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Test Report

Test centre:	TÜV Saarland e. V. Am TÜV 1 66280 Sulzbach
Test object:	Airtight multi-leaf damper (class 2), ID no. 256 W x H = 500 mm x 409 mm, gear version
Customer:	Aerotechnik Siegwart GmbH Untere Hofwiesen 66299 Friedrichsthal
Scope of 2nd commission:	Measurement of the leakage air flow in accordance with DIN EN 1751
Test basis:	DIN EN 1751, issue 01.99
Test date:	01-04-2005
Inspected by:	Mahren (Graduate Engineer – Dipl. Ing. (FH))
Test report no.:	60404A0216/H airtight multi-leaf damper (class 2)
No. of pages.:	5

1. General information

Aerotechnik Siegwart GmbH, Friedrichsthal commissioned us to inspect the sealing characteristics of an airtight multi-leaf damper (class 2) in accordance with DIN EN 1751. The purpose of the test was to establish whether DIN EN 1751 requirements were met.

2. Description of the inspected system

The description of the inspected damper in accordance with the manufacturer's specifications is included in enclosure 1. The documents presented to us do not contain production tolerances.

3. Test structure and realisation of measurements

The test station structure is illustrated in the enclosure. A Venturi tube was utilised to measure air volume. The static pressure as well as the differential pressure have been measured at the Venturi tube over 2 micromanometer.

4. Measuring results

Measuring results are listed in table 1 of the report.

The leakage air volumes measured are less than the values specified in DIN EN 1751 (as illustrated in table 1).

The inspection described here was not intended as a type or design acceptance test, endurance test, material test or production inspection, and no requirement for such existed. The measurement results are only valid for the inspected damper.

Table 1

Airtight multi-leaf damper in accordance with DIN EN 1751, class 2

Dimensions W x H [mm x mm]	Blade [unit]	Δp [Pa]	V [m³/h]	V [l/s]	Free surface [m²]	Permissible leakage air flow $[\frac{l}{s \bullet m^2}]$ $[\frac{m^3}{h \bullet m^2}]$	Measured leakage air flow $[\frac{l}{s \bullet m^2}]$ $[\frac{m^3}{h \bullet m^2}]$
500 x 409	4	100	17	4,72	0.205	39,01 (140,45)	23,035 (82,93)
		250	27	7,50	0.205	61,45 (221,21)	36,590 (131,71)
		500	39	10,83	0.205	87,21 (313,94)	52,840 (190,24)
		1000	56	15,56	0.205	123,33 (444,00)	75,880 (273,17)

Table 2

List of measuring instruments employed:

Ser. no.	Measuring instrument designation	Measurement range	Measurement uncertainty	Calibrated yes/no	Comment
1	Venturi tube	0 … 200 m³/h	± 0,5 % of measurement value	yes	
2	Micromanometer Manufacturer: SI	0 … 200 Pa 0 … 2000 Pa	± 0.5 % of measurement value	yes yes	

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Sulzbach, 02-05-05

Building Services and Conveying Engineering
Assessor:

Signature

Mahren (Graduate Engineer – Dipl. Ing. (FH))

Enclosure
Manufacturer's description
Test structure
Calculation example

TC

Date:

Distributor:
File no.: 60404A0216
5 copies: Aerotechnik Siegwart; c/o Mr. Kuhn, Untere Hofwiesen,
66299 Friedrichsthal

Calculation example:

Airtight multi-leaf damper in accordance with DIN EN 1751, class 2

Width	500 mm
Height	409 mm
Test pressure	1000 Pa
Free surface A	0.205 m²

Permissible leakage air flow q_{vLBA} in $l \cdot s^{-1} \cdot m^{-2}$ from Fig. C 1 of DIN EN 1751 at a test pressure of 1000 Pa, class 2:

q_{vLBA} = 123,33 $l \cdot s^{-1} \cdot m^{-2}$ equivalent to 444 $m^3 \cdot h^{-1} \cdot m^{-2}$

Measurement value: V = 56,00 m³/h equivalent to

$$V = \frac{56{,}00 \cdot 1{,}000}{3{,}600} \cdot \frac{l}{s} = 15{,}56 \ \frac{l}{s}$$

Leakage air flow:

q_{vLBA} =

$$\frac{V[l/s]}{A[m^2]} = \frac{15{,}56}{0{,}205} \cdot \frac{l}{s \cdot m^2}$$

= 75,88 $l \cdot s^{-1} \cdot m^{-2}$ < 123,33 $l \cdot s^{-1} \cdot m^{-2}$

= 273,17 $m^3 \cdot h^{-1} \cdot m^{-2}$ < 444 $m^3 \cdot h^{-1} \cdot m^{-2}$