

HVAC Assessment Sample



Homeowner, Sample

413 Valley Ridge,

| | |
|-----------------------|-------------------------------------|
| Date of Inspection | February 11, 2017 |
| Builder | Sample Report |
| Customer Move-In Date | April 2016 |
| Date Problem Started | May-June 2016 |
| Reason for Inspection | Possible mold/mildew issues in home |

Inspection By:

AIR RESCUE Heating and Cooling

Sample Report

Overview

I was requested to assess this single story home with a four-ton heat pump installed. The home was new in April 2016 and the homeowner stated issues began shortly after moving in. The homeowner did not voice any concerns about system operation. When questioned, the customer felt that the unit performance was okay. The homeowner's biggest concern was the recurring presence of mold/mildew on some clothing items in the master closets and child closet. In addition, there have been a couple of occurrences of mold/mildew on some pieces of furniture (see photos below of mold/mildew). I did not notice any musty smells in the home while I was there. The pictures below were given to me by the homeowner. I did not witness any of the conditions myself.



Equipment

| | Model # | Serial # |
|-----------------|------------------|------------|
| Condenser | 4SHP14LE148P-7 | 1615J10094 |
| Air Handler | BCE3M48E00NA4X-1 | 6015G02944 |
| Evaporator Coil | BCE3M48E00NA4X-1 | 6015G02944 |

Operating Conditions

| | |
|------------------------------|----|
| Outdoor Dry Bulb Temperature | 81 |
| Indoor Dry Bulb Temperature | 78 |
| Indoor Wet Bulb Temperature | 64 |
| Indoor Relative Humidity | 44 |
| Outdoor Relative Humidity | 47 |

Air Handler

The air handler installation appeared to meet reasonable standards. It was level right-to-left and front-to-back. It is recommended that the air handler be installed with about $\frac{1}{8}$ inch tilt towards front right to assist with condensation draining. The air handler did show signs of being wet inside (Fig. 1-2) but had no signs of mold. The air handler's internal insulation was in good condition.

Fig. 1



Fig. 2



Ducts & Plenums

| | |
|------------------------|-----|
| Supply Static Pressure | N/A |
| Return Static Pressure | N/A |
| Total Static Pressure | N/A |
| CFM | N/A |

I. Supply

The supply plenum was made of duct board and did not have starting collars sealed internally. There was no gross evidence of mold/mildew in the plenum. The ducts were partially sealed with mastic on the outside. I did not see any evidence of mold/mildew on any of the registers.



II. Return

The return plenum was also made of duct board with unsealed, internal starting collars. The return had a one-inch filter frame and there was a clean filter in place.

Evaporator Coil

The evaporator coil was clean and had both a primary and secondary drain attached. The drain pan did show residual evidence that it had possibly been holding water over a long period of evaporation. There may have been some issues with drainage at some point. The emergency pan also showed evidence of water across the front at some point.



Drains

There was both a primary and secondary drain attached with adequate slope. The primary had a P-trap but no cleanout and the secondary had no P-trap in place. As a precaution, I blew the primary out with nitrogen. I believe the primary drain is terminated to the washing machine drain and not a bathroom sink.



Condenser

The installation appeared to meet reasonable standards. It was level with a good concrete pad and theft cage in place. The unit appeared to be low on charge upon initial assessment. Armstrong recommended subcool for current conditions is 6-7 degrees; the unit initially was at 0.6 degrees. After adding approximately 2.5 lbs of 410a, the unit performance improved. Both the service valve and service port caps were loose on the unit.

| Cooling Pressures Initial | | After Charge | |
|---------------------------|-----|--------------|-----|
| SLP | 112 | SLP | 117 |
| SLT | 72 | SLT | 65 |
| VSAT | 37 | VSAT | 39 |
| LLP | 278 | LLP | 299 |
| LLT | 90 | LLT | 88 |
| LSAT | 91 | LSAT | 95 |
| SH | 35 | SH | 27 |
| SC | .6 | SC | 6.8 |


Delta T

| | Before Charge | After Charge |
|------------|---------------|--------------|
| Return Air | 70 | 68 |
| Supply Air | 57 | 50 |

Summary

I believe this homeowner has had some issues with mold/mildew in the home. There are many factors that have to be considered as the cause. The clothes in the master bedroom closet are in close proximity to the master bathroom shower area. Were the clothes completely dry when hung to begin with? Does the home lack sufficient fresh air? The fact that some small amount of growth has occurred on furniture seems to indicate there may be humidity problem in the home. However, we have no way to know how much or how often the HVAC has been run.

It is possible that the internal drain pan had been holding water at some point; and that during normal operation, the unit may have not been dehumidifying as it should. It is also possible that during



normal operation, the unit was actually adding humidity back into the home. With our recent varying weather temperatures, if the pan was holding water it could have been filled during AC operation and evaporated into the supply the next day during heating operation. There is no doubt that over all dehumidification performance will improve now with the system being adequately charged with refrigerant.

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