

OIL ANALYSIS REPORT



Machine Id HYSTER MUELL GWA Component

Diesel Engine Fluid XTRA REV 15W40 (--- LTR)

DIAGNOSIS

Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor.

🔺 Wear

Cylinder, crank, or cam shaft wear is indicated.

Contamination

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

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

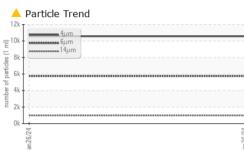
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		KL0013468		
Sample Date		Client Info		26 Jan 2024		
Machine Age	hrs	Client Info		0		
Oil Age	hrs	Client Info		135		
Oil Changed		Client Info		Not Changd		
Sample Status				ABNORMAL		
CONTAMINATION	١	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0		
Water		WC Method	>0.2	NEG		
Glycol		WC Method		NEG		
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	<u> </u>		
Chromium	ppm	ASTM D5185m	>20	5		
Nickel	ppm	ASTM D5185m	>4	0		
Titanium	ppm	ASTM D5185m		<1		
Silver	ppm	ASTM D5185m	>3	0		
Aluminum	ppm	ASTM D5185m	>20	2 8		
Lead	ppm	ASTM D5185m	>40	0		
Copper	ppm	ASTM D5185m	>330	6		
Tin	ppm	ASTM D5185m	>15	1		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		89		
Barium	ppm	ASTM D5185m		1		
Molybdenum	ppm	ASTM D5185m		48		
Manganese	ppm	ASTM D5185m		<1		
Magnesium	ppm	ASTM D5185m		307		
Calcium	ppm	ASTM D5185m		2196		
Phosphorus	ppm	ASTM D5185m		1058		
Zinc	ppm	ASTM D5185m		1211		
Sulfur	ppm	ASTM D5185m		3797		
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	<mark>/</mark> 69		
Sodium	ppm	ASTM D5185m		9		
Potassium	ppm	ASTM D5185m	>20	9		
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	0.2		
Nitration	Abs/cm	*ASTM D7624	>20	9.7		
Sulfation	Abs/.1mm	*ASTM D7415	>30	18.9		

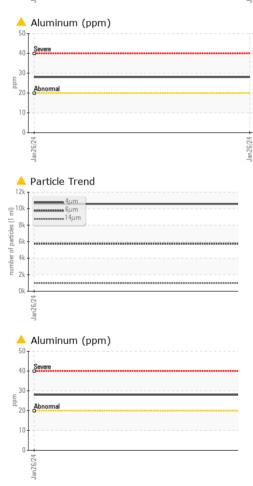


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Particles >4µm Particles >6µm		ASTM D7647		10570		
Particles Sum						
i antoico >oµin		ASTM D7647	>5000	5758		
Particles >14µm		ASTM D7647	>640	4 980		
Particles >21µm		ASTM D7647	>160	A 330		
Particles >38µm		ASTM D7647	>40	4 51		
Particles >71µm		ASTM D7647	>10	5		
Oil Cleanliness		ISO 4406 (c)	>19/16	20/17		
FLUID DEGRADA		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.4		
Base Number (BN)	mg KOH/g	ASTM D2896		9.95		
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
	scalar	*Visual	NONE	NONE		
	scalar	*Visual				
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar			NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		12.6		
GRAPHS						
Ferrous Alloys						
iron						T ²⁶
100 - chromium			122,88	0 -		-24
50-			30,72	0-		-22
**			* 중 7.68			-20
an 26/2			1.1 ref 1.92			-18
-			Ji licles (10
Non-terrous Metal	5		of part			-20 -18 -16 -14 -12
copper			10 12	0 -		14
a 5- tin			3	0-		-12
				⁸ Bizreve mal		10
5/24	************	*******************	******	2		-8
Jan 26			Jan 26	0		
,			-	⁴ μ 6μ Baco Numbor	14μ 21μ	38µ 71µ
¹⁸ Abnormal				Dase Number		
			ng KO			
Abnormal			p	0		
			Num			
104			Bast	24+0 /2		74 -
Jan26			Jan 26	Jan 26		an76/74
·WearChack USA	SO1 Madie		ny NC 9751	3		CONOF
				0		JUAREZ 348
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	Diagnose Diagnost		⁻ eb 2024 athan Heste		F	IERMOSILLO, MX 83140
	Particles >21µm Particles >38µm Particles >38µm Oil Cleanliness FLUID DEGRADA Oxidation Base Number (BN) VISUAL White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPERT Visc @ 100°C GRAPHS Ferrous Alloys 100 500 500 500 500 500 500 500	Particles >21µm Particles >38µm Particles >38µm Oil Cleanliness FLUID DEGRADATION Oxidation Abs/.1mm Base Number (BN) mg KOH/g VISUAL White Metal scalar Yellow Metal scalar Precipitate scalar Silt scalar Sand/Dirt scalar Appearance scalar Codor scalar Free Water scalar FulliD PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C WearCheck USA - 501 Madis	Particles >21µm ASTM D7647 Particles >38µm ASTM D7647 Oil Cleanliness ISO 4406 (c) FLUID DEGRADATION method Oxidation Abs/.1mm *ASTM D7414 Base Number (BN) mg KOH/g ASTM D2896 VISUAL method White Metal scalar *Visual Precipitate scalar *Visual Silt scalar *Visual Debris scalar *Visual Sand/Dirt scalar *Visual Codor scalar *Visual Codor scalar *Visual Free Water scalar *Visual Mon-ferrous Metals Odor c sc ASTM D445 GRAPHS Ferrous Alloys Mon-ferrous Metals Mon-ferrous	Particles >21µm ASTM D7647 >160 Particles >38µm ASTM D7647 >40 Particles >38µm ASTM D7647 >10 Oil Cleanliness ISO 4406 (c) >19/16 FLUID DEGRADATION method limit/base Oxidation Abs/.1mm 'ASTM D7414 >25 Base Number (BN) mg/KOHg ASTM D2896 VISUAL method limit/base White Metal scalar 'Visual NONE Yellow Metal scalar 'Visual NONE Yellow Metal scalar 'Visual NONE Silt scalar 'Visual NONE Sand/Dirt scalar 'Visual NONE Appearance scalar 'Visual NONE Appearance scalar 'Visual NORML Odor scalar 'Visual NORML Emulsified Water scalar 'Visual NORML Emulsified Water scalar 'Visual Sol 2 Free Viscosity @ 100°C cSt ASTM D445 GRAPHS Sol 2 Sol 2 S	Particles >21µm ASTM D7647 >160 330 Particles >38µm ASTM D7647 >40 51 Particles >71µm ASTM D7647 >10 5 Oil Cleanliness ISO 4406 (c) >19/16 20/17 FLUID DEGRADATION method limit/base current Oxidation Abs/Imm 'ASTM D7414 >25 14.4 Base Number (BN) mg/KOHg ASTM D2896 9.95 VISUAL method limit/base current White Metal scalar 'Visual NONE NONE Precipitate scalar 'Visual NONE NONE Sitt scalar 'Visual NONE NONE Debris scalar 'Visual NONE NONE Appearance scalar 'Visual NONE NONE Free Water scalar 'Visual NORML NORML Odor scalar 'Visual NORML NORML Codor scalar 'Visual NORML NORML Codor scalar 'Visual NORML NORML Precipitate Scalar 'Visual NONE NONE Free Water scalar 'Visual NORML NORML Codor scalar 'Visual NORML NORML MORML NORML Sitt Scalar 'Visual NORML NORML Appearance scalar 'Visual NORML NORML Free Water scalar 'Visual NORML NORML More free Water scalar 'Visual NORML NORML Viscosity @ 100°C cSt ASTM D445 12.6 GRAPHS Forrous Alloys 00000 C cSt ASTM D445 12.6 GRAPHS Ferrous Alloys 00000 C manual free method limit/base current Viscosity @ 100°C 00000 C cSt ASTM D445 12.6 GRAPHS Ferrous Alloys 00000 C cSt ASTM D445 12.6 GRAPHS 00000 C manual free method limit/base current Viscosity @ 100°C 00000 C cSt ASTM D445 12.6 GRAPHS 12.6 GRAPHS 12.6 GRAPHS 12.6	Particles >21 µm ASTM D7647 >160 330 Particles >38µm ASTM D7647 >10 5 Oil Cleanliness ISO 4406 (c) >19/16 20/17 FLUID DEGRADATION method limit/base current history1 Oxidation Abs:1mm 'ASTM D741 >25 14.4 Base Number (BN) mg KOHg ASTM D246 9.9.5 VISUAL method limit/base current history1 White Metal scalar 'Visual NONE NONE Precipitate scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NONE NONE Precipitate scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NONE NONE Emulsified Water scalar 'Visual NORML NORML Odor scalar 'Visual NORML NORML Precipitate scalar 'Visual NORM NONE Sand/Dirt scalar 'Visual NORML NORML Odor scalar 'Visual NORML NORML Precipitate scalar 'Visual NORML NORML Sit of scalar 'Visual NORM Precipitate scalar 'Visual NORM Sand/Dirt scalar 'Visual NORML NORML Odor scalar 'Visual NORML NORML Precipitate scalar 'Visual NORML NORML Precipitate scalar 'Visual NORM Precipitate scalar 'Visual NORML NORML Sit of scalar 'Visual NORML NORML Precipitate scalar 'Visual NORML NORML Precipitate scalar 'Visual NORML NORML Statar 'Visual NORML NORML Precipitate scalar 'Visual 'Precipitate scalar 'Visual 'Precipitate scalar 'Visu

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* - 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)

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