

OIL ANALYSIS REPORT

DHP15BLKTOP

Component

1 New (Unused) Oil

WADDICK 15W40 (--- LTR)

Sample Rating Trend NORMAL

DIAGNOSIS

Recommendation

This is a baseline read-out on the submitted sample.

Wear

{not applicable}

Contamination

{not applicable}

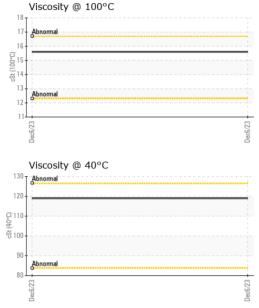
Fluid Condition

{not applicable}

Sample Number Client Info PC Sample Date Client Info 06 Dec 2023 Machine Age hrs Client Info 0 Client Info 0 Client Info 0 Client Info O Client Info O Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info N/A Client Info					Dec2023		
Sample Date Client Info O6 Dec 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		PC		
Oil Age hrs Client Info N/A	Sample Date		Client Info		06 Dec 2023		
Cilient Info	Machine Age	hrs	Client Info		0		
CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		0		
CONTAMINATION	Oil Changed		Client Info		N/A		
Water WC Method NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185(m) 0 Chromium ppm ASTM D5185(m) 0 Nickel ppm ASTM D5185(m) 0 Silver ppm ASTM D5185(m) 0 Aluminum ppm ASTM D5185(m) 0 App ASTM D5185(m) 0 App ASTM D5185(m) 0 Beryllium ppm	Sample Status				NORMAL		
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185(m) <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
Iron	Water		WC Method		NEG		
Chromium	WEAR METALS	5	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185(m) 0 Titanium ppm ASTM D5185(m) 0 Silver ppm ASTM D5185(m) 0 Aluminum ppm ASTM D5185(m) 0 Aluminum ppm ASTM D5185(m) 0 Lead ppm ASTM D5185(m) 0 Copper ppm ASTM D5185(m) 0 Tin ppm ASTM D5185(m) 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 Barium ppm ASTM D5185(m) 0	Iron	ppm	ASTM D5185(m)		<1		
Titanium	Chromium		ASTM D5185(m)		0		
Silver	Nickel	ppm	ASTM D5185(m)		0		
Ast	Titanium	ppm	ASTM D5185(m)		0		
Aluminum	Silver	ppm	ASTM D5185(m)		0		
Lead	Aluminum		ASTM D5185(m)		1		
Copper ppm ASTM D5185(m) 0 Tin ppm ASTM D5185(m) 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 Barium ppm ASTM D5185(m) 59 Molybdenum ppm ASTM D5185(m) 0 Manganesium ppm ASTM D5185(m) 1010 Calcium ppm ASTM D5185(m) 1020 Phosphorus ppm ASTM D5185(m) 2920	Lead		, ,		0		
Trin	Copper		ASTM D5185(m)		0		
Antimony							
Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 59 Manganese ppm ASTM D5185(m) 1010 Magnesium ppm ASTM D5185(m) 1020 Calcium ppm ASTM D5185(m) 1020 Phosphorus ppm ASTM D5185(m) 1210 Sulfur ppm ASTM D5185(m) 2920 Lithium ppm ASTM D5185(m) <1 <th< td=""><td></td><td></td><td></td><td></td><th></th><td></td><td></td></th<>							
Beryllium	•		. ,		-		
Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) <1 Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 59 Manganese ppm ASTM D5185(m) 0 Magnesium ppm ASTM D5185(m) 1010 Calcium ppm ASTM D5185(m) 1100 Phosphorus ppm ASTM D5185(m) 1210 Zinc ppm ASTM D5185(m) 2920 Sulfur ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Sodium ppm ASTM D5185(m) >20 <td></td> <td></td> <td>, ,</td> <td></td> <th></th> <td></td> <td></td>			, ,				
Boron	•				-		
Barium	ADDITIVES		method	limit/base	current	history1	history2
Barium	Boron	ppm	ASTM D5185(m)		<1		
Molybdenum ppm ASTM D5185(m) 59 Manganese ppm ASTM D5185(m) 0 Magnesium ppm ASTM D5185(m) 1010 Calcium ppm ASTM D5185(m) 1020 Phosphorus ppm ASTM D5185(m) 1210 Zinc ppm ASTM D5185(m) 2920 Sulfur ppm ASTM D5185(m) <1 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) <1 Sodium ppm ASTM D5185(m) >20 <1 Potassium ppm ASTM D5185(m) >20 <1 INFRA-RED method	Barium		ASTM D5185(m)		0		
Manganese ppm ASTM D5185(m) 0 Magnesium ppm ASTM D5185(m) 1010 Calcium ppm ASTM D5185(m) 1020 Phosphorus ppm ASTM D5185(m) 1100 Zinc ppm ASTM D5185(m) 2920 Sulfur ppm ASTM D5185(m) <1	Molvbdenum		(/		59		
Magnesium ppm ASTM D5185(m) 1010 Calcium ppm ASTM D5185(m) 1020 Phosphorus ppm ASTM D5185(m) 1100 Zinc ppm ASTM D5185(m) 1210 Sulfur ppm ASTM D5185(m) 2920 Lithium ppm ASTM D5185(m) <1			. ,		0		
Calcium ppm ASTM D5185(m) 1020 Phosphorus ppm ASTM D5185(m) 1100 Zinc ppm ASTM D5185(m) 1210 Sulfur ppm ASTM D5185(m) 2920 Lithium ppm ASTM D5185(m) <1	-				-		
Phosphorus ppm ASTM D5185(m) 1100 Zinc ppm ASTM D5185(m) 1210 Sulfur ppm ASTM D5185(m) 2920 Lithium ppm ASTM D5185(m) <1	-		. ,				
Zinc ppm ASTM D5185(m) 1210 Sulfur ppm ASTM D5185(m) 2920 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) 4 Sodium ppm ASTM D5185(m) <1 Potassium ppm ASTM D5185(m) >20 <1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7624* 4.0 Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2			, ,				
Sulfur ppm ASTM D5185(m) 2920 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) 4 Sodium ppm ASTM D5185(m) <1 Potassium ppm ASTM D5185(m) >20 <1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7624* 4.0 Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2							
Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) 4 Sodium ppm ASTM D5185(m) <1							
Silicon ppm ASTM D5185(m) 4 Sodium ppm ASTM D5185(m) <1 Potassium ppm ASTM D5185(m) >20 <1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7624* 4.0 Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2			. ,				
Sodium	CONTAMINAN	ΓS	method	limit/base	current	history1	history2
Sodium ppm ASTM D5185(m) <1 Potassium ppm ASTM D5185(m) >20 <1	Silicon	ppm	ASTM D5185(m)		4		
Potassium ppm ASTM D5185(m) >20 <1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7624* 4.0 Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185(m)		<1		
Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7624* 4.0 Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185(m)	>20	<1		
Nitration Abs/cm ASTM D7624* 4.0 Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2	Soot %	%	ASTM D7844*		0		
Sulfation Abs/.1mm ASTM D7415* 17.7 FLUID DEGRADATION method limit/base current history1 history2	Nitration	Abs/cm	ASTM D7624*		4.0		
	Sulfation	Abs/.1mm	ASTM D7415*				
Oxidation	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	ASTM D7414*		12.6		



OIL ANALYSIS REPORT



VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE		
Yellow Metal	scalar	Visual*	NONE	NONE		
Precipitate	scalar	Visual*	NONE	NONE		
Silt	scalar	Visual*	NONE	NONE		
Debris	scalar	Visual*	NONE	NONE		
Sand/Dirt	scalar	Visual*	NONE	NONE		
Appearance	scalar	Visual*	NORML	NORML		
Odor	scalar	Visual*	NORML	NORML		
Emulsified Water	scalar	Visual*		NEG		
Free Water	scalar	Visual*		NEG		
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)		119		
Visc @ 100°C	cSt	ASTM D7279(m)		15.6		
Viscosity Index (VI)	Scale	ASTM D2270*		138		
SAMPLE IMAG	ES	method	limit/base	current	history1	history2
Color					no image	no image
Bottom					no image	no image



CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number : 5698005

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Petro-Canada Technical/Nick Finelli : PC : 02604920

GRAPHS

Recieved

Diagnosed Diagnostician : Kevin Marson

: 22 Dec 2023 : 28 Dec 2023

Test Package : TEST (Additional Tests: FT-IR, ICP, ICP-NEWOIL, KV100, KV40, Spat, VI)

Mississauga, ON CA L5J 1K2 Contact: Nick Finelli

To discuss this sample report, contact Customer Service at 1-800-268-2131.

nick.finelli@hfsinclair.com

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

F: (877)352-8916