



Ducted Systems Technical Services Service Letter

Letter: **YS-002-2020**

Date: April 27, 2020

To: Service Managers & Technicians

Subject: **Nuisance low-pressure switch fault – Low ambient conditions - 3.5 ton (2nd generation) models**

Product: YHE42B22S, TH4B4222S, RHP14L42B22S, RHP14L42B23S,
THE42B32S, THE42B42S

Effective: **April 27, 2020**

Expires: **April 27, 2022**

Summary: **This letter provides explanation and resolution for 3.5-ton heat pump nuisance low-pressure switch faults during low ambient operation.**

We have received complaints of nuisance low-pressure switch faults/compressor lockouts on the above-listed models. We have investigated this issue and were able to replicate the faults as described. When the above mentioned 3.5-ton models were converted from the Bristol reciprocating compressor (generation 1 model) to a Copeland scroll compressor (generation 2 model), the outdoor metering device was also changed from a TXV to a fixed orifice device as shown to the right.



The field issue described in this letter does not apply to generation 1 models.

Many of the field complaints were able to be resolved by properly charging the heat pump. With the fixed metering device, system charge is very critical. Typically, the customer (contractor) would notice frost on the outdoor metering device and assume that it was restricted. The 14 SEER heat pump model installation manual contains heating charging charts for each tonnage and indoor coil combination. If charge is not adjusted using this method, in many instances the 3.5-ton heat pump model was not properly charged.

Our investigation revealed that even with a properly charged system when this model is operating in conditions lower than 15 degrees Fahrenheit, nuisance low-pressure switch trips will occur. The 15 degree Fahrenheit temperature data was verified through extensive engineering cold soak testing. The 5438494 demand defrost control utilized in this model unit ignores the low-pressure switch input during the following conditions:

- During defrost operation.
- During the first 120 seconds of compressor operation.
- During the first 120 seconds of compressor operation following a defrost cycle.
- While the test pin is shorted with a “Y” input.
- When the outdoor ambient temperature is lower than 5F

For installations where the above-listed model heat pumps are installed and operated in heating mode in conditions where the outdoor ambient temperature is lower than 15 degrees Fahrenheit, a repair must be made. There are two methods allowed for field repair.

If the heat pump is located in a climate that routinely experiences outdoor ambient conditions lower than 15 degrees Fahrenheit, the existing piston metering device needs to be replaced with a TXV. This repair is listed as the preferred method.

If the heat pump is located in a climate that rarely experiences outdoor ambient conditions lower than 15 degrees Fahrenheit, a temperature switch can be used to offer loss of charge protection. This repair is listed as the alternate method.

If the heat pump is located in a climate that never experiences outdoor ambient conditions lower than 15 degrees Fahrenheit, no repair is needed however no field repair claim will be denied based on unit geographic location.

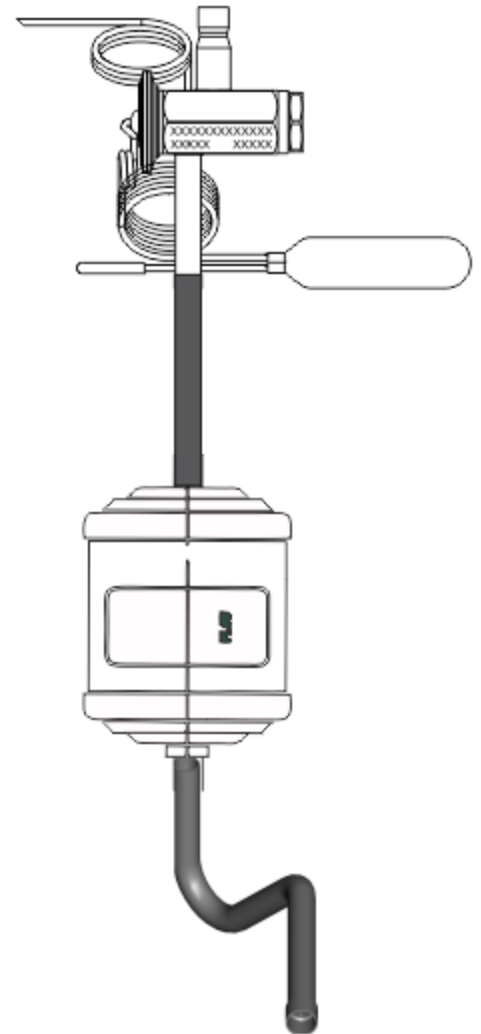
Preferred Method:

The field repair for this model unit is fairly quick and simple to perform. However, the majority of time spent on the repair is all the related work that must be performed such as hauling tools, refrigerant recovery, evacuation, and refrigerant re-charge.

With the control panel swung open and the lower block off panel removed, there is adequate access to the existing metering device, filter drier, etc. Source One repair kit S1-32547301000 contains the following items:

- 1 - 5147597 - VALVE TXV
- 1 - 5256516 - DRIER - STEEL FILTER
- 1 - 1179260 - COPPER TUBE - LIQUID
- 1 - 5118412 - COPPER TUBE - LIQ TXV
- 1 - 158194 - CLAMP
- 1 - 158198 - SCREW CAP HEX 1/4
- 1 - 14976 - INSULATION - TXV BULB FOAM
- 2 - 7315 - CABLE TIES
- 1 - 13028 - PAD
- 1 - 348120 - SCREW
- 1 - 5917066 - INSTALL MANUAL - 14 SEER TXV RE-WORK KIT

Using a tubing cutter, the existing 3/8 distributor line can be cut directly above the piston metering device. The existing 3/8 copper tube connecting the liquid line base valve to the filter drier can then be un-sweat from the base valve. The entire assembly can then be removed from the unit. Using the components in the kit, the assembly shown to the right can be put together all at one time inside the unit and then perform the five 3/8 braze joints. The only other braze joint is the 1/8 TXV equalizing line into the suction tube connecting the reversing valve to the outdoor coil. The suction tube does not have to be replaced, therefore there is no need to worry about potential damage to the reversing valve. Specific step by step repair instructions have been included in the Source One kit.



Units operating in warmer climates will not need any repair performed if properly charged.

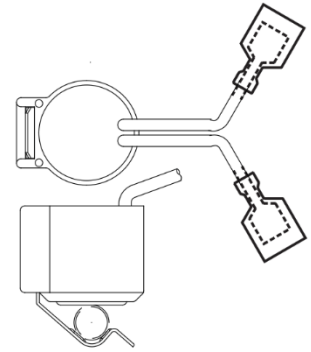
Units operating in fossil-fuel back up applications will not need any repair performed if LTCO (low temperature cut out) is set above 15 degrees Fahrenheit.

Units operating in less than 15 degree Fahrenheit outdoor ambient conditions need to be repaired.

This letter is to be used based on conditions listed above in **bold**. For repair using the preferred method, this letter will allow credit for Source One kit S1-32547301000, 10 lbs. R-410A refrigerant and 4 hours labor to perform metering device replacement. File a warranty claim using the service letter number. The warranty claim must include the invoice from the servicing dealer.

Alternate Method:

Field repair for this model unit using the alternative method is very quick and simple to perform. This repair method requires minimal hand tools, no refrigerant circuit work, and could even be done during routine outdoor section maintenance. The alternate method of repair should not be used if the heat pump routinely is operated in outdoor ambient conditions lower than 15 degrees Fahrenheit. The low-pressure switch will be electrically disconnected from the system and replaced with the loss of charge switch shown to the right. The loss of charge switch is the same part we use in our 16 SEER residential package unit models for loss of charge protection. The loss of charge switch clips onto the compressor discharge line. To use the loss of charge switch, the contractor will also need two TYCO 2-520183-2 (or equivalent) quick disconnects which are to be field supplied. This type of connector is in most cases typical HVAC service truck stock. This connector



This letter is to be used based on conditions listed above in **bold**. For repair using the alternate method, this letter will allow credit for Source One loss of charge switch S1-02436274000, and one hour of labor to perform loss of charge switch installation. File a warranty claim using the service letter number. The warranty claim must include the invoice from the servicing dealer.

If you have any questions on this feel free to call FD Northeast Technical Services at 1-855-251-8267 and speak with a technical support representative or email us at York-TechSupport-NE@jci.com