

## Flow performance of Vilpe WIVE 100 intake vents

<b>Customer</b>	<b>Vilpe Oy</b> Nico Stenroos Kauppatie 9 65610 Mustasaari nico.stenroos@vilpe.com
<b>Order reference</b>	Nico Stenroos 27.1.2020
<b>Contact person</b>	<b>Eurofins Expert Services Oy</b> Pekka Kettunen Kemistintie 3 02150 Espoo Phone 040 159 6471 pekkakettunen@eurofins.fi
<b>Assignment</b>	To determine the flow performance of Vilpe WIVE 100 intake vents.
<b>Sample details</b>	Intake vents WIVE 100 and WIVE 100 with thermostatic valve supplied by the customer. A description of the equipment is given in Appendix 1.  Sample received 19.3.2020. Measurements taken 22-24.4.2020.
<b>Methodology</b>	<p>The flow performance measurements of the intake vents were performed according to SFS-EN 13141-1:2004/1/. The vents were installed in a test chamber with a width of 1100 mm, height of 715 mm and depth of 505 mm.</p> <p>The measurements determined the air flow through the intake valves as a function of the static pressure difference between the test chamber and the ambient air.</p> <p>During the measurements, the test chamber was underpressurised compared to the ambient air.</p> <p>The airflows were measured according to ISO 5167-1:2003 and ISO 5167-2:2003/2/ using orifice plates with corner taps.</p> <p>Our laboratory (T001) is accredited by the FINAS Accreditation Service to perform measurements according to ISO 5167-1:2003 and ISO 5167-2:2003/2/. Other measurements and tests mentioned in this report are not covered by the accreditation.</p>

**Findings** The measurement results are presented in Appendix 2.

The results are valid only for the measured sample.

The measuring equipment used is given in Appendix 3.

**References** /1/ SFS-EN 13141-1:2004. Ventilation for buildings. Performance testing of components/products for residential ventilation. Part 1: Externally and internally mounted air transfer devices

/2/ ISO 5167-1:2003. Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full. Part 1: General principles and requirements.

ISO 5167-2:2003. Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full. Part 2: Orifice plates.

**Espoo, 14.5.2020**

[Signature – Pekka Kettunen, specialist]

**Appendices** 3

**Distribution** Customer, original, electronically approved

**Description of sample**

[image]

**Description of sample**

Vilpe filter and silencer

[image]

Thermostatic valve

[image]

Indoor unit in adjustment position 5

[image]

Product installed in test chamber

[image]

Product: Vilpe WIVE 100

### Flow performance

EN 13141-1:2004

Ambient air temperature 19.3 °C

Duct size: Ø100 mm

Filter: -

Silencer: -

Indoor unit adjustment position: 5

$\Delta p$	$q_v$	$v$
Pa	dm <sup>3</sup> /s	m/s
0.47	2.42	0.31
1.06	3.59	0.46
2.06	4.97	0.63
4.14	7.03	0.89
7.91	9.71	1.24
13.9	13.0	1.65
20.2	16.0	2.03

$\Delta p$  Static pressure difference between the chamber and the ambient air, Pa  
(chamber is underpressurised compared to the ambient air)

$q_v$  Air flow rate at a density of 1.20 kg/m<sup>3</sup>, dm<sup>3</sup>/s

$v$  Duct speed, m/s

Product: Vilpe WIVE 100

### Flow performance

EN 13141-1:2004

Ambient air temperature 19.2 °C

Duct size: Ø100 mm

Filter: Yes

Silencer: -

Indoor unit adjustment position: 5

$\Delta p$	$q_v$	$v$
Pa	dm <sup>3</sup> /s	m/s
0.51	0.43	0.05
1.04	0.76	0.10
2.14	1.40	0.18
4.05	2.38	0.30
8.01	3.97	0.51
13.9	5.93	0.76
20.3	7.70	0.98

$\Delta p$  Static pressure difference between the chamber and the ambient air, Pa  
(chamber is underpressurised compared to the ambient air)

$q_v$  Air flow rate at a density of 1.20 kg/m<sup>3</sup>, dm<sup>3</sup>/s

$v$  Duct speed, m/s

Product: Vilpe WIVE 100

### Flow performance

EN 13141-1:2004

Ambient air temperature 19.2 °C

Duct size: Ø100 mm

Filter: Yes

Silencer: Yes

Indoor unit adjustment position: 5

$\Delta p$	$q_v$	$v$
Pa	dm <sup>3</sup> /s	m/s
0.42	0.36	0.05
1.02	0.63	0.08
2.11	1.12	0.14
4.00	1.84	0.23
7.94	3.03	0.39
13.9	4.49	0.57
20.2	5.80	0.74

$\Delta p$  Static pressure difference between the chamber and the ambient air, Pa  
(chamber is underpressurised compared to the ambient air)

$q_v$  Air flow rate at a density of 1.20 kg/m<sup>3</sup>, dm<sup>3</sup>/s

$v$  Duct speed, m/s

Product: Vilpe WIVE 100

**Flow performance**

EN 13141-1:2004

[graph]



Product: Vilpe WIVE 100 with thermostat

### Flow performance

EN 13141-1:2004

Ambient air temperature 19.1 °C

Duct size: Ø100 mm

Filter: -

Silencer: -

Indoor unit adjustment position: 5

$\Delta p$	$q_v$	$v$
Pa	dm <sup>3</sup> /s	m/s
0.48	2.52	0.32
0.90	3.29	0.42
2.07	4.90	0.62
4.10	6.80	0.87
8.18	9.62	1.23
13.9	12.7	1.61
20.4	15.7	2.00

$\Delta p$  Static pressure difference between the chamber and the ambient air, Pa  
(chamber is underpressurised compared to the ambient air)

$q_v$  Air flow rate at a density of 1.20 kg/m<sup>3</sup>, dm<sup>3</sup>/s

$v$  Duct speed, m/s

Product: Vilpe WIVE 100 with thermostat

### Flow performance

EN 13141-1:2004

Ambient air temperature 19.1 °C

Duct size: Ø100 mm

Filter: Yes

Silencer: -

Indoor unit adjustment position: 5

$\Delta p$	$q_v$	$v$
Pa	dm <sup>3</sup> /s	m/s
0.29	0.26	0.03
0.98	0.70	0.09
1.99	1.35	0.17
4.12	2.44	0.31
7.95	4.03	0.51
13.9	6.04	0.77
20.2	8.31	1.06

$\Delta p$  Static pressure difference between the chamber and the ambient air, Pa  
(chamber is underpressurised compared to the ambient air)

$q_v$  Air flow rate at a density of 1.20 kg/m<sup>3</sup>, dm<sup>3</sup>/s

$v$  Duct speed, m/s

Product: Vilpe WIVE 100 with thermostat

### Flow performance

EN 13141-1:2004

Ambient air temperature 19.1 °C

Duct size: Ø100 mm

Filter: Yes

Silencer: Yes

Indoor unit adjustment position: 5

$\Delta p$	$q_v$	$v$
Pa	dm <sup>3</sup> /s	m/s
0.42	0.32	0.04
0.96	0.63	0.08
2.02	1.10	0.14
4.09	1.82	0.23
7.84	3.06	0.39
14.0	4.54	0.58
20.6	5.89	0.75

$\Delta p$  Static pressure difference between the chamber and the ambient air, Pa  
(chamber is underpressurised compared to the ambient air)

$q_v$  Air flow rate at a density of 1.20 kg/m<sup>3</sup>, dm<sup>3</sup>/s

$v$  Duct speed, m/s

Product: Vilpe WIVE 100 with thermostat

**Flow performance**

EN 13141-1:2004

[graph]

**Measuring equipment used**

Measuring device	Type reference	Manufacturing number	Calibration date
Micromanometer	Furness FCO12	0611108	26.8.2019
	Furness FCO12	0904078	26.8.2019
	Furness FCO12	0611106	26.8.2019
Air pressure	Vaisala PTU303	M4440048	27.8.2019
Humidity	Vaisala PTU303	M4440048	2.12.2019
Temperature	Agilent 34970A	MY44066372	16.7.2019
Orifice plate	Φ 50.0 / Φ 5.5	-	
	Φ 50.0 / Φ 12.55	-	
	Φ 50.0 / Φ 23.05	-	
	Φ 50.0 / Φ 40.06	-	