

OIL ANALYSIS REPORT



Machine Id

SLOB Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 15W40 (--- GAL)

DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

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

Fluid Condition

The oil is no longer serviceable due to the presence of contaminants.

| SAMPLE INFORM | ATION | method | limit/base | current | history1 | history2 |
|---|--|--|---|---|--|---|
| Sample Number | | Client Info | | WC0916277 | WC0883883 | WC0879743 |
| Sample Date | | Client Info | | 15 Apr 2024 | 01 Feb 2024 | 26 Nov 2023 |
| Machine Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | ABNORMAL | ABNORMAL | ABNORMAL |
| CONTAMINATION | N | method | limit/base | current | history1 | history2 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METALS | | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185(m) | >100 | 6 | 9 | 6 |
| Chromium | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >4 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | >3 | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185(m) | >20 | 2 | 5 | 2 |
| Lead | ppm | ASTM D5185(m) | >40 | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185(m) | >330 | <1 | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >15 | 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 | ppm | ASTM D5185(m) method | limit/base | 0 current | 0 history1 | 0 history2 |
| | ppm ppm | . , | limit/base | | - | - |
| ADDITIVES | | method | | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185(m) | 250 | current 52 | history1 54 | history2 64 |
| ADDITIVES Boron Barium | ppm ppm | method ASTM D5185(m) ASTM D5185(m) | 250 10 | current 52 0 | history1 54 0 | history2 64 <1 |
| ADDITIVES Boron Barium Molybdenum | ppm ppm ppm | method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 250 10 | current 52 0 37 | history1 54 0 36 | history2 64 <1 33 |
| ADDITIVES Boron Barium Molybdenum Manganese | ppm ppm ppm ppm | method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 250 10 100 | current 52 0 37 <1 | history1 54 0 36 0 | history2 64 <1 33 0 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm ppm | Method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 250 10 100 450 | current 52 0 37 <1 479 | history1 54 0 36 0 457 | history2 64 <1 33 0 417 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | methodASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m) | 250 10 100 450 3000 | current 52 0 37 <1 479 1583 | history1 54 0 36 0 457 1576 | history2 64 <1 33 0 417 1624 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm ppm | methodASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m) | 250 10 100 450 3000 1150 | current 52 0 37 <1 479 1583 694 | history1 54 0 36 0 457 1576 699 | history2 64 <1 33 0 417 1624 711 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm | methodASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 | current 52 0 37 <1 479 1583 694 802 | history1 54 0 36 0 457 1576 699 786 | history2 64 <1 33 0 417 1624 711 838 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 | current 52 0 37 <1 479 1583 694 802 1934 | history1 54 0 36 0 457 1576 699 786 2074 | history2 64 <1 33 0 417 1624 711 838 2067 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 | current 52 0 37 <1 479 1583 694 802 1934 <1 | history1 54 0 36 0 457 1576 699 786 2074 <1 | history2 64 <1 33 0 417 1624 711 838 2067 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 Iimit/base | current 52 0 37 <1 479 1583 694 802 1934 <1 current | history 1 54 0 36 0 457 1576 699 786 2074 <1 history 1 | history2 64 <1 33 0 417 1624 711 838 2067 <1 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 Iimit/base | current 52 0 37 <1 479 1583 694 802 1934 <1 current | history1 54 0 36 0 457 1576 699 786 2074 <1 history1 14 | history2 64 <1 33 0 417 1624 711 838 2067 <1 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 | current 52 0 37 <1 479 1583 694 802 1934 <1 current 4 3 | history1 54 0 36 0 457 1576 699 786 2074 <1 history1 14 3 | history2 64 <1 33 0 417 1624 711 838 2067 <1 history2 5 3 |
| 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) | 250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 | current 52 0 37 <1 479 1583 694 802 1934 <1 current 4 3 0 | history1 54 0 36 0 457 1576 699 786 2074 <1 history1 14 3 2 | history2 64 <1 33 0 417 1624 711 838 2067 <1 history2 5 3 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Fuel | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 imit/base >25 >158 >20 >5 | current 52 0 37 <1 479 1583 694 802 1934 <1 current 4 3 0 \$.9 | history1 54 0 36 0 457 1576 699 786 2074 <1 history1 14 3 2 ▲ 6 | history2 64 <1 33 0 417 1624 711 838 2067 <1 history2 5 3 <1 5 3 <1 ▲ 5 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) | 250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >20 >5 | current 52 0 37 <1 479 1583 694 802 1934 <1 current 4 3 0 ▲ 5.9 current 0.1 | history1 54 0 36 0 457 1576 699 786 2074 <1 history1 14 3 2 6 history1 0.1 | history2 64 <1 33 0 417 1624 711 838 2067 <1 bistory2 5 3 <1 bistory2 5 3 <1 <5 <5 bistory2 0.1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185(m) ASTM D7593* | 250 10 100 450 3000 1150 1350 4250 I imit/base >25 >158 >20 >5 I imit/base >3 | current 52 0 37 <1 479 1583 694 802 1934 <1 current 4 3 0 ▲ 5.9 | history1 54 0 36 0 457 1576 699 786 2074 <1 history1 14 3 2 ▲ 6 history1 | history2 64 <1 33 0 417 1624 711 838 2067 <1 history2 5 3 <1 5 3 <1 >5 3 <1 >5 3 <1 >5 history2 |



OIL ANALYSIS REPORT

| FT-IR (Direct Trend) | FLUID DEGRAD | ATION | method | limit/base | current | history1 | history2 |
|------------------------|--|--|--|---|--------------------|--------------------|---|
| Oxidation Nitration | Oxidation | Abs/.1mm | ASTM D7414* | >25 | 19.7 | 19.6 | 19.0 |
| | VISUAL | | method | limit/base | current | history1 | history2 |
| | White Metal | scalar | Visual* | NONE | NONE | VLITE | |
| | Yellow Metal | scalar | Visual* | NONE | NONE | NONE | |
| | Precipitate | scalar | Visual* | NONE | NONE | NONE | |
| Feb1/24 - | Silt Debris | scalar | Visual* | NONE | NONE | NONE | |
| 100 L | - | scalar | Visual* | NONE | VLITE | VLITE | |
| /iscosity @ 100°C | Sand/Dirt | scalar | Visual* | NONE | NONE | NONE | |
| Abnormal | Appearance Odor | scalar scalar | Visual* Visual* | NORML NORML | NORML NORML | NORML NORML | NORML |
| | Emulsified Water | scalar | Visual* | >0.2 | NEG | NEG | NEG |
| Base | Free Water | scalar | Visual* | | NEG | NEG | NEG |
| Abnormal | FLUID PROPER | | method | limit/base | current | history1 | history2 |
| | Visc @ 100°C | cSt | ASTM D7279(m) | | ▲ 11.5 | ▲ 11.4 | ▲ 11.4 |
| 54 | + | 501 | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | - (1.T |
| Feb1/24 | GRAPHS Iron (ppm) | | | | Lead (ppm) | | |
| , « | ²⁵⁰ | | | 100 | 0 T 10 mm | | |
| T-IR (Direct Trend) | _ 150 | 1 | | | | | |
| Oxidation Nitration | Abnormal | | | 면 40 | | | 1 |
| annammar Sulfation | 50 - | | | | 1+ | | |
| | | /24 | | 5/24 | 3/23 | /24 | 24 |
| | Nov26/23 | Feb1/24 | | Apr15/24 | Nov26/23 | Feb 1/24 | Apr15/24 |
| | Aluminum (ppm) | | | ppm) | | | |
| 42/. 42/. | 50 40 Severe | 1 | | 50 | Courses. | 1 | |
| Feb 1/24 | | | | | | | |
| | and a second sec | 1 | | ³⁰ 20 | | | |
| | 10 | _ | | 10 | | | |
| | Nov26/23 | Feb1/24 - | | Apr15/24 | Vov26/23 | Feb1/24 - | Apr15/24 |
| | | Fel | | Apr | 2 | | Aprl |
| | Copper (ppm) | | | 80 | Silicon (ppm |) | |
| | 300 - Severe | | | 60 | 1 | | 1 |
| | 톱 200 | | | 틆 40 | 0 | | |
| | 100 - | | | 20 | Abitotitia | | |
| | 0 | 4 | | 0 | | 44 | |
| | Nov26/23 | Feb1/24 | | Apr15/24 | Nav26/23 | Feb1/24 . | Apr15/24 |
| | ≥ ∧ Viscosity @ 100° | | | ⊲ _ | ≗ Fuel Dilution | | AF |
| | | 1 | | 10.0 | T | | |
| | 16 | | | 8.0 | | | |
| | G 10 Base 14 Abnormal | | | 필 6.0 및 6.0 % 4.0 | Abnormal | | |
| | | | | 2.0 | D | | |
| | 10 | /24 | | 0.0 | | /24 | 24 |
| | Nov26/23 | Feb1/24 | | Apr15/24 | Nov26/23 | Feb 1/24 | Apr15/24 |
| | - | 75 Appleby Recei Teste Diagr | ived :17 ed :18 | ngton, ON L7L 7 Apr 2024 8 Apr 2024 3 Apr 2024 - W | 1350 Go | overnment Rd. W, M | o Eagle Canada IACASSA COMPLEX irkland Lake, ON CA P2N 3J1 |

To discuss this sample report, contact Customer Service at 1-800-268-2131. 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.

Report Id: KIR370KIR [WCAMIS] 02629501 (Generated: 04/18/2024 12:48:15) Rev: 1

Contact/Location: Mike Campbell - KIR370KIR

mike.campbell@agnicoeagle.com

T: (705)567-5208

F: (705)567-5221