



BY JOHNSON CONTROLS

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TECHNICAL SERVICE

DATE: April 12, 2010 **YS-014-10**

TO: All York Branches and Distributors
All York Service Managers
All Field Service Supervisors

SUBJECT: Defrost Issues and Coil Matchups

UNITS: YZE, YZH

Reports of poor defrost performance and noisy compressor on the YZE and YZH heat pumps have initiated several changes to these product lines. Engineering has verified that operation under extremely humid environments slightly above freezing, units can exhibit noisy compressor operation, incomplete, slow, or “lazy” reversing valve shift (defrost mode only), and incomplete or inadequate defrost in certain cases.

Causes for these symptoms are as follows:

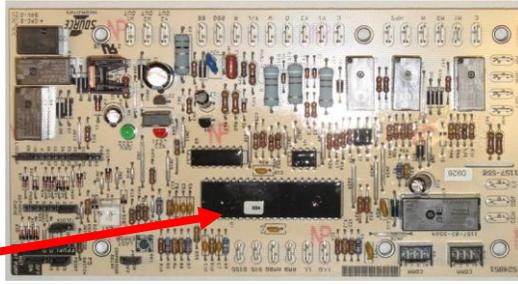
- **Compressor Noise** – this occurs from the operation of the Ultratech compressor during the shift operation modes of defrost, causing “chattering” of the upper scroll section of the compressor due to insufficient loading. This results in noisy compressor operation and low pumping rate. *Reliability of the compressor, however, is not affected in this mode of operation.*
- **Reversing Valve Shift** – slow shift of the reversing valve is the result of low pressure differential existing in low ambient/frosted conditions. This problem is exacerbated by the low pumping rate of the Ultratech scroll compressor in defrost conditions and, to some extent, the performance of the reversing valve.
- **Inadequate Defrost** – causes contributing to incomplete defrost are low pumping rate of the Ultratech scroll compressor in defrost, excessive frost buildup from the environmental conditions, poor reversing valve shift, and to a lesser extent, unequal distribution of hot gas in defrost mode.

Resolutions:

For field installed systems with poor reversing valve shift or noisy compressor during defrost cycle, the system control board should be replaced with one that contains modified software to introduce a shutdown sequence of the compressor during defrost transitions. The new York Guard VI control has a selectable 30 second compressor delay on the initiation and termination of the defrost cycle. This delay option is set in the off position on factory installed and Source One replacement boards, place this jumper in the “ON” position. A labor allowance of 90 minutes will be provided for replacement of the defrost board. **In most instances this change alone will resolve these field issues**, as it will create startup conditions for the compressor which avoids the noisy chatter, improves the pumping rate of the compressor which increases the speed of reversing valve shift, and decreases the shifting losses and accelerates and improves the defrost due to the better pumping rate of the compressor.

A non-communicating version of this new York Guard VI control (part # 524851) was installed in YZE and YZH units beginning in September 2009. The number 094 is located on the processor in the middle of this board. Fully communicating YZE and YZH units were released in November 2009 (the letters “CA” at the end of the model number designate Communication and 1st Generation). The York Guard VI board in these units (part # 500644) has the number 104 or 109 on the processor.

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For units manufactured before September 2009, a labor allowance of 90 minutes will be provided for replacement of the previous version of York Guard VI control (080) to remedy incomplete defrost issues. The Source One part number for the new board is S1-33102957000.

The York Guard VI control board has been further enhanced with the addition of two new defrost profiles (5 & 6). Setting five utilizes the defrost parameters of setting four but provides for an eleven minute maximum defrost time instead of eight minutes. Setting six provides for a thirteen minute maximum defrost time, as well as a more aggressive defrost initiation slope with lower defrost inhibit timing to provide more sensitivity to frost buildup allowing more frequent defrost cycles when necessary. These curves may be used in environments in which severe icing or frosting patterns may occur. **Defrost Setting 6 should only be used in extreme cases of incomplete defrost.**

A change has been made to the reversing valve which has improved the defrost operation. The new Saginomiya reversing valve (Source One part number S1-02533307002) shifts quicker, allowing the defrost operation to be fully implemented sooner. The models which contain this new reversing valve are YZE02411(C), YZE03611(C), YZE04811(C), YZH02411(C), YZH03611(C) and YZH04811(C). A labor allowance of 4 hours will be provided for replacement of the reversing valve. Production with the new valves began in July 2009 on the YZH02411, YZH03611 and YZH04811 units. Production on the YZH06011 valve changed in January 2010.

Prior to implementing the optional compressor delay, we changed the indoor TXV match on the YZH02411 and YZH03611 models to the 1TVM4G. This change did provide some improvement in the differential pressure during defrost operation, but continued testing has shown that use of the compressor delay alone will solve the issues. .

A labor allowance of 4 hours will be provided for replacement of the reversing valve and defrost board. A labor allowance of 1.5 hours will be provided for replacement of the defrost board.

Warranty claims are to be processed referencing this YS letter.

In addition, a number of YZH02411(C) system matches have been removed from AHRI due to concerns in the heating mode when in use with the hot heat pump option. The Tech Guide and Tabular Data Sheet have been updated to reflect these changes. For issues regarding an existing YZH02411 or YZH03611 system match, contact Technical Services at 1-877-874-7378 for concession consideration.

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