

### **PROBLEM SUMMARY**

### Sample Rating Trend

ISO

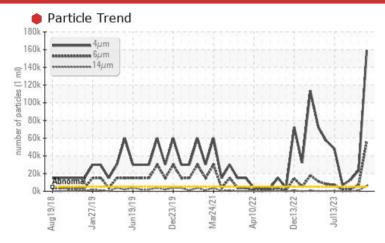


# RHOB/HYDRAULICS Machine Id E - 1 Hydraulics Repair Car

Tank Hydraulic System

**AMERICAN CHEMICAL TECH. FR WG 200-D (132 GAL)** 

### **COMPONENT CONDITION SUMMARY**



### **RECOMMENDATION**

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

PROBLEMATIC TEST RESULTS									
Sample Status			SEVERE	ABNORMAL	ABNORMAL				
Particles >4µm	ASTM D7647	>5000	<b>159095</b>	<u>^</u> 23481	<b>▲</b> 12930				
Particles >6µm	ASTM D7647	>1300	56467	<b>△</b> 6824	▲ 2389				
Particles >14µm	ASTM D7647	>160	<b>6125</b>	<u>▲</u> 553	<b>241</b>				
Particles >21µm	ASTM D7647	>40	<b>1680</b>	<b>▲</b> 71	<u> </u>				
Particles >38µm	ASTM D7647	>10	<b>46</b>	8	<b>1</b> 9				
Oil Cleanliness	ISO 4406 (c)	>19/17/14	<b>2</b> 4/23/20	22/20/16	<u>^</u> 21/18/15				

Customer Id: LEWBOSC Sample No.: WC0901983 Lab Number: 02610766 Test Package: IND 2



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To discuss the diagnosis or test data: Bill Quesnel CLS,OMA II,MLA-III,LLA-I +1 (289)291-4641 x4641

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To change component or sample information: Gloria Gonzalez +1 (289)291-4643 x4643 gloria.gonzalez@wearcheck.com

#### **RECOMMENDED ACTIONS** Action **Status** Date Done By Description We advise that you perform a filter service, and use off-line filtration to Change Filter ? improve the cleanliness of the system fluid. Resample ? Resample in 30-45 days to monitor this situation. The air breather requires service. If unrated, we recommend that you replace with a ? **Check Breathers** suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather We advise that you check all areas where contaminants can enter the **Check Dirt Access** ? system. We advise that you perform a filter service, and use off-line filtration to Filter Fluid improve the cleanliness of the system fluid.

### HISTORICAL DIAGNOSIS

#### 15 Dec 2023 Diag: Kevin Marson



We recommend you service the filters on this component. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



### 16 Oct 2023 Diag: Kevin Marson



We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



### 16 Aug 2023 Diag: Kevin Marson



We recommend you service the filters on this component. Resample at the next service interval to monitor. All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The condition of the oil is suitable for further service.



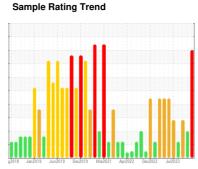


### **COOLANT REPORT**

## RHOB/HYDRAULICS E - 1 Hydraulics Repair Car

**Tank Hydraulic System** 

AMERICAN CHEMICAL TECH. FR WG 200-D (132 GAL)





### DIAGNOSIS

### Recommendation

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

#### Wear

All component wear rates are normal.

### Contamination

There is a high amount of particulates (2 to 100 microns in size) present in the oil.

### **Fluid Condition**

The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Sample Number         Client Info         WC0901983         WC0890378         WC0871206           Sample Date         Client Info         22 Jan 2024         15 Dec 2023         16 Oct 2023           Machine Age         hrs         Client Info         0         0         0           Oil Age         hrs         Client Info         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         SEVERE         ABNORMAL         ABNORMAL         ABNORMAL         ABNORMAL           CONTAMINATION         method         Imit/base         current         history1         history2           Water         WC Method         >55         NEG         NEG         NEG           CORROSION INHIBITORS         method         Imit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1			groto outro	TO GARLOTO DOCESTO	Marcori Papirote Source	OHLOLO	
Sample Date         Client Info         22 Jan 2024         15 Dec 2023         16 Oct 2023           Machine Age         hrs         Client Info         0         0         0         0           Oil Age         hrs         Client Info         0         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         SEVERE         ABNORMAL         ABNORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >55         NEG         NEG         NEG           CORROSION INHIBITORS method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         1         <1	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         0         0         0         0           Oil Age         hrs         Client Info         0         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         Client Info         N/A         N/A         N/A         N/A           CONTAMINATION         method         limit/base         current         history1         history2           Water         W Method         >55         NEG         NEG         NEG           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         1         2         1         -1 <t< td=""><td>Sample Number</td><td></td><td>Client Info</td><td></td><td>WC0901983</td><td>WC0890378</td><td>WC0871206</td></t<>	Sample Number		Client Info		WC0901983	WC0890378	WC0871206
Oil Age         hrs         Client Info         N/A         N/A         N/A         N/A           Oil Changed         Client Info         N/A         N/A         N/A         N/A         N/A           Sample Status         Client Info         N/A         ABNOFIBAL         Description         Description         Description         Description         Description         Description         N/A	Sample Date		Client Info		22 Jan 2024	15 Dec 2023	16 Oct 2023
Oil Changed Sample Status         Client Info         N/A SEVERE         N/A ABNORMAL         N/A ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >55         NEG         NEG         NEG           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         1         2         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Machine Age	hrs	Client Info		0	0	0
Sample Status	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >55         NEG         NEG         NEG           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         1         <1	Oil Changed		Client Info		N/A	N/A	N/A
Water         WC Method         >55         NEG         NEG         NEG           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         1         <1         <1         <1           Phosphorus         ppm         ASTM D5185(m)         1         2         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Sample Status				SEVERE	ABNORMAL	ABNORMAL
CORROSION INHIBITORS method limit/base current history1 history2  Silicon ppm ASTM D5185(m) 1 < 1 < 1  Phosphorus ppm ASTM D5185(m) 1 2 < 1  Boron ppm ASTM D5185(m)	CONTAMINATIO	N	method	limit/base	current	history1	history2
Silicon   ppm   ASTM D5185(m)   1   1   2   1   1   2   1   1   2   1   1	Water		WC Method	>55	NEG	NEG	NEG
Phosphorus	CORROSION IN	HIBITORS	method	limit/base	current	history1	history2
Seron   ppm   ASTM D5185(m)   c1   c1   c1   c1   c1   c1   c2   c4   c4   c4   c4   c4   c4   c4	Silicon	ppm	ASTM D5185(m)		1	<1	<1
Molybdenum         ppm         ASTM D5185(m)         0         0         0           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >20         0         0         0           Aluminum         ppm         ASTM D5185(m)         >20         0         0         0           Copper         ppm         ASTM D5185(m)         >20         0         0         0           Lead         ppm         ASTM D5185(m)         >20         0         0         0           Tin         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         >20         0         0         0           Zinc         ppm         ASTM D5185(m)         >20         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         159095         Δ 23481         Δ 12930           Particles >4μm         ASTM D7647         >160         6125         553         Δ 241 </td <td>Phosphorus</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td></td> <td>1</td> <td>2</td> <td>&lt;1</td>	Phosphorus	ppm	ASTM D5185(m)		1	2	<1
CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >20         0         0         0           Aluminum         ppm         ASTM D5185(m)         >20         0         0         0           Copper         ppm         ASTM D5185(m)         >20         0         0         0           Lead         ppm         ASTM D5185(m)         >20         0         0         0           Tin         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         >20         0         0         0           Zinc         ppm         ASTM D5185(m)         <1	Boron	ppm	ASTM D5185(m)		<1	<1	<1
Iron	Molybdenum	ppm	ASTM D5185(m)		0	0	0
Aluminum         ppm         ASTM D5185(m)         >20         0         0         0           Copper         ppm         ASTM D5185(m)         >20         0         0         0           Lead         ppm         ASTM D5185(m)         >20         0         0         0           Tin         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         <1	CORROSION		method	limit/base	current	history1	history2
Copper         ppm         ASTM D5185(m)         >20         0         0         0           Lead         ppm         ASTM D5185(m)         >20         0         0         0           Tin         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         <1	Iron	ppm	ASTM D5185(m)	>20	0	0	0
Lead         ppm         ASTM D5185(m)         >20         0         0         0           Tin         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         <1	Aluminum	ppm	ASTM D5185(m)	>20	0	0	0
Tin ppm ASTM D5185(m) >20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Copper	ppm	ASTM D5185(m)	>20	0	0	0
Silver ppm ASTM D5185(m)	Lead	ppm	ASTM D5185(m)	>20	0	0	0
Zinc ppm ASTM D5185(m) 0 0 0 0  CONTAMINANTS method limit/base current history1 history2  Particles >4µm ASTM D7647 >5000 159095  23481  12930  Particles >6µm ASTM D7647 >1300 56467  6824 2389  Particles >14µm ASTM D7647 >160 16125  553  241  Particles >21µm ASTM D7647 >40 1680 71 111  Particles >38µm ASTM D7647 >10  46 8  19  Particles >71µm ASTM D7647 >3  2  0  10  Oil Cleanliness ISO 4406 (c) >19/17/14 24/23/20  22/20/16  21/18/15  CARRIER SALTS method limit/base current history1 history2  Sodium ppm ASTM D5185(m) 195 192 160  Potassium ppm ASTM D5185(m) 20 11 14  SCALE POTENTIAL method limit/base current history1 history2  Calcium ppm ASTM D5185(m) 20 11 1 4	Tin	ppm	ASTM D5185(m)	>20	0	0	0
CONTAMINANTS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         159095         △ 23481         △ 12930           Particles >6μm         ASTM D7647         >1300         ♠ 56467         △ 6824         △ 2389           Particles >14μm         ASTM D7647         >160         ♠ 6125         △ 553         △ 241           Particles >21μm         ASTM D7647         >40         ♠ 1680         △ 71         △ 111           Particles >38μm         ASTM D7647         >10         △ 46         8         △ 19           Particles >71μm         ASTM D7647         >3         2         0         △ 10           Oil Cleanliness         ISO 4406 (c)         >19/17/14         ♠ 24/23/20         △ 22/20/16         △ 21/18/15           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1	Silver	ppm	ASTM D5185(m)		<1	<1	<1
Particles >4μm       ASTM D7647       >5000       159095       Δ 23481       Δ 12930         Particles >6μm       ASTM D7647       >1300       56467       Δ 6824       Δ 2389         Particles >14μm       ASTM D7647       >160       6125       Δ 553       Δ 241         Particles >21μm       ASTM D7647       >40       1680       Λ 71       Δ 111         Particles >38μm       ASTM D7647       >10       Δ 46       8       Δ 19         Particles >71μm       ASTM D7647       >3       2       0       Δ 10         Oil Cleanliness       ISO 4406 (c)       >19/17/14       24/23/20       Δ 22/20/16       Δ 21/18/15         CARRIER SALTS       method       limit/base       current       history1       history2         Sodium       ppm       ASTM D5185(m)       195       192       160         Potassium       ppm       ASTM D5185(m)       20       11       history1       history2         Calcium       ppm       ASTM D5185(m)       <1       1       <1       <1	Zinc	ppm	ASTM D5185(m)		0	0	0
Particles >6μm         ASTM D7647         >1300         56467         △ 6824         △ 2389           Particles >14μm         ASTM D7647         >160         ♠ 6125         △ 553         △ 241           Particles >21μm         ASTM D7647         >40         ♠ 1680         △ 71         △ 111           Particles >38μm         ASTM D7647         >10         △ 46         8         △ 19           Particles >71μm         ASTM D7647         >3         2         0         △ 10           Oil Cleanliness         ISO 4406 (c)         >19/17/14         ♠ 24/23/20         △ 22/20/16         △ 21/18/15           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1	CONTAMINANT	S	method	limit/base	current	history1	history2
Particles >14μm         ASTM D7647         >160         6125         △ 553         △ 241           Particles >21μm         ASTM D7647         >40         1680         △ 71         △ 111           Particles >38μm         ASTM D7647         >10         △ 46         8         △ 19           Particles >71μm         ASTM D7647         >3         2         0         △ 10           Oil Cleanliness         ISO 4406 (c)         >19/17/14         ♠ 24/23/20         △ 22/20/16         △ 21/18/15           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         195         192         160           Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1	Particles >4µm		ASTM D7647	>5000	<b>159095</b>	<u>23481</u>	<b>▲</b> 12930
Particles >21μm         ASTM D7647         >40         1680         ↑ 71         ↑ 111           Particles >38μm         ASTM D7647         >10         ♠ 46         8         ♠ 19           Particles >71μm         ASTM D7647         >3         2         0         ♠ 10           Oil Cleanliness         ISO 4406 (c)         >19/17/14         ♠ 24/23/20         ♠ 22/20/16         ♠ 21/18/15           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         195         192         160           Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1	Particles >6µm		ASTM D7647	>1300	<b>56467</b>	<u></u> 6824	▲ 2389
Particles >38μm         ASTM D7647 >10         46         8         19           Particles >71μm         ASTM D7647 >3         2         0         10           Oil Cleanliness         ISO 4406 (c) >19/17/14         24/23/20         22/20/16         21/18/15           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         195         192         160           Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1         1         <1	Particles >14μm		ASTM D7647	>160	<b>6125</b>	<b>△</b> 553	<b>241</b>
Particles >71μm         ASTM D7647         >3         2         0         ▲ 10           Oil Cleanliness         ISO 4406 (c)         >19/17/14         24/23/20         ▲ 22/20/16         ▲ 21/18/15           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         195         192         160           Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1	Particles >21µm		ASTM D7647	>40	<b>1680</b>	<b>▲</b> 71	<u> 111</u>
Oil Cleanliness         ISO 4406 (c)         >19/17/14         24/23/20         ▲ 22/20/16         ▲ 21/18/15           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         195         192         160           Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1         1         <1	Particles >38µm		ASTM D7647	>10	<b>46</b>	8	<b>1</b> 9
CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185(m)         195         192         160           Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1	Particles >71µm		ASTM D7647	>3	2	0	<u> </u>
Sodium         ppm         ASTM D5185(m)         195         192         160           Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1         1         <1	Oil Cleanliness		ISO 4406 (c)	>19/17/14	<b>24/23/20</b>	<u>22/20/16</u>	<u>^</u> 21/18/15
Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1         1         <1	CARRIER SALTS	S	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185(m)         20         11         14           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D5185(m)         <1         1         <1	Sodium	ppm	ASTM D5185(m)		195	192	160
Calcium         ppm         ASTM D5185(m)         <1         1         <1	Potassium	ppm			20	11	14
	SCALE POTENT	ĪAL	method	limit/base	current	history1	history2
••	Calcium	ppm	ASTM D5185(m)		<1	1	<1
	Magnesium	ppm	ASTM D5185(m)		<1	<1	0



### **COOLANT REPORT**

