LIEBHERR

PROBLEM SUMMARY

Sample Rating Trend
VISC

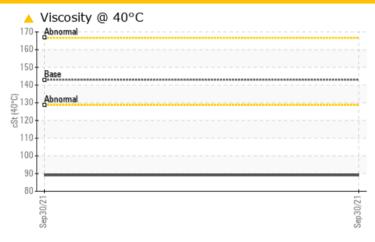


LIEBHERR 184-713

Component **Gearbox**

GEAR OIL SAE 80W90 (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS							
Sample Status				ABNORMAL			
Debris	scalar	*Visual	NONE	MODER			
Visc @ 40°C	cSt	ASTM D445	143	A 89.1			

Customer Id: LEC0033 Sample No.: LH0200477 Lab Number: 05410586 Test Package: MOBCE

To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 jhester@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

LIEBHERR

OIL ANALYSIS REPORT

Sample Rating Trend

VISCOSITY



LIEBHERR 184-713

Component

Gearbox

GEAR OIL SAE 80W90 (--- GAL)

ח	ΙΔ	G	N	\cap	S	IS
	٠,	Q.	ı v	$\overline{}$	J	

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Moderate concentration of visible dirt/debris present in the oil.

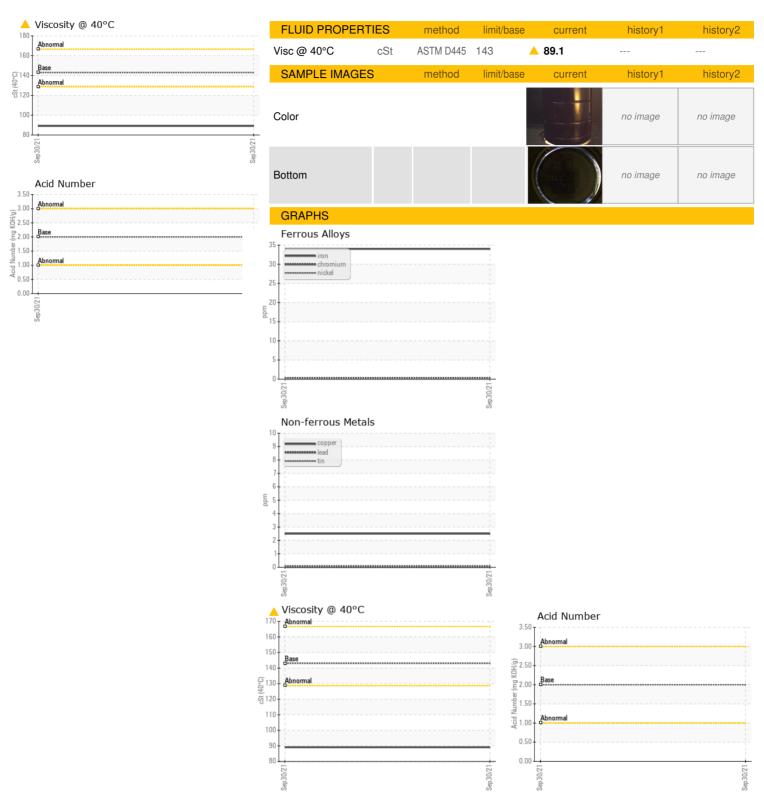
▲ Fluid Condition

The oil viscosity is lower than normal. Confirm oil type.

SAMPLE INFORMATION method limil/base current history1 history2							
Sample Number					Sep 2021		
Client Info Sample Date Client Info Sa39 Client Info Sa39 Client Info Sa39 Client Info Sa39 Client Info Sample Status Client Info N/A Client Info Client Info N/A Client Client Info Client Info N/A Client Client Info Clie	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Client Info Sample Date Client Info Sa39 Client Info Sa39 Client Info Sa39 Client Info Sa39 Client Info Sample Status Client Info N/A Client Info Client Info N/A Client Client Info Client Info N/A Client Client Info Clie	Sample Number		Client Info		LH0200477		
Machine Age hrs Client Info 8339 Oil Age hrs Client Info 0 Oil Changed Client Info N/A Sample Status MRANORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >200 34 Chromium ppm ASTM D5185m >10 <1			Client Info		30 Sep 2021		
Oil Age hrs Client Info N/A	•	hrs			-		
Oil Changed Sample Status	•						
MEAR METALS	-	1110					
WEAR METALS	-		Olioni inio				
Chromium	·		mothod	limit/baco			history?
Chromium ppm ASTM D5185m >10 <1 Nickel ppm ASTM D5185m 0 Siliver ppm ASTM D5185m 0 Siliver ppm ASTM D5185m >50 0 Aluminum ppm ASTM D5185m >50 0 Lead ppm ASTM D5185m >50 0 Copper ppm ASTM D5185m >200 2 Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 Barium ppm ASTM D5185m 20 0 Manganesium ppm							
Nickel	-						
Description				>10			
Silver					_		
ASTM D5185m >25					-		
Lead							
Copper		ppm			-		
Trin ppm ASTM D5185m >10 <1	Lead	ppm		>50	_		
Antimony	Copper	ppm	ASTM D5185m	>200	2		
Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 400 28 Barium ppm ASTM D5185m 200 0 Molybdenum ppm ASTM D5185m 12 <1 Manganese ppm ASTM D5185m 12 3 Magnesium ppm ASTM D5185m 150 719 Calcium ppm ASTM D5185m 150 719 Phosphorus ppm ASTM D5185m 1650 1231 Zinc ppm ASTM D5185m 125 421 Sulfur ppm ASTM D5185m >50 2	Tin	ppm	ASTM D5185m	>10	<1		
Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 400 28 Barium ppm ASTM D5185m 200 0 Molybdenum ppm ASTM D5185m 12 <1 Manganese ppm ASTM D5185m 12 3 Manganesium ppm ASTM D5185m 12 3 Manganesium ppm ASTM D5185m 12 3 Manganesium ppm ASTM D5185m 150 719 Calcium ppm ASTM D5185m 150 719 Zinc ppm ASTM D5185m 125 421 Sulfur ppm ASTM D5185m 125 <t< td=""><td>Antimony</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>0</td><td></td><td></td></t<>	Antimony	ppm	ASTM D5185m		0		
### ADDITIVES #### ASTM D5185m 400 28 ### Barium ppm ASTM D5185m 200 0 ### Manganese ppm ASTM D5185m 12 <1 ### Manganese ppm ASTM D5185m 12 3 ### Manganesium ppm ASTM D5185m 12 3 ### Calcium ppm ASTM D5185m 150 719 ### Phosphorus ppm ASTM D5185m 150 719 ### Phosphorus ppm ASTM D5185m 125 421 ### Sulfur ppm ASTM D5185m 22500 11384 ### CONTAMINANTS method limit/base current history1 history2 ### Silicon ppm ASTM D5185m >50 2 ### Sodium ppm ASTM D5185m >770 1 ### Potassium ppm ASTM D5185m >20 0 ### VISUAL method limit/base current history1 history2 ### White Metal scalar *Visual NONE NONE ### Yellow Metal scalar *Visual NONE NONE ### Yellow Metal scalar *Visual NONE NONE ### Silt scalar *Visual NONE NONE ### Debris scalar *Visual NONE NONE ### Debris scalar *Visual NONE NONE ### Appearance scalar *Visual NONE NONE ### Appearance scalar *Visual NORML NORML ### Appearance scalar *Visual NORML NORML ### Appearance scalar *Visual NORML NORML ### Appearance scalar *Visual NORML NORML	Vanadium	ppm	ASTM D5185m		0		
Boron	Cadmium	ppm	ASTM D5185m		0		
Barium ppm ASTM D5185m 200 0	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 12 <1 Manganese ppm ASTM D5185m <1	Boron	ppm	ASTM D5185m	400	28		
Manganese ppm ASTM D5185m <1 Calcium ppm ASTM D5185m 12 3 Phosphorus ppm ASTM D5185m 150 719 Phosphorus ppm ASTM D5185m 1650 1231 Zinc ppm ASTM D5185m 125 421 Sulfur ppm ASTM D5185m 22500 11384 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 Sodium ppm ASTM D5185m >170 1 Potassium ppm ASTM D5185m >20 0 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE	Barium	ppm	ASTM D5185m	200	0		
Magnesium ppm ASTM D5185m 12 3 Calcium ppm ASTM D5185m 150 719 Phosphorus ppm ASTM D5185m 1650 1231 Zinc ppm ASTM D5185m 125 421 Sulfur ppm ASTM D5185m 22500 11384 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 Sodium ppm ASTM D5185m >170 1 Potassium ppm ASTM D5185m >20 0 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>12</td> <td><1</td> <td></td> <td></td>	Molybdenum	ppm	ASTM D5185m	12	<1		
Calcium ppm ASTM D5185m 150 719 Phosphorus ppm ASTM D5185m 1650 1231 Zinc ppm ASTM D5185m 125 421 Sulfur ppm ASTM D5185m 22500 11384 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 Sodium ppm ASTM D5185m >170 1 Potassium ppm ASTM D5185m >20 0 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE Yellow Metal scalar *Visual NONE NONE Precipitate scalar *Visual NO	Manganese	ppm	ASTM D5185m		<1		
Phosphorus ppm ASTM D5185m 1650 1231 Zinc ppm ASTM D5185m 125 421 Sulfur ppm ASTM D5185m 22500 11384 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 Sodium ppm ASTM D5185m >170 1 Potassium ppm ASTM D5185m >20 0 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE Precipitate scalar *Visual NONE NONE Silt scalar *Visual	Magnesium	ppm	ASTM D5185m	12	3		
Phosphorus ppm ASTM D5185m 1650 1231 Zinc ppm ASTM D5185m 125 421 Sulfur ppm ASTM D5185m 22500 11384 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 Sodium ppm ASTM D5185m >50 2 Potassium ppm ASTM D5185m >20 0 Potassium ppm ASTM D5185m >20 0 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE Precipitate scalar *Visua	-		ASTM D5185m	150	719		
Zinc	Phosphorus		ASTM D5185m	1650	1231		
Sulfur ppm ASTM D5185m 22500 11384 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 Sodium ppm ASTM D5185m >170 1 Potassium ppm ASTM D5185m >20 0 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE Silt scalar *Visual NONE NONE Debris scalar *V				125	421		
Silicon	Sulfur				11384		
Silicon	CONTAMINANTS	3	method	limit/base	current	history1	history2
Sodium	Silicon	nnm	ASTM D5185m	>50	2		
VISUAL method limit/base current history1 history2 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 MODER Sand/Dirt scalar *Visual NORML NORML Appearance scalar *Visual NORML NORML Codor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG					_		
VISUAL method limit/base current history1 history2 White Metal scalar *Visual 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 NORML NORML Appearance scalar *Visual NORML NORML Odor scalar *Visual >0.2 NEG Emulsified Water scalar *Visual >0.2 NEG							
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 MODER Sand/Dirt scalar *Visual NORML NORML Appearance scalar *Visual NORML NORML Odor scalar *Visual >0.2 NEG	VISUAL		method	limit/base	current	historv1	history2
Yellow Metal scalar *Visual NONE NONE Precipitate scalar *Visual NONE NONE Silt scalar *Visual NONE NONE Debris scalar *Visual NONE MODER Sand/Dirt scalar *Visual NORM NORML Appearance scalar *Visual NORML NORML Odor scalar *Visual >0.2 NEG Emulsified Water scalar *Visual >0.2 NEG		scalar					
Precipitate scalar *Visual NONE NONE Silt scalar *Visual NONE NONE Debris scalar *Visual NONE MODER Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG							
Silt scalar *Visual NONE NONE Debris scalar *Visual NONE MODER Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG							
Debris scalar *Visual NONE ▲ MODER Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG	•						
Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG							
Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG							
Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG							
Emulsified Water scalar *Visual >0.2 NEG	• •						
Free Water scalar *Visual NEG				>0.2			
	Free Water	scalar	*Visual		NEG		

IEBHERR

OIL ANALYSIS REPORT







Laboratory Sample No. Lab Number

: 05410586 Unique Number : 9759774

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : LH0200477 Received : 29 Nov 2021 Diagnosed : 01 Dec 2021 Diagnostician : Jonathan Hester

Test Package : MOBCE (Additional Tests: ICP, KV40, PrtCount, SCREEN)

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)

FINKBINER EQUIPMENT CO.

15 W 400 N FRONTAGE RD BURR RIDGE, IL US 60527

Contact: DON FITZGERALD dfitzgerald@finkbiner.com

T: (815)546-8991 F: (630)654-3792

Contact/Location: DON FITZGERALD - LEC0033