

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Diesel Engine

Sample No: LH0268000

Oil Type: LIEBHERR MOTOROIL 5W-30 LOW ASH



HEAVY MACHINES INC
 825 31ST STREET NORTH
 BIRMINGHAM, AL
 US 35203
 Contact: CHRIS MCANNALLY
 cmcannally@heavymachines.com
 T:
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Sample Information

Sample Number	LH0268000	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Changed	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 100°C	cSt	● 11.9	---	---	---
Base Number (BN)	mg KOH/g	● 6.2	---	---	---
Oxidation (PA)	%	192	---	---	---



Contamination

Water	%	NEG	---	---	---
Soot %	%	● 0.1	---	---	---
Nitration (PA)	%	79	---	---	---
Sulfation (PA)	%	106	---	---	---
Glycol	%	NEG	---	---	---
Fuel	%	<1.0	---	---	---
Silicon	ppm	● 8	---	---	---
Sodium	ppm	● 2	---	---	---
Potassium	ppm	● 2	---	---	---



Wear Metals

Iron	ppm	● 6	---	---	---
Copper	ppm	● 20	---	---	---
Lead	ppm	● 2	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● 3	---	---	---
Chromium	ppm	● <1	---	---	---
Molybdenum	ppm	● 44	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	● 0	---	---	---
Manganese	ppm	● 1	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 1307	---	---	---
Magnesium	ppm	● 882	---	---	---
Zinc	ppm	● 873	---	---	---
Phosphorus	ppm	● 756	---	---	---
Barium	ppm	● 0	---	---	---
Boron	ppm	● 145	---	---	---

Diagnosis

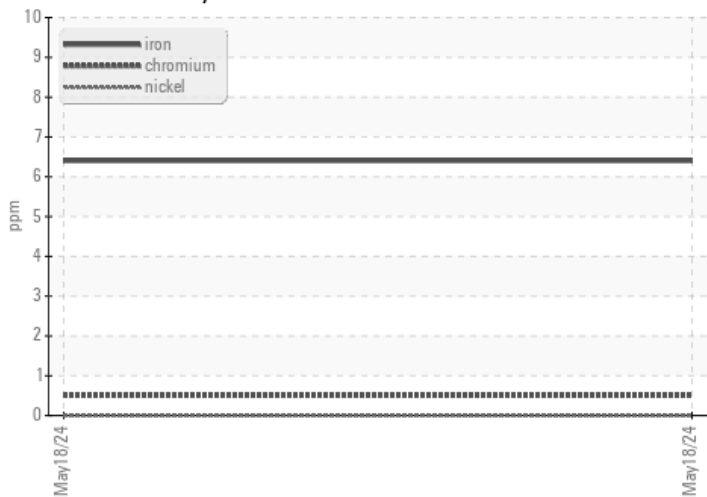
Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Depot: HEABIRLH
Unique No: 11044028
Signed: Don Baldrige
Report Date: 23 May 2024

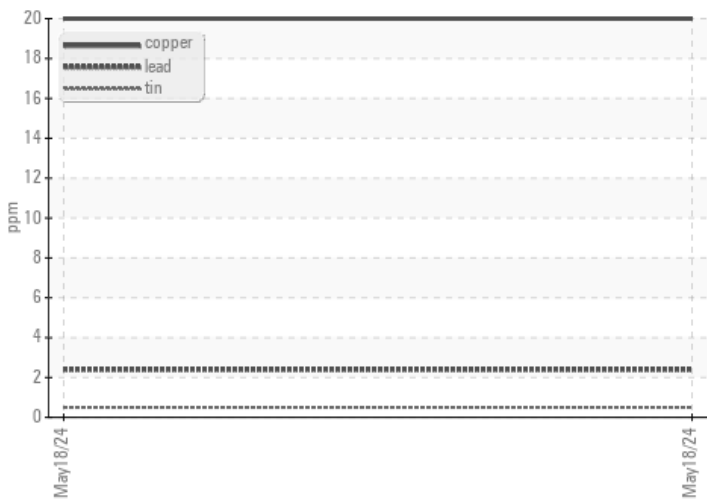


Graphs

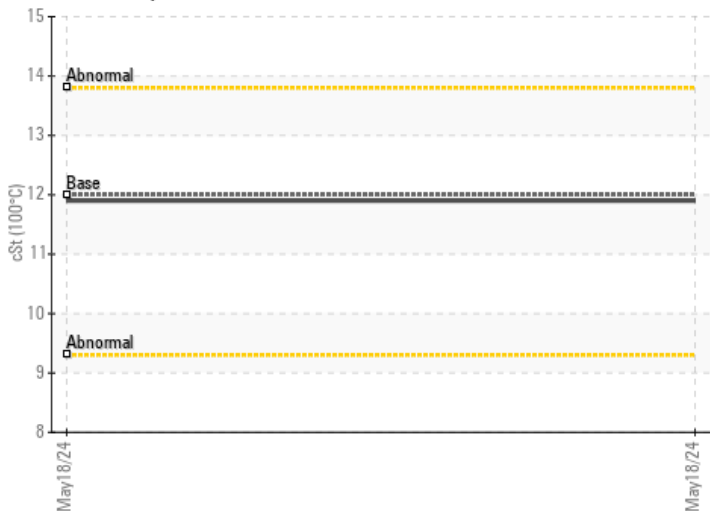
Ferrous Alloys



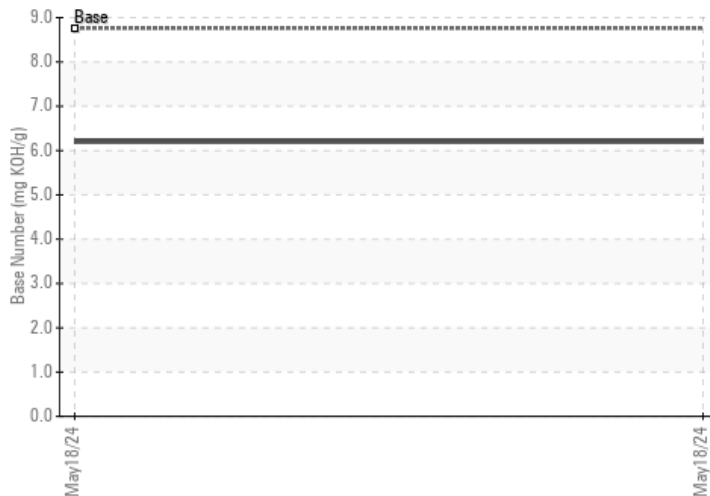
Non-ferrous Metals



Viscosity @ 100°C



Base Number



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LIEBHERR LH40M 159572-1215 - Transmission (Manual)

Sample No: LH0268001

Oil Type: LIEBHERR MOTOROIL 5W-30 LOW ASH



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Sample Information

Sample Number	LH0268001	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Changed	---	---	---
Sample Status	ATTENTION	---	---	---



Oil Condition

Visc @ 40°C	cSt	51.6	---	---	---
-------------	-----	------	-----	-----	-----



Contamination

Water	%	NEG	---	---	---
Silicon	ppm	4	---	---	---
Sodium	ppm	52	---	---	---
Potassium	ppm	5	---	---	---



Wear Metals

Iron	ppm	26	---	---	---
Copper	ppm	25	---	---	---
Lead	ppm	<1	---	---	---
Tin	ppm	1	---	---	---
Aluminum	ppm	4	---	---	---
Chromium	ppm	<1	---	---	---
Molybdenum	ppm	<1	---	---	---
Nickel	ppm	<1	---	---	---
Titanium	ppm	<1	---	---	---
Silver	ppm	<1	---	---	---
Manganese	ppm	47	---	---	---
Vanadium	ppm	<1	---	---	---



Additives

Calcium	ppm	3110	---	---	---
Magnesium	ppm	7	---	---	---
Zinc	ppm	1100	---	---	---
Phosphorus	ppm	970	---	---	---
Barium	ppm	0	---	---	---
Boron	ppm	7	---	---	---

Diagnosis

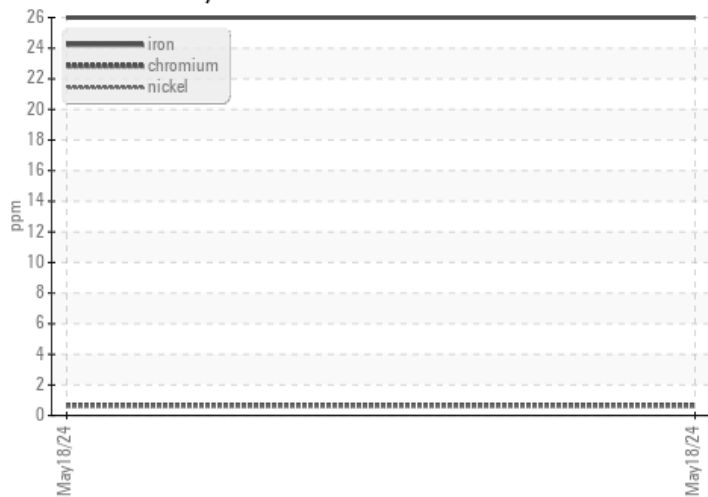
The fluid change at the time of sampling has been noted. Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the fluid. The fluid viscosity is lower than normal. This plus the additive levels indicates the addition of a different brand, or type of oil. Confirm oil type.

Depot: HEABIRLH
 Unique No: 11044883
 Signed: Sean Felton
 Report Date: 24 May 2024

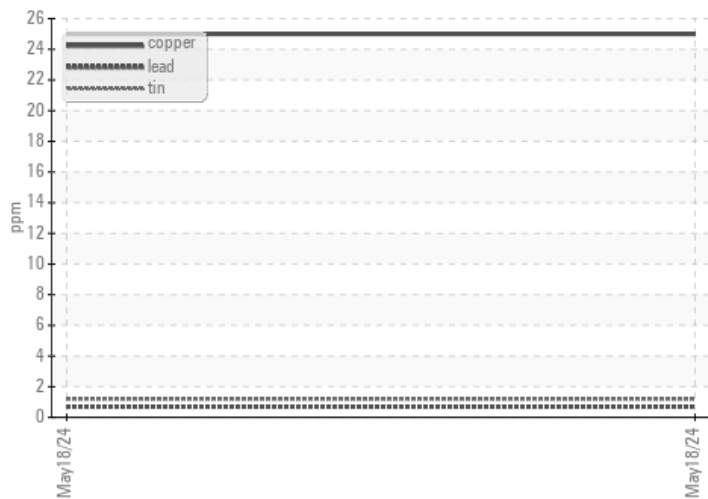


Graphs

Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C



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CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Hydraulic System

Sample No: LH0268008

Oil Type: AW HYDRAULIC OIL ISO 46



HEAVY MACHINES INC
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 BIRMINGHAM, AL
 US 35203
 Contact: MIKE DURHAM
 mdurham@heavy-llc.com
 T: (205)323-6108
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Sample Information

Sample Number	LH0268008	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	46.3	---	---	---
Acid Number (AN)	mg KOH/g	1.11	---	---	---



Contamination

Water	%	NEG	---	---	---
Particles >4µm		12204	---	---	---
Particles >6µm		2452	---	---	---
Particles >14µm		134	---	---	---
ISO 4406:1999 (c)		21/18/14	---	---	---
Silicon	ppm	2	---	---	---
Sodium	ppm	1	---	---	---
Potassium	ppm	0	---	---	---



Wear Metals

Iron	ppm	5	---	---	---
Copper	ppm	<1	---	---	---
Lead	ppm	0	---	---	---
Tin	ppm	0	---	---	---
Aluminum	ppm	<1	---	---	---
Chromium	ppm	0	---	---	---
Molybdenum	ppm	0	---	---	---
Nickel	ppm	0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	<1	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	1250	---	---	---
Magnesium	ppm	0	---	---	---
Zinc	ppm	690	---	---	---
Phosphorus	ppm	615	---	---	---
Barium	ppm	0	---	---	---
Boron	ppm	0	---	---	---

Diagnosis

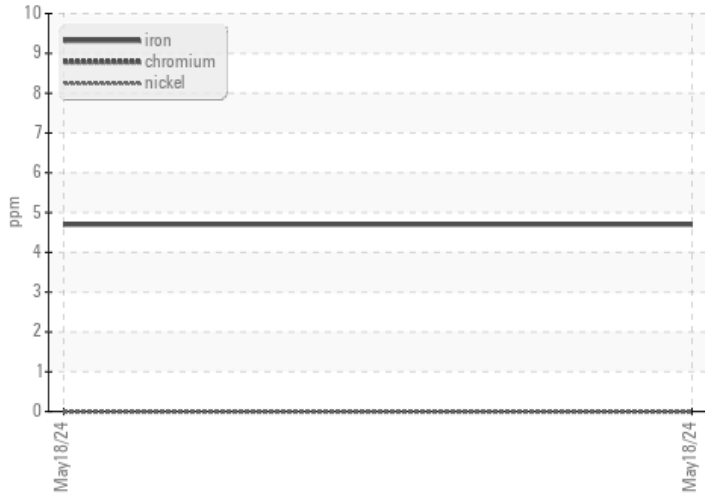
Resample at the next service interval to monitor. All component wear rates are normal. The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Depot: HEABIRLH
Unique No: 11044313
Signed: Don Baldrige
Report Date: 24 May 2024

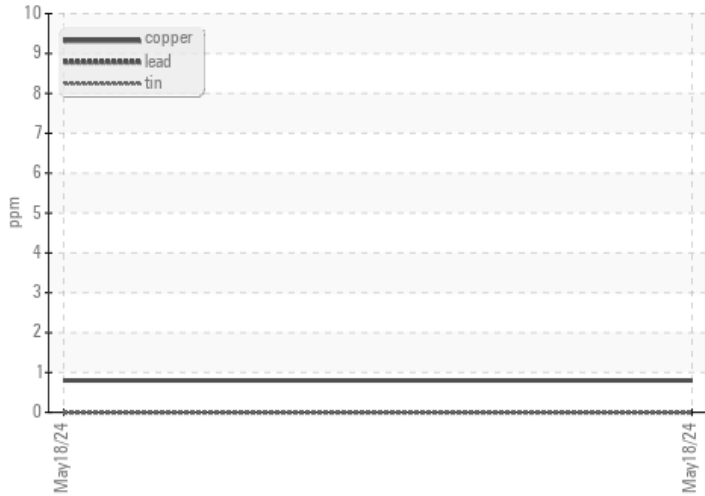


Graphs

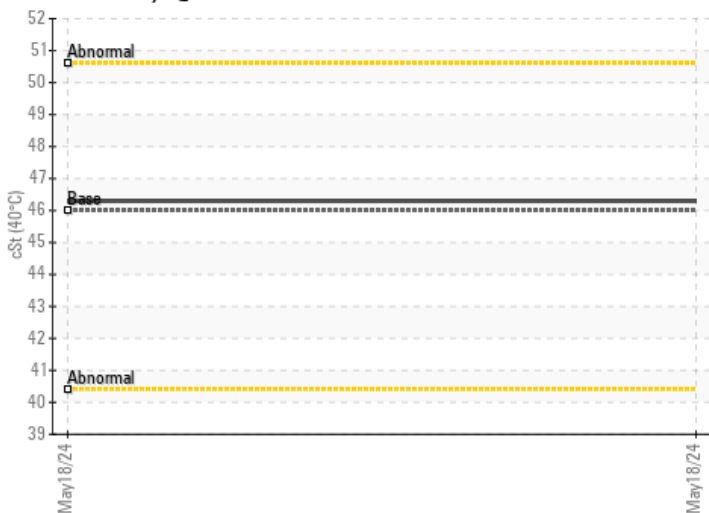
Ferrous Alloys



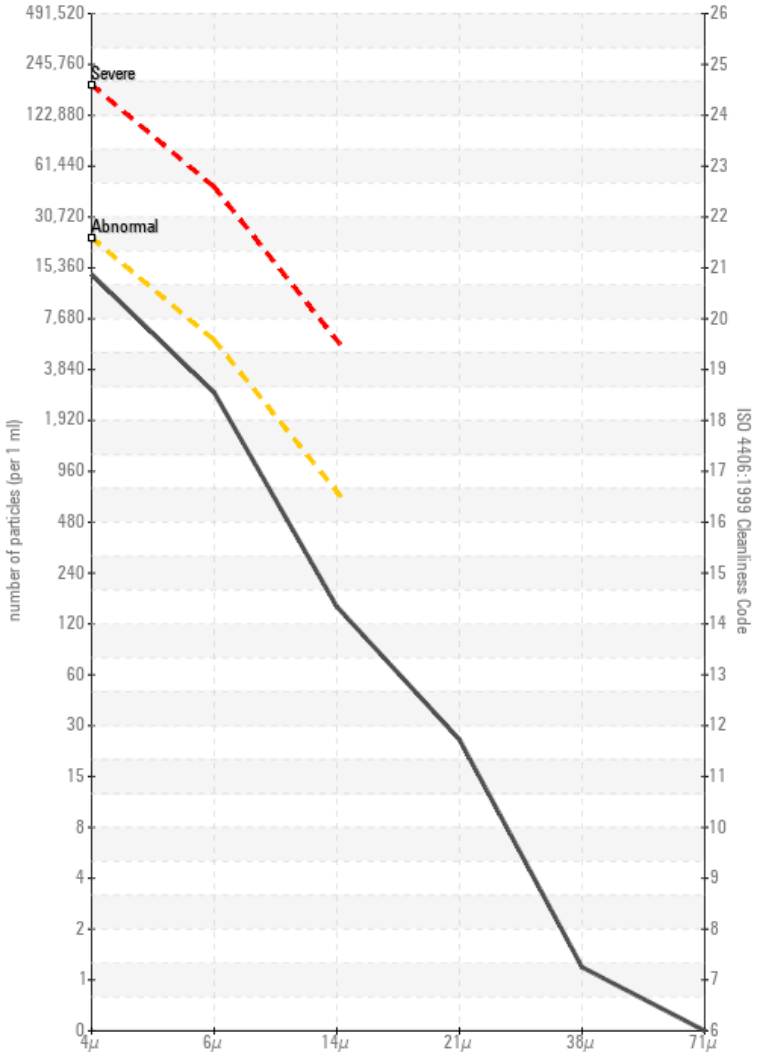
Non-ferrous Metals



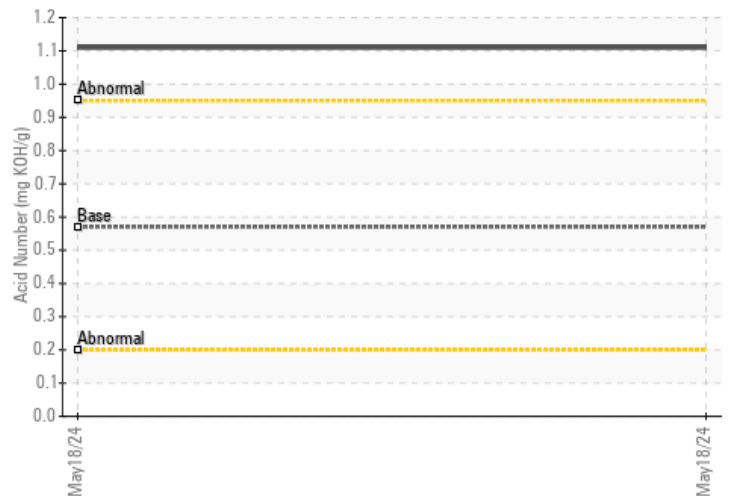
Viscosity @ 40°C



Particle Count



Acid Number



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CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Swing Drive

Sample No: LH0268002

Oil Type: GEAR OIL SAE 80W90



Sample Information

Sample Number	LH0268002	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Changed	---	---	---
Sample Status	NORMAL	---	---	---

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Oil Condition

Visc @ 40°C	cSt	● 178	---	---	---
-------------	-----	-------	-----	-----	-----



Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 3	---	---	---
Sodium	ppm	● 4	---	---	---
Potassium	ppm	● 1	---	---	---



Wear Metals

Iron	ppm	● 82	---	---	---
Copper	ppm	● 30	---	---	---
Lead	ppm	● 7	---	---	---
Tin	ppm	● 1	---	---	---
Aluminum	ppm	● 0	---	---	---
Chromium	ppm	● 0	---	---	---
Molybdenum	ppm	● 0	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 2	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 16	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 12	---	---	---
Phosphorus	ppm	● 2281	---	---	---
Barium	ppm	● 4	---	---	---
Boron	ppm	● 3	---	---	---

Diagnosis

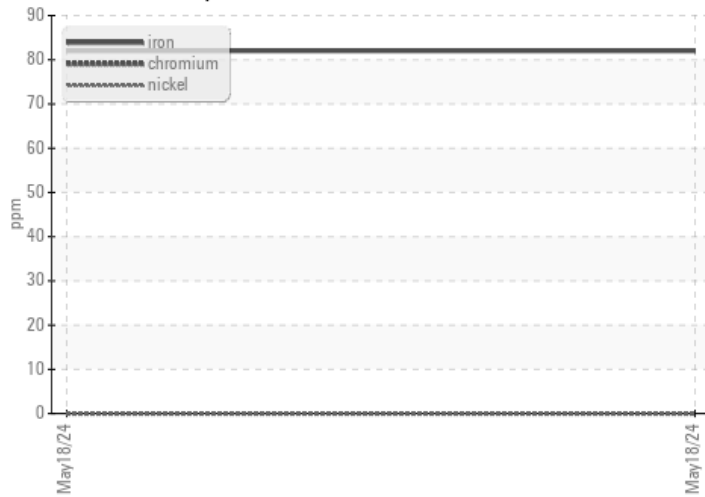
Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

Depot: HEABIRLH
Unique No: 11044846
Signed: Wes Davis
Report Date: 24 May 2024

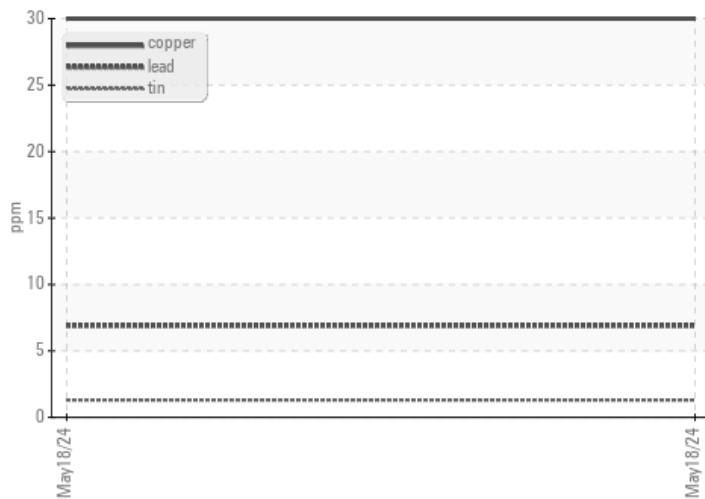


Graphs

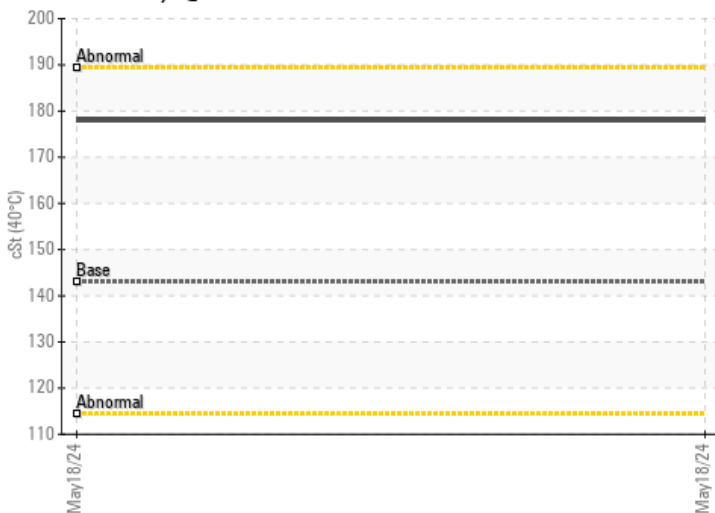
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C



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CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Front Left Wheel Hub

Sample No: LH0268003

Oil Type: GEAR OIL SAE 80W90



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 US 35203
 Contact: CHRIS MCANNALLY
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Sample Information

Sample Number	LH0268003	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	SEVERE	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 134	---	---	---
-------------	-----	-------	-----	-----	-----



Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 11	---	---	---
Sodium	ppm	● 3	---	---	---
Potassium	ppm	● <1	---	---	---



Wear Metals

Iron	ppm	● 121	---	---	---
Copper	ppm	● 118	---	---	---
Lead	ppm	● <1	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● 4	---	---	---
Chromium	ppm	● <1	---	---	---
Molybdenum	ppm	● 1	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	● 0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 5	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 70	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 64	---	---	---
Phosphorus	ppm	● 1302	---	---	---
Barium	ppm	● 0	---	---	---
Boron	ppm	● 1	---	---	---

Diagnosis

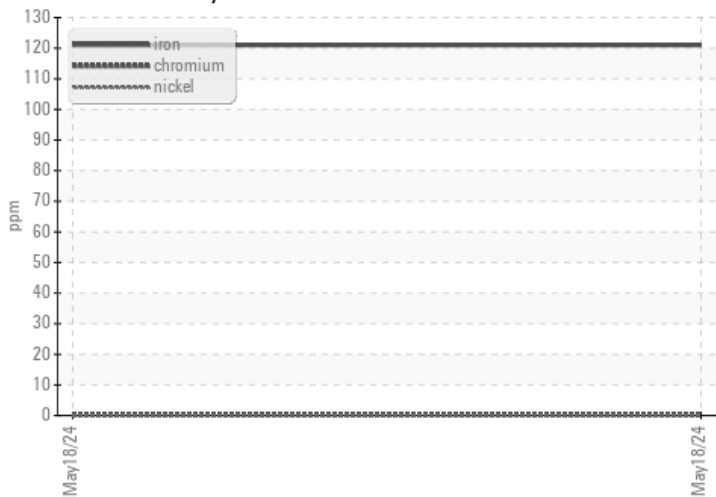
We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. The copper level is severe. High concentration of visible yellow metal present. There is no indication of any contamination in the oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Depot: HEABIRLH
 Unique No: 11044847
 Signed: Sean Felton
 Report Date: 28 May 2024

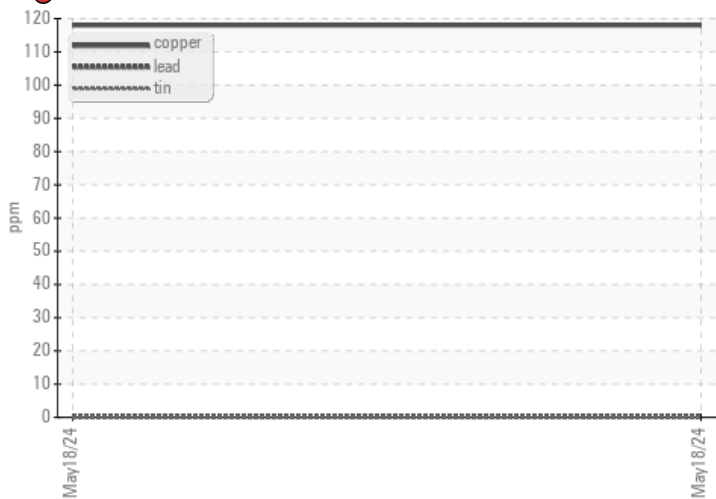


Graphs

Ferrous Alloys



● Non-ferrous Metals



Viscosity @ 40°C



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CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Front Differential

Sample No: LH0268007

Oil Type: GEAR OIL SAE 80W90



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 BIRMINGHAM, AL
 US 35203
 Contact: CHRIS MCANNALLY
 cmcannally@heavymachines.com
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Sample Information

Sample Number	LH0268007	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 180	---	---	---
-------------	-----	-------	-----	-----	-----



Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 6	---	---	---
Sodium	ppm	● 1	---	---	---
Potassium	ppm	● 0	---	---	---



Wear Metals

Iron	ppm	● 13	---	---	---
Copper	ppm	● 22	---	---	---
Lead	ppm	● 0	---	---	---
Tin	ppm	● 0	---	---	---
Aluminum	ppm	● 0	---	---	---
Chromium	ppm	● 0	---	---	---
Molybdenum	ppm	● 0	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● <1	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 3	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 7	---	---	---
Phosphorus	ppm	● 1221	---	---	---
Barium	ppm	● 370	---	---	---
Boron	ppm	● 3	---	---	---

Diagnosis

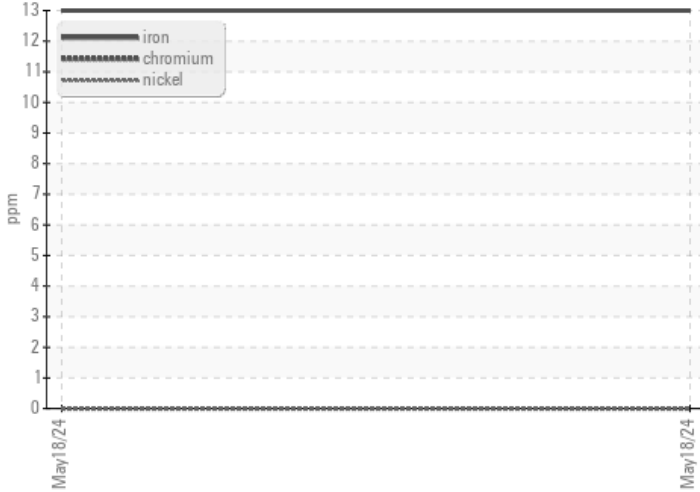
Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

Depot: HEABIRLH
 Unique No: 11044844
 Signed: Wes Davis
 Report Date: 24 May 2024

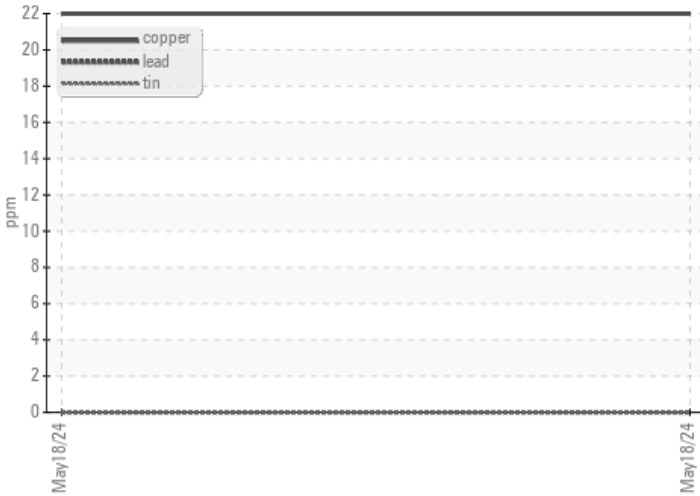


Graphs

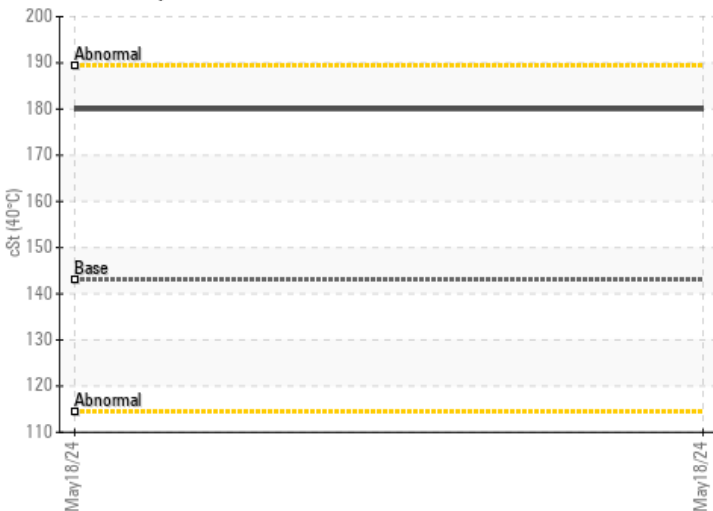
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C



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CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Front Right Wheel Hub

Sample No: LH0268005

Oil Type: GEAR OIL SAE 80W90



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 Contact: CHRIS MCANNALLY
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Sample Information

Sample Number	LH0268005	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	SEVERE	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 135	---	---	---
-------------	-----	-------	-----	-----	-----



Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 12	---	---	---
Sodium	ppm	● 3	---	---	---
Potassium	ppm	● <1	---	---	---



Wear Metals

Iron	ppm	● 144	---	---	---
Copper	ppm	● 168	---	---	---
Lead	ppm	● <1	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● 6	---	---	---
Chromium	ppm	● <1	---	---	---
Molybdenum	ppm	● 1	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	● 0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 6	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 79	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 106	---	---	---
Phosphorus	ppm	● 1278	---	---	---
Barium	ppm	● 0	---	---	---
Boron	ppm	● <1	---	---	---

Diagnosis

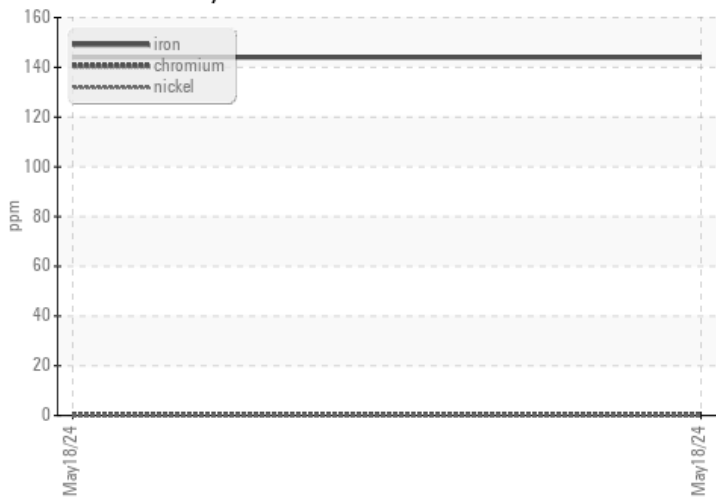
We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. The copper level is severe. High concentration of visible yellow metal present. There is no indication of any contamination in the oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Depot: HEABIRLH
 Unique No: 11044843
 Signed: Sean Felton
 Report Date: 28 May 2024

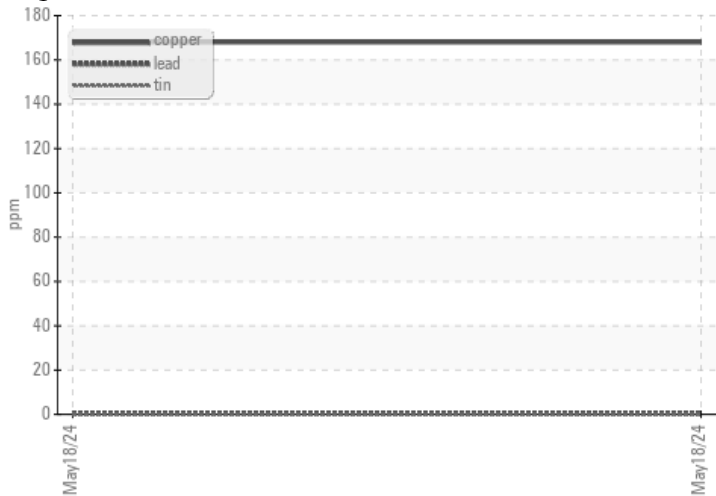


Graphs

Ferrous Alloys



● Non-ferrous Metals



Viscosity @ 40°C



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Splitter Box

Sample No: LH0268009

Oil Type: GEAR OIL SAE 80W90



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 BIRMINGHAM, AL
 US 35203
 Contact: CHRIS MCANNALLY
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Sample Information

Sample Number	LH0268009	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Changed	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 195	---	---	---
-------------	-----	-------	-----	-----	-----



Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 1	---	---	---
Sodium	ppm	● 2	---	---	---
Potassium	ppm	● 2	---	---	---



Wear Metals

Iron	ppm	● 20	---	---	---
Copper	ppm	● 0	---	---	---
Lead	ppm	● 0	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● <1	---	---	---
Chromium	ppm	● 0	---	---	---
Molybdenum	ppm	● 0	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 2	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 6	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 4	---	---	---
Phosphorus	ppm	● 1608	---	---	---
Barium	ppm	● 0	---	---	---
Boron	ppm	● 1	---	---	---

Diagnosis

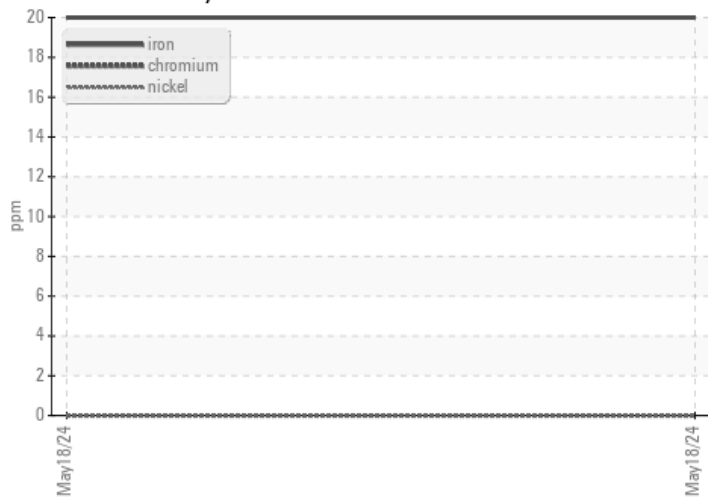
Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

Depot: HEABIRLH
 Unique No: 11044842
 Signed: Wes Davis
 Report Date: 24 May 2024

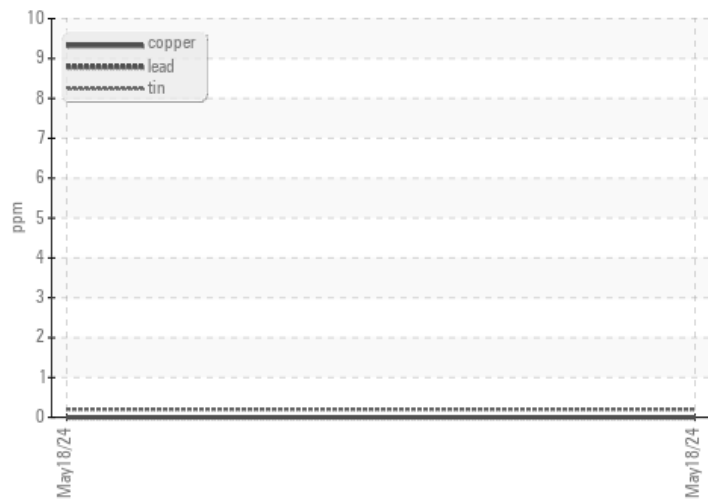


Graphs

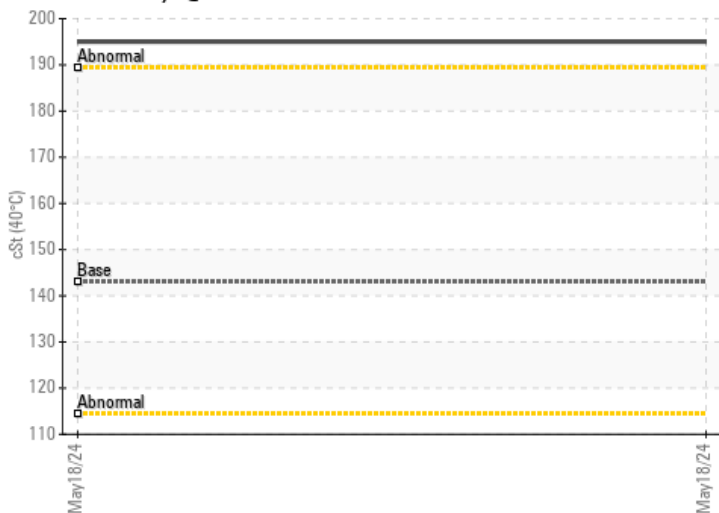
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Rear Left Wheel Hub

Sample No: LH0254164

Oil Type: GEAR OIL SAE 80W90



HEAVY MACHINES INC
 825 31ST STREET NORTH
 BIRMINGHAM, AL
 US 35203
 Contact: CHRIS MCANNALLY
 cmcannally@heavymachines.com
 T:
 F:



Sample Information

Sample Number	LH0254164	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 137	---	---	---
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Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 8	---	---	---
Sodium	ppm	● 1	---	---	---
Potassium	ppm	● 1	---	---	---



Wear Metals

Iron	ppm	● 63	---	---	---
Copper	ppm	● 54	---	---	---
Lead	ppm	● 0	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● <1	---	---	---
Chromium	ppm	● 0	---	---	---
Molybdenum	ppm	● 1	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	● 0	---	---	---
Silver	ppm	● 0	---	---	---
Manganese	ppm	● 1	---	---	---
Vanadium	ppm	● 0	---	---	---



Additives

Calcium	ppm	● 127	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 39	---	---	---
Phosphorus	ppm	● 1434	---	---	---
Barium	ppm	● 0	---	---	---
Boron	ppm	● 10	---	---	---

Diagnosis

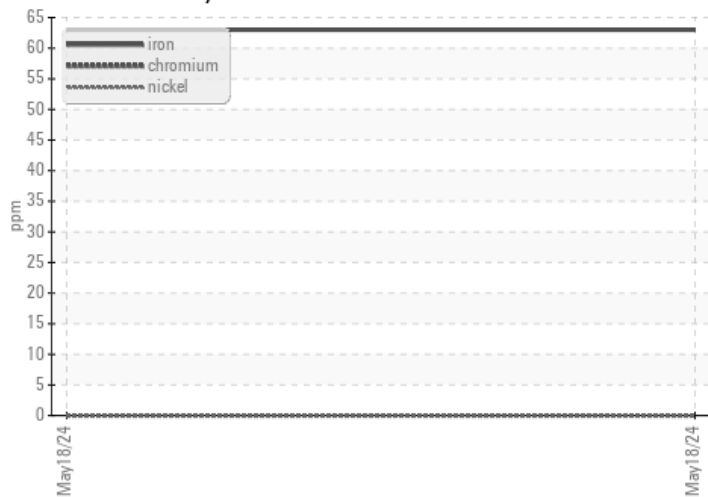
Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

Depot: HEABIRLH
 Unique No: 11044840
 Signed: Wes Davis
 Report Date: 24 May 2024

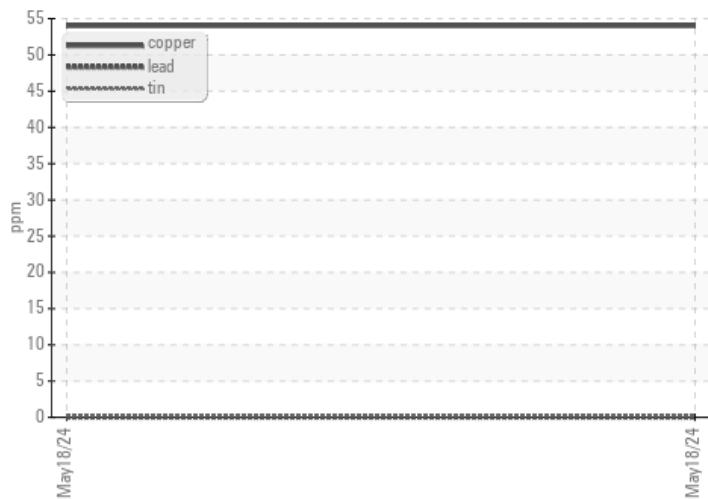


Graphs

Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Rear Differential

Sample No: LH0268006
 Oil Type: GEAR OIL SAE 80W90



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Sample Information

Sample Number	LH0268006	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 142	---	---	---
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Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 7	---	---	---
Sodium	ppm	● <1	---	---	---
Potassium	ppm	● 0	---	---	---



Wear Metals

Iron	ppm	● 37	---	---	---
Copper	ppm	● 52	---	---	---
Lead	ppm	● 0	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● <1	---	---	---
Chromium	ppm	● 0	---	---	---
Molybdenum	ppm	● 1	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 1	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 132	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 37	---	---	---
Phosphorus	ppm	● 1435	---	---	---
Barium	ppm	● 0	---	---	---
Boron	ppm	● 4	---	---	---

Diagnosis

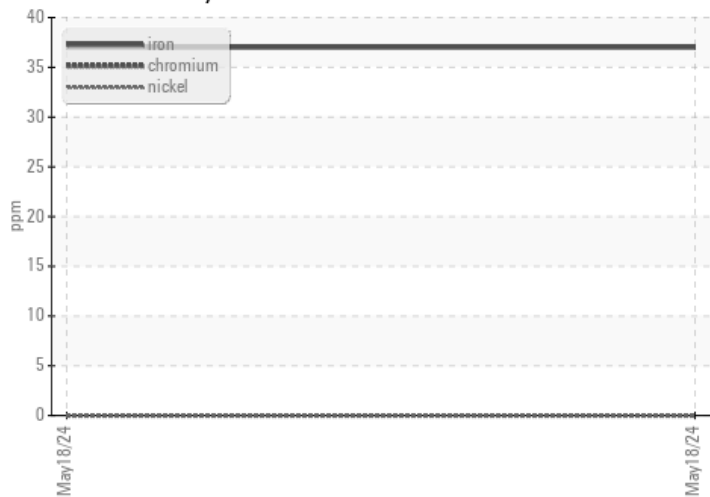
Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

Depot: HEABIRLH
 Unique No: 11044845
 Signed: Wes Davis
 Report Date: 24 May 2024

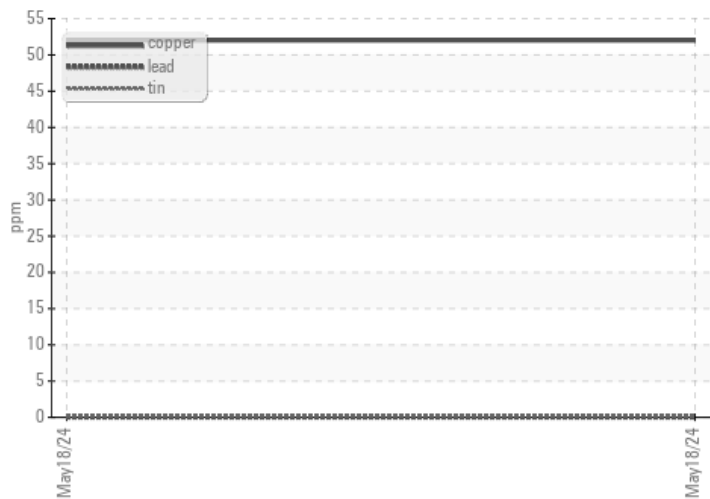


Graphs

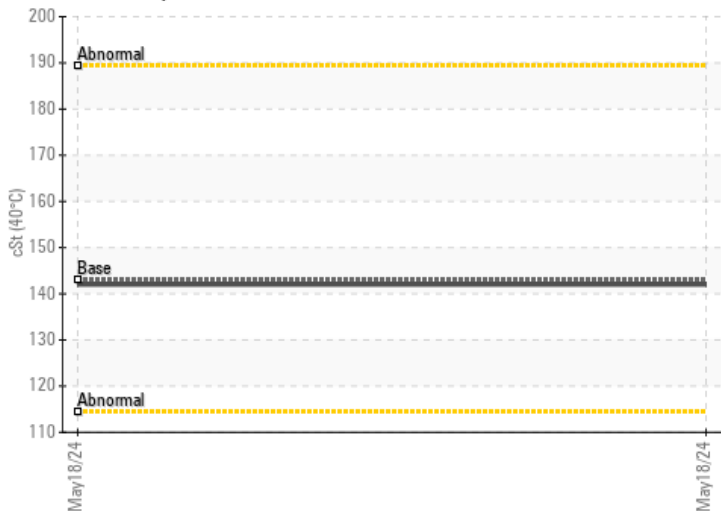
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH40M 159572-1215 - Rear Right Wheel Hub

Sample No: LH0268004

Oil Type: GEAR OIL SAE 80W90



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Sample Information

Sample Number	LH0268004	---	---	---
Sample Date	18 May 2024	---	---	---
Machine Hours	194	---	---	---
Oil Hours	194	---	---	---
Oil Changed	Changed	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 139	---	---	---
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Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 7	---	---	---
Sodium	ppm	● <1	---	---	---
Potassium	ppm	● 0	---	---	---



Wear Metals

Iron	ppm	● 47	---	---	---
Copper	ppm	● 49	---	---	---
Lead	ppm	● 0	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● <1	---	---	---
Chromium	ppm	● 0	---	---	---
Molybdenum	ppm	● 1	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	● 0	---	---	---
Silver	ppm	● 0	---	---	---
Manganese	ppm	● 1	---	---	---
Vanadium	ppm	● 0	---	---	---



Additives

Calcium	ppm	● 123	---	---	---
Magnesium	ppm	● 0	---	---	---
Zinc	ppm	● 34	---	---	---
Phosphorus	ppm	● 1391	---	---	---
Barium	ppm	● 0	---	---	---
Boron	ppm	● 4	---	---	---

Diagnosis

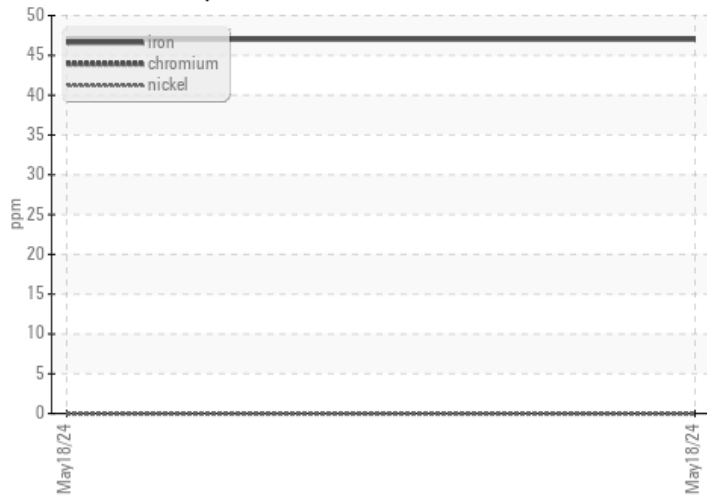
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Depot: HEABIRLH
 Unique No: 11044841
 Signed: Wes Davis
 Report Date: 24 May 2024

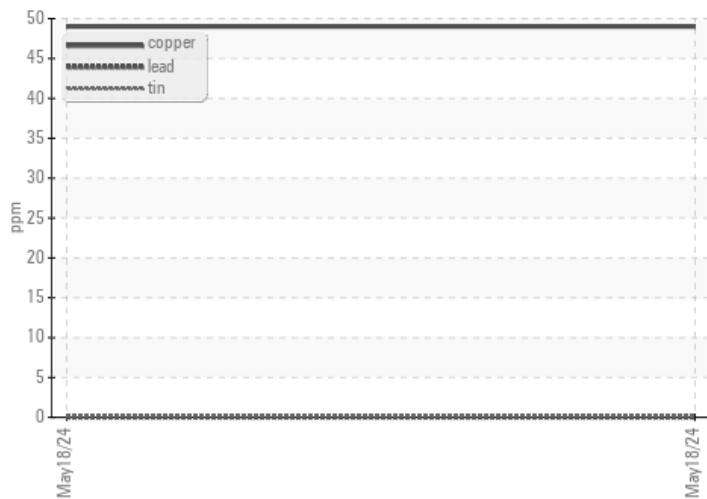


Graphs

Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C

