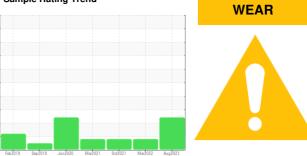


OIL ANALYSIS REPORT

Sample Rating Trend



Area METRO Machine Id METRO 20006 Component

Transmission (Manual) Fluid GEAR OIL SAE 80 (--- GAL)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

A Wear

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

Contamination

There is a high amount of particulates present in the fluid.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the fluid is suitable for further service.

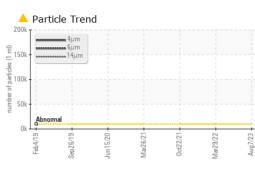
Oil Age m Oil Changed m Sample Status m Iron pi Iron pi Chromium pi Nickel pi Titanium pi Silver pi Aluminum pi Lead pi Copper pi Titanium pi Antimony pi Vanadium pi ADDITIVES pi Boron pi Manganese pi Magnesium pi Calcium pi Phosphorus pi Sulfur pi Silicon pi Sodium pi Potassium pi	nls nls nls opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >200 >5 >5 >5 >7 >25 >45 >225 >10 225 >10 Imit/base 400 200 12	WC0843174 07 Aug 2023 428914 0 N/A ABNORMAL Current 118 <118 <10 0 0 0 0 0 58 0 0 0 0 2 7 58 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	 WC0692900 29 Mar 2022 311587 0 N/A MARGINAL 108 <108 <1 0 0 0 65 <1 4 8 0 0 0 istory1 	 WC0631743 22 Oct 2021 261746 0 N/A MARGINAL 96 <1 0 0 0 54 0 55 8 0 0 54 14
Sample DateImachine AgemmMachine AgemmOil AgemmOil ChangedmmSample StatusmmSample StatusmmIronppChromiumppChromiumppNickelppTitaniumppAluminumppLeadppCopperppTinppAntimonyppCadmiumppBoronppBariumppManganeseppMagnesiumppCalciumppSulfurppSulfurppSiliconppSiliconppPotassiumpp<	opm opm opm opm opm opm opm opm opm opm	Client Info Client Info Client Info Client Info ASTM D5185m ASTM D5185m	>200 >5 >5 >25 >45 >225 >10 imit/base 400 200 12	428914 0 N/A ABNORMAL Current 118 <10 0 0 0 0 58 0 0 0 58 0 2 7 0 0 0 0 0 0 0 0 0 0 0 0 0	311587 0 N/A MARGINAL 108 <108 <10 0 0 0 65 <1 4 8 0 0 0 0 history1 2 0 <1 2 0 <1 	261746 0 N/A MARGINAL 96 <1 0 0 0 0 5 5 8 0 0 5 8 8 0 0 0 0 5 8 8 0 0 0 0
Oil AgemOil ChangedmSample StatusmWEAR METALSmIronpChromiumpNickelpTitaniumpSilverpAluminumpLeadpCopperpTinpAntimonypCadmiumpBoronpBariumpMagnesiumpCalciumpCalciumpSulfurpSulfurpSiliconpSiliconpPotassiumpPota	opm opm opm opm opm opm opm opm opm opm	Client Info Client Info Client Info Astm D5185m ASTM D5185m	>200 >5 >5 >25 >45 >225 >10 imit/base 400 200 12	0 N/A ABNORMAL current 118 <10 0 0 0 58 0 0 2 7 0 0 0 0 current 0 0 0 19	0 N/A MARGINAL 108 <10 0 0 0 0 65 <1 4 8 65 <1 4 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 N/A MARGINAL 96 <1 0 0 0 0 5 5 8 0 0 5 8 8 0 0 0 0 5 8 8 0 0 0 0
Oil Age m Oil Changed m Sample Status m WEAR METALS m Iron p Chromium p Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Boron p Barium p Malganese p Magnesium p Calcium p Phosphorus p Sulfur p Silicon p Silicon p Potassium p	opm opm opm opm opm opm opm opm opm opm	Client Info method ASTM D5185m ASTM D5185m	>200 >5 >5 >25 >45 >225 >10 imit/base 400 200 12	N/A ABNORMAL Current 118 <1 0 0 0 58 0 2 7 58 0 2 7 0 0 0 0 0 0 0 0 0 0 0 0 0	N/A MARGINAL 108 <10 0 0 0 65 <1 4 8 0 0 0 0 0 0 1 4 8 3 0 0 0 0 0 1 1 2 0 0 1 2 0 0 1 1	N/A MARGINAL 96 <1 0 0 0 54 0 5 5 8 0 0 5 8 0 0 0 0 0 0 0 0 0 0 0 0
Oil Changed Sample Status Sample Status WEAR METALS Iron Pi Chromium Nickel Pi Silver Pi Aluminum Lead Copper Pi Antimony Vanadium Pi Cadmium Boron Barium Molybdenum Pi Calcium Pi Calcium Pi Sulfur Pi Sulfur Silicon Pi Sodium Pi Sodium Pi Sodium Pi Potassium	opm opm opm opm opm opm opm opm opm opm	Client Info method ASTM D5185m ASTM D5185m	>200 >5 >5 >25 >45 >225 >10 imit/base 400 200 12	ABNORMAL current 118 <10 0 0 0 58 0 2 7 0 0 0 0 current 0 0 0 19	MARGINAL history1 108 <10 0 0 0 65 <1 4 8 0 0 0 history1 2 0 <1 1 2 0 <1 1 1 1 1 1 1 1 1	MARGINAL history2 96 <1 0 0 0 5 8 0 0 5 8 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1
Sample Status P WEAR METALS P Iron P Chromium P Nickel P Titanium P Silver P Aluminum P Lead P Copper P Antimony P Vanadium P Cadmium P Boron P Barium P Molybdenum P Manganese P Calcium P Phosphorus P Sulfur P Sulfur P Sodium P Phosphorus P Sulfur P Potassium P	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m	>200 >5 >5 >25 >45 >225 >10 imit/base 400 200 12	Current 118 <1 0 0 0 0 0 0 58 0 2 7 0 0 0 0 Current 0 0 0 1 9	history1 108 <1	history2 96 <1 0 0 0 5 8 0 0 5 8 0 0 0 0 0 history2 3 0 <1
Iron pr Chromium pr Nickel pr Titanium pr Silver pr Aluminum pr Lead pr Copper pr Tin pr Antimony pr Cadmium pr Cadmium pr Cadmium pr Molybdenum pr Manganese pr Manganese pr Manganese pr Manganese pr Sulfur pr Calcium pr Calcium pr Sulfur pr Sulfur pr Sulfur pr Sodium pr Sodium pr	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m	>200 >5 >5 >25 >45 >225 >10 imit/base 400 200 12	118 <1 0 0 0 58 0 2 7 7 2 7 3 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	108 <1 0 0 0 65 <1 4 8 0 0 0 0 history1 2 0 <1	96 <1 0 0 54 0 5 8 0 0 0 0 0 history2 3 0 <1
Chromium pr Nickel pr Titanium pr Silver pr Aluminum pr Lead pr Copper pr Tin pr Antimony pr Cadmium pr Cadmium pr ADDITIVES pr Boron pr Barium pr Molybdenum pr Magnesium pr Calcium pr Calcium pr Calcium pr Calcium pr Sulfur pr Sulfur pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m	>5 >5 >7 >25 >45 >225 >10 limit/base 400 200 12	<1 0 0 0 58 0 2 7 7 0 0 0 0 0 0 0 0 19	<1 0 0 0 65 <1 4 8 0 0 0 history1 2 0 <1	<1 0 0 0 5 8 0 0 0 0 history2 3 0 <1
Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Antimony p Cadmium p Cadmium p Cadmium p Antimony p Cadmium p Cadmium p Antimony p Cadmium p Cadmium p Antimony p Cadmium p Cadmium p Manganese p Manganese p Manganese p Manganese p Manganese p Manganese p Manganese p Manganese p Sulfur p CONTAMINANTS Silicon p Potassium p	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m	>5 >7 >25 >45 >225 >10 limit/base 400 200 12	0 0 0 58 0 2 7 7 0 0 0 0 0 0 0 0 0 19	0 0 0 ▲ 65 <1 4 8 0 0 0 0 +istory1 2 0 <1	0 0 0 54 0 5 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Nickel pp Titanium pp Silver pp Aluminum pp Lead pp Copper pp Tin pp Antimony pp Vanadium pp Cadmium pp Boron pp Manganese pp Magnesium pp Calcium pp Phosphorus pp Sulfur pp Silicon pp Sodium pp Potassium pp	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m	>7 >25 >45 >225 >10 limit/base 400 200 12	0 0 2 2 7 0 0 0 0 0 0 0 0 0 19	0 0 4 5 0 0 0 0 <u>history1</u> 2 0 <1	0 0 54 0 5 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Titanium pr Silver pr Silver pr Aluminum pr Lead pr Copper pr Tin pr Antimony pr Vanadium pr Antimony pr Manganese pr Magnesium pr Calcium pr Phosphorus pr Sulfur pr Sulfur pr Silicon pr Sodium pr Potassium pr	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m	>25 >45 >225 >10 limit/base 400 200 12	0 58 0 2 7 0 0 0 0 current 0 0 0 19	0 ▲ 65 <1 4 8 0 0 0 history1 2 0 <1	0 ▲ 54 0 5 8 0 0 0 0 history2 3 0 <1
SilverPrescriptionAluminumPrescriptionAluminumPrescriptionLeadPrescriptionCopperPrescriptionTinPrescriptionAntimonyPrescriptionAntimonyPrescriptionAntimonyPrescriptionAntimonyPrescriptionAntimonyPrescriptionAntimonyPrescriptionAntimonyPrescriptionAntimonyPrescriptionADDITIVESPrescriptionBoronPrescriptionBariumPrescriptionMagnesiumPrescriptionMagnesiumPrescriptionMagnesiumPrescriptionSulfurPrescriptionSiliconPrescriptionPressiumPrescription	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m	>25 >45 >225 >10 limit/base 400 200 12	 ▶ 58 0 2 7 0 0 current 0 0 0 0 19 	 ▲ 65 <1 4 8 0 0 history1 2 0 <1 	0 ▲ 54 0 5 8 0 0 0 0 history2 3 0 <1
Aluminum pr Lead pr Copper pr Tin pr Antimony pr Vanadium pr Cadmium pr Cadmium pr ADDITIVES pr Boron pr Barium pr Malganese pr Calcium pr Calcium pr Sulfur pr Sulfur pr Silicon pr Sodium pr Potassium pr	opm opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>45 >225 >10 limit/base 400 200 12	0 2 7 0 0 0 0 0 0 0 0 19	<1 4 8 0 0 0 history1 2 0 <1	0 5 8 0 0 0 0 history2 3 0 <1
Lead pp Copper pp Tin pp Antimony pp Cadmium pp Cadmium pp Cadmium pp ADDITIVES pp Barium pp Malganese pp Magnesium pp Calcium pp Calcium pp Zinc pp Sulfur pp Sulfur pp Sodium pp Potassium pp	opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>45 >225 >10 limit/base 400 200 12	2 7 0 0 0 <u>current</u> 0 0 0 19	<1 4 8 0 0 0 history1 2 0 <1	5 8 0 0 0 0 history2 3 0 <1
Copper pr Tin pr Antimony pr Vanadium pr Cadmium pr Cadmium pr ADDITIVES pr Boron pr Barium pr Malganese pr Magnesium pr Calcium pr Calcium pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr	opm opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>225 >10 limit/base 400 200 12	2 7 0 0 0 <u>current</u> 0 0 0 19	4 8 0 0 0 <u>history1</u> 2 0 <1	5 8 0 0 0 0 history2 3 0 <1
Tin pr Antimony pr Antimony pr Vanadium pr Cadmium pr ADDITIVES pr Boron pr Barium pr Manganese pr Magnesium pr Calcium pr Phosphorus pr Sulfur pr Silicon pr Sodium pr Potassium pr	opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>10 limit/base 400 200 12	7 0 0 0 <u>current</u> 0 0 0 19	8 0 0 0 <1	8 0 0 0 history2 3 0 <1
Antimony provide the second se	opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12	 0 0 0 current 0 0 0 0 19	0 0 history1 2 0 <1	0 0 history2 3 0 <1
Vanadium pr Cadmium pr ADDITIVES Boron pr Barium pr Molybdenum pr Magnesium pr Calcium pr Calcium pr Dhosphorus pr Zinc pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr	opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12	0 current 0 0 0 0 19	0 history1 2 0 <1	0 0 history2 3 0 <1
Cadmium pr ADDITIVES pr Boron pr Barium pr Molybdenum pr Magnesium pr Magnesium pr Calcium pr Phosphorus pr Sulfur pr CONTAMINANTS pr Silicon pr Potassium pr	opm opm opm opm opm opm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12	0 current 0 0 0 0 19	0 history1 2 0 <1	0 history2 3 0 <1
ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p CInc p Sulfur p Sulfur p Silicon p Potassium p Potassium p	opm opm opm opm opm	Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12	Current 0 0 0 19	history1 2 0 <1	history2 3 0 <1
Boron pr Barium pr Molybdenum pr Manganese pr Magnesium pr Calcium pr Calcium pr Zinc pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr	opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12	0 0 0 19	2 0 <1	3 0 <1
Barium pr Molybdenum pr Manganese pr Magnesium pr Calcium pr Calcium pr Calcium pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr	opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	200 12	0 0 19	0 <1	0 <1
Molybdenum pp Manganese pp Magnesium pp Calcium pp Phosphorus pp Zinc pp Sulfur pp CONTAMINANTS pp Silicon pp Sodium pp Potassium pp	opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m	12	0 19	<1	<1
Manganese pr Magnesium pr Calcium pr Phosphorus pr Zinc pr Sulfur pr CONTAMINANTS pr Silicon pr Sodium pr Potassium pr	opm opm	ASTM D5185m ASTM D5185m		19		
Magnesium pr Calcium pr Phosphorus pr Zinc pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr	opm	ASTM D5185m	12	-	16	14
Calcium pr Phosphorus pr Zinc pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr			12		0	
Phosphorus pr Zinc pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr	ppm		1 5 0		6	5
Zinc pr Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr		ASTM D5185m	150	43	76	75
Sulfur pr CONTAMINANTS Silicon pr Sodium pr Potassium pr	opm	ASTM D5185m	1650	867	929	865
CONTAMINANTS Silicon pr Sodium pr Potassium pr	ppm	ASTM D5185m	125	13	13	14
Silicon pr Sodium pr Potassium pr	opm	ASTM D5185m	22500	12540	10320	9913
Sodium protassium pr		method	limit/base	current	history1	history2
Potassium pr	opm	ASTM D5185m	>125	9	9	6
	opm	ASTM D5185m		1	1	1
	pm	ASTM D5185m		1	3	1
Water %	%	ASTM D6304	>0.1	0.016	0.014	0.015
ppm Water pp	opm	ASTM D6304	>1000	168.6	147.1	151.1
FLUID CLEANLINES	SS	method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>10000	A 160605		
Particles >6µm		ASTM D7647	>2500	<u> </u>		
Particles >14µm		ASTM D7647	>320	A 332		
Particles >21µm		ASTM D7647	>80	75		
Particles >38µm		ASTM D7647	>20	2		
Particles >71µm		ASTM D7647	>4	0		
Oil Cleanliness		ISO 4406 (c)	>20/18/15	4 25/23/16		
FLUID DEGRADATIO						
Acid Number (AN) mg	ION	method	limit/base	current	history1	history2

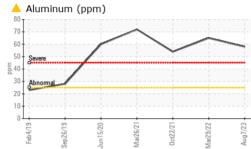
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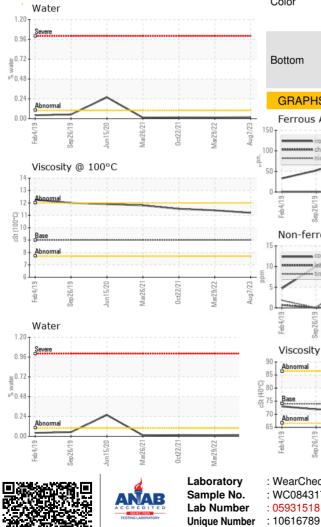
Contact/Location: GIANNA CREDAROLI - BASTARHD



OIL ANALYSIS REPORT

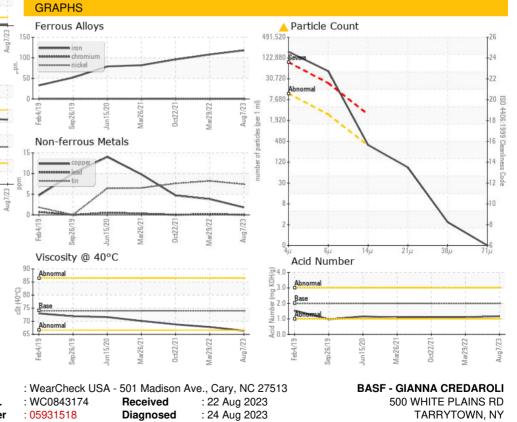






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	74	66.4	67.8	68.8
Visc @ 100°C	cSt	ASTM D445	9.0	11.2	11.4	11.52
Viscosity Index (VI)	Scale	ASTM D2270	94	162	162	162
SAMPLE IMAGES	`		11 11 11	ourropt	Internet and	history 0
	>	method	limit/base	current	history1	history2
Color	2	method	limit/base		History	no image

Bottom



Diagnostician : Jonathan Hester

Test Package : MOB 2 (Additional Tests: KF, KV100, PrtCount, VI)

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.

TARRYTOWN, NY US 10591 Contact: GIANNA CREDAROLI gianna.credaroli@basf.com T: F: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Contact/Location: GIANNA CREDAROLI - BASTARHD

no image