

OIL ANALYSIS REPORT

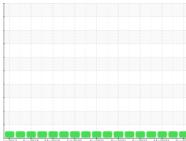
Sample Rating Trend





Gasoline Engine

KENDALL GT-1 HIGH PERFORMANCE SYNTH 5W20 (8 QTS)



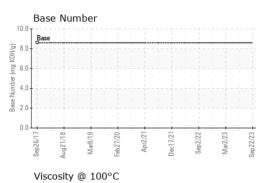


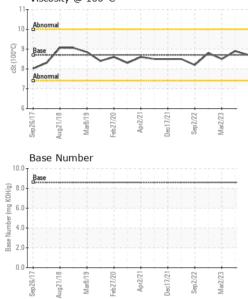
an2017 Aun2018 Mar2019 Feb2020 Anr2021 Dec2021 Sm2027 Mar2023 Sm2027

DIAGNOSIS	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Recommendation	Sample Number		Client Info		WC0680176	WC0680175	WC0680174
Resample at the next service interval to monitor. (Sample Date		Client Info		22 Sep 2023	11 May 2023	02 Mar 2023
Customer Sample Comment: Engine Hours: 2413)	Machine Age	mls	Client Info		91613	85865	79765
Wear	Oil Age	mls	Client Info		5748	6100	3384
All component wear rates are normal.	Oil Changed		Client Info		Changed	Changed	Changed
Contamination	Sample Status				NORMAL	NORMAL	NORMAL
There is no indication of any contamination in the oil.	CONTAMINATIO	N	method	limit/base	current	history1	history2
Fluid Condition	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
The AN level is acceptable for this fluid. The	Glycol		WC Method		NEG	NEG	NEG
condition of the oil is suitable for further service.	WEAR METALS		method	limit/base	current	history1	history2
	Iron	ppm	ASTM D5185m	>150	7	7	4
	Chromium	ppm	ASTM D5185m	>20	<1	0	0
	Nickel	ppm	ASTM D5185m	>5	<1	0	0
	Titanium	ppm	ASTM D5185m		0	0	0
	Silver	ppm	ASTM D5185m	>2	0	0	0
	Aluminum	ppm	ASTM D5185m		2	<1	1
	Lead	ppm	ASTM D5185m		0	0	<1
	Copper	ppm	ASTM D5185m		2	2	<1
	Tin	ppm	ASTM D5185m		_ <1	0	0
	Vanadium	ppm	ASTM D5185m	210	<1	0	<1
	Cadmium	ppm	ASTM D5185m		0	0	0
	ADDITIVES		method	limit/base	current	history1	history2
		nnm		limit/base			
	Boron	ppm	ASTM D5185m	limit/base	21	22	47
	Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	21 0	22 0	47
	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	21 0 100	22 0 96	47 0 116
	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	21 0 100 <1	22 0 96 <1	47 0 116 <1
	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	21 0 100 <1 395	22 0 96 <1 410	47 0 116 <1 426
	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		21 0 100 <1 395 1192	22 0 96 <1 410 1284	47 0 116 <1 426 1276
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	770	21 0 100 <1 395 1192 621	22 0 96 <1 410 1284 628	47 0 116 <1 426 1276 624
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	770	21 0 100 <1 395 1192 621 766	22 0 96 <1 410 1284 628 778	47 0 116 <1 426 1276 624 811
	Boron Barium 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 ASTM D5185m	770 850	21 0 100 <1 395 1192 621 766 2210	22 0 96 <1 410 1284 628 778 2111	47 0 116 <1 426 1276 624 811 2110
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	770 850 limit/base	21 0 100 <1 395 1192 621 766 2210	22 0 96 <1 410 1284 628 778 2111 history1	47 0 116 <1 426 1276 624 811
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	770 850 limit/base >30	21 0 100 <1 395 1192 621 766 2210 current 8	22 0 96 <1 410 1284 628 778 2111 history1 6	47 0 116 <1 426 1276 624 811 2110 history2 6
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	770 850 limit/base >30 >400	21 0 100 <1 395 1192 621 766 2210 current 8 3	22 0 96 <1 410 1284 628 778 2111 history1	47 0 116 <1 426 1276 624 811 2110 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	770 850 limit/base >30 >400	21 0 100 <1 395 1192 621 766 2210 current 8 3 9	22 0 96 <1 410 1284 628 778 2111 history1 6 2	47 0 116 <1 426 1276 624 811 2110 history2 6 <1 2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	770 850 limit/base >30 >400 >20	21 0 100 <1 395 1192 621 766 2210 current 8 3 9 Surrent	22 0 96 <1 410 1284 628 778 2111 history1 6 2 2 2 history1	47 0 116 <1 426 1276 624 811 2110 history2 6 <1 2 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	770 850 limit/base >30 >400 >20 limit/base	21 0 100 <1 395 1192 621 766 2210 current 8 3 9 current 0	22 0 96 <1 410 1284 628 778 2111 history1 6 2 2 2 2 <i>history1</i> 0	47 0 116 <1 426 1276 624 811 2110 history2 6 <1 2 history2 0.1
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	770 850 limit/base >30 >400 >20 limit/base >20	21 0 100 <1 395 1192 621 766 2210 current 8 3 9 current 0 8.0	22 0 96 <1 410 1284 628 778 2111 history1 6 2 2 2 history1	47 0 116 <1 426 1276 624 811 2110 history2 6 <1 2 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	770 850 limit/base >30 >400 >20 limit/base >20	21 0 100 <1 395 1192 621 766 2210 current 8 3 9 current 0 8.0 19.2	22 0 96 <1 410 1284 628 778 2111 history1 6 2 2 2 history1 0 8.3	47 0 116 <1 426 1276 624 811 2110 history2 6 <1 2 history2 0.1 8.2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	770 850 limit/base >30 >400 >20 limit/base >20 >30 >30	21 0 100 <1 395 1192 621 766 2210 current 8 3 9 current 0 8.0 19.2 current	22 0 96 <1 410 1284 628 778 2111 history1 6 2 2 2 history1 0 8.3 21.0 history1	47 0 116 <1 426 1276 624 811 2110 history2 6 <1 2 history2 0.1 8.2 18.1 18.1
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	770 850 limit/base >30 >400 >20 limit/base >20 >30 >30	21 0 100 <1 395 1192 621 766 2210 current 8 3 9 current 0 8.0 19.2	22 0 96 <1 410 1284 628 778 2111 history1 6 2 2 2 history1 0 8.3 21.0	47 0 116 <1 426 1276 624 811 2110 history2 6 <1 2 history2 0.1 8.2 18.1



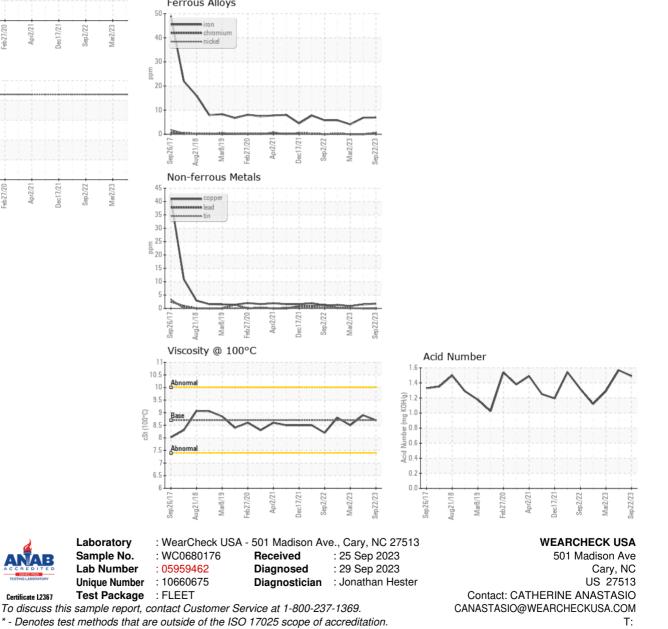
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VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*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	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	TIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	8.7	8.7	8.9	8.5
GRAPHS						

Ferrous Alloys



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Submitted By: Ken Hill

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