

OIL ANALYSIS REPORT

^{Area} [6100232170]

Hydraulic System

TDH FLUID SAE 70W80 (--- GAL)

HITACHI RYUNEE60K00010567

Sample Rating Trend **NORMAL**

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Recommendation

Resample at the next service interval to monitor. The fluid was not specified, however, a fluid match indicates that this fluid is (GENERIC) TDH FLUID SAE 70W80. Please confirm.

Wear

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

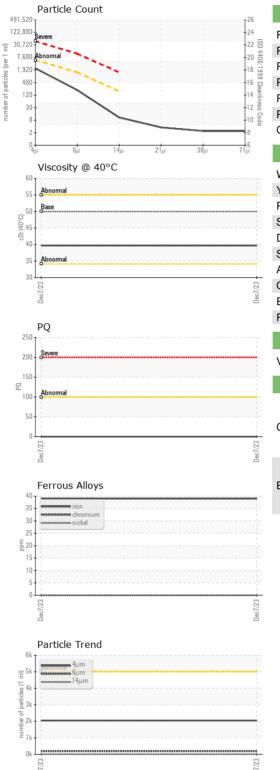
Fluid Condition

The condition of the oil is acceptable for the time in service.

Sample Date Client Info 07 Dec 2023 Machine Age hrs Client Info 4000 Oil Age hrs Client Info 1000 Oil Changed Client Info Changed Sample Status NORMAL CONTAMINATION method limit/base current history1 history2					Dec2023		
Sample Date Client Info	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 4000 Oil Changed Client Info 1000 Oil Changed Client Info Changed Sample Status NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184* 0 Iron ppm ASTM D8185(m) >10 0 Iron ppm ASTM D8185(m) >10 <1	Sample Number		Client Info		WA0020323		
Oil Age	Sample Date		Client Info		07 Dec 2023		
Contained Sample Status	Machine Age	hrs	Client Info		4000		
NORMAL NEG Nistory2 Neter WC Method >0.1 NEG Nistory2 NEG Nistory2 NEG Nistory2 NEG Nistory2 NEG Nistory2 Nistory3 Nistory4 Nistory5 Nistory4 Nistory5 Nistory6 Nistory7 Nistory8 Nistory8 Nistory8 Nistory9 Nis	Oil Age	hrs	Client Info		1000		
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D5185(m) >20 39 Iron ppm ASTM D5185(m) >10 0 Chromium ppm ASTM D5185(m) >10 <1 Nickel ppm ASTM D5185(m) 10 <1 Silver ppm ASTM D5185(m) >10 2 Aluminum ppm ASTM D5185(m) >10 2 Lead ppm ASTM D5185(m) >10 2 Lead ppm ASTM D5185(m) >10 0 Tin ppm ASTM D5185(m) 0 0	Oil Changed		Client Info		Changed		
Water WC Method >0.1 NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D5185(m) 0 Iron ppm ASTM D5185(m) >10 0 Chromium ppm ASTM D5185(m) >10 -1 Nickel ppm ASTM D5185(m) 10 -1 Titanium ppm ASTM D5185(m) >10 -1 Aluminum ppm ASTM D5185(m) >10 2 Copper ppm ASTM D5185(m) >10 -1 Tin ppm ASTM D5185(m) >10 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium	Sample Status				NORMAL		
WEAR METALS method limit/base current history1 history2 PQ ASTM D8184* 0 Iron ppm ASTM D5185(m) >20 39 Chromium ppm ASTM D5185(m) >10 -1 Nickel ppm ASTM D5185(m) >10 -1 Titanium ppm ASTM D5185(m) 0 Silver ppm ASTM D5185(m) >10 2 Aluminum ppm ASTM D5185(m) >10 -1 Aluminum ppm ASTM D5185(m) >10 -1 Lead ppm ASTM D5185(m) >10 -1 Copper ppm ASTM D5185(m) >10 0 Tin ppm ASTM D5185(m) 0 Antimony ppm <	CONTAMINATIO	N	method	limit/base	current	history1	history2
PQ	Water		WC Method	>0.1	NEG		
Iron	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185(m) > 10 0 Nickel ppm ASTM D5185(m) > 10 < 1 Titanium ppm ASTM D5185(m) > 10 < 1 Silver ppm ASTM D5185(m) > 10 2 Aluminum ppm ASTM D5185(m) > 10 2 Lead ppm ASTM D5185(m) > 10 < 1 Copper ppm ASTM D5185(m) > 10 0 Tin ppm ASTM D5185(m) 0 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 ADDITIVES method limit/	PQ		ASTM D8184*		0		
Chromium ppm ASTM D5185(m) > 10 0 Nickel ppm ASTM D5185(m) > 10 < 1 Titanium ppm ASTM D5185(m) > 10 < 1 Silver ppm ASTM D5185(m) > 10 2 Aluminum ppm ASTM D5185(m) > 10 2 Lead ppm ASTM D5185(m) > 10 < 1 Copper ppm ASTM D5185(m) > 10 0 Tin ppm ASTM D5185(m) 0 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 ADD1TIVES method limit/	Iron	ppm	ASTM D5185(m)	>20	39		
Titanium	Chromium		ASTM D5185(m)	>10	0		
Silver	Nickel	ppm	ASTM D5185(m)	>10	<1		
Aluminum	Titanium	ppm	ASTM D5185(m)		0		
Lead	Silver	ppm	ASTM D5185(m)		<1		
Copper ppm ASTM D5185(m) >75 4 Tin ppm ASTM D5185(m) >10 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) 10 4 Barium ppm ASTM D5185(m) 10 4 Molybdenum ppm ASTM D5185(m) 10 3 Magnesium ppm ASTM D5185(m) 10 13 Calcium ppm ASTM D5185(m) 3500 4050	Aluminum	ppm	ASTM D5185(m)	>10	2		
Tin ppm ASTM D5185(m) >10 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) 10 4 Barium ppm ASTM D5185(m) 10 <1 Molybdenum ppm ASTM D5185(m) 10 3 Manganese ppm ASTM D5185(m) 10 13 Magnesium ppm ASTM D5185(m) 100 13 Magnesium ppm ASTM D5185(m) 100 13 Magnesium ppm ASTM D5185(m) 100 13 Calcium ppm ASTM D5185(m) 1500 4050 Phosphorus ppm ASTM D5185(m) 1150 833 Zinc ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 5000 3580 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) >20 4	Lead	ppm	ASTM D5185(m)	>10	<1		
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) 10 4 Barium ppm ASTM D5185(m) 10 <1 Molybdenum ppm ASTM D5185(m) 10 3 Magnesium ppm ASTM D5185(m) 100 13 Calcium ppm ASTM D5185(m) 3500 4050 Phosphorus ppm ASTM D5185(m) 1150 833 Zinc ppm ASTM D5185(m) 5000 3580 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185(m)</td><td>>75</td><td>4</td><td></td><td></td></t<>	Copper	ppm	ASTM D5185(m)	>75	4		
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) 10 4 Barium ppm ASTM D5185(m) 10 3 Molybdenum ppm ASTM D5185(m) 10 3 Magnaese ppm ASTM D5185(m) 100 13 Magnesium ppm ASTM D5185(m) 3500 4050 Phosphorus ppm ASTM D5185(m) 1150 833 Zinc ppm ASTM D5185(m) 5000 3580 Sulfur ppm ASTM D5185(m) <1	Tin	ppm	ASTM D5185(m)	>10	0		
Beryllium	Antimony	ppm	ASTM D5185(m)		0		
Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 10 4 Barium ppm ASTM D5185(m) 10 3 Molybdenum ppm ASTM D5185(m) 10 3 Manganese ppm ASTM D5185(m) 100 13 Magnesium ppm ASTM D5185(m) 3500 4050 Calcium ppm ASTM D5185(m) 1150 833 Phosphorus ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) <1	Vanadium	ppm	ASTM D5185(m)		0		
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 10 4 Barium ppm ASTM D5185(m) 10 <1	Beryllium	ppm	ASTM D5185(m)		0		
Boron ppm ASTM D5185(m) 10 4	Cadmium	ppm	ASTM D5185(m)		0		
Barium ppm ASTM D5185(m) 10 <1 Molybdenum ppm ASTM D5185(m) 10 3 Manganese ppm ASTM D5185(m) 100 13 Magnesium ppm ASTM D5185(m) 3500 4050 Calcium ppm ASTM D5185(m) 1150 833 Phosphorus ppm ASTM D5185(m) 1150 977 Zinc ppm ASTM D5185(m) 5000 3580 Sulfur ppm ASTM D5185(m) <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 10 3 Manganese ppm ASTM D5185(m) 100 13 Magnesium ppm ASTM D5185(m) 100 13 Calcium ppm ASTM D5185(m) 3500 4050 Phosphorus ppm ASTM D5185(m) 1150 833 Zinc ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) < 1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Boron	ppm	ASTM D5185(m)	10	4		
Manganese ppm ASTM D5185(m) <1 Magnesium ppm ASTM D5185(m) 100 13 Calcium ppm ASTM D5185(m) 3500 4050 Phosphorus ppm ASTM D5185(m) 1150 833 Zinc ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) <1	Barium	ppm	ASTM D5185(m)	10	<1		
Magnesium ppm ASTM D5185(m) 100 13 Calcium ppm ASTM D5185(m) 3500 4050 Phosphorus ppm ASTM D5185(m) 1150 833 Zinc ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) < 1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Molybdenum	ppm	ASTM D5185(m)	10	3		
Calcium ppm ASTM D5185(m) 3500 4050 Phosphorus ppm ASTM D5185(m) 1150 833 Zinc ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) <1	Manganese	ppm	ASTM D5185(m)		<1		
Phosphorus ppm ASTM D5185(m) 1 150 833 Zinc ppm ASTM D5185(m) 1 150 977 Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Magnesium	ppm	ASTM D5185(m)	100	13		
Zinc ppm ASTM D5185(m) 1150 977 Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Calcium	ppm	ASTM D5185(m)	3500	4050		
Sulfur ppm ASTM D5185(m) 5000 3580 Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Phosphorus	ppm	ASTM D5185(m)	1150	833		
Lithium ppm ASTM D5185(m) <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Zinc	ppm	ASTM D5185(m)	1150	977		
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Sulfur	ppm	ASTM D5185(m)	5000	3580		
Silicon ppm ASTM D5185(m) >20 4 Sodium ppm ASTM D5185(m) 6	Lithium	ppm	ASTM D5185(m)		<1		
Sodium ppm ASTM D5185(m) 6	CONTAMINANTS	3	method	limit/base	current	history1	history2
	Silicon	ppm	ASTM D5185(m)	>20	4		
	Sodium		ASTM D5185(m)		6		
	Potassium		ASTM D5185(m)	>20	<1		



OIL ANALYSIS REPORT



FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	2046		
Particles >6µm		ASTM D7647	>1300	185		
Particles >14µm		ASTM D7647	>160	9		
Particles >21µm		ASTM D7647	>40	3		
Particles >38µm		ASTM D7647	>10	2		
Particles >71µm		ASTM D7647	>3	2		
Oil Cleanliness		ISO 4406 (c)	>19/17/14	18/15/10		
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*	>0.1	NEG		
Free Water	scalar	Visual*		NEG		
FLUID PROPERT	TES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	50	39.7		
SAMPLE IMAGES	3	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 : 5695733

: 02602648

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 : WA0020323

Received Diagnosed

: 13 Dec 2023 Diagnostician : Kevin Marson

: 12 Dec 2023

Test Package : MOB 2 (Additional Tests: PQ) To discuss this sample report, contact Customer Service at 1-800-268-2131.

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.

VILLE DE MALARTIC 901 RUE ROYAL MALARTIC, QC

CA J0Y 1Z0 Contact: Service Manager LLAFFLAMORE@WAJAX.COM

T: (819)860-3072 F: