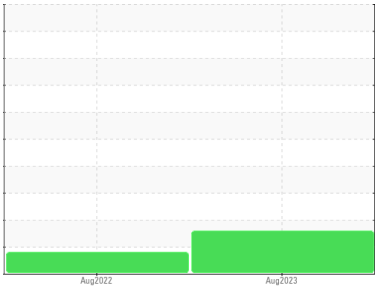
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
TORO GM4500 ROUGH 1 (S/N 403404578)
Component
Diesel Engine
Fluid
TRC PRO-SPEC IV XP SYN BLEND SAE 10W30 (6 QTS)

DIAGNOSIS

Recommendation
We advise that you check for faulty combustion, plugged air filters, or aftercoolers. We recommend you service the filters on this component. Resample at the next service interval to monitor.

Wear
Cylinder, crank, or cam shaft wear is indicated.

Contamination
There is an abnormal amount of solids and carbon present in the oil.

Fluid Condition
The oil viscosity is higher than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**TR05928896**	TR05638730	---
Sample Date		Client Info		**16 Aug 2023**	22 Aug 2022	---
Machine Age	hrs	Client Info		**2123**	1570	---
Oil Age	hrs	Client Info		**500**	845	---
Oil Changed		Client Info		**Not Changd**	Not Changd	---
Sample Status				**ABNORMAL**	ABNORMAL	---

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	▲ **186**	▲ 124	---
Chromium	ppm	ASTM D5185m	>20	**4**	3	---
Nickel	ppm	ASTM D5185m	>4	**3**	2	---
Titanium	ppm	ASTM D5185m		**<1**	<1	---
Silver	ppm	ASTM D5185m	>3	**0**	<1	---
Aluminum	ppm	ASTM D5185m	>20	**10**	8	---
Lead	ppm	ASTM D5185m	>40	**4**	5	---
Copper	ppm	ASTM D5185m	>330	**72**	91	---
Tin	ppm	ASTM D5185m	>15	**<1**	<1	---
Vanadium	ppm	ASTM D5185m		**0**	<1	---
Cadmium	ppm	ASTM D5185m		**0**	0	---

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**0**	0	---
Barium	ppm	ASTM D5185m		**2**	0	---
Molybdenum	ppm	ASTM D5185m		**153**	134	---
Manganese	ppm	ASTM D5185m		**2**	2	---
Magnesium	ppm	ASTM D5185m		**18**	22	---
Calcium	ppm	ASTM D5185m		**5271**	5305	---
Phosphorus	ppm	ASTM D5185m		**1037**	932	---
Zinc	ppm	ASTM D5185m		**1251**	1169	---
Sulfur	ppm	ASTM D5185m		**4742**	4466	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**14**	13	---
Sodium	ppm	ASTM D5185m		**5**	3	---
Potassium	ppm	ASTM D5185m	>20	**4**	<1	---

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	▲ **3.3**	2.8	---
Nitration	Abs/cm	*ASTM D7624	>20	**20.3**	21.4	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	**35.1**	36.6	---

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**26.7**	28.9	---
Base Number (BN)	mg KOH/g	ASTM D2896		**12.45**	13.6	---

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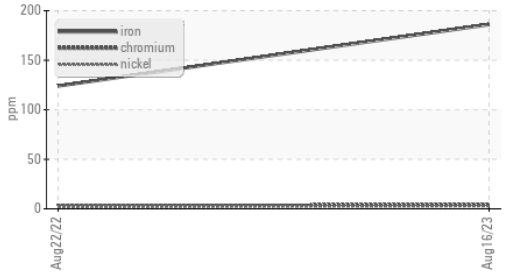
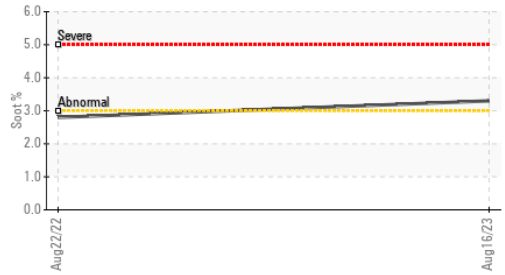
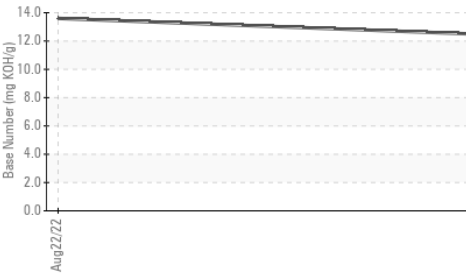
Ferrous Alloys



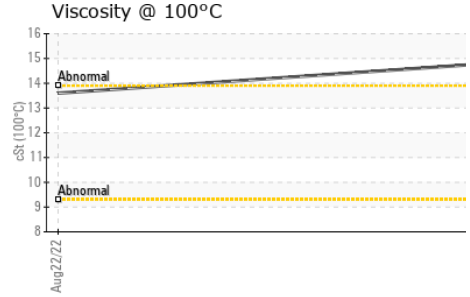
Soot %



Base Number



Viscosity @ 100°C

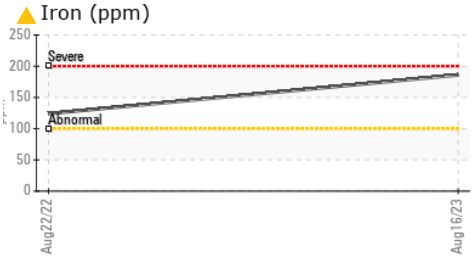


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	---
Silt	scalar	*Visual	NONE	**NONE**	NONE	---
Debris	scalar	*Visual	NONE	**NONE**	NONE	---
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	---
Appearance	scalar	*Visual	NORML	**NORML**	NORML	---
Odor	scalar	*Visual	NORML	**NORML**	NORML	---
Emulsified Water	scalar	*Visual	>0.2	**NEG**	NEG	---
Free Water	scalar	*Visual		**NEG**	NEG	---

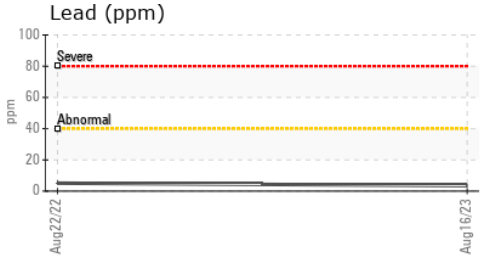
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		**14.8**	13.6	---

GRAPHS

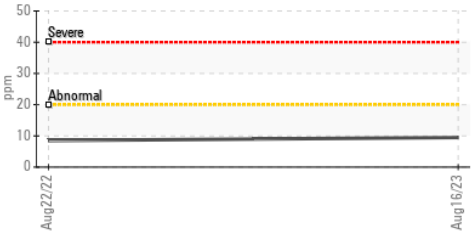
Iron (ppm)



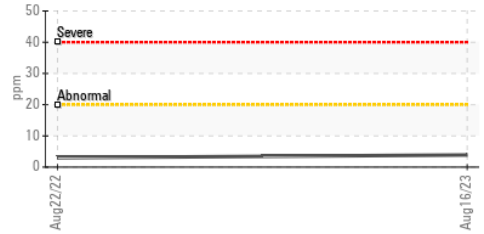
Lead (ppm)



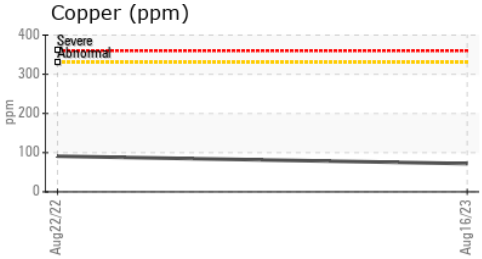
Aluminum (ppm)



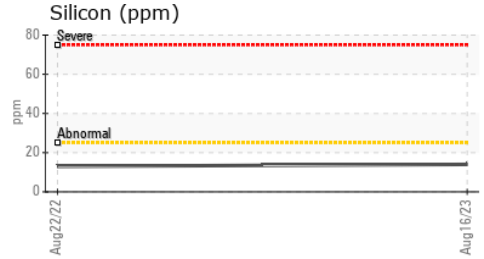
Chromium (ppm)



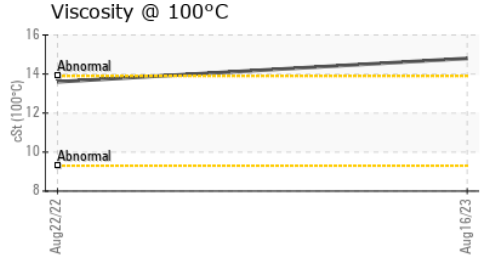
Copper (ppm)



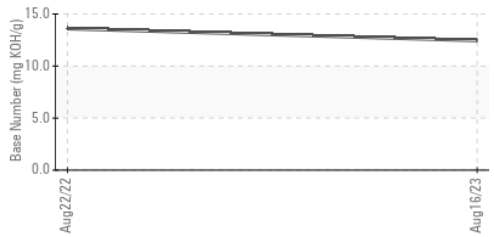
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR05928896
Lab Number : 05928896
Unique Number : 10608843
Test Package : MOB 2

Received : 18 Aug 2023
Diagnosed : 21 Aug 2023
Diagnostician : Doug Bogart

To discuss this sample report, contact Customer Service at 1-800-827-0711.
** - 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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