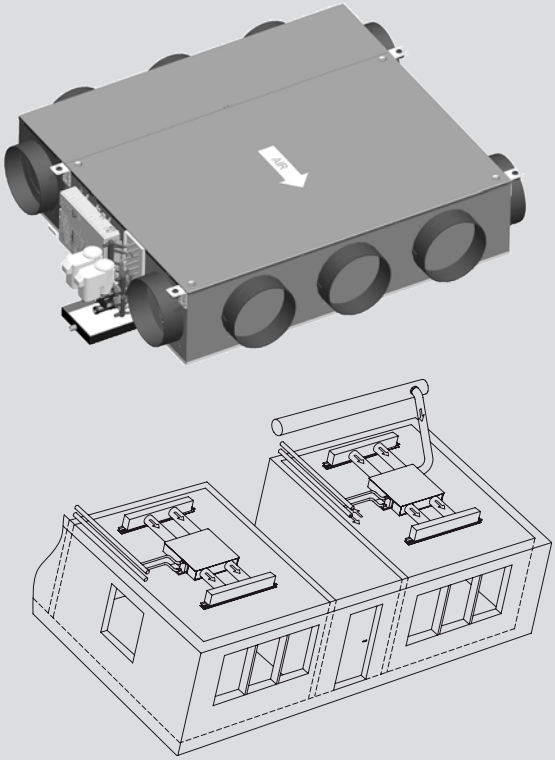
Carrier

United Technologies

PRODUCT SELECTION DATA



- Modular false ceiling ducted unit
- Extremely quiet operation
- Low Energy Consumption
- Flexibility for simplified installation
- Improved comfort
- Efficient Indoor Air Quality

Hydronic Ducted Fan Coil Units

42EM

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www.eurovent-certification.com
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Original document

Contents

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1 - FUNCTIONS

- The Carrier 42EM Atmosphera is available in different sizes with 2-pipe, 2-pipe plus electric heater or 4-pipe coils, with an air flow range from 27 to 440 l/s, a total nominal cooling capacity range from 0.65 to 10 kW and a nominal heating capacity range from 1.1 to 18 kW.
- Compact ducted unit, designed for false ceiling installation.
- Reliable and economical for light commercial and office applications.
- Low height of 250 mm.
- Two versions for increased installation flexibility: modular or compact.
- Compatible with the Carrier 35BD diffuser range.
- Air outlet configuration modularity with different plenums.
- Extremely low sound levels for ducted applications.
- Six-speed fan motor offers a wide choice of medium speeds.
- Available with low-consumption variable-speed EC motor (LEC = low energy consumption).
- High-pressure centrifugal fan.
- G3 filters as standard.
- Safe factory-installed electric heater with multiple capacity stages choices.
- Low water pressure drop with factory-installed valves.
- Factory-installed options (valves and controllers) for fast and easy installation in false ceilings.

2 - FEATURES

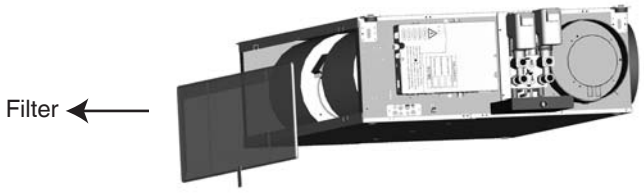
2.1 - Configuration flexibility

Depending on the size, several motor drive selections are available:

- Sizes 0 and 1: one multi-speed motor drive (models 05 and 10) and one low-consumption variable-speed motor drive (models 09 and 19)
- Sizes 2 and 3: three multi-speed motor drive selections possible (models 21, 22, 23 and 31, 32, 33) and one low-consumption variable-speed motor drive (models 29 and 39)

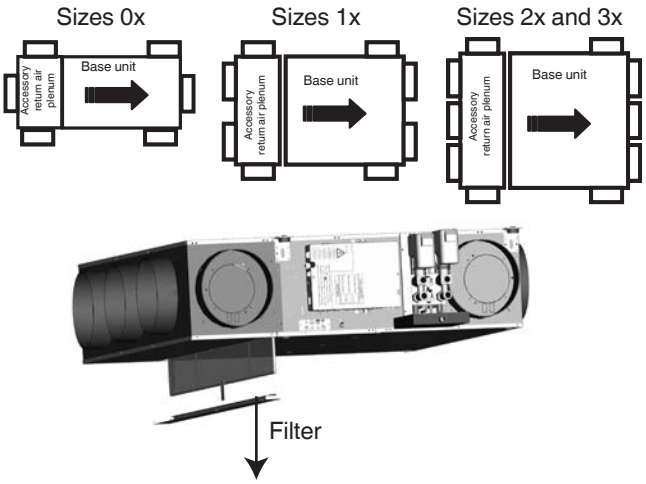
There are two unit models available:

- modular models for all sizes, with side connection spigots for maximised flexibility. This model consists of a non-ducted base unit. In this configuration filter removal is from the rear:



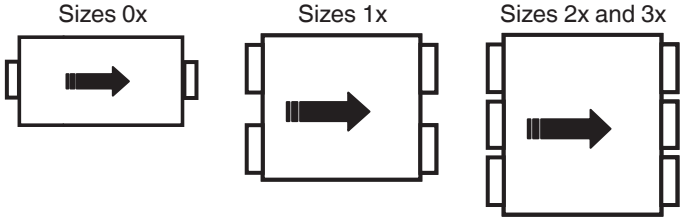
In models with ducted return air it is possible to add a factory-assembled return air plenum.

Connection possibilities

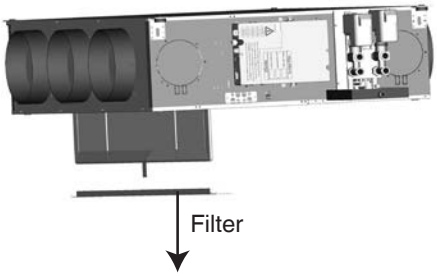


NOTE: Carrier recommends not to exceed an air velocity of 4 m/s (125 l/s 450 m3/h) per spigot.

- One-piece compact in-line units (all sizes) are models with in-line ducted supply and return air (only 125 mm diameter fresh air ducts can be connected on the sides).



This version does not allow the use of 200 mm diameter spigots on the sides. Filter removal is from below.



2.2 - Low noise levels

In order to further enhance occupant comfort this product range offers especially low noise levels. The casing of the 42EM Atmosphera is made of galvanised sheet steel with full high-efficiency internal lining for optimised thermal and sound insulation of the unit.

In order to comply with the various local regulations (fire class) the 42EM Atmosphera is available with class M1 type insulation (according to NF P 92-507). It is also equipped with anti-vibration mounts as standard. 42EM is available on request with insulation material Euroclass level B-s3-d0 (according to EN 13501) compliant with British Class O requirements.

2.3 - Compact design

The condensate removal pan height is optimised at 215 mm. In order to reduce the dimensions of the 42EM Atmosphera to the minimum, the units are equipped with high-efficiency heat exchangers with very high cooling capacity/treated air flow ratios.

2.4 - Physical and electrical data at Eurovent conditions

42EM		05			09			10			19		
Fan speed		**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
Air flow	l/s	58	86	90	32	89	121	74	119	132	37	127	151
	m^3/h	210	309	324	115	320	436	271	438	490	122	456	544
Available static pressure	Pa	23	50	58	6	50	93	19	50	62	4	50	75
Cooling mode, two pipes*													
Total cooling capacity	kW	1.57	2.18	2.27	0.91	2.25	2.86	1.87	2.76	3	1.01	2.90	3.31
Sensible cooling capacity	kW	1.14	1.61	1.68	0.64	1.67	2.17	1.39	2.11	2.31	0.73	2.23	2.59
Water flow rate	l/s	0.07	0.10	0.11	0.04	0.11	0.14	0.09	0.13	0.14	0.04	0.14	0.16
	l/h	270	374	389	156	387	492	321	475	516	162	499	569
Water pressure drop	kPa	13	24	25	4	25	38	11	23	27	3	25	33
Water content	l	0.35			0.35			0.5			0.5		
Heating mode, two pipes**													
Heating capacity	kW	1.91	2.69	2.8	1.08	2.77	3.59	2.44	3.75	4.1	1.26	3.97	4.6
Cooling mode, four pipes*													
Total cooling capacity	kW	1.43	1.98	2.06	0.83	2.05	2.6	1.8	2.6	2.8	0.91	2.67	3.01
Sensible cooling capacity	kW	1.08	1.52	1.58	0.61	1.57	2.03	1.36	2.03	2.21	0.66	2.1	2.4
Water flow rate	l/s	0.07	0.09	0.10	0.04	0.10	0.12	0.09	0.12	0.13	0.04	0.13	0.14
	l/h	247	342	355	143	353	447	310	446	482	155	457	518
Water pressure drop	kPa	9	17	19	3	18	28	14	29	34	4	30	39
Water content	l	0.32			0.32			0.45			0.45		
Heating mode, four pipes***													
Heating capacity	kW	1.47	2.00	2.08	0.87	2.06	2.60	2.44	3.46	3.73	1.36	3.63	4.09
Water flow rate	l/s	0.04	0.05	0.05	0.02	0.05	0.06	0.04	0.06	0.06	0.02	0.06	0.07
	l/h	129	175	182	76	181	228	209	298	320	110	311	352
Water pressure drop	kPa	10	17	19	4	19	28	7	14	16	2	16	20
Water content	l	0.11			0.11			0.15			0.15		
Electric heater		230 V ± 10 % - 1 ph - 50 Hz											
Maximum capacity	W	1600			1600			1600			1600		
Current drawn	A	6.95			6.95			6.95			6.95		
Sound levels													
Sound power level (return and radiated)	dB(A)	43	54	57	33	50	57	41	51	53	34	52	57
Sound power level (supply)	dB(A)	42	49	50	29	47	54	38	49	51	32	51	56
Electrical data, motor		230 V ± 10 % - 1 ph - 50 Hz											
Power input	W	45	77	102	4	33	72	44	82	113	6	51	83
Current drawn	A	0.2	0.34	0.45	-	-	-	0.17	0.35	0.48	-	-	-
Air filter (G3)	mm	230 x 420			230 x 420			230 x 570			230 x 570		
Technical data (compact model, overall dimensions)													
Connection diameter, cold and hot-water coils	in	1/2 gas (unit nuts female)											
Spigot connection diameter	mm	200			200			200			200		
Height	mm	250			250			250			250		
Depth	mm	700			700			850			850		
Length	mm	870			870			870			870		
Unit weight	kg	20			20			22			22		

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

2.4 - Physical and electrical data at Eurovent conditions (continued)

42EM		21			22			23			29		
Fan speed		**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
Air flow	l/s	69	150	163	85	173	199	106	247	263	55	211	237
	m^3/h	250	540	585	306	623	716	380	890	945	198	760	853
Available static pressure	Pa	12	50	58	12	50	66	9	50	56	3	50	63
Cooling mode, two pipes*													
Total cooling capacity	kW	1.85	3.65	3.90	2.32	4.23	4.70	2.70	5.40	5.60	1.56	4.92	5.36
Sensible cooling capacity	kW	1.36	2.77	2.98	1.70	3.21	3.61	2.03	4.22	4.44	1.13	3.80	4.18
Water flow rate	l/s	0.09	0.18	0.19	0.11	0.20	0.22	0.13	0.26	0.27	0.07	0.24	0.26
	l/h	324	634	677	399	726	808	472	929	972	269	845	921
Water pressure drop	kPa	6	23	26	9	30	36	13	50	54	4	39	45
Water content	l	1.0			1.0			1.0			1.0		
Heating mode, two pipes**													
Heating capacity	kW	2.33	4.77	5.12	2.87	5.44	6.13	3.47	7.26	7.63	1.9	6.43	7.08
Cooling mode, four pipes*													
Total cooling capacity	kW	2.21	3.45	3.70	2.23	3.96	4.38	2.61	4.97	5.20	1.51	4.57	4.95
Sensible cooling capacity	kW	1.69	2.66	2.85	1.65	3.06	3.43	1.97	3.96	4.17	1.1	3.59	3.94
Water flow rate	l/s	0.11	0.17	0.18	0.11	0.19	0.21	0.13	0.24	0.25	0.07	0.22	0.24
	l/h	392	598	637	382	679	753	450	864	896	260	785	850
Water pressure drop	kPa	10	22	25	10	29	35	12	46	50	4	37	43
Water content	l	0.8			0.8			0.8			0.8		
Heating mode, four pipes***													
Heating capacity	kW	1.85	3.50	3.70	2.29	3.98	4.39	2.60	4.90	5.20	1.57	4.57	4.95
Water flow rate	l/s	0.05	0.09	0.09	0.06	0.10	0.11	0.07	0.12	0.13	0.04	0.11	0.12
	l/h	166	310	328	201	349	386	234	439	457	138	402	435
Water pressure drop	kPa	2	6	7	3	9	10	4	13	14	2	11	13
Water content	l	0.2			0.2			0.2			0.2		
Electric heater		230 V ± 10 % - 1 ph - 50 Hz											
Maximum capacity	W	3200			3200			3200			3200		
Current drawn	A	13.91			13.91			13.91			13.91		
Sound levels													
Sound power level (return and radiated)	dB(A)	39	53	55	39	54	57	46	59	61	43	52	55
Sound power level (supply)	dB(A)	36	48	50	37	52	55	40	55	58	43	51	53
Electrical data, motor		230 V ± 10 % - 1 ph - 50 Hz											
Power input	W	43	94	104	62	112	128	102	139	149	4	73	96
Current drawn	A	0.20	0.43	0.45	0.29	0.52	0.62	0.55	0.63	0.68	0.05	0.61	0.74
Air filter (G3)	mm	230 x 990			230 x 990			230 x 990			230 x 990		
Technical data (compact model, overall dimensions)													
Connection diameter, cold and hot-water coils	in	1/2 gas (unit nuts female)											
Spigot connection diameter	mm	200			200			200			200		
Height	mm	250			250			250			250		
Depth	mm	1270			1270			1270			1270		
Length	mm	870			870			870			870		
Unit weight	kg	41			41			41			39		

Fan speed: L = Low, M = Medium, H = High

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

2.4 - Physical and electrical data at Eurovent conditions (continued)

42EM		31			32			33			39		
Fan speed		**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
Air flow	l/s	69	150	163	85	173	199	106	247	263	55	211	237
	m^3/h	250	540	585	306	623	716	380	890	945	198	760	853
Available static pressure	Pa	12	50	58	12	50	66	9	50	56	3	50	63
Cooling mode, two pipes*													
Total cooling capacity	kW	2.26	4.55	4.90	2.84	5.34	6.02	3.35	7.01	7.35	1.82	6.18	6.8
Sensible cooling capacity	kW	1.53	3.19	3.44	1.92	3.73	4.23	2.31	4.99	5.26	1.23	4.34	4.81
Water flow rate	l/s	0.11	0.22	0.24	0.13	0.26	0.29	0.16	0.34	0.35	0.09	0.30	0.32
	l/h	389	792	854	484	918	1034	580	1210	1260	313	1062	1166
Water pressure drop	kPa	6	24	28	9	32	41	13	56	61	4	42	49
Water content	l	1.7			1.7			1.7			1.7		
Heating mode, two pipes**													
Heating capacity	kW	2.48	5.19	5.60	3.05	5.94	6.72	3.75	8.01	8.50	1.99	7.07	7.82
Cooling mode, four pipes*													
Total cooling capacity	kW	2.20	4.40	4.80	2.75	5.18	5.83	3.20	6.70	7.10	1.78	5.99	6.57
Sensible cooling capacity	kW	1.50	3.13	3.37	1.89	3.65	4.14	2.26	4.87	5.14	1.21	4.26	4.7
Water flow rate	l/s	0.11	0.21	0.23	0.13	0.25	0.28	0.16	0.32	0.34	0.09	0.29	0.31
	l/h	378	766	824	472	890	1002	565	1160	1224	306	1030	1127
Water pressure drop	kPa	8	31	36	12	42	53	17	71	79	5	53	54
Water content	l	1.5			1.5			1.5			1.5		
Heating mode, four pipes***													
Heating capacity	kW	1.85	3.50	3.70	2.29	3.98	4.39	2.60	4.90	5.20	1.47	4.09	4.40
Water flow rate	l/s	0.05	0.09	0.09	0.06	0.10	0.11	0.07	0.12	0.13	0.04	0.10	0.11
	l/h	166	310	328	201	349	386	234	439	457	130	360	389
Water pressure drop	kPa	2	6	7	3	9	10	4	13	14	1	9	11
Water content	l	0.2			0.2			0.2			0.2		
Electric heater		230 V ± 10 % - 1 ph - 50 Hz											
Maximum capacity	W	3200			3200			3200			3200		
Current drawn	A	13.91			13.91			13.91			13.91		
Sound levels													
Sound power level (return and radiated)	dB(A)	39	53	55	39	54	57	46	59	61	43	52	55
Sound power level (supply)	dB(A)	36	48	50	37	52	55	40	55	58	43	51	53
Electrical data, motor		230 V ± 10 % - 1 ph - 50 Hz											
Power input	W	43	94	104	62	112	128	102	139	149	4	73	96
Current drawn	A	0.20	0.43	0.45	0.29	0.52	0.62	0.55	0.63	0.68	0.05	0.61	0.74
Air filter (G3)	mm	230 x 990			230 x 990			230 x 990			230 x 990		
Technical data (compact model, overall dimensions)													
Connection diameter, cold and hot-water coils	in	1/2 gas (unit nuts female)											
Spigot connection diameter	mm	200			200			200			200		
Height	mm	250			250			250			250		
Depth	mm	1270			1270			1270			1270		
Length	mm	870			870			870			870		
Unit weight	kg	43			43			43			41		

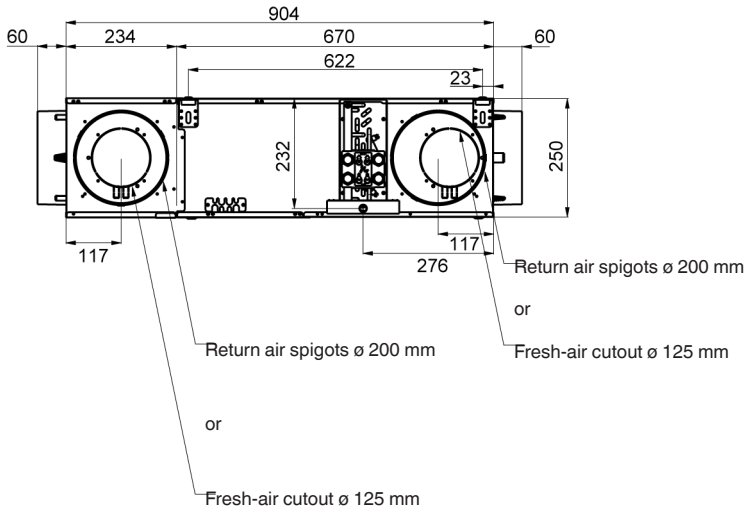
Fan speed: L = Low, M = Medium, H = High

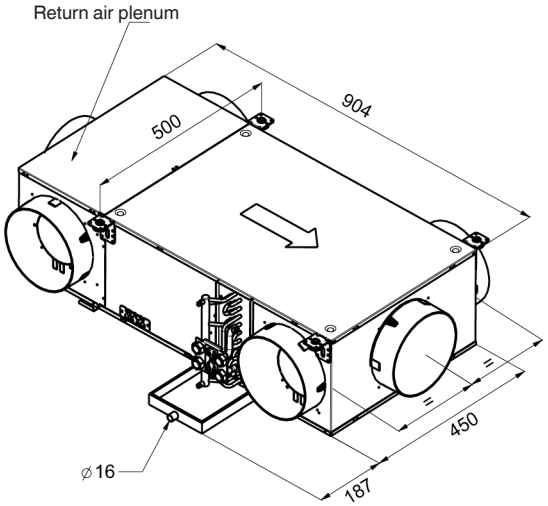
* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

2.5 - Dimensional drawings

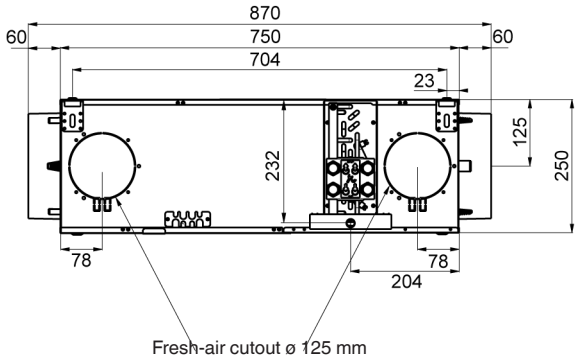
NOTE: All drawings shown have the coil connections on the right-hand side. Units with left-hand connections are symmetrical.

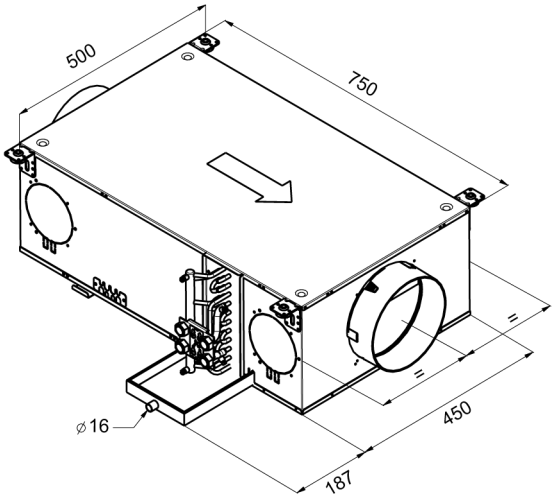
Size 0 - Modular model (with optional return air plenum)



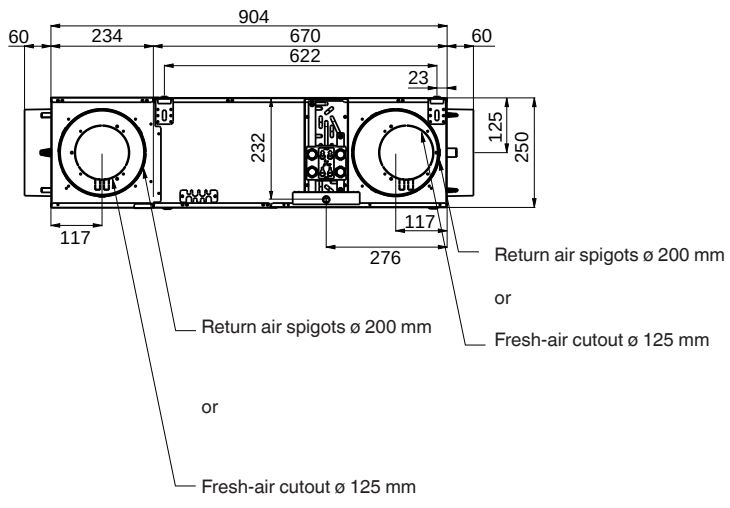


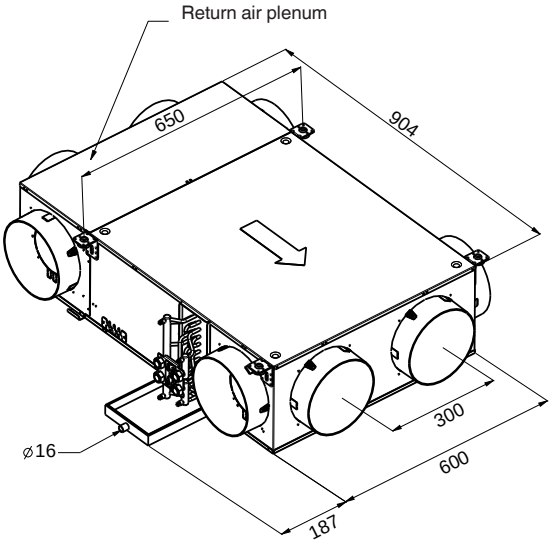
Size 0 - Compact in-line model, ducted return air





Size 1 - Modular model (with optional return air plenum)

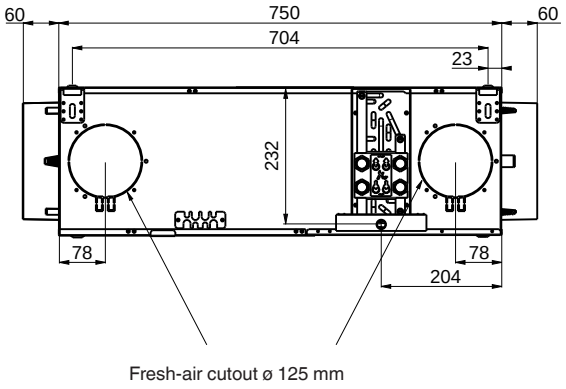


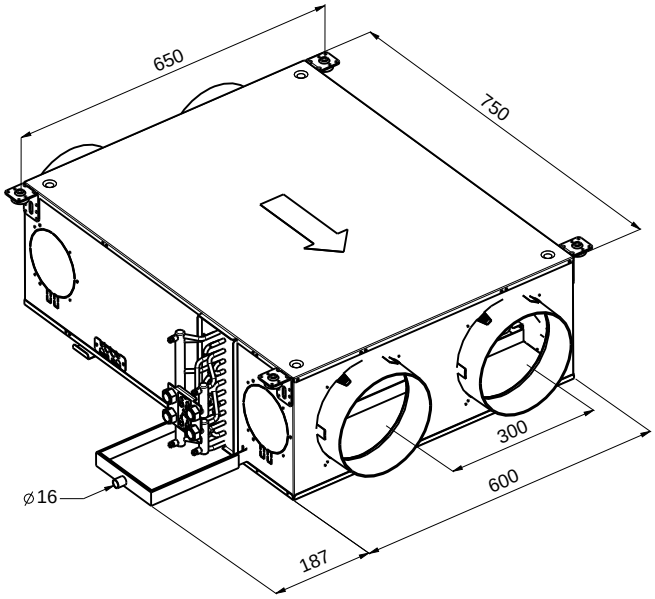


Air flow direction

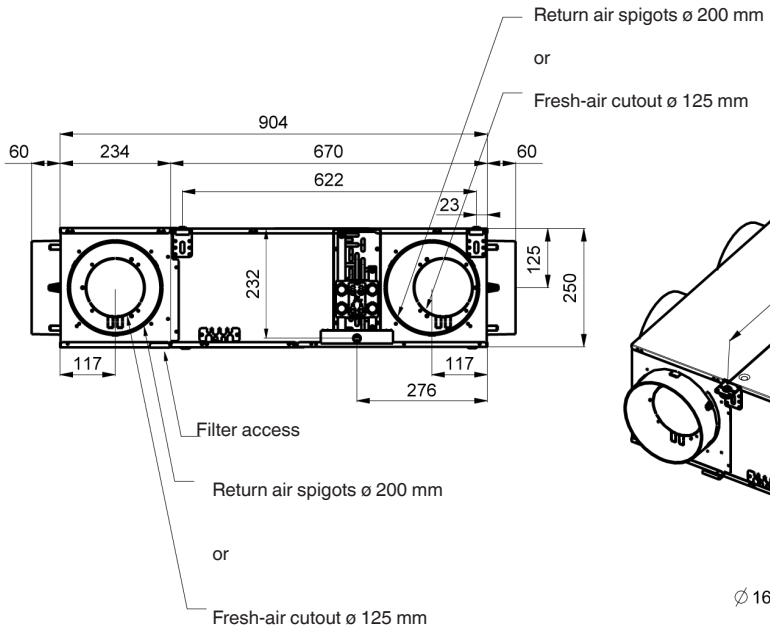
All dimensions are in mm.

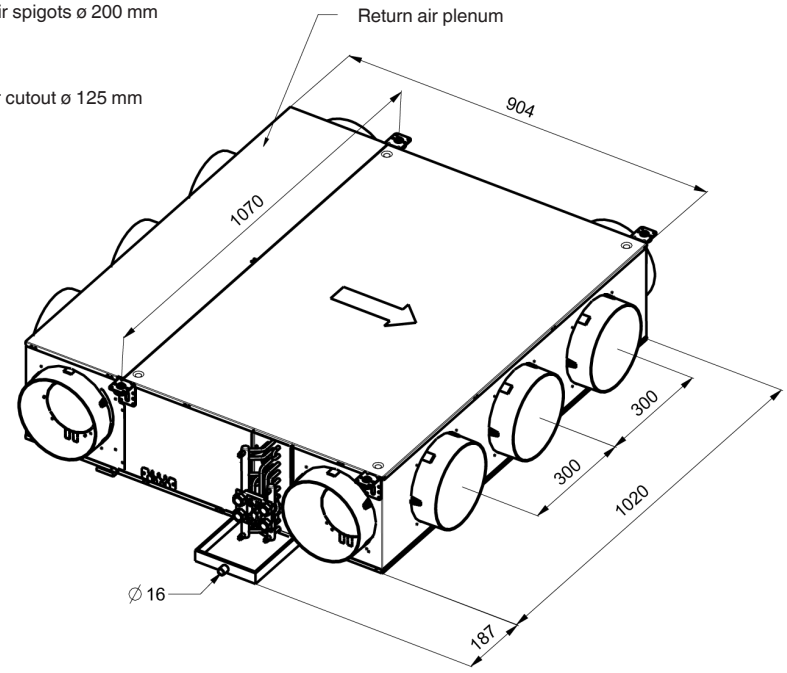
Size 1 - Compact in-line model, ducted return air



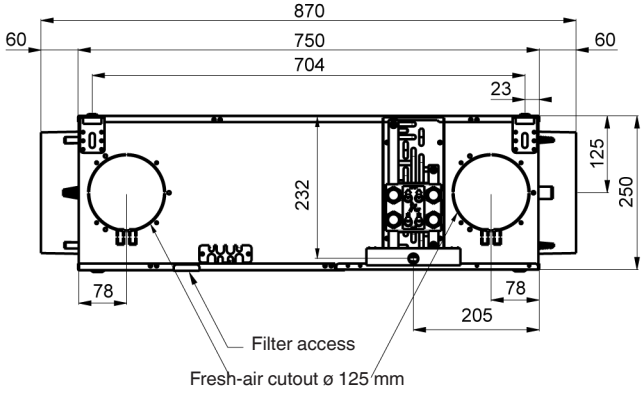


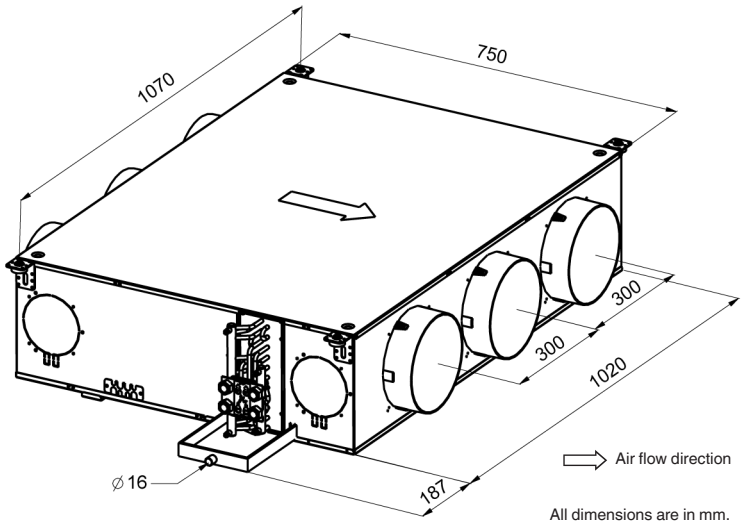
Sizes 2 and 3 - Modular model (with optional return air plenum)





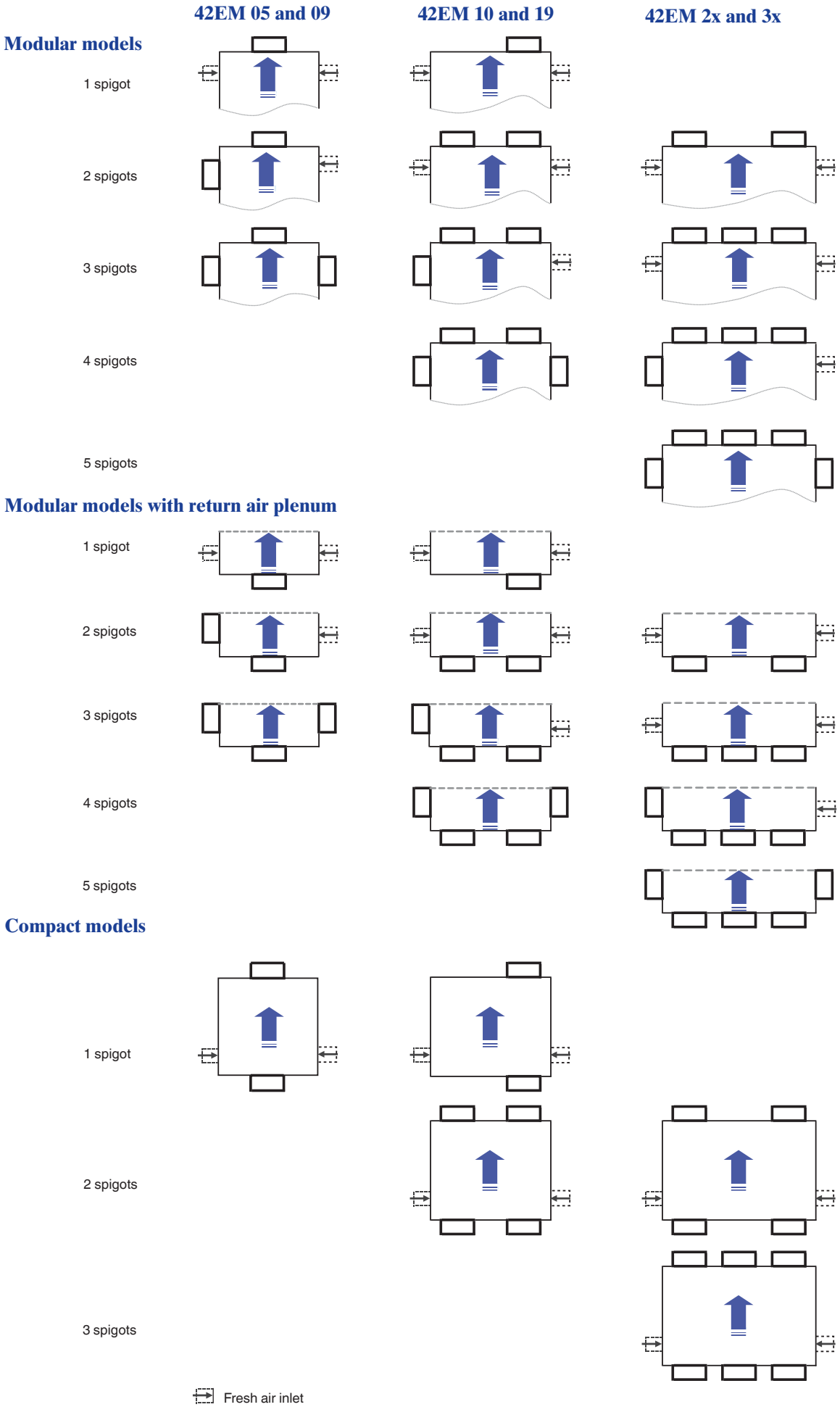
Sizes 2 and 3 - Compact in-line model, ducted return air





All dimensions are in mm.

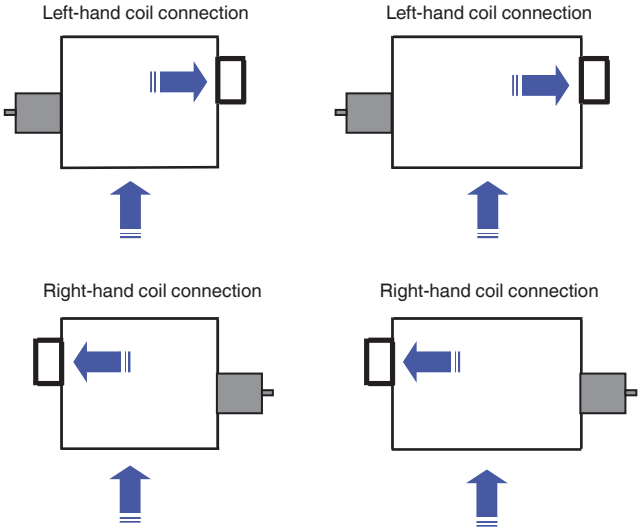
2.6 - Spigot configuration



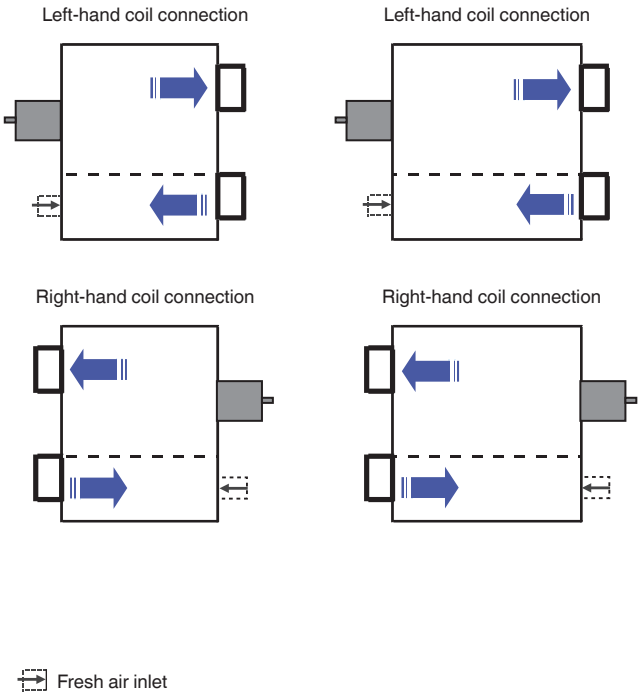
2.6 - Spigot configuration (continued)

42EM 05 and 09 **42EM 10 and 19**

U-shaped modular models without return air plenum



U-shaped modular models with return air plenum



NOTE: 42EM sizes 29 & 39 are available with plenum U type on special request.

IMPORTANT: The fresh air inlet is always opposite the spigot side that is by default opposite the coil connection side.

3 - MAIN MODULES AND COMPONENTS

3.1 - Fan motor assemblies

3.1.1 - Multi-speed fan motor assembly according to ERP 2015

Description/codification

42EM 1 0 XXX...

Unit size (chassis): 0, 1, 2, 3

Multi-speed fan motor assembly, size: 0, 1, 2, 3, 5
Variable speed: 9

- Asynchronous motors, 230 V - 1 ph - 50 Hz, 4 poles with internal overload protection.
- Permanent capacitor.
- Class B winding insulation, varnish class F.

The 42EM Atmosphera sizes 0x and 1x have a multi-speed fan motor assembly with forward-curved, double-inlet, single-wheel fans. Sizes 2x and 3x are available with double-wheel fans and three speed arrangements (21, 22, 23 and 31, 32, 33), depending on the required air flows/pressures.

Six speeds are available as standard. From these three speeds must be selected to allow connection of the fan motor in accordance with the applicable electromechanical or electronic regulations.

- Minimum speed: terminal 6
- Maximum speed: terminal 1
- 42EM units are supplied with Carrier numerical controls and prewired to the factory settings, for speeds 1, 3 and 5.
- For other fan motor speed wiring combinations refer to the unit codification.

3.1.2 - Low-consumption fan motor assembly (variable-speed LEC)

Atmosphera sizes 09, 19, 29 and 39 are equipped with the variable-speed LEC fan motor, that is controlled by a 0 to 10 V signal, available with the Carrier NTC type electronic control.

NOTE: In this case the minimum control signal that allows motor start-up is 2 V for two- and four-pipe versions and 3 V for the versions equipped with electric heaters.

If the product is supplied without a Carrier control device, verification of EMC conformity is the responsibility of the installer.

3.2 - Water coil

- Aluminium fins mechanically bonded by expansion onto copper tubes
- 1/2" threaded water inlet and outlet connections (female)
- Air purge valves and drain are standard.
- Service pressure 1600 kPa.

The coil is integral with the drain pan and coil access door to ease of removal during service and maintenance.

3.3 - One-piece condensate drain pan

Pan with a 16 mm external drain connection diameter and insulation class M1 in accordance with standard NFP 92-507.

3.4 - Filter and filter access

The 42EM includes as standard a non-regenerable G3 filter according to EN 779, medium fire rating M1, metal wire frame.

3.5 - Fan wiring solutions

3.5.1 - Multi-speed unit with bare wires (standard)

The fan motor assembly has six speeds taken from an auto-transformer offering the unit greater flow control flexibility.

When ordering, three of the six speeds must be selected to allow connection of the fan motor in accordance with the applicable electronic regulations. Three speeds are connected - the default factory wiring is 5-3-1 (minimum speed = 6, maximum speed =1).

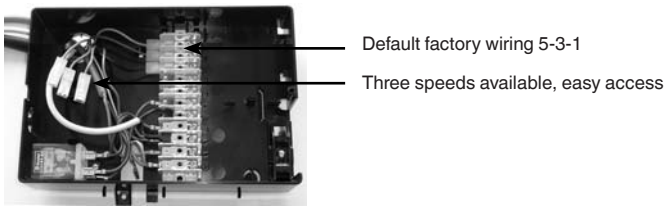
3.5.2 - Multi-speed unit with optional 6 speeds bare wires on connector

All motor fan speeds are factory wired and available as bare wires on connector.

3.5.3 - Multi-speed unit with optional control box

This option allows the installer to connect the unit to a terminal board inside a control box. To comply with the applicable regulations, the control box can be opened with a screw driver.

The control box option permits changing the speed wiring without access to the motor. Three of the available six speeds are connected - the default factory wiring is 5-3-1 (minimum speed = 6, maximum speed = 1).



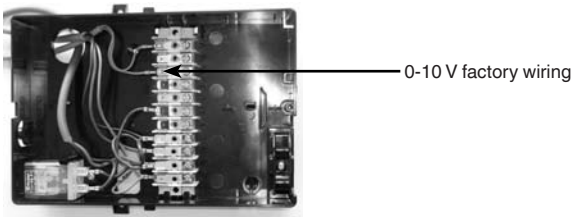
3.5.4 - Variable-speed low energy consumption (LEC) fan motor option with bare wires (standard)

The variable-speed low energy consumption (LEC) fan motor must be controlled by a 0-10 V d.c. signal.

3.5.5 - Variable-speed low energy consumption (LEC) fan motor option with control box option

This option allows the installer to connect the unit to a terminal board inside a control box. To comply with the applicable regulations, the control box can be opened with a screw driver.

The 0-10 V d.c. signal that controls the variable fan speed is directly accessible at the terminal board.



3.5.6 - Cover only option

An accessory plastic cover can be provided for a control supplied by the customer (max. dimensions L = 200 mm x D = 100 mm x H = 95 mm) and is installed on site or at the factory on a multi-speed unit or a variable-speed low energy consumption (LEC) fan motor.

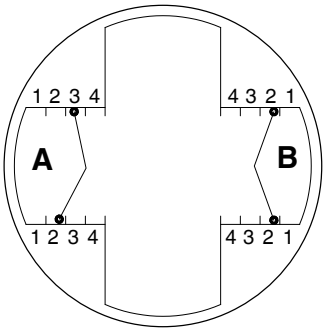
NOTE: This option is not compatible with the control box option.

3.6 - Fresh air controller

3.6.1 - Constant volume fresh air controller

The 42EM Atmosphera can be fitted with a constant fresh air flow controller, fixed at 8.5 l/s (30 m³/h) or adjustable from 17 l/s (60 m³/h) to 44 l/s (160 m³/h) to allow contol of the introduction of fresh air and of the air change rate. The fresh air supply is normally located ahead of the water coil.

Controllers with adjustable fresh air flow:



	l/s	m³/h	A	B
MR60	17	60	4-4	4-4
MR75	21	75	4-3	4-3
MR85	24	85	3-3	3-2
MR90	25	90	3-2	2-2
MR100	28	100	2-1	2-1
MR105	29	105	2-1	1-1
MR110	31	110	1-1	1-1
MR120	33	120	3-3	-
MR130	36	130	2-1	-
MR140	39	140	1-1	-
MR160	44	160	-	-

The 17 1/s (60 m³/h) or fresh air controller may be modified on site by relocating or removing two plastic restrictors in order to increase the maximum constant fresh air flow capacity to 44 1/s (160 m³/h).

IMPORTANT: If the 42EM includes a return air temperature sensor, the constant fresh air flow rate must not exceed 50% of the unit supply air flow rate at minimum speed.

NOTE: To operate correctly, the 8.5 l/s (30 m³/h) the constant fresh air flow controller requires a differential pressure in the range of 50 Pa to 200 Pa. The controller with adjustable fresh air flow from 17 l/s (60 m³/h) to 44 l/s (160 m3/h) requires a differential pressure in the range of 70 to 200 Pa.

3.6.2 - Variable volume fresh air controller

The 42EM Atmosphera can be equipped with an optional variable fresh air flow controller from 0-55 l/s (0-200 m³/h). This is connected to the numeric Carrier controller and can regulate the fresh air intake in two ways:

- either using a fixed rate set by the installer that can be reconfigured as required
- or based on the CO_2 level; in this case it is connected to a CO_2 sensor via the Carrier numeric controller (the CO_2 sensor is located opposite the fresh air inlet).

NOTE: With the variable fresh air flow controller the upstream pressure in the fresh air duct must be 180 Pa.

3.7 - Electric heater (option)

Electric heater-resistance wire type

- Supply voltage: 230 V - 1 ph - 50 Hz
- Heater size and capacity per unit (+5% ; -10%):

Electrical Heater Total capacity (W)	500	800	1000	1600	2000	3200
42EM 05/09	1 x 500	1 x 800	1 x 1000	1 x 1600	NA	NA
42EM 10/19	1 x 500	1 x 800	1 x 1000	1 x 1600	NA	NA
42EM 21	NA	NA	2 x 500	2 x 800	NA	NA
42EM 22/23/29	NA	NA	2 x 500	2 x 800	2 x 1000	2 x 1600
42EM 31	NA	NA	2 x 500	2 x 800	NA	NA
42EM 32/33/39	NA	NA	2 x 500	2 x 800	2 x 1000	2 x 1600

- The heater is protected with a dual safety device:
  a) Self-holding automatically reset integrated safety thermostat
  b) Destructive thermofuse link

NOTE: Minimum air flow must be maintained to avoid damaging the electric heaters:

- ***Unit sizes 05, 09, 10, 19: minimum air flow 28 l/s (100 m³/h)***
- ***Unit sizes 21, 31: minimum air flow 42 l/s (150 m³/h)***
- ***Unit sizes 22, 23, 29, 32, 33, 39: minimum air flow 55 l/s (200 m³/h)***

4 - TECHNICAL SPECIFICATIONS & OPTIONS

4.1 - Valves (option)

NOTE: The motor valve assembly is normally closed.

4.1.1 - Valve actuators

A wide choice of actuators is available with two or four-way valve bodies (three-way with integral bypass) to offer the right solution for any controller type and customer requirement, from on/off to proportional types, with either 230 V or 24 V power supply:

- On/off 230 V actuator
- On/off 24 V actuator
- Floating 3-point 230 V actuator
- Floating 3-point 24 V actuator
- Modulating 0-10 V/24 V actuator

When combined with LEC motors and the NTC controller, floating 3-point 230-V actuators are recommended to increase energy savings and enhance comfort.

NOTE: 24V power supply actuators are not compatible with Carrier controllers (Thermostats A/B/C/D, HDB & NTC).

4.1.2 - Two-way valve body

Features of the 1/2" two-way valve

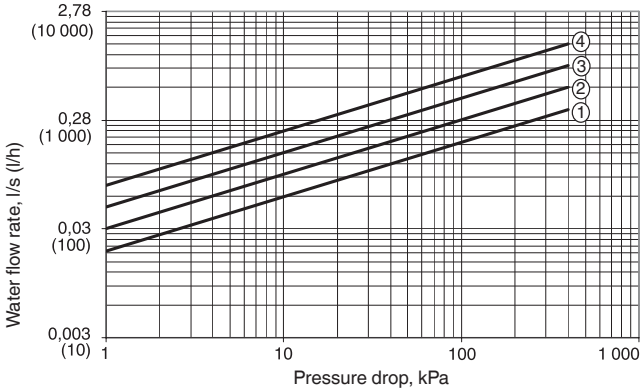
- 1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN 15 for 1/2" valve
- Fluid: water and glycol solution (max. 40% glycol)
- Operating range: 2-90°C
- Nominal pressure: PN 16 bar
- Kvs = 1.6

4.1.3 - Three-way valve body (with integral bypass)

Features of the 1/2" three-way valve

- 1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN 15 for 1/2" valve
- Fluid: water and glycol solution (max. 40% glycol)
- Operating range: 2-90°C
- Nominal pressure: PN 16 bar
- Kvs = 1.6

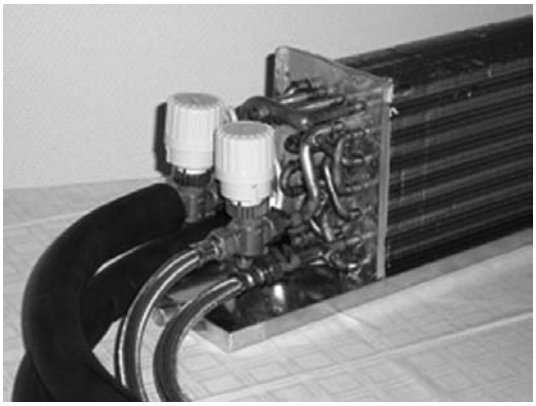
4.1.4 - Water valve pressure drop



Legend

1. Kvs = 0.63
2. Kvs = 1
3. Kvs = 1.6 (standard valve)
4. Kvs = 2.5

4.2 - Technical specification, flexible water pipes (option)



4.2.1 - Materials

- Pipes: MEPD-based elastomer (modified ethylene-propylene-diene)
- Braid: 304L stainless steel
- Insulation: cellular foam rubber with M1 fire rating (9 mm thick, flexible water pipes).

4.2.2 - Characteristics

- Minimum bend radius: 106 mm
- The flexible water pipes are designed for treated or untreated water (maximum 40% ethylene glycol or propylene glycol).
- Maximum hot water temperature 90 °C
- Maximum operating pressure: 16 bar
- 1/2" flat gas connections
- Length: 1 m.

KV Valves	On/Off				V3PTS			
	Cooling		Heating		Cooling		Heating	
	V2V	V4V	V2V	V4V	V2V	V4V	V2V	V4V
42EM 05/09	1.6	1.6	1.6	1.6	1.0	1.0	1.0	1.0
42EM 10/19	1.6	1.6	1.6	1.6	1.0	1.0	1.0	1.0
42EM 21	1.6	1.6	1.6	1.6	1.0	1.0	1.0	1.0
42EM 22/23/29	1.6	1.6	1.6	1.6	1.0	1.0	1.0	1.0
42EM 31	1.6	1.6	1.6	1.6	1.6	1.6	1.0	1.0
42EM 32/33/39	1.6	1.6	1.6	1.6	1.6	1.6	1.0	1.0
Course	2.5mm				6.5mm			

Note: By-pass KV = 0.63 for V4V valve KV=1 type
By-pass KV = 1 for VAV valve KV=1.6 type

4.3 - Filters

42EM offers multiple filters choices:

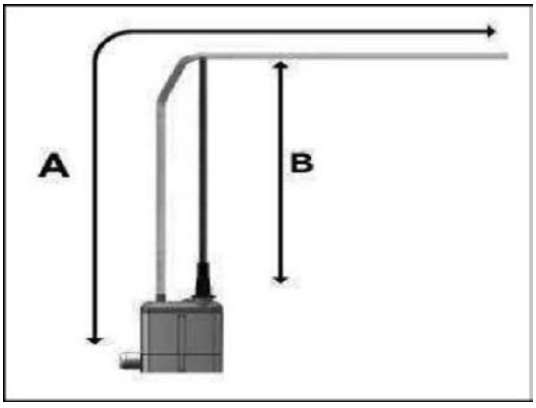
- Without filters: this option is available only on Compact units when another filter is already provided on air inlet diffuser or grilles.
- G3 filter: supplied as standard, medium fire rating M1, metal wire frame.
- G4 filter: medium efficiency solution, medium fire rating M1, metal wire frame.

4.4 - Condensate pump (option)

The condensate pump option is factory fitted on the side on the 42EM drain pan. Electrical power supply 230V-50/60Hz.

Condensate pump discharge performances:

TABLE OF ACTUAL DISCHARGE (l/h)				
	Total length of pipe (Ø int. 6 mm) A			
Discharge head (B)	5 m	10 m	20 m	30 m
0 m	20	19	18	17
2 m	16	15	14	13.5
4 m	11.5	11	10.5	10
6 m		8.5	7.5	6.5
8 m		6	5	4
10 m		4	3.5	2.5



5 - CONTROL (OPTION)

The Atmosphera can be supplied with a wide range of Carrier controls. These offer functions to suit the various application requirements, summarised in the table below.

		Thermostats	HDB	NTC
Control algorithms	On-Off	X	X	
	Proportional-integral			X
Valve management	Air flow control only (no valve)	X	X	
	On-off actuators	X	X	X
	Proportional valves			O
Fan control	Three speeds	Type A-B	X	X
	Automatic fan speed selection	X	X	X
	LEC motor control	Type C-D		X
Main functions	Setpoint control	X	X	X
	Occupied/unoccupied mode	X	X	X
	Frost protection mode	X	X	X
	Window contact input	X	X	X
	Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	Type A & C	X	X
	Automatic seasonal changeover (4 pipes and 2 pipes + electric heater)	Type B & D	X	X
	Manual changeover	X	X	X
	Continuous ventilation within dead-band	X	X	X
	Periodical ventilation within dead-band	X	X	X
	Unit grouping		X	X
	Louvre control		X	X
	On-site configuration		X	X
	Supply air temperature monitoring limiting			X
	Communication (CCN)			X
	Electrical heater loadshed			X
	Dirty filter alarm			X
	Alarm reporting			X
	IAQ control			O
	Demand control ventilation (DCV)			O
	Free cooling mode			O
User interface	Digital display		X	X
	Automatic or manual fan speed control	X	X	X
	Operating mode selection	X	X	X
	Eco/unoccupied button	X	X	X

Legend
HDB Hydronic Dual Board
NTC New Terminal Controller
X Standard function
O Available as an option

NOTE: For the features and specifications of the Carrier controllers refer to the technical documentation for each controller.

Upon special request other controller types can be factory-installed on the units (supplied by Carrier or the customer).

6 - ATMOSPHERA PERFORMANCE DATA

6.1 - Cooling capacity - water coil

6.1.1 - Two-pipe water coil

Entering/ leaving water temperature, °C		Sizes 05 and 09																	
		Relative humidity 50%																	
		Air flow, l/s (m³/h)																	
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)		
		Entering air dry-bulb temperature, °C																	
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6-12	TC	0.86	0.70	0.55	1.62	1.31	1.00	2.28	1.85	1.41	2.87	2.33	1.78	3.39	2.76	2.13	3.85	3.14	2.45
	SHC	0.58	0.51	0.45	1.10	0.98	0.85	1.59	1.40	1.22	2.03	1.80	1.57	2.44	2.17	1.90	2.82	2.51	2.21
	SAT	9.6	9.7	9.6	10.3	10.4	10.3	11.0	11.0	10.8	11.6	11.5	11.3	12.2	12.0	11.6	12.8	12.5	12.0
	WF	123	100	79	231	188	143	326	265	202	410	334	255	484	395	305	551	450	351
7-12	TC	0.85	0.68	0.53	1.59	1.29	0.98	2.25	1.82	1.38	2.82	2.30	1.75	3.33	2.71	2.09	3.80	3.09	2.40
	SHC	0.57	0.50	0.44	1.09	0.97	0.84	1.57	1.39	1.21	2.01	1.79	1.56	2.41	2.15	1.89	2.79	2.49	2.19
	SAT	9.8	9.9	9.9	10.5	10.5	10.5	11.1	11.1	10.9	11.8	11.6	11.4	12.4	12.1	11.7	12.9	12.6	12.1
	WF	145	118	90	273	222	168	386	313	238	484	394	301	572	466	359	652	530	413
8-13	TC	0.76	0.61	0.47	1.43	1.14	0.86	2.03	1.60	1.22	2.54	2.02	1.56	3.00	2.40	1.86	3.41	2.73	2.15
	SHC	0.53	0.47	0.41	1.02	0.90	0.78	1.48	1.30	1.13	1.89	1.67	1.46	2.27	2.02	1.76	2.63	2.34	2.05
	SAT	10.8	11.0	10.7	11.5	11.5	11.3	12.1	12.1	11.7	12.7	12.5	12.1	13.2	13.0	12.5	13.7	13.4	12.8
	WF	131	104	80	246	196	148	348	276	210	436	348	268	515	412	320	586	469	370
10-15	TC	0.60	0.47	0.37	1.12	0.87	0.68	1.57	1.23	0.97	1.98	1.57	1.24	2.35	1.88	1.49	2.68	2.17	1.73
	SHC	0.46	0.41	0.36	0.89	0.78	0.67	1.29	1.13	0.97	1.66	1.46	1.24	2.01	1.77	1.49	2.33	2.06	1.73
	SAT	13.0	12.8	12.2	13.5	13.3	12.9	14.0	13.7	13.4	14.4	14.1	13.7	14.8	14.4	14.1	15.2	14.7	14.4
	WF	102	80	63	192	150	116	270	212	167	341	270	213	404	324	257	460	373	298

Entering/ leaving water temperature, °C		Sizes 10 and 19																					
		Relative humidity 50%																					
		Air flow, l/s (m³/h)																					
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)			194 (700)			
		Entering air dry-bulb temperature, °C																					
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	
6-12	TC	0.82	0.67	0.53	1.55	1.24	0.94	2.19	1.75	1.34	2.78	2.21	1.70	3.31	2.63	2.03	3.78	3.01	2.33	4.21	3.37	2.62	
	SHC	0.56	0.49	0.44	1.07	0.94	0.82	1.55	1.36	1.19	2.00	1.75	1.54	2.41	2.12	1.86	2.80	2.46	2.16	3.16	2.79	2.62	
	SAT	10.1	10.1	9.9	10.7	10.8	10.7	11.3	11.3	11.1	11.9	11.8	11.5	12.4	12.2	11.9	12.9	12.6	12.2	13.3	13.0	12.6	
	WF	117	96	76	221	177	135	314	251	192	397	317	243	473	376	290	541	431	334	602	482	375	
7-12	TC	0.81	0.65	0.51	1.53	1.23	0.82	2.18	1.74	1.33	2.76	2.20	1.68	3.28	2.62	2.01	3.74	3.00	2.32	4.17	3.34	2.60	
	SHC	0.55	0.49	0.43	1.07	0.94	0.82	1.55	1.36	1.19	1.99	1.75	1.53	2.40	2.12	1.85	2.78	2.46	2.16	3.14	2.78	2.60	
	SAT	10.3	10.4	10.2	10.8	10.9	10.8	11.4	11.4	11.2	11.9	11.8	11.16	12.4	12.3	11.9	12.9	12.7	12.3	13.4	13.1	12.6	
	WF	139	112	87	263	211	160	375	299	228	475	378	289	564	450	346	643	516	398	716	574	446	
8-13	TC	0.73	0.57	0.45	1.38	1.08	0.82	1.95	1.53	1.17	2.47	1.93	1.49	2.94	2.30	1.79	3.35	2.64	2.07	3.72	2.95	2.33	
	SHC	0.52	0.45	0.40	1.00	0.87	0.76	1.45	1.27	1.11	1.87	1.63	1.43	2.26	1.98	1.73	2.62	2.30	2.00	2.96	2.61	2.33	
	SAT	11.3	11.4	11.0	11.8	11.9	11.6	12.4	12.3	12.0	12.8	12.7	12.3	13.3	13.1	12.7	13.8	13.5	13.0	14.2	13.8	13.3	
	WF	125	99	77	236	185	141	335	262	260	425	332	257	505	395	308	576	454	356	640	508	400	
10-15	TC	0.56	0.45	0.36	1.06	0.82	0.65	1.50	1.18	0.93	1.90	1.50	1.20	2.27	1.80	1.44	2.61	2.08	1.66	2.91	2.34	1.88	
	SHC	0.45	0.40	0.35	0.87	0.76	0.65	1.27	1.11	0.93	1.64	1.43	1.20	1.99	1.73	1.44	2.31	2.01	1.66	2.62	2.27	1.88	
	SAT	13.3	13.0	12.5	13.8	13.5	13.3	14.2	13.9	13.7	14.6	14.3	14.1	15.0	14.6	14.4	15.3	14.9	14.7	15.7	15.2	15.0	
	WF	97	77	61	183	142	112	258	202	161	327	258	206	390	310	247	448	357	286	501	403	323	

Entering/ leaving water temperature, °C		Size 21			Size 22			Size 23															
					Size 29																		
		Relative humidity 50%																					
		Air flow, l/s (m³/h)																					
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)			
		Entering air dry-bulb temperature, °C																					
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	
6-12	TC	2.38	1.91	1.46	3.38	2.71	2.09	4.28	3.42	2.65	5.08	4.08	3.16	6.04	4.86	3.78	6.89	5.55	4.35	7.28	5.88	4.63	
	SHC	1.64	1.44	1.25	2.37	2.08	1.83	3.05	2.68	2.35	3.68	3.24	2.84	4.46	3.94	3.45	5.17	4.58	4.02	5.51	4.88	4.63	
	SAT	10.5	10.6	10.5	11.1	11.1	10.9	11.6	11.6	11.3	12.1	12.0	11.7	12.8	12.5	12.1	13.4	13.0	12.6	13.7	13.3	12.7	
	WF	340	274	208	483	388	299	612	490	378	727	583	452	865	695	541	986	794	623	1041	841	662	
7-12	TC	2.35	1.89	1.44	3.35	2.68	2.06	4.24	3.40	2.61	5.04	4.04	3.12	5.98	4.80	3.75	6.83	5.49	4.31	7.22	5.81	4.57	
	SHC	1.63	1.43	1.25	2.35	2.07	1.81	3.03	2.67	2.34	3.66	3.23	2.83	4.43	3.92	3.45	5.14	4.55	4.01	5.48	4.86	4.57	
	SAT	10.6	10.7	10.6	11.1	11.2	11.0	11.7	11.6	11.4	12.2	12.1	11.7	12.9	12.6	12.2	13.5	13.1	12.6	13.7	13.3	12.8	
	WF	404	325	248	575	461	353	728	583	448	865	694	536	1027	825	643	1172	943	739	1239	997	784	
8-13	TC	2.12	1.67	1.27	3.00	2.36	1.82	3.80	2.99	2.31	4.51	3.56	2.77	5.36	4.25	3.32	6.11	4.86	3.84	6.45	5.15	4.08	
	SHC	1.52	1.33	1.16	2.21	1.93	1.69	2.85	2.49	2.18	3.44	3.02	2.63	4.17	3.67	3.20	4.85	4.27	3.72	5.17	4.56	4.08	
	SAT	11.6	11.6	11.4	12.1	12.1	11.8	12.6	12.5	12.2	13.1	12.9	12.5	13.7	13.4	12.9	14.2	13.8	13.3	14.5	14.0	13.5	
	WF	363	286	218	516	406	313	653	513	397	775	612	475	920	729	571	1049	836	660	1109	884	701	
10-15	TC	1.64	1.28	1.00	2.33	1.83	1.44	2.95	2.32	1.84	3.52	2.78	2.21	4.19	3.34	2.66	4.81	3.85	3.09	5.09	4.09	3.29	
	SHC	1.33	1.16	0.99	1.93	1.69	1.43	2.50	2.17	1.83	3.03	2.63	2.20	3.69	3.20	2.66	4.30	3.72	3.09	4.59	3.97	3.29	
	SAT	13.6	13.4	13.2	14.0	13.7	13.5	14.4	14.1	13.9	14.8	14.4	14.2	15.7	14.9	14.6	15.7	15.3	15.0	15.9	15.4	15.1	
	WF	283	220	171	401	314	247	507	400	316	605	478	379	721	574	458	828	663	531	876	704	565	

Legend
TC Total cooling capacity (kW)
SHC Sensible cooling capacity (kW)
SAT Supply air temperature (°C)
WF Water flow rate (l/h)
NOTE: To convert l/h to l/s, divide by 3600.

NOTE: Operating limits: air discharge temperature 12°C when the unit is installed in an ambient temperature of 27°C dry bulb and 65% relative humidity.

6.1.1 - Two-pipe water coil (cont.)

Entering/ leaving water temperature, °C		Size 31			Size 32 / Size 39																
		Relative humidity 50%																			
		Air flow, l/s (m³/h)																			
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)		
		Entering air dry-bulb temperature, °C																			
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6-12	TC	2.93	2.45	1.93	4.24	3.53	2.77	5.45	4.53	3.55	6.59	5.46	4.27	7.99	6.61	5.17	9.25	7.66	6.00	9.83	8.15	6.39
	SHC	1.89	1.68	1.47	2.76	2.45	2.15	3.58	3.19	2.79	4.37	3.89	3.41	5.37	4.78	4.20	6.30	5.61	4.94	6.74	6.01	6.39
	SAT	7.9	8.1	8.4	8.4	8.6	8.7	8.9	9.0	9.1	9.3	9.4	9.4	9.9	9.9	9.8	10.4	10.3	10.2	10.6	10.5	10.3
	WF	419	351	276	606	505	396	780	648	507	943	781	611	1143	945	740	1323	1095	858	1407	1166	915
7-12	TC	2.83	2.36	1.84	4.10	3.40	2.65	5.29	4.38	3.41	6.41	5.29	4.11	7.76	6.41	4.99	8.98	7.42	5.80	9.55	7.89	6.18
	SHC	1.84	1.64	1.43	2.69	2.40	2.09	3.51	3.12	2.73	4.29	3.81	3.34	5.27	4.69	4.11	6.18	5.51	4.85	6.62	5.90	6.18
	SAT	8.4	8.6	8.8	8.9	9.0	9.1	9.3	9.4	9.4	9.7	9.7	9.7	10.2	10.1	10.1	10.7	10.6	10.4	11.0	10.8	10.6
	WF	485	404	316	704	585	455	909	752	585	1100	908	706	1332	1101	857	1542	1275	995	1641	1355	1062
8-13	TC	2.59	2.12	1.62	3.76	3.05	2.34	4.84	3.92	3.00	5.85	4.72	3.62	7.08	5.71	4.39	8.19	6.62	5.11	8.71	7.04	5.45
	SHC	1.73	1.53	1.33	2.54	2.24	1.95	3.31	2.91	2.54	4.04	3.56	3.11	4.97	4.38	3.84	5.84	5.16	4.53	6.25	5.53	5.45
	SAT	9.5	9.7	9.7	9.9	10.0	10.0	10.3	10.4	10.3	10.7	10.7	10.6	11.1	11.1	10.9	11.6	11.5	11.2	11.8	11.7	11.4
	WF	446	364	279	645	525	401	831	673	516	1004	812	622	1217	982	755	1407	1138	878	1496	1210	937
10-15	TC	2.10	1.64	1.23	3.03	2.36	1.78	3.88	3.03	2.30	4.67	3.66	2.79	5.65	4.43	3.41	6.56	5.16	3.98	6.97	5.50	4.26
	SHC	1.52	1.32	1.16	2.23	1.94	1.70	2.90	2.53	2.21	3.55	3.10	2.71	4.37	3.83	3.33	5.16	4.52	3.92	5.53	4.85	4.26
	SAT	11.7	11.7	11.5	12.0	12.0	11.7	12.4	12.3	12.0	12.7	12.6	12.2	13.1	12.9	12.5	13.4	13.2	12.8	13.6	13.3	12.9
	WF	362	282	212	521	406	307	667	521	396	803	629	480	972	762	586	1128	887	685	1199	946	732

6.1.2 - Four-pipe water coil

Entering/ leaving water temperature, °C		Sizes 05 and 09																	
		Relative humidity 50%																	
		Air flow, l/s (m³/h)																	
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)		
		Entering air dry-bulb temperature, °C																	
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6-12	TC	0.78	0.64	0.51	1.46	1.19	0.90	2.06	1.67	1.27	2.59	2.10	1.61	3.05	2.49	1.91	3.46	2.83	2.20
	SHC	0.54	0.48	0.43	1.04	0.92	0.80	1.48	1.32	1.14	1.90	1.68	1.46	2.27	2.02	1.76	2.62	2.34	2.04
	SAT	10.6	10.5	10.2	11.3	11.3	11.1	12.0	11.9	11.6	12.6	12.4	12.1	13.2	12.9	12.5	13.8	13.4	12.8
	WF	112	92	73	209	170	129	294	239	182	370	300	230	437	356	273	495	405	314
7-12	TC	0.78	0.63	0.49	1.45	1.17	0.89	2.05	1.65	1.26	2.56	2.08	1.59	3.02	2.46	1.89	3.43	2.79	2.18
	SHC	0.54	0.48	0.42	1.03	0.91	0.79	1.48	1.31	1.14	1.88	1.68	1.46	2.26	2.01	1.75	2.60	2.32	2.03
	SAT	10.7	10.7	10.5	11.4	11.3	11.1	12.1	11.9	11.7	12.7	12.5	12.1	13.3	13.0	12.5	13.9	13.4	12.9
	WF	133	108	84	249	202	153	351	284	216	440	357	273	518	422	325	589	480	374
8-13	TC	0.70	0.56	0.43	1.31	1.04	0.79	1.84	1.46	1.12	2.30	1.83	1.41	2.72	2.17	1.69	3.09	2.47	1.95
	SHC	0.51	0.44	0.39	0.97	0.85	0.74	1.39	1.22	1.06	1.78	1.57	1.36	2.13	1.88	1.63	2.46	2.18	1.89
	SAT	11.7	11.6	11.2	12.3	12.2	12.0	13.0	12.8	12.5	13.6	13.3	12.9	14.1	13.7	13.2	14.6	14.2	13.6
	WF	120	96	75	224	178	135	316	250	192	396	315	243	467	373	291	530	424	335
10-15	TC	0.55	0.43	0.35	1.02	0.79	0.62	1.43	1.13	0.89	1.80	1.43	1.13	2.13	1.71	1.35	2.43	1.97	1.56
	SHC	0.44	0.39	0.34	0.85	0.74	0.62	1.22	1.06	0.88	1.56	1.36	1.13	1.88	1.64	1.35	2.18	1.90	1.56
	SAT	13.6	13.2	12.8	14.2	13.9	13.7	14.7	14.4	14.2	15.2	14.8	14.6	15.6	15.2	14.9	16.0	15.5	15.2
	WF	94	75	60	175	137	107	246	194	152	309	246	194	367	294	232	418	339	269

Entering/ leaving water temperature, °C		Sizes 10 and 19																			
		Relative humidity 50%																			
		Air flow, l/s (m³/h)																			
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)			194 (700)		
		Entering air dry-bulb temperature, °C																			
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6-12	TC	0.81	0.66	0.53	1.50	1.21	0.95	2.08	1.69	1.31	2.60	2.10	1.63	3.03	2.46	1.91	3.42	2.79	2.17	3.76	3.07	2.41
	SHC	0.55	0.49	0.44	1.05	0.93	0.82	1.49	1.32	1.16	1.89	1.67	1.47	2.25	2.00	1.75	2.58	2.29	2.01	2.88	2.56	2.41
	SAT	10.2	10.3	10.0	11.1	11.1	10.8	11.9	11.8	11.5	12.7	12.4	12.0	13.3	13.0	12.5	14.0	13.5	13.0	14.5	14.0	13.4
	WF	117	96	76	221	177	135	314	251	192	397	317	243	473	376	290	541	431	334	602	482	375
7-12	TC	0.80	0.65	0.51	1.48	1.20	0.93	2.07	1.67	1.29	2.56	2.08	1.60	2.99	2.43	1.89	3.37	2.74	2.15	3.72	3.02	2.38
	SHC	0.55	0.48	0.43	1.04	0.92	0.81	1.49	1.31	1.15	1.88	1.66	1.46	2.24	1.99	1.74	2.56	2.28	2.00	2.87	2.54	2.38
	SAT	10.4	10.4	10.2	11.2	11.2	10.9	12.0	11.9	11.6	12.8	12.5	12.1	13.5	13.1	12.6	14.1	13.6	13.0	14.6	14.1	13.4
	WF	137	111	87	254	206	159	355	286	221	440	356	276	514	418	324	579	471	368	639	519	409
8-13	TC	0.72	0.58	0.45	1.33	1.07	0.82	1.86	1.48	1.14	2.31	1.85	1.42	2.69	2.17	1.68	3.03	2.45	1.92	3.34	2.69	2.14
	SHC	0.51	0.45	0.40	0.98	0.86	0.76	1.40	1.23	1.08	1.77	1.56	1.36	2.11	1.86	1.62	2.42	2.14	1.87	2.71	2.39	2.14
	SAT	11.4	11.3	11.0	12.2	12.0	11.7	12.9	12.7	12.3	13.6	13.3	12.8	14.2	13.8	13.3	14.8	14.3	13.7	15.3	14.7	14.1
	WF	124	100	77	229	183	140	319	255	195	396	317	244	462	372	289	521	420	330	574	463	368
10-15	TC	0.58	0.45	0.36	1.06	0.82	0.65	1.47	1.14	0.91	1.82	1.43	1.14	2.14	1.43	1.14	2.14	1.93	1.55	2.66	2.15	1.73
	SHC	0.45	0.40	0.35	0.86	0.75	0.64	1.23	1.08	0.91	1.57	1.36	1.14	1.87	1.63	1.35	2.15	1.87	1.55	2.40	2.09	1.73
	SAT	13.2	13.0	12.5	13.9	13.6	13.4	14.6	14.2	14.0	15.1	14.7	14.5	15.7	15.2	14.9	16.2	15.6	15.3	16.6	16.0	15.6
	WF	99	77	62	182	141	112	252	197	156	314	246	196	368	291	233	415	332	266	458	370	297

Legend
TC Total cooling capacity (kW)
SHC Sensible cooling capacity (kW)
SAT Supply air temperature (°C)
WF Water flow rate (l/h)
NOTE: To convert l/h to l/s, divide by 3600.

NOTE: Operating limits: air discharge temperature 12°C when the unit is installed in an ambient temperature of 27°C dry bulb and 65% relative humidity.

6.1.2 - Four-pipe water coil (cont.)

Entering/ leaving water temperature, °C		Size 21						Size 22									Size 23					
		Size 29																				
		Relative humidity 50%																				
		Air flow, l/s (m³/h)																				
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)		
		Entering air dry-bulb temperature, °C																				
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6-12	TC	2.28	1.83	1.40	3.21	2.57	1.98	4.02	3.22	2.48	4.74	3.80	2.94	5.58	4.48	3.49	6.31	5.07	3.99	6.65	5.35	4.22
	SHC	1.59	1.40	1.22	2.28	2.01	1.76	2.91	2.56	2.25	3.49	3.08	2.70	4.19	3.70	3.25	4.82	4.27	3.75	5.12	4.54	4.22
	SAT	10.9	11.0	10.8	11.6	11.6	11.3	12.3	12.1	11.8	12.9	12.6	12.3	13.6	13.3	12.8	14.3	13.8	13.2	14.6	14.1	13.5
	WF	326	262	200	459	368	283	576	461	355	678	544	420	798	641	500	903	726	571	951	765	604
7-12	TC	2.26	1.81	1.38	3.18	2.55	1.94	3.98	3.20	2.45	4.69	3.76	2.90	5.52	4.43	3.45	6.25	5.01	3.93	6.59	5.28	4.16
	SHC	1.58	1.39	1.22	2.27	2.00	1.75	2.89	2.55	2.24	3.47	3.06	2.69	4.16	3.68	3.24	4.80	4.25	3.73	5.10	4.51	4.16
	SAT	11.0	11.0	10.9	11.7	11.6	11.4	12.4	12.2	11.9	13.0	12.7	12.3	13.7	13.3	12.8	14.4	13.9	13.3	14.6	14.1	13.5
	WF	388	311	238	546	437	334	684	549	421	805	646	499	948	761	592	1074	861	675	1132	907	714
8-13	TC	2.02	1.60	1.23	2.85	2.24	1.73	3.56	2.81	2.18	4.19	3.31	2.60	4.93	3.91	3.10	5.58	4.45	3.54	5.88	4.69	3.75
	SHC	1.48	1.30	1.14	2.13	1.87	1.63	2.72	2.39	2.09	3.26	2.87	2.51	3.92	3.46	3.01	4.53	3.99	3.48	4.81	4.24	3.75
	SAT	12.0	12.0	11.7	12.7	12.5	12.1	13.3	13.0	12.6	13.8	13.5	13.0	14.5	14.1	13.5	15.1	14.6	14.0	15.3	14.8	14.2
	WF	348	275	211	489	385	297	612	482	375	721	569	446	847	672	532	959	764	609	1011	806	645
10-15	TC	1.57	1.23	0.97	2.20	1.74	1.38	2.77	2.19	1.75	3.27	2.61	2.09	3.87	3.11	2.50	4.39	3.55	2.88	4.64	3.76	3.05
	SHC	1.30	1.14	0.97	1.87	1.63	1.38	2.40	2.09	1.75	2.88	2.51	2.09	3.47	3.02	2.50	4.01	3.48	2.88	4.26	3.69	3.05
	SAT	13.9	13.6	13.4	14.4	14.1	13.8	14.9	14.5	14.3	15.4	14.9	14.7	15.9	15.5	15.1	16.4	15.9	15.5	16.7	16.1	15.7
	WF	270	212	167	378	299	238	476	377	301	562	448	359	665	534	430	755	611	495	797	647	525

Entering/ leaving water temperature, °C		Size 31						Size 32									Size 33					
		Size 39																				
		Relative humidity 50%																				
		Air flow, l/s (m³/h)																				
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)		
		Entering air dry-bulb temperature, °C																				
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6-12	TC	2.86	2.38	1.87	4.13	3.42	2.68	5.30	4.38	3.43	6.39	5.27	4.12	7.72	6.37	4.98	8.90	7.36	5.77	9.45	7.82	6.14
	SHC	1.85	1.65	1.44	2.71	2.40	2.11	3.51	3.12	2.74	4.28	3.80	3.34	5.24	4.66	4.10	6.13	5.47	4.81	6.56	5.85	6.14
	SAT	8.3	8.5	8.6	8.8	8.9	9.0	9.2	9.3	9.4	9.7	9.7	9.7	10.3	10.2	10.1	10.8	10.7	10.5	11.1	10.9	10.7
	WF	409	340	267	590	489	383	758	627	491	914	754	590	1105	911	713	1274	1053	826	1353	1119	879
7-12	TC	2.76	2.29	1.79	4.00	3.30	2.57	5.15	4.24	3.30	6.22	5.11	3.98	7.50	6.18	4.81	8.66	7.13	5.58	9.21	7.57	5.95
	SHC	1.81	1.61	1.41	2.65	2.35	2.06	3.45	3.06	2.68	4.20	3.73	3.27	5.14	4.58	4.02	6.03	5.37	4.73	6.45	5.74	5.95
	SAT	8.7	8.9	9.0	9.2	9.3	9.3	9.6	9.7	9.7	10.0	10.0	10.0	10.6	10.5	10.3	11.1	11.0	10.7	11.4	11.2	10.9
	WF	474	393	307	687	567	442	885	728	567	1068	878	683	1288	1061	826	1488	1224	958	1581	1301	1021
8-13	TC	2.52	2.06	1.57	3.65	2.96	2.27	4.69	3.79	2.91	5.65	4.56	3.51	6.82	5.51	4.25	7.87	6.37	4.93	8.36	6.76	5.26
	SHC	1.70	1.50	1.31	2.49	2.20	1.92	3.24	2.86	2.50	3.96	3.49	3.05	4.85	4.28	3.76	5.68	5.03	4.42	6.08	5.39	5.26
	SAT	9.8	9.9	10.0	10.2	10.3	10.3	10.6	10.7	10.6	11.0	11.0	10.8	11.5	11.4	11.2	12.0	11.8	11.5	12.3	12.0	11.7
	WF	434	354	271	627	509	390	806	652	500	972	784	603	1171	947	730	1352	1094	848	1436	1162	904
10-15	TC	2.04	1.59	1.20	2.93	2.29	1.74	3.75	2.94	2.24	4.52	3.54	2.71	5.45	4.28	3.30	6.29	4.97	3.85	6.68	5.30	4.12
	SHC	1.49	1.30	1.14	2.19	1.91	1.67	2.85	2.49	2.17	3.48	3.04	2.64	4.28	3.75	3.25	5.03	4.41	3.81	5.38	4.73	4.12
	SAT	11.9	12.0	11.6	12.3	12.2	11.9	12.6	12.5	12.2	13.0	12.8	12.5	13.4	13.1	12.8	13.8	13.5	13.1	14.0	13.6	13.2
	WF	351	274	206	504	394	299	646	505	385	777	609	466	937	737	568	1082	855	663	1150	911	708

Legend
TC Total cooling capacity (kW)
SHC Sensible cooling capacity (kW)
SAT Supply air temperature (°C)
WF Water flow rate (l/h)
NOTE: To convert l/h to l/s, divide by 3600.

NOTE: Operating limits: air discharge temperature 12°C when the unit is installed in an ambient temperature of 27°C dry bulb and 65% relative humidity.

6.2 - Heating capacity - water coil

6.2.1 - Two-pipe changeover coil

Entering/ leaving water temperature, °C		Sizes 05 and 09																	
		Air flow, l/s (m³/h)																	
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)		
		Entering air dry-bulb temperature, °C																	
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	1.56	1.60	1.64	3.01	3.08	3.15	4.33	4.44	4.54	5.56	5.69	5.82	6.70	6.85	7.01	7.76	7.94	8.12
	SAT	67.4	67.4	67.4	65.5	65.5	65.5	63.6	63.6	63.6	62.0	61.9	61.9	60.5	60.4	60.3	59.1	59.0	58.9
	WF	137	141	144	264	271	277	381	390	398	488	500	511	588	602	615	682	697	713
60-50	HC	1.21	1.25	1.29	2.32	2.39	2.46	3.32	3.42	3.52	4.24	4.37	4.50	5.10	5.25	5.41	5.89	6.07	6.26
	SAT	57.0	57.0	57.0	55.3	55.3	55.3	53.7	53.7	53.6	52.3	52.2	52.2	51.1	51.0	50.9	50.0	49.8	49.7
	WF	106	109	113	203	209	215	290	299	308	371	382	394	446	459	473	515	531	547
55-40	HC	0.92	0.96	1.01	1.73	1.81	1.89	2.46	2.57	2.68	3.13	3.26	3.39	3.73	3.89	4.05	4.28	4.47	4.65
	SAT	48.4	48.5	48.6	46.6	46.7	46.8	45.2	45.3	45.3	44.0	44.0	44.0	43.0	42.9	42.9	42.0	41.9	41.9
	WF	54	56	59	101	105	110	143	150	156	182	190	198	217	226	236	249	260	271
50-40	HC	0.85	0.89	0.93	1.61	1.68	1.76	2.30	2.40	2.50	2.91	3.05	3.18	3.49	3.64	3.80	4.02	4.20	4.38
	SAT	46.2	46.3	46.3	44.8	44.8	44.9	43.6	43.6	43.6	42.5	42.5	42.4	41.6	41.5	41.4	40.7	40.6	40.5
	WF	74	77	81	140	147	153	200	209	218	254	265	277	304	317	331	350	366	382

Entering/ leaving water temperature, °C		Sizes 10 and 19																			
		Air flow, l/s (m³/h)																			
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)			194 (700)		
		Entering air dry-bulb temperature, °C																			
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	1.57	1.61	1.65	3.08	3.16	3.24	4.52	4.63	4.75	5.88	6.04	6.19	7.18	7.37	7.55	8.41	8.63	8.85	9.58	9.83	10.08
	SAT	67.5	67.5	67.5	66.7	66.7	66.7	65.7	65.7	65.7	64.7	64.6	64.6	63.6	63.6	63.5	62.6	62.5	62.5	61.6	61.5	61.4
	WF	138	141	145	270	277	284	397	407	417	517	530	544	631	647	664	739	758	777	841	863	885
60-50	HC	1.22	1.25	1.29	2.38	2.46	2.54	3.48	3.59	3.71	4.51	4.66	4.81	5.49	5.68	5.86	6.42	6.63	6.85	7.30	7.54	7.79
	SAT	57.1	57.1	57.2	56.3	56.4	56.4	55.4	55.4	55.4	54.5	54.5	54.5	53.6	53.6	53.6	52.8	52.7	52.7	51.9	51.9	51.8
	WF	106	110	113	208	215	222	304	314	324	385	408	421	480	496	512	561	580	599	638	659	681
55-40	HC	0.93	0.97	1.02	1.79	1.88	1.96	2.60	2.72	2.84	3.36	3.51	3.67	4.07	4.25	4.44	4.73	4.94	5.16	5.34	5.59	5.83
	SAT	48.7	48.8	48.9	47.6	47.7	47.8	46.7	46.8	46.9	45.9	46.0	46.0	45.1	45.2	45.2	44.4	44.4	44.3	43.7	43.6	43.6
	WF	54	57	59	104	109	114	151	158	165	195	204	213	237	247	258	275	288	300	311	325	340
50-40	HC	0.86	0.89	0.93	1.66	1.74	1.82	2.42	2.53	2.65	3.13	3.27	3.42	3.79	3.97	4.15	4.41	4.62	4.83	5.00	5.24	5.48
	SAT	46.4	46.5	46.5	45.6	45.7	45.8	44.9	45.0	45.0	44.2	44.2	44.2	43.5	43.5	43.5	42.8	42.8	42.7	42.2	42.1	42.1
	WF	75	78	81	145	151	158	211	221	231	272	285	298	330	346	361	384	403	421	336	457	477

Entering/ leaving water temperature, °C		Size 21						Size 22									Size 23					
		Size 29																				
		Air flow, l/s (m³/h)																				
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)		
		Entering air dry-bulb temperature, °C																				
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	4.62	4.74	4.86	6.74	6.91	7.09	8.73	8.95	9.18	10.59	10.87	11.15	12.92	13.26	13.60	15.08	15.47	15.87	16.10	16.53	16.95
	SAT	66.8	66.8	66.8	65.5	65.4	65.4	64.2	64.1	64.1	62.9	62.9	62.8	61.4	61.3	61.2	59.9	59.8	59.7	59.2	59.1	59.0
	WF	406	417	427	592	607	623	767	786	806	931	955	979	1135	1165	1194	1325	1359	1394	1415	1452	1489
60-50	HC	3.58	3.69	3.81	5.18	5.35	5.52	6.68	6.90	7.13	8.09	8.36	8.63	9.83	10.16	10.49	11.44	11.83	12.22	12.21	12.62	13.03
	SAT	56.4	56.4	56.4	55.2	55.2	55.2	54.1	54.0	54.0	53.0	53.0	52.9	51.7	51.6	51.6	50.5	50.4	50.3	50.0	49.9	49.7
	WF	313	323	333	453	468	483	584	604	623	707	731	755	860	888	917	1001	1035	1068	1068	1104	1140
55-40	HC	2.70	2.82	2.94	3.87	4.05	4.23	4.95	5.18	5.40	5.94	6.21	6.49	7.16	7.49	7.82	8.27	8.66	9.05	8.80	9.21	9.62
	SAT	47.7	47.8	47.9	46.5	46.6	46.7	45.5	45.5	45.5	44.5	44.5	44.5	43.4	43.3	43.3	42.4	42.3	42.2	41.9	41.8	41.7
	WF	157	164	171	225	236	246	288	301	314	446	362	377	416	436	455	482	504	526	512	536	560
50-40	HC	2.50	2.61	2.73	3.60	3.77	3.94	4.61	4.83	5.05	5.56	5.82	6.09	6.72	7.04	7.37	7.79	8.17	8.55	8.30	8.70	9.10
	SAT	45.7	45.8	45.8	44.7	44.8	44.8	43.8	43.8	43.8	43.0	43.0	42.9	42.0	41.9	41.9	41.1	41.0	40.9	40.7	40.6	40.5
	WF	218	228	238	314	328	343	402	421	440	484	507	530	585	613	642	679	712	745	723	758	793

Entering/ leaving water temperature, °C		Size 31						Size 32									Size 33					
		Size 39																				
		Air flow, l/s (m³/h)																				
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)		
		Entering air dry-bulb temperature, °C																				
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	4.87	4.98	5.10	7.17	7.34	7.52	9.36	9.59	9.82	11.44	11.72	12.01	14.05	14.40	14.75	16.49	16.90	17.32	17.65	18.09	18.54
	SAT	69.1	69.2	69.2	68.3	68.3	68.3	67.3	67.3	67.3	66.3	66.2	66.2	64.9	64.8	64.8	63.6	63.5	63.4	62.9	62.8	62.7
	WF	427	438	448	630	645	661	822	843	863	1005	1030	1055	1234	1265	1296	1448	1485	1521	1550	1589	1629
60-50	HC	4	4	4	6	6	6	7	8	8	9	9	9	11	11	12	13	13	14	14	14	14
	SAT	58.9	58.9	58.9	58.0	58.0	58.0	57.1	57.1	57.1	56.2	56.1	56.1	55.0	54.9	54.9	53.8	53.7	53.7	53.3	53.2	53.1
	WF	335	345	355	491	506	521	638	658	678	777	801	826	950	980	1010	1112	1147	1182	1188	1226	1264
55-40	HC	3.1	3.2	3.3	4.5	4.6	4.8	5.7	6.0	6.2	6.9	7.2	7.5	8.4	8.8	9.1	9.8	10.2	10.6	10.4	10.8	11.3
	SAT	52	52	52	50	51	51	49	49	50	48	49	49	47	47	47	46	46	46	46	46	46
	WF	180	187	194	260	271	281	334	348	362	404	421	438	489	510	531	567	591	615	604	630	655
50-40	HC	2.75	2.87	2.99	4.01	4.18	4.36	5.18	5.41	5.64	6.29	6.56	6.84	7.64	7.98	8.32	8.89	9.29	9.69	9.48	9.91	10.34
	SAT	48.3	48.3	48.4	47.4	47.5	47.5	46.7	46.7	46.7	45.9	45.9	45.9	44.9	44.8	44.8	43.9	43.9	43.8	43.5	43.4	43.4
	WF	240	250	260	349	364	379	452	472	491	548	572	596	666	695	725	774	809	844	826	863	901

For the legend and notes see page 19.

6.2.2 - Four-pipe coil, heating circuit

Entering/ leaving water temperature, °C		Sizes 05 and 09																	
		Air flow, l/s (m³/h)																	
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)		
		Entering air dry-bulb temperature, °C																	
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	0.75	0.77	0.79	1.38	1.42	1.45	1.92	1.96	2.01	2.39	2.44	2.50	2.81	2.87	2.94	3.19	3.26	3.34
	SAT	43.4	42.9	42.4	41.4	40.9	40.4	39.9	39.3	38.8	38.6	38.0	37.4	37.5	36.9	36.3	36.7	36.0	35.4
	WF	66	68	70	121	124	127	168	173	177	210	215	220	247	252	258	280	287	294
60-50	HC	0.57	0.59	0.61	1.05	1.08	1.12	1.45	1.50	1.54	1.80	1.86	1.92	2.12	2.18	2.25	2.40	2.48	2.55
	SAT	38.1	37.6	37.1	36.5	36.0	35.5	35.3	34.7	34.2	34.3	33.7	33.1	33.5	32.9	32.3	32.8	32.2	31.5
	WF	50	52	54	92	95	98	127	131	135	158	163	168	185	191	197	210	217	223
55-40	HC	0.41	0.43	0.45	0.75	0.79	0.82	1.04	1.08	1.13	1.28	1.34	1.40	1.50	1.56	1.63	1.69	1.77	1.85
	SAT	33.3	32.8	32.4	32.1	31.6	31.1	31.2	30.7	30.1	30.4	29.9	29.3	29.8	29.2	28.6	29.3	28.7	28.1
	WF	24	25	26	44	46	48	60	63	66	74	78	81	87	91	95	98	103	107
50-40	HC	0.39	0.41	0.43	0.71	0.75	0.78	0.98	1.03	1.07	1.21	1.27	1.33	1.42	1.49	1.56	1.61	1.69	1.76
	SAT	32.6	32.1	31.7	31.5	31.0	30.5	30.7	30.1	29.6	30.0	29.4	28.8	29.4	28.8	28.2	28.9	28.3	27.7
	WF	34	36	37	62	65	68	85	90	94	106	111	116	124	130	136	140	147	154

Entering/ leaving water temperature, °C		Sizes 10 and 19																			
		Air flow, l/s (m³/h)																			
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)			194 (700)		
		Entering air dry-bulb temperature, °C																			
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	1.03	1.05	1.08	1.89	1.94	1.99	2.60	2.67	2.74	3.22	3.31	3.39	3.77	3.87	3.97	4.25	4.36	4.48	4.69	4.81	4.94
	SAT	51.5	51.2	50.9	49.0	48.6	48.3	46.8	46.4	46.0	44.9	44.5	44.0	43.4	42.9	42.4	42.0	41.5	41.0	40.9	40.3	39.8
	WF	90	93	95	166	170	174	229	235	241	283	291	298	331	340	348	373	383	393	412	423	434
60-50	HC	0.78	0.81	0.83	1.43	1.48	1.53	1.96	2.03	2.10	2.42	2.51	2.59	2.83	2.92	3.02	3.19	3.30	3.41	3.51	3.63	3.76
	SAT	44.1	43.9	43.6	42.2	41.8	41.5	40.4	40.0	39.6	39.0	38.5	38.1	37.8	37.3	36.8	36.8	36.3	35.7	35.9	35.4	34.8
	WF	68	71	73	125	129	133	172	178	184	212	219	227	247	256	264	279	288	298	307	318	328
55-40	HC	0.55	0.58	0.61	1.00	1.05	1.10	1.37	1.44	1.51	1.69	1.77	1.86	1.97	2.06	2.16	2.21	2.32	2.43	2.43	2.55	2.67
	SAT	37.5	37.2	37.0	35.8	35.5	35.2	34.5	34.2	33.8	33.5	33.1	32.7	32.7	32.2	31.8	31.9	31.4	30.9	31.3	30.8	30.2
	WF	32	34	35	58	61	64	80	84	88	98	103	108	114	120	126	129	135	141	141	148	155
50-40	HC	0.53	0.55	0.58	0.96	1.01	1.06	1.32	1.39	1.45	1.62	1.70	1.79	1.89	1.98	2.08	2.12	2.23	2.34	2.33	2.45	2.57
	SAT	36.7	36.4	36.1	35.2	34.9	34.6	34.0	33.7	33.3	33.0	32.6	32.2	32.2	31.7	31.3	31.5	31.0	30.5	30.9	30.4	29.8
	WF	46	48	51	83	88	92	115	121	127	141	148	156	164	173	181	185	194	204	203	214	224

Entering/ leaving water temperature, °C		Size 21						Size 22									Size 23					
								Size 29														
		Air flow, l/s (m³/h)																				
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)		
		Entering air dry-bulb temperature, °C																				
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	2.13	2.18	2.24	2.96	3.03	3.11	3.67	3.77	3.87	4.30	4.42	4.54	5.05	5.19	5.32	5.71	5.86	6.02	6.01	6.17	6.33
	SAT	42.2	41.7	41.2	40.6	40.1	39.6	39.3	38.7	38.2	38.2	37.6	37.0	36.9	36.3	35.6	35.8	35.2	34.5	35.4	34.7	34.0
	WF	187	192	197	260	267	274	323	331	340	378	388	399	444	456	467	501	515	528	528	542	556
60-50	HC	1.61	1.66	1.72	2.22	2.30	2.38	2.75	2.85	2.95	3.22	3.33	3.45	3.77	3.90	4.04	4.26	4.41	4.56	4.48	4.64	4.80
	SAT	37.0	36.5	36.0	35.8	35.2	34.7	34.7	34.2	33.6	33.8	31.3	30.6	31.2	30.5	29.8	30.6	29.9	29.1	30.3	29.6	28.8
	WF	140	145	150	194	201	208	241	249	258	282	292	302	330	341	353	372	385	399	392	406	419
55-40	HC	1.10	1.16	1.21	1.51	1.59	1.67	1.87	1.97	2.07	2.19	2.30	2.42	2.56	2.70	2.83	2.89	3.04	3.19	3.04	3.20	3.35
	SAT	31.9	31.5	31.0	31.0	30.5	30.0	30.3	29.8	29.2	29.7	29.1	28.6	29.1	28.5	27.9	28.5	27.9	27.2	28.3	27.6	27.0
	WF	64	67	71	88	93	97	109	115	120	127	134	141	149	157	165	168	177	186	177	186	195
50-40	HC	1.07	1.12	1.18	1.47	1.55	1.63	1.83	1.92	2.02	2.14	2.25	2.36	2.49	2.62	2.75	2.81	2.95	3.10	2.95	3.10	3.26
	SAT	31.6	31.1	30.7	30.8	30.3	29.7	30.1	29.6	29.0	29.5	28.9	28.3	28.8	28.2	27.6	28.3	27.7	27.0	28.1	27.4	26.7
	WF	93	98	103	128	135	142	159	168	176	186	196	205	217	229	240	245	257	270	257	271	284

Entering/ leaving water temperature, °C		Size 31						Size 32									Size 33					
								Size 39														
		Air flow, l/s (m³/h)																				
		83 (300)			125 (450)			167 (600)			208 (750)			264 (950)			319 (1150)			347 (1250)		
		Entering air dry-bulb temperature, °C																				
		21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19	21	20	19
70-60	HC	2.14	2.20	2.26	2.97	3.05	3.13	3.69	3.79	3.89	4.33	4.44	4.56	5.07	5.21	5.35	5.73	5.89	6.04	6.04	6.20	6.36
	SAT	42.2	41.7	41.2	40.6	40.1	39.5	39.3	38.7	38.1	38.1	37.5	36.9	36.9	36.2	35.6	35.8	35.1	34.5	35.3	34.7	34.0
	WF	188	193	198	261	268	275	324	333	342	380	390	401	446	458	470	504	517	531	530	545	559
60-50	HC	1.62	1.68	1.73	2.24	2.32	2.40	2.78	2.87	2.97	3.25	3.36	3.48	3.80	3.94	4.07	4.29	4.44	4.59	4.52	4.67	4.83
	SAT	37.0	36.5	36.0	35.8	35.3	34.7	34.7	34.2	33.6	33.9	33.3	32.7	32.9	32.3	31.6	32.1	31.4	30.8	31.7	31.1	30.4
	WF	142	147	152	196	203	210	243	251	260	284	294	304	333	344	356	375	388	402	395	409	423
55-40	HC	1.12	1.18	1.24	1.55	1.63	1.70	1.91	2.01	2.11	2.24	2.35	2.47	2.62	2.76	2.89	2.95	3.10	3.25	3.11	3.26	3.42
	SAT	32.1	31.6	31.2	31.2	30.7	30.2	30.5	29.9	29.4	29.9	29.3	28.7	29.2	28.6	28.0	28.6	28.0	27.3	28.4	27.7	27.1
	WF	65	69	72	90	95	99	111	117	123	130	137	144	152	160	168	172	181	189	181	190	199
50-40	HC	1.08	1.14	1.19	1.50	1.57	1.65	1.86	1.95	2.05	2.17	2.28	2.39	2.53	2.66	2.79	2.85	3.00	3.14	3.00	3.15	3.30
	SAT	31.7	31.2	30.7	30.9	30.3	29.8	30.2	29.6	29.1	29.6	29.0	28.4	28.9	28.3	27.7	28.4	27.7	27.1	28.1	27.5	26.8
	WF	94	99	104	130	137	144	162	170	178	189	199	208	221	232	243	248	261	274	261	274	288

Legend
HC Heating capacity (kW)
SAT Supply air temperature (°C)
WF Water flow rate (l/h)
NOTE: To convert l/h to l/s, divide by 3600.

WARNING: The SAT must not exceed 60°C otherwise the supply air spigot connections may be damaged.

NOTE: The supply air temperature should be kept below 35°C in order to avoid the risk of stratification.

If the Atmosphera unit size 2 or 3 has only two spigots, the above performance data is reduced by 3%.

6.3 - Sound power levels

42EM 05 with one discharge spigot (multi-speed version)

		Octave band frequency (Hz)						
Speed	**Typ**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
R1	SUP	55	50	49	42	40	33	50
	RET	61	60	56	51	40	32	57
	RAD	62	49	45	41	34	23	49
R2	SUP	54	49	48	41	39	32	49
	RET	59	58	54	49	39	31	55
	RAD	55	46	44	40	32	21	46
R3	SUP	53	48	47	40	39	31	48
	RET	58	57	53	49	38	29	54
	RAD	51	44	42	38	31	19	44
R4	SUP	51	46	44	37	36	27	45
	RET	56	55	51	46	35	26	52
	RAD	50	43	41	37	30	*	43
R5	SUP	49	44	43	35	34	23	43
	RET	53	52	48	43	33	*	49
	RAD	47	40	38	34	27	*	39
R6	SUP	47	42	41	34	33	22	42
	RET	52	50	47	42	30	*	48
	RAD	46	38	35	31	24	*	37

42EM 09 with one discharge spigot (variable-speed LEC motor)

		Octave band frequency (Hz)						
Volt	**Typ**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
10	SUP	60	59	53	50	48	41	56
	RET	68	66	61	51	44	42	62
	RAD	58	57	52	49	46	39	55
9	SUP	59	58	52	49	46	40	55
	RET	67	65	59	50	43	41	61
	RAD	57	56	51	48	45	38	54
8	SUP	58	57	51	48	45	39	54
	RET	66	64	58	49	42	39	59
	RAD	57	55	50	47	44	37	53
7	SUP	56	54	48	46	41	35	51
	RET	63	61	56	47	39	36	57
	RAD	55	52	48	45	41	34	50
6	SUP	53	51	45	42	36	30	48
	RET	61	59	53	45	35	32	54
	RAD	53	49	45	41	37	30	47
5	SUP	50	47	42	38	32	26	44
	RET	58	54	49	41	31	27	50
	RAD	50	46	41	38	33	26	44
4	SUP	46	43	38	32	27	22	40
	RET	53	49	45	36	26	23	46
	RAD	46	41	37	33	27	22	39
3	SUP	41	38	33	24	22	19	34
	RET	48	43	40	29	23	21	40
	RAD	41	35	31	25	22	19	33
2	SUP	37	34	29	18	18	17	29
	RET	44	39	36	24	21	20	36
	RAD	38	31	26	19	18	17	28

42EM 10 with one discharge spigot (multi-speed version)

		Octave band frequency (Hz)						
Speed	**Typ**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
R1	SUP	57.3	55.1	46.2	43.1	37.1	31.3	50.3
	RET	60	57.8	52	46.8	43.5	38.7	54.3
	RAD	57.6	50.3	45.2	37.6	32.2	24.7	47.3
R2	SUP	55.8	52.4	43.7	40.4	34.4	27.1	47.8
	RET	57.8	54.1	49	43.3	39.9	34	51
	RAD	54.1	46.8	41.7	34.2	28.4	19.9	43.8
R3	SUP	51.5	48.8	40.1	36.5	30.4	22.2	44
	RET	55	51.5	46.4	40.8	36.8	29.8	48.3
	RAD	53.2	44.1	37	31	25.6	16.8	41.1
R4	SUP	48.4	45.2	36.9	33	26.4	18	40.6
	RET	51.9	47.7	43.2	37.1	32.5	23.9	44.7
	RAD	49.9	40.7	33.8	27.4	21.7	14.2	37.8
R5	SUP	46.4	43.5	35.1	30.7	23.4	16.8	38.7
	RET	49.9	45.6	41.6	34.7	29	20.2	42.7
	RAD	47.6	39.2	32.3	25.6	19.1	14.6	36
R6	SUP	45.1	42.1	34.1	28.9	21	17	37.4
	RET	48.7	44.6	40.6	32.9	26.5	18.9	41.5
	RAD	45.2	37.3	30.5	22.9	16.4	14.3	34

42EM 19 with one discharge spigot (variable-speed LEC motor)

		Octave band frequency (Hz)						
Volt	**Typ**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
10	SUP	64	62	56	51	49	44	59
	RET	68	67	61	54	49	46	63
	RAD	57	58	53	50	45	39	55
9	SUP	63	61	55	50	48	43	57
	RET	66	66	60	53	48	45	61
	RAD	57	57	52	49	43	37	54
8	SUP	62	59	54	49	46	42	56
	RET	65	65	58	52	47	44	60
	RAD	56	56	50	48	42	36	53
7	SUP	60	57	51	46	43	38	54
	RET	63	63	56	50	44	41	58
	RAD	55	54	48	46	39	32	51
6	SUP	57	54	48	43	40	35	51
	RET	61	60	53	47	41	37	55
	RAD	53	51	46	43	36	28	48
5	SUP	54	50	45	40	35	29	47
	RET	58	56	49	44	37	32	51
	RAD	50	47	42	39	31	22	45
4	SUP	50	45	41	35	29	23	42
	RET	53	50	45	39	32	26	46
	RAD	47	43	38	34	26	17	40
3	SUP	45	39	35	27	21	19	36
	RET	47	44	39	32	26	21	40
	RAD	41	39	33	27	20	17	35
2	SUP	41	34	32	22	15	15	32
	RET	43	39	35	28	22	17	36
	RAD	37	36	29	21	16	17	31

42EM 21 and 31 with two discharge spigots (multi-speed version)

		Octave band frequency (Hz)						
Speed	**Type**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
R1	SUP	54	53	49	44	39	35	50
	RET	58	58	52	47	42	35	54
	RAD	53	45	39	31	27	25	42
R2	SUP	53	51	47	42	37	32	48
	RET	56	56	50	45	39	32	52
	RAD	50	42	36	28	22	20	39
R3	SUP	51	49	46	40	35	28	47
	RET	54	54	49	43	37	28	50
	RAD	47	38	33	24	18	15	35
R4	SUP	47	46	42	36	30	22	43
	RET	50	50	45	39	32	22	46
	RAD	45	37	30	20	16	13	33
R5	SUP	43	42	38	31	24	13	39
	RET	46	47	42	34	28	16	43
	RAD	42	34	27	17	13	10	31
R6	SUP	40	39	35	27	19	11	35
	RET	43	43	38	30	26	12	39
	RAD	41	33	26	16	12	9	30

Legend
SUP Supply (dB re = 10^{-12} W)
RET Return (dB re = 10^{-12} W)
RAD Radiated (dB re = 10^{-12} W)
R Fixed speed

NOTE: The measurements are based on ISO standards and are without supply and return octopus plenums.

The room sound level calculations must take account of the sound absorption of the duct, the plenum, the room and ceiling.

For a selected speed the sound level can vary within a tolerance of ± 2.5 dB(A), depending on the available static pressure.

42EM 22 and 32 with three discharge spigots (multi-speed version)

		Octave band frequency (Hz)						
Speed	**Type**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
R1	SUP	59	59	54	48	43	40	55
	RET	62	63	56	53	47	40	59
	RAD	58	52	46	39	35	25	49
R2	SUP	58	57	53	47	41	38	54
	RET	62	62	56	52	45	38	58
	RAD	57	51	44	38	33	22	47
R3	SUP	55	55	50	45	39	35	51
	RET	59	60	54	50	43	36	56
	RAD	55	47	41	34	30	19	44
R4	SUP	52	51	47	41	35	29	48
	RET	57	58	52	47	40	32	54
	RAD	52	44	38	31	25	16	41
R5	SUP	46	46	42	35	26	19	42
	RET	51	52	47	41	32	20	48
	RAD	48	39	33	24	19	13	36
R6	SUP	41	40	35	28	19	17	36
	RET	44	45	40	33	22	19	41
	RAD	43	35	29	18	15	13	32

42EM 23 and 33 with three discharge spigots (multi-speed version)

		Octave band frequency (Hz)						
Speed	**Type**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
R1	SUP	62	62	55	50	44	43	57
	RET	66	67	59	53	48	42	61
	RAD	59	55	47	41	36	29	50
R2	SUP	60	60	53	48	42	41	55
	RET	64	65	57	52	47	41	59
	RAD	57	53	45	39	34	27	48
R3	SUP	58	58	51	46	40	39	53
	RET	62	62	55	50	45	38	57
	RAD	56	51	43	38	33	25	47
R4	SUP	54	53	48	42	36	34	49
	RET	58	57	52	46	40	35	53
	RAD	54	48	41	36	30	22	44
R5	SUP	49	48	43	38	31	30	45
	RET	52	52	49	41	34	33	49
	RAD	52	46	39	33	28	18	42
R6	SUP	45	43	39	33	26	27	40
	RET	49	49	45	37	29	29	46
	RAD	47	41	35	27	21	15	37

42EM 29 and 39 with three discharge spigots (variable-speed LEC motor)

		Octave band frequency (Hz)						
Volt	**Type**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
10	SUP	64	59	56	52	45	46	58
	RET	65	62	58	56	48	30	59
	RAD	67	62	54	50	44	45	58
9	SUP	62	57	54	50	43	44	55
	RET	63	59	56	53	47	28	57
	RAD	60	57	50	47	38	39	53
8	SUP	59	54	51	47	40	40	53
	RET	62	57	54	51	47	22	55
	RAD	53	53	47	45	33	33	50
7	SUP	58	52	50	45	38	38	51
	RET	60	55	53	49	45	24	54
	RAD	49	50	44	43	30	30	47
6	SUP	56	51	48	44	36	36	50
	RET	59	54	51	48	44	22	52
	RAD	47	48	42	42	28	28	45
5	SUP	54	49	47	42	34	34	48
	RET	57	52	50	45	43	16	50
	RAD	43	46	40	40	25	25	43
4	SUP	53	48	45	40	32	31	46
	RET	57	51	48	44	41	21	49
	RAD	39	43	38	38	22	22	41
3	SUP	51	46	43	38	30	30	44
	RET	55	48	46	42	40	19	47
	RAD	37	40	35	37	19	19	39
2	SUP	49	44	42	36	28	28	43
	RET	52	46	44	39	38	15	45
	RAD	35	38	33	35	17	17	37

Legend
SUP Supply (dB re = 10^{-12} W)
RET Return (dB re = 10^{-12} W)
RAD Radiated (dB re = 10^{-12} W)
R Fixed speed

NOTE: The measurements are based on ISO standards and are without supply and return octopus plenums.

The room sound level calculations must take account of the sound absorption of the duct, the plenum, the room and ceiling.

For a selected speed the sound level can vary within a tolerance of ± 2.5 dB(A), depending on the available static pressure.

Return air plenum attenuation

The sound power level measurements were carried out on a non-ducted unit without return air plenum. If the unit includes a return air plenum, correct the sound power levels (RET) using the correction factors in the table below:

Unit size 42EM	Octave band frequency (Hz)						
	125	**250**	**500**	**1K**	**2K**	**4K**	**dB(A)**
0	-4	-7	-6	-5	-9	-3	-6
1, 2, and 3	-0.4	-1.1	-2.6	-7.4	-10.7	-6.8	-2.5

6.4 - Electrical data

42EM 05 (multi-speed version)

Speed	I (A)	P (W)	Qv (l/s)	Qv (m^3/h)	PR (Pa)
R1	0.49	112	170	612	0
	0.49	112	164	592	6
	0.48	110	147	528	27
	0.47	107	130	469	41
	0.47	105	119	429	54
	0.46	103	110	395	64
	0.45	101	88	316	81
	0.45	101	78	280	91
	0.44	100	66	236	101
	0.43	99	39	141	113
	0.43	99	26	93	119
R2	0.36	83	149	537	0
	0.36	83	145	523	5
	0.35	78	119	430	34
	0.34	77	103	371	53
	0.34	76	93	334	63
	0.33	74	79	286	75
	0.32	72	59	213	95
	0.31	70	38	139	106
	0.31	69	30	107	110
	0.31	69	20	74	115
R3	0.31	71	131	473	0
	0.31	71	128	462	5
	0.30	67	114	411	21
	0.29	66	98	353	43
	0.29	65	90	325	52
	0.28	64	81	292	62
	0.28	64	74	266	71
	0.28	62	64	231	82
	0.27	61	51	184	92
	0.26	58	31	111	103
	0.26	57	21	74	110
R4	0.26	59	110	397	0
	0.26	59	108	390	4
	0.24	57	91	328	27
	0.24	55	74	265	51
	0.24	55	65	234	63
	0.23	53	54	193	77
	0.23	52	42	151	85
	0.22	50	28	102	96
	0.22	49	19	70	103
R5	0.22	50	93	336	0
	0.22	50	92	330	2
	0.21	49	81	293	17
	0.21	48	70	252	33
	0.20	47	58	210	51
	0.20	47	53	192	59
	0.20	45	35	127	78
	0.19	45	25	91	88
R6	0.19	46	84	301	0
	0.19	46	80	289	6
	0.19	45	71	256	19
	0.19	45	63	228	30
	0.18	44	52	187	47
	0.18	42	40	143	60
	0.17	41	23	85	79
	0.17	39	14	50	90

Legend
I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
PR Available static pressure
R Fixed speed

NOTE: Voltage supply: 230 V (± 10%)

42EM 09 (variable-speed LEC motor)

Control (Volt)	I (A)	Cos	P (W)	Qv (l/s)	Qv (m^3/h)	P (Pa)
10	1.00	0.54	123	222	800	2
	0.96	0.53	116	208	750	24
	0.92	0.52	110	194	700	45
	0.89	0.52	106	181	650	66
	0.85	0.52	101	167	600	85
	0.82	0.51	97	153	550	103
	0.78	0.51	93	139	500	121
	0.75	0.51	88	125	450	137
9	0.85	0.55	108	208	750	4
	0.82	0.54	101	194	700	26
	0.79	0.53	96	181	650	48
	0.76	0.53	91	167	600	68
	0.73	0.52	87	153	550	86
	0.70	0.52	83	139	500	104
	0.67	0.51	79	125	450	120
	0.64	0.51	75	111	400	134
8	0.68	0.59	92	194	700	7
	0.66	0.56	86	181	650	30
	0.65	0.55	81	167	600	51
	0.63	0.53	77	153	550	69
	0.61	0.53	73	139	500	86
	0.58	0.52	70	125	450	102
	0.56	0.51	66	111	400	116
	0.54	0.51	63	97	350	129
7	0.56	0.49	64	167	600	15
	0.53	0.49	60	153	550	34
	0.50	0.49	56	139	500	51
	0.47	0.49	53	125	450	65
	0.44	0.49	50	111	400	78
	0.41	0.49	47	97	350	89
	0.39	0.49	44	83	300	100
	0.36	0.49	41	69	250	110
6	0.45	0.47	48	153	550	5
	0.41	0.48	45	139	500	23
	0.38	0.48	42	125	450	38
	0.36	0.48	40	111	400	51
	0.34	0.48	37	97	350	63
	0.31	0.48	35	83	300	73
	0.29	0.48	32	69	250	83
	0.27	0.47	30	56	200	92
5	0.31	0.46	33	125	450	1
	0.28	0.48	31	111	400	19
	0.25	0.49	29	97	350	34
	0.23	0.51	26	83	300	46
	0.20	0.52	24	69	250	56
	0.18	0.52	21	56	200	65
	0.15	0.52	18	42	150	72
4	0.11	0.77	19	97	350	1
	0.11	0.71	18	83	300	17
	0.10	0.72	17	69	250	29
	0.10	0.65	15	56	200	38
	0.10	0.58	13	42	150	45
	0.10	0.50	11	28	100	50
3	0.11	0.48	12	69	250	3
	0.11	0.40	10	56	200	15
	0.10	0.39	9	42	150	22
	0.10	0.38	8	28	100	27
	0.08	0.38	7	14	50	31
2	0.05	0.35	4	42	150	4
	0.05	0.35	4	28	100	8
	0.05	0.35	4	14	50	10

42EM 10 (multi-speed version)

Speed	I (A)	P (W)	Qv (l/s)	Qv (m³/h)	PR (Pa)
R1	0.52	119	196	705	0
	0.52	118	188	675	10
	0.51	117	181	650	20
	0.50	115	166	596	39
	0.50	114	156	560	50
	0.48	111	114	410	92
	0.48	110	89	321	114
	0.47	108	63	227	135
	0.46	107	39	141	149
R2	0.37	87	165	594	0
	0.37	85	146	525	28
	0.36	82	128	460	50
	0.35	81	111	400	69
	0.34	78	93	335	89
	0.34	78	82	294	102
	0.34	77	62	222	122
	0.33	76	50	180	130
	0.33	75	41	149	135
R3	0.31	73	145	522	0
	0.31	72	131	473	22
	0.30	69	109	393	51
	0.29	68	92	332	72
	0.29	67	77	278	91
	0.28	65	60	217	110
	0.28	64	50	179	118
R4	0.26	60	121	437	0
	0.25	59	107	385	23
	0.25	58	88	315	53
	0.24	57	68	246	80
	0.24	55	52	187	100
	0.23	54	41	147	110
R5	0.21	51	103	370	1
	0.21	51	87	312	25
	0.21	49	71	255	48
	0.20	48	50	179	80
	0.20	47	42	150	90
R6	0.19	45	92	330	0
	0.18	44	76	274	20
	0.18	43	54	196	52
	0.18	43	42	150	70
	0.18	42	33	120	80
	0.17	41	24	87	90
	0.17	41	18	63	99

Legend
I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
PR Available static pressure
R Fixed speed

NOTE: Voltage supply: 230 V (± 10%)

42EM 19 (variable-speed LEC motor)

Control (Volt)	I (A)	Cos	P (W)	Qv (l/s)	Qv (m³/h)	PR (Pa)
10	1.04	0.53	127	239	860	0
	0.99	0.53	121	222	800	29
	0.95	0.53	115	208	750	52
	0.91	0.53	111	194	700	73
	0.87	0.53	106	181	650	93
	0.84	0.53	102	167	600	111
	0.81	0.53	97	153	550	127
9	0.91	0.53	110	229	823	0
	0.87	0.53	105	208	750	34
	0.83	0.53	100	194	700	55
	0.80	0.52	96	181	650	75
	0.77	0.52	92	167	600	92
	0.73	0.52	88	153	550	109
	0.70	0.52	84	139	500	123
	0.66	0.52	79	125	450	136
8	0.79	0.52	94	208	750	17
	0.76	0.52	90	194	700	38
	0.72	0.52	86	181	650	57
	0.69	0.52	82	167	600	74
	0.66	0.51	78	153	550	90
	0.63	0.51	75	139	500	104
	0.60	0.51	71	125	450	118
	0.57	0.51	66	111	400	129
	0.53	0.51	62	97	350	140
7	0.62	0.51	72	194	700	3
	0.59	0.51	68	181	650	22
	0.56	0.50	65	167	600	40
	0.54	0.50	62	153	550	56
	0.51	0.50	59	139	500	70
	0.48	0.50	56	125	450	82
	0.46	0.50	52	111	400	94
	0.43	0.49	49	97	350	104
	0.40	0.49	45	83	300	113
6	0.47	0.49	53	167	600	10
	0.44	0.49	50	153	550	27
	0.42	0.49	47	139	500	43
	0.40	0.49	45	125	450	56
	0.37	0.49	42	111	400	67
	0.35	0.49	39	97	350	77
	0.33	0.49	36	83	300	86
	0.30	0.48	34	69	250	94
5	0.33	0.48	36	139	500	11
	0.31	0.48	34	125	450	26
	0.29	0.48	32	111	400	38
	0.27	0.48	29	97	350	48
	0.25	0.47	27	83	300	57
	0.23	0.47	25	69	250	64
	0.21	0.47	23	56	200	71
	0.19	0.46	20	42	150	76
4	0.30	0.31	22	111	400	11
	0.27	0.33	21	97	350	21
	0.24	0.34	19	83	300	29
	0.21	0.36	17	69	250	37
	0.18	0.38	16	56	200	43
	0.15	0.40	13	42	150	48
	0.12	0.41	11	28	100	52
3	0.14	0.37	12	83	300	7
	0.13	0.39	11	69	250	14
	0.12	0.41	11	56	200	20
	0.10	0.43	10	42	150	26
	0.09	0.44	9	28	100	31
	0.08	0.42	8	14	50	34
	0.08	0.39	7	3	10	35
2	0.05	0.35	4	42	150	4
	0.05	0.35	4	28	100	8
	0.05	0.35	4	14	50	10
	0.05	0.35	4	3	10	10

42EM 21 and 31 (multi-speed version)

Speed	I (A)	P (W)	Qv (l/s)	Qv (m^3/h)	PR (Pa)
R1	0.50	115	245	882	0
	0.49	113	231	831	12
	0.48	111	213	765	28
	0.46	107	180	650	52
	0.45	104	161	578	66
	0.44	100	139	501	77
	0.43	98	121	437	86
	0.42	96	105	376	94
	0.40	93	81	290	102
R2	0.44	101	215	774	0
	0.43	99	201	723	12
	0.42	97	182	654	29
	0.40	93	151	544	55
	0.39	90	135	488	65
	0.38	87	114	410	77
	0.37	86	98	353	86
	0.36	83	80	289	93
	0.35	80	60	214	104
R3	0.38	87	182	655	0
	0.37	85	175	632	6
	0.36	83	161	581	18
	0.35	81	139	502	39
	0.34	77	110	397	60
	0.33	75	95	343	71
	0.32	73	77	276	81
	0.31	71	60	215	91
R4	0.30	68	148	532	0
	0.29	67	143	515	4
	0.29	67	133	480	11
	0.28	65	111	400	29
	0.28	64	89	321	45
	0.27	63	75	269	56
	0.27	61	62	223	66
	0.26	59	40	145	81
R5	0.24	55	120	432	0
	0.24	54	114	411	4
	0.23	53	95	342	17
	0.23	52	67	241	36
	0.22	51	53	191	45
	0.22	51	44	159	53
	0.22	51	27	98	64
R6	0.20	44	98	352	0
	0.19	43	94	337	2
	0.19	43	71	254	14
	0.19	43	49	175	27
	0.18	42	18	63	46

42EM 22 and 32 (multi-speed version)

Speed	I (A)	P (W)	Qv (l/s)	Qv (m^3/h)	PR (Pa)
R1	0.82	171	330	1188	0
	0.76	158	301	1085	17
	0.72	149	283	1020	28
	0.66	138	255	919	46
	0.62	128	224	805	66
	0.58	120	198	711	82
	0.55	112	170	614	96
	0.53	108	153	551	102
	0.52	106	145	521	104
R2	0.72	152	285	1026	0
	0.68	145	269	969	13
	0.60	128	234	842	41
	0.56	119	210	755	60
	0.53	111	185	666	77
	0.50	105	165	594	88
	0.48	99	143	516	96
	0.45	94	124	447	102
R3	0.64	136	230	828	0
	0.62	130	221	795	12
	0.56	119	202	726	34
	0.51	110	179	644	56
	0.48	101	156	563	75
	0.45	95	138	495	85
	0.42	89	119	429	95
	0.39	83	95	341	106
R4	0.51	109	187	673	0
	0.50	107	182	655	7
	0.46	98	157	564	37
	0.44	93	143	516	51
	0.40	85	121	436	71
	0.38	80	103	369	82
	0.36	75	85	307	92
	0.33	69	67	241	102
R5	0.40	84	136	489	0
	0.39	83	133	478	4
	0.38	80	116	418	23
	0.37	78	108	388	32
	0.34	73	92	332	52
	0.33	71	81	292	62
	0.31	67	67	240	72
	0.29	62	54	193	85
R6	0.31	65	102	367	0
	0.30	64	99	357	3
	0.30	63	93	336	7
	0.28	60	67	241	32
	0.27	58	56	193	41
	0.25	54	35	125	63

Legend

I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
PR Available static pressure
R Fixed speed

NOTE: Voltage supply: 230 V (± 10%)

42EM 23 and 33 (multi-speed version)

Speed	I (A)	P (W)	Qv (l/s)	Qv (m³/h)	PR (Pa)
R1	0.96	208	410	1475	2
	0.92	199	389	1400	12
	0.86	187	361	1300	25
	0.80	176	333	1200	39
	0.75	165	306	1100	52
	0.70	154	278	1000	65
	0.66	144	250	900	77
	0.62	135	222	800	88
	0.58	126	194	700	99
	0.55	119	167	600	108
R2	0.87	189	347	1250	1
	0.83	181	333	1200	11
	0.76	166	306	1100	30
	0.70	153	278	1000	47
	0.64	140	250	900	62
	0.59	129	222	800	76
	0.55	120	194	700	88
	0.51	112	167	600	98
	0.48	105	139	500	107
	0.46	100	111	400	113
R3	0.79	164	261	940	1
	0.74	156	250	900	15
	0.70	146	236	850	31
	0.65	138	222	800	46
	0.61	130	208	750	58
	0.58	123	194	700	69
	0.54	116	181	650	78
	0.51	111	167	600	87
	0.49	106	153	550	94
	0.47	101	139	500	99
R4	0.65	131	176	635	2
	0.61	123	169	610	18
	0.59	121	167	600	24
	0.53	109	153	550	50
	0.48	100	139	500	70
	0.44	94	125	450	83
	0.41	89	111	400	92
	0.40	86	97	350	97
	0.39	84	83	300	100
	0.39	83	69	250	100
R5	0.56	117	146	525	2
	0.55	110	139	500	21
	0.51	100	125	450	52
	0.48	92	111	400	75
	0.45	86	97	350	90
	0.42	81	83	300	100
	0.39	78	69	250	105
	0.37	76	56	200	108
	0.35	74	42	150	110
	0.34	73	28	100	111
R6	0.56	107	114	410	0
	0.49	96	97	350	47
	0.44	88	83	300	72
	0.40	82	69	250	88
	0.37	77	56	200	98
	0.35	73	42	150	102
	0.34	71	28	100	104

Legend
I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
PR Available static pressure
R Fixed speed

NOTE: Voltage supply: 230 V (± 10%)

42EM 29 and 39 (variable-speed LEC motor)

Control (Volt)	I (A)	P (W)	Qv (l/s)	Qv (m³/h)	PR (Pa)
10	1.35	192	444	1600	8
	1.28	178	417	1500	36
	1.22	169	389	1400	59
	1.17	160	361	1300	79
	1.12	152	333	1200	96
	1.06	144	306	1100	110
	1.01	136	278	1000	122
	0.95	129	250	900	132
	0.90	121	222	800	141
	0.84	113	194	700	149
	0.79	105	167	600	157
	0.72	95	139	500	166
9	1.12	150	417	1500	17
	1.04	140	389	1400	35
	0.98	132	361	1300	51
	0.94	126	333	1200	66
	0.89	120	306	1100	80
	0.85	114	278	1000	92
	0.81	107	250	900	104
	0.76	100	222	800	114
	0.71	93	194	700	123
	0.65	85	167	600	130
	0.61	78	139	500	137
8	0.94	119	389	1400	11
	0.87	111	361	1300	27
	0.81	104	333	1200	42
	0.77	99	306	1100	56
	0.73	93	278	1000	68
	0.69	87	250	900	79
	0.64	81	222	800	89
	0.60	75	194	700	98
	0.55	68	167	600	106
7	0.68	85	333	1200	17
	0.65	80	306	1100	31
	0.61	75	278	1000	44
	0.58	70	250	900	55
	0.54	65	222	800	65
	0.50	60	194	700	74
	0.46	55	167	600	81
	0.41	49	139	500	87
	0.37	44	111	400	93
6	0.50	62	306	1100	5
	0.48	58	278	1000	19
	0.45	54	250	900	30
	0.42	50	222	800	40
	0.39	46	194	700	49
	0.35	42	167	600	56
	0.32	37	111	400	63
	0.30	33	56	200	68
5	0.33	38	250	900	5
	0.31	35	222	800	15
	0.29	33	194	700	24
	0.26	30	167	600	32
	0.24	27	139	500	39
	0.21	23	83	300	45
	0.20	21	56	200	49
	0.20	19	28	100	52
4	0.21	23	194	700	6
	0.20	21	167	600	14
	0.18	20	139	500	20
	0.14	14	83	300	31
	0.10	11	56	200	34
	0.08	7	28	100	37
	0.07	6	14	50	37
3	0.15	15	167	600	0
	0.13	13	139	500	6
	0.11	11	83	300	16
	0.10	10	56	200	20
	0.10	9	28	100	23
	0.09	8	14	50	24
2	0.04	4	83	300	2
	0.05	4	56	200	6
	0.05	4	28	100	10
	0.05	4	14	50	12

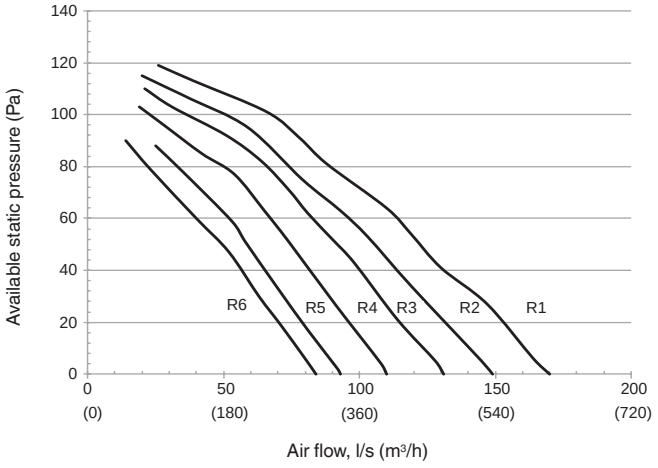
6.5 - Water coil pressure drop

Water flow rate, l/s		0.03	0.05	0.08	0.11	0.14	0.17	0.19	0.22	0.25	0.28	0.30	0.33	0.36
Water flow rate, l/h		**100**	**200**	**300**	**400**	**500**	**600**	**700**	**800**	**900**	**1000**	**1100**	**1200**	**1300**
	Water coil type													
Sizes 05-09	Two-pipe cooling and changeover	2	6	14	26	40	58	79	-	-	-	-	-	-
	Four-pipe cooling	1	6	13	23	36	52	71	-	-	-	-	-	-
	Four-pipe heating	5	22	49	87	-	-	-	-	-	-	-	-	-
Sizes 10-19	Two-pipe cooling and changeover	1	4	9	16	26	37	50	65	83	-	-	-	-
	Four-pipe cooling	1	6	13	23	36	52	71	93	-	-	-	-	-
	Four-pipe heating	2	6	14	24	38	55	75	-	-	-	-	-	-
Sizes 21-22-23-29	Two-pipe cooling and changeover	1	2	5	9	14	19	26	35	44	54	-	-	-
	Four-pipe cooling	1	2	5	10	15	22	29	38	49	60	-	-	-
	Four-pipe heating	1	3	6	11	17	25	34	44	56	69	84	100	117
Sizes 31-32-33-39	Two-pipe cooling and changeover	1	1	3	6	9	13	18	24	30	37	44	53	62
	Four-pipe cooling	1	2	5	8	13	18	25	33	41	51	62	73	86
	Four-pipe heating	1	3	6	11	18	26	35	46	58	71	86	-	-

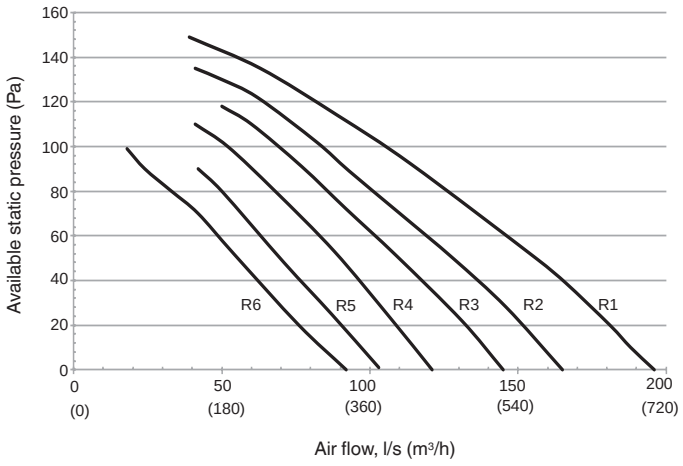
6.6 - Air flow data

Static pressure available (Pa) as a function of the air flow, l/s (m³/h)

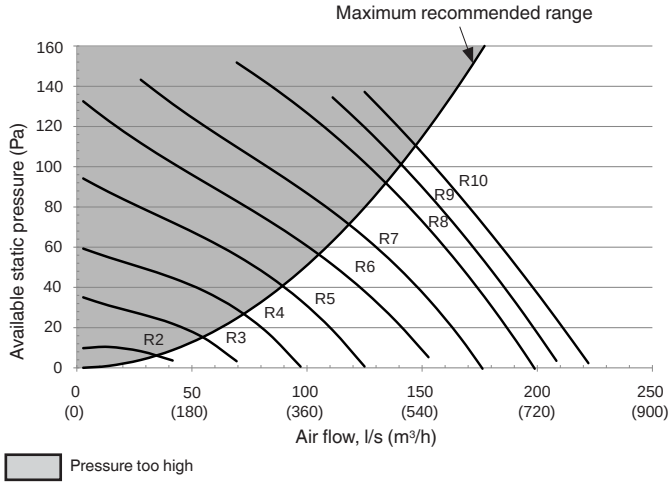
Size 05 multi-speed - unit without spigot



Size 10 multi-speed - unit without spigot

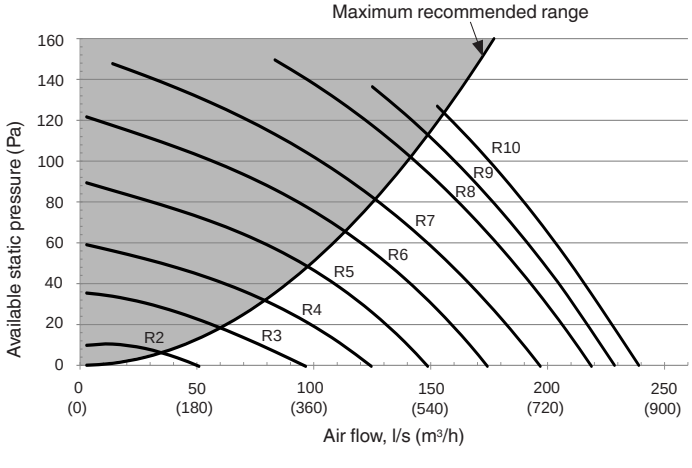


Size 09 (variable-speed LEC motor) - unit without spigot



Pressure too high

Size 19 (variable-speed LEC motor) - unit without spigot



Pressure drop (Pa) for supply and return air plenum boxes as a function of the number of spigots (ø 200 mm)

Size 0

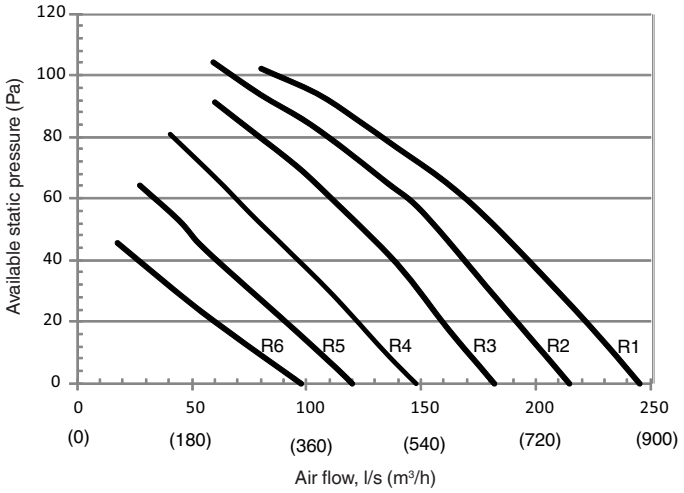
Air flow, l/s		0	28	56	83	111	139	167
Air flow, m³/h		**0**	**100**	**200**	**300**	**400**	**500**	**600**
1 spigot	Supply	0	1	2	5	9	14	19
	Return	0	0	1	2	3	5	6
2 spigots	Supply	0	0	1	2	3	5	6
	Return	0	0	0	0	1	2	3

Size 1

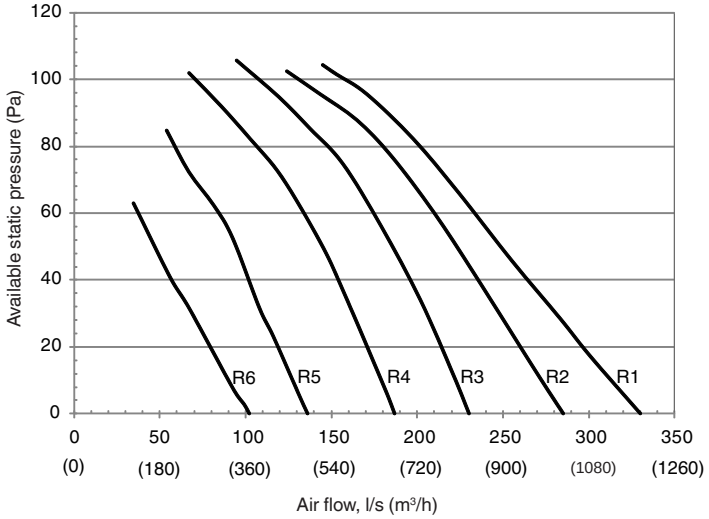
Air flow, l/s		28	56	83	111	125	139	153	167	181	194
Air flow, m³/h		**100**	**200**	**300**	**400**	**450**	**500**	**550**	**600**	**650**	**700**
1 spigot	Supply	1	4	9	15	19	24	-	-	-	-
	Return	2	7	15	27	35	43	-	-	-	-
2 spigots	Supply	0	1	2	3	4	5	6	8	9	10
	Return	0	2	4	6	8	10	12	16	18	20
3 spigots	Supply	0	0	1	1	2	2	3	3	4	4
	Return	0	1	2	3	4	5	6	7	8	10

Static pressure available (Pa) as a function of the air flow, l/s (m³/h)

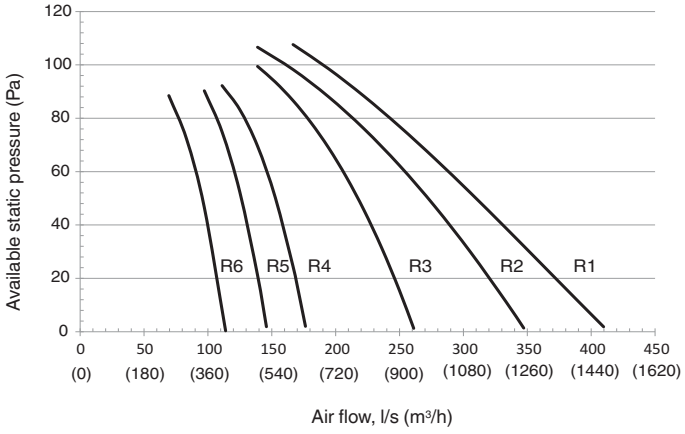
Sizes 21 and 31 - unit without spigot



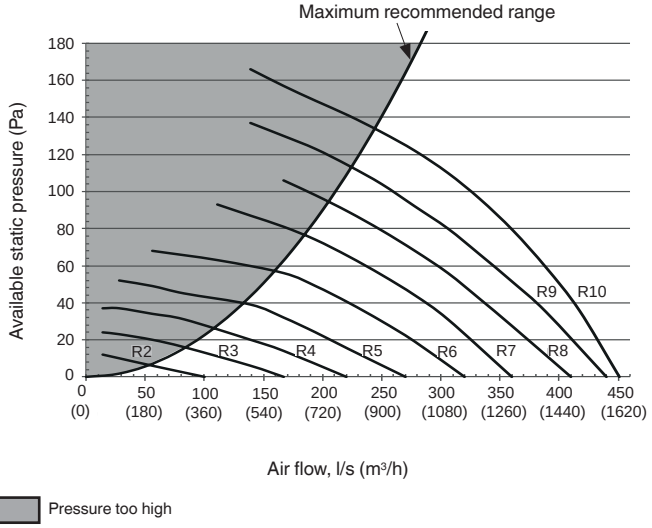
Sizes 22 and 32 - unit without spigot



Sizes 23 and 33 - unit without spigot



Sizes 29 and 39 - unit without spigot



IMPORTANT: The curves were derived by smoothing, based on the information shown in the electrical data table.

NOTE: The data is for units without supply and return plenums. See chapter "Pressure drop for supply and return air plenum boxes as a function of the number of spigots" for the plenum pressure drops.

Pressure drop (Pa) for supply and return air plenum boxes as a function of the number of spigots (ø 200 mm)

Sizes 21 - 22 - 23 - 29 - 31 - 32 - 33 - 39

Air flow (l/s)		**0**	**28**	**56**	**83**	**111**	**139**	**167**	**194**	**222**	**250**	**278**	**306**	**333**	**361**	**389**	**417**
Air flow (m³/h)		**0**	**100**	**200**	**300**	**400**	**500**	**600**	**700**	**800**	**900**	**1000**	**1100**	**1200**	**1300**	**1400**	**1500**
1 spigot	Supply	0	0.9	3.5	7.9	14	21.8	31.4									
	Return	0	0.7	2.7	6.1	10.9	17.1	24.6									
2 spigots	Supply	0	0.2	0.7	1.6	2.9	4.5	6.5	8.9	11.6	14.7	18.1	21.9				
	Return	0	0.2	0.7	1.7	3.0	4.6	6.7	9.1	11.9	15.0	18.6	22.5				
3 spigots	Supply	0	0.1	0.5	1.1	2.0	3.1	4.4	6.0	7.9	10.0	12.3	14.9	17.7	20.8	24.1	27.7
	Return	0	0.2	0.7	1.5	2.6	4.1	5.9	8.0	10.5	13.3	16.4	19.8	23.6	27.7	32.1	36.9
4 spigots	Supply	0	0.0	0.1	0.3	0.6	0.9	1.3	1.7	2.3	2.9	3.6	4.3	5.1	6.0	7.0	8.0
	Return	0	0.1	0.2	0.5	0.9	1.3	1.9	2.6	3.4	4.3	5.3	6.5	7.7	9.0	10.4	12.0
5 spigots	Supply	0	0.0	0.1	0.3	0.5	0.7	1.0	1.4	1.8	2.3	2.9	3.5	4.1	4.9	5.6	6.5
	Return	0	0.0	0.2	0.4	0.7	1.1	1.6	2.1	2.8	3.5	4.3	5.3	6.3	7.3	8.5	9.8

7 - GUIDE SPECIFICATION

- Supply 42EM Atmosphera fan coil units in accordance with the certified drawings.
- The performance of each 42EM unit shall conform to the published technical and performance data.
- The casings of 42EM units shall be made from galvanised sheet steel, thermally and acoustically insulated, and shall be provided with adequate access for service and maintenance. 42EM units shall be provided with suspension lugs with rubber anti-vibration mounts.
- The supply and return air connection spigots (200 mm diameter) shall be integral with each 42EM unit.
- 42EM units shall be equipped with either a cooling/heating changeover coil, a monobloc heating and cool-ing coil or a cooling coil and an electric heater. The water coils shall be provided with manual air purge valves.
- The cooling and heating coils shall be made from copper tubes of 3/8" external diameter and aluminium fins. The maximum water side working pressure shall not exceed 10 bar (1000 kPa).
- The aluminium drain pan beneath the coil and valves shall be monobloc to avoid the possibility of leaks.
- The two-way or three-way on/off water flow control valves shall be provided with flexible water pipes with 1/2" BSP union nuts to simplify connections on site and maintenance and servicing work.
- 42EM units supplied shall be provided with disposable 85% gravimetric (G3) and M1 fire class filters.
- Filter access shall be:
  - From below the unit for ducted models,
  - From the rear of the unit for non-ducted models.
- The 42EM shall be equipped with a LEC (Low Energy Consumption) type fan motor assembly.
- This direct-drive motor shall be electronically commutated (EC motor), controlled by a 0-10 V signal, allowing it to operate precisely, simply and quietly with a wide range of rotational speeds in variation from the original speed.
- Fans shall be a double-inlet centrifugal forward-curved type, with 1 or 2 fans per unit depending upon unit size.
- 42EM units shall be suitable for connection to electronic controllers (wall-mounted thermostats) that allow fan speed changes to adjust the unit's heating and cooling capacity.
- Electrical connections carried out on 42EM units shall be the quick-connection type in order to simplify maintenance. A plastic cover shall protect the terminals.

Numerical control

- The numerical controls shall use the CCN (Carrier Comfort Network) communication protocol.
- These controls shall have the following functions:
  - Control of the Atmosphera fan speed.
  - Control of the water flow through the on/off type two or three-way valves with reference to internal and external loads, in order to maintain a constant ambient temperature in the conditioned space.
  - Provide on/off control of the resistance wire type electric heater.
  - Be controlled by a Zone User Interface.
- The power supply to the controller shall be 230 V a.c. (± 10%) single-phase, 50 Hz, to avoid the need for a transformer. The electric heater shall be controlled directly from the numerical controller to avoid the need for a power Triac.

Quality and Environment
Management Systems
Approval

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Manufacturer reserves the right to change any product specification without notice.

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