

Client Name
Preventive Maintenance Procedure

Procedure Title: Batch Process Rotary Pumps Annual Preventive Maintenance	Revision Date 2/14/08	Page 1 of 5	Client Logo
Prepared By: APS		Approved By:	

PPE Required as Marked			
<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Goggles	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Work Gloves
<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Respirator	<input type="checkbox"/> Rubber Apron	<input type="checkbox"/> Rubber Gloves
<input type="checkbox"/> Heat-Resistant Gloves	<input type="checkbox"/> Safety Harness	<input type="checkbox"/> Rubber Mat	<input type="checkbox"/>

Purpose:

To perform annual preventive maintenance on the Batch Kitchen rotary pumps. This preventive maintenance procedure supersedes the semi-annual oil change procedure.

Initial Conditions:

Pump shutdown and not required for production

Reference Documents:

Manufacturer's Operation and Maintenance Manual

Job Hazards:

Refer to attached Job Hazard Analysis for specific details.

Required Equipment & Materials:

Standard preventive maintenance tool kit

Work Order/Machine/Name/Machine Identification

WO: _____ Machine Name: _____ ID: _____

Time & Date/Estimated Labor Hours/Actual Labor Hours

Time/Date: _____ Estimated Hours: _____ Actual Hours: _____

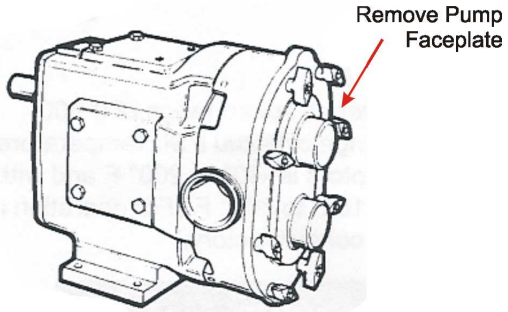
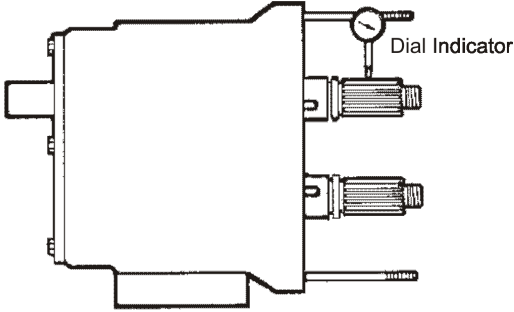
Craftsman Name/Clock Number

Name: _____ Clock #: _____

General Information:

1. Make sure you are working on the correct machine (i.e. 1, not 2, for instance).
2. Record all measurements on attached data sheet.
3. When the PM is finished, dispose of all rags, worn or unused parts, trash, etc.
4. Make sure that the work area is clean before you leave the job site.

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Steps	Key Points	√
Check Shaft Radial Play		
1. Place the pump's local disconnect switch in the OFF position.		
2. Remove the pump's face plate.		
3. Using a dial indicator, measure top shaft bearing radial play and record play on attached data sheet. Repeat step for lower shaft bearing. The bearings will need to be replaced if the deflection is equal to or greater than <i>rotor to body</i> diametrical clearance.		

MODEL	APPLICATION	A BACK FACE	B ROTOR TO BODY	C FRONT FACE	MODEL	APPLICATION	A BACK FACE	B ROTOR TO BODY	C FRONT FACE
6	STANDARD	.002	.003	.005	62	STANDARD	.003	.005	.010
12	STANDARD	.002	.003	.008	130 134	STANDARD	.003	.005	.006
14 15	STANDARD	.002	.003	.005	132	STANDARD	.003	.005	.011
18	STANDARD	.002	.003	.005	133A	STANDARD	.003	.005	.007
22	STANDARD	.002	.003	.008	220 224	STANDARD	.005	.006	.007
30 34	STANDARD	.002	.003	.005	222	STANDARD	.005	.006	.013
32	STANDARD	.002	.003	.008	223A	STANDARD	.005	.005	.006
33A	STANDARD	.002	.003	.007	320 324	STANDARD	.006	.007	.010
60 64	STANDARD	.003	.005	.007	323A	STANDARD	.006	.007	.010

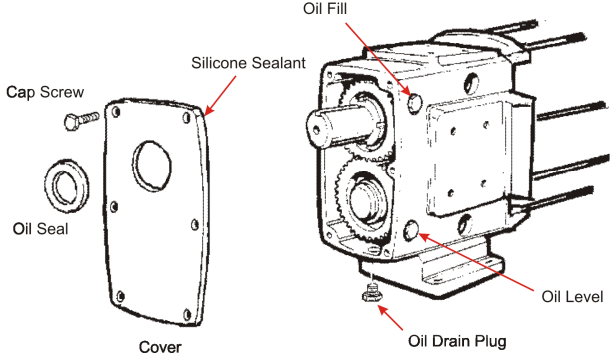
*For non-standard rotor clearance, contact Application Engineering at Wauksha Cherry-Burrell

Table 1 Clearances

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Steps	Key Points	√
Inspect Pump Impellers		
<p>1. Remove pump impellers.</p> <ul style="list-style-type: none"> Remove impeller retaining nuts. Use the special wrench supplied by pump vendor and hit it sharply with a soft hammer to loosen nuts. Orient impellers perpendicular to each other and remove impeller with both wings exposed first. <div data-bbox="233 846 763 1020" style="border: 2px solid black; background-color: yellow; padding: 5px; text-align: center;"> <p>NOTE</p> <p>Handle lobes with care to avoid nicks and scratches.</p> </div> <ul style="list-style-type: none"> If it is stuck tight, use a gear puller or hardwood lever behind impeller hub to force it off spline. Remove pump impeller by pulling it straight off studs. Use a soft hammer to assist if body is stuck tight. Inspect body housing for damage. Report to supervision if severe damage is noted. 	 <p>Loosen and Remove Lobe Retaining Nuts.</p>	
<p>2. Inspect pump impellers for worn splines, bearing shoulder wear, and stress cracks.</p>	<p>Use dye check method to detect any fatigue type cracks that may develop into serious trouble.</p>	

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Steps	Key Points	√																								
Inspect Gears																										
1. Remove oil drain plug and drain oil.																										
2. Remove cap screws from gear case cover.																										
3. Pull cover off shaft extension. If cover sticks, use soft hammer to loosen it.																										
4. Scrape silicone sealant from gear case cover.																										
5. Remove oil seal from cover with an arbor press and discard.																										
6. Inspect gears for wear, backlash, and looseness.																										
7. Press new oil seal into gear cover.																										
8. Place silicone sealant on back of gear cover and mount cover assembly over shaft extension onto gear case. Secure with cap screws.																										
9. Fill gearbox with FMO 1100 AW Gear Oil. Install oil fill plug. NOTE: This step fulfils the requirement for the semi-annual oil change for the Waukesha pump.	<table border="1" data-bbox="824 1381 1409 1703"> <thead> <tr> <th colspan="3">OIL CAPACITY (GEARS)</th> </tr> <tr> <th>MODEL</th> <th>TOP OR BOTTOM SHAFT</th> <th>SIDE MOUNT</th> </tr> </thead> <tbody> <tr> <td>6,12,14, 15, 18,22</td> <td>1.3 oz. (40 ml)</td> <td>3.3 oz. (100 ml)</td> </tr> <tr> <td>30,32 33A, 34</td> <td>2 oz.(60 ml)</td> <td>4 oz. (120 ml)</td> </tr> <tr> <td>60,62, 64</td> <td>6 oz.(170 ml)</td> <td>9.5 oz.(280 ml)</td> </tr> <tr> <td>130 132,133A,134</td> <td>6 oz.(170 ml)</td> <td>9.5 oz.(280 ml)</td> </tr> <tr> <td>220 ,222 ,223 224</td> <td>11 oz. (320 ml)</td> <td>20 oz. (600 ml)</td> </tr> <tr> <td>320, 324, 323A</td> <td>17 oz.(500 ml)</td> <td>44 oz. (1300 ml)</td> </tr> </tbody> </table>	OIL CAPACITY (GEARS)			MODEL	TOP OR BOTTOM SHAFT	SIDE MOUNT	6,12,14, 15, 18,22	1.3 oz. (40 ml)	3.3 oz. (100 ml)	30,32 33A, 34	2 oz.(60 ml)	4 oz. (120 ml)	60,62, 64	6 oz.(170 ml)	9.5 oz.(280 ml)	130 132,133A,134	6 oz.(170 ml)	9.5 oz.(280 ml)	220 ,222 ,223 224	11 oz. (320 ml)	20 oz. (600 ml)	320, 324, 323A	17 oz.(500 ml)	44 oz. (1300 ml)	
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Task	Equipment Description	Equipment No.	Data Log	Pass √	Fail √
Waukesha Pump Inspection	Product Tank Pump No.1	P3701	Radial Play Top Shaft _____ Bottom Shaft _____		
			Impeller Inspection		
			Gear Inspection		
			<input type="checkbox"/> Oil Change Complete		
	Product Tank Pump No.2	P3702	Radial Play Top Shaft _____ Bottom Shaft _____		
			Impeller Inspection		
			Gear Inspection		
			<input type="checkbox"/> Oil Change Complete		