Vertical Packaged and Split Air Conditioners

AVN 204 to 904
EVN/CVN 204 to 904

19.4 to 85.4 kW

19.8 to 86.4 kW

HFC 410A

Engineering Data Manual

EDM AECVN-A.1GB

Date : June 2008

Supersedes : None

Airwell

Technical Description

General

The units "AVN" (Packaged units), "CVN-EVN" (Split units) are vertical air conditioners, Heat Pump and designed to operate with ducts, for both indoor and outdoor units.

The whole range of Vertical Units is made in two separate sections and can be installed in the stand-alone version or in the split version (to be specified when order).

In case of compact version the unit is supplied complete with R410A refrigerant gas, whereas split units are supplied with N_2.

The units are delivered fully tested and wired and they are ready for the easy plug and play installation.

R410A refrigerant gas and Scroll compressor

Although R410A is a blend, it behaves like a pure gas and features a negligible glide. Thanks to its outstanding heat conductivity, R410A contributes towards achieving high system efficiency. Better performances are achieved thanks to use of SCROLL compressors too, that have been expressly redesigned for applications with the new gas and they are now more compact, more silent and more efficient than before.

Complete versatility and efficiency

The units are designed to fully satisfy any application system need thanks to a complete range, versions and configurations and with the goal of guaranteeing high efficiency at any working conditions. As the units are checked in the factory, during installation only the electrical, air and condensate drain connections need to be made. They have also been developed thinking to make easy the maintenance operations they need.

Structure

Self supporting panels structure in steel sheet protected by oven-dried polyester paint for corrosion resistance. The panels are thermally and acoustically insulated with a sheet 10mm high of polyethylene foam high density.

Fan

The external and internal sections of the whole range are both supplied with centrifugal fans with dual intakes. Ventilation characteristics can be adjusted by pulley (iron-made) and belt regulation.

Refrigerant circuit

In copper tubing in accordance with EN-12375. Fitted tapping points for reading pressure gauges and refrigerant load. Heat Pump versions are fitted with a 4-way valve activated by solenoid valve and liquid accumulator on suction side to protect the compressor against liquid filling strokes.

Exchangers

Direct expansion finned exchangers made from copper pipes and aluminium fins, adequately distanced and dimensioned to ensure the maximum heat exchange efficiency.

Filtration

Washable air filter easy-to-remove with galvanized plate frame and protective mesh. Standard class G2 filtering efficiency (according with EN 779). The unit can be supplied with filters of different efficiencies for particular applications.

Electrical panel and safety devices

The whole units are fitted with pressostats for high and low pressure (2 for low pressure: 1 on Cooling circuit and 1 on Heat Pump circuit). The electrical panel complies with 73/23 CEE, 89/392 CEE, 89/336 CEE Directives and with EN-60204-I.

The electrical panel, completely wired, includes the safety ON-OFF mechanical main door lock isolator switch, compressors and fans fuses and the thermal overload protection of the fans. Phase sequence control and earth connections are fitted in all models.

Options and accessories

- **Exchangers :** By request the units can be equipped with copper fins coils or aluminium fins covered with polyurethane for installations in aggressive environments or Blygold covering for corrosive environments.
- **Pressure condensing control :** In addition to the Standard "on-off" control to be found on all models, may be installed a proportional condensing control. This control operates through airflow variation (managing the dampers) or increasing / decreasing the fans speed, modifying the motor frequency.
- **Electrical heaters :** Heating elements (of finned elements) of adequate power are supplied together with contactors, fuses and relative switch. The heating element is protected by two temperature limiting devices, one with automatic reset and the second with manual reset (see the correspondent chapter). The electrical heater is placed behind of evaporating coil so it permits to add 1 or 2 heating stages to the unit.
- **Hot water coil :** A water coil made of copper pipes and aluminium fins can be placed inside the indoor section allowing 1 or 2 heating stages to the unit (Heat Pump).
- **Thermostat :** Regulation through the PCO terminal, characterized by great versatility makes it easy for the user. It allows the visualization and modification of control parameters and fundamental operations by the user himself. pLAN connections and interface with the more commonly-used BMS (Building Management Systems) are possible.
- **Thermostatic or enthalpy Free-Cooling :** It is supplied as an independent module that, coupled with 2 dampers, realizes thermostatic and enthalpy Freecooling and, if coupled with 3 dampers, in the presence of return centrifugal fan, permits renewal of air in the places.
- **Return centrifugal fan :** As an independent module, with 3 dampers Freecooling permits the renewal o fair in the place to be acclimatized.
- **Air quality :** We can offer several optional to maintain a high level of comfort and healthiness of the air, such as air quality probe, dirty filter detector, smoke detector, high efficiency filters and FIRE detectors.
- **Powered fan :** In case of special requirements please contact Technical Department.
- **Power supply :** Possibility of adapting to different voltages and frequencies on demand.
- **Vibration absorbers :** Possibility of supplying the unit with vibration absorbers.
- **Compressor noise insulation :** Possibility of supplying this accessory on demand.

Standard - ARIA

Wall-mounted electronic thermostat consisting of a terminal (located in the room) and a power board (located in the unit). Connection to the unit through 2 wires.

Features :

- COOL/HEAT/AUTO/FAN modes.
- Room sensor in the return.
- Temperature set-point between 16 °C and 30 °C.
- Set : COMFORT/ABSENCE/NIGHT.

Other options :

- pLAN Network applications (up to 16 units controlled by a PCO_3). See the connections example in the next pages.
- Remote temperature probe (connected to the terminal).
- Thermostatic Free Cooling.
- Timer Setting terminal (not compatible when pLAN network).
- Dirty filter detector.

Optional - PCO

New high tech user interfaces, terminal PGD that makes it easy with the user. Display and keypad offer the user the possibility of programming the control parameters (set point, differential band, alarm thresholds, etc) and basic operations (ON/OFF, display of controlled values).

Features :

- Connection of the terminal is unnecessary for Standard operation of the control.
- Management of main system alarms.
- Compressors shattering or sequence.
- Temperature probe on the return of the unit.

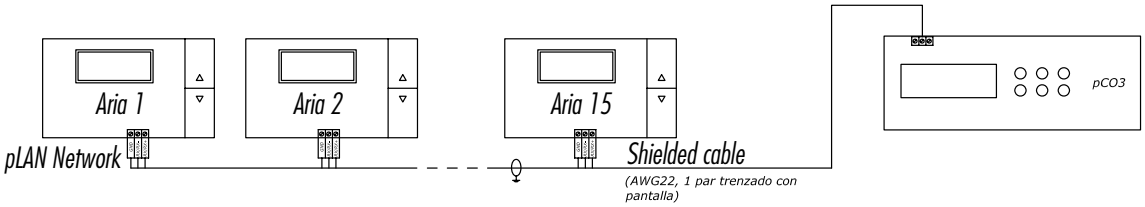
Other options :

- Thermostatic or Enthalpy FreeCooling with proportional management of the dampers.
- pLAN connections, as well as possibility to interface the PCO with the more commonly-used BMS (Building Management Systems) See the connections example in the next pages.
- Timer setting.
- Management off whole range of optional for air quality control (CO2 probe, dirty filter detector, etc).
- Modes : NORMAL, ONLY FAN, FAN + FREECOOLING, RENEWAL (with 5% open damper).

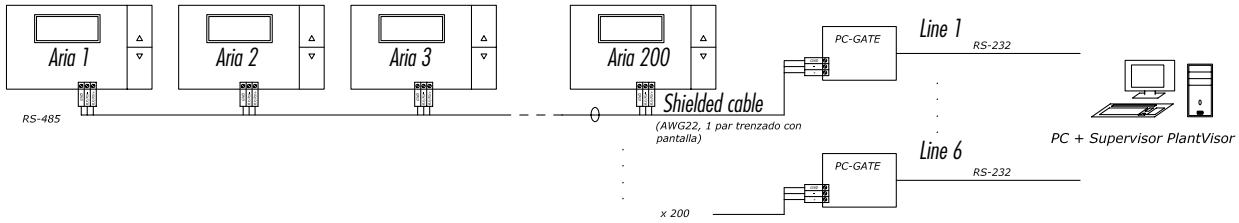
Examples of Connexion

In case of ARIA control, the units can be connected as follows. All connections available only with ARIA pLAN version.

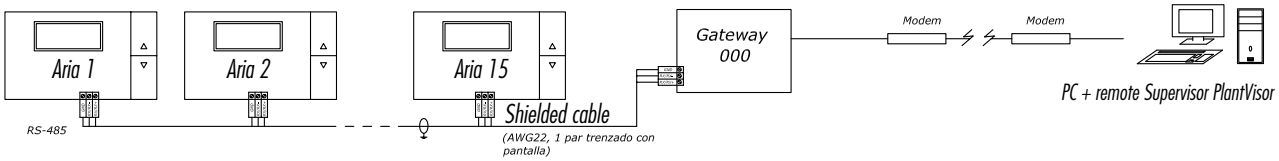
pLAN connection



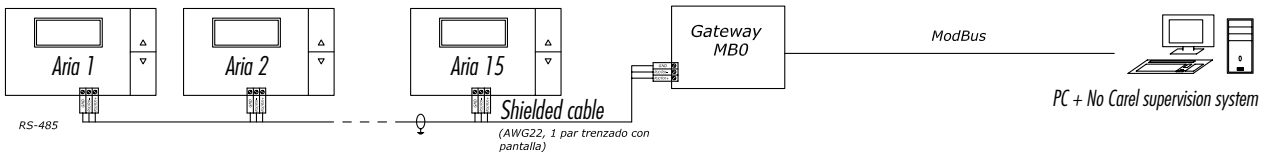
Connection with PlantVisor (Carel)



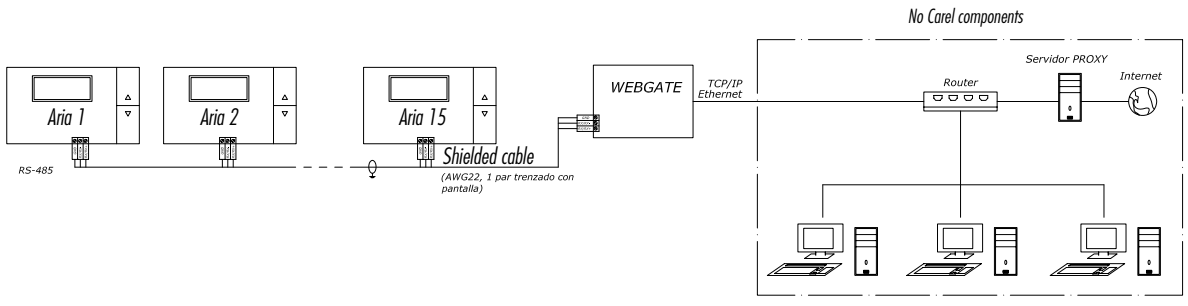
Connection with remote PlantVisor (Carel)



Connection with no Carel supervisor



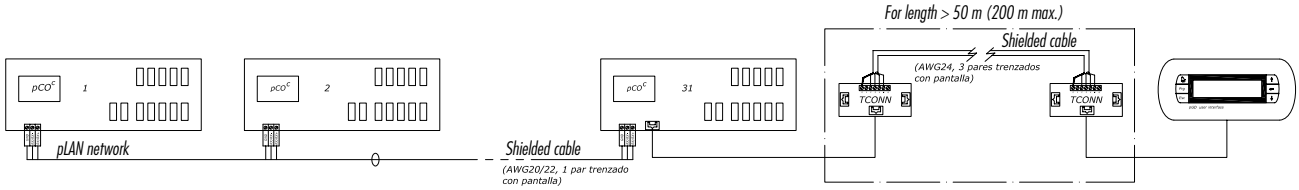
TCP/IP connection



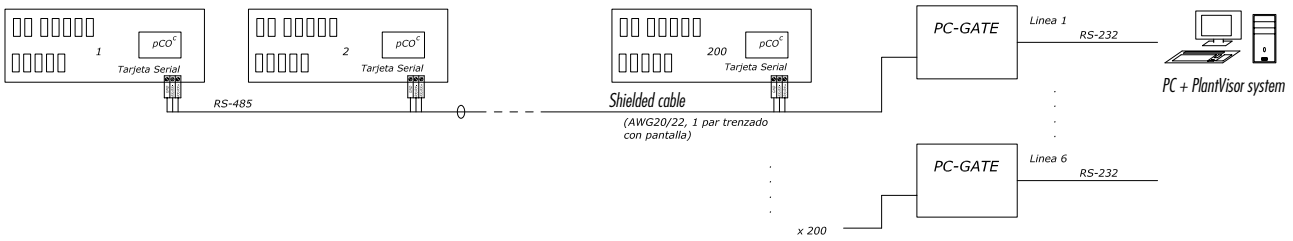
Examples of Connexion (continued)

In case of PCO control, the units can be connected as follows.

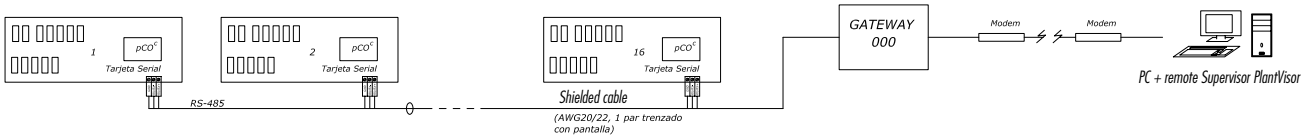
pLAN connection



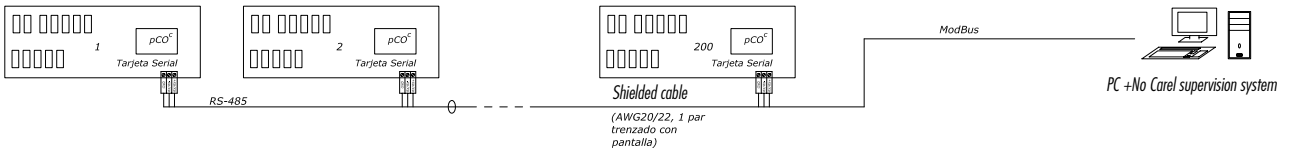
Connection with PlantVisor (Carel)



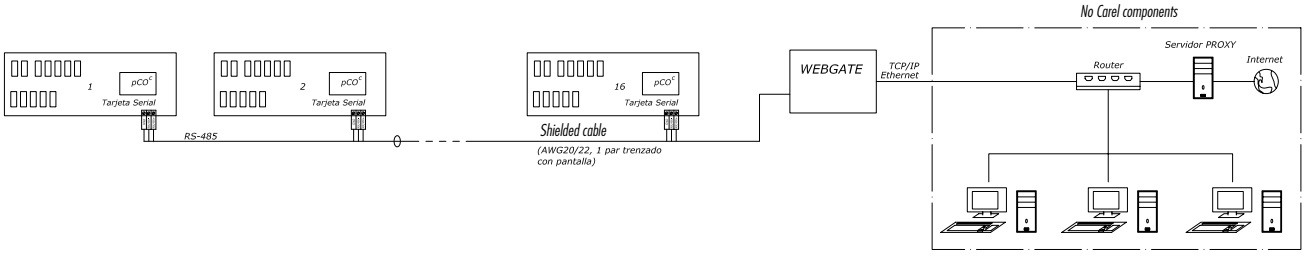
Connection with remote PlantVisor (Carel)



Connection with no Carel supervisor



TCP/IP connection



Supply and Return Positions

There is the possibility of several configurations of the inlet and outlet positions of the air intakes. The panel are easy interchangeable, although the final configuration must be selected when order.

AVN units

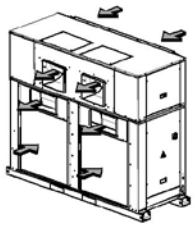


Fig.A

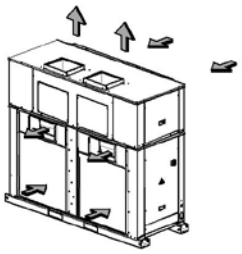


Fig.B

Fig.C

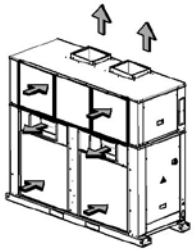


Fig.D

EVN-CVN units

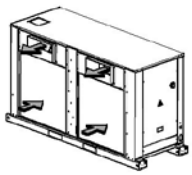


Fig.A

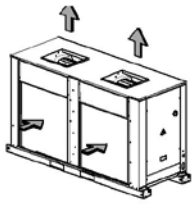


Fig.B

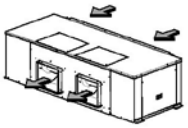


Fig.A

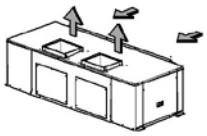


Fig.B

Technical Data

MODELS		204	254	304	354	384	454	504	604	654	754	904
COOLING MODE												
Cooling Capacity **(1)**	kW	19.4	24.5	29.1	32.3	37.7	42.7	49.1	58.1	64.6	75.4	85.4
Power Input **(1)**	kW	7.9	9.5	11.7	12.5	14.4	16.6	19.0	22.0	23.5	28.8	31.6
EER compressor	W/W	3.4	3.6	3.5	3.5	3.5	3.5	3.6	3.5	3.5	3.5	3.5
EER unit	W/W	2.5	2.6	2.5	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.7
HEAT PUMP MODE												
Heating Capacity **(2)**	kW	19.8	24.9	29.5	32.9	38.3	43.1	49.8	59.1	65.8	76.7	86.4
Power Input **(2)**	kW	7.7	7.2	10.7	9.4	11.1	15.5	17.5	20.1	21.7	26.5	29.3
COP compressor	W/W	3.6	4.1	4.0	4.0	4.0	3.9	4.1	4.0	4.0	4.0	3.9
COP unit	W/W	2.6	3.4	2.7	3.5	3.5	2.8	2.9	2.9	3.0	2.9	2.9
COMPRESSORS												
Type		Hermetic Scroll										
Number		1	1	1	1	1	1	2	2	2	2	2
Number of circuits		1	1	1	1	1	1	2	2	2	2	2
Number of stages		1	1	1	1	1	1	2	2	2	2	2
Type of oil		Danfoss P.O.E. 160 SZ. Copeland 3MAF 32 cSt. ICI Emkarate RL32 CF. Mobil EAL Arctic 22cc										
Crankcase heater	W	65	65	65	65	65	75	65	65	65	65	75
Quantity/Load	litres	1.8	3.3	3.3	3.3	3.3	6.2	3.3	3.3	3.3	3.3	6.2
Cooling Power Input **(1)**	kW	5.7	6.9	8.4	9.2	10.7	12.1	13.8	16.8	18.3	21.4	24.2
Cooling Electrical Requirement **(1)**	A	10.5	12.3	15.3	17.4	18.5	23.7	24.5	30.6	34.8	37.1	47.3
Heating Power Input **(2)**	kW	5.5	6.1	7.4	8.3	9.6	11.0	12.3	14.9	16.5	19.1	21.9
Heating Electrical Requirement **(2)**	A	9.6	11.4	14.3	16.3	17.1	22.3	22.8	28.5	32.7	34.2	44.7
INDOOR UNIT												
Number of fans		1 x Simple						1 x Tandem				
Type		Pulley & Belt ajustable motor Centrifugal fan										
Absorbed Power Motor	kW	0.75	1.10	1.10	1.10	1.50	1.50	2.20	2.20	2.20	3.00	3.00
Maximum Electrical Requirement	A	1.93	2.60	2.60	2.60	3.40	3.40	4.94	4.94	4.94	6.60	6.60
Nominal airflow	m^3/h	4 000	5 200	5 500	6 800	8 000	8 000	10 200	10 500	12 500	14 500	15 000
Available Static Pressure	Pa	120	120	120	120	120	120	150	150	150	150	150
OUTDOOR UNIT												
Number of fans		1 x Simple						2 x Simple				
Type		Pulley & Belt ajustable motor Centrifugal fan										
Absorbed Power Motor	kW	1.50	1.50	2.20	2.20	2.20	3.00	3.00	3.00	3.00	4.40	4.40
Maximum Electrical Requirement	A	3.40	3.40	4.94	4.94	4.94	6.60	6.80	6.80	6.80	9.88	9.88
Nominal airflow	m^3/h	8 500	8 500	9 500	11 000	12 000	12 700	15 600	16 500	19 000	21 600	23 000
Available Static Pressure	Pa	120	120	120	150	150	150	150	150	150	150	150
DIMENSIONS												
Length	mm	1325	1325	1325	1675	1675	1675	2350	2350	2600	2600	2600
Depth	mm	800	800	800	900	900	900	900	900	940	940	940
Height	mm	1890	1890	1890	2030	2030	2030	1950	1950	2300	2300	2300
Packaged Unit Weight AVN	kg	370	378	387	544	564	585	745	772	969	1007	1046
Split Unit Weight CVN	kg	259	265	271	381	395	409	521	540	678	705	733
Split Unit Weight EVN	kg	111	113	116	163	169	175	223	232	291	302	314
Condensing Water Drain pipe		Male thread 3/4" G										
SAFETY DEVICES												
Heat-Pump & Cooling mode		High Pressure Pressostat. Manual Reset. 42 bar +/-1										
Cooling mode		Low Pressure Pressostat. Automatic Reset 4.5 bar +/-0.4										
Heat-Pump mode		Low Pressure Pressostat. Automatic Reset. 3.0 bar +/-0.3										
GAS REFRIGERANT												
Type		R410A										
Load	kg	4.8	6.1	7.3	8.1	9.4	10.7	2 x 6.1	2 x 7.3	2 x 8.1	2 x 9.4	2 x 10.7
Power Supply		400V-III+N-50Hz(+/-5%)										
Unit Maximum Electrical Input	A	20	25	29	33	35	42	50	54	62	70	81
Packaged Sound Pressure Level **(3)**	dB(A)	65.0	67.5	68.0	69.5	71.0	71.0	72.0	72.0	73.0	74.0	75.0
Evaporating Unit Sound Pressure Level **(3)**	dB(A)	61.0	61.5	62.0	62.0	64.0	63.5	66.0	66.0	67.0	67.0	68.0
Condensing Unit Sound Pressure Level **(3)**	dB(A)	64.5	67	67.5	69	69.5	70	70	70.5	71	72	72.5

(1) Indoor temperature : 27 °C and 50% RH (Twb=19 °C) and outdoor temperature : 35 °C.

(2) Indoor temperature : 20 °C and outdoor temperature : 7 °C (Twb=6 °C).

(3) Pressure sound level measured at 5 m distance from unit surface in free field conditions at 1.5 m from ground level and with air ducts.

Optional Item Data

Electrical heater

It consists of modular finned elements that permit a wide selection of heating capacities. The finned elements are mounted in a frame and are completely cabled.

The operation is regulated by the own air-conditioner control system. The heating elements have an independent switch and two thermal cut-outs: the first one with automatic reset disconnects the heating elements when temperature reaches 77 °C; the other, with manual reset, disconnects it when temperature reaches 105 °C.

In case of an internal cut-out failure of the fan, the unit control system stops the heating element.

All units can manage 2 stages electrical heaters, with the exception of 1 circuit Heat Pump unit managed by ARIA electronic control.

Models	**kW**	**204**	**254**	**304**	**354**	**384**	**454**	**504**	**604**	**654**	**754**	**904**
Cooling Capacities	**kW**	**19.4**	**24.5**	**29.1**	**32.3**	**37.7**	**42.7**	**49.1**	**58.1**	**64.6**	**75.4**	**85.4**
Electrical heater 1 stage	**9**	**x**	**x**	**x**								
	13.5	**x**	**x**	**x**								
	18				**x**	**x**	**x**					
	22.5							**x**	**x**			
	27				**x**	**x**	**x**			**x**	**x**	**x**
	36							**x**	**x**			
	45									**x**	**x**	**x**
Electrica heater 2 stages	**9 + 9**	**x**	**x**	**x**								
	13.5 + 13.5	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**			
	18 + 18				**x**	**x**	**x**			**x**	**x**	**x**
	22.5 + 22.5							**x**	**x**			
	27 + 27									**x**	**x**	**x**

Hot water coil

It is made with copper pipes and aluminium fins with galvanised sheet metal headers and copper manifolds with brass connections.

The water coils are placed inside the indoor section after evaporator coils.

3-way valve control is ON-OFF in case of ARIA electronic control and PROPORTIONAL in case of PCO electronic control.

Models		**204**	**254**	**304**	**354**	**384**	**454**	**504**	**604**	**654**	**754**	**904**
Capacity	**kW**	27.3	32.1	33.2	42.9	47.2	47.2	65.6	66.8	85.8	94.2	96.2
Nominal airflow	**m²/h**	4 000	5 200	5 500	6 800	8 000	8 000	10 200	10 500	12 500	14 500	15 000
Water pressure drop	**kPa**	16.5	22.3	23.7	25.9	30.9	30.9	19.3	20.0	23.9	28.3	29.5
Water coil connections	**Ø**	3/4" G	3/4" G	3/4" G	3/4" G	3/4" G	3/4" G	1" G	1" G	1 1/4" G	1 1/4" G	1 1/4" G
Water flow rate	**l/h**	1595	1878	1944	2509	2762	2762	3839	3908	5022	5514	5631

Air conditions : 20 °C and 50% RH.
Water conditions : Inlet 80 °C, outlet 65 °C.

Optional Item Data (cont'd)

Thermostatic/Enthalpy freecooling

Thermostatic or enthalpy freecooling consists of 2 external damper module managed by a motor, or 3 external dampers when a return fan is supplied with the unit.

2-damper freecooling

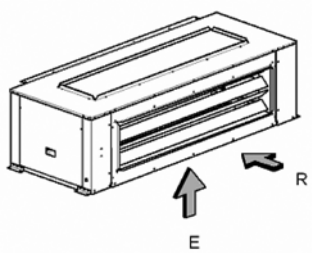


Fig.A

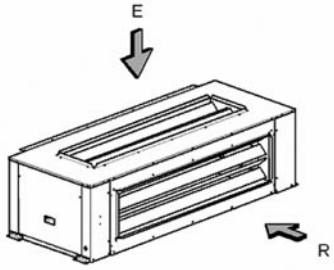
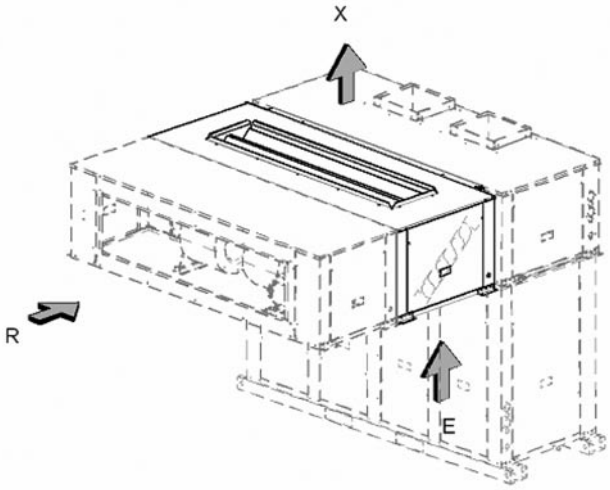


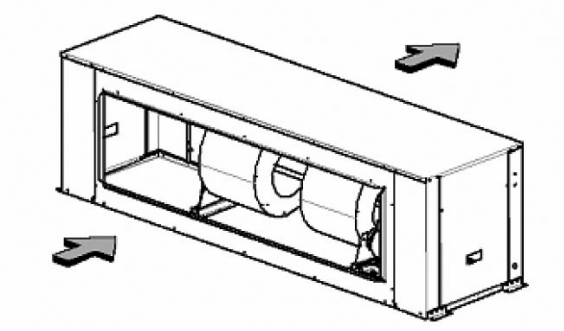
Fig.B

R- Return
E- Outdoor air
X- Exhaust air

3-damper freecooling (with return centrifugal fan)



Return centrifugal fan module and fan characteristics



Models	Nominal airflow (m^3/h)	Motor (kW)	Pressure (Pa)	Speed (rpm)
204	3400	0.55	96	502
254	4200	0.55	96	527
304	4400	0.55	96	545
354	5400	0.55	96	439
384	6400	0.75	96	466
454	6400	0.75	96	466
504	8200	1.1	120	657
604	8200	1.1	120	658
654	10000	1.5	120	635
754	10200	1.5	120	639
904	10500	1.5	120	648

Operating Limits

	Air temperature (°C)			
	Cooling mode		Heat pump mode	
	Dry bulb	Wet bulb	Dry bulb	Wet bulb
Indoor temperature				
Minimum	19	14	10***	-
Maximum	35	21	27	-
Outdoor temperature				
Minimum	-10*	-	-10	-
Maximum	46**	-	24	16

* A proportional condensing control is necessary when outdoor temperature is below 18 °C.

** Up to 52 °C with powered fan.

*** The appliance can operate for a short time when temperatures are below 10 °C in order to raise the air temperature in the environment being served up to 10 °C.

Correcting Factors

CORRECTING FACTOR FOR COOLING CAPACITY ACCORDING TO % OF INDOOR AIR FLOW					
% air flow	**80**	**90**	**100**	**110**	**120**
TOTAL capacity	0.96	0.985	1	1.015	1.03
SENSIBLE capacity	0.885	0.925	1	1.065	1.11

CORRECTING FACTOR FOR HEATING CAPACITY ACCORDING TO % OF INDOOR AIR FLOW					
% air flow	**80**	**90**	**100**	**110**	**120**
TOTAL capacity	0.96	0.985	1	1.025	1.045

Cooling Capacities

Sizes	Indoor temp. (°C)		Outdoor temperature (°C)														
	Wet bulb	Dry bulb	25			30			35			40			46		
			Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs
204	16	19	19.1	11.3	6.3	18.4	11.3	6.9	17.6	10.8	7.7	16.7	10.4	8.2	15.8	10.4	8.8
		21	19.2	13.2	6.3	18.5	12.8	7.0	17.7	12.5	7.7	16.7	12.1	8.3	15.9	11.7	8.8
		23	19.3	14.9	6.3	18.6	14.7	7.0	17.7	14.0	7.7	16.8	13.7	8.3	15.9	13.5	8.9
		25	19.5	18.0	6.3	18.9	17.6	7.0	18.0	16.8	7.8	17.1	16.2	8.4	16.3	15.6	8.9
	19	23	20.8	11.3	6.5	20.0	10.7	7.1	19.0	10.4	7.8	17.9	10.0	8.5	17.0	9.5	8.9
		25	21.0	15.2	6.5	20.2	14.9	7.1	19.3	14.5	7.9	18.3	14.1	8.5	17.4	13.7	8.9
		27	21.1	16.4	6.5	20.3	16.0	7.2	**19.4**	**15.6**	**7.9**	18.3	15.2	8.5	17.4	14.8	8.9
		29	21.3	18.5	6.5	20.5	18.2	7.2	19.5	17.8	7.9	18.5	17.2	8.5	17.7	16.4	8.9
	21	25	21.9	11.5	6.5	20.9	10.8	7.2	20.1	10.4	7.9	19.0	10.1	8.5	17.9	9.9	9.0
		27	22.0	14.2	6.6	21.1	14.0	7.2	20.2	13.5	8.0	19.1	13.3	8.5	18.0	12.8	9.0
		29	22.0	16.2	6.6	21.1	16.0	7.3	20.2	15.6	8.0	19.1	15.3	8.6	18.2	14.7	9.1
		31	22.1	19.8	6.6	21.6	18.5	7.3	20.7	18.0	8.0	19.5	17.8	8.6	18.6	17.8	9.1
	23	27	22.5	11.6	6.6	21.3	10.9	7.3	20.9	10.5	8.1	20.2	10.1	8.7	19.4	10.0	9.1
		29	22.7	14.4	6.6	21.5	14.0	7.3	21.1	13.6	8.1	20.2	13.3	8.7	19.8	13.0	9.1
		31	23.5	16.4	6.7	22.7	16.1	7.4	21.5	15.6	8.1	20.5	15.3	8.8	20.2	14.7	9.2
		33	23.8	20.0	6.7	23.1	18.6	7.4	21.9	18.1	8.1	20.7	17.8	8.8	20.4	18.0	9.2
254	16	19	24.2	14.1	7.6	23.2	14.1	8.3	22.3	13.6	9.2	21.1	13.0	9.9	20.0	13.0	10.5
		21	24.3	16.5	7.6	23.4	16.1	8.4	22.3	15.6	9.3	21.2	15.2	10.0	20.1	14.7	10.5
		23	24.4	18.7	7.6	23.5	18.4	8.4	22.4	17.5	9.3	21.2	17.2	10.0	20.2	17.0	10.6
		25	24.7	22.6	7.6	23.9	22.0	8.4	22.8	21.1	9.3	21.7	20.4	10.1	20.6	19.5	10.6
	19	23	26.3	14.2	7.8	25.2	13.4	8.5	24.1	13.0	9.4	22.7	12.6	10.2	21.6	11.9	10.6
		25	26.6	19.1	7.8	25.6	18.7	8.6	24.4	18.2	9.5	23.1	17.7	10.2	22.0	17.2	10.7
		27	26.7	20.6	7.8	25.7	20.1	8.6	**24.5**	**19.6**	**9.5**	23.2	19.1	10.2	22.1	18.6	10.7
		29	26.9	23.3	7.8	25.9	22.8	8.6	24.7	22.4	9.5	23.4	21.6	10.2	22.3	20.5	10.7
	21	25	27.7	14.4	7.8	26.4	13.6	8.6	25.4	13.0	9.5	24.0	12.7	10.2	22.7	12.4	10.8
		27	27.8	17.8	7.9	26.7	17.5	8.7	25.5	17.0	9.6	24.1	16.7	10.2	22.8	16.1	10.8
		29	27.9	20.4	7.9	26.7	20.1	8.7	25.5	19.5	9.6	24.1	19.2	10.3	23.1	18.4	10.9
		31	27.9	24.9	7.9	27.3	23.2	8.8	26.2	22.6	9.6	24.7	22.3	10.3	23.5	22.3	10.9
	23	27	28.4	14.5	8.0	27.0	13.7	8.8	26.5	13.1	9.7	25.5	12.7	10.4	24.5	12.6	10.9
		29	28.7	18.0	8.0	27.2	17.5	8.8	26.7	17.1	9.7	25.5	16.7	10.4	25.0	16.3	10.9
		31	29.7	20.6	8.1	28.7	20.2	8.9	27.2	19.6	9.8	26.0	19.2	10.5	25.5	18.4	11.0
		33	30.2	25.1	8.1	29.2	23.3	8.9	27.7	22.8	9.8	26.2	22.3	10.5	25.7	22.6	11.0
304	16	19	28.7	16.4	9.3	27.6	16.4	10.3	26.4	15.8	11.4	25.0	15.1	12.2	23.7	15.1	13.0
		21	28.8	19.2	9.3	27.8	18.7	10.3	26.5	18.2	11.4	25.1	17.6	12.3	23.8	17.1	13.0
		23	28.9	21.7	9.3	27.9	21.4	10.3	26.6	20.4	11.4	25.1	20.1	12.3	23.9	19.7	13.1
		25	29.3	26.3	9.4	28.3	25.7	10.4	27.0	24.5	11.5	25.7	23.7	12.4	24.5	22.7	13.1
	19	23	31.2	16.5	9.5	29.9	15.6	10.5	28.5	15.2	11.6	26.9	14.6	12.5	25.6	13.8	13.1
		25	31.6	22.2	9.6	30.3	21.7	10.6	29.0	21.2	11.7	27.4	20.6	12.5	26.0	20.1	13.2
		27	31.7	23.9	9.6	30.5	23.4	10.6	**29.1**	**22.8**	**11.7**	27.5	22.2	12.6	26.1	21.6	13.2
		29	31.9	27.1	9.6	30.7	26.6	10.6	29.3	26.0	11.7	27.8	25.1	12.6	26.5	23.9	13.2
	21	25	32.8	16.8	9.7	31.3	15.8	10.6	30.1	15.1	11.7	28.5	14.8	12.6	26.9	14.5	13.3
		27	33.0	20.7	9.7	31.6	20.4	10.7	30.2	19.7	11.8	28.6	19.4	12.6	27.0	18.7	13.3
		29	33.0	23.7	9.7	31.7	23.3	10.7	30.3	22.7	11.8	28.6	22.4	12.7	27.3	21.4	13.4
		31	33.1	28.9	9.8	32.4	27.0	10.8	31.0	26.3	11.9	29.3	26.0	12.7	27.9	26.0	13.4
	23	27	33.7	16.9	9.8	32.0	16.0	10.9	31.4	15.3	11.9	30.2	14.8	12.9	29.1	14.6	13.4
		29	34.0	21.0	9.8	32.3	20.4	10.9	31.7	19.9	11.9	30.2	19.4	12.9	29.7	18.9	13.4
		31	35.2	24.0	9.9	34.0	23.5	11.0	32.3	22.8	12.0	30.8	22.4	13.0	30.2	21.5	13.6
		33	35.8	29.2	9.9	34.6	27.2	11.0	32.9	26.5	12.0	31.1	26.0	13.0	30.5	26.2	13.6
354	16	19	31.8	18.5	9.9	30.6	18.5	11.0	29.3	17.8	12.1	27.7	17.0	13.0	26.3	17.0	13.8
		21	32.0	21.7	10.0	30.8	21.1	11.0	29.4	20.5	12.2	27.8	19.8	13.1	26.4	19.3	13.8
		23	32.1	24.4	10.0	31.0	24.1	11.0	29.5	22.9	12.2	27.9	22.6	13.1	26.5	22.2	14.0
		25	32.5	29.6	10.0	31.4	28.9	11.1	30.0	27.6	12.2	28.5	26.6	13.2	27.1	25.5	14.0
	19	23	34.6	18.6	10.2	33.2	17.6	11.2	31.7	17.1	12.4	29.8	16.5	13.3	28.4	15.6	14.0
		25	35.0	25.0	10.2	33.7	24.5	11.3	32.2	23.9	12.5	30.4	23.2	13.3	28.9	22.6	14.1
		27	35.1	26.9	10.2	33.8	26.3	11.3	**32.3**	**25.7**	**12.5**	30.5	25.0	13.5	29.0	24.4	14.1
		29	35.4	30.5	10.2	34.1	29.9	11.3	32.5	29.3	12.5	30.8	28.3	13.5	29.4	26.9	14.1
	21	25	36.4	18.9	10.3	34.8	17.8	11.3	33.5	17.0	12.5	31.6	16.7	13.5	29.8	16.3	14.2
		27	36.6	23.3	10.4	35.1	22.9	11.4	33.6	22.2	12.6	31.7	21.8	13.5	29.9	21.1	14.2
		29	36.7	26.6	10.4	35.2	26.3	11.4	33.6	25.5	12.6	31.8	25.2	13.6	30.3	24.1	14.3
		31	36.7	32.6	10.4	35.9	30.4	11.5	34.4	29.6	12.7	32.5	29.2	13.6	31.0	29.2	14.3
	23	27	37.4	19.0	10.5	35.5	18.0	11.6	34.9	17.2	12.7	33.6	16.7	13.7	32.3	16.4	14.3
		29	37.8	23.6	10.5	35.8	22.9	11.6	35.2	22.3	12.7	33.6	21.8	13.7	32.9	21.3	14.3
		31	39.0	27.0	10.6	37.8	26.5	11.7	35.8	25.7	12.8	34.2	25.2	13.8	33.6	24.1	14.5
		33	39.7	32.9	10.6	38.4	30.6	11.7	36.5	29.8	12.8	34.5	29.2	13.8	33.9	29.5	14.5

Pt : Total capacity.
Ps : Sensible capacity.
Pabs : Absorbed power.

Cooling Capacities (cont'd)

Sizes	Indoor temp. (°C)		Outdoor temperature (°C)														
	Wet bulb	Dry bulb	25			30			35			40			46		
			Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs
384	16	19	37.2	21.7	11.5	35.7	21.7	12.7	34.3	20.9	14.0	32.4	20.0	15.0	30.8	20.0	16.0
		21	37.4	25.4	11.5	36.0	24.7	12.7	34.4	24.0	14.1	32.5	23.3	15.1	30.9	22.6	16.0
		23	37.5	28.7	11.5	36.2	28.2	12.7	34.5	26.9	14.1	32.6	26.5	15.1	31.0	26.1	16.1
		25	38.0	34.8	11.5	36.7	33.9	12.8	35.1	32.4	14.1	33.3	31.3	15.3	31.7	30.0	16.1
	19	23	40.5	21.8	11.8	38.8	20.6	12.9	37.0	20.0	14.3	34.8	19.4	15.4	33.1	18.3	16.1
		25	40.9	29.4	11.8	39.4	28.7	13.0	37.6	28.0	14.4	35.5	27.2	15.4	33.8	26.5	16.3
		27	41.1	31.6	11.8	39.5	30.9	13.0	**37.7**	**30.2**	**14.4**	35.7	29.3	15.6	33.9	28.6	16.3
		29	41.4	35.8	11.8	39.8	35.1	13.1	38.0	34.4	14.4	36.0	33.2	15.6	34.4	31.6	16.3
	21	25	42.6	22.2	11.9	40.6	20.9	13.1	39.1	20.0	14.5	36.9	19.6	15.6	34.8	19.1	16.4
		27	42.7	27.4	12.0	41.0	26.9	13.2	39.2	26.1	14.5	37.1	25.6	15.6	35.0	24.8	16.4
		29	42.8	31.3	12.0	41.1	30.9	13.2	39.3	30.0	14.5	37.1	29.6	15.7	35.4	28.2	16.6
		31	42.9	38.2	12.0	42.0	35.6	13.3	40.2	34.8	14.6	38.0	34.3	15.7	36.2	34.3	16.6
	23	27	43.7	22.3	12.1	41.5	21.1	13.4	40.7	20.2	14.7	39.2	19.6	15.8	37.7	19.3	16.6
		29	44.1	27.7	12.1	41.8	26.9	13.4	41.1	26.2	14.7	39.2	25.6	15.8	38.5	25.0	16.6
		31	45.6	31.7	12.2	44.1	31.1	13.5	41.8	30.2	14.8	40.0	29.6	16.0	39.2	28.4	16.7
		33	46.4	38.6	12.2	44.9	35.9	13.5	42.6	35.0	14.8	40.3	34.3	16.0	39.6	34.7	16.7
454	16	19	42.1	24.2	13.2	40.5	24.2	14.6	38.8	23.2	16.2	36.7	22.2	17.3	34.9	22.2	18.4
		21	42.4	28.3	13.3	40.8	27.5	14.6	38.9	26.7	16.2	36.8	25.9	17.4	35.0	25.2	18.4
		23	42.5	31.9	13.3	41.0	31.4	14.7	39.1	30.0	16.2	36.9	29.5	17.4	35.1	29.0	18.6
		25	43.0	38.7	13.3	41.6	37.7	14.7	39.7	36.1	16.3	37.7	34.8	17.6	35.9	33.4	18.6
	19	23	45.8	24.3	13.6	44.0	23.0	14.9	41.9	22.3	16.5	39.5	21.5	17.8	37.5	20.4	18.6
		25	46.3	32.7	13.6	44.6	32.0	15.0	42.6	31.2	16.6	40.3	30.3	17.8	38.3	29.5	18.8
		27	46.5	35.2	13.6	44.7	34.4	15.0	**42.7**	**33.6**	**16.6**	40.4	32.6	17.9	38.4	31.8	18.8
		29	46.9	39.8	13.7	45.1	39.1	15.1	43.0	38.2	16.6	40.8	37.0	17.9	38.9	35.1	18.8
	21	25	48.2	24.7	13.7	46.0	23.2	15.1	44.3	22.2	16.7	41.8	21.8	17.9	39.5	21.3	18.9
		27	48.4	30.5	13.8	46.5	30.0	15.2	44.4	29.0	16.7	42.0	28.5	17.9	39.6	27.6	18.9
		29	48.5	34.8	13.8	46.6	34.3	15.2	44.5	33.4	16.7	42.0	32.9	18.1	40.1	31.4	19.1
		31	48.6	42.6	13.9	47.6	39.7	15.4	45.5	38.7	16.9	43.0	38.2	18.1	41.0	38.2	19.1
	23	27	49.5	24.8	14.0	47.0	23.5	15.4	46.1	22.5	16.9	44.4	21.8	18.3	42.7	21.5	19.1
		29	50.0	30.9	14.0	47.4	30.0	15.4	46.6	29.2	16.9	44.4	28.5	18.3	43.6	27.9	19.1
		31	51.7	35.2	14.1	50.0	34.6	15.6	47.4	33.6	17.1	45.3	32.9	18.4	44.4	31.6	19.3
		33	52.5	43.0	14.1	50.8	39.9	15.6	48.3	38.9	17.1	45.7	38.2	18.4	44.8	38.6	19.3
504	16	19	48.5	28.7	15.1	46.5	28.7	16.7	44.6	27.5	18.5	42.2	26.4	19.8	40.1	26.4	21.1
		21	48.7	33.5	15.2	46.9	32.6	16.7	44.7	31.7	18.5	42.3	30.7	20.0	40.2	29.9	21.1
		23	48.9	37.8	15.2	47.1	37.2	16.8	44.9	35.5	18.6	42.5	35.0	20.0	40.4	34.4	21.3
		25	49.4	45.8	15.2	47.8	44.7	16.8	45.7	42.7	18.6	43.4	41.3	20.1	41.3	39.5	21.3
	19	23	52.7	28.7	15.5	50.6	27.2	17.0	48.2	26.4	18.8	45.4	25.5	20.3	43.2	24.1	21.3
		25	53.3	38.7	15.6	51.2	37.9	17.2	48.9	36.9	19.0	46.3	35.9	20.3	44.0	35.0	21.5
		27	53.5	41.7	15.6	51.4	40.7	17.2	**49.1**	**39.8**	**19.0**	46.5	38.7	20.5	44.2	37.7	21.5
		29	53.9	47.2	15.6	51.8	46.3	17.3	49.5	45.3	19.0	46.9	43.8	20.5	44.7	41.6	21.5
	21	25	55.4	29.2	15.7	52.9	27.5	17.3	50.9	26.4	19.1	48.1	25.8	20.5	45.4	25.2	21.7
		27	55.7	36.1	15.8	53.4	35.5	17.4	51.1	34.4	19.2	48.3	33.8	20.5	45.5	32.7	21.7
		29	55.8	41.3	15.8	53.5	40.7	17.4	51.1	39.5	19.2	48.3	39.0	20.7	46.2	37.2	21.9
		31	55.9	50.4	15.9	54.7	47.0	17.6	52.4	45.8	19.3	49.4	45.3	20.7	47.1	45.3	21.9
	23	27	57.0	29.4	16.0	54.0	27.8	17.7	53.0	26.6	19.4	51.1	25.8	20.9	49.1	25.5	21.9
		29	57.4	36.6	16.0	54.5	35.5	17.7	53.5	34.6	19.4	51.1	33.8	20.9	50.1	33.0	21.9
		31	59.4	41.8	16.2	57.4	41.0	17.9	54.5	39.8	19.6	52.0	39.0	21.1	51.1	37.4	22.0
		33	60.4	50.9	16.2	58.4	47.3	17.9	55.5	46.1	19.6	52.5	45.3	21.1	51.6	45.7	22.0
604	16	19	57.4	33.3	17.5	55.1	33.3	19.3	52.8	32.0	21.4	50.0	30.6	22.9	47.5	30.6	24.4
		21	57.7	39.0	17.6	55.5	37.9	19.4	53.0	36.8	21.5	50.2	35.7	23.1	47.6	34.7	24.4
		23	57.9	44.0	17.6	55.8	43.3	19.4	53.2	41.3	21.5	50.3	40.6	23.1	47.8	40.0	24.6
		25	58.6	53.3	17.6	56.6	52.0	19.5	54.1	49.7	21.6	51.4	48.0	23.3	48.9	46.0	24.6
	19	23	62.4	33.4	18.0	59.9	31.6	19.7	57.0	30.7	21.8	53.7	29.7	23.5	51.1	28.1	24.6
		25	63.1	45.0	18.0	60.7	44.1	19.9	57.9	42.9	22.0	54.8	41.7	23.5	52.1	40.6	24.9
		27	63.3	48.4	18.0	60.9	47.4	19.9	**58.1**	**46.2**	**22.0**	55.0	45.0	23.8	52.3	43.8	24.9
		29	63.8	54.8	18.1	61.4	53.8	20.0	58.6	52.7	22.0	55.5	50.9	23.8	53.0	48.4	24.9
	21	25	65.7	34.0	18.2	62.7	32.0	20.0	60.3	30.6	22.1	57.0	30.0	23.8	53.7	29.3	25.1
		27	65.9	42.0	18.3	63.2	41.3	20.1	60.5	40.0	22.2	57.2	39.3	23.8	53.9	38.0	25.1
		29	66.1	48.0	18.3	63.4	47.3	20.2	60.6	46.0	22.2	57.3	45.3	24.0	54.7	43.3	25.3
		31	66.2	58.6	18.4	64.8	54.6	20.4	62.0	53.3	22.4	58.6	52.6	24.0	55.8	52.6	25.3
	23	27	67.5	34.2	18.5	64.0	32.4	20.5	62.8	31.0	22.4	60.5	30.0	24.2	58.1	29.6	25.3
		29	68.0	42.5	18.5	64.5	41.3	20.5	63.4	40.2	22.4	60.5	39.3	24.2	59.3	38.4	25.3
		31	70.4	48.5	18.7	68.0	47.6	20.7	64.5	46.2	22.7	61.6	45.3	24.4	60.5	43.5	25.5
		33	71.5	59.2	18.7	69.2	55.0	20.7	65.7	53.6	22.7	62.2	52.6	24.4	61.1	53.2	25.5

Pt : Total capacity.
Ps : Sensible capacity.
Pabs : Absorbed power.

Cooling Capacities (cont'd)

Sizes	Indoor temp. (°C)		Outdoor temperature (°C)														
	Wet bulb	Dry bulb	25			30			35			40			46		
			Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs	Pt	Ps	Pabs
654	16	19	63.8	36.3	18.7	61.3	36.3	20.6	58.7	34.9	22.9	55.5	33.4	24.4	52.8	33.4	26.1
		21	64.1	42.5	18.8	61.7	41.3	20.7	58.9	40.2	22.9	55.8	38.9	24.7	52.9	37.9	26.1
		23	64.3	48.0	18.8	62.0	47.2	20.7	59.2	45.0	23.0	55.9	44.3	24.7	53.2	43.6	26.3
		25	65.1	58.1	18.8	63.0	56.7	20.8	60.1	54.2	23.1	57.1	52.3	24.9	54.4	50.1	26.3
	19	23	69.4	36.4	19.2	66.6	34.5	21.1	63.4	33.5	23.3	59.7	32.4	25.1	56.8	30.6	26.3
		25	70.2	49.1	19.2	67.5	48.1	21.2	64.4	46.8	23.5	60.9	45.5	25.1	57.9	44.3	26.6
		27	70.4	52.8	19.2	67.7	51.7	21.3	**64.6**	**50.4**	**23.5**	61.2	49.0	25.4	58.1	47.8	26.6
		29	71.0	59.8	19.3	68.2	58.7	21.3	65.2	57.4	23.5	61.7	55.5	25.4	58.9	52.7	26.6
	21	25	73.0	37.1	19.4	69.7	34.9	21.4	67.0	33.4	23.6	63.3	32.7	25.4	59.7	32.0	26.8
		27	73.3	45.8	19.5	70.3	45.0	21.5	67.2	43.6	23.7	63.6	42.9	25.4	60.0	41.4	26.8
		29	73.5	52.3	19.5	70.5	51.6	21.6	67.3	50.1	23.7	63.6	49.4	25.6	60.8	47.2	27.0
		31	73.6	63.9	19.6	72.0	59.6	21.8	68.9	58.1	23.9	65.1	57.4	25.6	62.0	57.4	27.0
	23	27	75.0	37.3	19.7	71.1	35.3	21.9	69.8	33.8	24.0	67.2	32.7	25.9	64.6	32.3	27.0
		29	75.6	46.4	19.7	71.8	45.0	21.9	70.5	43.9	24.0	67.2	42.9	25.9	65.9	41.9	27.0
		31	78.2	52.9	20.0	75.6	51.9	22.1	71.8	50.4	24.2	68.5	49.4	26.1	67.2	47.4	27.3
		33	79.5	64.5	20.0	76.9	60.0	22.1	73.0	58.5	24.2	69.2	57.4	26.1	67.9	58.0	27.3
754	16	19	74.4	43.2	22.9	71.5	43.2	25.3	68.5	41.5	28.0	64.8	39.7	30.0	61.6	39.7	32.0
		21	74.8	50.5	23.0	72.0	49.1	25.4	68.7	47.8	28.1	65.0	46.3	30.2	61.7	45.0	32.0
		23	75.0	57.0	23.0	72.4	56.1	25.4	69.0	53.6	28.1	65.2	52.7	30.2	62.0	51.8	32.3
		25	75.9	69.1	23.1	73.4	67.4	25.5	70.1	64.4	28.3	66.6	62.2	30.5	63.4	59.6	32.3
	19	23	80.9	43.3	23.5	77.6	41.0	25.8	74.0	39.8	28.6	69.7	38.5	30.8	66.3	36.4	32.3
		25	81.8	58.4	23.6	78.7	57.1	26.0	75.1	55.7	28.8	71.1	54.1	30.8	67.5	52.7	32.5
		27	82.1	62.8	23.6	79.0	61.4	26.1	**75.4**	**59.9**	**28.8**	71.4	58.3	31.1	67.8	56.8	32.5
		29	82.8	71.1	23.7	79.6	69.8	26.2	76.0	68.3	28.8	72.0	66.0	31.1	68.7	62.7	32.5
	21	25	85.1	44.1	23.8	81.3	41.5	26.2	78.2	39.7	28.9	73.9	38.9	31.1	69.7	38.0	32.8
		27	85.5	54.4	23.9	82.0	53.6	26.4	78.4	51.8	29.0	74.2	51.0	31.1	70.0	49.2	32.8
		29	85.7	62.2	23.9	82.2	61.3	26.4	78.5	59.6	29.0	74.2	58.7	31.4	70.9	56.1	33.1
		31	85.9	76.0	24.1	84.0	70.8	26.7	80.4	69.1	29.3	75.9	68.2	31.4	72.4	68.2	33.1
	23	27	87.5	44.4	24.2	82.9	42.0	26.8	81.4	40.2	29.4	78.4	38.9	31.7	75.4	38.4	33.1
		29	88.2	55.1	24.2	83.7	53.6	26.8	82.2	52.2	29.4	78.4	51.0	31.7	76.9	49.8	33.1
		31	91.2	62.9	24.5	88.2	61.7	27.1	83.7	59.9	29.7	79.9	58.7	32.0	78.4	56.3	33.4
		33	92.7	76.7	24.5	89.7	71.3	27.1	85.2	69.5	29.7	80.7	68.2	32.0	79.2	68.9	33.4
904	16	19	84.3	48.2	25.2	81.0	48.2	27.8	77.6	46.3	30.8	73.4	44.3	32.9	69.7	44.3	35.1
		21	84.7	56.4	25.2	81.6	54.8	27.8	77.8	53.3	30.8	73.7	51.7	33.2	69.9	50.2	35.1
		23	85.0	63.6	25.2	82.0	62.6	27.9	78.2	59.7	30.9	73.9	58.8	33.2	70.2	57.8	35.4
		25	86.0	77.1	25.3	83.2	75.2	28.0	79.4	71.9	31.0	75.5	69.4	33.5	71.9	66.5	35.4
	19	23	91.7	48.3	25.8	87.9	45.8	28.3	83.8	44.4	31.3	78.9	42.9	33.8	75.1	40.6	35.4
		25	92.7	65.1	25.9	89.2	63.7	28.6	85.1	62.1	31.6	80.5	60.4	33.8	76.5	58.8	35.7
		27	93.0	70.1	25.9	89.5	68.5	28.6	**85.4**	**66.9**	**31.6**	80.9	65.0	34.1	76.8	63.4	35.7
		29	93.7	79.3	26.0	90.1	77.8	28.7	86.1	76.2	31.6	81.5	73.7	34.1	77.8	70.0	35.7
	21	25	96.4	49.1	26.1	92.1	46.3	28.7	88.6	44.3	31.7	83.7	43.4	34.1	78.9	42.4	36.0
		27	96.8	60.7	26.3	92.9	59.7	28.9	88.9	57.8	31.9	84.0	56.9	34.1	79.2	54.9	36.0
		29	97.1	69.4	26.3	93.1	68.4	29.0	89.0	66.5	31.9	84.1	65.5	34.4	80.3	62.6	36.3
		31	97.3	84.8	26.4	95.1	79.0	29.3	91.1	77.1	32.1	86.0	76.1	34.4	82.0	76.1	36.3
	23	27	99.1	49.5	26.5	94.0	46.8	29.4	92.2	44.8	32.2	88.8	43.4	34.8	85.4	42.8	36.3
		29	99.9	61.5	26.5	94.8	59.7	29.4	93.1	58.2	32.2	88.8	56.9	34.8	87.1	55.5	36.3
		31	103.3	70.2	26.9	99.9	68.9	29.7	94.8	66.9	32.5	90.5	65.5	35.1	88.8	62.9	36.7
		33	105.1	85.6	26.9	101.6	79.6	29.7	96.5	77.6	32.5	91.4	76.1	35.1	89.7	76.9	36.7

Pt : Total capacity.
Ps : Sensible capacity.
Pabs : Absorbed power.

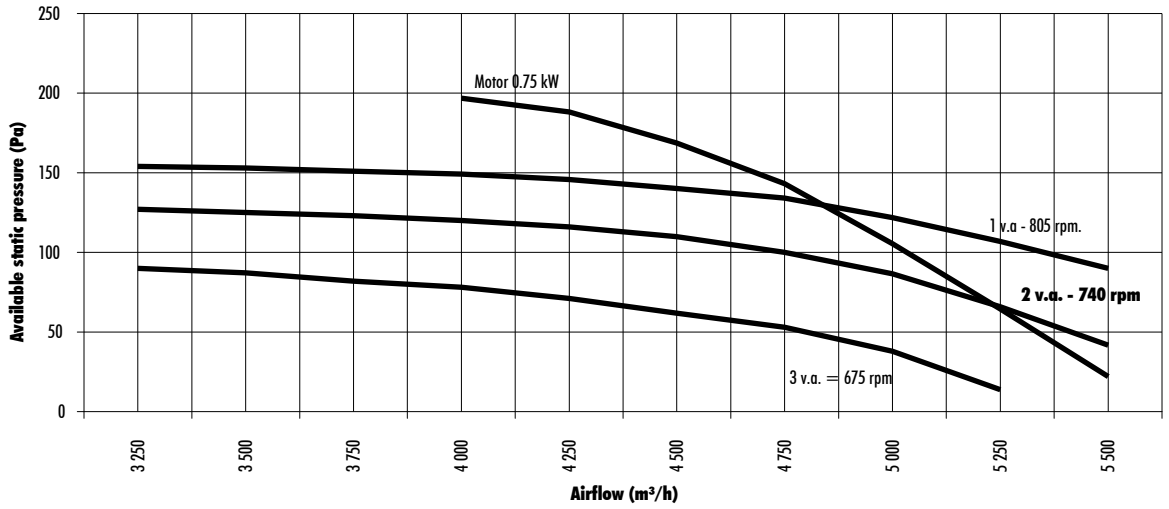
Heating Capacities

Sizes	Outdoor temp. (°C)	Indoor temperature (°C)											
		15		17		19		20		21		22	
		Pt	Pabs	Pt	Pabs	Pt	Pabs	Pt	Pabs	Pt	Pabs	Pt	Pabs
204	-5	13.8	5.6	13.7	5.8	13.5	5.9	13.4	6.0	13.3	5.5	13.3	5.5
	0	16.3	6.2	16.1	6.4	15.9	6.6	15.8	6.7	15.7	6.8	15.6	6.8
	5	19.1	6.8	18.9	7.1	18.7	7.2	18.6	7.4	18.4	7.5	18.4	7.6
	7	20.4	7.1	20.1	7.4	19.9	7.3	**19.8**	**7.7**	19.7	7.8	19.6	7.9
	10	22.3	7.6	22.0	7.9	22.2	8.1	21.7	8.2	21.6	8.3	21.4	8.4
	15	25.8	8.3	25.5	8.7	25.2	8.9	25.1	9.0	25.0	9.1	24.8	9.2
254	-5	17.4	5.2	17.2	5.4	17.0	5.6	16.9	5.6	16.8	5.1	16.7	5.2
	0	20.5	5.8	20.3	6.0	20.1	6.2	19.9	6.3	19.8	6.3	19.7	6.4
	5	24.1	6.4	23.8	6.7	23.6	6.7	23.4	6.9	23.2	7.0	23.1	7.1
	7	25.6	6.7	25.3	6.9	25.1	6.8	**24.9**	**7.2**	24.7	7.3	24.6	7.4
	10	28.0	7.1	27.7	7.4	27.9	7.6	27.3	7.7	27.1	7.8	27.0	7.8
	15	32.4	7.8	32.1	8.1	31.7	8.3	31.6	8.4	31.4	8.5	31.2	8.7
304	-5	20.6	7.8	20.4	8.0	20.1	8.3	20.0	8.4	19.9	7.6	19.7	7.7
	0	24.3	8.6	24.0	9.0	23.7	9.2	23.6	9.3	23.5	9.4	23.3	9.5
	5	28.5	9.5	28.2	10.0	27.9	10.0	27.7	10.3	27.4	10.4	27.4	10.6
	7	30.3	10.0	30.0	10.3	29.7	10.2	**29.5**	**10.7**	29.3	10.9	29.1	11.0
	10	33.2	10.5	32.8	11.0	33.0	11.2	32.3	11.4	32.1	11.5	31.9	11.7
	15	38.4	11.6	38.0	12.1	37.6	12.4	37.4	12.5	37.2	12.7	37.0	12.9
354	-5	23.0	6.8	22.7	7.0	22.4	7.2	22.3	7.3	22.1	6.6	22.0	6.7
	0	27.1	7.5	26.8	7.8	26.5	8.0	26.3	8.1	26.2	8.2	26.0	8.3
	5	31.8	8.3	31.5	8.7	31.1	8.7	30.9	9.0	30.6	9.1	30.5	9.2
	7	33.8	8.7	33.5	9.0	33.1	8.9	**32.9**	**9.4**	32.7	9.5	32.5	9.6
	10	37.0	9.2	36.6	9.5	36.8	9.8	36.0	9.9	35.8	10.0	35.6	10.2
	15	42.8	10.1	42.4	10.5	41.9	10.8	41.7	10.9	41.5	11.1	41.2	11.2
384	-5	26.8	8.0	26.5	8.3	26.1	8.5	26.0	8.6	25.8	7.8	25.6	7.9
	0	31.6	8.9	31.2	9.2	30.9	9.5	30.7	9.6	30.5	9.7	30.3	9.8
	5	37.0	9.8	36.7	10.3	36.2	10.3	36.0	10.6	35.7	10.7	35.6	10.9
	7	39.4	10.3	39.0	10.6	38.6	10.5	**38.3**	**11.1**	38.1	11.2	37.9	11.4
	10	43.1	10.8	42.7	11.3	42.9	11.6	42.0	11.7	41.7	11.9	41.5	12.0
	15	49.8	11.9	49.3	12.5	48.8	12.7	48.6	12.9	48.3	13.1	48.0	13.3
454	-5	30.1	11.2	29.8	11.6	29.4	11.9	29.2	12.1	29.0	10.9	28.9	11.0
	0	35.5	12.4	35.1	12.9	34.7	13.2	34.5	13.4	34.3	13.5	34.1	13.7
	5	41.7	13.7	41.2	14.3	40.8	14.4	40.5	14.8	40.1	15.0	40.0	15.2
	7	44.3	14.3	43.9	14.8	43.4	14.6	**43.1**	**15.5**	42.8	15.7	42.6	15.9
	10	48.5	15.1	48.0	15.7	48.3	16.2	47.2	16.4	46.9	16.6	46.7	16.8
	15	56.1	16.7	55.5	17.4	54.9	17.8	54.6	18.0	54.3	18.3	54.0	18.5
504	-5	34.8	12.6	34.4	13.1	34.0	13.5	33.8	13.7	33.5	12.4	33.3	12.5
	0	41.0	14.0	40.6	14.6	40.1	15.0	39.9	15.2	39.6	15.3	39.4	15.5
	5	48.1	15.5	47.6	16.2	47.1	16.3	46.8	16.8	46.4	17.0	46.3	17.2
	7	51.2	16.2	50.7	16.8	50.1	16.6	**49.8**	**17.5**	49.5	17.7	49.2	18.0
	10	56.1	17.2	55.5	17.8	55.8	18.3	54.6	18.6	54.2	18.8	53.9	19.0
	15	64.8	18.9	64.1	19.7	63.4	20.2	63.1	20.4	62.8	20.7	62.5	21.0
604	-5	41.3	14.5	40.8	15.0	40.3	15.5	40.1	15.7	39.8	14.2	39.5	14.4
	0	48.6	16.1	48.1	16.8	47.6	17.2	47.3	17.4	47.0	17.6	46.7	17.8
	5	57.1	17.8	56.5	18.6	55.8	18.7	55.5	19.3	55.0	19.5	54.8	19.7
	7	60.8	18.6	60.1	19.3	59.5	19.0	**59.1**	**20.1**	58.7	20.4	58.4	20.6
	10	66.5	19.7	65.8	20.5	66.1	21.0	64.7	21.3	64.3	21.6	63.9	21.8
	15	76.8	21.7	76.1	22.6	75.2	23.2	74.9	23.4	74.5	23.7	74.1	24.1
654	-5	45.9	15.7	45.5	16.2	44.9	16.7	44.6	16.9	44.3	15.4	44.0	15.5
	0	54.2	17.4	53.6	18.1	53.0	18.6	52.7	18.8	52.3	19.0	52.0	19.2
	5	63.6	19.2	62.9	20.1	62.2	20.2	61.8	20.8	61.2	21.1	61.1	21.3
	7	67.7	20.1	66.9	20.8	66.2	20.5	**65.8**	**21.7**	65.4	22.0	65.0	22.3
	10	74.0	21.3	73.3	22.1	73.6	22.7	72.1	23.0	71.6	23.3	71.2	23.6
	15	85.6	23.4	84.7	24.4	83.8	25.0	83.4	25.3	82.9	25.6	82.5	26.0
754	-5	53.5	19.1	53.0	19.8	52.3	20.4	52.0	20.7	51.6	18.8	51.3	18.9
	0	63.1	21.2	62.4	22.1	61.7	22.7	61.3	23.0	61.0	23.2	60.6	23.5
	5	74.1	23.5	73.3	24.6	72.5	24.6	72.0	25.4	71.3	25.7	71.2	26.0
	7	78.8	24.6	78.0	25.4	77.1	25.1	**76.7**	**26.5**	76.1	26.8	75.8	27.2
	10	86.3	26.0	85.3	27.0	85.8	27.7	84.0	28.1	83.4	28.4	83.0	28.8
	15	99.7	28.6	98.7	29.8	97.6	30.5	97.2	30.9	96.6	31.3	96.1	31.8
904	-5	60.3	21.2	59.7	21.9	58.9	22.6	58.6	22.9	58.1	20.7	57.8	20.9
	0	71.1	23.5	70.3	24.4	69.5	25.1	69.1	25.4	68.7	25.7	68.2	25.9
	5	83.4	26.0	82.6	27.2	81.6	27.2	81.1	28.1	80.3	28.5	80.2	28.8
	7	88.8	27.2	87.8	28.1	86.9	27.7	**86.4**	**29.3**	85.8	29.7	85.3	30.1
	10	97.2	28.7	96.1	29.9	96.6	30.6	94.6	31.1	94.0	31.4	93.5	31.8
	15	112.3	31.6	111.2	33.0	110.0	33.8	109.4	34.2	108.8	34.6	108.2	35.1

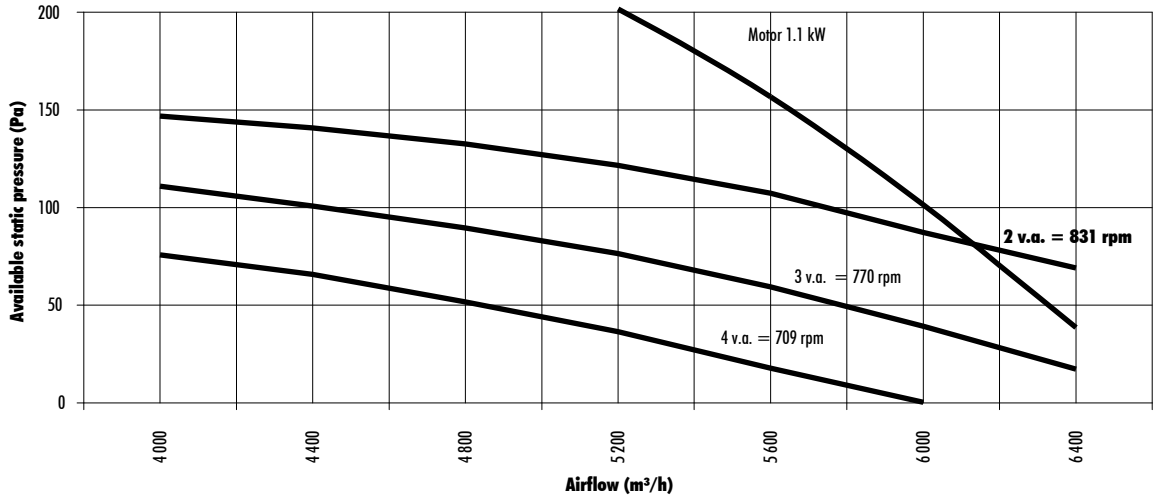
Pt : Total capacity.
Pabs : Absorbed power.

Internal Fan Curves

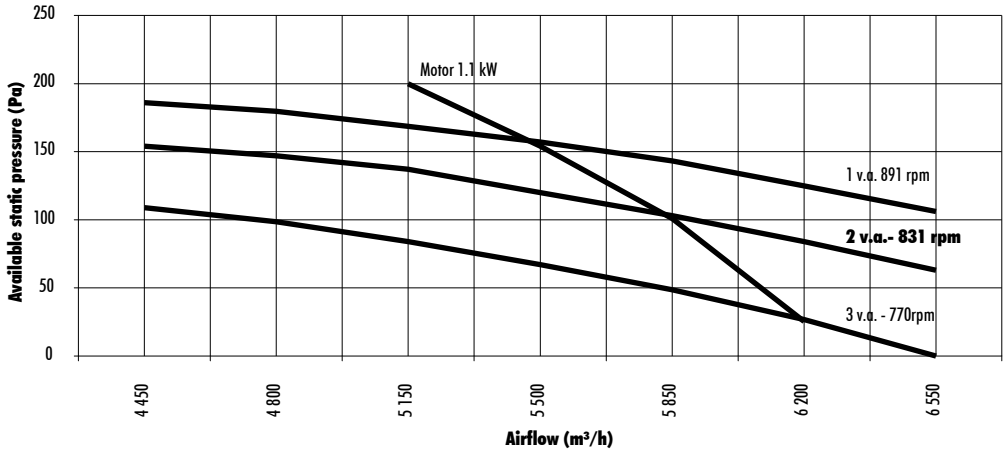
Size 204 - Min. airflow : 3250 m³/h - Max. airflow 4750 m³/h - Standard airflow : 4000 m³/h



Size 254 - Min. airflow : 4000 m³/h - Max. airflow 6400 m³/h - Standard airflow : 5200 m³/h

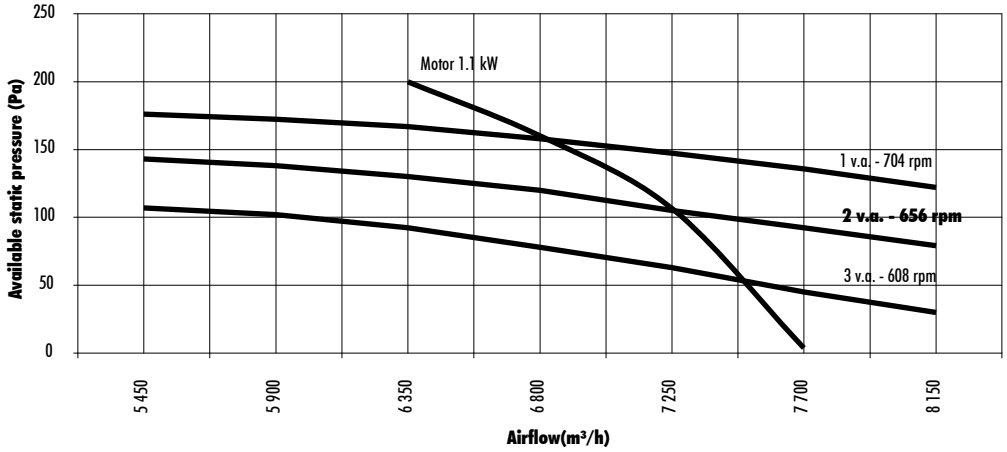


Size 304 - Min. airflow : 4450 m³/h - Max. airflow 6550 m³/h - Standard airflow : 5500 m³/h

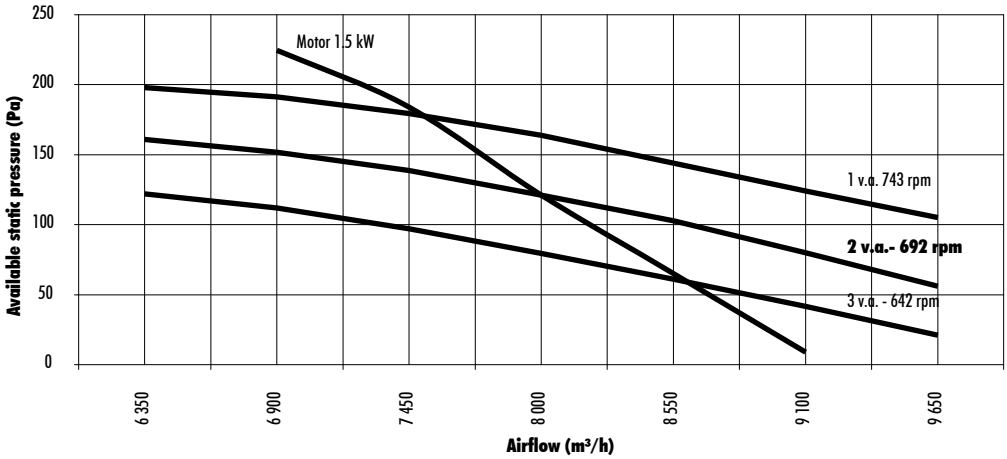


Internal Fan Curves (cont'd)

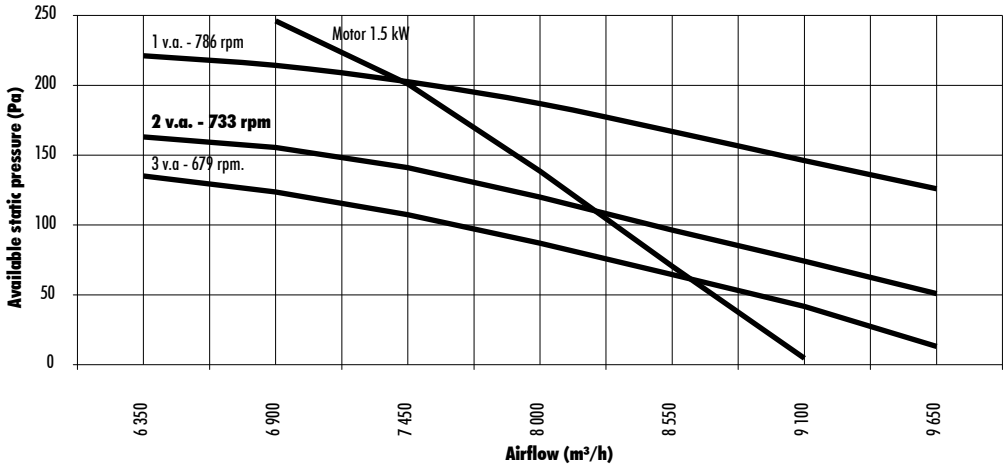
Size 354 - Min. airflow : 5450 m³/h - Max. airflow 8150 m³/h - Standard airflow : 6800 m³/h



Size 384 - Min. airflow : 6350 m³/h - Max. airflow 9650 m³/h - Standard airflow : 8000 m³/h

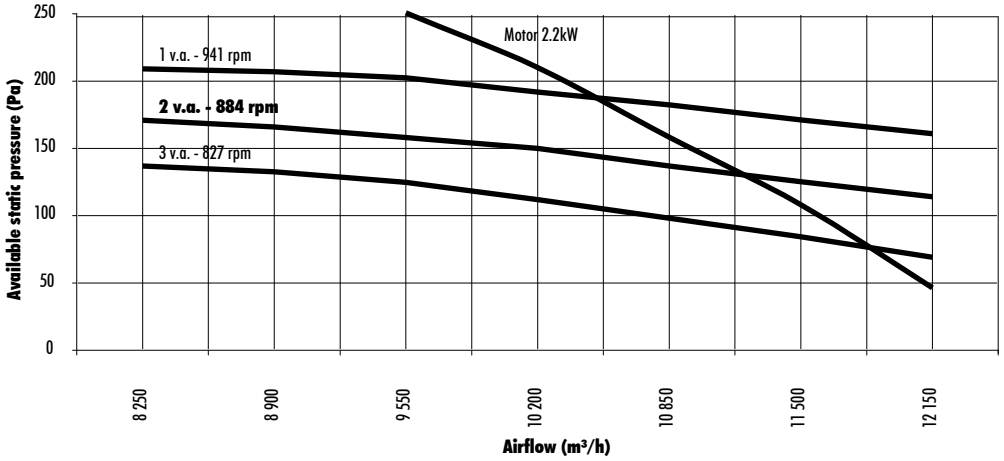


Size 454 - Max. airflow : 6350 m³/h - Min. airflow 9650 m³/h - Standard airflow : 8000 m³/h

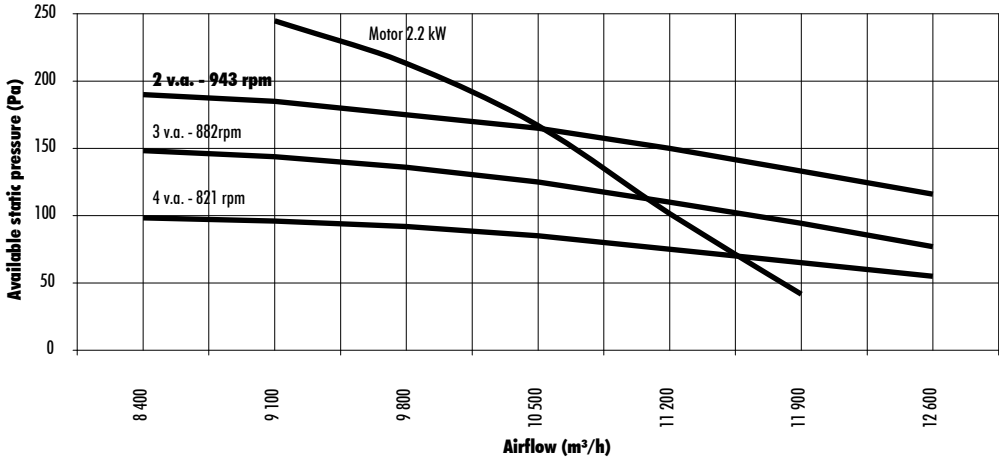


Internal Fan Curves (cont'd)

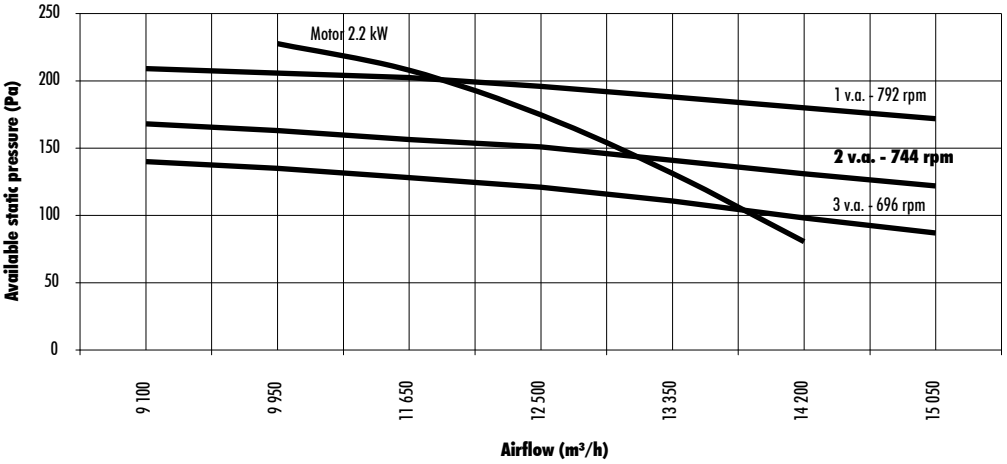
Size 504 - Min. airflow : 8250 m³/h - Max. airflow 12150 m³/h - Standard airflow : 10200 m³/h



Size 604 - Min. airflow : 8400 m³/h - Max. airflow 12600 m³/h - Standard airflow : 10500 m³/h

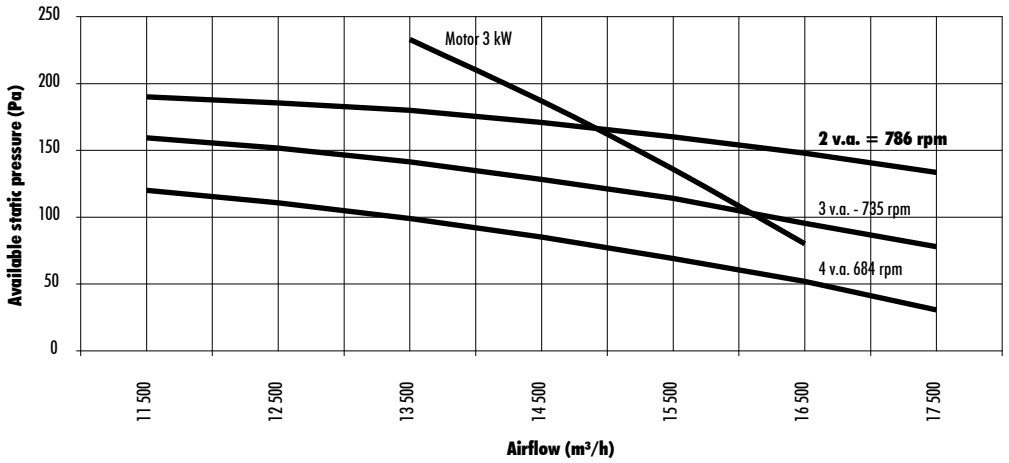


Size 654 - Min. airflow : 9100 m³/h - Max. airflow 15050 m³/h - Standard airflow : 12500 m³/h

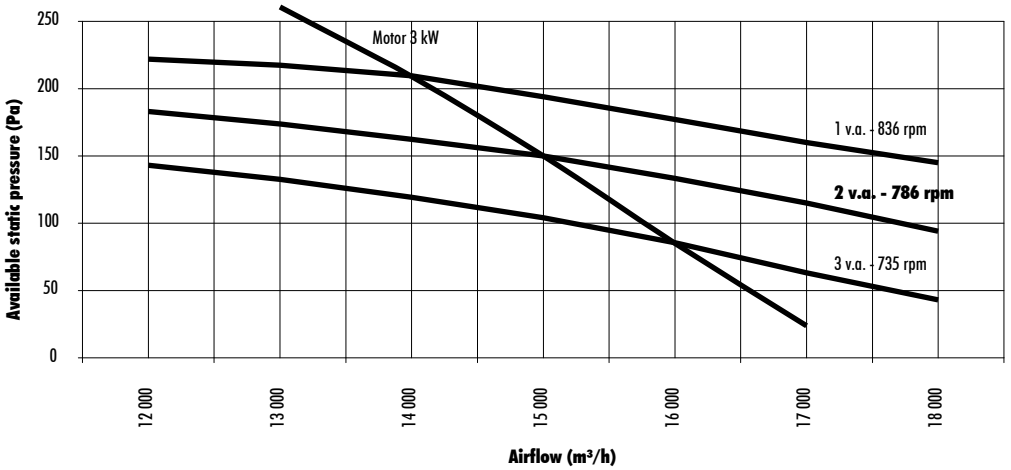


Internal Fan Curves (cont'd)

Size 754 - Min. airflow : 11500 m³/h - Max. airflow 17500 m³/h - Standard airflow : 14500 m³/h

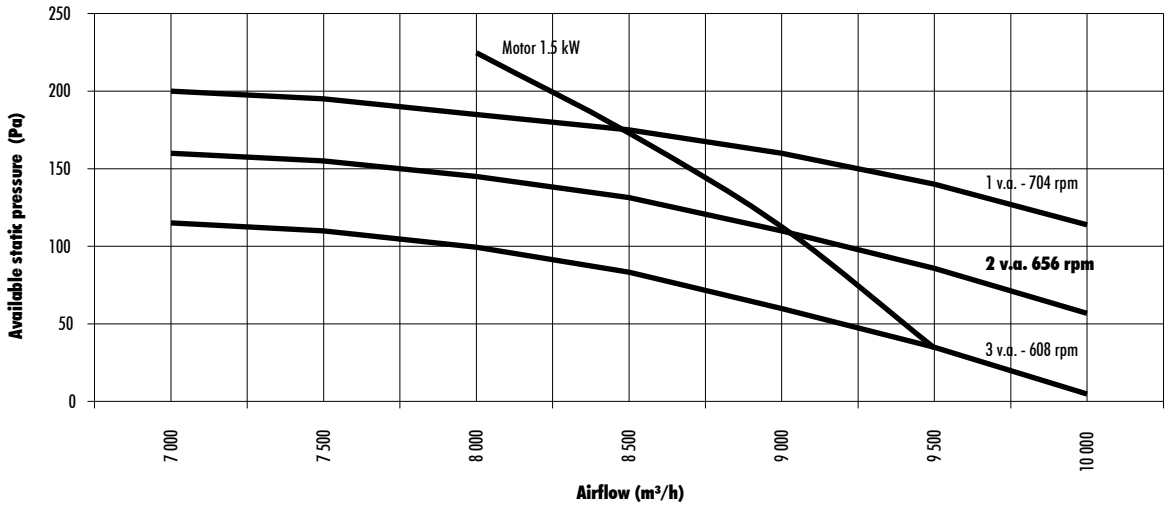


Size 904 - Min. airflow : 12000 m³/h - Max. airflow 18000 m³/h - Standard airflow : 15000 m³/h

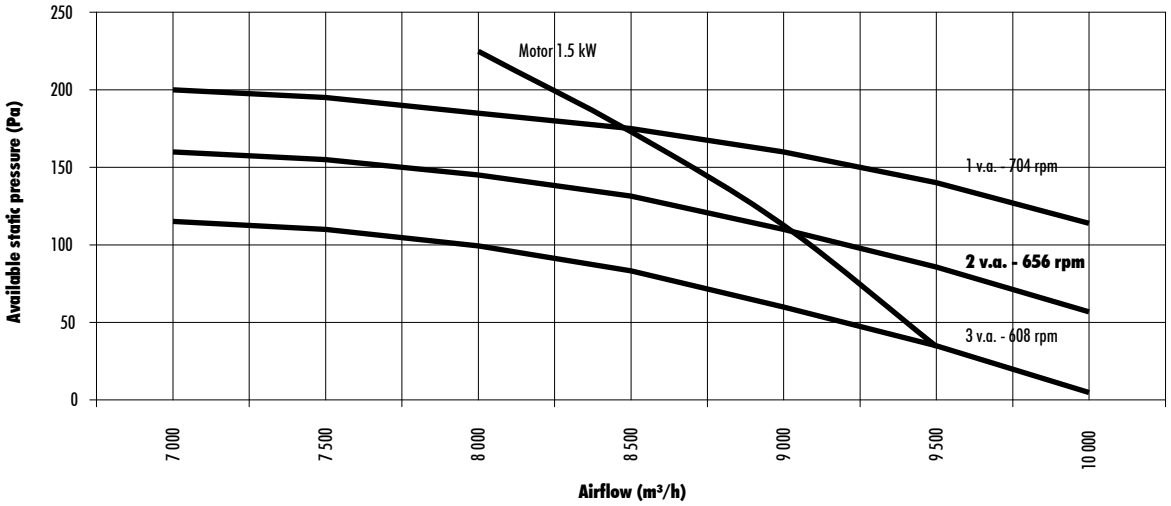


External Fan Curves

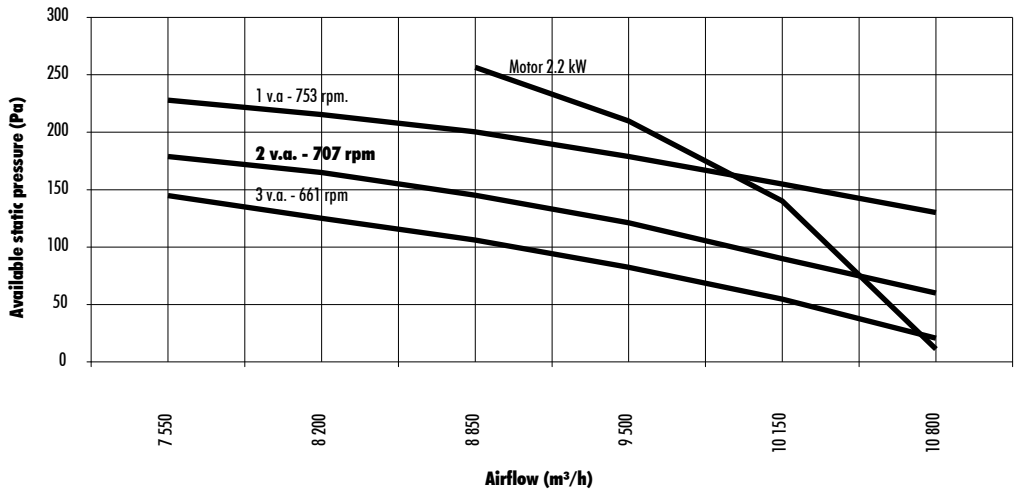
Size 204 - Min. airflow : 7000 m³/h - Max. airflow 10000 m³/h - Standard airflow : 8500 m³/h



Size 254 - Min. airflow : 7000 m³/h - Max. airflow 10000 m³/h - Standard airflow : 8500 m³/h

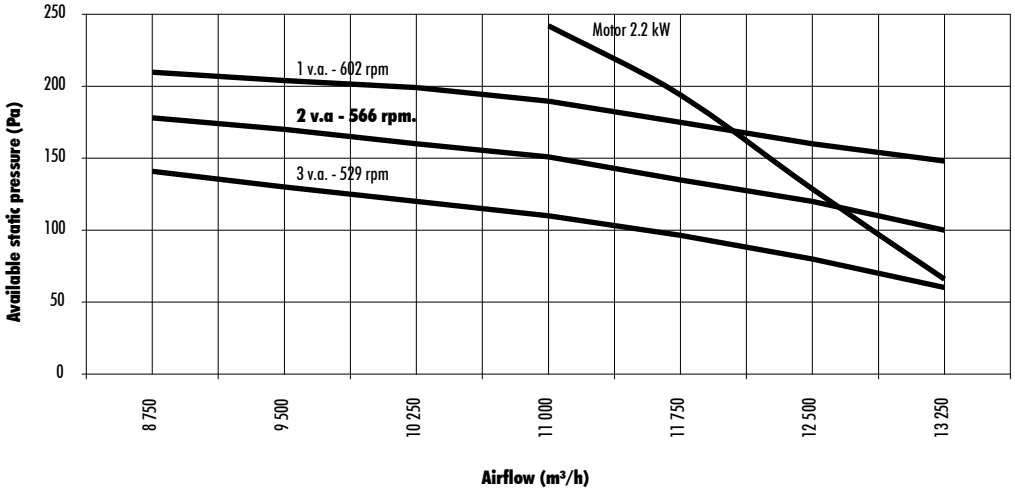


Size 304 - Max. airflow : 7550 m³/h - Min. airflow 10800 m³/h - Standard airflow : 9500 m³/h

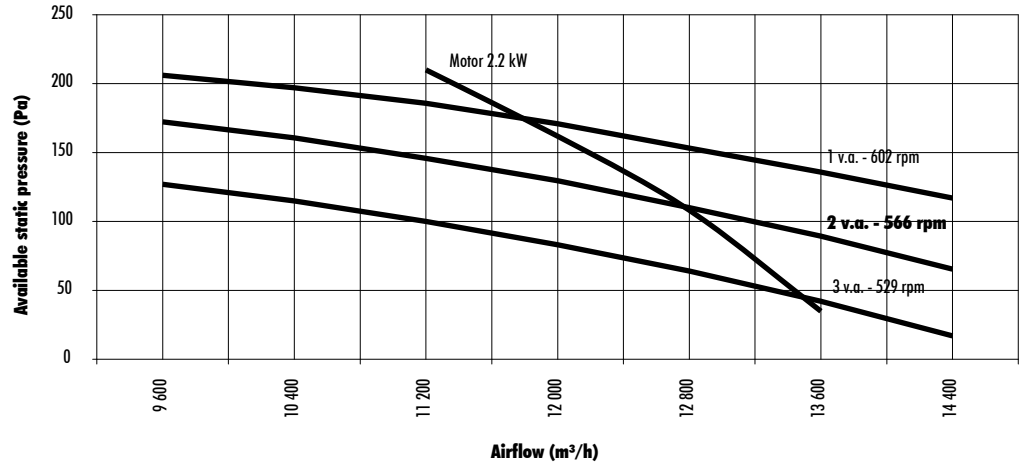


External Fan Curves (cont'd)

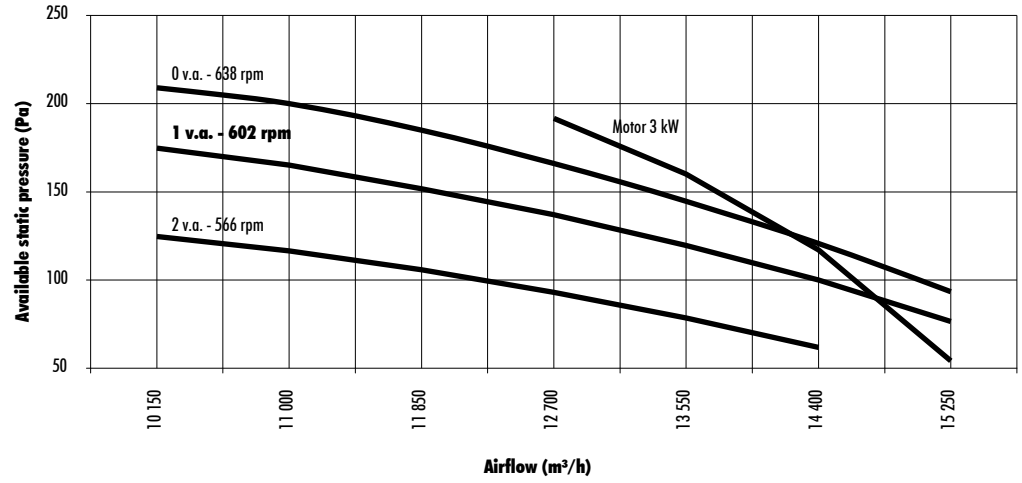
Size 354 - Min. airflow : 8750 m³/h - Max. airflow 13250 m³/h - Standard airflow : 11000 m³/h



Size 384 - Min. airflow : 9600 m³/h - Max. airflow 14400 m³/h - Standard airflow : 12000 m³/h

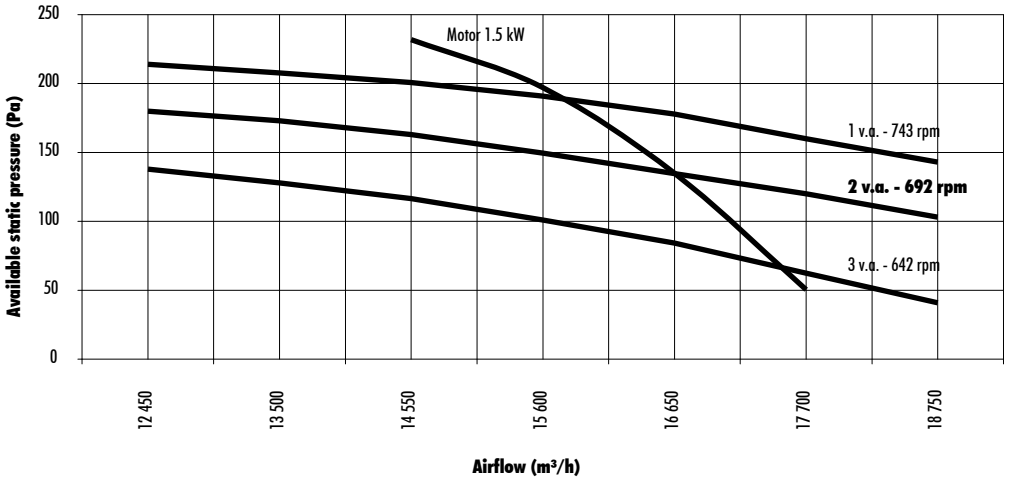


Size 454 - Min. airflow : 10150 m³/h - Max. airflow 15250 m³/h - Standard airflow : 12700 m³/h

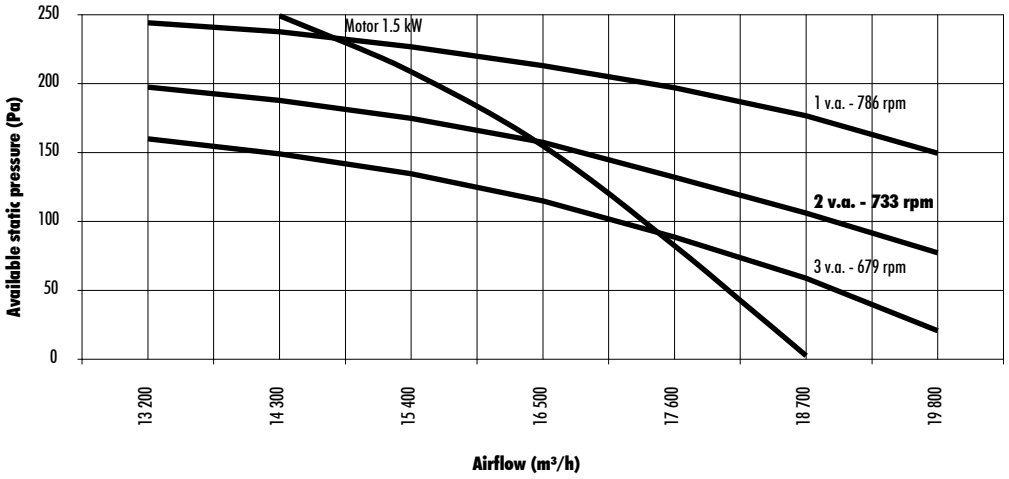


External Fan Curves (cont'd)

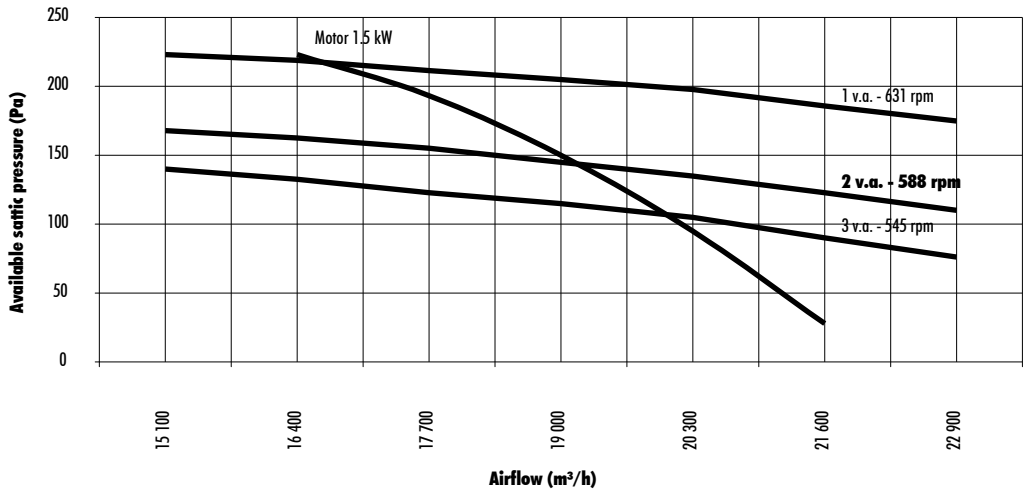
Size 504 - Min. airflow : 12450 m³/h - Max. airflow 18750 m³/h - Standard airflow : 15600 m³/h



Size 604 - Min. airflow : 13200 m³/h - Max. airflow 19800 m³/h - Standard airflow : 16500 m³/h

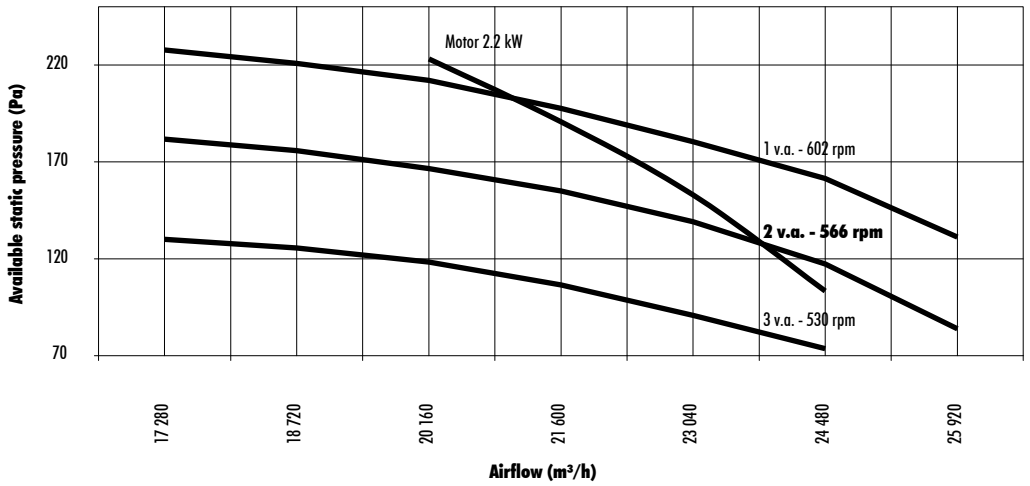


Size 654 - Min. airflow : 15100 m³/h - Max. airflow 22900 m³/h - Standard airflow : 19000 m³/h

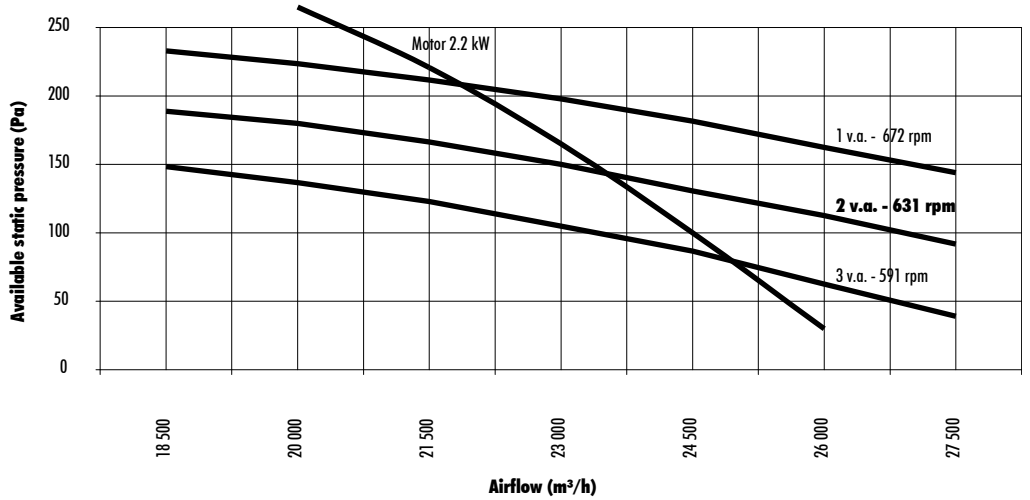


External Fan Curves (cont'd)

Size 754 - Min. airflow : 17280 m³/h - Max. airflow 25380 m³/h - Standard airflow : 21600 m³/h

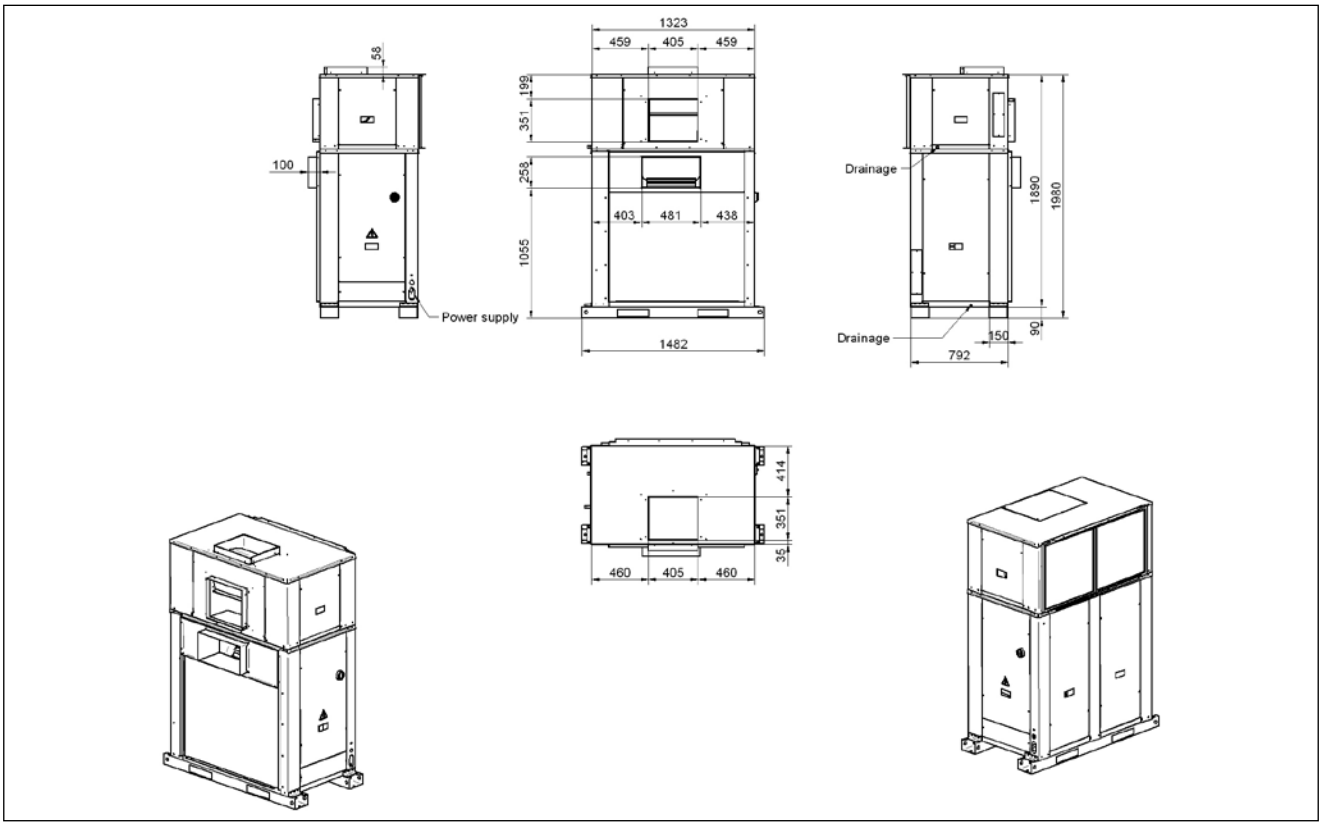


Size 904 - Min. airflow : 18500 m³/h - Max. airflow 27500 m³/h - Standard airflow : 23000 m³/h

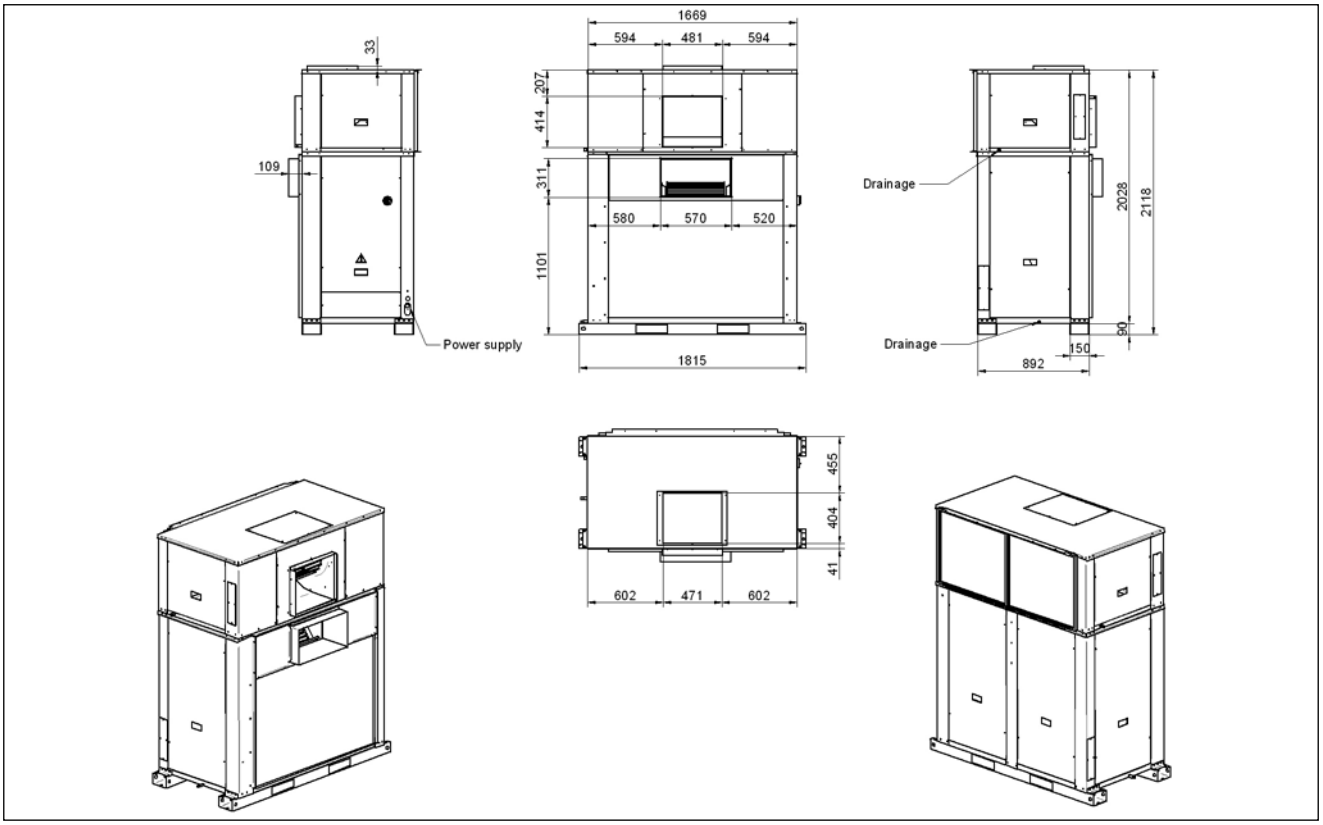


Dimensions

AVN 204-254-304

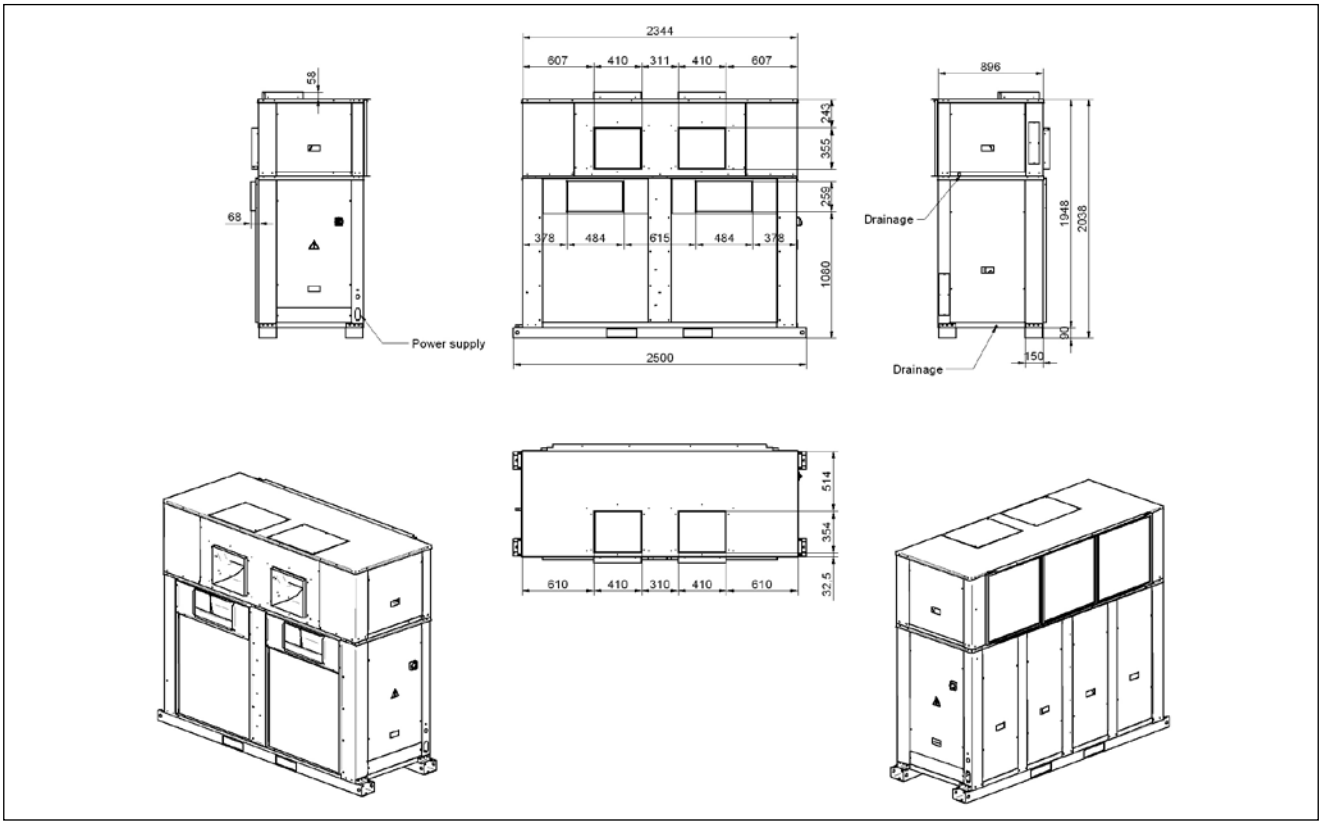


AVN 354-384-454

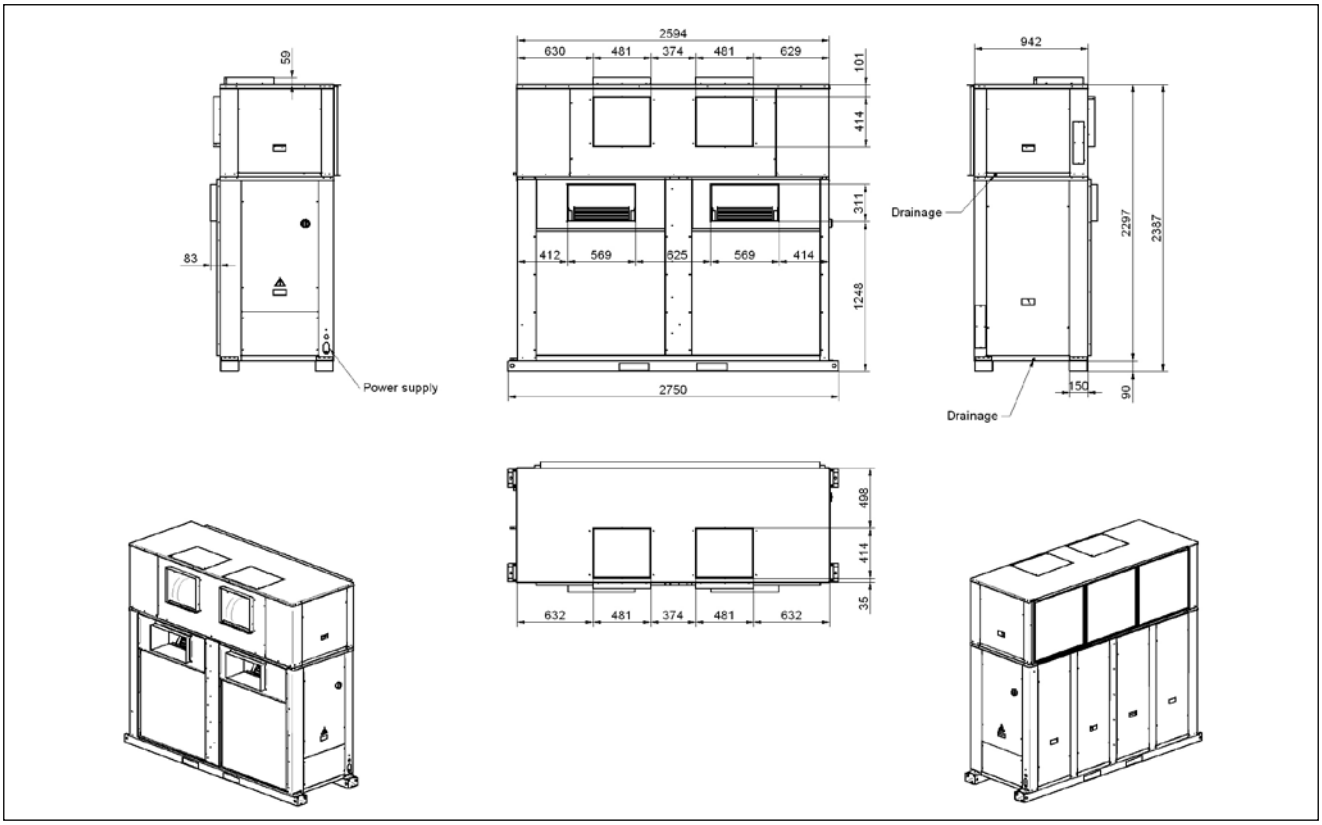


Dimensions (cont'd)

AVN 504-604

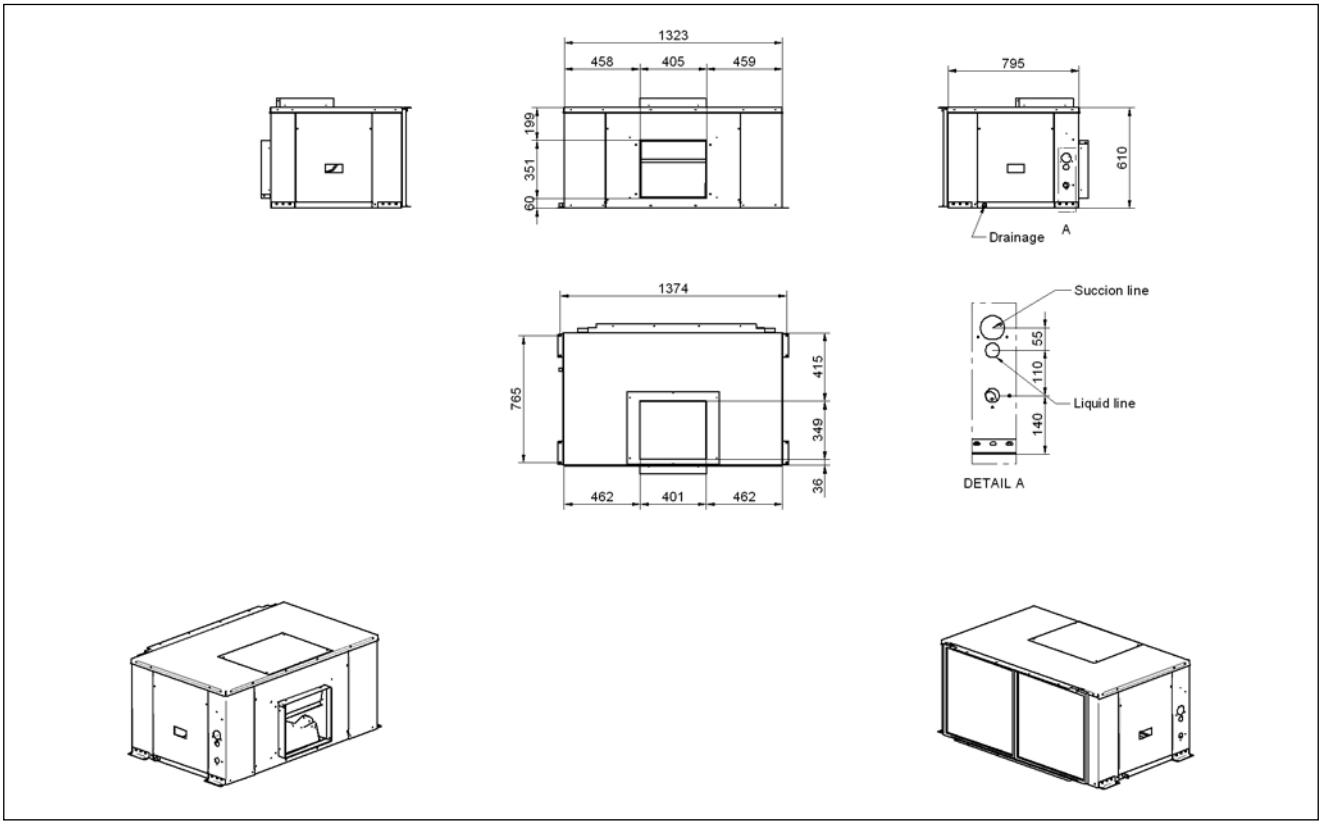


AVN 654-754-904

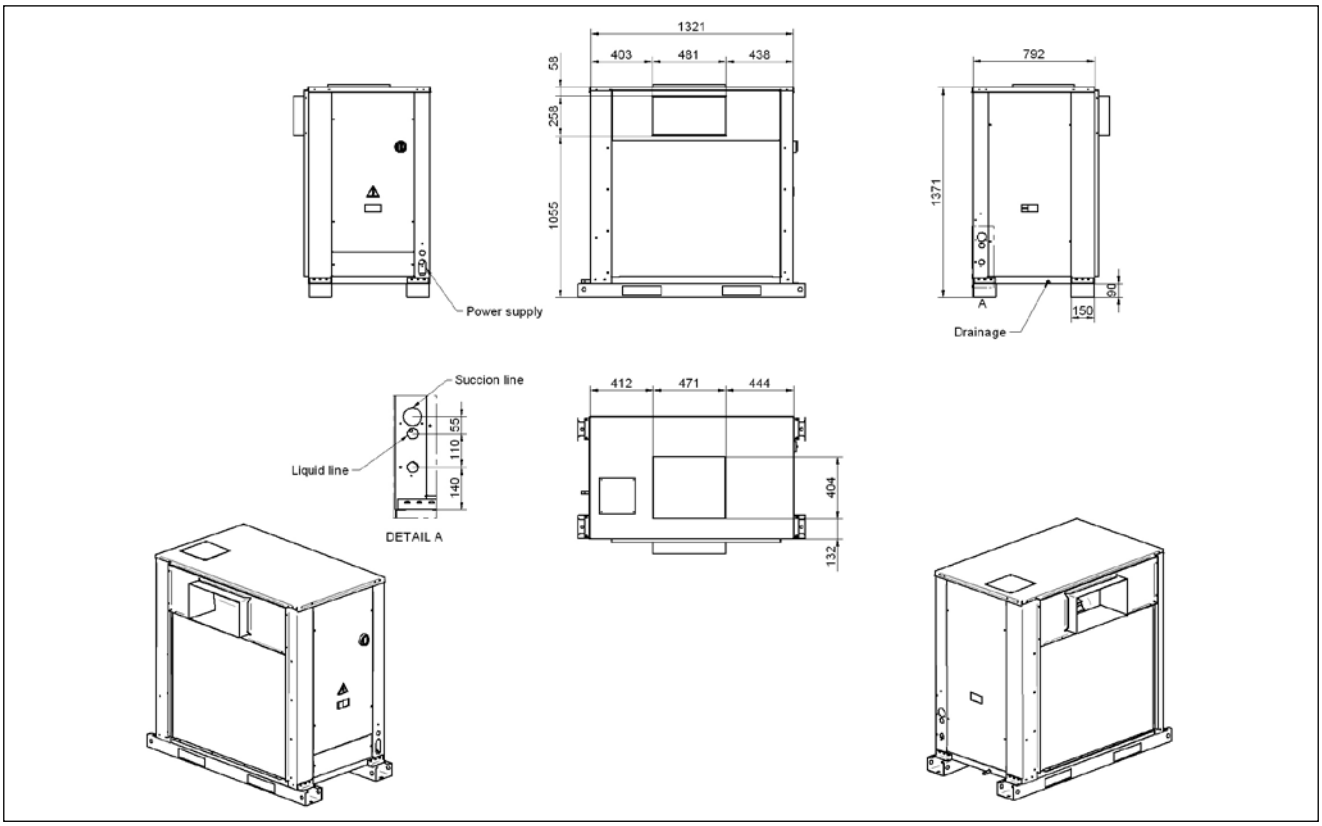


Dimensions (cont'd)

EVN 204-254-304

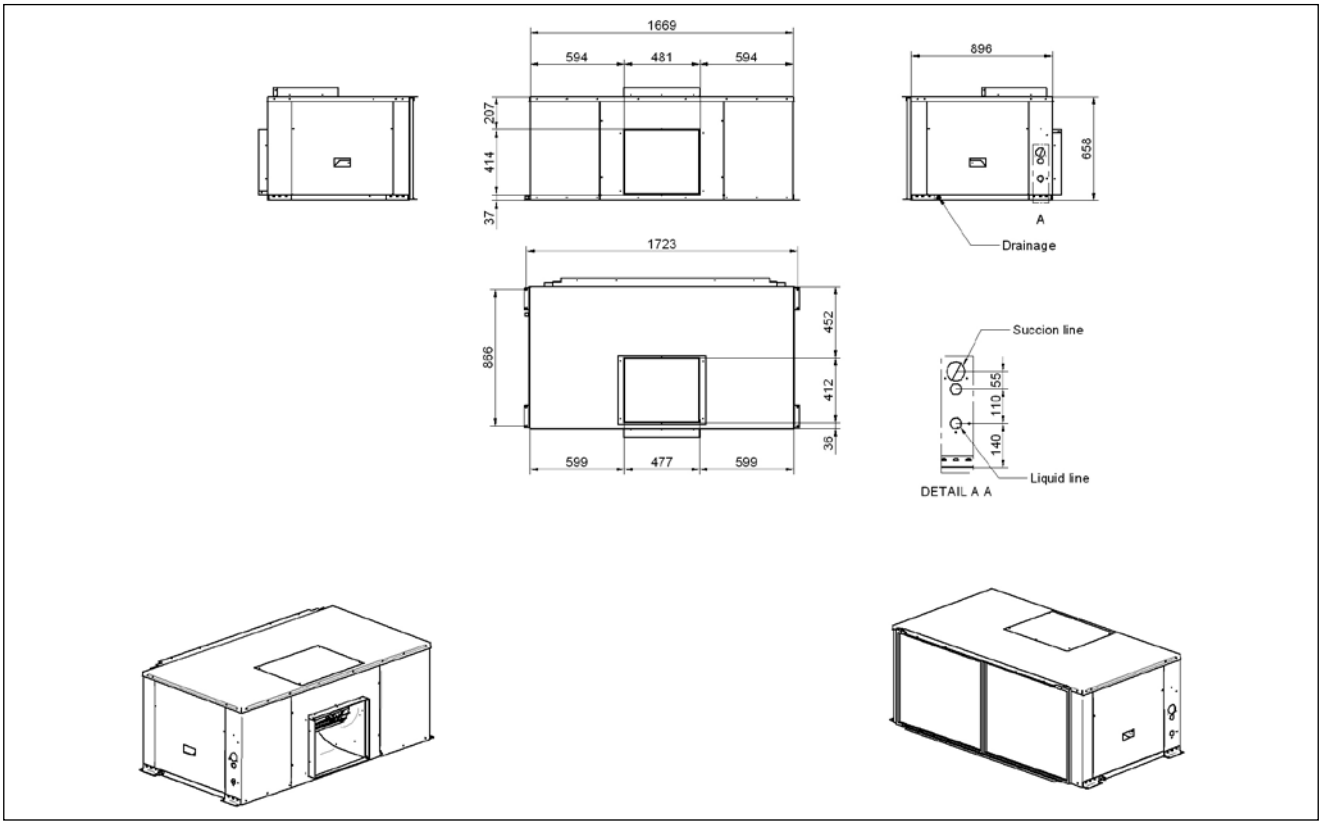


CVN 204-254-304

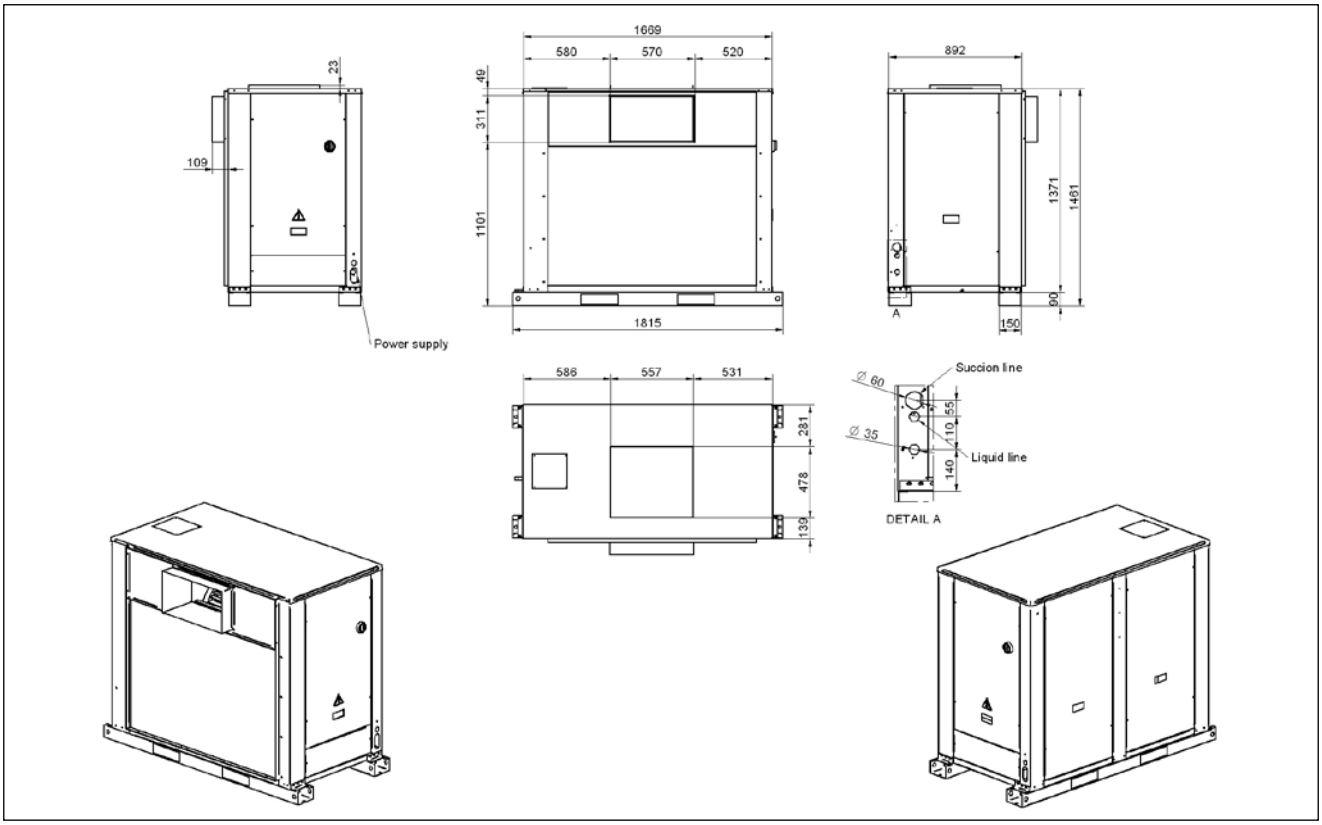


Dimensions (cont'd)

EVN 354-384-454

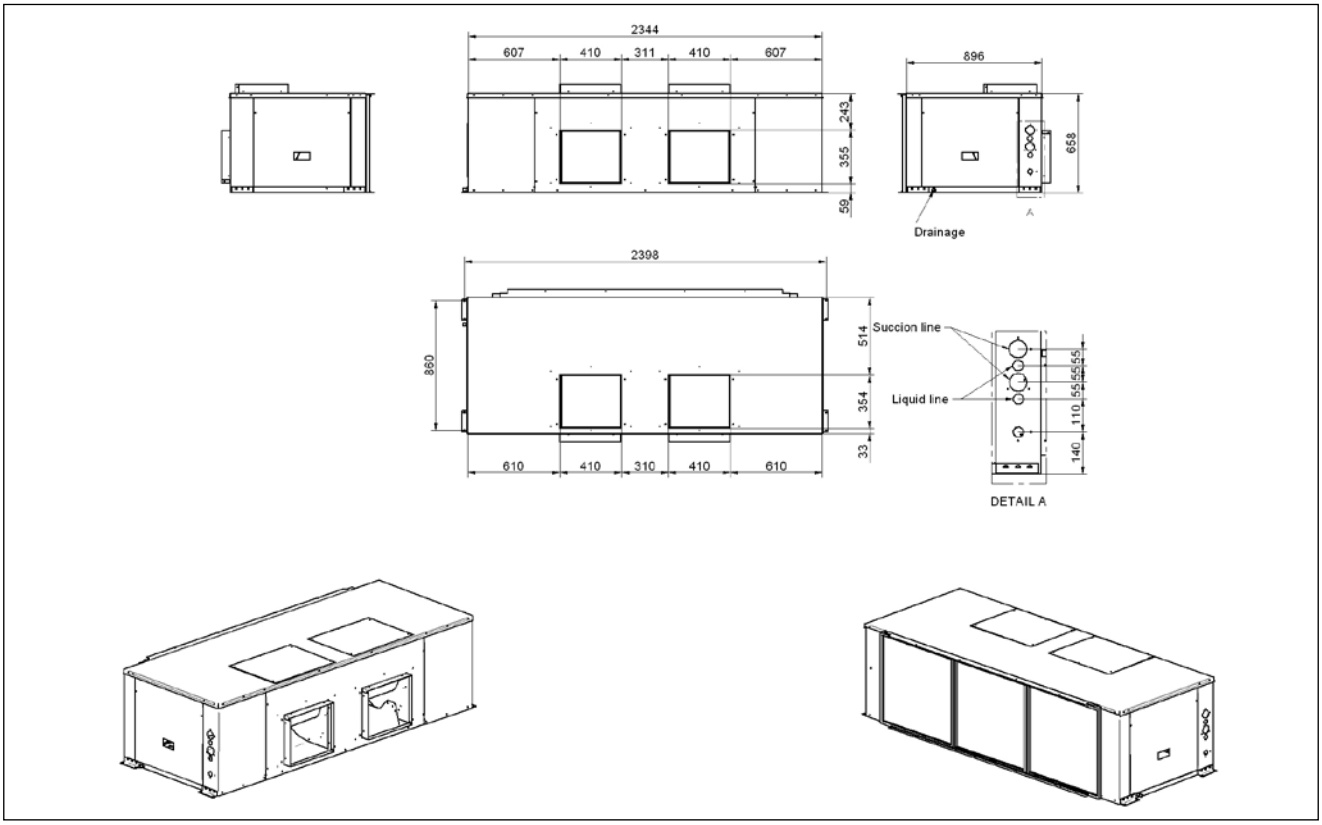


CVN 354-384-454

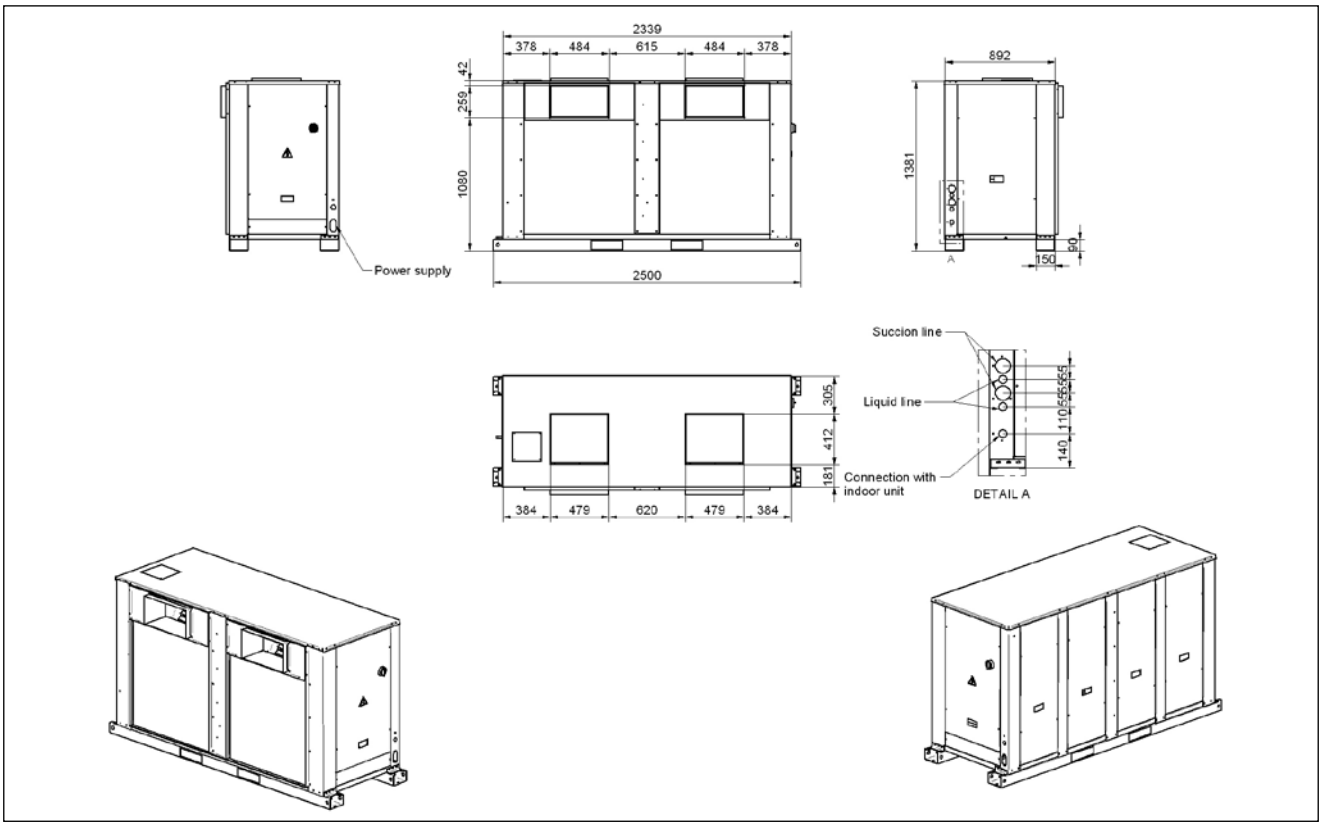


Dimensions (cont'd)

EVN 504-604

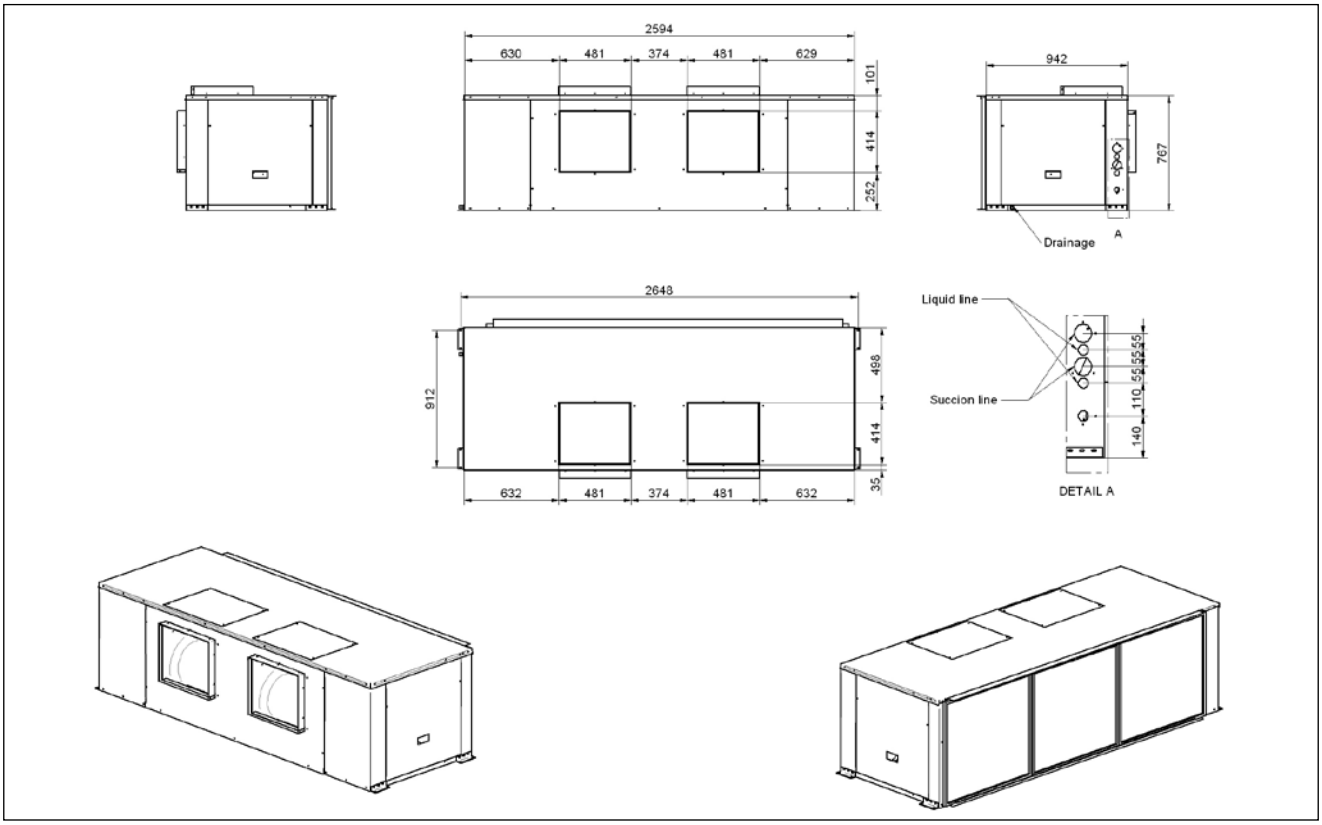


CVN 504-604

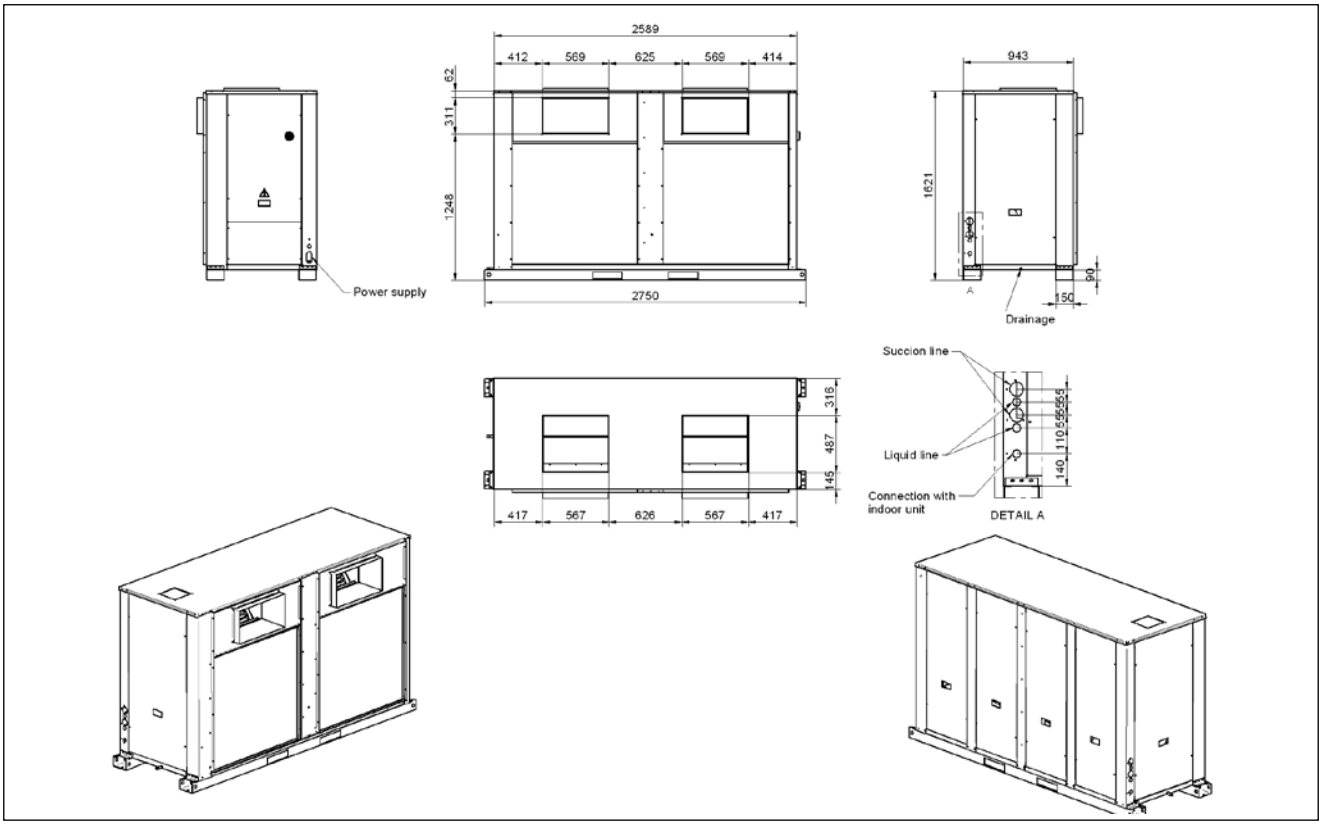


Dimensions (cont'd)

EVN 654-754-904

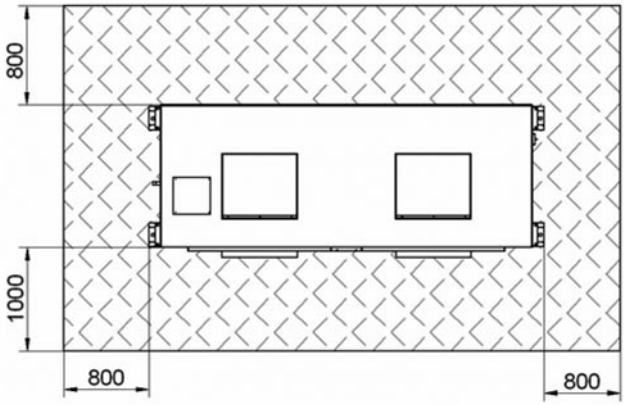


CVN 654-754-904



Servicing Area

The appliance must be planed on a flan, level and rigid surface and supplied with shock absorbers. In the picture below, minimum clearance to be provided for maintenance access (both package and split units)



Note

Note

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