**Checklist: Data Checking for Volume Control Dampers and Backdraft Dampers**

**Air performance**

* Pressure drop testing shall be conducted in both directions of airflow (front to back and back to front) in full open position per ANSI/AMCA 500-D, setup per at least one of the AMCA 500-D Figures 5.1, 5.2, 5.3, 5.4, or 5.5.
* Vertically mounted backdraft dampers shall be mounted per Fig 5.4 or 5.5.
* Horizontally mounted backdraft damper shall be mounted per Fig 5.7A, 5.7B, 5.7E or 5.7F.
* Test samples

***Rectangular*** (excluding back draft dampers): Test data shall be submitted for the following sizes:

305 mm X 305 mm (12” X 12”)

610 mm X 610 mm (24” X 24”)

914 mm X 914 mm (36” X 36”)

305 mm X 1220 mm (12” X 48”)

1220 mm X 305 mm (48” X 12”)

If the maximum single section size is less than that shown above, a multi-section damper shall be tested if offered by the manufacturer. If any of the sizes listed above are not offered by the manufacturer, those sizes are not required to be tested or listed. A minimum of one of the sizes listed above must be tested for a product line to be eligible for certification.

***Round*** (excluding backdraft dampers): Test data shall be submitted for the following sizes (diameters):

305 mm (12”)

610 mm (24”)

914 mm (36”)

If the smallest damper is larger than 305 mm (12”) or the largest damper is smaller than 914 mm (36”), three sizes shall be tested: largest, smallest, midway between the largest and smallest.

***Rectangular (backdraft damper only)***: A 610 mm X 610 mm (24” X 24”) damper shall be tested. If the largest size damper produced is smaller than 610 mm X 610 mm (24”X24”), the largest size shall be tested.

***Round (backdraft damper only)***: A 610 mm (24”) diameter damper shall be tested. If the largest size damper produced is smaller than 610 mm (24”), the largest cataloged size shall be tested.

* Published ratings of air performance shall be a statement of maximum static pressure drop for a specified airflow rate and at standard air density and the AMCA figure or figures tested for all required sizes.
* Except for backdraft dampers, the published performance for each shall be from the worse performing of the two airflows.
* Rating shall be published in tabular form, graphical form or both.
* Pressure drop information presented in SI units shall be rounded to the nearest pascal (e.g., 5 Pa, not 5.1) when testing results in pressure drop values of 1 Pa or greater.
* Published data may be rounded to one digit after the decimal point (e.g., 0.8 Pa, not 0.83 Pa) when testing results in pressure drop values less than 1 Pa.
* Pressure drop information presented in IP units shall be rounded to a maximum of two digits after the decimal point (e.g., 0.02 in. wg, not 0.024 in. wg) when testing results in pressure drop values of 0.01 in. wg or greater.
* Published data may be rounded to three digits after the decimal point (e.g., 0.003 in. wg, not 0.0032 in. wg) when testing results in pressure drop values less than 0.01 in. wg.
* Extrapolation below the minimum test static pressure drop shall be permitted, excluding backdraft damper. Extrapolation above the maximum test static pressure drop shall not be permitted. Extrapolation outside of the test sizes shall not be permitted. The portion of the air performance curve obtained by extrapolation shall be charted with a broken line and must be a smooth continuation of the adjacent portion of the curve.

**Air Leakage Ratings Requirements**

* Test data shall be submitted for the following sizes:

305 mm x 1220 mm (12 in. x 48 in.)

Max width x 914 mm (max width x 36 in.)

* Up to two additional sizes may be tested for catalog purposes. The width of the additional size(s) shall be of any width between 305 mm (12 in.) and the maximum width. The height of the additional size(s) shall be 914 mm (36 in.).
* If the maximum single section size is less than that shown above, a multisection damper shall be tested, if offered by the manufacturer.
* A minimum of one of the sizes listed above shall be tested for a product line to be eligible for certification.
* The following statement shall be included: “Data are based on a torque of [#] N•m/m2 (in.-lb/ft2) applied to close and seat the damper during the test.” Stated torque value, in N•m/m2 (in.-lb/ft2), shall be the **maximum** of the samples tested.
* Any number ending with a decimal greater than 0.02 shall be rounded to the next higher number, e.g., 6.12 N•m/m2 = 6.1 N•m/m2 and 6.13 N•m/ m2 = 6.2 N•m/m2 (5.12 in.-lb/ft2 = 5.1 in.-lb/ft2 and 5.13 in. lb/ft2 = 5.2 in.\*lb/ft2).
* A table showing the opening torque may be included on the same page provided it is labeled as “opening torque.”

**Air Leakage class**

* When only the two required sizes are tested, publish the maximum air leakage class from the worse performing size at each catalog pressure. The worse leakage performance shall be based on the test results in both modes (pressure in direction of flow and back pressure).
* When optional sizes are tested in addition to the two required sizes, the air leakage class shall be published as a function of the damper width.
* At each pressure to be cataloged, publish the air leakage class from the worse performing of the two dampers used to establish each damper width range.
* For Backdraft Damper, two tests shall be conducted on each sample. Each test shall be conducted over a range of pressures consisting of at least five points.
* Published data shall show the test sample size.
* Published data shall state “Air leakage is based on operation between 00C – 490C (320F – 120F)”.

**Allowable Air Leakage to Achieve Classification:**

SI Unit:

|  |  |  |  |
| --- | --- | --- | --- |
| **Maximum Allowable Leakage, L/s/m2** | | | |
| **Class** | **at 0.25 kPa [1]** | **at 1.0 kPa [1]** | **at *x* kPa [2]** |
| 1A | 15.2 | N/A | N/A |
| 1 | 20 | 41 | 2√*x* X 20 |
| 2 | 51 | 102 | 2√*x* X 51 |
| 3 | 203 | 406 | 2√*x* X 203 |

I-P Unit:

|  |  |  |  |
| --- | --- | --- | --- |
| **Maximum Allowable Leakage, cfm/ft2** | | | |
| **Class** | **at 1 in wg [1]** | **at 4 in wg [1]** | **at x in wg [2]** |
| 1A | 3 | N/A | N/A |
| 1 | 4 | 8 | √*x* X 4 |
| 2 | 10 | 20 | √*x* X 10 |
| 3 | 40 | 80 | √*x* X 40 |

*Notes*:

[1] Required pressures shall be cataloged.

[2] Any other pressure may be cataloged using these formulas