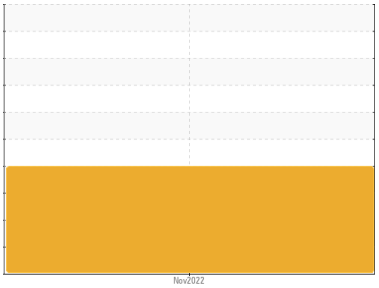
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
KA4213-L19
Component
Gasoline Engine
Fluid
SUPER TECH 5W20 (--- QTS)

DIAGNOSIS

Recommendation
The oil is near the end of it`s useful service life, recommend schedule an oil change. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

Contamination
Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of seal material. The water content is negligible.

Fluid Condition
The BN level is low. The AN level is at the top-end of the recommended limit.

SAMPLE INFORMATION		method	limit/base	current	history 1	history 2
Sample Number		Client Info		**WC0751444**	---	---
Sample Date		Client Info		**03 Nov 2022**	---	---
Machine Age	kms	Client Info		**152917**	---	---
Oil Age	kms	Client Info		**45741**	---	---
Oil Changed		Client Info		**Not Changd**	---	---
Sample Status				**ABNORMAL**	---	---

CONTAMINATION		method	limit/base	current	history 1	history 2
Glycol		WC Method		**NEG**	---	---

WEAR METALS		method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>150	**46**	---	---
Chromium	ppm	ASTM D5185m	>20	**1**	---	---
Nickel	ppm	ASTM D5185m	>5	**1**	---	---
Titanium	ppm	ASTM D5185m		**<1**	---	---
Silver	ppm	ASTM D5185m	>2	**3**	---	---
Aluminum	ppm	ASTM D5185m	>40	**8**	---	---
Lead	ppm	ASTM D5185m	>50	**<1**	---	---
Copper	ppm	ASTM D5185m	>155	**4**	---	---
Tin	ppm	ASTM D5185m	>10	**<1**	---	---
Vanadium	ppm	ASTM D5185m		**2**	---	---
Cadmium	ppm	ASTM D5185m		**0**	---	---

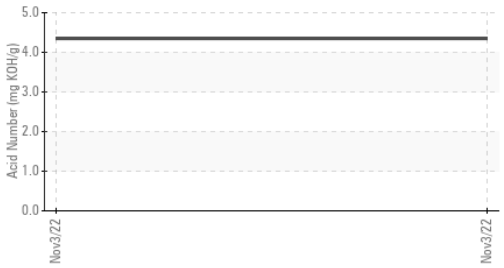
ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m		**41**	---	---
Barium	ppm	ASTM D5185m		**0**	---	---
Molybdenum	ppm	ASTM D5185m		**92**	---	---
Manganese	ppm	ASTM D5185m		**1**	---	---
Magnesium	ppm	ASTM D5185m		**589**	---	---
Calcium	ppm	ASTM D5185m		**1185**	---	---
Phosphorus	ppm	ASTM D5185m		**738**	---	---
Zinc	ppm	ASTM D5185m		**914**	---	---
Sulfur	ppm	ASTM D5185m		**3624**	---	---

CONTAMINANTS		method	limit/base	current	history 1	history 2
Silicon	ppm	ASTM D5185m	>30	▲ **64**	---	---
Sodium	ppm	ASTM D5185m	>400	**9**	---	---
Potassium	ppm	ASTM D5185m	>20	**1**	---	---
Fuel	%	ASTM D3524	>4.0	**1.7**	---	---
Water	%	ASTM D6304	>0.2	**0.054**	---	---
ppm Water	ppm	ASTM D6304	>2000	**549.4**	---	---

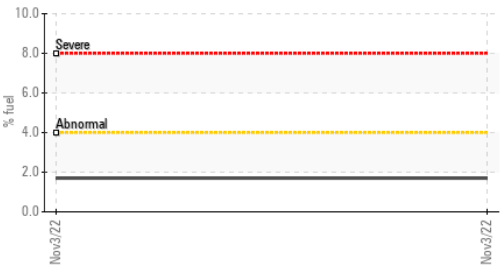
INFRA-RED		method	limit/base	current	history 1	history 2
Soot %	%	*ASTM D7844		**0.1**	---	---
Nitration	Abs/cm	*ASTM D7624	>20	**18.0**	---	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	**37.3**	---	---

OIL ANALYSIS REPORT

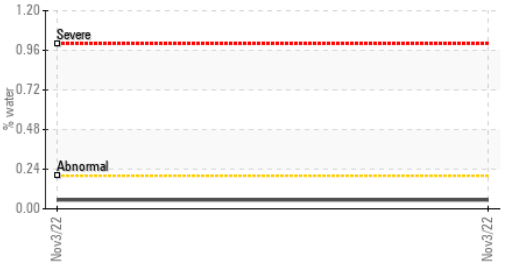
Acid Number



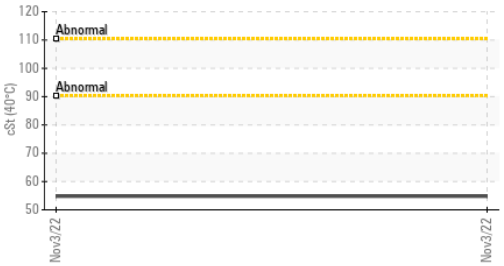
Fuel Dilution



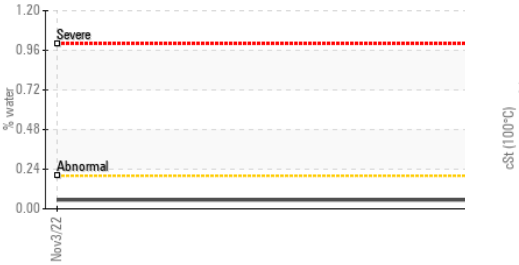
Water



Viscosity @ 40°C



Water



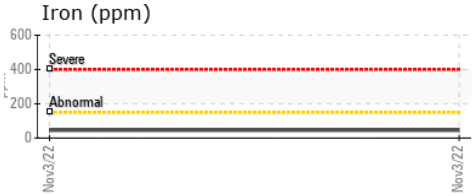
FLUID DEGRADATION		method	limit/base	current	history 1	history 2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**37.9**	---	---
Acid Number (AN)	mg KOH/g	ASTM D8045		▲ **4.35**	---	---
Base Number (BN)	mg KOH/g	ASTM D2896		▲ **2.21**	---	---

VISUAL		method	limit/base	current	history 1	history 2
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**	---	---

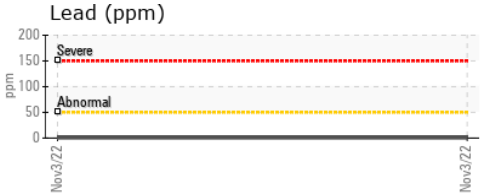
FLUID PROPERTIES		method	limit/base	current	history 1	history 2
Visc @ 40°C	cSt	ASTM D445		**54.8**	---	---
Visc @ 100°C	cSt	ASTM D445		**9.5**	---	---
Viscosity Index (VI)	Scale	ASTM D2270		**157**	---	---

GRAPHS

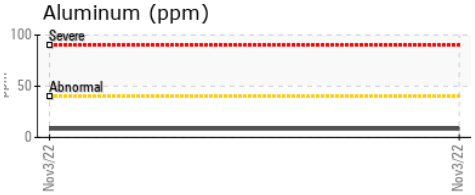
Iron (ppm)



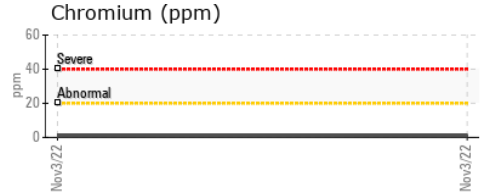
Lead (ppm)



Aluminum (ppm)

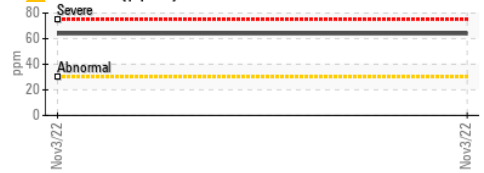


Chromium (ppm)



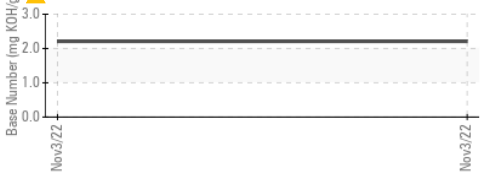
Copper (ppm)

▲ Silicon (ppm)



Viscosity @ 100°C

▲ Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0751444 **Received** : 06 Dec 2022
Lab Number : 05710525 **Diagnosed** : 13 Dec 2022
Unique Number : 10245100 **Diagnostician** : Jonathan Hester
Test Package : MOB 2 (Additional Tests: FUELDILUTION, KF, KV40, PercentFuel, TBN, VI)

AVL POWERTRAIN ENGINEERING INC
47519 HALYARD DRIVE
PLYMOUTH, MI
US 48170-2438
Contact: Service Manager

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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