

ELFODuct

Uncased horizontal water terminal unit

Range: CF 91 - 242

Capacities from 29,70 to 83,8 kW



The ELFODuct CF units are ideal air-treatment terminal units for installations where ducted air distribution is necessary.

They are designed for installation in suspended ceilings and are distinguished by their compactness and extremely low noise levels obtained thanks to both internal and external insulation.

The main features are:

- various available controls, from simple speed control through to the electronic control set-up for connection to ELFOControl. or general supervisors;
- available in version for 2 and 4-pipe systems;
- wide choice of aeraulic accessories (plenum for round ducts, fresh air intake plenum);
- electric heater section with different power plus electronic power modulation control;
- high head-pressure fans for ducted air distribution.

STANDARD UNIT SPECIFICATIONS

STRUCTURE

(SIZE 91-121) Hot galvanized steel cabinet with galvanized and painted plate panelling, as per the MAGONA 3000/80 system. Internal layer of open cell polyurethane lining.
(SIZES 142-162-182-202-242) Self supporting panel structure in steel sheet protected by oven-dried polyester paint. The panels are easy to remove for complete accessibility to the internal components and are internally coated with a thermo-acoustic insulation. The unit is furnished with condensate tray .

INTERNAL EXCHANGER

finned exchanger, made from copper pipes arranged in staggered rows and mechanically expanded for better adherence to the collar of the fins. The fins are made from aluminium with a special corrugated surface, set a suitable distance apart to ensure maximum heat exchange efficiency.

FAN

dual intake centrifugal fan coupled via belt/pulley system to a three-phase electric motor on belt tightener. Variable-pitch pulley. The fan/motor assembly is mounted on an antivibration system.

TRAY

Galvanized steel condensate collection tray fitted with drain pipe.

ELECTRICAL PANEL

Electrical panel composed with terminal block and isolator IP55.

ELECTRIC MOTOR

Electrical motor connected to fan by belt/pulley system.

CONNECTIONS

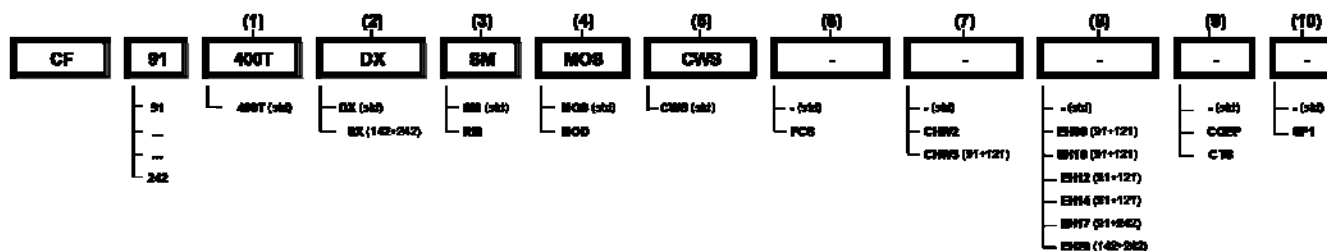
1"¼ water coil connections

ACCESSORIES

- 2 rows hot water coil
- 3 rows hot water coil (SIZE 91-121)
- Electric heaters.
- Larger outlet electric fan motor
- Double-speed motor
- Angular air filter section
- Mixing and recycling box
- RS485 remote communication serial port
- CLIVET TALK TERMINAL electronic for HID-T2 or HID-T3 thermostats(ELFOControl)
- HID-T2 electronic ambient control
- HID-T3 electronic ambient control
- Rubber antivibration mounts
- 3 way valve kit for 2-pipe system
- 3 way valve kit for 4-pipe system

Configurations

Necessary configuration string for supplying the unit with the indicated elements.



UNIT CONFIGURATIONS

(1) VOLTAGE

Supply voltage 400/3/50 without neutral(400T)
Standard power supply

(2) WATER FITTINGS

Water fittings to the left(SX)
standard
Water fittings to the right(DX)
(sizes 142-162-182-202-242)

(3) AIR FLOW

Standard air outlet flow-rate(SM)
Reduced air outlet flow-rate(RM)

(4) MOTOR SPECIFICATIONS

Standard motor(MOS)
Double-speed motor(MOD)

(5) WATER COIL

Standard water coil(CWS)

(6) AIR FILTER

Air filter: not required(-)
standard
Angular air filter section.(FCS)

(7) HOT WATER COIL

Hot water coil: not required(-)
standard
2 rows hot water coil(CHW2)
3 rows hot water coil(CHW3)
(size 91-121)

(8) PREHEATING ELECTRIC HEATERS

Heating electric heaters: not required(-)
standard
4,5 kW electric heaters(EH09)
(size 91-121)
6 kW electric heaters(EH10)
(size 91-121)
9 kW electric heaters(EH12)
(size 91-121)
12 kW electric heaters(EH14)
(size 91-121)
18 kW electric heaters(EH17)
24 kW electric heaters(EH20)
(sizes 142-162-182-202-242)

(9) ELECTRICAL PANEL

Electric version: not required(-)
standard
Capacity electrical panel(CQEP)
CLIVET TALK TERMINAL electronic for HID-T2 or HID-T3 thermostats (ELFOControl)(CTS)

(10) REMOTE COMMUNICATION SERIAL PORT

Remote communication serial port: not required(-)
standard
RS485 remote communication serial port(SP1)

GENERAL TECHNICAL SPECIFICATIONS

Size			91	121	142	162	182	202	242
------	--	--	----	-----	-----	-----	-----	-----	-----

COOLING

Cooling capacity	1	kW	29.7	40.3	46.9	52.4	59	75.2	83.8
Sensible capacity	1	kW	22.1	29.7	33.6	38	42.5	52.7	59.5
Total power input	1	kW	0.75	1.1	1.1	1.5	1.5	2.2	3

HEATING

Heat output	2	kW	35.1	47.2	53.2	60.3	76	83.4	94.3
-------------	---	----	------	------	------	------	----	------	------

INTERNAL EXCHANGER

Front surface		m ²	0.6	0.8	1.02	1.02	1.02	1.43	1.43
Number of rows		Nr	4	4	4	4	4	4	4
Fin spacing		mm	2.1	2.1	2.1	2.1	1.8	1.8	1.8
Water content		l	7	9.4	12.8	12.8	12.8	17.5	17.5
Water flow-rate		l/s	1.35	1.84	2.24	2.5	2.8	3.58	4
Pressure drop		kPa	20	24	36	43	54	85	104

AIR HANDLING SECTION FANS (OUTLET)

Type of fans	3		CFG	CFG	CFG	CFG	CFG	CFG	CFG
Number of fans		Nr	1	1	2	2	2	2	2
Air flow	4	l/s	1417	1889	2120	2500	2660	3100	3620
Installed unit power		kW	0.8	1.1	1.1	1.5	1.5	2.2	3
Max outside static pressure	4	Pa	150	150	90	90	60	120	210
Max outside static pressure		Pa	240	240	300	300	300	300	300

CONNECTIONS

Water fittings			1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
Condensate discharge			1"	1"	3/4"	3/4"	3/4"	3/4"	3/4"

POWER SUPPLY

Standard power supply		V	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
-----------------------	--	---	----------	----------	----------	----------	----------	----------	----------

DIMENSIONS

Length		mm	1285	1435	2015	2015	2015	2515	2515
Depth		mm	945	1030	775	775	775	850	850
Height		mm	585	685	730	730	730	680	680

STANDARD UNIT WEIGHTS

Shipping weight		kg	150	168	190	210	218	280	292
Operating weight		kg	138	158	170	190	195	253	265

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecode-sign Lot21.

'Contains fluorinated greenhouse gases'(GWP 2087,5)

(2) ambient temperature 20°C DB
water inlet 50°C and outlet 40°C

(3) CFG = centrifugal fan

(4) rated flow, maximum speed, including the air filter

(1) Ambient temperature 27°C/19.5 WB
water inlet 7°C and outlet 12°C

OPERATING LIMITS (COOLING)

Size			91	121	142	162	182	202	242
Max air temperature inlet (WB)		°C	40	40	40	40	40	40	40
Min air inlet temperature (W.B.)		°C	2	2	2	2	2	2	2
Max ambient relative humidity		%	75	75	75	75	75	75	75
Max water inlet temperature		°C	80	80	80	80	80	80	80
Min. water outlet temperature		°C	6	6	6	6	6	6	6

OPERATING LIMITS (HEATING)

Size			91	121	142	162	182	202	242
Max water inlet temperature		°C	80	80	80	80	80	80	80
Min. water inlet temperature		°C	30	30	30	30	30	30	30
Max air temperature inlet (WB)		°C	40	40	40	40	40	40	40
Min air inlet temperature (W.B.)		°C	2	2	2	2	2	2	2

16 bar water side high head-pressure

DB = dry bulb

WB = wet bulb

ELECTRICAL DATA

Size			91	121	142	162	182	202	242
------	--	--	----	-----	-----	-----	-----	-----	-----

F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS

F.L.A. - Total		A	1,9	2,7	2,7	3,4	3,4	4,8	6,5
----------------	--	---	-----	-----	-----	-----	-----	-----	-----

F.L.I. FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITION

F.L.I. - Total		kW	0.75	1.1	1.1	1.5	1.5	2.2	3
----------------	--	----	------	-----	-----	-----	-----	-----	---

M.I.C. MAXIMUM INRUSH CURRENT

M.I.C. - Value		A	10.6	12.7	12.7	18	18	26.4	39
----------------	--	---	------	------	------	----	----	------	----

Power supply: 400/3/50 Hz. Voltage variation: max +/- 10%
Voltage unbalance between phases: max 2 %

SOUND LEVELS

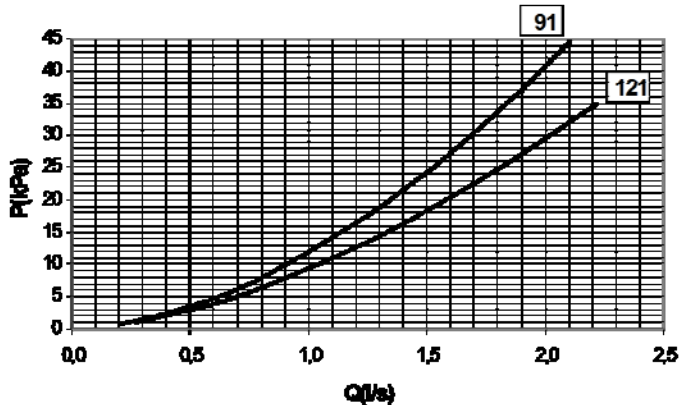
Size	Sound Power Level (dB)								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
91	63,0	69,4	65,8	67,2	68,8	67,3	64,0	56,7	65,3	73,3
121	64,8	66,8	70,2	68,8	68,5	68,3	64,9	59,1	66,1	74,1
142	61,1	64,6	64,7	72	72,6	70,3	67,1	62,0	68,8	76,8
162	63,0	67,7	67,2	75,6	76,4	74,0	71,0	66,4	72,6	81,9
182	63,6	68,0	67,9	77,3	77,7	75,3	72,2	67,8	73,9	81,9
202	69,7	69,9	71,7	72,9	72,6	71,2	69,3	63,8	70,0	78,0
242	70,2	71,2	72,8	74,7	74,6	74,5	71,8	66,9	72,2	80,2

The sound levels refer to units ceiling installed without false ceiling, with nominal air flow, fan supply 400/3/50, damper on the fan discharge and 1 m. of ducting suction and discharge. Sound pressure levels referred to 1 m. from units external surface operating in free field conditions.

When the unit is installed in conditions different from nominal test conditions (e.g. near walls or obstacles in general or with different static pressures), the sound levels may undergo substantial variations (up to a maximum of 3dB (A) of deviation). Data provided according to UNI EN ISO 9614-2 Regulation.

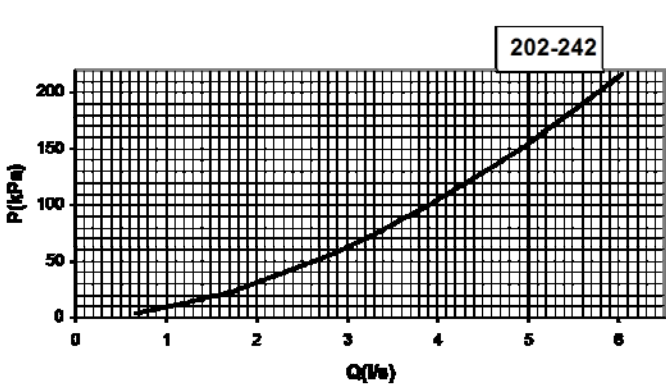
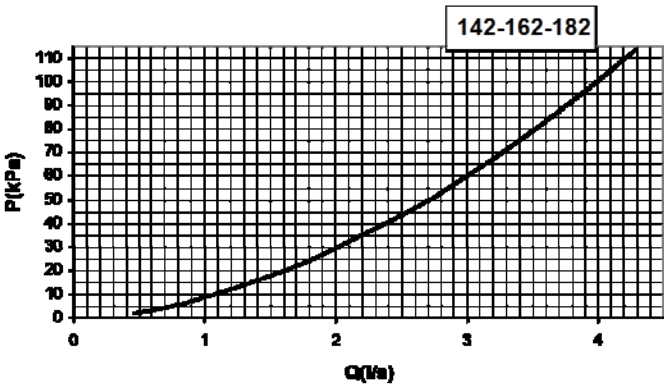
Standard water coil

internal exchanger pressure drop



Cooling operation

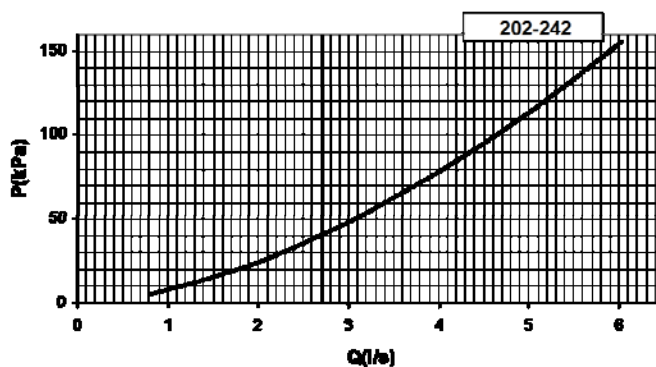
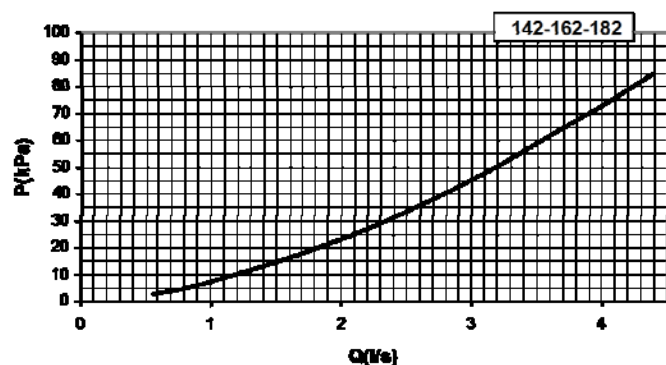
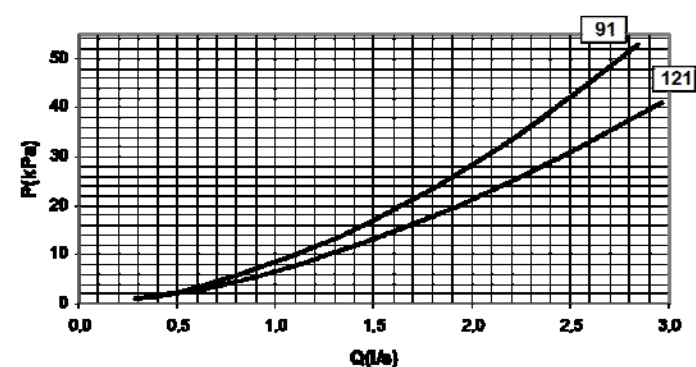
Q = WATER FLOW
DP = PRESSURE DROP



Standard water coil

internal exchanger pressure drop

Heating operation



Correction factors for reduced air flow-rate

The reduced flow-rate (around 15% less than the rated value) causes a variation in the output of the unit. Therefore, all capacities (cooling kWf, sensible kW and heating kWt capacity) should be corrected using the factors shown in the table to the side. The correction factors for the individual terminal should be considered at parity of evaporation temperature (cooling) and condensing temperature (heating).

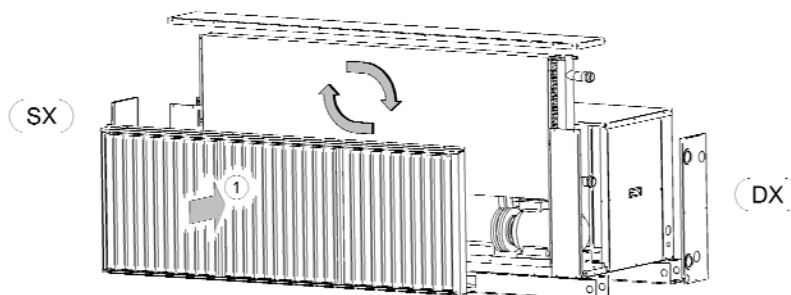
SIZE	91	121	142	162	182	202	242
KE = COOLING PERFORMANCE MULTIPLICATION COEFFICIENT	0.902	0.899	0.893	0.897	0.894	0.890	0.892
KS = SENSIBLE OUTPUT MULTIPLICATION COEFFICIENT	0.886	0.886	0.881	0.884	0.881	0.879	0.880
KT = HEATING PERFORMANCE MULTIPLICATION COEFFICIENT	0.882	0.882	0.877	0.880	0.876	0.874	0.700

OUTLET WATER FITTINGS

(sizes 142-162-182-202-242)

The manifold outlet side of the coil is determined in the configuration phase, but if necessary it can be changed at the worksite prior to installation of the unit by removing the access panels and turning the coil.

- (1) AIR FLOW
- (DX) WATER FITTINGS TO THE RIGHT
- (SX) WATER FITTINGS TO THE LEFT



COOLING PERFORMANCE

Size	Ta (°C) DB/WB	EXTERNAL EXCHANGER WATER INLET / OUTLET TEMPERATURE (°C)									
		6 / 11		7 / 12		9 / 14		10 / 15		13 / 18	
		kWf	kWs	kWf	kWs	kWf	kWs	kWf	kWs	kWf	kWs
91	22 / 15.4	18.9	17.4	17.1	16.1	13.7	13.4	12.1	12.1	7.73	7.73
	24 / 17	23.8	20.0	21.2	18.7	16.8	16.0	14.9	14.7	10.6	10.6
	26 / 18.6	29.4	22.3	26.4	21.0	21.1	18.4	18.8	17.1	13.6	13.2
	27 / 19.5	32.9	23.3	29.7	22.1	24.0	19.5	21.5	18.2	15.3	14.3
	28 / 20.3	36.3	24.4	33.0	23.1	26.9	20.6	24.1	19.3	16.9	15.5
	30 / 21.9	43.6	26.7	40.3	25.4	33.6	22.9	30.2	21.6	20.1	17.9
121	22 / 15.4	25.7	23.5	23.2	21.7	18.6	18.2	16.4	16.4	10.5	10.5
	24 / 17	32.4	27.0	28.9	25.2	22.9	21.7	20.3	19.9	14.1	14.1
	26 / 18.6	39.9	30.0	35.9	28.3	28.8	24.8	25.7	23.1	18.4	17.9
	27 / 19.5	44.6	31.5	40.3	29.7	32.7	26.3	29.3	24.5	21.0	19.4
	28 / 20.3	48.9	32.9	44.5	31.2	36.5	27.8	32.9	26.0	23.6	20.9
	30 / 21.9	58.3	35.9	53.9	34.2	45.3	30.9	41.1	29.2	29.1	24.1
142	22 / 15.4	29.8	26.6	26.6	24.6	20.8	20.7	18.3	18.3	12.3	12.3
	24 / 17	37.7	30.4	33.6	28.5	26.4	24.5	23.2	22.6	15.6	15.6
	26 / 18.6	46.4	33.9	41.8	32.0	33.4	28.1	29.7	26.1	20.2	20.2
	27 / 19.5	51.6	35.5	46.9	33.6	38.1	29.7	34.0	27.7	23.3	21.9
	28 / 20.3	56.5	37.2	51.7	35.2	42.6	31.4	38.3	29.4	26.4	23.6
	30 / 21.9	66.7	40.6	62.1	38.7	52.8	34.9	48.0	33.0	33.6	27.2
162	22 / 15.4	33.4	30.1	29.9	27.9	23.6	23.4	20.8	20.8	13.8	13.8
	24 / 17	42.2	34.5	37.6	32.3	29.6	27.8	26.1	25.6	17.7	17.7
	26 / 18.6	51.9	38.4	46.7	36.2	37.4	31.8	33.2	29.6	22.8	22.8
	27 / 19.5	57.7	40.2	52.4	38.0	42.5	33.6	38.0	31.4	26.3	24.9
	28 / 20.3	63.2	42.0	57.8	39.9	47.5	35.5	42.8	33.4	29.7	26.8
	30 / 21.9	74.8	45.8	69.5	43.7	58.9	39.4	53.6	37.3	37.6	30.9
182	22 / 15.4	37.6	33.7	33.6	31.2	26.5	26.2	23.3	23.3	15.5	15.5
	24 / 17	47.5	38.6	42.4	36.1	33.4	31.1	29.5	28.6	19.8	19.8
	26 / 18.6	58.4	42.9	52.6	40.5	42.2	35.5	37.5	33.1	25.6	25.6
	27 / 19.5	64.9	44.9	59.0	42.5	48.0	37.6	42.9	35.1	29.6	27.8
	28 / 20.3	71.0	47.0	65.0	44.6	53.6	39.7	48.2	37.3	33.5	30.0
	30 / 21.9	84.0	51.2	78.0	48.8	66.2	44.0	60.2	41.6	42.5	34.4
202	22 / 15.4	48.0	41.9	42.8	38.9	33.5	32.8	29.5	29.5	19.9	19.9
	24 / 17	60.7	47.9	54.2	44.8	42.7	38.7	37.6	35.7	25.0	25.0
	26 / 18.6	74.4	53.3	67.2	50.2	54.1	44.2	48.0	41.1	32.4	32.0
	27 / 19.5	82.6	55.8	75.2	52.7	61.4	46.7	55.0	43.7	37.5	34.6
	28 / 20.3	90.1	58.3	82.7	55.3	68.6	49.3	61.8	46.3	42.6	37.3
	30 / 21.9	105.9	63.6	98.9	60.6	84.6	54.7	77.2	51.7	54.5	42.8
242	22 / 15.4	53.7	47.3	47.8	43.9	37.4	37.0	32.9	32.9	22.3	22.3
	24 / 17	67.7	54.0	60.4	50.6	47.6	43.7	41.9	40.3	28.3	28.3
	26 / 18.6	83.0	60.1	74.9	56.7	60.2	49.9	53.6	46.4	36.4	36.2
	27 / 19.5	92.1	62.9	83.8	59.5	68.4	52.7	61.3	49.3	42.0	39.1
	28 / 20.3	100.6	65.7	92.2	62.4	76.4	55.6	68.8	52.3	47.6	42.2
	30 / 21.9	118.4	71.6	110.4	68.3	94.1	61.7	85.9	58.3	60.5	48.4

The performance refers to rated air flow.

Ta = Air intake temperature

DB = Dry bulb

WB = Wet bulb

kWf = Cooling capacity in kW

kWs = Sensible cooling capacity (kW)

HEATING PERFORMANCE

Size	Ta (°C)	EXCHANGER WATER INLET TEMPERATURE (°C)				
		40	45	50	60	70
		kWt	kWt	kWt	kWt	kWt
91	10	35.5	43.3	51.0	66.5	81.9
	15	27.7	35.4	43.0	58.3	73.5
	18	23.0	30.6	38.3	53.5	68.6
	20	19.8	27.5	35.1	50.3	65.4
	22	16.6	24.3	32.0	47.2	62.2
	25	11.8	19.6	27.3	42.5	57.5
121	10	47.8	58.2	68.5	89.2	109.8
	15	37.4	47.6	57.8	78.2	98.6
	18	31.0	41.3	51.5	71.8	92.0
	20	26.8	37.0	47.2	67.5	87.7
	22	22.5	32.8	43.0	63.3	83.4
	25	16.0	26.5	36.8	57.1	77.1
142	10	53.8	65.1	76.5	99.0	121.5
	15	42.3	53.5	64.7	87.0	109.2
	18	35.3	46.6	57.8	80.0	101.9
	20	30.6	41.9	53.2	75.4	97.1
	22	25.9	37.3	48.6	70.8	92.4
	25	18.7	30.4	41.8	64.0	85.4
162	10	60.9	73.9	86.9	112.7	138.4
	15	47.8	60.6	73.5	98.9	124.3
	18	39.8	52.7	65.5	90.9	116.0
	20	34.5	47.4	60.3	85.6	110.6
	22	29.1	42.2	55.1	80.4	105.2
	25	21.0	34.3	47.3	72.8	97.3
182	10	76.2	91.3	105.8	132.8	157.5
	15	61.6	76.4	90.7	117.4	141.7
	18	52.9	67.7	81.8	108.3	132.4
	20	47.2	61.9	76.0	102.4	126.3
	22	41.6	56.2	70.2	96.5	120.3
	25	33.2	47.8	61.7	87.8	111.4
202	10	84.7	102.0	119.4	153.8	188.1
	15	66.8	84.1	101.2	135.3	169.1
	18	56.1	73.3	90.5	124.4	157.9
	20	48.9	66.2	83.4	117.3	150.5
	22	41.7	59.2	76.4	110.2	143.3
	25	31.0	48.6	66.0	99.8	132.5
242	10	95.6	115.3	135.1	174.3	213.4
	15	75.3	94.9	114.5	153.3	191.8
	18	63.1	82.8	102.3	141.0	179.1
	20	55.0	74.7	94.3	132.9	170.8
	22	46.8	66.7	86.3	124.8	162.5
	25	34.6	54.6	74.4	112.9	150.3

The performance refers to rated air flow.

Ta = Air intake temperature

Difference between inlet / outlet water temperature = 10°C

kWt = Heating capacity (kW)

PERFORMANCES OF SUPPLY AIR FANS

AIR FLOW: STANDARD

EXTERNAL STATIC PRESSURE (Pa)			10	30	60	90	120	150	180	210	240	270	300
91	Air flow	l/s	1417	1417	1417	1417	1417	1417	1417	1417	1417	-	-
	Fan RPM	rpm	550	595	640	685	730	780	820	870	910	-	-
	Total input	kW	0.47	0.53	0.58	0.64	0.68	0.73	0.82	0.89	0.96	-	-
	Sound pressure level	dB	67.5	68	68.5	69	70	71	71.5	72	73	-	-
	Motor input	kW	0.75	0.75	0.75	0.75	0.75	0.75	1.1	1.1	1.1	-	-
	Transmission code (fan)		T180.9.2.34						T160.9.2.32			-	-
121	Air flow	l/s	1889	1889	1889	1889	1889	1889	1889	1889	1889	-	-
	Fan RPM	rpm	435	475	520	560	595	640	680	710	755	-	-
	Total input	kW	0.56	0.63	0.69	0.81	0.9	1.01	1.12	1.2	1.38	-	-
	Sound pressure level	dB	64	64.5	65	66	67.5	68	69	69.8	70.5	-	-
	Motor input	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.5	1.5	1.5	-	-
	Transmission code (fan)		T250.9.2.41						T200.9.2.38			-	-
142	Air flow	l/s	-	-	2120	2120	2120	2120	2120	2120	2120	2120	2120
	Fan RPM	rpm	-	-	671	718	765	811	856	901	944	987	1028
	Total input	kW	-	-	0.89	0.98	1.08	1.18	1.28	1.39	1.5	1.61	1.72
	Sound pressure level	dB	-	-	80	80	81	81	81	82	82	83	83
	Motor input	kW	-	-	1.1	1.1	1.5	1.5	1.5	1.5	2.2	2.2	2.2
	Transmission code (fan)		-	-	T200.1.2.00			T170.1.2.00			T200.1.2.00		
162	Air flow	l/s	-	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
	Fan RPM	rpm	-	681	721	761	800	839	877	914	951	987	1023
	Total input	kW	-	1.13	1.25	1.37	1.48	1.59	1.7	1.82	1.94	2.05	2.16
	Sound pressure level	dB	-	79	80	80	81	81	82	82	83	83	84
	Motor input	kW	-	1.5	1.5	1.5	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	Transmission code (fan)		-	T200.1.2.00			T224.1.2.00			T200.1.2.00			
182	Air flow	l/s	-	2660	2660	2660	2660	2660	2660	2660	2660	2660	2660
	Fan RPM	rpm	-	704	742	780	817	853	889	925	960	995	1030
	Total input	kW	-	1.3	1.42	1.54	1.67	1.79	1.91	2.04	2.16	2.28	2.4
	Sound pressure level	dB	-	81	81	82	82	83	83	84	84	85	85
	Motor input	kW	-	1.5	1.5	2.2	2.2	2.2	2.2	2.2	3	3	3
	Transmission code (fan)		-	T224.1.2.00						T190.1.2.00			
202	Air flow	l/s	-	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100
	Fan RPM	rpm	-	586	622	655	686	717	747	777	807	836	866
	Total input	kW	-	1.59	1.74	1.88	2.02	2.16	2.3	2.44	2.59	2.74	2.89
	Sound pressure level	dB	-	77	78	79	80	80	80	81	81	82	82
	Motor input	kW	-	2.2	2.2	2.2	2.2	3	3	3	3	3	3
	Transmission code (fan)		-	T300.1.2.00				T224.1.2.00			T236.1.2.00		
242	Air flow	l/s	-	-	3620	3620	3620	3620	3620	3620	3620	3620	3620
	Fan RPM	rpm	-	-	645	678	708	737	766	794	821	849	876
	Total input	kW	-	-	2.09	2.24	2.41	2.56	2.71	2.86	3.02	3.18	3.34
	Sound pressure level	dB	-	-	80	80	81	81	82	82	83	83	83
	Motor input	kW	-	-	3	3	3	3	3	3	4	4	4
	Transmission code (fan)		-	-	T280.1.2.00			T250.1.2.00			T224.1.2.00		

The performance of the fans does not include the pressure drop in the air filter section (optional).

MMF - Outlet uprated electric motor

The uprated electrical motor of supply fan is used when the standard motor capacity is not sufficient to reach extremely high values of external static pressure. The standard electric motor is described in the general technical data, while the "DELIVERY FAN PERFORMANCE" section provides information about the uprated motors, on the basis of the useful static pressure.

PERFORMANCES OF SUPPLY AIR FANS
AIRFLOW: REDUCED

EXTERNAL STATIC PRESSURE (Pa)			30	60	90	120	150	180	210	240	270	300
91	Airflow	l/s	1208	1208	1208	1208	1208	1208	1208	1208	-	-
	Fan RPM	rpm	520	580	640	680	740	790	840	890	-	-
	Motor shaft input power	kW	0,35	0,39	0,43	0,48	0,56	0,63	0,67	0,72	-	-
	F.L.I. - Single supply fan	kW	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	-	-
	Transmission code (fan)		T224.9.2.38			T160.9.2.32					-	-
121	Airflow	l/s	1611	1611	1611	1611	1611	1611	1611	1611	-	-
	Fan RPM	rpm	415	470	515	560	600	650	685	730	-	-
	Motor shaft input power	kW	0,41	0,47	0,57	0,64	0,72	0,83	0,92	1	-	-
	F.L.I. - Single supply fan	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	-	-
	Transmission code (fan)		T280.9.2.43			T200.9.2.38					-	-
142	Airflow	l/s	-	1800	1800	1800	1800	1800	1800	1800	1800	1800
	Fan RPM	rpm	-	636	691	744	797	842	883	924	967	1001
	Motor shaft input power	kW	-	0,67	0,75	0,85	0,94	1,03	1,12	1,21	1,31	1,39
	F.L.I. - Single supply fan	kW	-	1,1	1,1	1,1	1,1	1,1	1,5	1,5	2,2	2,2
	Transmission code (fan)		-	T190.1.2.00			T180.1.2.00			T190.1.2.00		
162	Airflow	l/s	2125	2125	2125	2125	2125	2125	2125	2125	2125	2125
	Fan RPM	rpm	642	682	722	763	803	843	876	921	964	1007
	Motor shaft input power	kW	0,86	0,94	1,03	1,11	1,2	1,3	1,38	1,49	1,61	1,73
	F.L.I. - Single supply fan	kW	1,1	1,1	1,1	1,5	1,5	1,5	2,2	2,2	2,2	2,2
	Transmission code (fan)		T200.1.2.00						T224.1.2.00		T190.1.2.00	
182	Airflow	l/s	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
	Fan RPM	rpm	641	683	726	768	809	850	890	930	969	1007
	Motor shaft input power	kW	0,95	1,04	1,13	1,23	1,33	1,44	1,54	1,65	1,76	1,88
	F.L.I. - Single supply fan	kW	1,5	1,5	1,5	1,5	1,5	1,5	2,2	2,2	2,2	2,2
	Transmission code (fan)		T190.1.2.00			T224.1.2.00		T200.1.2.00				
202	Airflow	l/s	2635	2635	2635	2635	2635	2635	2635	2635	2635	2635
	Fan RPM	rpm	531	568	605	642	680	716	752	786	819	852
	Motor shaft input power	kW	1,94	1,04	1,14	1,25	1,37	1,49	1,61	1,73	1,86	1,99
	F.L.I. - Single supply fan	kW	1,5	1,5	1,5	1,5	2,2	2,2	2,2	2,2	2,2	2,2
	Transmission code (fan)		T250.1.2.00			T280.1.2.00			T250.1.2.00			
242	Airflow	l/s	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075
	Fan RPM	rpm	535	571	607	643	679	714	751	786	821	856
	Motor shaft input power	kW	1,21	1,33	1,45	1,47	1,7	1,84	1,99	2,13	2,29	2,44
	F.L.I. - Single supply fan	kW	1,5	1,5	2,2	2,2	2,2	2,2	2,2	3	3	3
	Transmission code (fan)		T280.1.2.00		T300.1.2.00		T280.1.2.00			T224.1.2.00		

The performance of the fans does not include the pressure drop in the air filter section (optional).

ACCESSORIES

CHW2 - 2 rows hot water coil

(size 91-121)

(BHW3)3 rows water coil

(size 91-121)

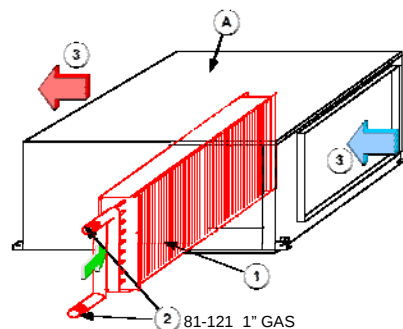
This section is required if the environment is not heated using a unit in heat pump mode. In fact, in harsh winter climates, the outside air temperature may fall below the minimum operating limit of the unit, or be such as to cause an excessive decline in performance, making the installation of heat pump units unadvisable. The 2- or 3-row hot water coil is housed in a special compartment inside the unit, and is installed as an alternative to the electric heater coil.

The hot water coil can also be supplied separately and installed in the unit at a later time.

This section is made from a galvanised plate frame, copper pipe coil and aluminium fins.

Configuration Detail
separately supplied accessories

(A) STANDARD UNIT
(1) HOT WATER COIL
(2) WATER FITTINGS
(3) AIR FLOW



Performances of hot water coil (2 rows)

CF		91				121			
Ti/To		60/40	60/50	70/60	80/70	60/40	60/50	70/60	80/70
		KWt	KWt	KWt	KWt	KWt	KWt	KWt	KWt
Ta(°C)	10	30.7	40.8	50.8	60.8	40.3	53.2	66.1	79.0
	15	25.7	35.5	45.4	55.3	33.8	46.6	59.3	72.1
	20	20.8	30.5	40.3	50.0	27.4	40.1	52.7	65.3
	25	15.9	25.6	35.3	44.9	21.1	33.7	46.2	58.7

KWT = HEATING CAPACITY (KW)
Ti/To = WATER TEMPERATURE INLET/OUTLET (°C)
TA = AIR INTAKE TEMPERATURE

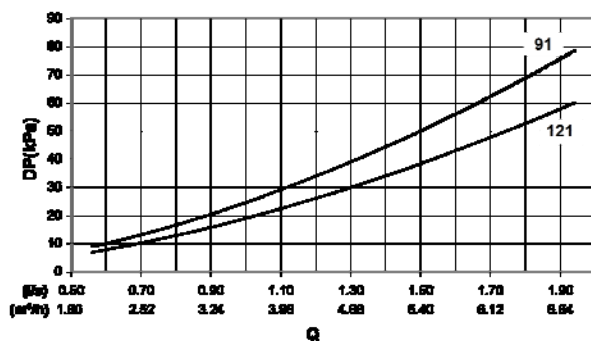
Performances of hot water coil (3 rows)

CF		91				121			
Ti/To		60/40	60/50	70/60	80/70	60/40	60/50	70/60	80/70
		KWt	KWt	KWt	KWt	KWt	KWt	KWt	KWt
Ta(°C)	10	38.8	50.9	63.2	75.8	52.9	69.5	86.1	99.0
	15	32.3	44.5	56.7	68.9	44.5	60.9	77.3	93.7
	20	26.2	38.3	50.4	62.4	36.2	52.4	68.6	84.8
	25	20.2	32.2	44.1	56.0	28.0	44.2	60.2	76.2

KWT = HEATING CAPACITY (KW)
Ti/To = WATER TEMPERATURE INLET/OUTLET (°C)
TA = AIR INTAKE TEMPERATURE

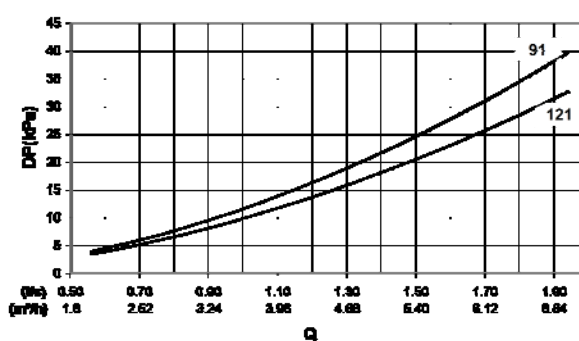
Hot water coil pressure drop: WATER side

2 rows water coil



Q = WATER FLOW
DP = PRESSURE DROP

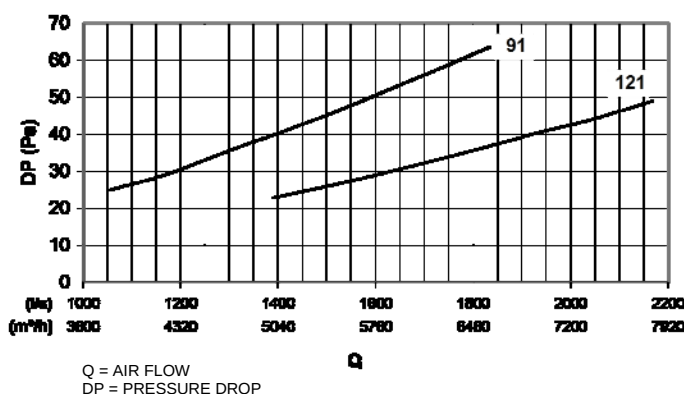
3 rows water coil



Q = WATER FLOW
DP = PRESSURE DROP

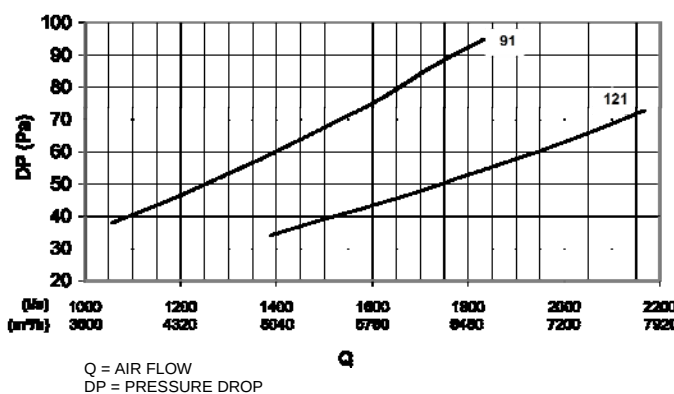
Hot water coil pressure drop: AIR side

2 rows water coil



Q = AIR FLOW
DP = PRESSURE DROP

3 rows water coil



Q = AIR FLOW
DP = PRESSURE DROP

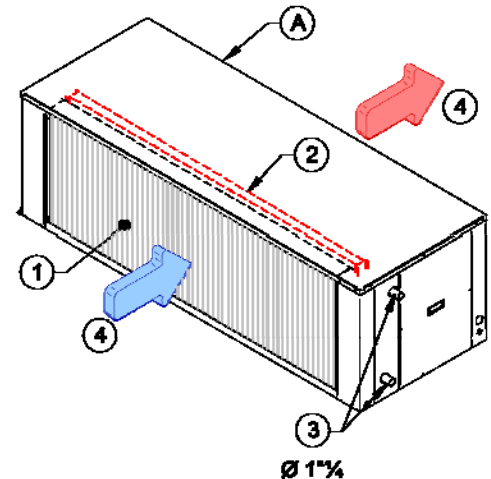
BHW2 - 2 rows water coil

(sizes 142-162-182-202-242)

This section is necessary if the ambient cannot be suitably heated with a heat pump unit. Indeed, under a very harsh winter climate, the external air temperature can go below the min. operating limit of the unit or cause excessive poor performance, thus advising against the installation of heat pump units.

The hot water coil is seated in a suitable compartment inside the unit, as an alternative to the electric heating coil.

This section is made up of a galvanized plate frame, a coil in copper pipes and aluminum fins.



Configuration Detail

(A) STANDARD UNIT
(1) STANDARD WATER COIL
(2) 2 ROWS WATER COIL
(3) 1 1/4
(4) AIR FLOW

Performances of hot water coil (2 rows)

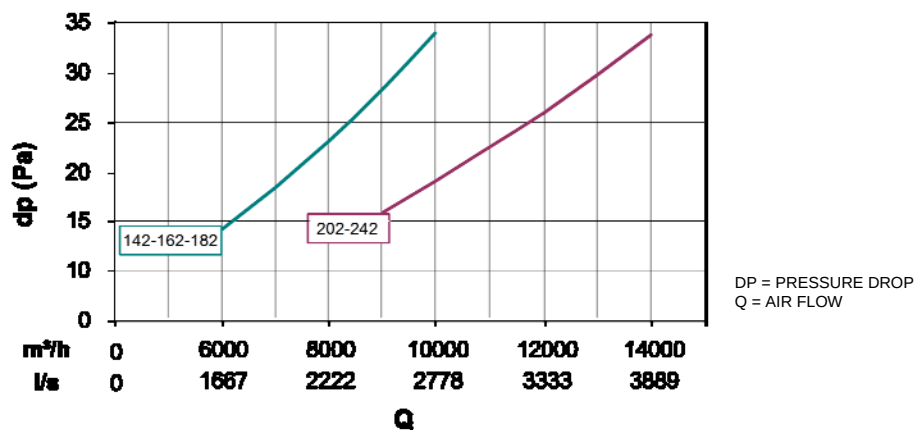
CF		142				162				182				202				242			
Ti/To (°C)		50/40	60/50	70/60	80/70	50/40	60/50	70/60	80/70	50/40	60/50	70/60	80/70	50/40	60/50	70/60	80/70	50/40	60/50	70/60	80/70
Ta (°C)	10	41.5	55.2	68.9	82.7	46.1	61.4	76.8	92.1	47.9	63.9	79.9	95.9	61.5	81.3	101.1	121.0	67.9	89.9	111.9	133.9
	15	34.6	48.2	61.8	75.4	38.4	53.6	68.8	84.0	40.0	55.8	71.6	87.4	51.6	71.2	90.7	110.4	56.9	78.7	100.4	122.2
	20	27.9	41.4	54.8	68.3	31.0	46.0	61.0	76.0	32.2	47.8	63.4	79.1	41.8	61.2	80.6	100.0	46.1	67.5	89.1	110.7
	25	21.3	34.6	47.9	61.2	23.6	38.5	53.3	68.2	24.5	40.0	55.5	71.0	32.1	51.4	70.6	89.7	35.4	56.8	78.1	99.4

KWT = HEATING CAPACITY (KW)

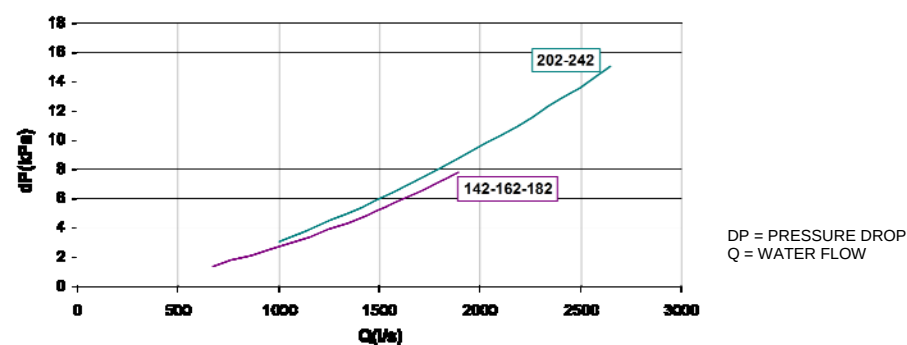
Ti/To = WATER TEMPERATURE INLET/OUTLET (°C)

TA = AIR INTAKE TEMPERATURE

Hot water coil pressure drop: AIR side



Hot water coil pressure drop: WATER side



EH - Electric heaters

(size 91-121)

If hot water is not available, the electric heater section can be used for the utilities described above.

This is supplied with a thermal-magnetic power cut-out, safety thermostat against overheating, and an electronic board for the modulating control of the power, from 0 to 100%, with a trimmer for limiting the maximum power supplied, and/or ON/OFF control.

It is made with a galvanised plate frame and finned aluminium heating elements that allow rapid and uniform diffusion of the heat.

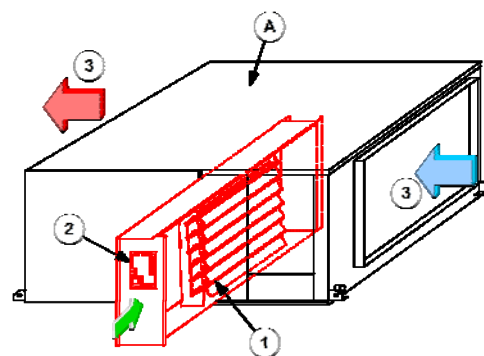
For the power values available, refer to the table enclosed further on.

The air-side pressure drop according to the capacity can vary from a minimum of 5 Pa to a maximum of 10 Pa.

N.B. This section requires a 400/3/50 Hz +/- 10% power supply.

Configuration Detail
separately supplied accessories

(A) STANDARD UNIT
(1) ELECTRIC HEATERS.
(2) HEATER MANAGEMENT ELECTRICAL PANEL
(3) AIR FLOW

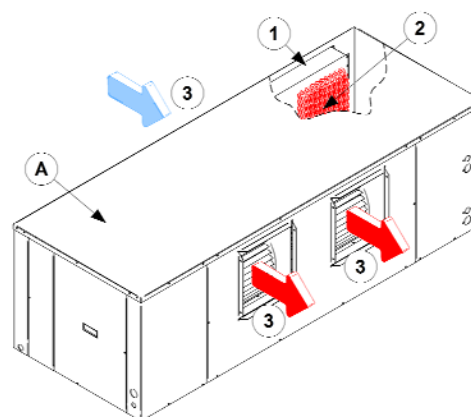


(sizes 142-162-182-202-242)

If there is no possibility of using the hot water coil, the section with electric heaters can be used. It is supplied with a power magneto-thermal switch and a safety thermostat against superheating. It is made up of a galvanized plate frame and the heating elements are made up of steel pipes and galvanized fins for a homogeneous heat distribution.

Configuration Detail

(A) STANDARD UNIT
(1) STANDARD WATER COIL
(2) ELECTRIC HEATERS.
(3) AIR FLOW



ELECTRIC HEATERS

GRANDEZZE	91	121	142	162	182	202	242
4.5 kW	X	X	-	-	-	-	-
6 kW	X	X	-	-	-	-	-
9 kW	X	X	-	-	-	-	-
12 kW	X	X	-	-	-	-	-
18 kW	X	X	X	X	X	X	X
24 kW	-	-	X	X	X	X	X

10V2X - 3 way valve kit for 2-pipe system

10V4X - 3 way valve kit for 4-pipe system

The option has to be combined to the water coil for 2 or 4-pipe system and it allows the automatic control of the unit power efficiency. The kit includes the 3-way valve body, modulating actuator with cable to be connected to the unit logic, T pipe fittings. The installation has to be carried out on site outside the unit, also the by-pass pipe has to be selected by the Customer.



The kit is combined to option: CTS CLIVET TALK TERMINAL electronic for HID-T2 or HID-T3 thermostats



Installation provided by the Customer.



Separately supplied accessories

FCS - Angular air filter section

(size 91-121)

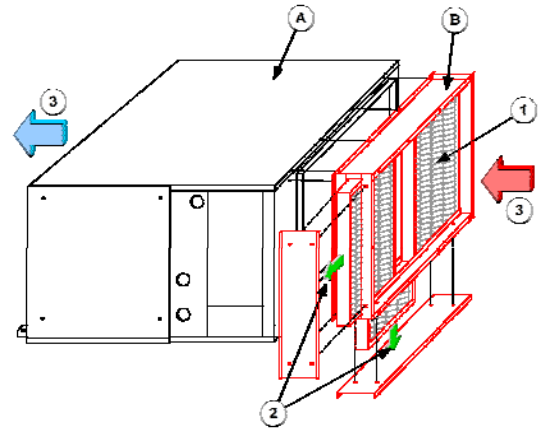
Pre-painted metal plate frame. Filtering media made from sized polyester fibre with synthetic resins, self-extinguishing (class F1-DIN 53438), washable in soapy water, max. temperature 60°C.

Max. degree of separation 87.5 % (ASHRAE 52-76 Atm),

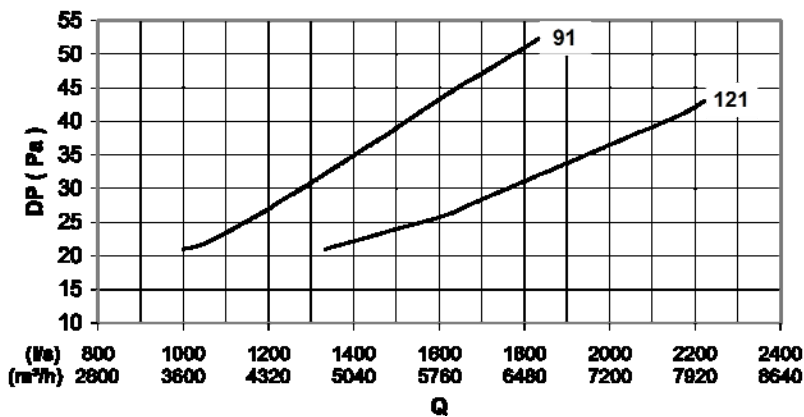
Eurovent classification 4/5 EU 3. The filtering media is contained in a galvanised plate frame with electric welded galvanised protective mesh.

- (A) STANDARD UNIT
- (B) PRE-PAINTED METAL PLATE FRAME
- (1) PLEATED AIR FILTER
- (2) DIRECTION OF AIR FILTER REMOVAL
- (3) AIR FLOW

Configuration Detail
separately supplied accessories



Air filter pressure drop



Q = AIR FLOW
DP = PRESSURE DROP

(sizes 142-162-182-202-242)

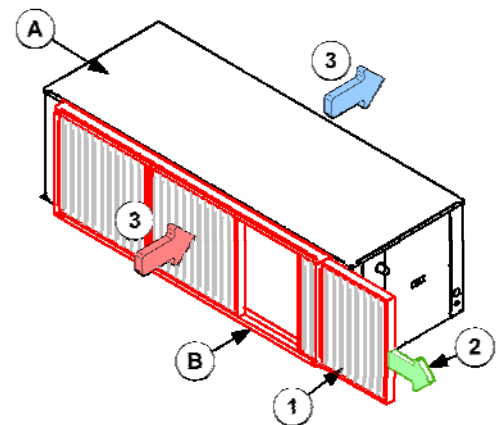
Pre-painted metal plate frame. Filtering media made from sized polyester fibre with synthetic resins, self-extinguishing (class F1-DIN 53438), washable in soapy water, max. temperature 60°C.

Max. degree of separation 87.5 % (ASHRAE 52-76 Atm),

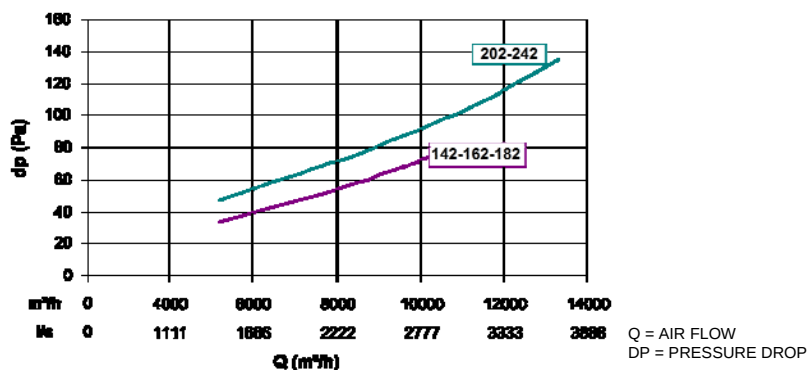
Eurovent classification 4/5 EU 3. The filtering media is contained in a galvanised plate frame with electric welded galvanised protective mesh.

- (A) STANDARD UNIT
- (B) PRE-PAINTED METAL PLATE FRAME
- (1) PLEATED AIR FILTER
- (2) DIRECTION OF AIR FILTER REMOVAL
- (3) AIR FLOW

Configuration Detail



Air filter pressure drop



Q = AIR FLOW
DP = PRESSURE DROP

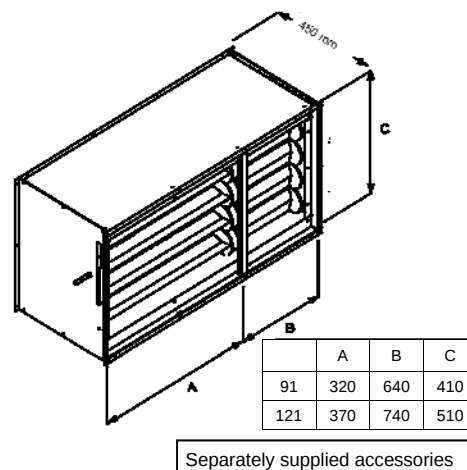
MCRX - Mixing and recirculating chamber

(size 91-121)

When the system needs fresh air flow, this section allows the connections of return air from the ambient duct with the intake fresh air duct.

The renewal air regulation is obtained by a coupled air lock, eventually motorized. The section divided the nominal air flow in 1/3 of outdoor air inlet and 2/3 of ambient air recirculation.

The plenum is suitable to be installed with fresh air intake on both sides (right and left) rotating it of 180° before the coupling with the base unit the regulating handle is an optional supplied on the indoor air inlet side. On the opposite side a bolt suitable for servo-control is supplied.



Separately supplied accessories

AMRX - Rubber antivibration mounts

The antivibration mounts are installed at the base of the unit to reduce its vibrations in case of floor positioning.



Separately supplied accessories

MOD - Double-speed motor

The two-speed motor is managed by a manual selector (to be provided for by the client) for the adjustment of the air flow rate of the fan. The double speed is normally used when there are air ducts made of fabric. During the start-up phase, the first speed prevents tears in the fabric ducts. After that, with the second speed the system comes up to normal operating capacity.

Configuration Detail

CQEP- Capacity electrical panel

The electrical panel is composed of:

- motor protection switch
- remote switch for power supply of centrifugal fan
- terminal board for connection to motor

Configuration Detail

CTS - CLIVET TALK TERMINAL electronic for HID-T2 or HID-T3 thermostats (ELFOControl)

This is a card for control of the unit which, in addition to basic functions, allows it to be connected to a network of similar units managed centrally by ELFOControl, which in turn can be connected to a supervisor, moreover it can also manage a linked mini-net, of maximum 8 units, by RS485 or Wireless serial ports, with a Master-Slave system.

This type of electronic card is suited for communicating via RS485 or wireless if connected to SP1 or SPZB devices.

The microprocessor control installed in the unit receives operating settings from one of the following devices:

HID-T2 - room control for wall installation

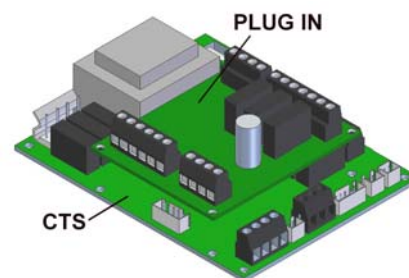
HID-T3 - room control for wall installation with humidity probe

– ELFOControl

Its functions are:

- control of minimum temperature of system water temperature
- control of ON-OFF water valve
- digital input for remote on/off function or winter/summer
- control of actuator of external air shutter
- on/off control of electrical heating element or cumulative alarm relay.

The room temperature probe includes the ClivetTalkTerminalSpace electronics.



Configuration Detail

HID-T2 - HID-T2 electronic ambient control

The HID-T2 room thermostat makes it possible to interface with the regulation module of units equipped with ClivetTalkTerminal Space electronics and to manage one or more thermostat units.

The room thermostat allows the following functions:

- Setting of desired temperature
- On/off
- Change Summer/winter automatically or manually with digital input
- Selection of economic operation
- Setting of unit operation parameters
- Setting of fan-only mode
- Control of external air shutter and control of motorized air outlet grille, if present
- Management of diagnostics with specific code for type of error

Dimensions: 184X82X27 mm

The thermostat is connected to the unit by means of a shielded twisted pair at a distance of up to 15 m.

For connections to the ELFOControl network, refer to the specific sections.



Separately supplied accessories

HID-T3 - HID-T3 electronic ambient control

The HID-T3 room climate control makes it possible to interface with the regulation module of units equipped with ClivetTalkTerminal Space electronics and to manage one or more thermostat units. The room thermostat allows the following functions:

- Setting of desired temperature
- Change Summer/winter automatically or manually with digital input
- Selection of economic operation
- Setting of unit operation parameters-Setting of fan-only mode
- Control of external air shutter and control of motorized air outlet grille, if present
- Management of humidity probe
- Humidity display-Management of diagnostics with specific code for type of error

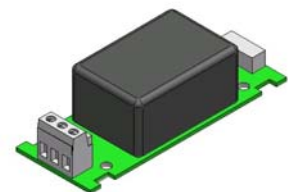
Dimensions: 184X82X27 mmThe thermostat is connected to the unit by means of a shielded twisted pair at a distance of up to 15 m. For connections to the ELFOControl network, refer to the specific sections.



Separately supplied accessories

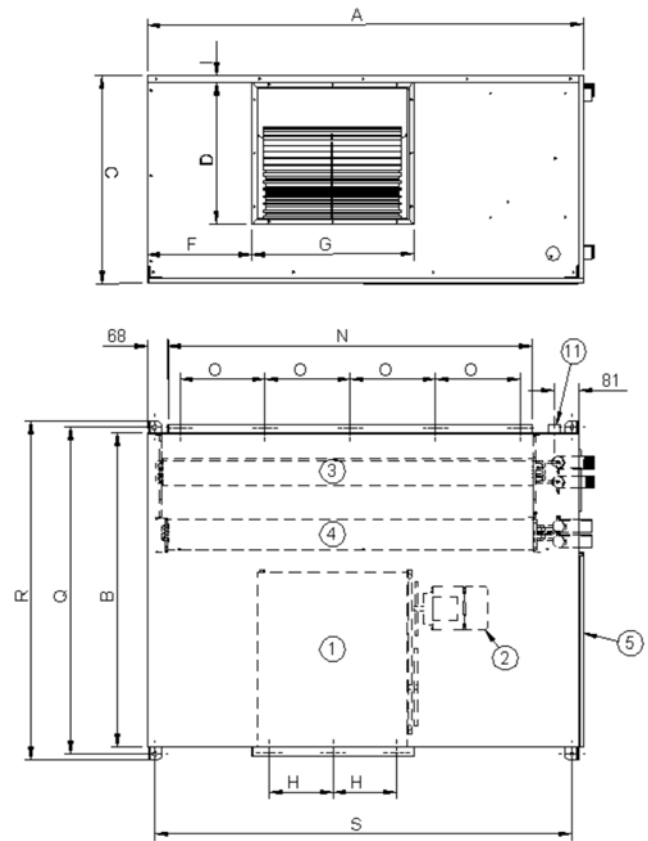
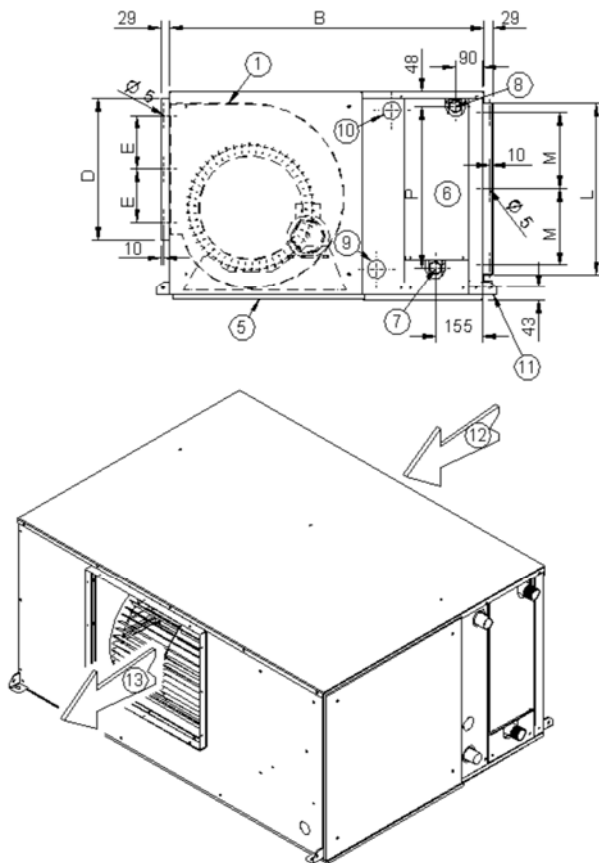
SP1 - RS485 remote communication serial port

The serial port with MODBUS protocol allows the cable connection between the units and the ELFOControl system, allowing the operation parameters control and modification.



Configuration Detail
Separately supplied accessories

DIMENSIONAL DRAWINGS

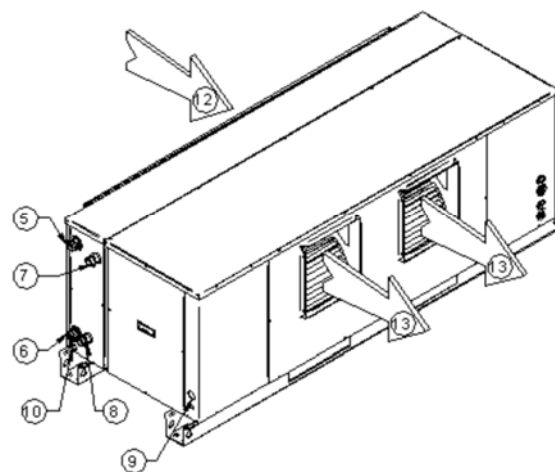
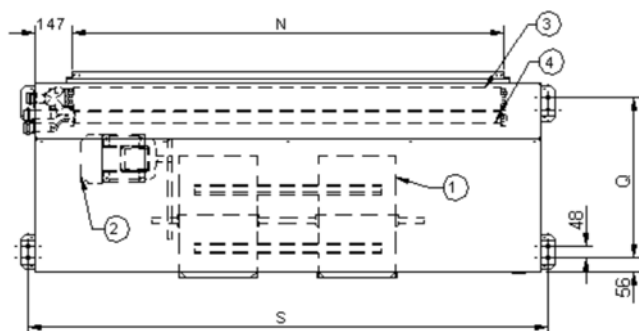
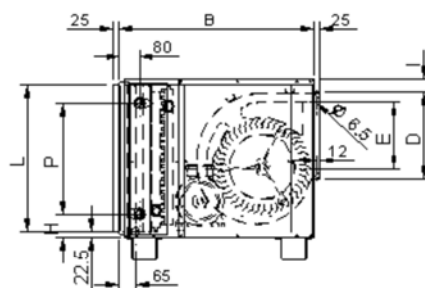
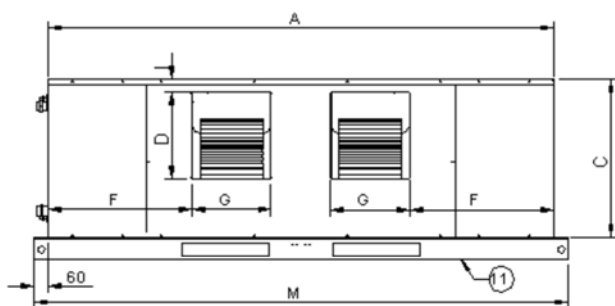


- (1) CENTRIFUGAL FAN
- (2) FAN MOTOR
- (3) MAIN WATER COIL
- (4) WATER HEATING COIL (OPTIONAL)
- (5) PANEL FOR MOTOR AND FAN INSPECTION
- (6) PANEL FOR EXCHANGER INSPECTION
- (7) EXCHANGER WATER INLET
MAIN WATER COIL
- (8) EXCHANGER WATER OUTLET
MAIN WATER COIL

- (9) EXCHANGER WATER INLET
ADDITIONAL WATER COIL
(10) EXCHANGER WATER OUTLET
ADDITIONAL WATER COIL
(11) CONDENSATE DISCHARGE
(12) RETURN AIR DIRECTION
(13) SUPPLY AIR DIRECTION

Size			91	121
A		mm	1285	1435
B		mm	945	1030
C		mm	585	685
D		mm	407	465
E		mm	147	176
F		mm	270	344
G		mm	460	533
H		mm	173	210
I		mm	7	21
L		mm	465	565
M		mm	200	250
N		mm	1047	1200
O		mm	243	280
P		mm	435	530
Q		mm	987	1074
R		mm	1028	1114
S		mm	1222	1372
Length		mm	1285	1435
Depth		mm	945	1030
Height		mm	585	685
Operating weight		kg	138	158
Shipping weight		kg	150	168

DIMENSIONAL DRAWINGS



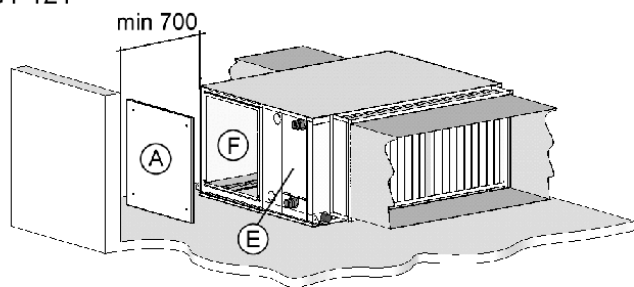
- (1) CENTRIFUGAL FAN
- (2) FAN MOTOR
- (3) MAIN WATER COIL
- (4) WATER HEATING COIL (OPTIONAL)
- (5) EXCHANGER WATER OUTLET
- MAIN WATER COIL
- (6) EXCHANGER WATER INLET
- MAIN WATER COIL
- (7) EXCHANGER WATER OUTLET
- ADDITIONAL WATER COIL

- (8) EXCHANGER WATER INLET
- ADDITIONAL WATER COIL
- (9) POWER INPUT
- (10) CONDENSATE DISCHARGE
- (11) EASILY REMOVABLE UNIT SUPPORT BASE
- (12) RETURN AIR DIRECTION
- (13) SUPPLY AIR DIRECTION

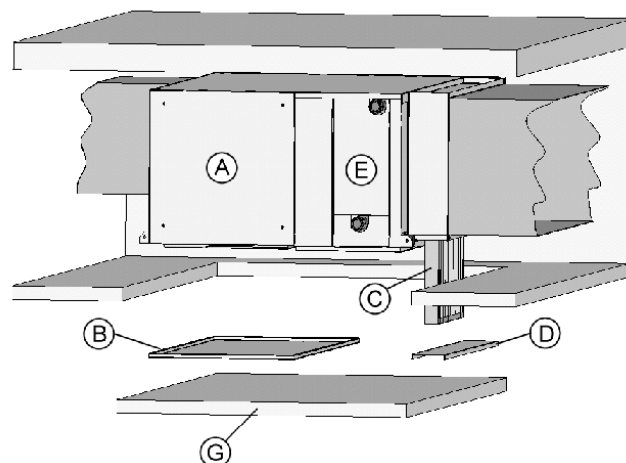
Size		142	162	182	202	242
A	mm	2015	2015	2015	2515	2515
B	mm	775	775	775	850	850
C	mm	630	630	630	680	680
D	mm	345	345	345	408	408
E	mm	263	263	263	200	200
F	mm	571	571	571	735	735
G	mm	316	316	316	375	375
H	mm	94	94	94	71	71
I	mm	52	52	52	38	38
L	mm	582	582	582	632	632
M	mm	2130	2130	2130	2630	2630
N	mm	1720	1720	1720	2220	2220
O	mm	-	-	-	-	-
P	mm	442	442	442	492	492
Q	mm	642	642	642	742	742
R	mm	-	-	-	-	-
S	mm	2070	2070	2070	2570	2570
Length	mm	2015	2015	2015	2515	2515
Depth	mm	775	775	775	850	850
Height	mm	730	730	730	680	680
Operating weight	kg	170	190	195	253	265
Shipping weight	kg	190	210	218	280	292

FUNCTIONAL CLEARANCES

91-121

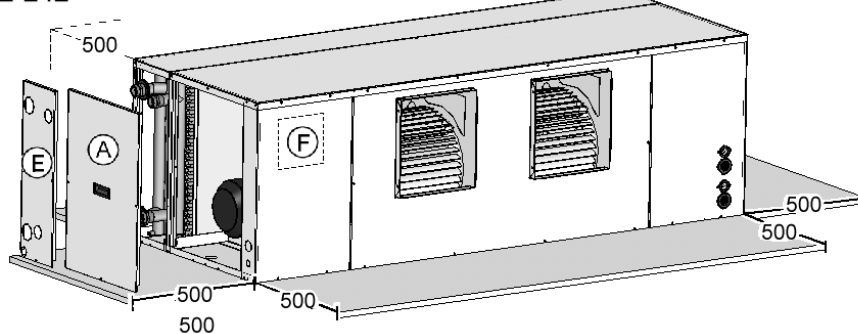


91-121



- (A) PANEL FOR MOTOR AND FAN INSPECTION
- (B) PANEL FOR MOTOR AND FAN INSPECTION
- (C) AIR FILTER
- (D) FILTER REMOVAL DOOR
- (E) PANEL FOR EXCHANGER INSPECTION
- (F) ELECTRICAL PANEL
- (G) ACCESS TRAP DOOR

142-242



**CLIVET SPA**

Via Camp Lonc 25, Z.I. Villapaiera - 32032 Feltre (BL) - Italy
Tel. + 39 0439 3131 - Fax + 39 0439 313300 - info@clivet.it

CLIVET GROUP UK LIMITED

4 Kingdom Close, Segensworth East - Fareham, Hampshire - PO15 5TJ - United Kingdom
Tel. + 44 (0) 1489 572238 - Fax + 44 (0) 1489 573033 - enquiries@clivetgroup.co.uk

(Service Department)

Units F5&F6 Railway Triangle Ind Est, Walton Road - Portsmouth, Hampshire - PO6 1TG - United Kingdom
Tel. +44 (0) 2392 381235 - Fax. +44 (0) 2392 381243 - service@clivetgroup.co.uk

CLIVET ESPAÑA S.A.U.

C/ Bac de Roda, 36 - 08019 Barcelona - España
Tel: +34 93 8606248 - Fax +34 93 8855392 - info@clivet.es

Av.Manoteras Nº 38, Oficina C303 - 28050 Madrid - España
Tel. +34 91 6658280 - Fax +34 91 6657806 - info@clivet.es

CLIVET GmbH (Hydronic and Applied Division)

Hummelsbütteler Steindamm 84, 22851 Norderstedt - Germany
Tel. + 49 (0) 40 32 59 57-0 - Fax + 49 (0) 40 32 59 57-194 - info.de@clivet.com

CLIVET GmbH (VRF, Residential and Lightcom Division)

Eisenstrasse 9c, 65428 Rüsselsheim/Frankfurt - Germany
Tel. + 49 (0) 6142 83594-0 - Fax + 49 (0) 6142 83594-20 - vrf.de@clivet.com

CLIVET RUSSIA

Elektrozavodskaya st. 24, office 509 - 107023, Moscow, Russia
Tel. + 74956462009 - Fax + 74956462009 - info.ru@clivet.com

CLIVET MIDEAST FZCO

Dubai Silicon Oasis (DSO), High Bay Complex, Office N. 20, PO BOX 342009, Dubai, UAE
Tel. + 9714 3208499 - Fax + 9714 3208216 - info@clivet.ae

CLIVET AIRCONDITIONING SYSTEMS PRIVATE LIMITED

4BA, Gundecha Onclave, Kherani Road - Sakinaka, Andheri (East) - Mumbai 400 072 - India
Tel. +91 22 6193 7000 - Fax +91 22 6193 7001 - info.in@clivet.com

A Group Company of



www.clivet.com
www.clivetlive.com