

#### Machine Id LIEBHERR 31228 Component Left Final Drive Fluid CHEVRON DELO GEAR ESI OIL 80W90 (--- QTS)

## RECOMMENDATION

We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

## WEAR

The copper level has decreased, but is still abnormal. All other component wear rates are normal.

# CONTAMINATION

There is a light concentration of water present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

	Test	UOM	Method	Limit/Abn	Cı	urrent	Hi	story1	Hi	story2
	Sample Number		Client Info		W	C0950521	W	0924461	W	0786568
	Sample Date		Client Info		10	Jul 2024	27	Jun 2024	27	Oct 2023
	Machine Age	hrs	Client Info		0		11	267	10	900
	Oil Age	hrs	Client Info		0		12	50	10	00
	Filter Age	hrs	Client Info		0		12	50	0	
	Oil Changed		Client Info		N/	Ά	Cł	Changed Chang		nanged
	Filter Changed		Client Info		N/	Ά	Cł	nanged	N/A	
	Sample Status				SE	EVERE	SE	SEVERE SEVE		EVERE
	Iron	ppm	ASTM D5185m	>500		331		918		1099
	Chromium	ppm	ASTM D5185m	>10		2		7		
	Nickel	ppm	ASTM D5185m	>10		2		4		5
	Titanium	ppm	ASTM D5185m			4		6		11
	Silver	ppm	ASTM D5185m			0		0		0
	Aluminum	ppm	ASTM D5185m	>25		99		109		199
	Lead	ppm	ASTM D5185m	>25		0		2		0
	Copper	ppm	ASTM D5185m	>50		99		389		388
	Tin	ppm	ASTM D5185m	>10		4		12		19
	Vanadium	ppm	ASTM D5185m			<1		0		<1
	White Metal	scalar	*Visual	NONE		NONE		NONE		NONE
	Yellow Metal	scalar	*Visual	NONE		NONE		NONE		NONE
	Silicon	ppm	ASTM D5185m	>75		271		310		597
	Potassium	ppm	ASTM D5185m	>20		25		29		48
	Water	%	ASTM D6304	>0.2		0.306				
	ppm Water									
		ppm	ASTM D6304	>2000		3060				
	Silt	ppm scalar	ASTM D6304 *Visual	>2000 NONE	<b></b>	3060 MODER		 NONE		MODER
	Silt Debris									
		scalar	*Visual	NONE		MODER		NONE		MODER
	Debris	scalar scalar	*Visual *Visual	NONE NONE		MODER NONE		NONE LIGHT		MODER NONE
	Debris Sand/Dirt	scalar scalar scalar	*Visual *Visual *Visual	NONE NONE NONE		MODER NONE NONE		NONE LIGHT NONE		MODER NONE NONE
	Debris Sand/Dirt Appearance	scalar scalar scalar scalar	*Visual *Visual *Visual *Visual	NONE NONE NORML		MODER NONE NONE NORML		NONE LIGHT NONE NORML		MODER NONE NONE NORML
	Debris Sand/Dirt Appearance Odor Emulsified Water	scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NORML NORML		MODER NONE NORE NORML 0.2%		NONE LIGHT NONE NORML NORML NEG		MODER NONE NORML NORML NEG
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium	scalar scalar scalar scalar scalar scalar ppm	*Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NORML NORML >0.2		MODER NONE NORML NORML 0.2%		NONE LIGHT NONE NORML NORML NEG 9		MODER NONE NORML NORML NEG 25
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron	scalar scalar scalar scalar scalar scalar ppm	*Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m	NONE NONE NORML NORML >0.2		MODER NONE NORML NORML 0.2%		NONE LIGHT NONE NORML NORML NEG 9 76		MODER NONE NORML NORML NEG 25 85
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium	scalar scalar scalar scalar scalar scalar ppm ppm	*Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m	NONE NONE NORML NORML >0.2 15 0		MODER NONE NORML NORML 0.2%		NONE LIGHT NORML NORML NEG 9 76 1		MODER NONE NORML NORML NEG 25 85 1
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Molybdenum	scalar scalar scalar scalar scalar ppm ppm ppm	*Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m	NONE NONE NORML NORML >0.2 15 0		MODER NONE NORML 0.2% 11 107 0 10		NONE LIGHT NORML NORML NEG 9 76 1 6		MODER NONE NORML NORML NEG 25 85 1 1
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Molybdenum Manganese	scalar scalar scalar scalar scalar ppm ppm ppm ppm	*Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	NONE NORML NORML >0.2 15 0 0		MODER NONE NORML 0.2% 11 107 0 10 3		NONE LIGHT NORML NORML NEG 9 76 1 6 6 10		MODER NONE NORML NORML NEG 25 85 1 5 5 12
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Molybdenum Manganese Magnesium	scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm	*Visual *Visual *Visual *Visual *Visual *Visual ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	NONE NORME NORML >0.2 15 0 0		MODER         NONE         NORML         0.2%         11         107         0         103         3         53		NONE LIGHT NORML NORML NEG 9 76 1 6 6 10 26		MODER NONE NORML NORML NEG 25 85 1 5 12 55
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Molybdenum Manganese Magnesium Calcium	scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm ppm	<ul> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>ASTM D5185m</li> </ul>	NONE NORME NORML >0.2 15 0 0 0 0		MODER NONE NORML 0.2% 11 107 0 107 10 3 3 53 104		NONE LIGHT NORML NORML NEG 9 76 1 6 10 26 29		MODER NONE NORML NORML NEG 25 25 45 12 55 65
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Sodium Barium Molybdenum Manganese Magnesium Calcium Phosphorus	scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm	<ul> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>ASTM D5185m</li> </ul>	NONE NORME NORML >0.2 15 0 0 0 0 5 600		MODER NONE NORML 0.2% 11 107 0 107 3 53 53 104 3166		NONE LIGHT NORML NORML NEG 9 76 1 6 1 6 1 0 2 6 2 9 2 9 2 9 2 9 2 1 5 1 4		MODER NONE NORML NORML 25 85 1 25 12 55 65 1366
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Boron Barium Barium Malybdenum Manganese Magnesium Calcium Phosphorus	scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm ppm ppm ppm ppm	<ul> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>ASTM D5185m</li> </ul>	NONE NORME NORML >0.2 15 0 0 0 0 5 600 0 0		MODER         NONE         NORML         0.2%         11         107         10         3         53         104         3166         137		NONE LIGHT NORML NORML NEG 9 76 1 6 1 6 2 6 2 9 2 9 1 5 1 4 2 9 9 9		MODER NONE NORML NORML NEG 25 85 1 1 5 5 5 6 5 1 3 6 6 1 3 6 6 1 3 6 6 1 3 6 6 1 3 6 6 1 2 2
	Debris Sand/Dirt Appearance Odor Emulsified Water Sodium Sodium Barium Molybdenum Manganese Magnesium Calcium Phosphorus	scalar scalar scalar scalar scalar ppm ppm ppm ppm ppm ppm ppm	<ul> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>Visual</li> <li>ASTM D5185m</li> </ul>	NONE NORME NORML >0.2 15 0 0 0 0 5 600		MODER NONE NORML 0.2% 11 107 0 107 3 53 53 104 3166		NONE LIGHT NORML NORML NEG 9 76 1 6 1 6 1 0 2 6 2 9 2 9 2 9 2 9 2 1 5 1 4		MODER NONE NORML NORML 25 85 1 25 12 55 65 1366

ASTM D445 140

Visc @ 40°C

cSt

## FLUID CONDITION

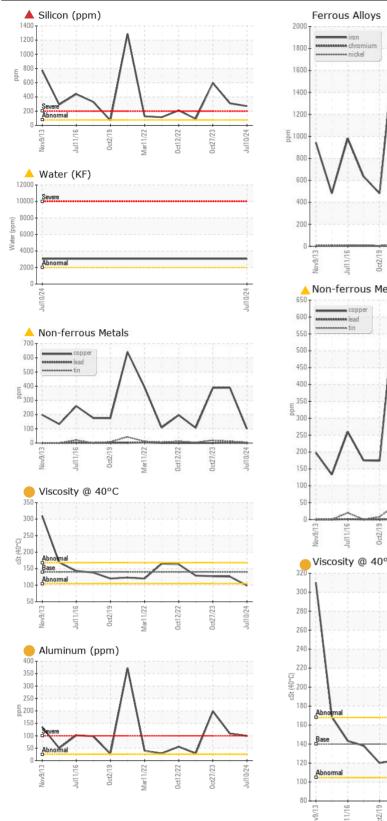
The oil viscosity is lower than normal. Confirm oil type. The oil is no longer serviceable due to the presence of contaminants.

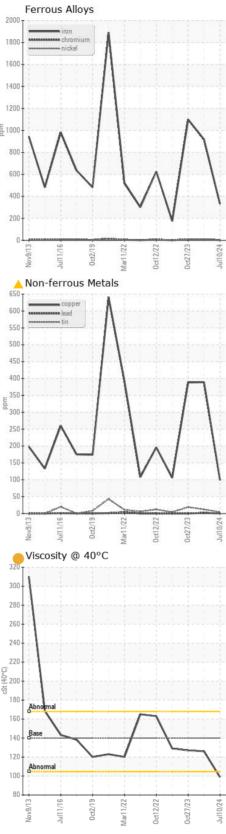
Contact/Location: CHRIS CALTON - MSCDURLH

126

98.8

127





SULLIVAN EASTERN INC-LIEBHERR : WearCheck USA - 501 Madison Ave., Cary, NC 27513 2860 C SLATER RD MORRISVILLE, NC : 20 Jul 2024 - Don Baldridge US 27560 Contact: CHRIS CALTON

T:

Test Package : CONST (Additional Tests: KF) To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WC0950521

: 06240742

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

F: (919)484-2136 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Received

Diagnosed

Tested

: 18 Jul 2024

: 19 Jul 2024

Certificate L2367

Laboratory

Sample No.

Lab Number

Unique Number : 11129576

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