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RE: Report of Duct Leakage Test with Zip-Ez Duct Wrap & Flex Fasteners

Overview:

The purpose of this test was to determine if the Zip-Ez insulation fasteners contribute to or cause excessive duct leakage when installed. The Zip-Ez fastener consists of a conical plastic washer held in place with a coarse thread sheet metal screw.

To conduct the test, a section of 12" x 12" x 8' length of 16 gauge sheet metal duct was fabricated. One end of this duct was closed with a sheet metal end cap. All seams and end cap were sealed with duct mastic and allowed to dry for several days.

A standard duct leakage test was conducted using a Minneapolis Duct Blaster. The flow meter was an Energy Conservatory DG-700 Pressure and Flow Gauge. The gauge was within calibrated specifications.

The duct blaster was connected to the open end of the 12" x 12" duct using the square mounting plate held in place with UL-approved foil duct sealant tape and a flex duct connection to the Duct Blast fan.

Duct leakage tests were conducted at various pressures before and after installation of the Zip-Ez fasteners.

Test #1 Results - Duct Blaster fitted with flow ring #3:

Duct pressurized to 25Pa; No leakage

Duct pressurized to 50Pa; No leakage

Duct pressurized to 100Pa No leakage

A fog machine was used to fill the duct while under pressure to see if there were any visible leaks. A “wizard stick” was used as a smoke pencil on the exterior to determine if any leaks were visible. No fog was observed leaking from any joint or seam and no leaks were detected with the smoke pencil.

The Zip-Ez fasteners were then used to install small 3” square sections of duct insulation to the sheet metal. They were spaced 12” on center and 7 fasteners were installed in total.

The duct leakage test was repeated.

Test #2 Results - Duct Blaster fitted with flow ring #3:

Duct pressurized to 25Pa; No leakage

Duct pressurized to 50Pa; No leakage

Duct pressurized to 100Pa No leakage

The fog machine and smoke pencil were used to determine if any leaks would be visible while the duct was under pressure. No fog was observed leaking from any joint or seam and no leaks were detected with the smoke pencil.

Additional Zip-Ez fasteners were installed without duct insulation directly to the sheet metal. They were spaced 12” on center and 6 fasteners were installed in total.

The duct leakage test was repeated.

Test #3 Results - Duct Blaster fitted with flow ring #3:

Duct pressurized to 25Pa; No leakage

Duct pressurized to 50Pa; No leakage

Duct pressurized to 100Pa No leakage

The fog machine and smoke pencil were used again to determine if any leaks would be visible while the duct was under pressure. No fog was observed leaking from any joint or seam and no leaks were detected with the smoke pencil.

The flow restrictor ring was removed and the duct pressurized again to 100Pa and no leakage was measured. It appears that the coarse threads on the sheet metal screws are self sealing.

In conclusion, No measured or visible leakage was observed before or after installation of the Zip-Ez fasteners.

Respectfully,
Tony Lisanti
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BPI Certified – BA, Envelope & Heating.