

# Test Report

**Test centre:** TÜV Saarland e. V.  
Am TÜV 1  
66280 Sulzbach

**Test object:** Airtight multi-leaf damper (class 2), ID no. 257  
W x H = 1000 mm x 669 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/I 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 the air volume. The static pressure as well as the differential pressure have been measured at the Venturi tube over 2 micromanometer.

## **4. Measuring results**

The 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]	$\Delta p$ [Pa]	V [m <sup>3</sup> /h]	V [l/s]	Free surface [m <sup>2</sup> ]	Permissible leakage air flow	Measured leakage air flow
						$\left[\frac{l}{s \cdot m^2}\right]$	$\left[\frac{l}{s \cdot m^2}\right]$
						$\left[\frac{m^3}{h \cdot m^2}\right]$	$\left[\frac{m^3}{h \cdot m^2}\right]$
1000 x 669	4	100	25	6,94	0.669	39,00 (140,39)	10,38 (37,36)
		250	43	11,90	0.669	61,67 (222,00)	17,85 (64,27)
		500	62	17,22	0.669	87,22 (314,00)	25,74 (92,67)
		1000	90	25,00	0.669	123,33 (444,00)	37,36 (134,52)

**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 m <sup>3</sup> /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, 03-05-05

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	1000 mm
Height	669 mm
Test pressure	1000 Pa
Free surface A	0.669 m <sup>2</sup>

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:

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

Measurement value:  $V = 90,00 \text{ m}^3/\text{h}$  equivalent to

$$V = \frac{90,00 \cdot 1,000}{3,600} \cdot \frac{l}{s} = 25 \frac{l}{s}$$

Leakage air flow:

$$\begin{aligned} q_{VLBA} &= \frac{V[l/s]}{A[m^2]} = \frac{25}{0,669} \cdot \frac{l}{s \cdot m^2} \\ &= 37,37 \text{ l} \cdot \text{s}^{-1} \cdot \text{m}^{-2} < 123,33 \text{ l} \cdot \text{s}^{-1} \cdot \text{m}^{-2} \\ &= 134,52 \text{ m}^3 \cdot \text{h}^{-1} \cdot \text{m}^{-2} < 444 \text{ m}^3 \cdot \text{h}^{-1} \cdot \text{m}^{-2} \end{aligned}$$