

WEAR ABNORMAL CONTAMINATION NORMAL FLUID CONDITION NORMAL

Machine Id LIEBHERR 31222 Component Left Final Drive Fluid GEAR OIL SAE 80W90 (--- QTS)

RECOMMENDATION

The oil change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

V	VE	E/	4	R

The copper level is abnormal. All other component wear rates are normal.

CONTAMINATION

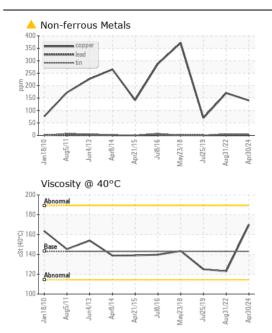
There is no indication of any contamination in the oil.

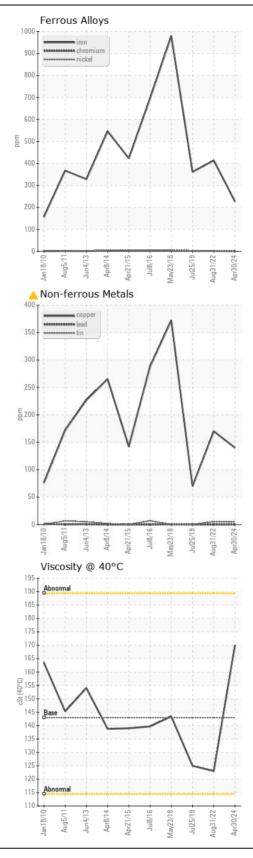
FLUID CONDITION

The condition of the oil is acceptable for the time in service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0924615	WC0689013	WC0370559
Sample Date		Client Info		30 Apr 2024	31 Aug 2022	25 Jul 2019
Machine Age	hrs	Client Info		17247	16179	15419
Oil Age	hrs	Client Info		1000	250	250
Filter Age	hrs	Client Info		1000	0	0
Oil Changed		Client Info		Changed	Not Changd	Changed
Filter Changed		Client Info		Changed	Changed	N/A
Sample Status				ABNORMAL	ABNORMAL	NORMAL
Iron	ppm	ASTM D5185m	>500	227	413	361
Chromium	ppm	ASTM D5185m	>10	<1	2	2
Nickel	ppm	ASTM D5185m	>10	0	<1	<1
Titanium	ppm	ASTM D5185m		۰ <1	<1	<1
Silver	ppm	ASTM D5185m		0	<1	0
Aluminum	ppm	ASTM D5185m	>25	7	13	14
Lead	ppm	ASTM D5185m	>25	0	0	0
Copper	ppm	ASTM D5185m	>50	<u> </u>	▲ 170	70
Tin	ppm	ASTM D5185m	>10	5	5	0
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	MODER	LIGHT	NONE
						-
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>75	27	31	41
Silicon Potassium		ASTM D5185m ASTM D5185m	>75 >20	27 2	31 3	41 10
Silicon Potassium Water	ppm ppm	ASTM D5185m ASTM D5185m WC Method	>75 >20 >0.2	27 2 NEG	31 3 NEG	41 10 NEG
Silicon Potassium Water Silt	ppm ppm scalar	ASTM D5185m ASTM D5185m WC Method *Visual	>75 >20 >0.2 NONE	27 2 NEG MODER	31 3 NEG NONE	41 10 NEG MODER
Silicon Potassium Water Silt Debris	ppm ppm scalar scalar	ASTM D5185m ASTM D5185m WC Method *Visual *Visual	>75 >20 >0.2 NONE NONE	27 2 NEG MODER NONE	31 3 NEG NONE LIGHT	41 10 NEG MODER NONE
Silicon Potassium Water Silt Debris Sand/Dirt	ppm ppm scalar scalar scalar	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual	>75 >20 >0.2 NONE NONE NONE	27 2 NEG MODER NONE NONE	31 3 NEG NONE LIGHT NONE	41 10 NEG MODER NONE NONE
Silicon Potassium Water Silt Debris Sand/Dirt Appearance	ppm ppm scalar scalar scalar scalar	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual	>75 >20 >0.2 NONE NONE NONE NORML	27 2 NEG MODER NONE NONE NORML	31 3 NEG NONE LIGHT NONE NORML	41 10 NEG MODER NONE NONE NORML
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor	ppm ppm scalar scalar scalar scalar scalar	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual	>75 >20 >0.2 NONE NONE NONE NORML	27 2 NEG MODER NONE NONE NORML NORML	31 3 NEG NONE LIGHT NONE NORML NORML	41 10 NEG MODER NONE NONE NORML NORML
Silicon Potassium Water Silt Debris Sand/Dirt Appearance	ppm ppm scalar scalar scalar scalar	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual	>75 >20 >0.2 NONE NONE NONE NORML	27 2 NEG MODER NONE NONE NORML	31 3 NEG NONE LIGHT NONE NORML	41 10 NEG MODER NONE NONE NORML
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor	ppm ppm scalar scalar scalar scalar scalar	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual	>75 >20 >0.2 NONE NONE NONE NORML	27 2 NEG MODER NONE NONE NORML NORML	31 3 NEG NONE LIGHT NONE NORML NORML	41 10 NEG MODER NONE NONE NORML NORML
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water	ppm ppm scalar scalar scalar scalar scalar scalar	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual	>75 >20 >0.2 NONE NONE NORML NORML >0.2	27 2 NEG MODER NONE NONE NORML NORML NEG	31 3 NEG NONE LIGHT NONE NORML NORML NEG	41 10 NEG MODER NONE NONE NORML NORML NEG
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium	ppm ppm scalar scalar scalar scalar scalar scalar ppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m	>75 >20 >0.2 NONE NONE NORML NORML >0.2	27 2 NEG MODER NONE NORE NORML NORML NEG 2	31 3 NEG NONE LIGHT NORML NORML NEG 3	41 10 NEG MODER NONE NONE NORML NORML NEG 3
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron	ppm ppm scalar scalar scalar scalar scalar scalar gppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m	 >75 >20 >0.2 NONE NORME NORML >0.2 >170 400 	27 2 NEG MODER NONE NORML NORML NEG 2 62	31 3 NEG NONE LIGHT NORML NORML NEG 3 174	41 10 NEG MODER NONE NORML NORML NEG 3 1111
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium	ppm ppm scalar scalar scalar scalar scalar scalar ppm ppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m	 >75 >20 >0.2 NONE NONE NORML NORML >0.2 >170 400 200 	27 2 NEG MODER NONE NORML NORML NEG 2 62 1	31 3 NEG NONE LIGHT NONE NORML NORML NEG 3 174 0	41 10 NEG MODER NONE NONE NORML NEG 3 1111 0
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Molybdenum	ppm ppm scalar scalar scalar scalar scalar scalar ppm ppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m	 >75 >20 >0.2 NONE NONE NORML NORML >0.2 >170 400 200 	27 2 NEG MODER NONE NORML NORML NEG 2 62 1 0	31 3 NEG NONE LIGHT NORML NORML NEG 3 174 0 3	41 10 NEG MODER NONE NORML NORML NEG 3 1111 0 0
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Molybdenum Manganese	ppm ppm scalar scalar scalar scalar scalar gpm ppm ppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	 >75 >20 >0.2 NONE NORME NORML >0.2 >1700 400 200 12 	27 2 NEG MODER NONE NORML NORML NEG 2 62 1 0 2	31 3 NEG NONE LIGHT NORML NORML NEG 3 174 0 3 3 3	41 10 NEG MODER NONE NORML NORML NEG 3 1111 0 0 2
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Molybdenum Manganese Magnesium	ppm ppm scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	 >75 >20 >0.2 NONE NONE NORML >0.2 >170 400 200 12 12 	27 2 NEG MODER NONE NORML NORML NEG 2 62 1 0 2 5	31 3 NEG NONE LIGHT NONE NORML NORML NEG 3 174 0 3 3 174 0 3 174	41 10 NEG MODER NONE NONE NORML NEG 3 1111 0 0 2 2 12
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Malybdenum Manganese Magnesium	ppm ppm scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	 >75 >20 >0.2 NONE NONE NORML NORML >0.2 >170 400 200 12 12 150 	27 2 NEG MODER NONE NORML NORML NEG 2 62 1 0 2 1 0 2 5 23	31 3 NEG NONE LIGHT NORML NORML NEG 3 174 0 3 3 174 0 3 3 174 8 3	41 10 NEG MODER NONE NORML NORML NEG 3 1111 0 0 2 12 12 39
Silicon Potassium Water Silt Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Barium Molybdenum Manganese Magnesium Calcium	ppm ppm scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m WC Method *Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	 >75 >20 >0.2 NONE NORME NORML >0.2 >1700 400 200 12 12 150 1650 	27 2 NEG MODER NONE NORML NORML NEG 2 62 1 0 2 5 23 2388	31 3 NEG NONE LIGHT NORML NORML NEG 3 174 0 3 174 0 3 174 0 3 174 0 3 3 174 0 3 3 174 0 3 3 174 0 3 3 174 0 3 3 3 15 3 3	41 10 NEG MODER NONE NORML NORML NEG 3 1111 0 0 2 112 39 1694

Contact/Location: CHRIS CALTON - MSCDURLH





SULLIVAN EASTERN INC-LIEBHERR 2860 C SLATER RD MORRISVILLE, NC US 27560 Contact: CHRIS CALTON



 Certificate L2367
 Test Package
 : CONST
 Contact: CI

 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)
 F:

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received

Diagnosed

Tested

: 13 May 2024

: 14 May 2024

: 15 May 2024 - Don Baldridge

T: F: (919)484-2136

Laboratory

Sample No.

Lab Number : 06177586

Unique Number : 11023639

: WC0924615

Contact/Location: CHRIS CALTON - MSCDURLH Page 2 of 2