

Casing leakage test sheet

Test setup		Reference nr.
Date	5-3-2015	LM-15.0009
Exp. Date	5-3-2018	Tested by Rik v Kroonenburg
Place	HC Barcol-Air	Witness by Bob Strooker
measure temperature	16.9 [°C]	
Atmospheric pressure	1.035 [hPa]	
Correctionfactor	1.032	

Contact information	
Tel	+31 (0)299 689 300
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Email	hcbarcol-air-info@hcgroep.com



Model (Name/Type):	Variable Air Volume (VAV) terminal circular single wall type NAOBOOB 100	Result:	Class D
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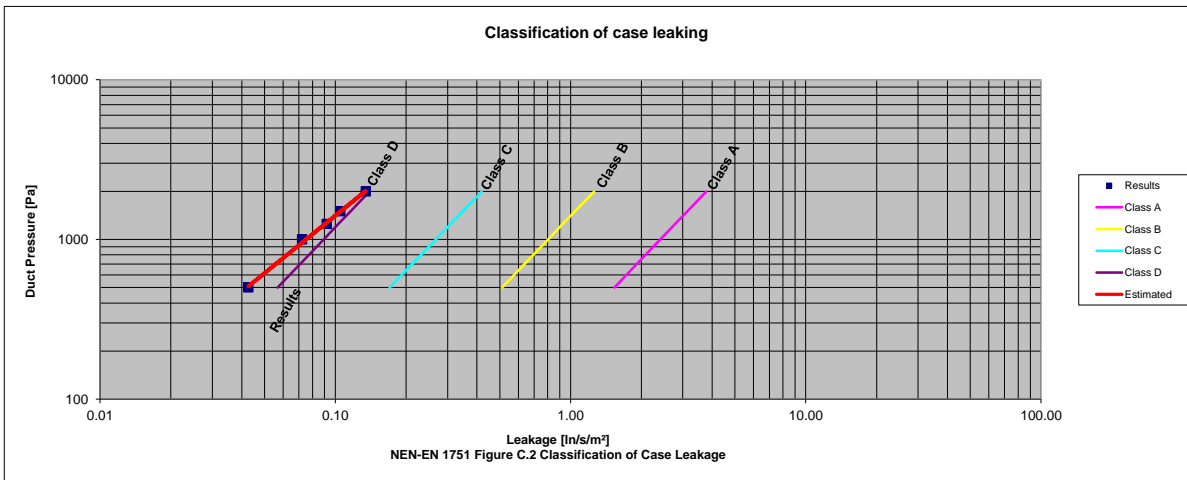
Product specifications	
Productcode	NAOBOOB
Model	100
Case Width	[m]
Case Height	[m]
Case Diameter	0.100 [m]
Case Length	0.500 [m]
Real Duct surface	0.157 [m²]
Virtual Duct surface	0.314 [m²]
Note:	When Case Length < 1m; 1m is used in calculations as specified by LUKA.

Measurement specifications		
Pressure time	60 seconds	
Pressure controller	PR-41X/20mbar/81955.50	
Airflow meter(s)	Low Flow	F-111B-20K-RAD-00-V
	High Flow	F-112AC-M20-RAD-55-V
Rated Accuracy	Pressure Ctrl	± 0.05%Rd + 0.093%FS
	Low Flow	± 0.5%Rd + 0.1%FS
	High Flow	± 0.5%Rd + 0.1%FS
	Pressure Ctrl	23-1-2015
Date calibrated	Low Flow	21-1-2015
	High Flow	19-1-2015

The leakage is measured in normal liters (= 1liter at 0°C and 101325 pa)

NEN-EN 1751	
Max. Leakagefactor [ln/s/m²]	
Class A	0.027
Class B	0.009
Class C	0.003
Class D	0.001
$\Phi L = f \times P_s^{0.65}$	
ΦL = Leakage [ln/s/m²]	
f = Leakagefactor	
P _s = Static Pressure	

Measurements and calculations						LUKA standards					Estimated class
Reading	Measure instrument	Static pressure [Pa]	Leakage [ln/s]	Leakage duct surface [ln/s/m²]	Corrected at 20°C [ln/s/m²]	Product tightness factor [-]	Class A [ln/s/m²]	Class B [ln/s/m²]	Class C [ln/s/m²]	Class D [ln/s/m²]	
1	Low Flow	500	0.013	0.04	0.04	0.000752	1.53	0.51			Class D
2	Low Flow	1000	0.022	0.07	0.07	0.000811		0.80	0.27	0.09	Class D
3	Low Flow	1250	0.028	0.09	0.09	0.000893			0.31	0.10	Class D
4	Low Flow	1500	0.032	0.10	0.11	0.000907			0.35	0.12	Class D
5	Low Flow	2000	0.041	0.13	0.13	0.000963			0.42	0.14	Class D



Other results	
Visual deformation	no
Pressure [Pa]	2000

As the tested model is the smallest model of this product range, the same classification result (or better) is valid for all bigger models.

Approved and certified by
 Certificate nr. 89204853.1
 TÜVRheinland®
 Precisely Right.

Calibration certifications nr.
 Low Flow BHTG22/CHK/1776430
 High Flow BHTG22/CHK/1773876
 Pressure ctrl not specified

Casing leakage test sheet

Test setup		
Date	1-5-2015	Reference nr.
Exp. Date	1-5-2018	Tested by
Place	HC Barcol-Air	Witness by
measure temperature	17,8 [°C]	
Atmospheric pressure	1,014 [hPa]	
Correctionfactor	1,008	

Contactinformation	
Tel	+31 (0) 299 689 300
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Email	hcbarcol-air-info@hcgroep.com



Model (Name/Type):	Variable Air Volume (VAV) terminal circular double wall type NBOBOOB 100	Result:	Class C
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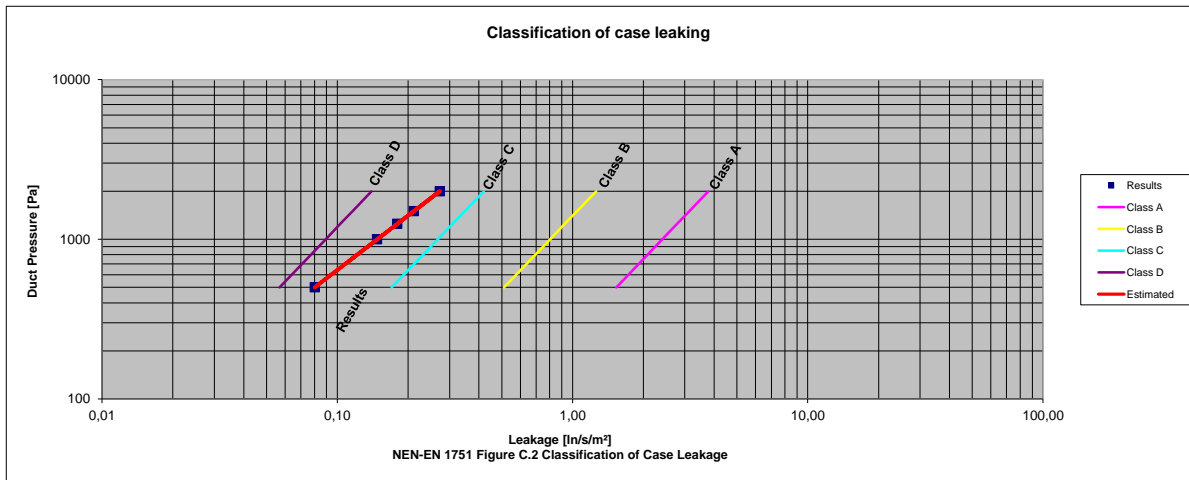
Products specifications	
Productcode	NBOBOOB
Model	100
Case Width	[m]
Case Height	[m]
Case Diameter	0,100 [m]
Case Length	0,500 [m]
Real Duct surface	0,157 [m²]
Virtual Duct surface	0,314 [m²]
Note:	When Case Length < 1m; 1m is used in calculations as specified by LUKA.

Measurement specifications	
Pressure time	60 seconds
Pressure controller	PR-41X/20mbar/81955.50
Airflow meter(s)	Low Flow
	High Flow
Rated Accuracy	Pressure Ctrl
	Low Flow
Date calibrated	High Flow
	Low Flow
	High Flow

The leakage is measured in normal liters (= 1liter at 0°C and 101325 pa)

NEN-EN 1751	
Max. Leakagefactor [ln/s/m²]	
Class A	0,027
Class B	0,009
Class C	0,003
Class D	0,001
$\Phi L = f \times Ps^{0,65}$	
ΦL = Leakage [ln/s/m²]	
f = Leakagefactor	
Ps = Static Pressure	

Measurements and calculations						LUKA standards					Estimated class
Reading	Measure instrument	Static pressure [Pa]	Leakage [ln/s]	Leakage duct surface [ln/s/m²]	Corrected at 20°C [l/s/m²]	Product tightness factor [-]	Class A [ln/s/m²]	Class B [ln/s/m²]	Class C [ln/s/m²]	Class D [ln/s/m²]	
1	Low Flow	500	0,025	0,08	0,08	0,001413	1,53	0,51			Class C
2	Low Flow	1000	0,046	0,15	0,15	0,001657		0,80	0,27	0,09	Class C
3	Low Flow	1250	0,056	0,18	0,18	0,001744			0,31	0,10	Class C
4	Low Flow	1500	0,066	0,21	0,21	0,001826			0,35	0,12	Class C
5	Low Flow	2000	0,085	0,27	0,27	0,001951			0,42	0,14	Class C



Other results	
Visual deformation	no
Pressure [Pa]	2000

As the tested model is the smallest model of this product range, the same classification result (or better) is valid for all bigger models.

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Certificate nr.
89204853.1



Calibration certifications nr.
Low Flow BHTG22/CHK/1776430
High Flow BHTG22/CHK/1773876
Pressure ctrl not specified

Casing leakage test sheet

Test setup		
Date	24-8-2015	Reference nr.
Exp. Date	24-8-2018	Tested by
Place	HC Barcol-Air	Witness by
measure temperature	25	[°C]
Atmospheric pressure	1,001	[bar]
Correctionfactor	0,971	

Contact information	
Tel	+31 (0) 299 689 300
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Email	hcbarcol-air-info@hcgroep.com



Model (Name/Type):	Induction VAV Air Volume terminal type NVOJ.OB 100	Result:	Class C
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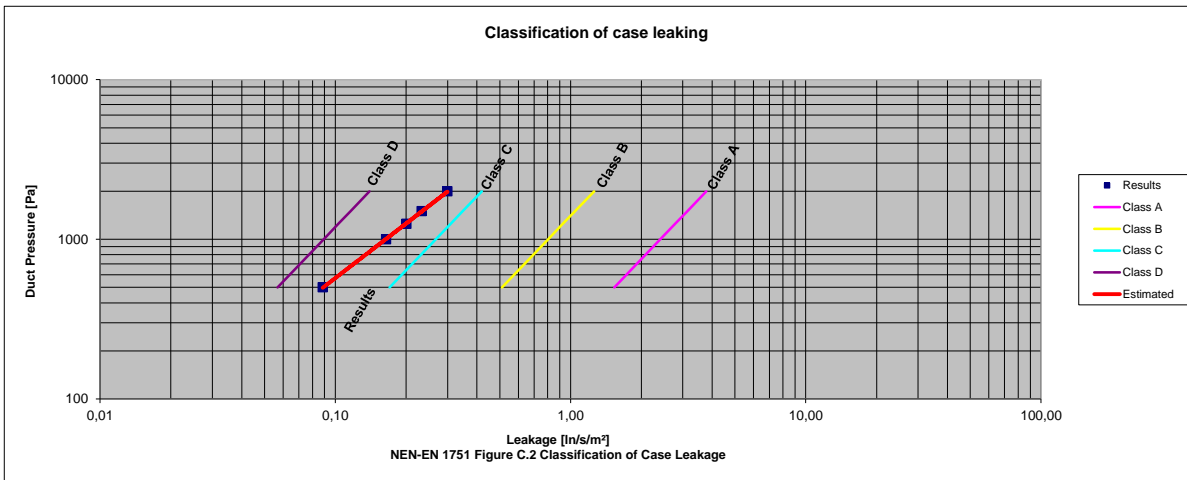
Product specifications	
Productcode	NVOJBOB
Model	100
Case Width	0,330 [m]
Case Height	0,230 [m]
Case Diameter	[m]
Case Length	1,470 [m]
Real Duct surface	1,646 [m ²]
Virtual Duct surface	1,646 [m ²]
Note:	When Case Length < 1m; 1m is used in calculations as specified by LUKA.

Measurement specifications	
Pressure time	60 seconds
Pressure controller	PR-41X/20mbar/81955.50
Airflow meter(s)	Low Flow
	High Flow
Rated Accuracy	Pressure Ctrl
	Low Flow
Date calibrated	High Flow
	Low Flow
	High Flow

The leakage is measured in normal liters (= 1liter at 0°C and 101325 pa)

NEN-EN 1751	
Max. Leakagefactor [ln/s/m ²]	
Class A	0,027
Class B	0,009
Class C	0,003
Class D	0,001
$\Phi L = f \times P_s^{0,65}$	
ΦL = Leakage [ln/s/m ²]	
f = Leakagefactor	
P _s = Static Pressure	

Measurements and calculations						LUKA standards					Estimated class
Reading	Measure instrument	Static pressure [Pa]	Leakage [ln/s]	Leakage duct surface [ln/s/m ²]	Corrected at 20°C [l/s/m ²]	Product tightness factor [-]	Class A [ln/s/m ²]	Class B [ln/s/m ²]	Class C [ln/s/m ²]	Class D [ln/s/m ²]	
1		500	0,15	0,09	0,09	0,001558	1,53	0,51			Class C
2		1000	0,279	0,17	0,16	0,001847		0,80	0,27	0,09	Class C
3		1250	0,34	0,21	0,20	0,001947			0,31	0,10	Class C
4		1500	0,395	0,24	0,23	0,002009			0,35	0,12	Class C
5		2000	0,508	0,31	0,30	0,002143			0,42	0,14	Class C



Other results	
Visual deformation	no
Pressure [Pa]	2000

As the tested model is the smallest model of this product range, the same classification result (or better) is valid for all bigger models. This classification is also valid for the following types:

- NVOA00B
- NVOCO0B
- NVOG.OB
- NVON.OB
- NVOQ.OB

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 Certificate nr.
 89204853.1

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Calibration certifications nr.
 Low Flow BHTG22/1528974
 High Flow BHTG22/1523091
 Pressure ctrl not specified