

# LABORATORY ANALYSIS



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Department **BRASS MILL SERVO/INVOICE**  
 Equipment No. **MILL-RVM-29R-MILL-SC 29R SCREWDOWN HPU (00009)**  
 System **Hydraulic System**  
 Oil Type **CONOCO HYDROCLEAR HC 12 (--- GAL)**

**WIELAND**  
 BRASS ACCOUNTS PAYABLE, GEORGE STREET  
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 US 62024  
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## DIAGNOSIS

Particle counts have slightly increased outside of acceptable limits. Viscosity remains slightly elevated and there is some copper in the sample that we should monitor. We recommend a filter service at this time. Copper (Cu) ppm levels are severe. Lead (Pb) ppm levels are abnormal. Bearing wear is indicated. Oil cooler core leaching or motor piston wear is indicated. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The viscosity of the oil is higher than normal, possibly indicating the addition of a heavier grade of oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

## SAMPLE INFORMATION

Lab Number	New	2310-00981	2309-00923	2308-01486
Date of Sample	(Typical)	<b>20 Oct 2023</b>	22 Sep 2023	25 Aug 2023
Oil Added		<b>UNK</b>	UNK	UNK
Last Drain Date		--	--	--
Last Filter Service		--	--	--
Sample Point		---	---	---
Sample Status		<b>SEVERE</b>	SEVERE	SEVERE

## VISCOSITY @ 100F OR 40C (ASTM D-445)

SSU Vis. @ 100F	SSU	67.3	67.3	67.2
cSt Vis. @ 40C	cSt	12.0	11.48	11.46

## % WATER - KARL FISCHER (ASTM E203)

% Water (KF)	%	0.017	0.010	0.013
ppm Water (KF)	ppm	170	110	130

## TOTAL ACID NUMBER (NEUT. NO.)(ASTM D974)

TAN, mg KOH/g	mg KOH/g	0.29	<0.10	0.14
		0.21		

## PARTICLE COUNT (PER 1ML)

ISO CODE	ISO 4406(c)	>17/15/12	17/16/13	18/15/9	19/16/11
4 Micron & Larger	particles/ml	>1300	1,007	1,490	4,690
6 Micron & Larger	particles/ml	>320	363	183	473
14 Micron & Larger	particles/ml	>40	53	4	18
21 Micron & Larger	particles/ml	>10	17	1	7
38 Micron & Larger	particles/ml	>3	2	0	1
70 Micron & Larger	particles/ml	>3	0	0	0

## ICP - OILS (REPORTED IN PARTS PER MILLION)

Aluminum (Al)	ppm	<5	<5	<5
Antimony (Sb)	ppm	<5	<5	<5
Cadmium (Cd)	ppm	<5	<5	<5
Chromium (Cr)	ppm	<5	<5	<5
Cobalt (Co)	ppm	<5	<5	<5
Copper (Cu)	ppm	250	255	262
Iron (Fe)	ppm	5	5	5
Lead (Pb)	ppm	146	112	107
Manganese (Mn)	ppm	<5	<5	<5
Molybdenum(Mo)	ppm	<5	<5	<5
Nickel (Ni)	ppm	<5	<5	<5
Silver (Ag)	ppm	<5	<5	<5
Tin (Sn)	ppm	5	<5	<5
Titanium (Ti)	ppm	<5	<5	<5
Vanadium (V)	ppm	<5	<5	<5
Barium (Ba)	ppm	<5	<5	<5
Boron (B)	ppm	<5	<5	<5
Calcium (Ca)	ppm	9	10	10
Magnesium (Mg)	ppm	<5	<5	<5
Phosphorus(P)	ppm	159	170	176
Silicon (Si)	ppm	<5	<5	<5
Zinc (Zn)	ppm	15	15	16
Sulfur (S)	ppm	59	60	62

Customer Id: GLOEAS  
 Sample No.: EN23100981  
 Lab Number: 23100981  
 Test Package: TEST



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