system. | | | |
| Filter Fluid | | | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid | | | |

HISTORICAL DIAGNOSIS

14 Feb 2024 Diag: Wes Davis



We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.All component wear rates are normal. There is a high amount of particulates (2 to 100 microns in size) present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



28 Mar 2023 Diag: Wes Davis



We recommend you service the filters on this component. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.





OIL ANALYSIS REPORT

Area [226.998.1008] MULTIPLAS OM2 Component

Hydraulic System Fluid SHELL TELLUS 46 (200 GAL)

DIAGNOSIS

Recommendation

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

Wear

All component wear rates are normal.

Contamination

There is a high amount of particulates (2 to 100 microns in size) present in the oil.

Fluid Condition

The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



| SAMPLE INFORM | | method | limit/base | current | history1 | history2 |
|--|--|--|---|--|---|---|
| Sample Number | | Client Info | | WC0790185 | WC0790186 | WC0790182 |
| Sample Date | | Client Info | | 14 Mar 2024 | 14 Feb 2024 | 28 Mar 2023 |
| Machine Age | mths | Client Info | | 8 | 8 | 6 |
| Oil Age | mths | Client Info | | 1 | 8 | 6 |
| Oil Changed | intilo | Client Info | | Filtered | Filtered | Not Change |
| Sample Status | | | | SEVERE | SEVERE | |
| Campie Otatas | | | | OEVENE | OLVENE | //DITOT IIV// LE |
| CONTAMINATION | ۷ | 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 | 8 | 8 | 6 |
| Chromium | ppm | ASTM D5185(m) | >20 | 0 | 0 | <1 |
| Nickel | ppm | ASTM D5185(m) | >20 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Lead | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185(m) | >20 | <1 | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| 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 |
| ADDITIVES Boron | nom | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron Barium | ppm | method ASTM D5185(m) ASTM D5185(m) | limit/base 0.0 0 | current 2 0 | history1 2 0 | history2 2 0 |
| ADDITIVES Boron Barium Molybdenum | ppm ppm | method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | limit/base 0.0 0 | current 2 0 | history1 2 0 | history2 2 0 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese | ppm ppm ppm | method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | limit/base 0.0 0 0 | current 2 0 0 0 | history1 2 0 0 0 | history2 2 0 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | limit/base 0.0 0 0 | current 2 0 0 0 5 | history1 2 0 0 0 0 | history2 2 0 <1 0 7 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | limit/base 0.0 0 0 11 35 | current 2 0 0 0 5 65 | history1 2 0 0 0 0 6 6 | history2 2 0 <1 0 7 7 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 0 11 35 266 | Current 2 0 0 0 5 65 307 | history1 2 0 0 0 6 6 66 308 | history2 2 0 <1 0 7 7 79 363 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 0 11 35 266 276 | current 2 0 0 5 65 307 382 | history1 2 0 0 0 6 6 6 6 6 308 388 | history2 2 0 <1 0 7 7 79 363 407 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 0 11 35 266 276 1847 | current 2 0 0 5 65 307 382 2249 | history1 2 0 0 0 6 6 6 6 6 308 388 2041 | history2 2 0 <1 0 7 79 363 407 1561 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 11 35 266 276 1847 | Current 2 0 0 5 65 307 382 2249 <1 | history1 2 0 0 0 6 66 308 388 2041 <1 | history2 2 0 <1 0 7 79 363 407 1561 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 11 35 266 276 1847 | current 2 0 0 5 65 307 382 2249 <1 | history1 2 0 0 0 6 66 308 388 2041 <1 | history2 2 0 <1 0 7 79 363 407 1561 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 11 35 266 276 1847 1847 | current 2 0 0 0 5 65 307 382 2249 <1 current | history1 2 0 0 0 6 66 308 388 2041 <1 history1 | history2 2 0 <1 0 7 79 363 407 1561 <1 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 11 35 266 276 1847 1847 Imit/base >15 | current 2 0 0 0 5 65 307 382 2249 <1 current 0 | history1 2 0 0 0 6 66 308 388 2041 <1 history1 0 | history2 2 0 <1 0 7 79 363 407 1561 <1 bistory2 0 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 11 35 266 276 1847 1847 binit/base >15 | current 2 0 0 0 5 65 307 382 2249 <1 0 <1 | history1 2 0 0 0 6 66 308 388 2041 <1 history1 0 <1 | history2 2 0 <1 0 7 79 363 407 1561 <1 history2 0 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | limit/base 0.0 0 11 35 266 276 1847 1847 bitit/base >15 | current 2 0 0 0 5 65 307 382 2249 <1 current 0 <1 0 <1 0 | history1 2 0 0 0 6 308 388 2041 <1 history1 0 <1 <1 | history2 2 0 <1 0 7 79 363 407 1561 <1 history2 0 <1 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | <pre>limit/base 0.0 0 11 35 266 276 1847 1847 s>15 s>20 limit/base s</pre> | current 2 0 0 0 5 65 307 382 2249 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 | history1 2 0 0 0 6 308 308 2041 <1 history1 0 <1 1 +istory1 0 <1 +istory1 | history2 2 0 <1 0 7 79 363 407 1561 <1 history2 0 <1 history2 0 <1 <1 <1 <1 <1 <1 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | <pre>limit/base 0.0 0 1.1 35 266 276 1847 1847 s>15 s>15 s>20 limit/base s>5000</pre> | current 2 0 0 5 65 307 382 2249 <1 0 <1 0 <1 0 <1 0 <10 <210 0 <10 0 <210 0 <210 0 <210 0 <210 0 <210 <210 0 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <21 | history1 2 0 0 0 6 308 388 2041 <1 history1 0 <1 1 <1 <1 ×1 | history2 2 0 <1 0 7 79 363 407 1561 <1 bistory2 0 <1 +history2 0 <1 +history2 +history2 +history2 +history2 +history2 +history3 +history4 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | <pre>limit/base 0.0 0 1.1 35 266 276 1847 1847 imit/base >15 </pre> | current 2 0 0 5 65 307 382 2249 <1 0 <1 0 <1 0 <10 57092 §969 | history1 2 0 0 0 6 308 388 2041 <1 history1 0 <1 +1 0 <1 +1 0 <1 +1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 | history2 2 0 <1 0 7 79 363 407 1561 <1 history2 0 <1 0 <1 <1 history2 1 <1 <1 <1 <1 <1 <1494 1469 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) ASTM D7647 ASTM D7647 | limit/base 0.0 0 11 35 266 276 1847 Imit/base >15 >20 limit/base >5000 >1300 >160 | Current 2 0 0 5 65 307 382 2249 <1 0 <1 0 <1 0 <10 0 <10 0 <210 <210 0 <210 0 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 | history1 2 0 0 0 6 308 388 2041 <1 history1 0 <1 history1 0 <1 <1 <1 <1 <1 <1 <1 <3550 <42550 <436 | history2 2 0 <1 0 7 79 363 407 1561 <1 0 <1 0 <1 0 <1 <1 history2 14494 1469 55 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 | limit/base 0.0 0 11 35 266 276 1847 >20 limit/base >20 limit/base >5000 >1300 >160 >40 | Current 2 0 0 5 65 307 382 2249 <1 0 <1 0 <1 0 <10 0 <210 <2249 <10 0 <210 0 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 <210 | Aistory1 2 0 0 0 6 308 308 2041 <1 0 <1 0 <1 bistory1 0 <1 bistory1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 | history2 2 0 <1 0 7 79 363 407 1561 <1 0 <1 0 <1 0 <1 history2 0 <1 14494 1469 55 17 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm Particles >38µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 | limit/base 0.0 0 11 35 266 276 1847 265 276 1847 20 limit/base >20 limit/base >5000 >1300 >160 >40 >10 | current 2 0 0 5 65 307 382 2249 <1 0 <1 0 <11 0 <10 current 0 <10 current 0 <10 0 <10 0 152 15 | history1 2 0 0 6 308 308 2041 <1 • | history2 2 0 <1 0 7 79 363 407 1561 <1 bistory2 0 <1 history2 0 <1 14494 1469 55 17 2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >4µm Particles >14µm Particles >38µm Particles >38µm Particles >71µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 | limit/base 0.0 0 11 35 266 276 1847 1847 base >15 >20 limit/base >5000 >1300 >160 >40 >10 >3 | Current 2 0 0 5 65 307 382 2249 <1 0 <10 0 <10 0 <10 0 <10 0 <10 <10 0 <152 152 15 1 | Pistory1 2 0 0 6 308 388 2041 <1 bistory1 0 <1 bistory1 0 <1 0 <1 0 <1 0 <1 0 <10 <10 <10 <10 0 <10 0 <10 0 <10 0 <10 0 <10 0 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 | history2 2 0 <1 0 7 79 363 407 1561 <1 bistory2 0 <1 bistory2 0 <1 bistory2 14494 1469 55 17 2 0 |

Contact/Location: Ralph Butt - LEGLON



OIL ANALYSIS REPORT

| A Particle Trer | nd | |
|--|----------|------------|
| ^{50k} ^π _E ^{50k} ^{4μm} ^{6μm} ^{14μm} | | |
| sador | | |
| ab 20k - Abnormal | | |
| | | |
| 0k Parton Million | Feb14/24 | Mar14/24 - |
| ©k E2002 Particle Trer | Feb14/24 | Mar14/24 |
| 0k Particle Trer 60k θμm 50k 4μm 4μm 14μm | reb1424 | Mari424 |





| FLUID DEGRADA | TION | method | limit/base | current | history1 | history2 |
|------------------|----------|---------------|------------|---------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.36 | 0.39 | 0.39 | 0.29 |
| 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 | VLITE | VLITE | 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 PROPERT | IES | method | limit/base | current | history1 | history2 |
| Visc @ 40°C | cSt | ASTM D7279(m) | 46.99 | 42.1 | 42.4 | 41.4 |
| SAMPLE IMAGES | ; | method | limit/base | current | history1 | history2 |
| Color | | | | | | |

Bottom



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.

CALA

ISO 17025:2017 Accredited Laboratory

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