YORK BY JOHNSON CONTROLS	SB0132	1211
	File In: N/A	
SERVICE BULLETIN	Affected Equipment: YCAL & YLAA AIR-COOLED LIQUID SCROLL CHILLERS	

Subject: Chilled Liquid Factory Installed Pump Packages - Starting problems during commissioning or after extended periods of down time.

Issue Date: 11/11/2011 **Withdrawal Date: None** **Data Control Level:**
Materials Needed: None
Tools Required: Box or open end wrenches as needed.
Est. Time Required: One (1) hour.

Warranty: No

PROBLEM

After long periods of chiller down time with water sitting idle in the chilled liquid system or after sitting on a jobsite for long periods prior to commissioning, water pumps may occasionally develop internal corrosion that prevents a pump from starting. Figures 1 and 2 show examples of typical volute housing corrosion on a pump that has been sitting idle in a water filled chilled liquid system for a long period of time:

FIGURE 1 - CORRODED WATER PUMP VOLUTES

Work on this equipment should only be done by properly trained personnel who are qualified to work on this type of equipment. Failure to comply with this requirement could expose the worker, the equipment and the building and its inhabitants to the risk of injury or property damage.

The instructions on this service bulletin are written assuming the individual who will perform this work is a fully trained HVAC & R journeyman or equivalent, certified in refrigerant handling and recovery techniques, and knowledgeable with regard to electrical lock out/tag out procedures. The individual performing this work should be aware of and comply with all Johnson Controls, national, state and local safety and environmental regulations while carrying out this work. Before attempting to work on any equipment, the individual should be thoroughly familiar with the equipment by reading and understanding the associated service literature applicable to the equipment. If you do not have this literature, you may obtain it by contacting a Johnson Controls Service Office.

Should there be any question concerning any aspect of the tasks outlined in this bulletin, please consult a Johnson Controls Service Office prior to attempting the work. Please be aware that this information may be time sensitive and that Johnson Controls reserves the right to revise this information at any time. Be certain you are working with the latest information.

FIGURE 2 - CORRODED VOLUTE CLOSE-UP

Clearances between the pump impeller and the volute are small and critical to the operation of the pump. The build-up of corrosion, which typically does not affect pump operation, may sometimes cause a bridge between the impeller and the volute, resulting in a symptom that resembles a locked pump condition.

SOLUTION

First determine if the pump starts. In a dual pump system, both pumps run individually and will each need to be checked. If the pump(s) operate(s), there is no cause for concern. Follow the steps below to free a corrosion locked pump:

1. First, assure the associated pump contactor is pulled in and three phase power is applied to the pump motor. Resolve any wiring or programming problems that exist that prevent the associated pump contactor from pulling in.
2. If the pump contactor is pulling in and power is applied to the pump motor, but the pump is not operating, remove power from the chiller. Lock-out/tag-out the chiller.
3. Loosen (i.e. No more than 2 turns) the bolts attaching the motor adapter plate to the volute housing. Note the bolt torque. Loosening the bolts should help to unload the forces creating the impeller freeze. To avoid leaking water from the system, do not remove the bolts. The motor is to remain fastened to the volute housing. See the two photos in Figure #3:

FIGURE 3 - LOOSENING THE BOLTS ATTACHING THE IMPELLER ADAPTER TO THE VOLUTE HOUSING

4. “Rock” the motor to help free the impeller from the volute housing.
5. Re-apply power to the chiller.
6. Using caution and staying clear of the pump, energize the motor momentarily to “bump” the rotation of the impeller. This can be accomplished by momentarily applying 115VAC to the pump contactor coil or utilizing the Service Mode from the chiller control panel. Simply “bump” the motor, DO NOT continuously run the pump. Since the bolts are loose, some water may seep from the gasket area between the volute housing and the motor adapter plate. Repeat this step a few times to attempt to free the impeller from the volute.
7. If the impeller breaks free and the pump becomes unlocked, retighten the bolts to the original torque requirements and purge air from the pump per standard service procedures. Ensure the pump is operational after reassembly and that it turns in the correct direction.
8. If the locked condition persists, lock-out/tag-out the equipment, drain the system and remove the pump from the volute to determine if the motor turns or there are obvious signs of other problems. Repair or replace the pump or motor as required.

Utilize the procedure above as necessary to free a corroded pump that will not start.