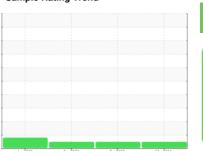


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id

KENWORTH T800 350 (S/N BXS021929)

Diesel Engine

SHELL ROTELLA T 15W40 (--- GAL)

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

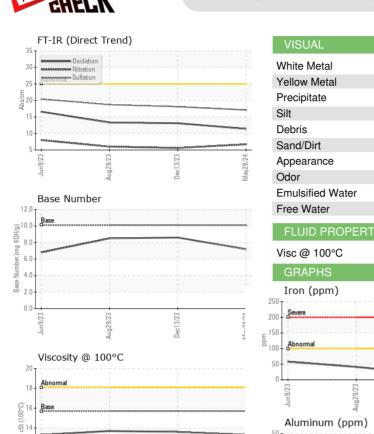
Fluid Condition

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

Sample Date Client Info 28 May 2024 13 Dec 2023 29 Aug 2023 Machine Age mis Client Info 0 0 0 0 0 Oli Age mis Client Info 0 0 0 0 0 0 0 Oli Changed Client Info Changed NORMAL NO			Jun202	3 Aug2023	Dec2023 M	ay2024	
Client Info	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 40483 33371 272410 Oil Age mls Client Info 0 0 0 Oil Changed Client Info Changed Changed Changed Changed Changed NORMAL CONTAMINATION method limit/bass current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Ricg WC Method NEG NEG NEG NEG WEAR METALS method limit/bass current history1 history2 Iron ppm ASTM D5185m >10 0 <1 <1 Ciron ppm ASTM D5185m >20 0 <1 <1 Ciron ppm ASTM D5185m >3 0 0 <1 Ciron ppm ASTM D5185m >3 0 0 <1	Sample Number		Client Info		WC0917132	WC0850989	WC0822276
Oil Age	Sample Date		Client Info		28 May 2024	13 Dec 2023	29 Aug 2023
Changed Changed Changed NORMAL NORMAL NORMAL NORMAL	Machine Age	mls	Client Info		40483	33371	272410
NORMAL NORMAL NORMAL NORMAL	Oil Age	mls	Client Info		0	0	0
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 18 20 41 Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >4 0 <1 <1 Silver ppm ASTM D5185m >4 0 <1 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >40 0 <1 1 Copper ppm ASTM D5185m >40 0 <1 1 Vanadium ppm ASTM D5185m >15 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0	CONTAMINATION	J	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 18 20 41 Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >4 0 <1 <1 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >40 0 <1 1 Lead ppm ASTM D5185m >40 0 <1 1 Lead ppm ASTM D5185m >40 0 <1 1 Copper ppm ASTM D5185m >15 <1 <1 <1 <1 Cadadium ppm ASTM D5185m 0 0 0 0 0 Barium ppm ASTM D5185m 1.2	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 <1 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	18	20	41
Titanium	Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	<1
Aluminum	Titanium	ppm	ASTM D5185m		1	0	<1
Lead	Silver	ppm	ASTM D5185m	>3		0	
Copper	Aluminum	ppm	ASTM D5185m	>20		4	
Tin	Lead	ppm					1
Vanadium ppm ASTM D5185m 0 0 <1	Copper	ppm	ASTM D5185m	>330	111	13	
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 316 27 37 30 Barium ppm ASTM D5185m 0.0 0 0 0 Molybdenum ppm ASTM D5185m 1.2 29 52 55 Manganese ppm ASTM D5185m 24 301 589 642 Calcium ppm ASTM D5185m 24 301 589 642 Calcium ppm ASTM D5185m 2292 1941 1491 1645 Phosphorus ppm ASTM D5185m 2292 1941 1491 1645 Phosphorus ppm ASTM D5185m 160 1157 1188 1263 Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base curre	Tin			>15			
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 316 27 37 30 Barium ppm ASTM D5185m 0.0 0 0 0 Molybdenum ppm ASTM D5185m 1.2 29 52 55 Manganese ppm ASTM D5185m 24 301 589 642 Calcium ppm ASTM D5185m 24 301 589 642 Calcium ppm ASTM D5185m 2292 1941 1491 1645 Phosphorus ppm ASTM D5185m 2292 1941 1491 1645 Phosphorus ppm ASTM D5185m 1160 1157 1188 1263 Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base current history1 history2 Sodium ppm ASTM D5185m <th></th> <th>ppm</th> <th></th> <th></th> <th>-</th> <th></th> <th></th>		ppm			-		
Boron ppm ASTM D5185m 316 27 37 30 30	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 1.2 29 52 55 Manganese ppm ASTM D5185m 24 301 589 642 Calcium ppm ASTM D5185m 24 301 589 642 Calcium ppm ASTM D5185m 2292 1941 1491 1645 Phosphorus ppm ASTM D5185m 1064 1020 1054 1007 Zinc ppm ASTM D5185m 1160 1157 1188 1263 Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >3	Boron	ppm	ASTM D5185m	316	27	37	30
Manganese ppm ASTM D5185m <1	Barium	ppm	ASTM D5185m	0.0	-		
Magnesium ppm ASTM D5185m 24 301 589 642 Calcium ppm ASTM D5185m 2292 1941 1491 1645 Phosphorus ppm ASTM D5185m 1064 1020 1054 1007 Zinc ppm ASTM D5185m 1160 1157 1188 1263 Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/.mm *ASTM D7845 >30 17.1 18.1 18.7 FLUID DEGRADATION method				1.2			
Calcium ppm ASTM D5185m 2292 1941 1491 1645 Phosphorus ppm ASTM D5185m 1064 1020 1054 1007 Zinc ppm ASTM D5185m 1160 1157 1188 1263 Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	•						
Phosphorus ppm ASTM D5185m 1064 1020 1054 1007 Zinc ppm ASTM D5185m 1160 1157 1188 1263 Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation A	-	• •					
Zinc ppm ASTM D5185m 1160 1157 1188 1263 Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 3 4 4 Potassium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414					-		
Sulfur ppm ASTM D5185m 4996 3918 3313 3868 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 3 4 4 Potassium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3	•	• •					
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 3 4 4 Potassium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3	-				-		
Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 3 4 4 Potassium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3		ррш					
Sodium ppm ASTM D5185m 3 4 4 Potassium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3							
Potassium ppm ASTM D5185m >20 6 11 46 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3				>25			
INFRA-RED				. 20			
Soot % % *ASTM D7844 >3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3		ррпі					
Nitration Abs/cm *ASTM D7624 >20 6.7 5.6 6.0 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3							
Sulfation Abs/.1mm *ASTM D7415 >30 17.1 18.1 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3							
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 11.4 13.1 13.3							
Oxidation					17.1		18.7
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.1 7.2 8.6 8.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	11.4	13.1	13.3
	Base Number (BN)	mg KOH/g	ASTM D2896	10.1	7.2	8.6	8.5



OIL ANALYSIS REPORT



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	IES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.7	13.3	13.6	13.7
GRAPHS						
Iron (ppm)			10	Lead (ppm)		
200 - Severe				Severe		
E 150			E G	0		
Abnormal				0 Abnormal		
50			2	0		
- 13 + 10 × 13 × 10 × 10 × 10 × 10 × 10 × 10 ×		/23+	724	733	/23 -	/23
Jun9/23 Aug29/23		Dec13/23	May28/24	Jun9/23	Aug 29/23	Dec13/23
Aluminum (ppm)				Chromium (p	pm)	
50 Severe				Severe		
10]
Abnormal		 	mdd 2	Abnormal		
10				0		
0				0		
Jun9/23 Aug29/23		Dec13/23	May28/24	Jun9/23	Aug 29/23	Dec13/23
A		De	Mar			Ma
Copper (ppm) Severe				Silicon (ppm)		
300			e	0		
E 200			E.4	0		
100				Abnormal		
Jun9/23 +		3/23	8/24	9/23	9/23	3/23
Ā		Dec13/23	May28/24	Jun9/23	Aug29/23	Dec13/23
Viscosity @ 100°C			12	Base Number	r	
Abnormal		***************************************		Base		***************************************
			10 10 8 8 8 8 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Transfer of the latest and the lates		
00 16 - Base 14 - Magazina			6 mper 4	1		
Abnormal			N 4			
10 0		m	O	0	m	5
Jun9/23 Aug29/23		Dec13/23	May28/24	Jun9/23	Aug 29/23	Dec13/23
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Certificate 12367

Sample No.

: WC0917132 Lab Number : 06196479 Unique Number : 11058602

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 31 May 2024 **Tested** : 03 Jun 2024

: 03 Jun 2024 - Don Baldridge Diagnosed Test Package : MOB 1 (Additional Tests: TBN)

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.

US 28458 Contact: GREG JONES gregory.jones@houseofraeford.com T: (910)289-6884

JOHNSON BREEDERS

3425 HWY 117N

ROSE HILL, NC

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