

## Preventive Maintenance Checklist

### POSITIVE DISPLACEMENT PUMPS

Implementation of a preventive maintenance plan keeps SPX FLOW products running at optimal levels and protects your product investment. Use the below checklist to schedule regular product inspections and part replacements using SPX FLOW genuine spares to extend your products lifecycle.

MAINTENANCE FREQUENCY*		DAILY	WEEKLY	MONTHLY	EVERY 3 MONTHS	POSSIBLE CAUSES	POSSIBLE SOLUTIONS	SOLVE WITH 
OIL/LUBRICATION 	Check oil level, for contaminants and for leaks (if applicable)		X			<ul style="list-style-type: none"> <li>Oil leak from gear case cover, oil seal or gear case rear oil seal</li> <li>Loose back cover, Oil plug damaged</li> </ul>	<ul style="list-style-type: none"> <li>Replace oil seals</li> <li>Check or replace oil plug</li> </ul>	
	Check for Leaks-Product		X			<ul style="list-style-type: none"> <li>Damaged seals or elastomers</li> </ul>	<ul style="list-style-type: none"> <li>Replace seals or elastomers</li> </ul>	
	Check for Leaks-Flush fluid		X			<ul style="list-style-type: none"> <li>Damaged seal, fitting or flush tube.</li> <li>Damaged flush-side seal components, damaged elastomers</li> </ul>	<ul style="list-style-type: none"> <li>Replace seal, fitting, or flush tube</li> <li>Replace flush-side seal components</li> <li>Replace elastomers</li> </ul>	
	Check for excess grease in clean-out plugs				X	<ul style="list-style-type: none"> <li>Excess grease accumulates with normal operation</li> </ul>	<ul style="list-style-type: none"> <li>Remove excess grease from clean-out plugs</li> </ul>	
	Check front grease seals				X	<ul style="list-style-type: none"> <li>Seal may be deteriorated or worn</li> <li>Shaft worn under seals, or no grease on lips to lubricate</li> </ul>	<ul style="list-style-type: none"> <li>Replace seals</li> <li>Properly lubricate with grease when installing</li> <li>Inspect shaft surface under seals</li> </ul>	
ROTORS 	Check for damaged rear oil seals				X	<ul style="list-style-type: none"> <li>Seal may be old and worn</li> <li>No grease on lips to lubricate</li> <li>Shaft worn under seals</li> <li>Not centered on shaft when installed</li> </ul>	<ul style="list-style-type: none"> <li>Replace seals</li> <li>Properly lubricate with grease when installing</li> <li>Inspect shaft surface under seals</li> </ul>	
	Check for rotor tip to rotor tip contact or uneven rotor tip to rotor tip clearance.				X	<ul style="list-style-type: none"> <li>Hard object jammed into rotors and twisted shafts</li> </ul>	<ul style="list-style-type: none"> <li>Replace shafts</li> <li>Install strainers if necessary</li> <li>Check and replace gears if necessary</li> </ul>	
	Check for rotor tip to rotor hub contact				X	<ul style="list-style-type: none"> <li>Loose rotor nut(s)</li> <li>Belleville-style washer(s) on backwards</li> <li>Backface clearances not even</li> <li>Bearings need replacing</li> </ul>	<ul style="list-style-type: none"> <li>Torque rotor nut(s) properly</li> <li>Install belleville-style washers correctly</li> <li>Verify backface clearances are even</li> <li>Check and replace bearings</li> </ul>	
	Check for worn/damaged rotor or shaft keyway(s) or key(s)				X	<ul style="list-style-type: none"> <li>Loose rotor nut(s)</li> <li>Belleville-style washer(s) on backwards</li> </ul>	<ul style="list-style-type: none"> <li>Replace rotors, shafts and keys</li> <li>Torque rotor nut(s)</li> <li>Install belleville-style washer(s) correctly</li> </ul>	
	Check for worn rotor hub end or shaft shoulder				X	<ul style="list-style-type: none"> <li>Loose rotor nut(s)</li> <li>Belleville-style washer(s) on backwards</li> <li>Rotors slammed against shoulder when installed</li> </ul>	<ul style="list-style-type: none"> <li>Torque rotor nut(s)</li> <li>Install belleville-style washer(s) correctly</li> <li>Replace rotors and shafts or shim front bearing(s) to maintain proper backface clearances</li> </ul>	
GEARS/BEARINGS 	Check for sharp edged shaft shoulder				X	<ul style="list-style-type: none"> <li>Loose rotor nut(s)</li> <li>Belleville-style washer(s) on backwards</li> <li>Rotors slammed against shoulder when installed</li> <li>Backface clearances not even</li> </ul>	<ul style="list-style-type: none"> <li>Torque rotor nut(s)</li> <li>Install belleville-style washer(s) correctly</li> <li>Remove sharp edge with file to prevent cutting shaft o-ring</li> <li>Verify backface clearances are even</li> </ul>	
	Inspect for Gear backlash				X	<ul style="list-style-type: none"> <li>Lack of lubrication</li> <li>Excessive hydraulic loads</li> <li>Loose gear locknuts</li> </ul>	<ul style="list-style-type: none"> <li>Check lubrication level and frequency</li> <li>Reduce hydraulic loads</li> <li>Torque locknuts to specified torque values</li> <li>Check and replace gears if necessary</li> </ul>	
	Inspect gears for worn or broken teeth				X	<ul style="list-style-type: none"> <li>Lack of lubrication</li> <li>Excessive hydraulic loads</li> <li>Loose gear locknuts</li> </ul>	<ul style="list-style-type: none"> <li>Check lubrication level and frequency</li> <li>Reduce hydraulic loads</li> <li>Torque locknuts to specified torque values</li> <li>Check and replace gears if necessary</li> </ul>	
	Inspect for loose gears				X	<ul style="list-style-type: none"> <li>Gear locknuts not torqued properly</li> <li>Locking assembly not torqued properly</li> <li>Worn gear key</li> </ul>	<ul style="list-style-type: none"> <li>Torque gear nut to specified torque value</li> <li>Check and replace gears if necessary</li> <li>Inspect gear key, shaft keyway and shaft, replace if necessary</li> </ul>	
	Inspect bearings, axially or radially movement				X	<ul style="list-style-type: none"> <li>Lack of lubrication</li> <li>Excessive hydraulic loads</li> <li>Product or water contamination</li> </ul>	<ul style="list-style-type: none"> <li>Check lubrication level and frequency</li> <li>Reduce hydraulic loads</li> <li>Ensure no excess grease build-up</li> <li>Replace bearings if necessary</li> </ul>	

\*Recommended maintenance frequency depends on application environment and pump run times.

For more detailed repair information, download a copy of the required pump manual from the SPX FLOW website. Contact your local distributor for repair service and genuine SPX FLOW parts orders

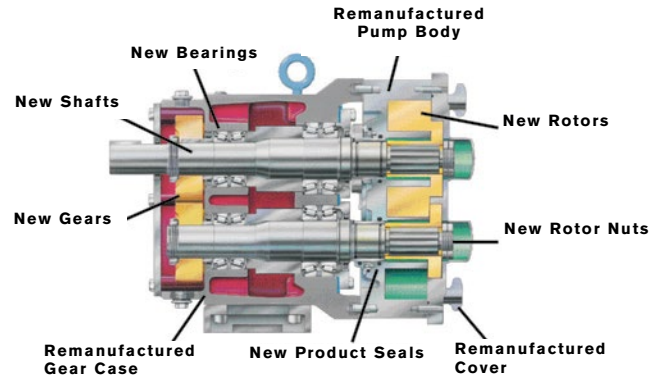
## UNIVERSAL 1 AND 2 - PUMP REMANUFACTURING

When your pump can no longer be repaired, who better to trust for the reconditioning of your pump than the company who originally manufactured it? Plus all remanufactured pumps carry a full factory warranty. This program includes our special "NO DOWNTIME" feature, supplying you with a replacement pump before returning your old pump.

**Pump Remanufacture Program** - The Remanufacture Program will restore your Universal series pumps\* to new pump status as many times as possible. Regardless of condition, pumps will be remanufactured TWICE GUARANTEED.

**Factory Warranty** - You get a NEW Full-Year Warranty along with the same quality, performance-tested, rugged reliability you've come to expect from Waukesha Cherry-Burrell.

**Pump Exchange** - Our convenient Pump Exchange Policy allows you to receive your newly remanufactured pump prior to returning your worn unit resulting in NO DOWNTIME.



\*All savings based upon market price of new pump within the same model family only.

\*\*Excluded are Ductile Iron Pumps, Universal Lobe Pumps and pumps that have been modified by unauthorized repair or reconditioning facilities.

## UNIVERSAL 3 - PUMPS FOR LIFE™

Purchasing a new Universal 3 positive displacement pump comes with a beneficial life cycle opportunity called the Pumps for Life™ program. This features a reduced price for customers purchasing new replacement U3 pumps provided they have used genuine OEM parts throughout the pumps' life.

**1** Purchase new Universal 3 (U3) pump



**2** Maintain pump with genuine SPX FLOW parts



**3** Trade in OLD U3 pump for a NEW U3 pump at a remanufactured price



## ROTOR PROGRAM - TRADE IN USED 88 ALLOY STANDARD AND UTS ROTORS FOR MONEY

When you accumulate a minimum of 100 lbs. of used Alloy 88 rotors (including Armaloy coated and UTS twin screw rotors), SPX FLOW will issue you an RMA # to return the cleaned, used rotors to the Delavan Facility. Upon receipt of the cleaned, worn rotors, SPX FLOW will confirm the weight and issue you a credit based on the current price per pound\*\*.

(Applies to U.S., Canada and Mexico)

U.S. freight will be absorbed by SPX FLOW providing we choose the carrier and the total weight meets or exceeds 100 lbs.

\*Diamond coated rotors are not applicable for this program. \*\*Contact customer service for current price per pound. Credit per pound rate subject to change without notice



## LOCATE YOUR LOCAL DISTRIBUTOR FOR CERTIFIED SERVICE AND GENUINE SPARE PARTS.



SCAN FOR LOCATOR



NAVIGATE TO LOCATOR

1. Go to [www.spxflow.com](http://www.spxflow.com)
2. Select Brands on Navigation
3. Locate Where to Buy Button

WHERE TO BUY

ADDITIONAL SUPPORT



For service videos and product animations visit the SPX FLOW Channel at [www.youtube.com/c/SPXFLOWInc](http://www.youtube.com/c/SPXFLOWInc)

Based in Charlotte, North Carolina, SPX FLOW, Inc. (NYSE: FLOW) is a multi-industry manufacturing leader. For more information, please visit [www.spxflow.com](http://www.spxflow.com)

# SPXFLOW

SPX FLOW 611 Sugar Creek Road, Delavan, WI 53115

P: (262) 728-1900 or (800) 252-5200

E: [wcb@spxflow.com](mailto:wcb@spxflow.com) • [www.spxflow.com](http://www.spxflow.com)

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