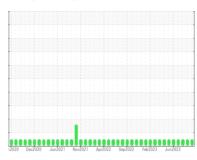


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id **023-0201**

Component **Diesel Engine**

SCHAEFFER SUPREME 7000 (--- GAL)

DIAGNICOIO

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

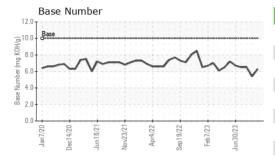
Fluid Condition

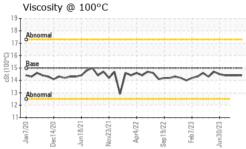
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION method limit/base current history2 history2 | | | 12020 Dec20 | 20 Jun2021 Nov2021 | Apr2022 Sep2022 Feb2023 | Jun2023 | |
|---|------------------|----------|-------------|--------------------|-------------------------|-------------|-------------|
| Sample Date | SAMPLE INFORM | MATION | method | limit/base | current | history1 | history2 |
| Machine Age hrs Client Info 14522 14283 14014 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info Changed Changed Changed Sample Status Image: Client Info Changed Changed NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method 55 <1.0 <1.0 <1.0 Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 <1 0 3 Chromium ppm ASTM D5185m >20 0 0 <1 Nickel ppm ASTM D5185m >30 0 0 0 Aluminum ppm ASTM D5185m >30 0 0 0 Lead ppm | Sample Number | | Client Info | | WC0868414 | WC0815225 | WC0815036 |
| Oil Age hrs Client Info Changed Changed <t< th=""><th>Sample Date</th><th></th><th>Client Info</th><th></th><th>25 Oct 2023</th><th>29 Sep 2023</th><th>01 Sep 2023</th></t<> | Sample Date | | Client Info | | 25 Oct 2023 | 29 Sep 2023 | 01 Sep 2023 |
| Oil Changed Sample Status Client Info Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL AST.0 C 1.0 1.0 1.0 NORMAL | Machine Age | hrs | Client Info | | 14522 | 14283 | 14014 |
| Sample Status | Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 <1 0 3 Chromium ppm ASTM D5185m >20 0 0 <1 0 0 Nickel ppm ASTM D5185m >4 <1 0 0 0 Silver ppm ASTM D5185m >4 <1 0 0 0 Silver ppm ASTM D5185m >40 0 0 0 0 0 Aluminum ppm ASTM D5185m >40 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Oil Changed | | Client Info | | Changed | Changed | Changed |
| Fuel | Sample Status | | | | NORMAL | NORMAL | NORMAL |
| Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 <1 0 3 Chromium ppm ASTM D5185m >20 0 0 <1 Nickel ppm ASTM D5185m >4 <1 0 0 Silver ppm ASTM D5185m 3 0 0 0 Silver ppm ASTM D5185m >20 4 2 2 2 Lead ppm ASTM D5185m >20 4 2 2 2 Lead ppm ASTM D5185m >40 0 0 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 | CONTAMINATION | V | method | limit/base | current | history1 | history2 |
| WEAR METALS | Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Iron | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium ppm ASTM D5185m >20 0 0 <1 | WEAR METALS | | method | limit/base | current | history1 | history2 |
| Nickel | Iron | ppm | ASTM D5185m | >100 | <1 | 0 | 3 |
| Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 4 2 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 0 0 <1 | Chromium | ppm | ASTM D5185m | >20 | 0 | 0 | <1 |
| Silver | Nickel | ppm | ASTM D5185m | >4 | <1 | 0 | 0 |
| Aluminum ppm ASTM D5185m >20 4 2 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 0 0 <1 Tin ppm ASTM D5185m >15 <1 <1 <1 Vanadium ppm ASTM D5185m <1 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 <th>Titanium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th>0</th> | Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 0 0 <1 | Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Copper ppm ASTM D5185m >330 0 <1 | Aluminum | ppm | ASTM D5185m | >20 | 4 | 2 | 2 |
| Tin ppm ASTM D5185m >15 <1 | Lead | ppm | ASTM D5185m | >40 | 0 | 0 | 0 |
| Vanadium ppm ASTM D5185m <1 | Copper | ppm | ASTM D5185m | >330 | 0 | 0 | <1 |
| Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 87 69 85 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 50 72 92 72 Manganese ppm ASTM D5185m 1000 16 17 23 Calcium ppm ASTM D5185m 1000 16 17 23 Calcium ppm ASTM D5185m 1000 16 17 23 Calcium ppm ASTM D5185m 1000 2215 2300 2334 Phosphorus ppm ASTM D5185m 985 1095 1001 1117 Zinc ppm ASTM D5185m 985 1095 1001 1117 Zinc ppm ASTM D5185m >20 7 7 7 </th <th></th> <th>ppm</th> <th></th> <th>>15</th> <th><1</th> <th><1</th> <th></th> | | ppm | | >15 | <1 | <1 | |
| ADDITIVES | Vanadium | ppm | ASTM D5185m | | | 0 | |
| Boron ppm ASTM D5185m 87 69 85 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 50 72 92 72 Manganese ppm ASTM D5185m 0 0 <1 | Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 50 72 92 72 Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 1000 16 17 23 Calcium ppm ASTM D5185m 1400 2215 2300 2334 Phosphorus ppm ASTM D5185m 1400 2215 2300 2334 Phosphorus ppm ASTM D5185m 985 1095 1001 1117 Zinc ppm ASTM D5185m 1060 1334 1239 1367 Sulfur ppm ASTM D5185m 4000 5398 5028 6370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m >20 | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 50 72 92 72 Manganese ppm ASTM D5185m 0 0 <1 | Boron | ppm | ASTM D5185m | | 87 | 69 | 85 |
| Manganese ppm ASTM D5185m 0 0 <1 | Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Magnesium ppm ASTM D5185m 1000 16 17 23 Calcium ppm ASTM D5185m 1400 2215 2300 2334 Phosphorus ppm ASTM D5185m 985 1095 1001 1117 Zinc ppm ASTM D5185m 1060 1334 1239 1367 Sulfur ppm ASTM D5185m 4000 5398 5028 6370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m >20 <1 | Molybdenum | ppm | ASTM D5185m | 50 | 72 | 92 | 72 |
| Calcium ppm ASTM D5185m 1400 2215 2300 2334 Phosphorus ppm ASTM D5185m 985 1095 1001 11117 Zinc ppm ASTM D5185m 1060 1334 1239 1367 Sulfur ppm ASTM D5185m 4000 5398 5028 6370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m >20 <1 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.4 8.2 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 17.1 history2 Oxidation Abs/.1mm <th>Manganese</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th><1</th> | Manganese | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Phosphorus ppm ASTM D5185m 985 1095 1001 1117 Zinc ppm ASTM D5185m 1060 1334 1239 1367 Sulfur ppm ASTM D5185m 4000 5398 5028 6370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m >20 <1 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/.mm *ASTM D7624 >20 8.4 8.2 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 17.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Ab | | ppm | ASTM D5185m | 1000 | 16 | | 23 |
| Zinc ppm ASTM D5185m 1060 1334 1239 1367 Sulfur ppm ASTM D5185m 4000 5398 5028 6370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m >20 <1 <1 3 Potassium ppm ASTM D5185m >20 <1 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/.mm *ASTM D7624 >20 8.4 8.2 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 17.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm </th <th>Calcium</th> <th>ppm</th> <th>ASTM D5185m</th> <th>1400</th> <th>2215</th> <th>2300</th> <th>2334</th> | Calcium | ppm | ASTM D5185m | 1400 | 2215 | 2300 | 2334 |
| Sulfur ppm ASTM D5185m 4000 5398 5028 6370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m >20 <1 | Phosphorus | ppm | | | | | 1117 |
| CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m <1 <1 3 Potassium ppm ASTM D5185m >20 <1 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.4 8.2 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 17.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6 14.0 15.0 | - | ppm | | | 1334 | 1239 | |
| Silicon ppm ASTM D5185m >25 7 7 7 Sodium ppm ASTM D5185m <1 | Sulfur | ppm | ASTM D5185m | 4000 | 5398 | 5028 | 6370 |
| Sodium ppm ASTM D5185m <1 | CONTAMINANTS | | method | limit/base | current | | history2 |
| Potassium ppm ASTM D5185m >20 <1 | | | | >25 | | | |
| INFRA-RED | | | | | | | |
| Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.4 8.2 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 17.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6 14.0 15.0 | Potassium | ppm | ASTM D5185m | >20 | <1 | 0 | 2 |
| Nitration Abs/cm *ASTM D7624 >20 8.4 8.2 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 17.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6 14.0 15.0 | INFRA-RED | | | limit/base | current | history1 | |
| Sulfation Abs/.1mm *ASTM D7415 >30 17.8 17.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6 14.0 15.0 | | | | | | | |
| FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2514.614.015.0 | | Abs/cm | | | 8.4 | | |
| Oxidation Abs/.1mm *ASTM D7414 >25 14.6 14.0 15.0 | Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 17.8 | 17.1 | 18.3 |
| | FLUID DEGRADA | TION | method | limit/base | current | history1 | history2 |
| Base Number (BN) mg KOH/g ASTM D2896 10 6.3 5.4 6.5 | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 14.6 | 14.0 | 15.0 |
| | Base Number (BN) | mg KOH/g | ASTM D2896 | 10 | 6.3 | 5.4 | 6.5 |



OIL ANALYSIS REPORT



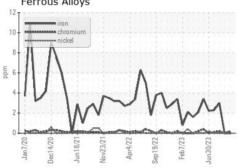


| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | 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 | >0.2 | NEG | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |

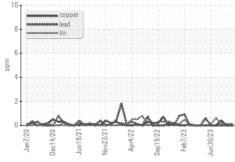
| FLUID PROPERI | IES | method | | | history1 | history2 |
|---------------|-----|-----------|----|------|----------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 15 | 14.4 | 14.4 | 14.4 |

GRAPHS

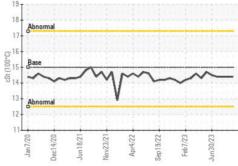
Ferrous Alloys











Base Number 12.0 Base Number (mg KOH/g)





Laboratory Sample No. Lab Number

Unique Number : 10727986

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0868414 : 05999626

Received Diagnosed

: 06 Nov 2023

: 07 Nov 2023

0.0

Diagnostician : Wes Davis

Test Package : CONST (Additional Tests: TBN) 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)

SHIMMICK CONSTRUCTION

5535 TRAILHEAD DRIVE CHATTANOOGA, TN US 37415

Contact: DANIEL LISELLA

daniel.lisella@shimmick.com T:

F: