LABORATORY ANALYSIS

ENGINEERED LUBRICANTS
11525 Rock Island Court, St. Louis, MO 63043
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Department **NC**

Equipment No. **2003 VERTICAL MILL SPINDLE (00029)**

System **Oil**

Oil Type **ENGINEERED LUBRICANTS ENSPIN NO.6-PF (--- GAL)**

BACHMAN MACHINE COMPANY
4321 NORTH BROADWAY, 008901
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US 63147
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DIAGNOSIS

Particle counts are elevated in all micron ranges. I recommend a filter service at this time and a partial purge to remove the smaller particles. After equipment is idle for 8 hours, drain 25% capacity of the component. Top off with new oil.Copper (Cu) ppm levels are abnormal. There is a high amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. Viscosity of sample indicates oil is within ISO 5 range, advise investigate. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION

Lab Number		New	**2312-00184**	2305-00768	2209-00540
Date of Sample		(Typical)	**01 Dec 2023**	19 May 2023	16 Sep 2022
Oil Added			**UNK**	UNK	UNK
Last Drain Date			**--**	--	--
Months on Sample			**213.4**	207.0	199.1
Last Filter Service			**--**	--	--
Sample Point			**---**	---	---
Sample Status			**ABNORMAL**	SEVERE	SEVERE

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

SSU Vis. @ 100F	SSU		**49.3**	---	58.4
cSt Vis. @ 40C	cSt	10	▲ **6.705**	▲ 4.89	▢ 9.22

COLOR (BASED ON ASTM D1500 STANDARDS)

Color	Scale 0-8	0.5	**1.0**	1.5	1.5

PARTICLE COUNT (PER 1ML)

ISO CODE	ISO 4406(c)	>16/14/12	**18/16/12**	22/20/15	19/18/14
4 Micron & Larger	particles/1ml	>640	▲ **1,371**	⬢ 20,440	▲ 4,855
6 Micron & Larger	particles/1ml	>160	▲ **425**	⬢ 5,120	⬢ 1,305
14 Micron & Larger	particles/1ml	>40	▢ **31**	▲ 275	▲ 107
21 Micron & Larger	particles/1ml	>10	▢ **7**	▲ 59	▲ 32
38 Micron & Larger	particles/1ml	>3	▢ **0**	2	3
70 Micron & Larger	particles/1ml	>3	▢ **0**	▢ 0	▢ 1

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		▲ **21**	▲ 23	<5
Iron (Fe)	ppm		**<5**	<5	<5
Lead (Pb)	ppm		**12**	10	<5
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**	7	<5
Boron (B)	ppm		**<5**	<5	<5
Calcium (Ca)	ppm		**<5**	<5	<5
Magnesium (Mg)	ppm		**<5**	<5	<5
Phosphorus(P)	ppm		**123**	204	30
Silicon (Si)	ppm		**<5**	<5	<5
Zinc (Zn)	ppm		**111**	215	10
Sulfur (S)	ppm	715	▢ **827**	▢ 850	▢ 704

Customer Id: BACSTL
Sample No.: EN23120184
Lab Number: 23120184
Test Package: TEST

To manage this report scan the QR code

To discuss the diagnosis or test data:
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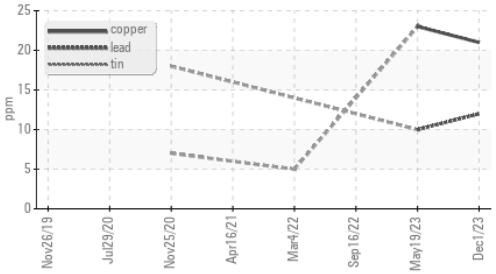
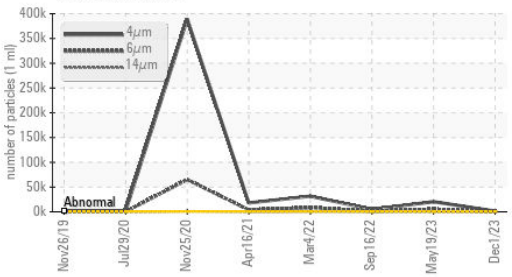
OIL ANALYSIS REPORT

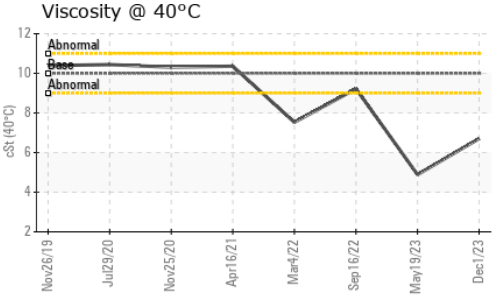
Non-ferrous Metals



Particle Trend



Viscosity @ 40°C



DR FERROGRAPHY READINGS

L			**1.4**	5.7	10.9
S			**0.5**	1.4	0.5
WPC	DL + DS		**1.9**	7.1	11.4

CONTAMINATION

Water			**NEG**	NEG	NEG