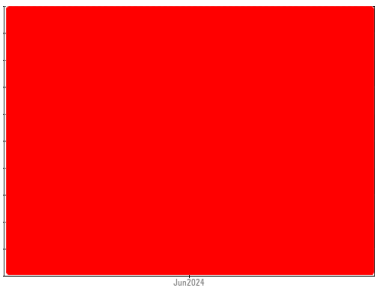
# PROBLEM SUMMARY

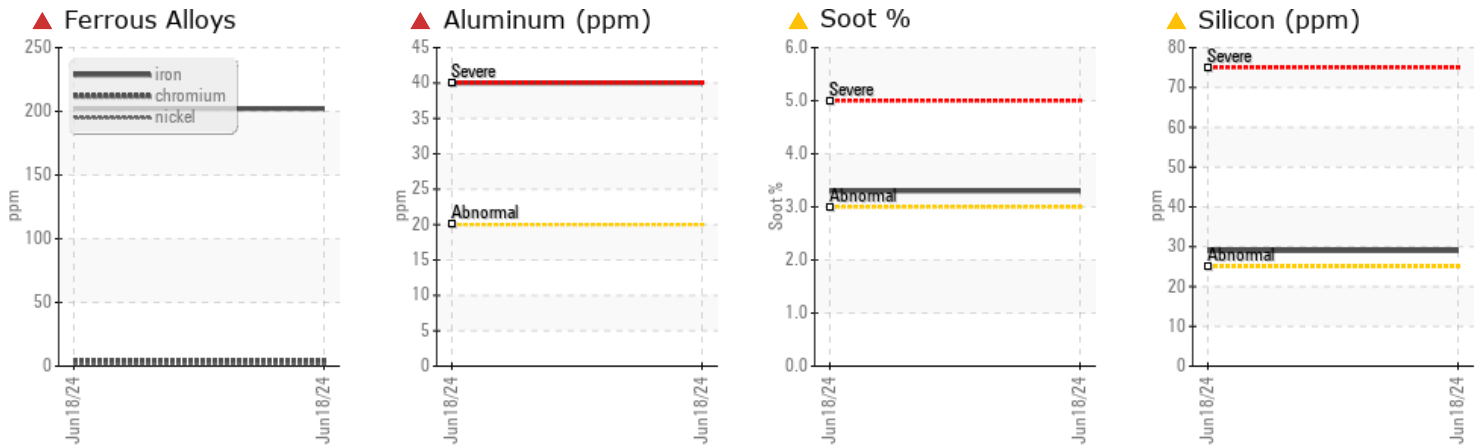
Sample Rating Trend




WEAR

Machine Id
**226**
Component
**Diesel Engine**
Fluid
**PRIMROSE 790 Syn-O-Gen 8 (--- GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample Status | | | | **SEVERE** | --- | --- |
| Iron | ppm | ASTM D5185m | >100 | ▲ **202** | --- | --- |
| Aluminum | ppm | ASTM D5185m | >20 | ▲ **40** | --- | --- |
| Silicon | ppm | ASTM D5185m | >25 | ▲ **29** | --- | --- |
| Soot % | % | *ASTM D7844 | >3 | ▲ **3.3** | --- | --- |

**Customer Id:** MIDMIDKY
**Sample No.:** WC0925566
**Lab Number:** 06216613
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
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jhester@wearcheckusa.com

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

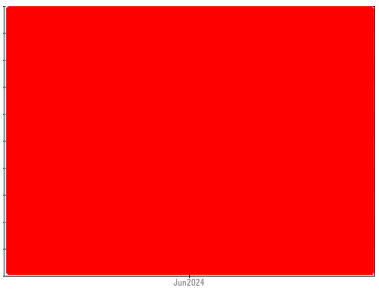
## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Inspect Wear Source | --- | --- | ? | We advise that you inspect for the source(s) of wear. |
| Change Fluid | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Change Filter | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Check Dirt Access | --- | --- | ? | We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. |

## HISTORICAL DIAGNOSIS

# OIL ANALYSIS REPORT

Sample Rating Trend




**WEAR**

Machine Id
**226**
Component
**Diesel Engine**
Fluid
**PRIMROSE 790 Syn-O-Gen 8 (--- GAL)**

## DIAGNOSIS

**▲ Recommendation**
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

**▲ Wear**
Piston and cylinder wear is indicated.

**▲ Contamination**
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. There is an abnormal amount of solids and carbon present in the oil.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0925566** | --- | --- |
| Sample Date | | Client Info | | **18 Jun 2024** | --- | --- |
| Machine Age | mls | Client Info | | **242060** | --- | --- |
| Oil Age | mls | Client Info | | **15000** | --- | --- |
| Oil Changed | | Client Info | | **Changed** | --- | --- |
| Sample Status | | | | **SEVERE** | --- | --- |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | --- | --- |
| Water | | WC Method | >0.2 | **NEG** | --- | --- |
| Glycol | | WC Method | | **NEG** | --- | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | ▲ **202** | --- | --- |
| Chromium | ppm | ASTM D5185m | >20 | **4** | --- | --- |
| Nickel | ppm | ASTM D5185m | >4 | **2** | --- | --- |
| Titanium | ppm | ASTM D5185m | | **<1** | --- | --- |
| Silver | ppm | ASTM D5185m | >3 | **<1** | --- | --- |
| Aluminum | ppm | ASTM D5185m | >20 | ▲ **40** | --- | --- |
| Lead | ppm | ASTM D5185m | >40 | **35** | --- | --- |
| Copper | ppm | ASTM D5185m | >330 | **22** | --- | --- |
| Tin | ppm | ASTM D5185m | >15 | **3** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **<1** | --- | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | --- | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **166** | --- | --- |
| Barium | ppm | ASTM D5185m | | **0** | --- | --- |
| Molybdenum | ppm | ASTM D5185m | | **94** | --- | --- |
| Manganese | ppm | ASTM D5185m | | **2** | --- | --- |
| Magnesium | ppm | ASTM D5185m | | **475** | --- | --- |
| Calcium | ppm | ASTM D5185m | | **1485** | --- | --- |
| Phosphorus | ppm | ASTM D5185m | | **1092** | --- | --- |
| Zinc | ppm | ASTM D5185m | | **1383** | --- | --- |
| Sulfur | ppm | ASTM D5185m | | **3181** | --- | --- |

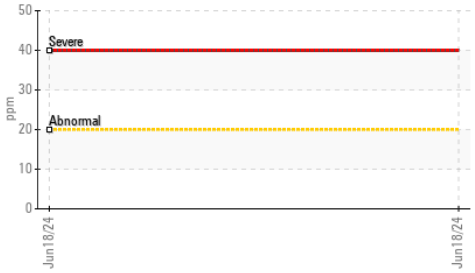
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | ▲ **29** | --- | --- |
| Sodium | ppm | ASTM D5185m | | **6** | --- | --- |
| Potassium | ppm | ASTM D5185m | >20 | **7** | --- | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | ▲ **3.3** | --- | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **14.7** | --- | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **33.7** | --- | --- |

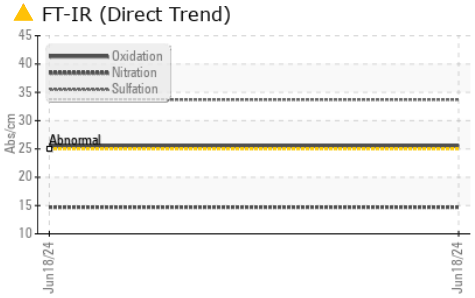
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **25.5** | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **6.9** | --- | --- |

# OIL ANALYSIS REPORT

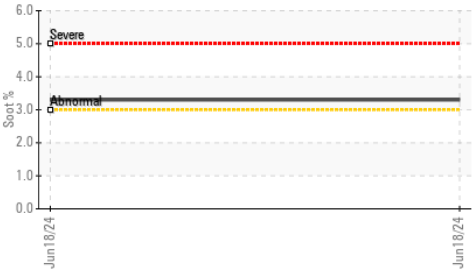
Aluminum (ppm)



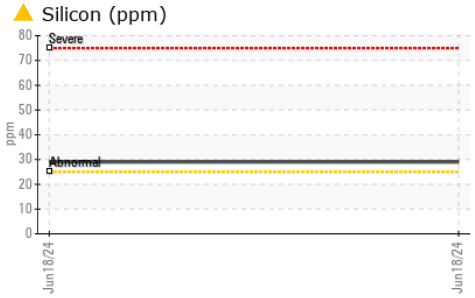

FT-IR (Direct Trend)



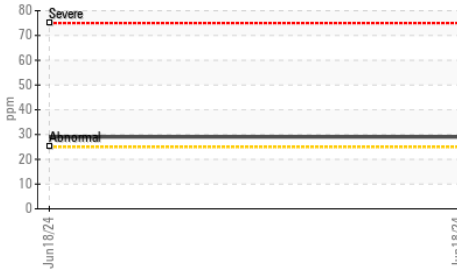

Soot %




Silicon (ppm)




Silicon (ppm)

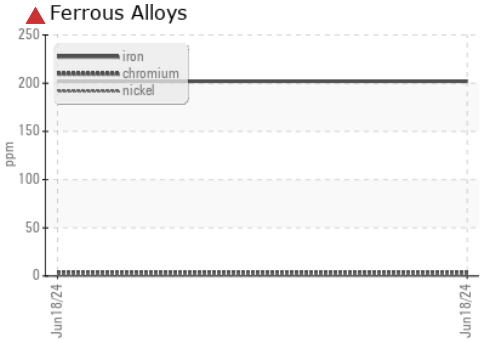



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | --- | --- |
| Silt |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

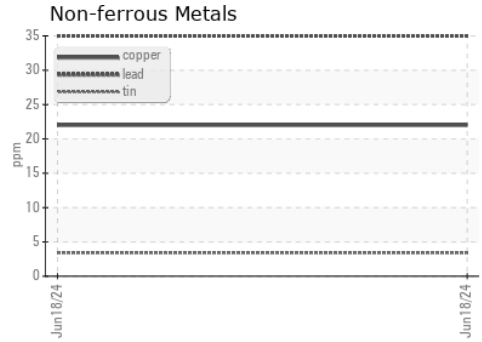
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | | **14.8** | --- | --- |

## GRAPHS

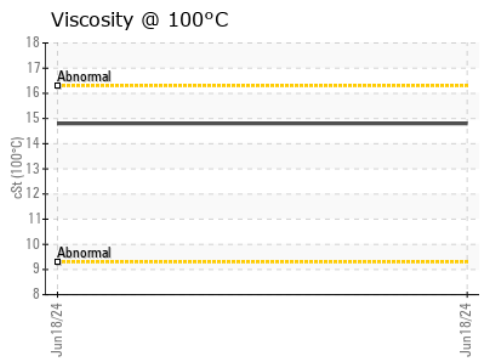
Ferrous Alloys



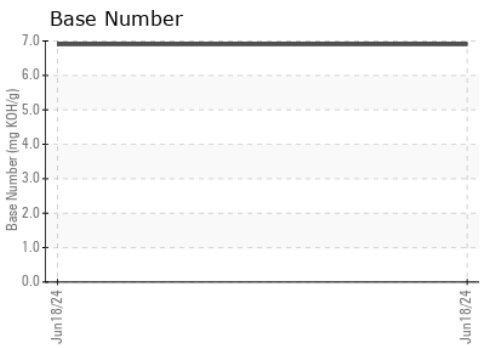

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0925566
**Lab Number** : 06216613
**Unique Number** : 11089477
**Test Package** : FLEET

**Received** : 21 Jun 2024
**Tested** : 24 Jun 2024
**Diagnosed** : 24 Jun 2024 - Jonathan Hester

*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)*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