

OIL ANALYSIS REPORT

Sample Rating Trend

VISCOSITY

BUBBLE PERFORATOR

Gearbox Fluid SHELL OMALA 220 (--- GAL)

DIAGNOSIS

Recommendation

Confirm the source of the lubricant being utilized for top-up/fill. 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

There is no indication of any contamination in the oil.

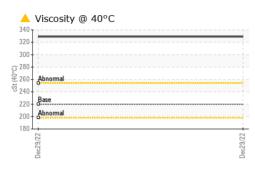
Fluid Condition

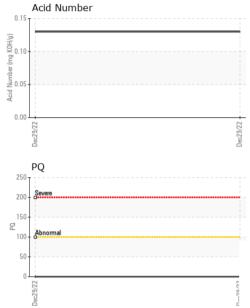
Viscosity of sample indicates oil is within ISO 320 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| Sample Date Image of the second | | | | | Dec2022 | | | |
|---|-------------------------------------|----------|---------------|---------------|-------------|----------|----------|--|
| Sample Date Client Info 29 Dec 2022 Machine Age yrs Client Info 0 Oil Age yrs Client Info 0 Sample Status Client Info N/A CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D5185(m) >15 0 Iron ppm ASTM D5185(m) >15 1 Nickel ppm ASTM D5185(m) >25 <1 Gopper ppm ASTM D5185(m) >25 0 Antimony ppm ASTM D5185(m) >5 <1 Vanadium ppm ASTM D5185(m) | SAMPLE INFORM | IATION | method | limit/base | current | history1 | history2 | |
| Machine Age yrs Client Info 0 Oil Age yrs Client Info N/A Sample Status Image Lient Info N/A CONTAMINATION method limitbase current history1 history2 Water WC Method >.0 WAT method limitbase current history1 history2 PQ ASTM D8184' 0 Chromium ppm ASTM D5185(m) >15 <1 | Sample Number | | Client Info | | WC0763603 | | | |
| Oil Age yrs Client Info 0 Oil Changed Client Info N/A Sample Status Imit/base ourrent history1 history2 Water WC Method >0.2 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184* 0 Iron ppm ASTM D6185(m) >15 0 Nickel ppm ASTM D5185(m) >15 0 Aluminum ppm ASTM D5185(m) >20 4 Adaminum ppm ASTM D5185(m) >20 4 Adaminum ppm ASTM D5185(m) >20 4 Adaminum ppm ASTM D5185(m) >20 Adaminum | Sample Date | | Client Info | | 29 Dec 2022 | | | |
| Oil Changed Client Info N/A Sample Status Imathod limit/base current history1 history2 Water WC Method >0.2 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184/ 0 Iron ppm ASTM D5185(m) >200 2 Nickel ppm ASTM D5185(m) >15 0 Nickel ppm ASTM D5185(m) >15 0 Silver ppm ASTM D5185(m) >200 4 Copper ppm ASTM D5185(m) >200 4 Adaminum ppm ASTM D5185(m) >200 4 Adaminum ppm ASTM D5185(m) >20 4 | Machine Age | yrs | Client Info | | 0 | | | |
| Sample Status method limit/base current history1 history2 Water WC Method >0.2 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184' 0 fron ppm ASTM D5185(m) >200 2 Nickel ppm ASTM D5185(m) >15 0 Nickel ppm ASTM D5185(m) >15 <1 | Oil Age | yrs | Client Info | | 0 | | | |
| CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D6184/ 0 Chromium ppm ASTM D6185/m >15 0 Nickel ppm ASTM D5185/m >15 0 Nickel ppm ASTM D5185/m 0 Auminum ppm ASTM D5185/m >200 4 Lead ppm ASTM D5185/m >200 4 Auminum ppm ASTM D5185/m >200 4 Lead ppm ASTM D5185/m >200 4 Auminum ppm ASTM D5185/m >200 4 Copper ppm ASTM D5185/m 0 | Oil Changed | | Client Info | | | | | |
| Water WC Method >0.2 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184* 0 Iron ppm ASTM D8185m >200 2 Chromium ppm ASTM D5185m >15 0 Nickel ppm ASTM D5185m >15 <1 | Sample Status | | | | ABNORMAL | | | |
| WEAR METALS method limit/base current history1 history2 PQ ASTM D6184* 0 Iron ppm ASTM D6184(m) 200 2 Chromium ppm ASTM D5185(m) >15 0 Nickel ppm ASTM D5185(m) >15 <1 Nickel ppm ASTM D5185(m) >5 <1 Aluminum ppm ASTM D5185(m) >200 4 Lead ppm ASTM D5185(m) >200 4 Copper ppm ASTM D5185(m) >200 4 Matimony ppm ASTM D5185(m) >200 Copper ppm ASTM D5185(m) >200 Cadmium ppm ASTM D5185(m) 0 | CONTAMINATION | J | method | limit/base | current | history1 | history2 | |
| PQ ASTM D8184* 0 Iron ppm ASTM D5185(m) >200 2 Chromium ppm ASTM D5185(m) >15 0 Nickel ppm ASTM D5185(m) >15 <1 | Water | | WC Method | >0.2 | NEG | | | |
| Iron ppm ASTM D5185(m) >200 2 Chromium ppm ASTM D5185(m) >15 0 Nickel ppm ASTM D5185(m) >15 <1 Nickel ppm ASTM D5185(m) 0 Silver ppm ASTM D5185(m) >25 <1 Aluminum ppm ASTM D5185(m) >200 4 Lead ppm ASTM D5185(m) >200 4 Copper ppm ASTM D5185(m) >20 4 Matimony ppm ASTM D5185(m) >5 <1 Cadmium ppm ASTM D5185(m) >5 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 | WEAR METALS | | method | limit/base | current | history1 | history2 | |
| Chromium ppm ASTM D5185(m) >15 0 Nickel ppm ASTM D5185(m) >15 <1 | PQ | | ASTM D8184* | | 0 | | | |
| Nickel ppm ASTM D5/85(m) >15 <1 Titanium ppm ASTM D5/85(m) 0 Silver ppm ASTM D5/85(m) >25 <1 | Iron | ppm | ASTM D5185(m) | >200 | 2 | | | |
| Titanium ppm ASTM D5185(m) 0 Silver ppm ASTM D5185(m) >25 <1 | Chromium | ppm | ASTM D5185(m) | >15 | 0 | | | |
| Silver ppm ASTM D5185(m) 0 Aluminum ppm ASTM D5185(m) >25 <1 | Nickel | ppm | ASTM D5185(m) | >15 | <1 | | | |
| Aluminum ppm ASTM D5185(m) >25 <1 | Titanium | ppm | ASTM D5185(m) | | 0 | | | |
| Lead ppm ASTM D5185(m) >100 0 Copper ppm ASTM D5185(m) >200 4 Tin ppm ASTM D5185(m) >25 0 Antimony ppm ASTM D5185(m) >5 <1 | Silver | ppm | ASTM D5185(m) | | 0 | | | |
| Copper ppm ASTM D5185(m) >200 4 Tin ppm ASTM D5185(m) >25 0 Antimony ppm ASTM D5185(m) >5 <1 | Sulfur ppm ASTM D51 | Aluminum | ppm | ASTM D5185(m) | >25 | <1 | | |
| Time ppm ASTM D5185(m) >25 0 Antimony ppm ASTM D5185(m) >5 <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 0 Molybdenum ppm ASTM D5185(m) 0.0 0 Magnesium ppm ASTM D5185(m) 0 0 | Lead | ppm | ASTM D5185(m) | >100 | 0 | | | |
| Antimony ppm ASTM D5185(m) >5 <1 | Copper | ppm | ASTM D5185(m) | >200 | 4 | | | |
| 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) 4.4 <1 Barium ppm ASTM D5185(m) 0.0 0 Manganese ppm ASTM D5185(m) 0.0 0 Magnesium ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Calcium ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Sulfur ppm ASTM D5185(m) 7039 T9 | Tin | ppm | ASTM D5185(m) | >25 | 0 | | | |
| BerylliumppmASTM D5185(m)0CadmiumppmASTM D5185(m)Imit/basecurrenthistory1history2ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)4.4<1 | Antimony | ppm | ASTM D5185(m) | >5 | <1 | | | |
| CadmiumppmASTM D5185(m)0ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)4.4<1 | Vanadium | ppm | ASTM D5185(m) | | 0 | | | |
| ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)4.4<1 | Beryllium | ppm | ASTM D5185(m) | | 0 | | | |
| Boron ppm ASTM D5185(m) 4.4 <1 Barium ppm ASTM D5185(m) 0.0 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) 0 0 Zinc ppm ASTM D5185(m) 215 163 Sulfur ppm ASTM D5185(m) 7039 79 Sulfur ppm ASTM D5185(m) 7039 79 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >50 3 Potassium p | Cadmium | ppm | ASTM D5185(m) | | 0 | | | |
| BariumppmASTM D5185(m)0.00MolybdenumppmASTM D5185(m)00ManganeseppmASTM D5185(m)00MagnesiumppmASTM D5185(m)00CalciumppmASTM D5185(m)00CalciumppmASTM D5185(m)00PhosphorusppmASTM D5185(m)215163ZincppmASTM D5185(m)0<1SulfurppmASTM D5185(m)703979LithiumppmASTM D5185(m)<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>503PotassiumppmASTM D5185(m)>20<1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2 | ADDITIVES | | method | limit/base | current | history1 | history2 | |
| MolybdenumppmASTM D5185(m)00ManganeseppmASTM D5185(m)00MagnesiumppmASTM D5185(m)00CalciumppmASTM D5185(m)00PhosphorusppmASTM D5185(m)215163ZincppmASTM D5185(m)0<1 | Boron | ppm | ASTM D5185(m) | 4.4 | <1 | | | |
| ManganeseppmASTM D5185(m)0MagnesiumppmASTM D5185(m)00CalciumppmASTM D5185(m)00PhosphorusppmASTM D5185(m)215163ZincppmASTM D5185(m)0<1 | Barium | ppm | ASTM D5185(m) | 0.0 | 0 | | | |
| Magnesium ppm ASTM D5185(m) 0 0 Calcium ppm ASTM D5185(m) 0 0 0 Phosphorus ppm ASTM D5185(m) 215 163 Zinc ppm ASTM D5185(m) 0 <1 | Molybdenum | ppm | ASTM D5185(m) | 0 | 0 | | | |
| Calcium ppm ASTM D5185(m) 0 0 Phosphorus ppm ASTM D5185(m) 215 163 Zinc ppm ASTM D5185(m) 0 <1 | Manganese | ppm | ASTM D5185(m) | | 0 | | | |
| Phosphorus ppm ASTM D5185(m) 215 163 Zinc ppm ASTM D5185(m) 0 <1 | Magnesium | ppm | ASTM D5185(m) | 0 | 0 | | | |
| ZincppmASTM D5185(m)0<1SulfurppmASTM D5185(m)7039 79 LithiumppmASTM D5185(m)<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>503SodiumppmASTM D5185(m)>503PotassiumppmASTM D5185(m)>20<1 | Calcium | ppm | ASTM D5185(m) | 0 | 0 | | | |
| SulfurppmASTM D5185(m)7039 79 LithiumppmASTM D5185(m) < 1 CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>50 3 SodiumppmASTM D5185(m)>20 5 PotassiumppmASTM D5185(m)>20 <1 FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2 | Phosphorus | ppm | ASTM D5185(m) | 215 | 163 | | | |
| LithiumppmASTM D5185(m)<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>503SodiumppmASTM D5185(m)5PotassiumppmASTM D5185(m)>20<1 | Zinc | ppm | ASTM D5185(m) | 0 | <1 | | | |
| CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>503SodiumppmASTM D5185(m)5PotassiumppmASTM D5185(m)>20<1 | Sulfur | ppm | ASTM D5185(m) | 7039 | 4 79 | | | |
| Silicon ppm ASTM D5185(m) >50 3 Sodium ppm ASTM D5185(m) 5 5 Potassium ppm ASTM D5185(m) >20 <1 | Lithium | ppm | ASTM D5185(m) | | <1 | | | |
| SodiumppmASTM D5185(m)5PotassiumppmASTM D5185(m) >20<1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2 | CONTAMINANTS | | method | limit/base | current | history1 | history2 | |
| SodiumppmASTM D5185(m)5PotassiumppmASTM D5185(m) >20<1 | Silicon | ppm | ASTM D5185(m) | >50 | 3 | | | |
| Potassium ppm ASTM D5185(m) >20 <1 FLUID DEGRADATION method limit/base current history1 history2 | Sodium | | ASTM D5185(m) | | 5 | | | |
| | Potassium | | ASTM D5185(m) | >20 | | | | |
| Acid Number (AN) mg KOH/g ASTM D974* 0.13 | FLUID DEGRADA | TION | method | limit/base | current | history1 | history2 | |
| | Acid Number (AN) | mg KOH/g | ASTM D974* | | 0.13 | | | |



OIL ANALYSIS REPORT





| | VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------------------|----------------------------|----------------|-----------------|--|-------------|-----------------|------------------------------|
| | White Metal | scalar | Visual* | NONE | NONE | | |
| | Yellow Metal | scalar | Visual* | NONE | VLITE | | |
| 1 | Precipitate | scalar | Visual* | NONE | NONE | | |
| | Silt | scalar | Visual* | NONE | NONE | | |
| | Debris | scalar | Visual* | NONE | NONE | | |
| | Sand/Dirt | scalar | Visual* | NONE | NONE | | |
| 9/22 . | Appearance | scalar | Visual* | NORML | NORML | | |
| Dec29/22 | Odor | scalar | Visual* | NORML | NORML | | |
| | Emulsified Water | scalar | Visual* | >0.2 | NEG | | |
| | Free Water | scalar | Visual* | | NEG | | |
| | FLUID PROPERT | | method | limit/base | current | history1 | history2 |
| | Visc @ 40°C | cSt | ASTM D7279(m) | 220 | ▲ 329 | | |
| | SAMPLE IMAGES | | method | limit/base | current | history1 | history2 |
| | | | mothod | | | | motory |
| Dec29/22 - | Color | | | | | no image | no image |
| | Bottom | | | | | no image | no image |
| | GRAPHS | | | | | | |
| | Ferrous Alloys | | | 23 | PQ | | |
| | iron | | | | Smuara | | |
| ç | = 6 - mium | | | | 0 - Gevele | | |
| C. B. C | | | | 18 | 30 | | |
| ć | 2 | | | 16 | 50 | | |
| | 0 | | | | 10 - | | |
| | Dec29/22 | | | Dec29/22 | 20 | | |
| | Dec | | | | Abnormal | | |
| | Non-ferrous Metals | s | | 10 | JU + Q | | |
| | 10 copper 1 | | | 8 | 30 | | |
| | 8 - Reason lead | | | 6 | 50 | | |
| | | | | | 10 | | |
| | 2 | | | | 20 | | |
| | | | | | | | |
| | 29/22 | | | Dec29/22 | 1/22 | | |
| | Dec29/27 | | | Dec2 | Dec29/22 | | |
| | 🔺 Viscosity @ 40°C | | | | Acid Number | | |
| | 350 T | | | | | | |
| | 300- | | | KOHV | | | |
| | Abnormal Base Base | | | Acid Number (mg KOH/g)) 0 mmber (mg KOH/g) | 10 | | |
| | | | | er o r | 05 | | |
| | 200 - Abnormal | | | - Nu Nu | | | |
| | 150 | | | | JU | | |
| | Dec29/22 | | | Dec29/22 | Dec29/22 | | |
| CALA Laboratory | : WearCheck - C8-1175 | | | | 'L 5H9 | Ivex Protect | |
| Sample No. 17025:2017 Lab Number | : WC0763603 | Recei Teste | | 3 Jan 2023 6 Jan 2023 | | | Britannia Ro ssissauga, C |
| Accredited Unique Number | | Diagr | | Jan 2023 - Ke | vin Marson | IVI | CA L4W 5N |
| | : IND 2 (Additional Tes | | | | | Conta | act: Terry Ea |
| discuss this sample report | , contact Customer Servi | ce at 1-8 | 800-268-213 | | | erry.Earle@ivex | |
| st denoted (*) outside scop | e of accreditation, (m) me | ethod ma | odified, (e) te | sted at exte | rnal lab. | | (905)795-88 |
| idity of results and interpre | | | | | | | |

F:

ĥ

Validity of results and interpretation are based on the sample and information as supplied.