



# OIL ANALYSIS REPORT

|                 |          |
|-----------------|----------|
| WEAR            | NORMAL   |
| CONTAMINATION   | ABNORMAL |
| FLUID CONDITION | ABNORMAL |

Machine Id  
**606011 HITACHI ZW370-6**  
 Component  
**Diesel Engine**  
 Fluid  
**SHELL 15W40 (--- GAL)**

## RECOMMENDATION

We advise that you check the fuel injection system. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

## WEAR

All component wear rates are normal.

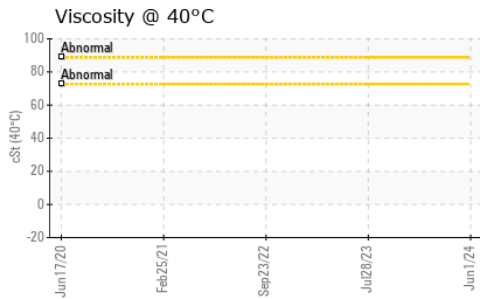
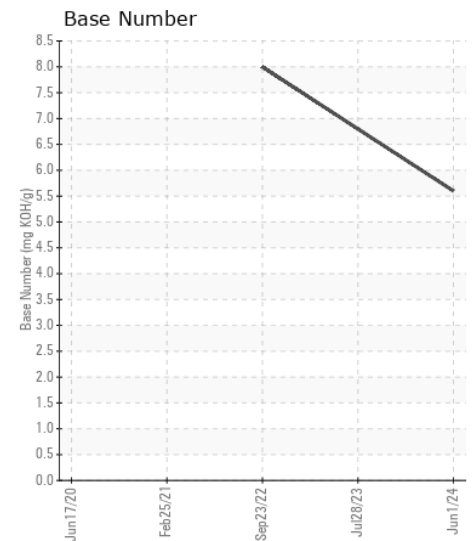
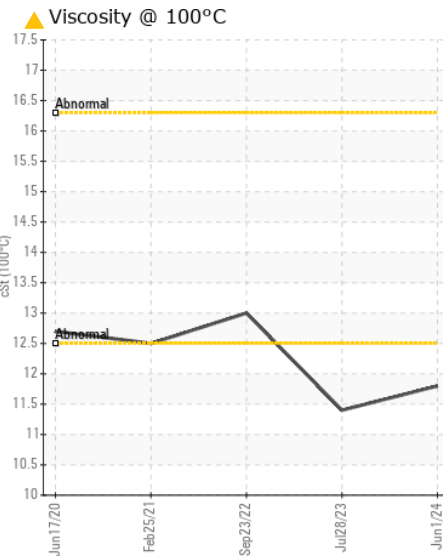
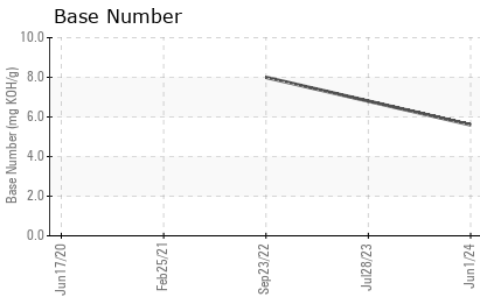
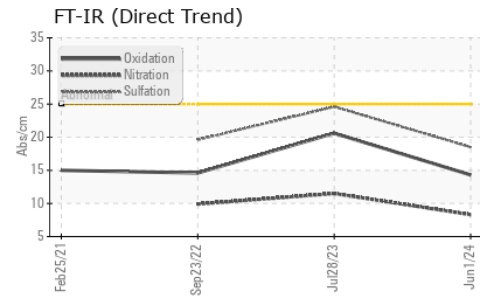
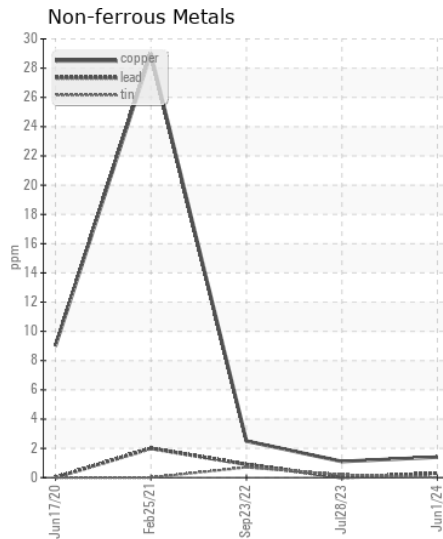
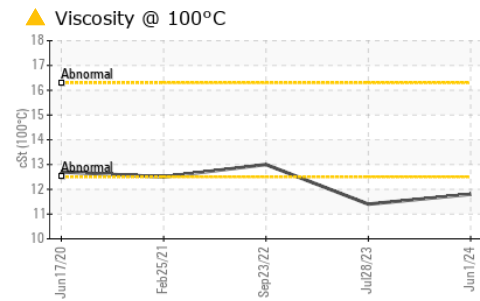
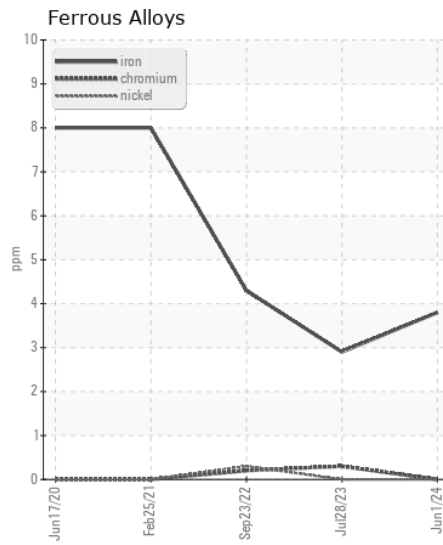
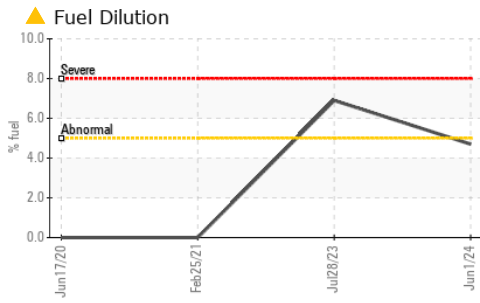
## CONTAMINATION

There is a moderate amount of fuel present in the oil.

## FLUID CONDITION

Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

| Test             | UOM      | Method      | Limit/Abn | Current     | History1    | History2    |
|------------------|----------|-------------|-----------|-------------|-------------|-------------|
| Sample Number    |          | Client Info |           | WC0910269   | WC0653560   | WC0661343   |
| Sample Date      |          | Client Info |           | 01 Jun 2024 | 28 Jul 2023 | 23 Sep 2022 |
| Machine Age      | hrs      | Client Info |           | 6126        | 4978        | 4185        |
| Oil Age          | hrs      | Client Info |           | 500         | 0           | 515         |
| Filter Age       | hrs      | Client Info |           | 500         | 0           | 515         |
| Oil Changed      |          | Client Info |           | Changed     | N/A         | Changed     |
| Filter Changed   |          | Client Info |           | Changed     | N/A         | Changed     |
| Sample Status    |          |             |           | ABNORMAL    | ABNORMAL    | NORMAL      |
| Iron             | ppm      | ASTM D5185m | >100      | 4           | 3           | 4           |
| Chromium         | ppm      | ASTM D5185m | >20       | 0           | <1          | <1          |
| Nickel           | ppm      | ASTM D5185m | >4        | 0           | 0           | <1          |
| Titanium         | ppm      | ASTM D5185m |           | <1          | 0           | 0           |
| Silver           | ppm      | ASTM D5185m | >3        | 0           | 0           | 0           |
| Aluminum         | ppm      | ASTM D5185m | >20       | 2           | 3           | 3           |
| Lead             | ppm      | ASTM D5185m | >40       | <1          | 0           | <1          |
| Copper           | ppm      | ASTM D5185m | >330      | 1           | 1           | 2           |
| Tin              | ppm      | ASTM D5185m | >15       | 0           | <1          | <1          |
| Vanadium         | ppm      | ASTM D5185m |           | <1          | <1          | 0           |
| White Metal      | scalar   | *Visual     | NONE      | NONE        | NONE        | NONE        |
| Yellow Metal     | scalar   | *Visual     | NONE      | NONE        | NONE        | NONE        |
| Silicon          | ppm      | ASTM D5185m | >25       | 3           | 3           | 4           |
| Potassium        | ppm      | ASTM D5185m | >20       | 1           | 1           | 2           |
| Chlorine         | ppm      | ASTM D5185m |           | ---         | ---         | ---         |
| Fuel             | %        | ASTM D3524  | >5        | ▲ 4.7       | ▲ 6.9       | <1.0        |
| Water            |          | WC Method   | >0.2      | NEG         | NEG         | NEG         |
| Glycol           |          | WC Method   |           | NEG         | NEG         | NEG         |
| Soot %           | %        | *ASTM D7844 | >3        | 0.1         | 0.8         | 0.1         |
| Nitration        | Abs/cm   | *ASTM D7624 | >20       | 8.3         | 11.5        | 9.9         |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30       | 18.5        | 24.6        | 19.6        |
| 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         |
| Sodium           | ppm      | ASTM D5185m | >150      | <1          | 3           | 1           |
| Boron            | ppm      | ASTM D5185m |           | 34          | 22          | 55          |
| Barium           | ppm      | ASTM D5185m |           | 0           | <1          | 0           |
| Molybdenum       | ppm      | ASTM D5185m |           | 61          | 31          | 86          |
| Manganese        | ppm      | ASTM D5185m |           | <1          | 0           | <1          |
| Magnesium        | ppm      | ASTM D5185m |           | 47          | 32          | 35          |
| Calcium          | ppm      | ASTM D5185m |           | 2316        | 1911        | 2348        |
| Phosphorus       | ppm      | ASTM D5185m |           | 1022        | 809         | 1065        |
| Zinc             | ppm      | ASTM D5185m |           | 1265        | 998         | 1281        |
| Sulfur           | ppm      | ASTM D5185m |           | 4588        | 3421        | 4779        |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25       | 14.3        | 20.6        | 14.6        |
| Base Number (BN) | mg KOH/g | ASTM D2896  |           | 5.6         | 6.8         | 8.0         |
| Visc @ 100°C     | cSt      | ASTM D445   |           | ▲ 11.8      | ▲ 11.4      | 13.0        |



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0910269 **Received** : 28 Jun 2024  
**Lab Number** : 06223308 **Tested** : 03 Jul 2024  
**Unique Number** : 11101505 **Diagnosed** : 03 Jul 2024 - Jonathan Hester  
**Test Package** : FLEET ( Additional Tests: KV40, PercentFuel )

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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