Johnson Controls

Ducted Systems
Technical Services
Service Letter

Letter: **YS-002-2018**

Date: March 29, 2018

To: All Ducted Systems Branch Service, Sales, and Training Managers
All Ducted Systems Distribution Service, Sales, and Training Managers

Subject: YHE36, TH4B36, RHP14L36 with AE42C/RFCX42C Match-Up Refrigerant Charging

Product: YHE36, TH4B36 or RHP14L36 Heat Pump & AE42C/RFCX42C Air Handler

Summary: This letter is to advise of a refrigerant charge adjustment that must be made when installing one of the 14 SEER heat pumps listed above with an AE42C or RFCX42C air handler in a downflow or horizontal right application.

We have received reports of downflow or horizontal right applications of the above mentioned equipment match-up not operating properly in the heating mode. Specifically, the systems were reported as cycling on the high pressure switch. Most applications were placed back into service once some of the refrigerant charge was removed from the system.

The investigation into the matter confirmed that the initial unit charge of 12 lbs. 4 oz. (plus or minus refrigerant line length adjustment) worked correctly as designed in upflow or horizontal left applications. However, we had to remove approximately 1 lb. 6 oz. of refrigerant for the system to operate in the heating mode in downflow or horizontal right applications without nuisance high pressure switch faults.

The Residential Design Engineering team tested downflow and horizontal right applications with the reduced refrigerant charge to determine the effect it would have on the systems operation and performance. The rated cooling capacity of this system operating at rated CFM is 34,200 Btu total capacity and a 12.5 EER. The rated heating capacity of this system operating at rated CFM and 47° F is 33,400 Btu's with a COP of 3.68.

Reducing the refrigerant charge as mentioned above resulted in cooling capacity of 32,786 Btu total capacity and an 11.77 EER. The heating capacity with the reduced charge ended up at 33,747 Btu's with a COP of 3.32. These test were performed in downflow and horizontal right configurations.

We have been operating these units in our labs as well as several sites around the country with the same reduced refrigerant charge and no additional operational problems noted.

Therefore, if installing one of these systems in an upflow or horizontal left application, the system should be charged with the appropriate charge adjustment for the refrigerant line length. If installing one of these systems in a downflow or horizontal right application, you will need to remove 1 lb. 6 oz. of refrigerant from the unit base charge. If charging in cooling mode we suggest you target a 3 to 6 degree subcooling with the reduced refrigerant charge. Keep in mind that proper indoor airflow must be confirmed prior to system charging.

Other indoor system matches with this outdoor unit that contain the 48C indoor coil are the AP37C, AE48C, AVC42C, AVC48C, RFCX37C, RFCX42C, RFCX48C and the CM48C loose coil. While we have not received any reports of this issue being experienced with any indoor match other than the AE42C model, the refrigerant charge may need to be adjusted as mentioned above when matched with any of these units.

We realize that field applications having a system that requires a different refrigerant charge for different application configurations is not desired. The Residential Design Engineering team is working on a redesign of the outdoor unit that will solve this complication. More information will be forthcoming about that redesign once it is ready to be released.

For units already installed in the field and experienced high pressure trips during heating mode operation, this YS letter will provide a 1 hour labor allowance to adjust the refrigerant charge per the instructions noted above.

Please direct any questions you have regarding this issue to either of the undersigned or contact the Residential Technical Service department at 1-877-874-7378, Thank you for your continued support and business.

Effective Date:	This service letter is effective as of April 2, 2018
Expiration Date:	This service letter will expire on April 2, 2019
Warranty Claims:	Final warranty claims referring to this service letter must be submitted no later than 90 days after the expiration date noted above.

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