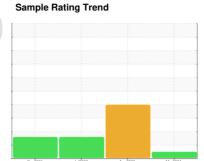


# **OIL ANALYSIS REPORT**







Left Final Drive

GEAR OIL SAE 80W90 (--- GAL)

#### DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. The fluid was not specified, however, a fluid match indicates that this fluid is (GENERIC) GEAR OIL SAE 80W90. Please confirm.

#### Wear

All component wear rates are normal.

# Contamination

There is no indication of any contamination in the

## **Fluid Condition**

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

Sample Number   Client Info   WC0936872   WC0818715   WC0619237   Sample Date   Client Info   19 Mar 2024   24 Aug 2023   22 Jul 2022   Jul	( GAL)		Nov202	1 Jul2022	Aug2023 N	1ar2024	
Sample Date   Client Info   19 Mar 2024   24 Aug 2023   22 Jul 2022	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date   Client Info   19 Mar 2024   24 Aug 2023   22 Jul 2022	Sample Number		Client Info		WC0936872	WC0818715	WC0619237
Alachine Age			Client Info		19 Mar 2024	24 Aug 2023	22 Jul 2022
Dit Age	•	hrs	Client Info		4466		3406
Discrimination   Dis		hrs	Client Info		0	676	3373
NORMAL   ABNORMAL   ADNORMAL   ADNORMAL   ADNORMAL   ADRMAL   A	-		Client Info		Not Changd	Changed	Changed
Veract	Sample Status						ABNORMAL
WEAR METALS         method         limit/base         current         history1         history2           fron         ppm         ASTM D5185m         >500         378         ∆ 1385         ▲ 1075           chromium         ppm         ASTM D5185m         >10         8         △ 22         12           dickel         ppm         ASTM D5185m         >10         <1	CONTAMINATION	V	method	limit/base	current	history1	history2
Description	Water		WC Method	>0.2	NEG	NEG	NEG
ASTM D5185m   SILVER   DFM   ASTM D5185m   SILVER   DFM	WEAR METALS		method	limit/base	current	history1	history2
Action   Act	ron	ppm	ASTM D5185m	>500	378	<u> </u>	<u></u> 1075
Silver	Chromium	ppm	ASTM D5185m	>10	8	<u>^</u> 22	<u>12</u>
Silver	lickel	ppm	ASTM D5185m	>10	<1	1	<1
Silver	- itanium		ASTM D5185m		1	<1	<1
Astmoderate	Silver		ASTM D5185m		0	0	0
December   December	Aluminum		ASTM D5185m	>25	13	<b>1</b> 4	8
Description	_ead				<1	<1	0
Astrophysical Part	Copper		ASTM D5185m	>50	6	19	15
Astmost ppm	rin				0	0	0
Anadium         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1			ASTM D5185m				
ADDITIVES	•				<1	<1	<1
Soron   ppm   ASTM D5185m   400   24   71   40	Cadmium						
Description	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         12         <1         2         1           Manganese         ppm         ASTM D5185m         4         13         9           Magnesium         ppm         ASTM D5185m         12         5         16         5           Calcium         ppm         ASTM D5185m         150         43         131         88           Phosphorus         ppm         ASTM D5185m         1650         474         992         931           Zinc         ppm         ASTM D5185m         125         40         140         129           Sulfur         ppm         ASTM D5185m         22500         20240         20183         22078           CONTAMINANTS         method         limit/base         current         history1         history2           Gilicon         ppm         ASTM D5185m         >75         58         99         42           Goldium         ppm         ASTM D5185m         >170         1         0         <1           Foliosium         ppm         ASTM D5185m         >20         6         9         3           VISUAL         method         limit/base         current	Boron	ppm	ASTM D5185m	400	24	71	40
Manganese         ppm         ASTM D5185m         4         13         9           Magnesium         ppm         ASTM D5185m         12         5         16         5           Calcium         ppm         ASTM D5185m         150         43         131         88           Phosphorus         ppm         ASTM D5185m         1650         474         992         931           Zinc         ppm         ASTM D5185m         125         40         140         129           Sulfur         ppm         ASTM D5185m         22500         20240         20183         22078           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >75         58         99         42           Sodium         ppm         ASTM D5185m         >170         1         0         <1							
Magnesium         ppm         ASTM D5185m         12         5         16         5           Calcium         ppm         ASTM D5185m         150         43         131         88           Phosphorus         ppm         ASTM D5185m         1650         474         992         931           Zinc         ppm         ASTM D5185m         125         40         140         129           Sulfur         ppm         ASTM D5185m         22500         20240         20183         22078           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >75         58         99         42           Godium         ppm         ASTM D5185m         >170         1         0         <1	Barium	ppm	ASTM D5185m	200	2	2	6
Calcium         ppm         ASTM D5185m         150         43         131         88           Phosphorus         ppm         ASTM D5185m         1650         474         992         931           Zinc         ppm         ASTM D5185m         125         40         140         129           Sulfur         ppm         ASTM D5185m         22500         20240         20183         22078           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >75         58         99         42           Godium         ppm         ASTM D5185m         >170         1         0         <1					_		
Phosphorus         ppm         ASTM D5185m         1650         474         992         931           Zinc         ppm         ASTM D5185m         125         40         140         129           Sulfur         ppm         ASTM D5185m         22500         20240         20183         22078           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >75         58         ■ 99         42           Solicon         ppm         ASTM D5185m         >170         1         0         <1	Molybdenum	ppm	ASTM D5185m		<1	2	1
Phosphorus         ppm         ASTM D5185m         1650         474         992         931           Zinc         ppm         ASTM D5185m         125         40         140         129           Sulfur         ppm         ASTM D5185m         22500         20240         20183         22078           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >75         58         ■ 99         42           Solicon         ppm         ASTM D5185m         >170         1         0         <1	Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	12	<1 4	2 13	1 9
Zinc         ppm         ASTM D5185m         125         40         140         129           Gulfur         ppm         ASTM D5185m         22500         20240         20183         22078           CONTAMINANTS         method         limit/base         current         history1         history2           Gilicon         ppm         ASTM D5185m         >75         58         ■ 99         42           Godium         ppm         ASTM D5185m         >170         1         0         <1           Potassium         ppm         ASTM D5185m         >170         1         0         <1           Potassium         ppm         ASTM D5185m         >20         6         9         3           VISUAL         method         limit/base         current         history1         history2           White Metal         scalar         *Visual         NONE         NONE         NONE         NONE           Vollegenerate         scalar         *Visual         NONE         NONE         NONE         NONE           Visual         NONE         NONE         NONE         NONE         NONE           Potation         NONE         NONE         NONE	Nolybdenum Nanganese Nagnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	12	<1 4 5	2 13 16	1 9 5
CONTAMINANTS method limit/base current history1 history2  Silicon ppm ASTM D5185m >75 58	Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	12 12 150	<1 4 5 43	2 13 16 131	1 9 5 88
Solicon ppm ASTM D5185m >75 58 99 42 Sodium ppm ASTM D5185m >170 1 0 <1 Potassium ppm ASTM D5185m >20 6 9 3  VISUAL method limit/base current history1 history2  White Metal scalar *Visual NONE NONE NONE NONE NONE NONE NONE NON	Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	12 12 150 1650	<1 4 5 43 474	2 13 16 131 992	1 9 5 88 931
Sodium         ppm         ASTM D5185m         >170         1         0         <1           Potassium         ppm         ASTM D5185m         >20         6         9         3           VISUAL         method         limit/base         current         history1         history2           White Metal         scalar         *Visual         NONE         NONE         NONE         NONE           Vellow Metal         scalar         *Visual         NONE         NONE <td>Barium Molybdenum Manganese Magnesium Calcium Phosphorus Sulfur</td> <td>ppm ppm ppm ppm ppm</td> <td>ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m</td> <td>12 12 150 1650 125</td> <td>&lt;1 4 5 43 474 40</td> <td>2 13 16 131 992 140</td> <td>1 9 5 88 931 129</td>	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Sulfur	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	12 12 150 1650 125	<1 4 5 43 474 40	2 13 16 131 992 140	1 9 5 88 931 129
Potassium ppm ASTM D5185m >20 6 9 3  VISUAL method limit/base current history1 history2  White Metal scalar *Visual NONE NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE LIGHT NONE NONE Debris scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE NONE NONE NONE NON	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	12 150 1650 125 22500	<1 4 5 43 474 40 20240	2 13 16 131 992 140 20183	1 9 5 88 931 129
VISUAL method limit/base current history1 history2  White Metal scalar *Visual NONE NONE NONE NONE  Vellow Metal scalar *Visual NONE NONE NONE NONE  Precipitate scalar *Visual NONE NONE NONE NONE  Silt scalar *Visual NONE LIGHT NONE NONE  Debris scalar *Visual NONE NONE NONE NONE  Sand/Dirt scalar *Visual NONE NONE NONE NONE  Appearance scalar *Visual NORML NORML NORML NORML  Door scalar *Visual NORML NORML NORML NORML  NORML NORML NORML NORML	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	12 12 150 1650 125 22500 limit/base	<1 4 5 43 474 40 20240  current	2 13 16 131 992 140 20183 history1	1 9 5 88 931 129 22078 history2
White Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE LIGHT NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Deparance scalar *Visual NONE NONE NONE NONE NONE NONE NONE NONE	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Gulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m	12 12 150 1650 125 22500 limit/base >75	<1 4 5 43 474 40 20240  current 58	2 13 16 131 992 140 20183 history1	1 9 5 88 931 129 22078 history2
Yellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONELIGHTNONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORML	Molybdenum Manganese Magnesium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	12 12 150 1650 125 22500 limit/base >75 >170	<1 4 5 43 474 40 20240  current 58 1	2 13 16 131 992 140 20183 history1 99	1 9 5 88 931 129 22078 history2 42 <1
Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE LIGHT NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML	Molybdenum Manganese Magnesium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	12 150 1650 125 22500 limit/base >75 >170 >20	<1 4 5 43 474 40 20240  current 58 1 6	2 13 16 131 992 140 20183 history1 • 99 0	1 9 5 88 931 129 22078 history2 42 <1
Silt scalar *Visual NONE LIGHT NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Dodor scalar *Visual NORML NORML NORML NORML	Molybdenum Manganese Magnesium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	12 12 150 1650 125 22500 limit/base >75 >170 >20 limit/base	<1 4 5 43 474 40 20240  current 58 1 6  current	2 13 16 131 992 140 20183 history1   99 0 9	1 9 5 88 931 129 22078 history2 42 <1 3 history2
Debris scalar *Visual NONE NONE NONE NONE  Sand/Dirt scalar *Visual NONE NONE NONE NONE  Appearance scalar *Visual NORML NORML NORML NORML  Odor scalar *Visual NORML NORML NORML NORML NORML	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium VISUAL White Metal	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method ASTM D5185m  Method *Visual	12 150 1650 125 22500 limit/base >75 >170 >20 limit/base	<1 4 5 43 474 40 20240  current 58 1 6  current NONE	2 13 16 131 992 140 20183 history1   99 0 9 history1 NONE	1 9 5 5 88 931 129 22078 history2 42 <1 3 history2 NONE
Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML	Molybdenum Manganese Magnesium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium VISUAL White Metal Yellow Metal	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method ASTM D5185m ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  *Visual	12 150 1650 125 22500 limit/base >75 >170 >20 limit/base NONE NONE	<1 4 5 43 474 40 20240  current 58 1 6  current NONE	2 13 16 131 992 140 20183 history1  99 0 9 history1 NONE NONE	1 9 5 88 931 129 22078 history2 42 <1 3 history2 NONE NONE
Appearance scalar *Visual NORML NORML NORML NORML NORML NORML NORML NORML NORML	Molybdenum Manganese Magnesium Calcium Phosphorus Cinc Gulfur CONTAMINANTS Gilicon Godium Potassium VISUAL White Metal Yellow Metal Precipitate	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method ASTM D5185m ASTM D5185m  **Visual **Visual **Visual	12 150 1650 125 22500 limit/base >75 >170 >20 limit/base NONE NONE NONE	<1 4 5 43 474 40 20240  current 58 1 6  current NONE NONE	2 13 16 131 992 140 20183 history1  99 0 9 history1 NONE NONE NONE	1 9 5 88 931 129 22078 history2 42 <1 3 NONE NONE NONE
Appearance scalar *Visual NORML NORML NORML NORML NORML NORML NORML NORML NORML	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Gulfur CONTAMINANTS Silicon Sodium Potassium VISUAL White Metal Yellow Metal Precipitate Silt	ppm	ASTM D5185m  Method ASTM D5185m ASTM D5185m  *Visual *Visual *Visual *Visual	12 12 150 1650 125 22500 limit/base >75 >170 >20 limit/base NONE NONE NONE	<1 4 5 43 474 40 20240 current 58 1 6 current NONE NONE NONE LIGHT	2 13 16 131 992 140 20183 history1   99 0 9 history1 NONE NONE NONE NONE	1 9 5 88 931 129 22078 history2 42 <1 3 history2 NONE NONE NONE NONE
Odor scalar *Visual NORML NORML NORML NORML	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Gulfur CONTAMINANTS Gilicon Godium Potassium VISUAL White Metal Cellow Metal Precipitate Gilt Debris	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method ASTM D5185m ASTM D5185m  *Visual *Visual *Visual *Visual *Visual *Visual *Visual	12 12 150 1650 125 22500 limit/base >75 >170 >20 limit/base NONE NONE NONE NONE NONE	<1 4 5 43 474 40 20240  current 58 1 6  current NONE NONE NONE LIGHT NONE	2 13 16 131 992 140 20183 history1   99 0 9 history1 NONE NONE NONE NONE NONE NONE	1 9 5 88 931 129 22078 history2 42 <1 3 history2 NONE NONE NONE NONE NONE NONE NONE
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Gulfur CONTAMINANTS Silicon Sodium Potassium VISUAL White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt	ppm	ASTM D5185m  Method ASTM D5185m ASTM D5185m  *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual	12 12 150 1650 125 22500 limit/base >75 >170 >20 limit/base NONE NONE NONE NONE NONE NONE NONE	<1 4 5 43 474 40 20240  current 58 1 6  current NONE NONE NONE LIGHT NONE NONE NONE	2 13 16 131 992 140 20183 history1   99 0 9 history1 NONE NONE NONE NONE NONE NONE NONE NON	1 9 5 88 931 129 22078 history2 42 <1 3 history2 NONE NONE NONE NONE NONE NONE NONE NON
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method  ASTM D5185m ASTM D5185m  *Visual  *Visual	12 12 150 1650 125 22500 limit/base >75 >170 >20 limit/base NONE NONE NONE NONE NONE NONE NONE NON	<1 4 5 43 474 40 20240  current 58 1 6  current NONE NONE NONE NONE NONE NONE NONE NON	2 13 16 131 992 140 20183 history1  ▲ 99 0 9 history1 NONE NONE NONE NONE NONE NONE NONE NON	1 9 5 88 931 129 22078 history2 42 <1 3 history2 NONE NONE NONE NONE NONE NONE NONE NON

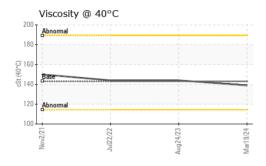
mitter By: JAMES STEELMON

NEG

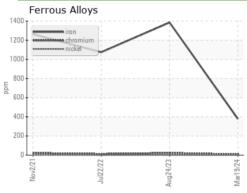
scalar \*Visual

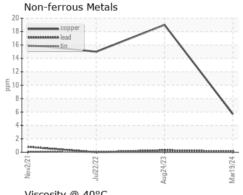


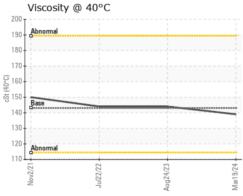
# **OIL ANALYSIS REPORT**



FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	143	139	144	144
SAMPLE IMAG	iES	method	limit/base	current	history1	history2
Color				no image	no image	no image
Bottom				no image	no image	no image











Certificate 12367

Laboratory Sample No.

Lab Number : 06174343 Unique Number : 11020396

: WC0936872

Test Package : CONST

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 09 May 2024

**Tested** : 10 May 2024 Diagnosed : 10 May 2024 - Wes Davis

MANHATTAN ROAD AND BRIDGE

5601 S 122ND E AVE TULSA, OK US 74146

Contact: WILL ANDERSON will.anderson@manhattanrb.com

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)

T:

F: