



Test Report issued under the responsibility of:





TEST REPORT
EHPA-DACH Testing Regulation
Supplemental requirements for granting the international quality label for
heat pumps
Testing of Air/Water Heat Pumps
Testing of Water/Water and Brine/Water Heat Pumps

DIN EN 14511-1, DIN EN 14511-2, DIN EN 14511-3, DIN EN 14511-4
Air conditioners, liquid chilling packages and heat pumps with
electrically driven compressors for space heating and cooling

DIN EN 14511-1:2011 Terms and definitions
DIN EN 14511-2:2011 Test conditions
DIN EN 14511-3:2011 Test methods
DIN EN 14511-4:2011 Requirements

Report Reference No.:	413300-2600-0015/185066
Date of issue:	2013-09-17
Total number of pages	11
Testing Laboratory	VDE Testing and Certification Institute
Address	Merianstraße 28, D-63069 Offenbach
Applicant's name	Vaillant GmbH
Address	Berghauser Str. 40; D-42859 Remscheid
Test specification:	
Standard	<input type="checkbox"/> EHPA Testing Regulation Testing of Water/Water and Brine/Water Heat Pumps, Version 1.5, Release 01.09.2012 Test Method based on EN 14511-1 through 4 <input checked="" type="checkbox"/> EHPA Testing Regulation Testing of Air/Water Heat Pumps, Version 1.5, Release 01.09.2012 Test Method based on EN 14511-1 through 4 <input checked="" type="checkbox"/> EN 14511-1:2011 (DIN EN14511-1:2012-01) EN 14511-2:2011 (DIN EN 14511-2:2012-01) EN 14511-3:2011 (DIN EN 14511-3:2012-01) EN 14511-4:2011 (DIN EN 14511-4 :2012-01)
Test procedure	EHPA
Non-standard test method:	N/A
Test Report Form No.:	EHPA_Ver_1_5, Release 2012-09-01

Test Report Form(s) Originator.:	VDE Testing and Certification Institute
Master TRF.....:	Dated 2012-09
Test report level.....:	1
Test item description : Heat pump	
Trade Mark	
Manufacturer	Saunier Duval ECC Industrie, 17 rue de la Petite Baratte; F-44315 Nantes
Model/Type reference	VWL 85/2 A 230V; VWL 115/2 A 230V; VWL 115/2 A 400V
Ratings	VWL 85/2 A 230V : AC 230V, max. power input; 2,52 kW refrigerant R410A, 1,95Kg;
	VWL 115/2 A 230V : AC 230V, max. power input; 3,38 kW refrigerant R410A, 3,53Kg
	VWL 115/2 A 400V : 3AC 400V, max. power input; 3,38 kW refrigerant R410A, 3,53Kg
Description of Appliance:	
<p>The product is an air/water heat pump that transfers heat from one location to another. To do this, it uses the characteristic properties of a coolant. Intended use includes the following:</p> <ul style="list-style-type: none"> – Installing and fitting the boiler in accordance with the boiler and system approval. – Compliance with all inspection and maintenance conditions listed in the instructions. The product can operate at outside temperatures of between –20 °C and 35 °C in heating mode, and between –20 °C and 46 °C in cylinder charging mode. -If the product's refrigerant circuit pressure exceeds the maximum pressure of 4.15 MPa (41.5 bar), the high-pressure switch switches the product off. Following a waiting period, the product attempts to start once more. After three failed start attempts in succession, a fault message is displayed. – If the product is switched off, the crankcase housing heating is switched on when the compressor outlet temperature reaches 7 °C in order to prevent possible damage caused by switching it back on. – If the compressor inlet temperature and the compressor outlet temperature are below 1 °C, the compressor does not start up. – A temperature sensor on the compressor outlet limits the product's operation if the measured temperature exceeds the maximum permissible temperature. The maximum permissible temperature depends on the evaporation and condensation temperature. The product is equipped with a flow sensor. It measures the flow rate of the connected heating circuit when starting up the product. – If the heating circuit temperature falls below 3 °C, the product's frost protection function is automatically activated as the heating pump is started. In addition, frost protection agent should be added to the heating water as the heating water temperature may fall below the freezing point in the event of a power cut 	

Testing procedure and testing location:	
<input type="checkbox"/>	CB/CCA Testing Laboratory:
<input checked="" type="checkbox"/>	Accreditation:
 Registration No. D-PL-12061-01-01	
Standards	EN 14511-1, -2, -3, -4, EN ISO 9614-1, -2, -3, EN 12102, ISO 3744, ISO 3745, ISO 3746, EN 60335-1, EN 60335-2-40
Testing location/ address	
<input type="checkbox"/>	Associated CB Laboratory:
--	
Testing location/ address	
	Tested by (name + signature)
	Approved by (+ signature)
<input checked="" type="checkbox"/>	Testing procedure: TMP/TDAP
	Tested by (name + signature)
	Approved by (+ signature)
Testing location/ address	Saunier Duval Clima, S.A. MendigorrITU 52; Pol. Ind. Jundiz ES-01015 Vitoria-Gasteiz

Summary of testing:**Tests performed (name of test and test clause):**

- All performance tests carried out at manufacturer laboratory.
- Acoustic measurements carried out at manufacturer laboratory.

Testing location:

Saunier Duval Clima, S.A.
MendigorrITU 52; Pol. Ind. Jundiz
ES-01015 Vitoria-Gasteiz

Vaillant GmbH

Berghauser Str. 40; D-42859 Remscheid

Summary of compliance with National Differences:

Remark according EHPA regulations for granting the international quality label for electrically driven heat pumps:

A model range is characterised by uniform main components. The following number of units must be examined from each model range:

Table 2.1

n _{HP} serie	Ratio Q _{max} /Q _{min}	Q _{max} *Q _{min}	
		≤ 30 kW	>30 kW
≤ 4	-	1	2
> 4	≤ 3.0	2	2
> 4	> 3.0	2	3

n_{HP} serie -> number of heat pumps in a serie

Remark:

According to the EHPA regulations the heat pumps VWL 85/2 A 230V; VWL 115/2 A 230V and VWL 115/2 A 400V builds a model range. The heat pumps VWL 115/2 A 230V and VWL 115/2 A 400V has the same design (refrigerant circuit and compressor), the only different is the inverter drive. The heat pump VWL 115/2 A 230V has a 1-phase drive and the heat pump VWL 115/2 A 400V has a 3-phase drive.









Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P(Pass)
- test object does not meet the requirement.....:	F(Fail)
Testing:	
Date of receipt of test item	2013-05-13
Date (s) of performance of tests	1 st week: 2013-05-13 - 2013-05-16 2 nd week: 2013-06-24 - 2013-06-28
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p>	

General product information:








Test item particulars:		
Testing of Air/Water Heat Pumps		
Machine-specific information:		
- Manufacturer.....:	Saunier Duval (Vaillant Group)	
- Machine type (Test sample).....:	VWL 85/2 A 230V	VWL 115/2 A 400V
- Serial number test sample	21124900100119711610005001N3	21131000100322901610005000N0
- manufacturer compressor and type	SIAM compressor industry, type: SNB 172F	SIAM compressor industry, type: TNB220FLHMT
- Serial number motor compressor.....:	SNB172FTKMT-0161706-CFXG	TNB220FLHMT-0042396-TVNG
- Refrigerant filling (type and quantity)	R410A; 1,95Kg	R410A; 3,53Kg
- GWP value of the refrigerant (as required by the EU Ecolabel, 2007/742/EC)	1725	
- Rated volume flow on user side with which the measurements were taken.....:	A7/W35: 1,42 m³/h	A7/W35: 1,81 m³/h
	A7/W45: 1,32 m³/h	A7/W45: 1,75 m³/h
	A7/W55: 0,78 m³/h	A7/W55: 1,08 m³/h
- Blower speed, air volume flow and maximum permissible external static pressure drop.....:	550 rpm	700rpm
	(at A2/W35)	
- Heat exchanger type.....:	See table components	
- Evaporator.....:	See table components	
- Expansion valve type	See table components	
- Dimensions and weight of the heat pump.....:	1103mm x 463mm x 975mm	
	Weight: 105 Kg	Weight: 129 Kg
- Description of the design.....:	See below	
Output measurement: A2 / W35		
(according EN14511)	VWL 85/2 A 230V	VWL 115/2 A 400V
- Average heat output	4,468 kW	5,432 kW
- Average electrical power consumption	1,166 kW	1,633 kW
- COP	3,83	3,33
- min. required COP at A2/W35.....:	3,10	
- Hydraulic pressure drop in user system (delta p):	43450 Pa	32612 Pa
Usage limits and safety test:		
- Extreme points tested and reached.:	P	
- Safety test passed or failed.....:	P	
Electrical measurements:		
- Max. start current with or <u>without</u> soft start.:	10,98 A	13,20 A
- Output factor (mean value)	--	
Sound measurement:		
- Sound output is given in dB(A).....:	A7/W35: 60,1 dB(A)	A7/W35: 64,5 dB(A)
	A7/W45: 60,4 dB(A)	A7/W45: 65,4 dB(A)
	A7/W55: 61,3 dB(A)	A7/W55: 65,8 dB(A)
- Measurement precision (standard deviation in dB):	+/- 1dB	

Marking plates

VWL 85/2 A 230V

 Vaillant GmbH, Berghauser Straße 40, Remscheid / Germany			
VWL 85/2 A 230V			
IP 25	 R410A 1,95 kg PS _{R_HP} = PS _{R_LP} (41,5) (bar)	 3/N/PE 400V~ 50Hz P _{max} 2,55 kW I 11,5 A I _{max} 16 A	
PS _n min 0,1 MPa		PS _n max 0,3 MPa	
COP	A-7/W35 2,80	EER	A35/W18 3,30
	A2/W35 3,80		A35/W7 2,60
	A7/W35 4,80		A35/W18 7,20 kW
	A7/W45 3,80		A35/W7 5,10 kW
	A7/W55 3,00		
	A-7/W35 6,70 kW		
	A2/W35 4,60 kW		
	A7/W35 8,10 kW		
	A7/W45 7,80 kW		
	A7/W55 7,00 kW		
Contains fluorinated greenhouse gases covered by Kyoto protocol Hermetically sealed			
<div style="background-color: black; color: white; padding: 5px; display: inline-block;">Bar code + Serial n°</div>			
 			

VWL115/2 A 400V

 Vaillant GmbH, Berghauser Straße 40, Remscheid / Germany			
VWL 115/2 A 400V			
IP 25	 R410A 3,53 kg PS _{R_HP} = PS _{R_LP} (41,5) (bar)	3/N/PE 400V~ 50Hz P _{max} 3,30 kW I 3,5 A I _{max} 13,2 A	
PS _n min 0,1 MPa		PS _n max 0,3 MPa	
COP	A-7/W35 2,50	EER	A35/W18 2,60
	A2/W35 3,40		A35/W7 2,68
	A7/W35 4,20		A35/W18 5,10 kW
	A7/W45 3,40		A35/W7 7,50 kW
	A7/W55 2,90		
	A-7/W35 7,90 kW		
	A2/W35 5,50 kW		
	A7/W35 10,5 kW		
	A7/W45 10,2 kW		
	A7/W55 9,80 kW		
Contains fluorinated greenhouse gases covered by Kyoto protocol Hermetically sealed			
<div style="background-color: black; color: white; padding: 5px; display: inline-block;">Bar code + Serial n°</div>			
 			

Compressor VWL 85/2 A 230V

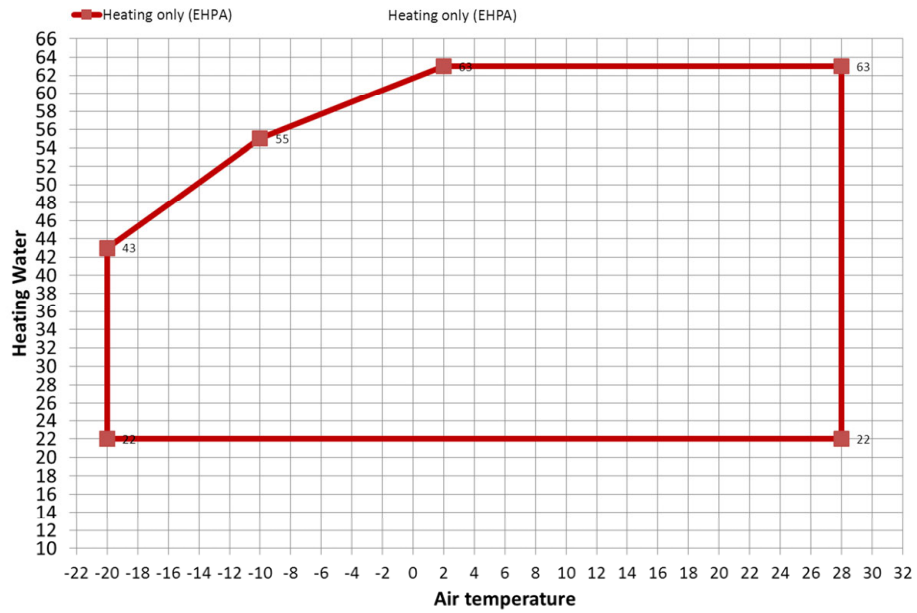


Compressor VWL 115/2 A 400V

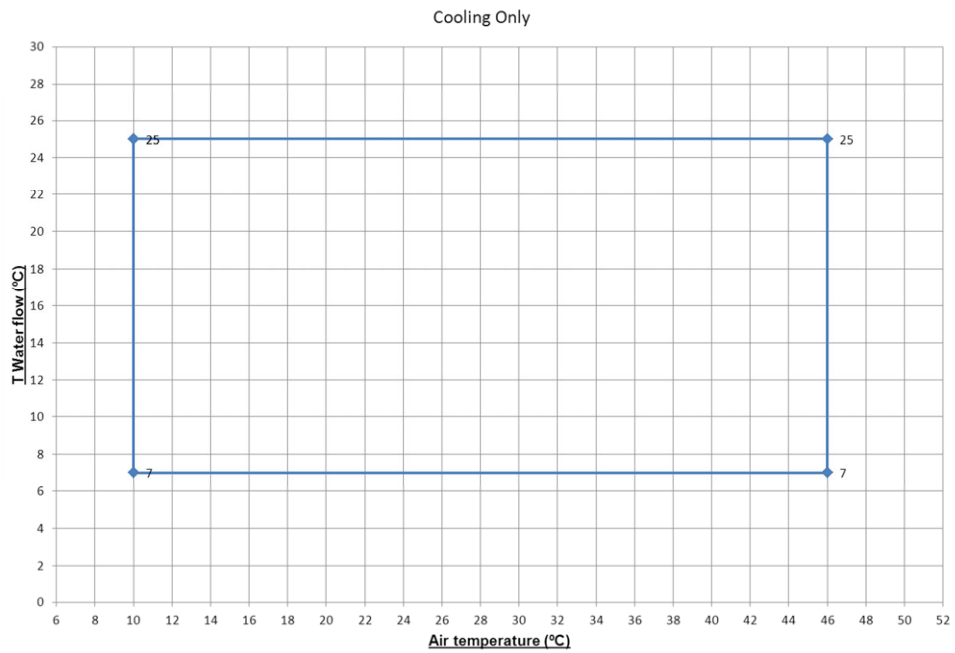


Usage limits (Figure 1)

Usage limits heating mode

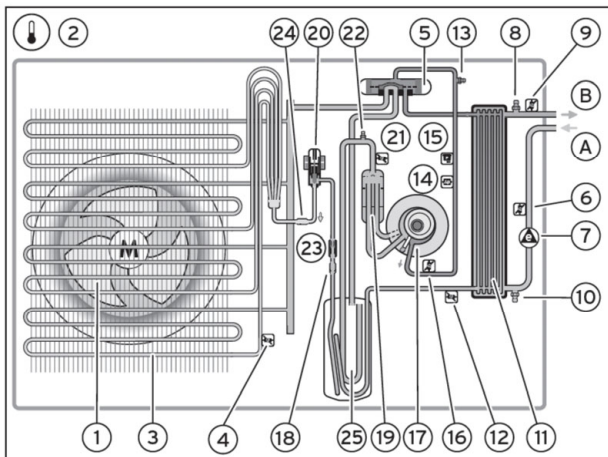


Usage limits cooling mode



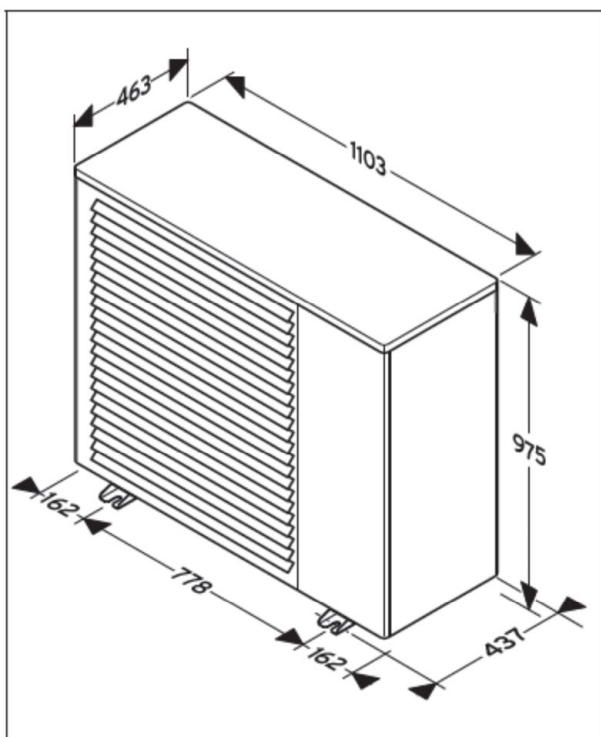
Photographs:

Heat pump system

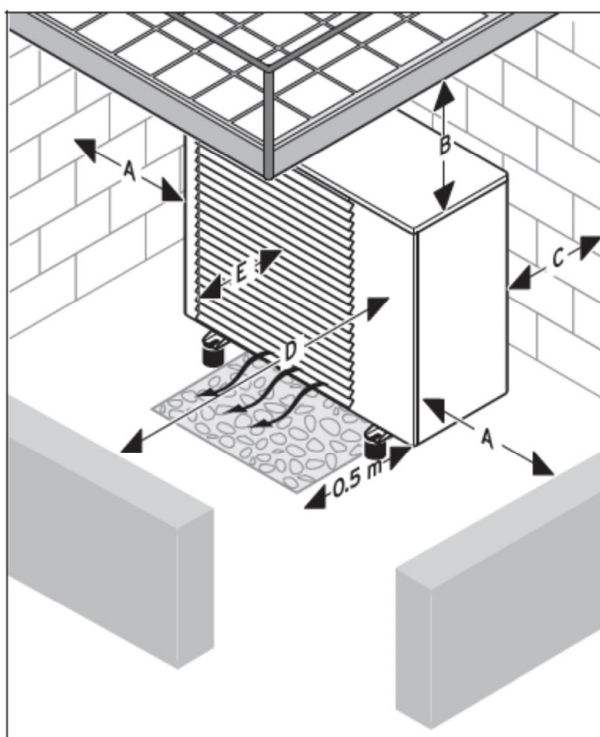


- 1 Fan
- 2 Outside temperature sensor
- 3 Ribbed pipe heat exchanger
- 4 Temperature sensor of the ribbed pipe heat exchanger
- 5 4-way valve
- 6 Return heating circuit temperature sensor
- 7 High-efficiency pump with flow sensor
- 8 Purging valve
- 9 Flow heating circuit temperature sensor
- 10 Drain valve
- 11 Plate heat exchanger
- 12 Temperature sensor after the plate heat exchanger
- 13 Service valve for the high-pressure range of the coolant circuit

Dimensions



Installation clearances



Clearance	Only for heating mode	For heating and cooling mode
A	> 250 mm	> 250 mm
B	> 1000 mm	> 1000 mm
C	> 120 mm	> 300 mm
D	> 600 mm	> 600 mm
E	> 300 mm	> 300 mm

**Test results Air-Water-Heat pump * heating * in conjunction with EN14511-2:2011 Table 12, 13, 14 and 15
(Calculations according to EN14511 within correction of circulation pump)**

Model		VWL 85/2 A 230V	VWL 115/2 A 230V	VWL 115/2 A 400V	Remarks
	Footnote	►	□	►	
Refrig. / Mass	Type R410A / [kg]	1,95Kg	3,53Kg	3,53Kg	
Installation:		outdoor			
Sound power :	[dB(A)]	See table page 6			
A 7 / W 35	Heat output [kW]	8,039	10,389	10,389	
Delta T 5K	El. input [kW]	1,692	2,446	2,446	
	COP [-]	4,75	4,25	4,25	
Volume flow heat sink	[m³/h]	1,416	1,805	1,805	
A 2 / W 35	Heat output [kW]	4,467	5,434	5,434	
	El. input [kW]	1,165	1,633	1,633	
	COP [-]	3,83	3,33	3,33	
	Min.req. COP [-]	3,10			EHPA requirement
A -7 / W 35	Heat output [kW]	6,675	7,845	7,845	
	El. input [kW]	2,399	3,097	3,097	
	COP [-]	2,78	2,51	2,51	
A -15 / W 35	Heat output [kW]	6,174	6,776	6,776	
	El. input [kW]	2,454	2,807	2,807	
	COP [-]	2,52	2,41	2,41	
A 7 / W 45	Heat output [kW]	7,658	10,076	10,076	
Delta T 5K	El. input [kW]	2,032	2,923	2,923	
	COP [-]	3,77	3,45	3,45	
Volume flow heat sink	[m³/h]	1,324	1,748	1,748	
A 2 / W 45	Heat output [kW]	4,009	5,517	5,517	
	El. input [kW]	1,255	2,129	2,129	
	COP [-]	3,19	2,59	2,59	
A -7 / W 45	Heat output [kW]	5,679	6,817	6,817	
	El. input [kW]	2,516	3,273	3,273	
	COP	2,26	2,08	2,08	
A -15 / W 45	Heat output [kW]	5,272	6,031	6,031	
	El. input [kW]	2,386	3,032	3,032	
	COP	2,21	1,99	1,99	
A 7 / W 55	Heat output [kW]	6,926	9,680	9,680	
Delta T 8K	El. input [kW]	2,330	3,380	3,380	
	COP [-]	2,97	2,86	2,86	
Volume flow heat sink	[m³/h]	0,780	1,081	1,081	
A 2 / W 55	Heat output [kW]	3,780	5,173	5,173	
	El. input [kW]	1,576	2,276	2,276	
	COP [-]	2,40	2,27	2,27	
A -7 / W 55	Heat output [kW]	4,670	5,081	5,081	
	El. input [kW]	2,437	3,207	3,207	
	COP	1,92	1,58	1,58	
A -15 / W 55	Heat output [kW]	2,936	2,935	2,935	
	El. input [kW]	1,730	1,730	1,730	
	COP	1,70	1,70	1,70	
Compressor	Manufacturer	SIAM compressor industry			
	Type	Twin Rotary			
	quantity	1			

Footnote

- This test sample was selected by national QLC and tested by the test center
- The tech. datas of this type were transmitted by the manufacturer and **not tested by the test center**

Operating points in request of manufacturer

Model		VWL 85/2 A 230V	VWL 115/2 A 230V	VWL 115/2 A 400V	Remarks
	Footnote	►	□	►	
A 10 / W 35	Heat output [kW]	6,739	9,284	9,284	VDI 4650, BAFA
With delta T 5K at A7 / W35	El. input [kW]	1,205	1,817	1,817	
	COP [-]	5,59	5,11	5,11	
A 10 / W 45	Heat output [kW]	6,156	8,829	8,829	
With delta T 5K at A7 / W45	El. input [kW]	1,479	2,223	2,223	
	COP [-]	4,16	3,97	3,97	
A 10 / W 55	Heat output [kW]	5,433	8,358	8,358	
With delta T 5K at A7 / W55	El. input [kW]	1,716	2,757	2,757	
	COP [-]	3,17	3,03	3,03	
A 12 / W 35	Heat output [kW]	7,115	9,911	9,911	EN 14825
With delta T 5K at A7 / W35	El. input [kW]	1,198	1,791	1,791	
	COP [-]	5,94	5,53	5,53	
A 12 / W 45	Heat output [kW]	6,544	9,280	9,280	EN 14825
With delta T 5K at A7 / W45	El. input [kW]	1,476	2,229	2,229	
	COP [-]	4,43	4,16	4,16	
A 12 / W 55	Heat output [kW]	5,830	8,942	8,942	EN 14825
With delta T 8K at A7 / W55	El. input [kW]	1,740	2,632	2,632	
	COP	3,35	3,40	3,40	

Footnote

- This test sample was selected by national QLC and tested by the test center
□ The tech. datas of this type were transmitted by the manufacturer and **not tested by the test center**

Test results Air-Water-Heat pump * cooling * in conjunction with EN14511-2:2011 Table 16 for low temperature

Model		VWL 85/2 A 230V	VWL 115/2 A 230V	VWL 115/2 A 400V	Remarks
	Footnote	►	□	►	
Refrig. / Mass	Type R410A / [kg]	1,95Kg	3,53Kg	3,53Kg	
Installation:		Outdoor			
Sound power :	[dB(A)]	--	--	--	
A 35 / W 7	Cooling capacity [kW]	5,177	7,574	7,574	Volume flow 0,895 m³/h
Delta T 5K	El. input [kW]	1,975	2,709	2,709	
	EER [-]	2,62	2,80	2,80	
A 35 / W 18	Cooling capacity [kW]	7,268	10,454	10,454	Volume flow 1,226 m³/h
Delta T 5K	El. input [kW]	2,171	3,065	3,065	
	EER [-]	3,35	3,41	3,41	

Footnote

- This test sample was selected by national QLC and tested by the test center
- The tech. datas of this type were transmitted by the manufacturer and **not tested by the test center**

-- END OF TEST REPORT --