

# FAN COIL UNITS

LASER, LOW BODY & CONCEALED

## TECHNICAL INFORMATION



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# 1. GENERAL INFORMATION

## 1.1 Applications

Fan coils are used to directly treat the air in the room where they are installed.

They can be used both for heating and cooling applications; in the latter case, the air is also dehumidified.

## 1.2 Operation

The effectiveness of a fan coil is due to the large surface area of the finned heat exchanger (coil) where the air drawn from the room by the fan passes through.

Heating operation: the hot water circulating in the finned coil supplies heat to the air passing through the heat exchanger.

Cooling operation: the chilled water circulating in the finned coil removes heat from the air passing through the heat exchanger.

The air is also dehumidified and the condensed water vapour must be discharged from the unit: suitable drains must therefore be provided to drain the condensed water that collects in the condensate tray.

## 1.3 Performances

The performance of a fan coil can vary greatly with changes in the temperature and in the amount of water circulating through the coil, as well as with changes in the temperature and in the amount of air circulating through the coil.

When using the direct expansion coil, thermal performances in cooling and heating depend on the performance of the condensing unit connected to the fan coil.

The air volume is determined by selecting the proper fan speed (MIN-MED-MAX), while the water flow rate is determined by the specifications of the system and of the pump. Thermal performances of the unit can be optimised by controlling the inlet flow rate of the water with proper regulating valves (ON/OFF, floating 3 points, modulating with proportional feedback), which can be supplied as accessories.

For each model, thermal performances in heating and cooling depend on the number of rows of the coil installed, which gives the opportunity to make the air treatment suit every condition required.

In cooling function, under the same operating conditions, the more rows the heat exchanger has, the more it will dehumidify.

## 1.4 Product range

This manual covers the following models of YORK fancoil units:

Model	Installation	Size
<b>SIGMA SERIE</b>		
YLV with cabinet	vertical on the wall/floor (with feet)	110÷228
YLV/AF with cabinet and frontal air intake	vertical on the floor (without feet)	110÷228
YLH with cabinet	horizontal on the ceiling	110÷228
YLH/AF with cabinet and bottom air intake	horizontal on the ceiling	110÷228
<b>LOW BODY SERIE</b>		
YLVr with cabinet	vertical on the floor (without feet)	110÷218
YLVr without cabinet	vertical and concealed	110÷218
<b>CONCEALED SERIE</b>		
YLIV without cabinet	vertical and concealed	110÷228
YLIV/AF without cabinet and frontal air intake	vertical and concealed	110÷228
YLIH without cabinet	horizontal and concealed	110÷228
YLIH/AF without cabinet and bottom air intake	horizontal and concealed	110÷228

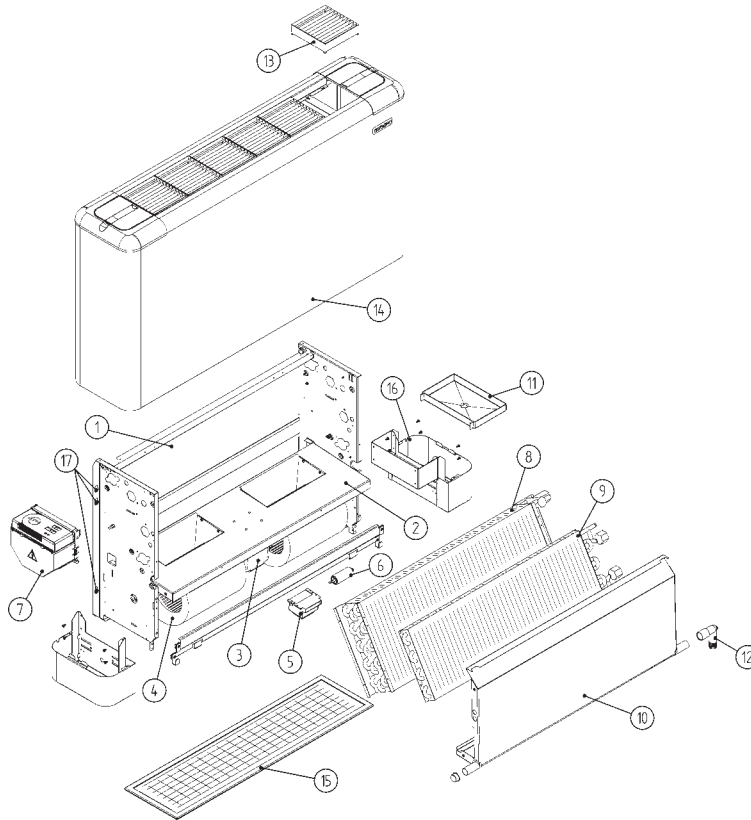
## 1.5 Selection software

To facilitate choosing the correct size of a fan coil for any operating condition (including those differing from the standard ones), YORK offers a dedicated computer program, either available on CD-ROM or it can be downloaded from the YORK official web site, on request.



Installation and Operation instructions concerning the software for selection are given on its «Help on line».

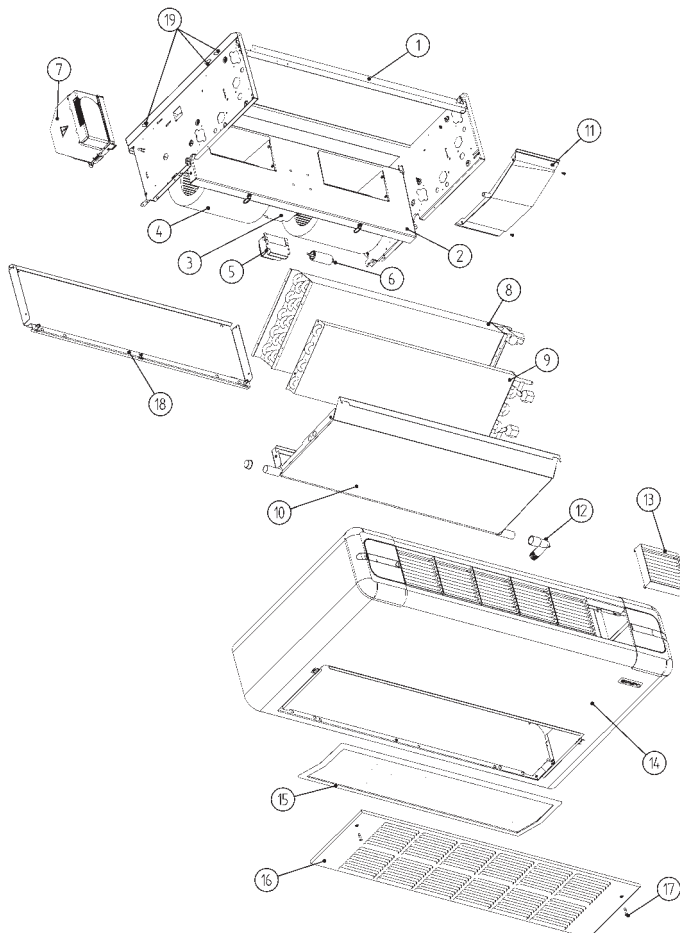
## YLV Model



### LEGEND

- |    |                                |
|----|--------------------------------|
| 1  | Internal structure             |
| 2  | Fan deck                       |
| 3  | Electric motor                 |
| 4  | Scroll                         |
| 5  | Autotransformer                |
| 6  | Capacitor                      |
| 7  | Electric panel                 |
| 8  | Standard coil (2, 3 or 4 rows) |
| 9  | Additional coil                |
| 10 | Condensate tray                |
| 11 | Auxiliary drain pan (vertical) |
| 12 | Water discharge plastic pipe   |
| 13 | Grilles                        |
| 14 | Housing                        |
| 15 | Filter                         |
| 16 | Set of feet                    |
| 17 | Fixing slots                   |

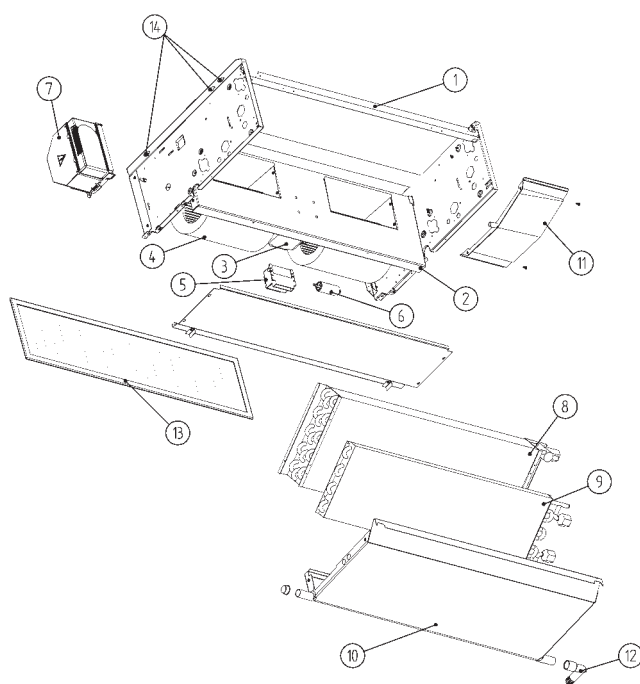
## YLH/AF Model



### LEGEND

- |    |                                  |
|----|----------------------------------|
| 1  | Internal structure               |
| 2  | Fan deck                         |
| 3  | Electric motor                   |
| 4  | Scroll                           |
| 5  | Autotransformer                  |
| 6  | Capacitor                        |
| 7  | Electric panel                   |
| 8  | Standard coil (2, 3 or 4 rows)   |
| 9  | Additional coil                  |
| 10 | Condensate tray                  |
| 11 | Auxiliary drain pan (horizontal) |
| 12 | Water discharge plastic pipe     |
| 13 | Grilles                          |
| 14 | Housing                          |
| 15 | Filter                           |
| 16 | Air intake panel                 |
| 17 | Fixing screws                    |
| 18 | Back inner panel                 |
| 19 | Fixing slots                     |

## Modello YLIH



### LEGEND

1	Structure
2	Fan deck
3	Electric motor
4	Scroll
5	Autotransformer
6	Capacitor
7	Electric panel
8	Standard coil (2, 3 or 4 rows)
9	Additional coil
10	Condensate tray
11	Auxiliary drain pan (horizontal)
12	Water discharge plastic pipe
13	Filter
14	Fixing slots

## 2. MODELS WITH CABINET

### 2.1 LASER Serie: YLV – YLV/AF Models



Vertical units with upper air outlet and bottom (YLV) or frontal (YLV/AF) air intake, to be installed on the wall (YLV) or on the floor (both models, but with a set of feet in RAL 9003 for SV model).

- grilles can be adjusted in all 4 directions and are made of heat-resistant ABS
- models equipped with auxiliary drain pan
- 2 pipe systems: 2, 3 or 4 row coils; on 2 or 3 row coil units an electric heater can also be mounted
- 4 pipe systems: additional 1 row coil can be added to units with a 2 or 3 row coil
- direct expansion system: 3 row direct expansion coil
- standard colour: white casing (RAL 9003), with white grilles and access doors (RAL 9016)



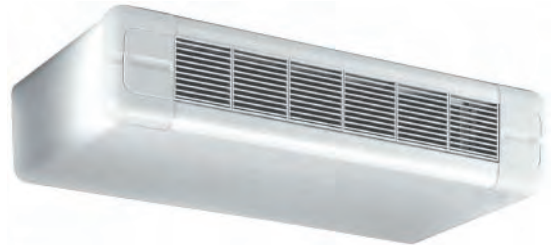
YLV Model

### 2.2 LASER Serie: YLH – YLH/AF Models

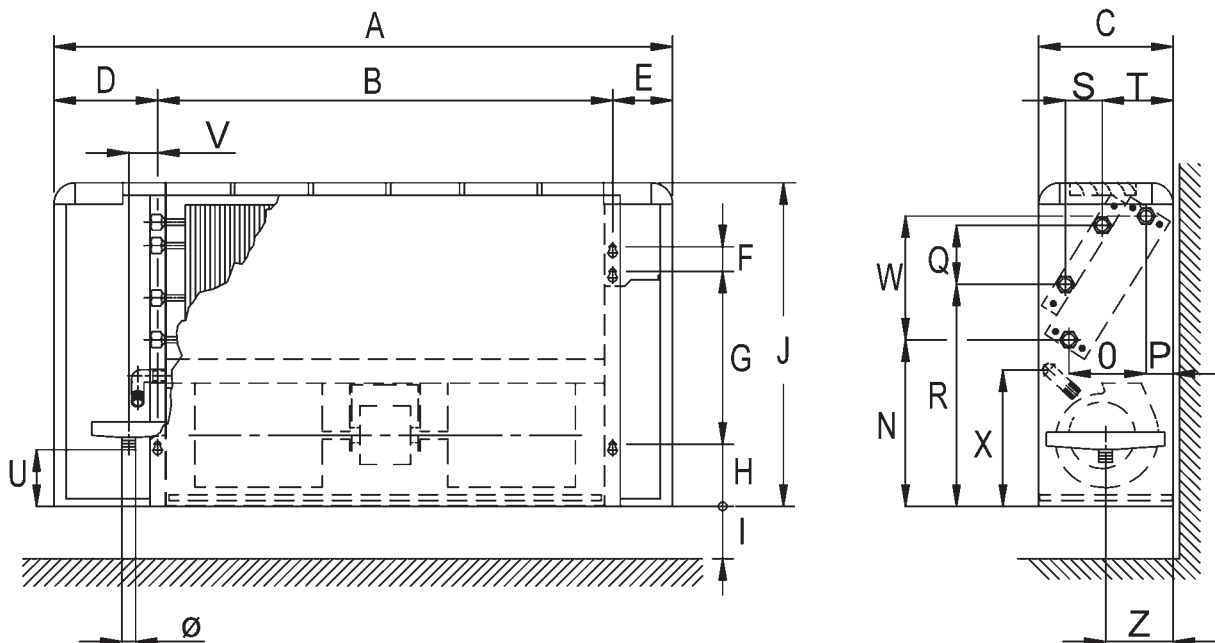


Horizontal units for ceiling installation with frontal air discharge and rear (YLH) or bottom (YLH/AF) air intake.

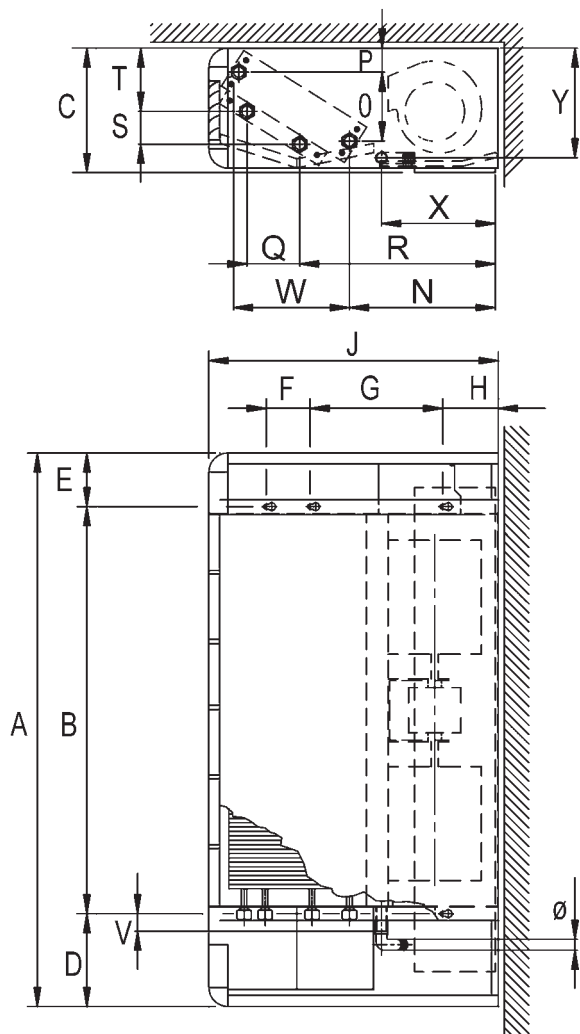
- grilles can be adjusted in all four directions and are made of heat-resistant ABS
- models equipped with auxiliary drain pan
- 2 pipe systems: 2, 3 or 4 row coils; in 2 or 3 row coil units an electric heater can also be mounted
- 4 pipe systems: additional 1 row coil can be added to units with a 2 or 3 row coil
- direct expansion system: 3 row direct expansion coil
- standard colour: white casing (RAL 9003) with white grilles and access doors (RAL 9016)



YLH Model



YLV Model



YLH/AF Model

**YLV – YLH Dimensions and weights**

Size	110	112	114	216	218	220	222	224	226	228
A	648	773	898	1023	1148	1273	1273	1523	1523	1773
B	374	499	624	749	874	999	999	1249	1249	1499
C	224	224	224	224	224	254	254	254	254	254
D	174	174	174	174	174	174	174	174	174	174
E	100	100	100	100	100	100	100	100	100	100
F	40	40	40	40	40	40	40	40	40	40
G	280	280	280	280	280	356	356	356	356	356
H	101	101	101	101	101	101	101	101	101	101
I	85	85	85	85	85	85	85	85	85	85
J	538	538	538	538	538	614	614	614	614	614
N	266	266	266	266	266	299	299	299	299	299
O	113	113	113	113	113	138	138	138	138	138
P	48	48	48	48	48	53	53	53	53	53
Q	87	87	87	87	87	87	87	87	87	87
R	335	335	335	335	335	335	409	409	409	409
S	50	50	50	50	50	50	50	50	50	50
T	117	117	117	117	117	135	135	135	135	135
U	90	90	90	90	90	116	116	116	116	116
V	47	47	47	47	47	47	47	47	47	47
W	195	195	195	195	195	238	238	238	238	238
X	219	219	219	219	219	252	252	252	252	252
Z	109	109	109	109	109	122	122	122	122	122
Ø	20	20	20	20	20	20	20	20	20	20
kg	18	20	23	28	31	41	44	52	52	58

**YLV/AF – YLH/AF Dimensions and weights**

Size	110	112	114	216	218	220	222	224	226	228
A	648	773	898	1023	1148	1273	1273	1523	1523	1773
B	374	499	624	749	874	999	999	1249	1249	1499
C	233	233	233	233	233	263	263	263	263	263
D	174	174	174	174	174	174	174	174	174	174
E	100	100	100	100	100	100	100	100	100	100
F	40	40	40	40	40	40	40	40	40	40
G	280	280	280	280	280	356	356	356	356	356
H	101	101	101	101	101	101	101	101	101	101
J	538	538	538	538	538	614	614	614	614	614
N	266	266	266	266	266	299	299	299	299	299
O	113	113	113	113	113	138	138	138	138	138
P	48	48	48	48	48	53	53	53	53	53
Q	87	87	87	87	87	87	87	87	87	87
R	335	335	335	335	335	335	409	409	409	409
S	50	50	50	50	50	50	50	50	50	50
T	117	117	117	117	117	135	135	135	135	135
V	28	28	28	28	28	28	28	28	28	28
W	195	195	195	195	195	238	238	238	238	238
X	219	219	219	219	219	252	252	252	252	252
Y	205	205	205	205	205	235	235	235	235	235
Ø	20	20	20	20	20	20	20	20	20	20
kg	19	21	24	30	32	43	46	54	54	61



Please refer to the Eurovent-Certification website ([www.eurovent-certification.com](http://www.eurovent-certification.com)) for updated values.



## 2.5 LOW BODY Serie: YLVR Model

Vertical unit in a reduced height (430 mm) with upper air outlet and frontal air intake, to be installed on the floor.

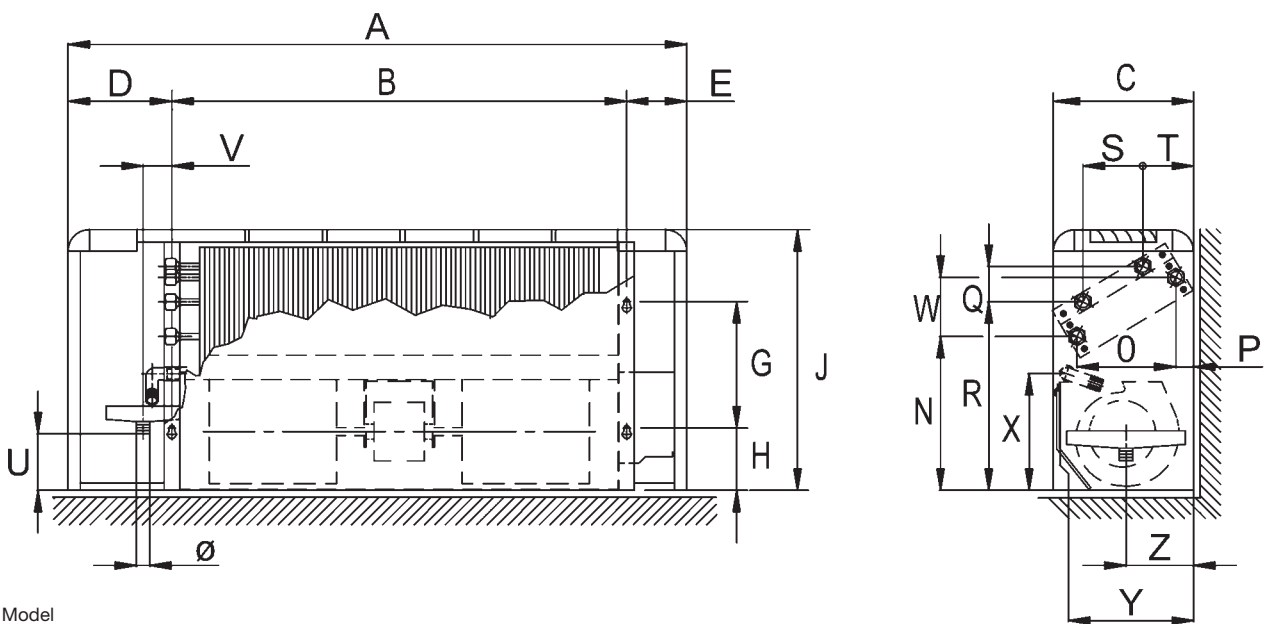
- grilles can be adjusted in all four directions and are made of heat-resistant ABS
- model equipped with auxiliary drain pan
- 2 pipe systems: 2 or 3 row coils
- 4 pipe systems: additional 1 row coil can be added to units with a 2 or 3 row coil
- standard colour: white casing (RAL 9003) with white grilles and access doors (RAL 9016)



YLVR Model

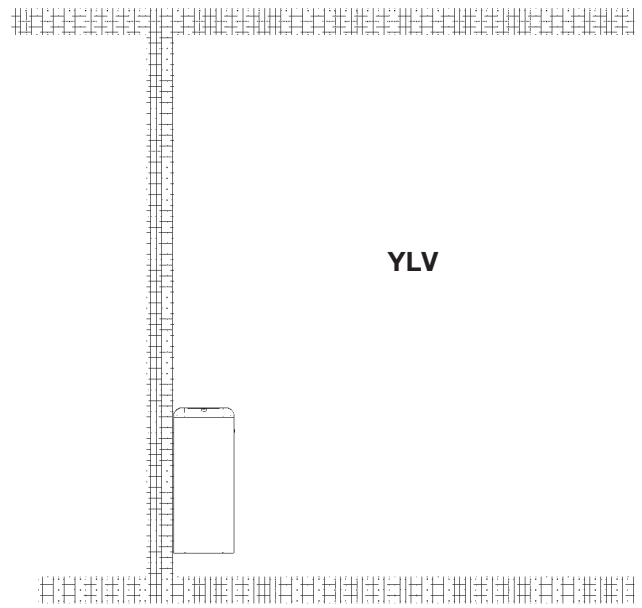
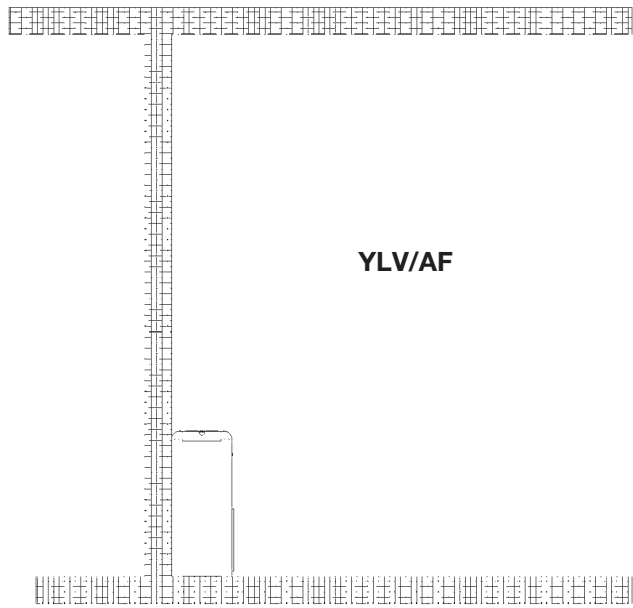
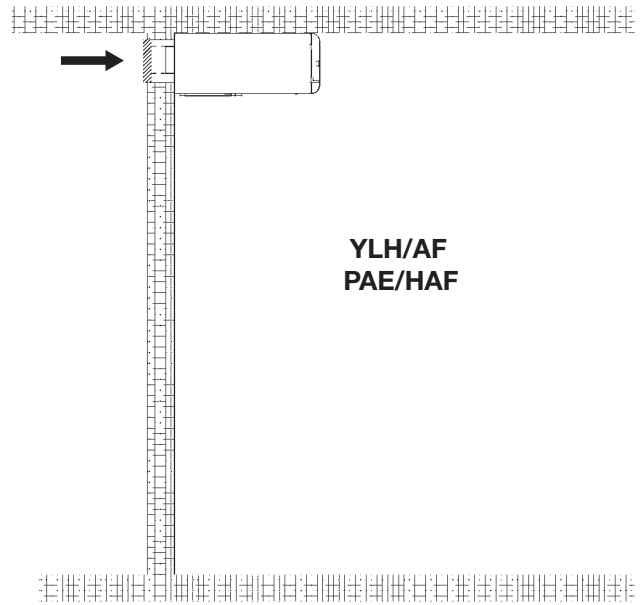
### YLVR Dimensions and weights

Size	110	112	114	216	218
<b>A</b>	648	773	898	1023	1148
<b>B</b>	374	499	624	749	874
<b>C</b>	254	254	254	254	254
<b>D</b>	174	174	174	174	174
<b>E</b>	100	100	100	100	100
<b>G</b>	170	170	170	170	170
<b>H</b>	101	101	101	101	101
<b>J</b>	430	430	430	430	430
<b>N</b>	245	245	245	245	245
<b>O</b>	154	154	154	154	154
<b>P</b>	31	31	31	31	31
<b>Q</b>	47	47	47	47	47
<b>R</b>	304	304	304	304	304
<b>S</b>	88	88	88	88	88
<b>T</b>	87	87	87	87	87
<b>U</b>	65	65	65	65	65
<b>V</b>	47	47	47	47	47
<b>W</b>	84	84	84	84	84
<b>X</b>	214	214	214	214	214
<b>Z</b>	109	109	109	109	109
<b>Ø</b>	20	20	20	20	20
<b>kg</b>	15	17	22	23	26



YLVR Model

**SUGGESTED INSTALLATION**



### 3. MODELS WITHOUT CABINET

#### 3.1 CONCEALED Serie: YLIV - YLIV/AF Models



Vertical units for concealed installation with upper air outlet and bottom (YLIV) or frontal (YLIV/AF) air intake.

- models equipped with auxiliary drain pan
- 2 pipe systems: 2, 3 or 4 row coils; in all units an electric heater can also be mounted
- 4 pipe systems: additional 1 row coil can be added to units with a 2 or 3 row coil; in 4 row coil units, the additional 1 row coil is fitted on the air outlet connection
- direct expansion system: 3 row direct expansion coil



YLIV Model

#### 3.2 CONCEALED Serie: YLIH - YLIH/AF Models



Horizontal units for concealed installation, with frontal air outlet and rear (YLIH) or bottom (YLIH/AF) air intake.

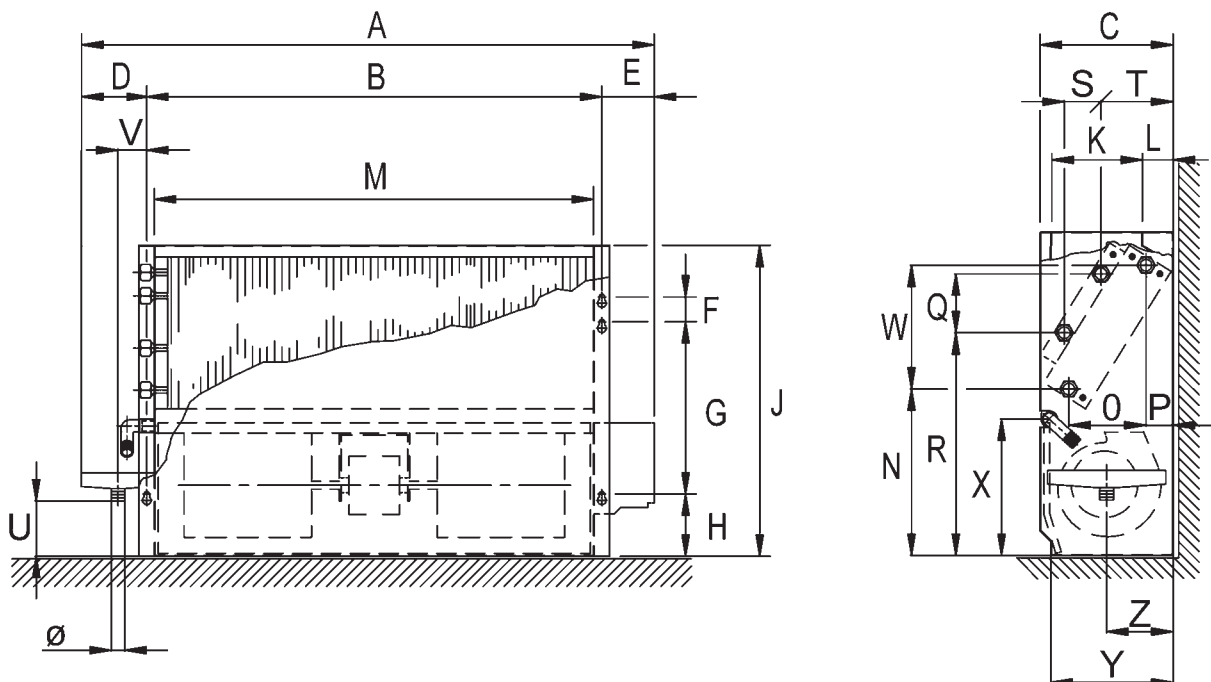
- models equipped with auxiliary drain pan
- 2 pipe systems: 2, 3 or 4 row coils; in all units an electric heater can also be mounted
- 4 pipe systems: additional 1 row coil can be added to units with a 2 or 3 row coil; in 4 row coil units, the additional 1 row coil is fitted on the air outlet connection
- direct expansion system: 3 row direct expansion coil



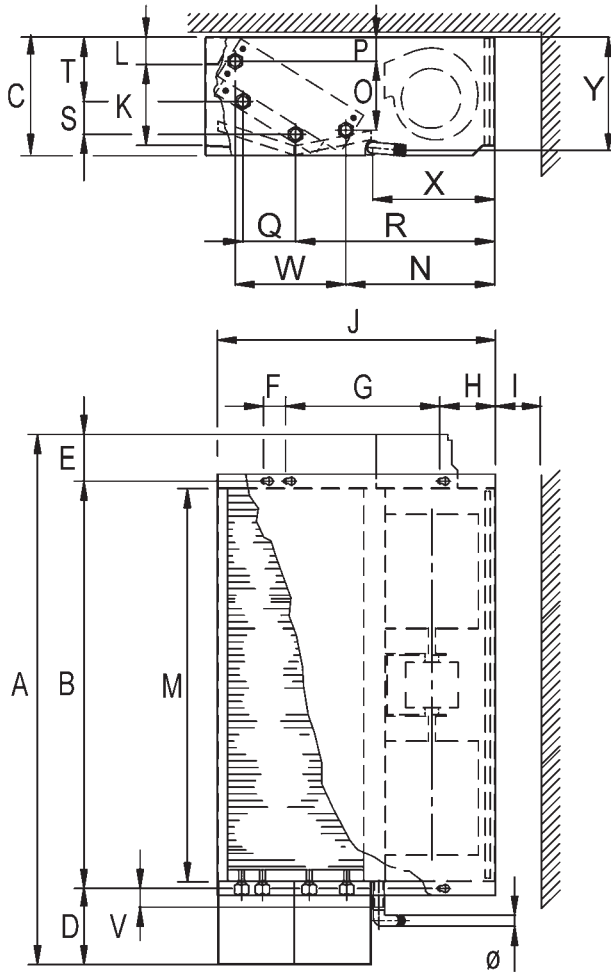
YLIH/AF Model



Please refer to the Eurovent-Certification website ([www.eurovent-certification.com](http://www.eurovent-certification.com)) for updated values.



YLIV/AF Model



YLIH Model

**YLIV – YLIH Dimensions and weights**

Size	110	112	114	216	218	220	222	224	226	228
A	574	699	824	949	1074	1199	1199	1449	1449	1699
B	374	499	624	749	874	999	999	1249	1249	1499
C	215	215	215	215	215	245	245	245	245	245
D	128	128	128	128	128	128	128	128	128	128
E	72	72	72	72	72	72	72	72	72	72
F	40	40	40	40	40	40	40	40	40	40
G	280	280	280	280	280	356	356	356	356	356
H	101	101	101	101	101	101	101	101	101	101
I	85	85	85	85	85	85	85	85	85	85
J	505	505	505	505	505	581	581	581	581	581
K	110	110	110	110	110	125	125	125	125	125
L	55	55	55	55	55	60	60	60	60	60
M	349	474	599	724	849	974	974	1224	1224	1474
N	266	266	266	266	266	299	299	299	299	299
O	113	113	113	113	113	138	138	138	138	138
P	48	48	48	48	48	53	53	53	53	53
Q	87	87	87	87	87	87	87	87	87	87
R	355	355	355	355	355	409	409	409	409	409
S	50	50	50	50	50	50	50	50	50	50
T	117	117	117	117	117	135	135	135	135	135
V	28	28	28	28	28	28	28	28	28	28
W	195	195	195	195	195	238	238	238	238	238
X	219	219	219	219	219	252	252	252	252	252
Y	205	205	205	205	205	235	235	235	235	235
Ø	20	20	20	20	20	20	20	20	20	20
kg	10	13	16	19	22	29	31	38	38	42

**YLIV/AF – YLIH/AF Dimensions and weights**

Size	110	112	114	216	218	220	222	224	226	228
A	555	680	805	930	1055	1180	1180	1430	1430	1680
B	374	499	624	749	874	999	999	1249	1249	1499
C	215	215	215	215	215	245	245	245	245	245
D	109	109	109	109	109	109	109	109	109	109
E	72	72	72	72	72	72	72	72	72	72
F	40	40	40	40	40	40	40	40	40	40
G	280	280	280	280	280	356	356	356	356	356
H	101	101	101	101	101	101	101	101	101	101
J	505	505	505	505	505	581	581	581	581	581
K	110	110	110	110	110	125	125	125	125	125
L	55	55	55	55	55	60	60	60	60	60
M	349	474	599	724	849	974	974	1224	1224	1474
N	266	266	266	266	266	299	299	299	299	299
O	113	113	113	113	113	138	138	138	138	138
P	48	48	48	48	48	53	53	53	53	53
Q	87	87	87	87	87	87	87	87	87	87
R	355	355	355	355	355	409	409	409	409	409
S	50	50	50	50	50	50	50	50	50	50
T	117	117	117	117	117	135	135	135	135	135
U	90	90	90	90	90	116	116	116	116	116
V	47	47	47	47	47	47	47	47	47	47
W	195	195	195	195	195	238	238	238	238	238
X	219	219	219	219	219	252	252	252	252	252
Y	200	200	200	200	200	230	230	230	230	230
Z	109	109	109	109	109	122	122	122	122	122
Ø	20	20	20	20	20	20	20	20	20	20
kg	10	13	16	19	22	29	31	38	38	42

### 3.3 LOW BODY Serie: YLIVR Model

Vertical unit in a reduced height (395 mm) for concealed installation, with upper air outlet and frontal air intake.

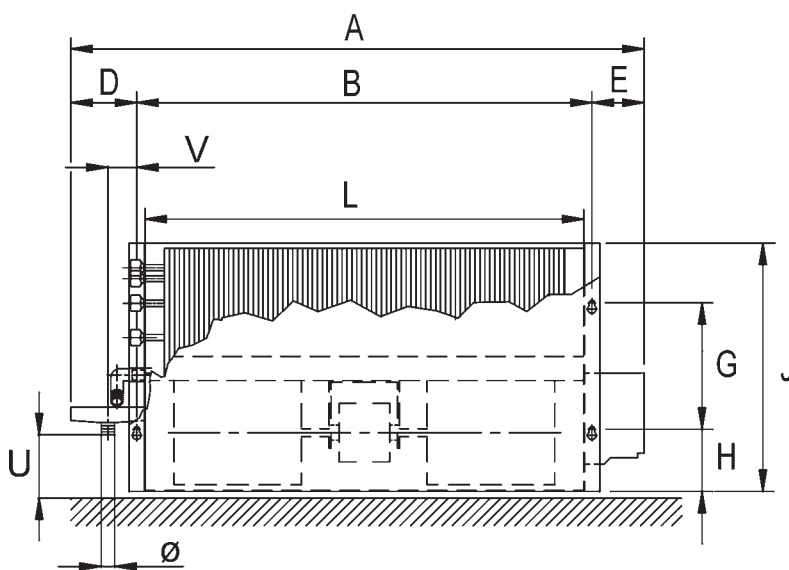
- model equipped with auxiliary drain pan
- 2 pipe systems: 2 or 3 row coils
- 4 pipe systems: additional 1 row coil can be added to units with a 2 or 3 row coil



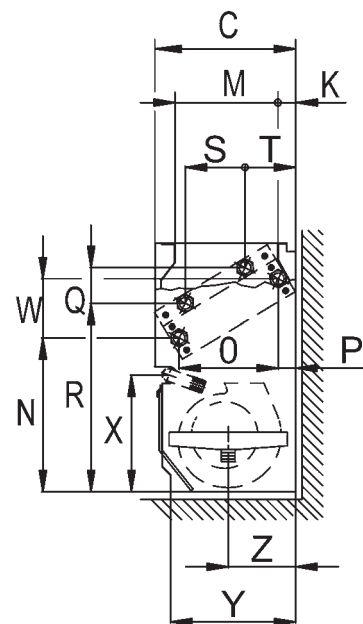
YLIVR Model

#### YLIVR Dimensions and weights

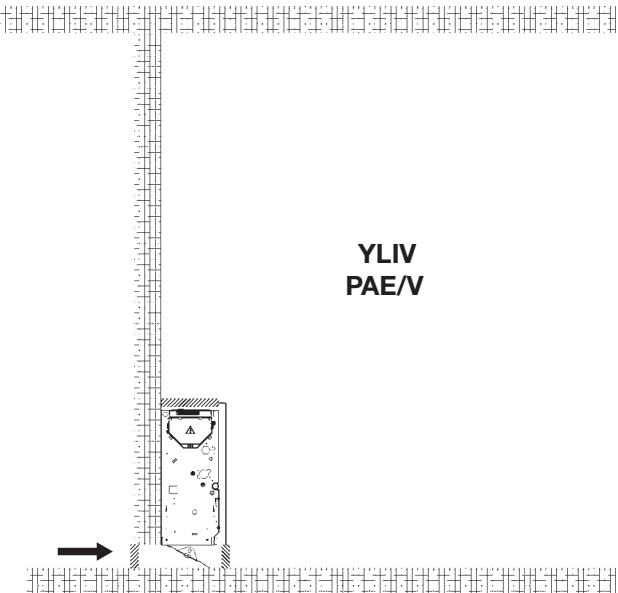
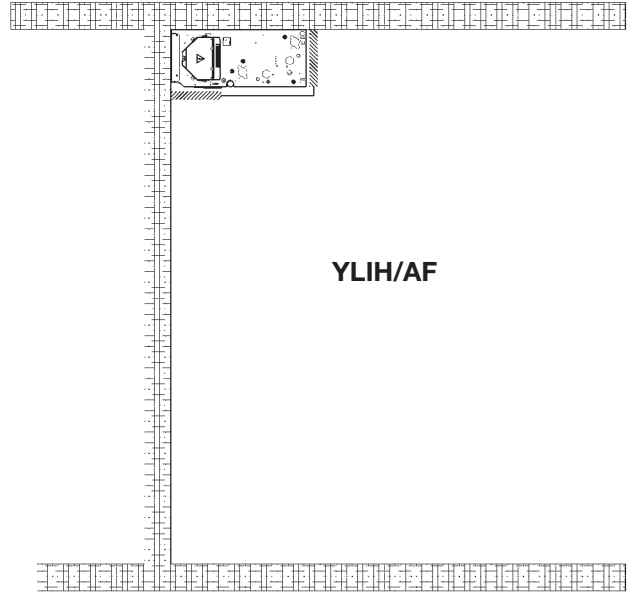
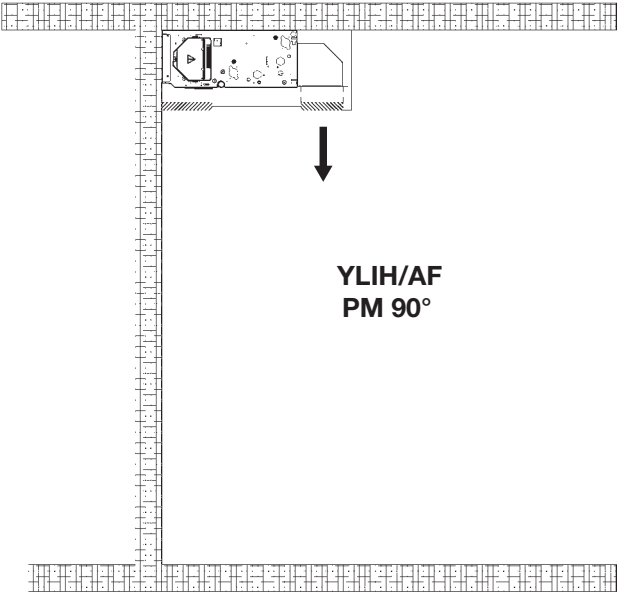
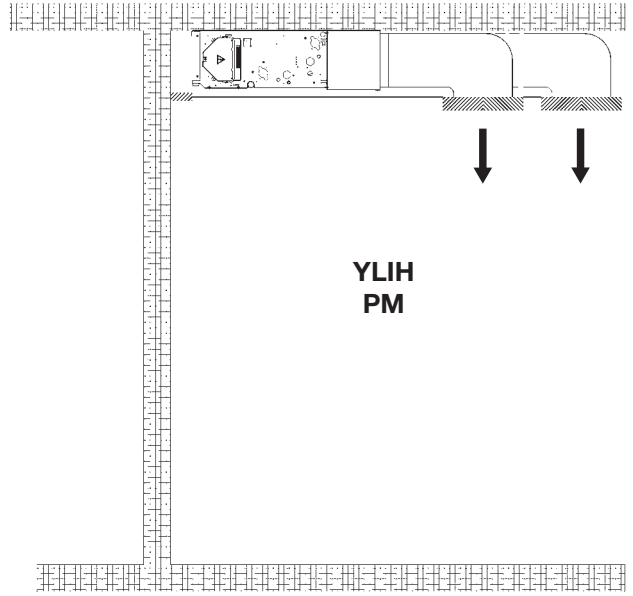
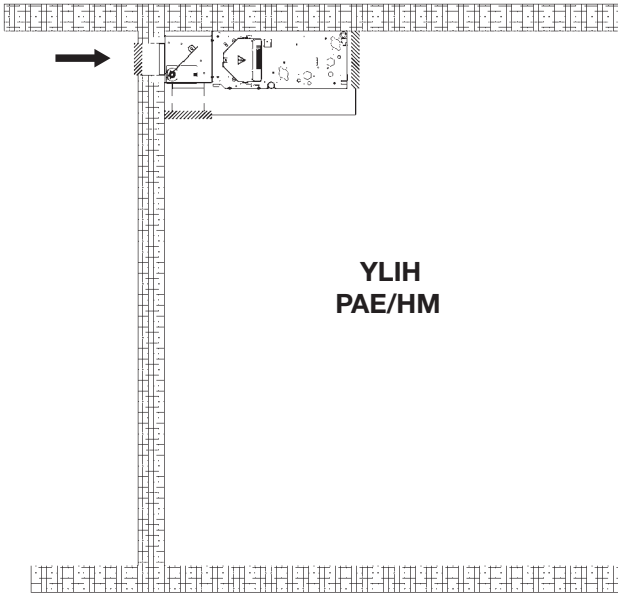
Size	110	112	114	216	218
<b>A</b>	555	680	805	930	1055
<b>B</b>	374	499	624	749	874
<b>C</b>	230	230	230	230	230
<b>D</b>	108	108	108	108	108
<b>E</b>	73	73	73	73	73
<b>G</b>	170	170	170	170	170
<b>H</b>	101	101	101	101	101
<b>J</b>	395	395	395	395	395
<b>K</b>	61	61	61	61	61
<b>L</b>	349	474	599	724	849
<b>M</b>	127	127	127	127	127
<b>N</b>	245	245	245	245	245
<b>O</b>	154	154	154	154	154
<b>P</b>	31	31	31	31	31
<b>Q</b>	47	47	47	47	47
<b>R</b>	304	304	304	304	304
<b>S</b>	88	88	88	88	88
<b>T</b>	87	87	87	87	87
<b>U</b>	65	65	65	65	65
<b>V</b>	47	47	47	47	47
<b>W</b>	84	84	84	84	84
<b>X</b>	214	214	214	214	214
<b>Y</b>	201	201	201	201 </td <td>201</td>	201
<b>Z</b>	109	109	109	109	109
<b>Ø</b>	20	20	20	20	20
<b>kg</b>	9	11	14	16	19



YLIVR Model



**SUGGESTED INSTALLATION**



## 4. COMPONENTS

### 4.1 Inner frame

The inner frame consists of 2 sides welded to a back panel and of a movable element (condensate tray). It is made of galvanised steel: 8/10 mm thick for models up to size 218, 10/10 mm thick starting from size 220.

The sides have a special structure near the coil connections in order to avoid the headers' deformation while connecting the unit to the system (anti-torsion structure).

All the inner elements are completely lined with thermal insulation material.

The insulated condensate tray can be taken apart independently of the other components and it is perfectly effective both in vertical and in horizontal position.

The condensed water is discharged from the side (left or right, by choice), through a 20 mm external diameter header.

### 4.2 Coils

The coils consist of aluminium fin packs and mechanically expanded copper tubes. Operating pressure 8 bar, testing pressure 30 bar.

Standard water connections are on the right side of the unit, facing the air outlet; however the coils can be easily removed and reversed on site. Each header is provided with a very handy air valve, to allow air venting or water drainage from the coil. All water connections are 1/2" G (female threaded).

#### Sizes 110-228

Type of coil	YLV YLV/AF	YLH YLH/AF	YLIV YLIV/AF	YLIH YLIH/AF	YLVR YLIVR
<b>B2 (2 rows)</b>	•	•	•	•	•
<b>B3 (3 rows)</b>	•	•	•	•	•
<b>B4 (4 rows)</b>	•	•	•	•	
<b>B2 + BA1 (*)</b>	•	•	•	•	•
<b>B3 + BA1 (*)</b>	•	•	•	•	•
<b>B4 + BA41 (**)</b>			•	•	
<b>BE3 (direct expansion)</b>	•	•	•	•	
<b>BE3 + BA1 (*)</b>	•	•	•	•	

(\*) BA1: additional 1 row coil for 4 pipe systems; the coil (for heating only) is placed inside the inner frame, in addition to 2 or 3 row coils.

(\*\*) BA41: additional 1 row coil for 4 pipe systems; the coil (for heating only) is placed outside the frame, fixed on the air outlet.

### 4.3 Fan deck

The centrifugal motor, single- or double-shaft, is single phase with permanently connected capacitor and thermal protection of the windings; protection grade IP 41.

It is provided with 6 speeds (by using a transformer), 3 of them factory wired as standard.

If an electric shock occurs to the unit, the autotransformer is also a protection for the motor: in this case it will burn before the shock damages the motor.

The motor and the scrolls are fixed on a galvanized steel base-ment (12/10 mm thick for models 110÷218 and 15/10 mm thick from size 220÷228): the motor is located in a proper cradle and fixed with elastic ribbon supports. On request, motor for sizes 222÷228 are also available with ball bearings.

Each fan assembly is dynamically balanced, to reduce noise and wear of the components to minimum levels; it can easily be removed, independently of the inner frame, by taking off two fixing screws.

It consists of a centrifugal fan, one (110÷114 sizes) or two (216÷228 sizes) aluminium impellers, directly splined to the motor shaft, and of galvanized steel scrolls.

### 4.4 Electrical components and controls

The electric panel (CBL00) consists of a self-extinguishing plastic box (class V0), which contains a 12 pole terminal board. The plastic box is fixed on the left side (as standard) of the inner frame, and it can easily be pulled out and shifted from the left to the right side when the water connections are reversed.

Every unit is provided with an electric wiring diagram, always showing all the controls (both built-in and remote) and electric accessories eventually mounted on the unit. Everything must be correctly wired in accordance to the diagram, to obtain the requested working conditions of the unit.

### 4.5 Air filter

The air filter consists of a metal frame and two wide mesh nets enclosing the filter element. (see. Fig. YLV, point 15).

The filter is placed on the bottom part of the unit (except for AF units) and it can be easily removed by releasing its fixing; it can be cleaned by washing with soap and water and drying in open-air.

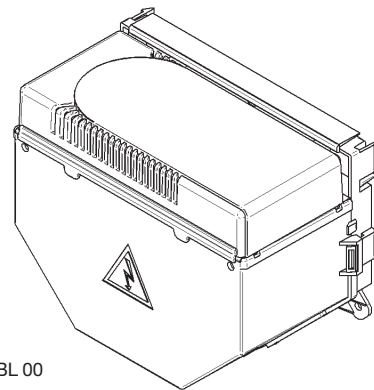
AF models have a shaped filter located behind the air inlet panel and suspended by splines (see Fig. YLH/AF, point 15).

### 4.6 Housing

The housing (see. Fig. YLV, point 14) is manufactured with sheet steel painted with oven dried epoxy powders; its thickness is 8/10 mm for 110÷218 sizes and 10/10 mm for 220÷228 sizes. The standard colour is white (RAL 9003).

It is fixed to the inner frame with screws and also with retainers. In models having frontal air intake (AF), the panel covering the filter is fixed with a 1/4 turn screw system and can be taken off by using a screwdriver.

The standard grilles are movable and can be turned into all 4 directions without any tool. They are made of heat-resistant ABS (see Fig. YLV, point 13). At each side of the grilles, two doors in ABS give access to the control panel and to the water connections respectively. Both grilles and access doors are white (RAL 9016).



CBL 00

On request, the full range of RAL colours is available for each model with a slightly increased delivery time.



## 5. ELECTRICAL ACCESSORIES

### 5.1 Electric box CBL10

Self-extinguishing plastic box (class V0), which contains a 12 pole terminal board and a double insulated transformer (230/24 Vac 10 VA), for the electrical connection of the modulating valves. It is supplied as standard when the regulators CER10 and CER30 are requested (see §5.8).

### 5.2 Electric box CBL20

Self-extinguishing plastic box (class V0), which contains a 12 pole terminal board and a power relay card (230 Vac): this card is requested either when an electric heater is mounted on the fancoil unit or to control the fan speeds in Master/Slave configuration.

It can be combined with the following regulators: CMR00, CMR10, CER00 and CER20 (see §5.7 and §5.8).

### 5.3 Electric box CBL30

Self-extinguishing plastic box (class V0), which contains a 12 pole terminal board, a double insulated transformer (230/24 Vac 10 VA) for the electrical connection of the modulating valves and/or 24 Vac controls, a power relay card (24 Vac), which is requested to control the fan speeds in Master/Slave configuration.

It can be combined with the following regulators: CER10, CER30, CER00 (with power supply 24V) and CER20 (with power supply 24V).

### 5.4 Electric heater KREL

Electric heater supplied with 2 safety thermostats, one with automatic resetting and the other one with manual resetting (in accordance with 73/23 CEE and EMC 89/336 CEE Directives), and a power relay card (CBL20).

Table A

Sizes 110-228						
Model		YLV YLV/AF	YLH YLH/AF	YLIV YLIV/AF	YLIH YLIH/AF	YLVR YLVR
Type of coil	B2	•	•	•	•	•
	B3	•	•	•	•	
	B4			•	•	
	BE3	•	•	•	•	

The table A shows the availability of the electric heater for the different models, in relation to the coil mounted on the unit.

The table B shows the power of the electric heater for each unit size. An electric heater with a lower power rating than shown can always be installed.

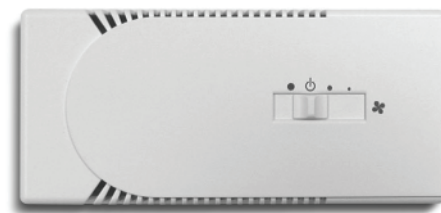
Table B

Size	110	112	114	216	218	220	222	224	226	228
Power kW	0,5	1,0	1,5	2,0	2,25	2,5	2,5	3,0	3,0	3,5

### 5.5 Fan speed selectors CSL, CSR

These selectors have no room thermostat and can control the 3 fan speeds only. CSL40 and CSR40 models are provided with a weekly timer in order to set the fancoil operating time.

The speed selectors do not control any valve: a remote thermostat (TAD10) is requested in order to control the ON/OFF valves, eventually.



CSR00

For more information please refer to the technical manual for YORK controllers.

SPEED SELECTORS	Built-in				Remote	
	CSL00	CSL20	CSL30	CSL40	CSR00	CSR40
Manual fan speed selector + OFF position	•				•	
Ventilation mode (Thermostated – OFF – Continuous)		•	•	•		•
Manual speed selector	•	•	•	•	•	•
Manual S/W switch		•		•		•
External (centralized) S/W switch			•			
Digital Timer for daily/weekly program				•		•

Compatibility	Ref. YORK	Built-in				Remote	
		CSL00	CSL20	CSL30	CSL40	CSR00	CSR40
2 pipe system only		•				•	
2/4 pipe system			•	•	•		•
ON/OFF 230V cooling and heating valve, 2/4 pipe system	J3A2		•	•	•		•
Minimum water temp. thermostat	TM	•	•	•	•	•	•
Remote room thermostat	TAD10	•	•	•	•	•	•
Electric heater (in alternative to the heating valve)	KREL		•	•	•		•

## 5.6 Room temperature thermostat TAD10

Room temperature thermostat for wall installation with manual selection of the working mode (Summer/Winter changeover) and set point regulation of the room temperature.

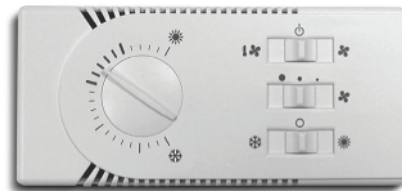


TAD10

For more information please refer to the technical manual for YORK controllers.

## 5.7 Thermostats CML, CMR

Room temperature thermostats with fan speed selector. The comfort temperature zone (20-25°C) is marked around the knob. It is also possible to limit the temperature setting range.



CMR00

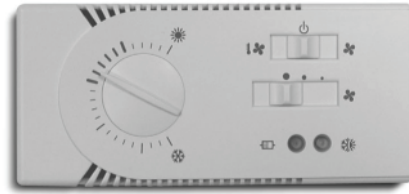
For more information please refer to the technical manual for YORK controllers.

THERMOSTATS	Built-in		Remote	
	CML00	CML10	CMR00	CMR10
Ventilation mode (Thermostated – OFF – Continuous)	•	•	•	•
Manual speed selector	•	•	•	•
Manual S/W switch	•		•	
External (centralized) S/W switch		•		•
Temperature thermostat	•	•	•	•
Temperature setting range limitation	•	•	•	•

Compatibility	Ref. YORK	Built-in		Remote	
		CML00	CML10	CMR00	CMR10
2/4 pipe system		•	•	•	•
ON/OFF 230V cooling and heating valve, 2/4 pipe system	J3A2	•	•	•	•
Minimum water temp. thermostat	TM	•	•	•	•

## 5.8 Electronic regulators CEL, CER

The YORK electronic controllers with microprocessor offer a wide range of functions for the fancoil regulation; they are provided with the comfort temperature zone (20-25°C) and with the opportunity to limit the temperature setting range.



CER00

For more information please refer to the technical manual for YORK controllers.

ELECTRONIC REGULATORS	Built-in				Remote			
	CEL00	CEL10	CEL20	CEL30	CER00	CER10	CER20	CER30
<b>Functions</b>								
Ventilation mode (Thermostated – OFF – Continuous)	•	•	•	•	•	•	•	•
Manual speed selector	•	•	•	•	•	•	•	•
Automatic speed selection			•	•			•	•
Automatic or external (centralized) S/W changeover	•	•	•	•	•	•	•	•
Electronic temperature thermostat	•	•	•	•	•	•	•	•
Temperature setting range limitation	•	•	•	•	•	•	•	•
De-stratification function	•	•	•	•	•	•	•	•
Economy/occupancy function	•	•	•	•	•	•	•	•
Window contact	•	•	•	•	•	•	•	•
Frost protection (only with heating valve)	•	•	•	•	•	•	•	•
Operating mode LED (Summer – Winter)	•	•	•	•	•	•	•	•
Dirty filter alarm LED	•	•	•	•	•	•	•	•

Compatibility	Ref. YORK	Built-in				Remote			
		CEL00	CEL10	CEL20	CEL30	CER00	CER10	CER20	CER30
2/4 pipe system		•	•	•	•	•	•	•	•
ON/OFF 230V cooling and heating valve, 2/4 pipe system	J3A2	•		•		•		•	
Modulating 24V cooling and heating valve, 2/4 pipe system	J3AM		•		•		•		•
Minimum water temp. thermostat	TM	•	•	•	•	•	•	•	•
NTC sensor for automatic S/W changeover (2 pipe system only)	WS	•	•	•	•	•	•	•	•
Electric heater (in alternative to the heating valve)	KREL	•		•		•		•	

## 5.9 Digital control

The YORK digital control system permits a complete and integrated management of several fancoil units installed in the same building. It is designed either for a stand-alone operation mode, or to be integrated, at different levels, to a centralized

Building Automation System, with a local or open communication protocol (Local Bus or Open Bus).

The digital regulator can control many fancoils at the same time, which are connected together by a digital line.

For more details please refer to the technical manual for YORK digital regulators.

## 5.10 TM – Minimum water temperature thermostat TM

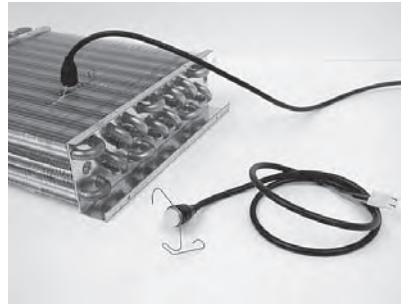
Bimetallic thermostat with fixed set point, to be used in heating only. It is factory mounted or, upon request, supplied separately as a kit.

Functions:

- during heating operation, it prevents the fan from starting if the coil temperature has not reached the set point temperature

Technical features:

- installation position: clipped to the coil fins
- set point temperature:  $42\text{ °C} \pm 3\text{ °C}$
- differential:  $10\text{ °C}$
- rating of contacts: 5 A - 250 Vac



## 5.11 Water sensor WS

3m length NTC sensor (10K, 25°C), requested when a fancoil unit is controlled by a regulator with microprocessor, in a 2 pipe system, for both heating and cooling operation.

The Summer/Winter changeover works with the following procedures:

- WS combined with CER00, CER20, CEL00, CEL20  
Summer: water temperature  $< 17\text{ °C}$  = cooling on;  
water temperature  $> 19\text{ °C}$  = cooling off  
Winter: water temperature  $> 32\text{ °C}$  = valve open;  
water temperature  $< 30\text{ °C}$  = valve close  
water temperature  $> 35\text{ °C}$  = fan on;  
water temperature  $< 33\text{ °C}$  = fan off
- WS combined with CER10, CER30, CEL10, CEL30  
Summer: water temperature  $< 11\text{ °C} \pm 1\text{ K}$  = cooling on;  
water temperature  $> 14\text{ °C} \pm 1\text{ K}$  = cooling off  
Winter: water temperature  $> 40\text{ °C} \pm 1\text{ K}$  = cooling on;  
water temperature  $< 30\text{ °C} \pm 1\text{ K}$  = cooling off

The water sensor is not suitable when 2 way valves are mounted on the unit (i.e.: J2A2 or J2AM).

## 5.12 Air sensor AS

1m length NTC sensor (10K, 25°C), to be installed on the fancoil unit's air intake.

It is supplied as standard with the following regulators: CML00, CEL00, CEL20 and CEL30.

It is optional, on request, with the following regulators: CMR00, CER00, CER20 and CER30.

## 5.13 AFT – Thermostat AFT

### 5.13.1 Anti-frost function

When combined with a motorized dumper (either PAE/VM or PAE/HM), the anti-frost thermostat closes the dumper if the air temperature is below the set point (i.e.  $0\text{ °C}$ ), avoiding any damage to the coil caused by the frozen water inside it.

### 5.13.2 Additional function when used in combination with an electric heater and a regulator with microprocessor.

When the electronic regulator switches in heating operation, immediately it turns the electric heater on until the coil's temperature reaches the value set on the AFT thermostat (i.e.  $40\text{ °C}$ ).

When the heat exchanger is warm enough, the electric heater is deactivated and the unit will work with the water coil.

Technical features:

- operating range:  $0\text{ °C} \pm 3\text{ °C} / 40\text{ °C} \pm 5\text{ °C}$
- differential:  $2\text{ °C} \pm 1\text{ K}$
- rating of contacts: 15 (2.5) A/250V

## 5.14 Condensate pump PC

The condensate pump is necessary when the traditional water discharge is not allowed.

Functions:

- forced evacuation of the condensed water

Technical features:

- max water flow: 8 l/h
- max water discharge: 6 m head
- max suction: 1 m
- power supply: 230V 50 Hz
- power: 18 W
- alarm output: NC 8 A resistive
- thermal protection: (overheating)  $90\text{ °C}$
- sound level:  $\leq 28\text{ dB(A)}$  at 1 m

## 6. REGULATING VALVES

### 6.1 On/Off valves: 3-way with 4 water connections (J3A2) or 2-way (J2A2), 1/2", 230V, for 2 or 4 pipe systems

The On/Off 3-way regulating valves with bypass and 2-way regulating valves are provided with thermoelectric actuator and connection tubes. The direct water flow is closed by not supplying power to the actuator.

They are suitable for fan coils size 110÷228 and available also with 24V.

### 6.2 Modulating valves: 3-way with 4 water connections (J3AM) or 2-way (J2AM), 1/2", 24V, for 2 or 4 pipe systems

The modulating 3-way regulating valves with bypass and 2-way regulating valves are provided with thermoelectric actuator and connection tubes. The direct water flow is closed by not supplying power to the actuator.

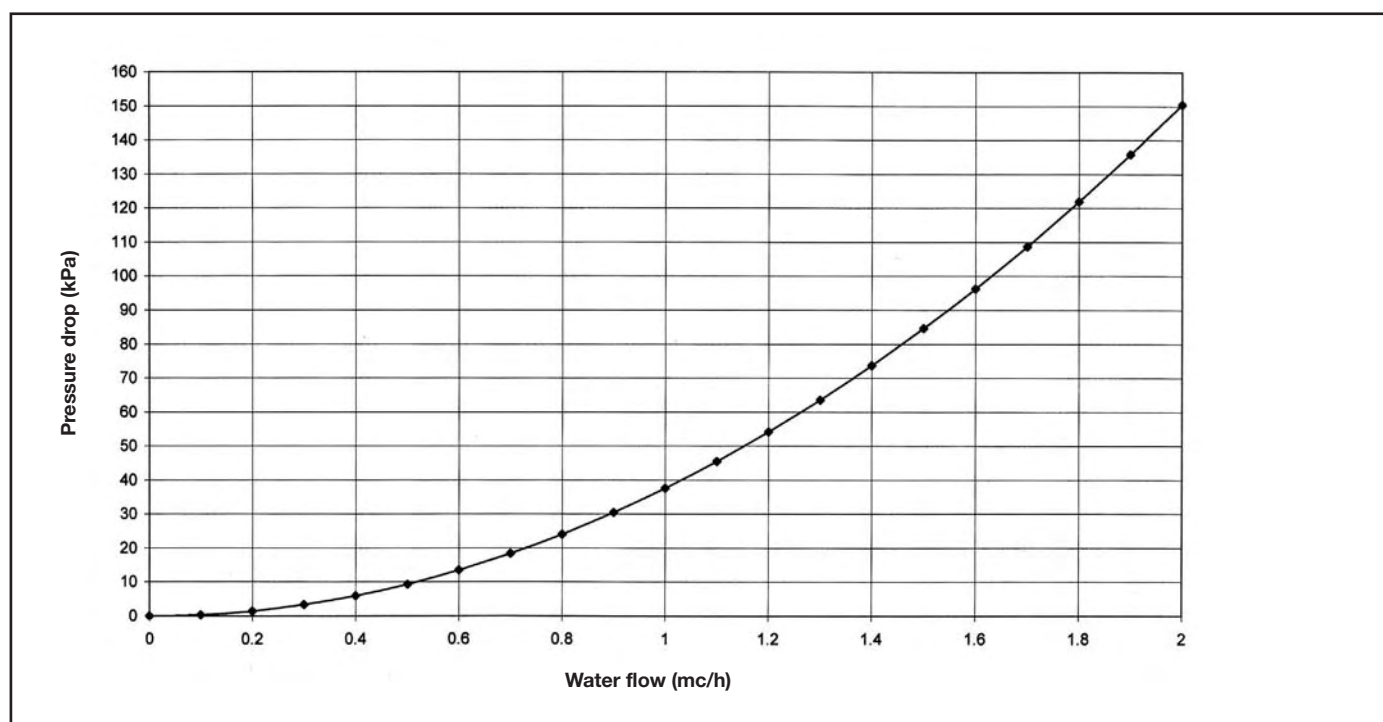
They are suitable for fan coils size 110÷228.

### 6.3 Floating valves H3AF: 3-way 3 positions with 4 water connections, 1/2", 24V, for 2 or 4 pipe systems

The 3-way 3 positions floating valves with 4 water connections and bypass are provided with electric actuator, floating control and connection tubes. The actuator is compatible with an external controller which opens or closes the valve by feeding the terminals of the actuator. To solder the valves to the piping system, they are equipped with copper elbows (external diam. 14 mm) and flat sealing washers. The direct water flow is closed by not supplying power to the actuator.

They are suitable for fan coils size 110÷228.

Pressure drop diagram for valves having kvs value 1,63.



Pressure drops diagram referred to the body valve only (J3A2, J3AM).

## BODY VALVES' TECHNICAL FEATURES

	J3A2 – J2A2 – J3AM – J2AM	H3AF
<b>Nominal pressure</b>	PN16	PN16
<b>Water connection</b>	1/2" Gm	1/2" Gm
<b>kv: water flow rate</b>	1,6 (by-pass 1,6)	1,6 (by-pass 1,0)

## ACTUATORS' TECHNICAL FEATURES

	Voltage supply V-ph-Hz	Running time s	Control signal Vdc	Protection grade	Controllers compatibility
<b>J3A2 – J2A2</b>	230-1-50(60)	180÷260		IP 44 vert. IP 42 horiz.	TAD10 – CMR00 – CMR10 CER00 – CER20 – CML00 CML10 – CEL00 – CEL20 Digital
<b>J3AM – J2AM</b>	24-1-50(60)		0÷10	IP 40	CER10 – CER30 – CEL10 CEL30 – Digital
<b>H3AF</b>	24-1-50(60)	3 positions floating control without feedback		IP 43	Digital

On request, 3/4" valves are also available (kvs 2,5).

**The consultant has the responsibility of the correct choice of the valve.  
In order to choose the correct type of valve it is necessary to know the system's technical specifications; for this reason the consultant should take full responsibility for this choice.**

### 6.4 DT – Shut-off valve DT

It is a full bore ball valve with T handle; it is designed to separate the unit from the piping system if maintenance is required.

### 6.5 FY – Y filter FY

It is an accessible water filter with a stainless steel filter element. It is installed at the water inlet to avoid the entrance of wastes coming from the piping system; all solids with diameter above 0.4 mm can be removed.

## 7. OTHER ACCESSORIES

### 7.1 CP1 – Set of feet

Set of painted steel feet, each of them composed by two elements: a bearing element fixed to the inner frame, on which the unit leans, and a visible element fixed to the previous one. They are designed to cover the water connections and the electric cables.

- Height: 85 mm
- Colour: RAL 9003 (white) for both Sigma and Prisma series

### 7.2 ZL1 – Long socle with feet

Painted steel socle consisting of a set of feet (CP1) and a frontal grill. It is designed to cover a vertical external air intake or other accessories.

- Height: 85 mm
- Colour: RAL 9003 (white) for both Sigma and Prisma series

### 7.3 PPV1 – Vertical back panel

It is a back panel made of steel painted in the same colour as the casing. It is mounted on vertical units with housing when the back side of the unit is in view.

### 7.4 PPH1 – Horizontal back panel

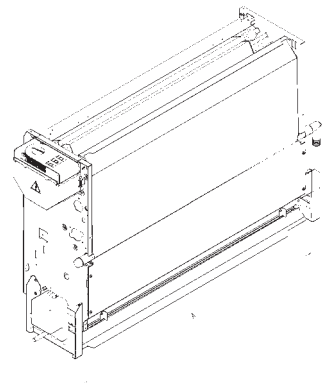
It is a back panel made of steel painted in the same colour as the casing. It is mounted on horizontal units with housing when the back side of the unit is in view.

### 7.5 PAE/V1 – Vertical external air intake with manual damper

PAE/V 1 is a vertical external air intake with supporting feet, frontal grill and manual damper.

All the elements are made of painted steel. The manual air damper provides the unit with a mixture of return air and outside air. An air intake at the rear of the fan coil must be included to provide fresh outside air.

- Mixture rate: 0 / 100 %
- Height: 85 mm
- Colour: RAL 9003 (white) for both Sigma and Prisma series



Size		110	112	114	216	218	220	222	224	226	228
A	mm	424	549	674	799	924	1049	1049	1174	1174	1299

### 7.6 PAE/VM1 – Vertical external air intake with motorized damper

PAE/VM1 is a vertical external air intake with supporting feet, frontal grill and motorized damper.

All the elements are made of painted steel. The motorized air damper is regulated by a servomotor and provides the unit with a mixture of return air and outside air. The servomotor operating mode depends on the required working conditions. An air intake at the rear of the fan coil must be included to provide fresh outside air.

- Mixture rate: 0 / 100 %
- Height: 85 mm
- Colour: RAL 9003 (white) for both Sigma and Prisma series
- Servomotor regulation: ON/OFF (code LM230), ON/OFF with spring return (code LF230) or modulating with a proper controller (code LM24)

## 7.7 PAE/H1 – Horizontal external air intake with manual damper

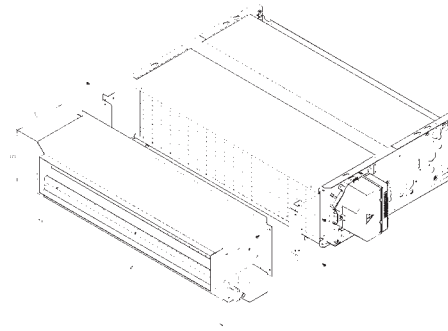
Air suction plenum made of galvanized steel sheet, provided with a rectangular collar for the connection to the external air intake. It is mounted on the air intake of the unit, between the

external air intake and the filter, which remains accessible for maintenance. The manual damper can be operated by a lever located on the side of the unit.

Size		110	112	114	216	218	220	222	224	226	228
<b>B</b>	<b>mm</b>	351	476	601	726	851	976	976	1226	1226	1476
<b>E</b>	<b>mm</b>	176	176	176	176	176	206	206	206	206	206
<b>D</b>	<b>mm</b>	176	176	176	176	176	206	206	206	206	206

## 7.8 PAE/HM1 – Horizontal external air intake with motorized damper

Air suction plenum made of galvanized steel sheet, provided with a rectangular collar for the connection to the external air intake. It is mounted on the air intake of the unit, between the external air intake and the filter, which remains accessible for maintenance. The damper can be operated by a servomotor: ON/OFF (code LM230), ON/OFF with spring return (code LF230) or modulating with a proper controller (code LM24).

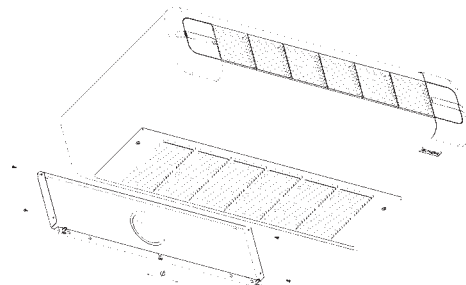


Size		110	112	114	216	218	220	222	224	226	228
<b>A</b>	<b>mm</b>	351	476	601	726	851	976	976	1226	1226	1476
<b>B</b>	<b>mm</b>	176	176	176	176	176	206	206	206	206	206
<b>C</b>	<b>mm</b>	176	176	176	176	176	206	206	206	206	206

## 7.9 PAE/HAF1 – Horizontal external air intake (for horizontal units with bottom air intake)

This external air intake is made of galvanized steel and is installed on the back side of horizontal units with bottom air intake. It is provided with a collar to be located in a hole on the wall, which allows the entrance of outside air.

- Collar diameter of units 110÷218: 100 mm
- Collar diameter of units 220÷228: 150 mm

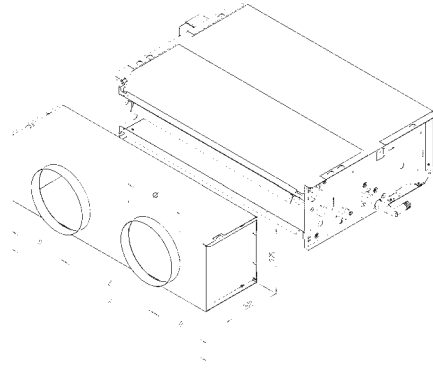


Size		110	112	114	216	218	220	222	224	226	228
<b>No. of spigots</b>		1	1	1	1	1	1	1	1	1	1
<b>Spigots' external Ø mm</b>		100	100	100	100	100	150	150	150	150	150



## 7.10 PM – Air delivery plenum

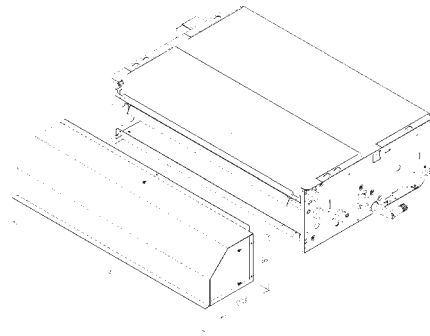
The air delivery plenum is made of galvanized steel sheet, insulated inside, provided with spigots for the connection to the air ducts. It is mounted on the air outlet of the unit.



Size		110	112	114	216	218	220	222	224	226	228
No. of spigots		1	2	2	2	2	3	3	3	3	3
Spigots' external Ø mm		150	150	150	200	200	200	200	200	200	200
A	mm	350,6	475,6	600,6	725,6	850,6	975,6	975,6	1225,6	1225,6	1475,6
D	mm	189,5	127	139,5	202	252	152	152	277	277	377
E	mm	–	250	350	350	375	350	350	350	350	375

## 7.11 PM90 - 90° Air delivery plenum

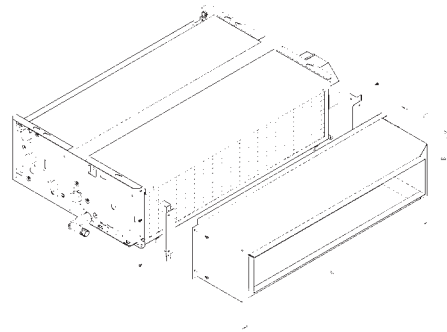
The 90° air delivery plenum is made of galvanized steel sheet, insulated inside, provided with a rectangular collar for the connection to the air duct. It is mounted on the air outlet of the unit.



Size		110	112	114	216	218	220	222	224	226	228
A	mm	379	504	629	754	879	1004	1004	1254	1254	1504

## 7.12 PA – Air suction plenum

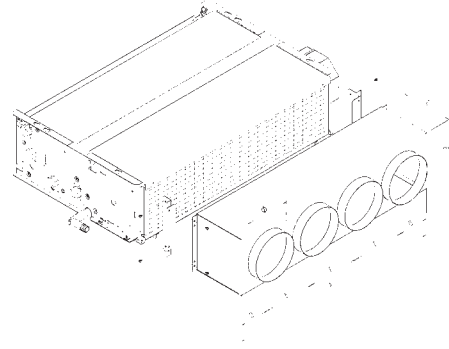
The air suction plenum is made of galvanized steel sheet, provided with a rectangular collar for the connection to the external air intake. It is mounted on the air intake of the unit, between the external air intake and the filter, which remains accessible for maintenance.



Size		110	112	114	216	218	220	222	224	226	228
A	mm	351	476	601	726	851	976	976	1226	1226	1476
B	mm	176	176	176	176	176	206	206	206	206	206
C	mm	176	176	176	176	176	206	206	206	206	206

### 7.13 PAS – Air suction plenum with spigots

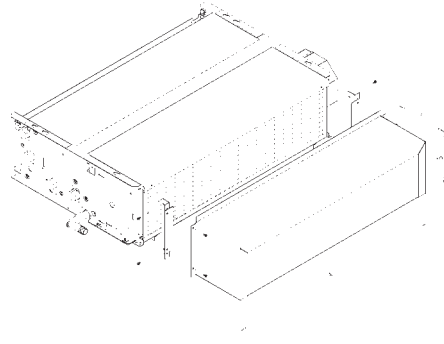
Air suction plenum made of galvanized steel sheet, provided with collars (spigots) for the connection to the external air intake. It is mounted on the air intake of the unit, between the external air intake and the filter, which remains accessible for maintenance.



Size		110	112	114	216	218	220	222	224	226	228
No. of spigots		2	2	3	4	4	3	3	4	4	4
Spigots' external Ø mm		100	150	150	150	150	200	200	200	200	200
A	mm	350,6	475,6	600,6	725,6	850,6	975,6	975,6	1225,6	1225,6	1475,6
B	mm	191	191	191	191	191	221	221	221	221	221
C	mm	176,6	176,6	176,6	176,6	176,6	206,6	206,6	206,6	206,6	206,6
D	mm	76,8	101,8	101,8	101,8	101,8	116,8	116,8	126,8	126,8	126,8
E	mm	–	–	–	174	222,5	–	–	360	360	485
F	mm	197	272	198,5	174	202	371	371	252	252	252

### 7.14 PA90 – Plenum 90° Air suction plenum

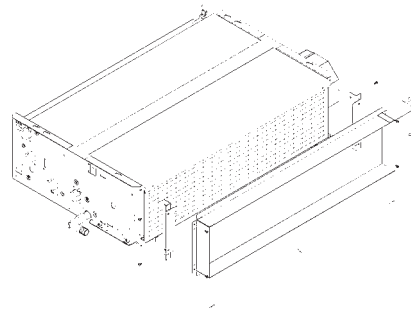
The 90° air suction plenum is made of galvanized steel sheet, provided with a rectangular collar for the connection to the external air intake. It is mounted on the air intake of the unit, between the external air intake and the filter, which remains accessible for maintenance.



Size		110	112	114	216	218	220	222	224	226	228
A	mm	351	476	601	726	851	976	976	1226	1226	1476
B	mm	176	176	176	176	176	206	206	206	206	206
C	mm	176	176	176	176	176	206	206	206	206	206

### 7.15 RCA – Duct connection

This duct connection is made of galvanized steel, provided with a rectangular collar for the connection to the suction air duct. It is mounted on the air intake of the unit, between the duct and the filter, which remains accessible for maintenance.



Size		110	112	114	216	218	220	222	224	226	228
A	mm	351	476	601	726	851	976	976	1226	1226	1476
B	mm	176	176	176	176	176	206	206	206	206	206

## 8. TECHNICAL DATA

### 8.1 Air volumes

#### 8.1.1 LASER & CONCEALED Series

##### Nominal values (m³/s)

Size		110	112	114	216	218	220	222	224	226	228
Fan speed	Fan speed 1	292	396	490	749	900	1089	1365	1581	1715	2132
	Fan speed 2 MAX	241	331	410	666	788	915	1128	1231	1388	1813
	Fan speed 3 MED	194	248	342	500	616	734	966	1097	1266	1222
	Fan speed 4	162	212	299	407	540	651	833	933	1058	1014
	Fan speed MIN	144	187	266	382	464	565	776	794	933	895
	Fan speed 6	108	151	223	324	378	525	683	702	839	781



Nominal capacities refer to standard fan coils with clean air filter, 20 °C room temperature, at sea level, without external static pressure.

##### Values with external static pressure (m³/s)

Water pressure drop (Pa)		10	20	30	40	50	60	70	80	90	100	110
Size 110	Fan speed 1	270	252	234	212	187	151	112				
	Fan speed 2 MAX	223	205	191	173	151	122	83				
	Fan speed 3 MED	176	162	144	126	108	86	95				
	Fan speed 4	144	126	108	90	76	54					
	Fan speed 5 MIN	126	104	86	76	58	39					
	Fan speed 6	86	65									
Size 112	Fan speed 1	374	353	331	302	274	241	202				
	Fan speed 2 MAX	310	295	277	252	227	202	176				
	Fan speed 3 MED	230	216	198	180	155	130	97				
	Fan speed 4	191	173	155	140	119	97	68				
	Fan speed 5 MIN	162	140	119	104	86	68					
	Fan speed 6	126	101	83	68							
Size 114	Fan speed 1	446	410	374	338	302	263	220				
	Fan speed 2 MAX	382	349	320	288	252	212	162				
	Fan speed 3 MED	310	281	256	230	198	158	112				
	Fan speed 4	266	238	209	180	155	126	94				
	Fan speed 5 MIN	234	202	176	151	126	101	72				
	Fan speed 6	187	158	130	108	86	65					
Size 216	Fan speed 1	720	706	670	616	558	511	454				
	Fan speed 2 MAX	626	598	562	515	468	421	367				
	Fan speed 3 MED	461	425	389	353	310	263	205				
	Fan speed 4	360	324	292	263	230	187	137				
	Fan speed 5 MIN	331	284	256	230	202	162	108				
	Fan speed 6	270	209	173	148	115						
Size 218	Fan speed 1	853	810	760	698	634	565	486				
	Fan speed 2 MAX	738	698	652	594	536	475	407				
	Fan speed 3 MED	572	540	500	454	403	349	295				
	Fan speed 4	497	464	421	374	324	270	198				
	Fan speed 5 MIN	414	374	338	299	259	209	137				
	Fan speed 6	328	263	212	166	144						
Size 220	Fan speed 1	1043	989	927	857	780	696	604	504	396	282	159
	Fan speed 2 MAX	869	816	758	695	626	552	473	388	297	201	
	Fan speed 3 MED	681	627	571	514	456	396	334	272			
	Fan speed 4	589	530	474	420	368	319	273	229			
	Fan speed 5 MIN	501	441	384	331	282	236	194				
	Fan speed 6	441	366	301	244	196	157	128				
Size 222	Fan speed 1	1307	1237	1177	1099	1014	928	819	710	592	460	336
	Fan speed 2 MAX	1087	1035	985	922	852	778	688	594	493	377	270
	Fan speed 3 MED	919	864	815	755	690	622	546	466	381	297	190
	Fan speed 4	780	725	669	611	549	483	419	350	279	215	122
	Fan speed 5 MIN	718	660	600	540	479	418	357	294	232	169	
	Fan speed 6	615	550	488	428	371	317	265	216	170		
Size 224	Fan speed 1	1539	1489	1431	1364	1289	1207	1116	1016	909	793	670
	Fan speed 2 MAX	1184	1132	1075	1013	946	874	797	715	628	536	439
	Fan speed 3 MED	1057	1012	961	904	842	775	702	624	540	451	357
	Fan speed 4	887	838	786	729	669	605	538	467	392	313	231
	Fan speed 5 MIN	746	696	644	591	537	482	425	367	308		
	Fan speed 6	650	597	545	493	441	389	338	287			
Size 226	Fan speed 1	1673	1623	1565	1498	1424	1341	1249	1150	1042	926	802
	Fan speed 2 MAX	1341	1289	1232	1170	1103	1031	954	872	785	693	596
	Fan speed 3 MED	1225	1179	1128	1072	1010	943	870	793	710	621	528
	Fan speed 4	1013	964	911	855	795	731	663	592	517	439	357
	Fan speed 5 MIN	884	833	781	728	673	618	561	502	443		
	Fan speed 6	786	733	680	628	577	525	475	424			
Size 228	Fan speed 1	2090	2040	1983	1918	1846	1767	1680	1586	1485	1376	1259
	Fan speed 2 MAX	1773	1724	1667	1602	1528	1446	1356	1257	1149	1034	910
	Fan speed 3 MED	1175	1123	1066	1003	935	862	783	699	609	514	414
	Fan speed 4	970	921	868	811	750	684	614	540	461	378	291
	Fan speed 5 MIN	856	811	759	701	637	566	470	407	317		
	Fan speed 6	718	655	593	533	474	416	358	302			

## 8.1.2 LOW BODY Serie

### Nominal values (m<sup>3</sup>/s)

Size		110	112	114	216	218
Fan speed	Fan speed 1	289	381	513	670	802
	Fan speed 2 MAX	243	321	446	574	691
	Fan speed 3 MED	203	246	343	470	570
	Fan speed 4	167	192	271	370	485
	Fan speed 5 MIN	149	178	253	356	470
	Fan speed 6	111	139	200	289	370



Nominal capacities refer to standard fan coils with clean air filter, 20 °C room temperature, at sea level, without external static pressure.

### Values with external static pressure (m<sup>3</sup>/s)

Water pressure drop (Pa)		10	20	30	40	50	60	70	80
Size 110	Fan speed 1	267	253	236	218	192	160	125	82
	Fan speed 2 MAX	225	207	196	182	194	136	96	60
	Fan speed 3 MED	185	167	149	136	118	100	78	
	Fan speed 4	149	132	118	103	89	71		
	Fan speed 5 MIN	129	107	93	82	67			
	Fan speed 6	93	71	57					
Size 112	Fan speed 1	360	343	321	296	267	239	203	156
	Fan speed 2 MAX	303	289	271	249	228	207	182	139
	Fan speed 3 MED	228	210	192	178	156	132	100	67
	Fan speed 4	174	156	143	129	111	89	64	
	Fan speed 5 MIN	149	125	107	93	78	60		
	Fan speed 6	111	82	71	64	53			
Size 114	Fan speed 1	477	446	414	381	349	314	271	225
	Fan speed 2 MAX	417	392	363	335	303	267	225	174
	Fan speed 3 MED	307	274	249	232	203	164	118	100
	Fan speed 4	243	218	192	167	143	118	89	
	Fan speed 5 MIN	218	182	156	136	118	89	60	
	Fan speed 6	171	143	118	96	78	60		
Size 216	Fan speed 1	631	606	570	528	477	432	374	285
	Fan speed 2 MAX	542	513	477	439	396	352	303	232
	Fan speed 3 MED	424	388	356	321	285	243	192	121
	Fan speed 4	332	296	267	243	214	174	125	71
	Fan speed 5 MIN	303	253	225	207	182	143	89	67
	Fan speed 6	239	189	153	132	100			
Size 218	Fan speed 1	762	724	677	624	566	503	432	343
	Fan speed 2 MAX	655	624	581	531	477	424	363	278
	Fan speed 3 MED	524	485	446	410	367	317	260	210
	Fan speed 4	449	417	381	339	292	246	182	53
	Fan speed 5 MIN	414	363	328	299	263	218	143	
	Fan speed 6	314	267	225	178	125			

## 8.2 Cooling capacities

### 8.2.1 LASER & CONCEALED Series

Room temperature: 27 °C D. B. – 19 °C W.B.

Water temperature: 7/12 °C

Size		110	112	114	216	218	220	222	224	226	228	
<b>2 ROWS</b>												
Fan speed 1	Total cooling capacity	kW	1,215	1,546	2,18	3,092	3,464	4,162	5,056	6,805	7,007	9,086
	Sensible cooling capacity	kW	1,000	1,301	1,764	2,491	2,963	3,551	4,160	5,443	5,643	7,232
	Water flow	l/h	209	266	375	532	596	716	869	1170	1205	1562
	Water pressure drop	kPa	20,3	3,8	12,1	23,1	8,3	13,8	21,9	38,6	37,1	70,0
Fan speed 2 MAX	Total cooling capacity	kW	1,077	1,383	1,942	2,878	3,2	3,755	4,509	5,803	6,15	8,22
	Sensible cooling capacity	kW	0,870	1,144	1,547	2,297	2,698	3,141	3,648	4,549	4,865	6,452
	Water flow	l/h	185	238	334	495	550	646	775	998	1057	1413
	Water pressure drop	kPa	16,4	3,1	9,9	20,3	7,2	11,5	17,9	29,2	29,5	58,6
Fan speed 3 MED	Total cooling capacity	kW	0,936	1,145	1,717	2,390	2,741	3,274	4,094	5,377	5,799	6,329
	Sensible cooling capacity	kW	0,742	0,923	1,349	1,866	2,254	2,677	3,271	4,179	4,553	4,829
	Water flow	l/h	161	197	295	411	471	563	704	924	997	1088
	Water pressure drop	kPa	12,8	2,2	7,9	14,7	5,5	9,1	15,1	25,5	26,6	37,0
Fan speed 4	Total cooling capacity	kW	0,829	1,030	1,565	2,077	2,514	3,032	3,719	4,813	5,151	5,549
	Sensible cooling capacity	kW	0,648	0,821	1,217	1,598	2,041	2,451	2,940	3,701	3,993	4,186
	Water flow	l/h	143	177	269	357	432	521	639	827	886	954
	Water pressure drop	kPa	10,4	1,9	6,7	11,5	4,7	7,9	12,7	21,0	21,6	29,4
Fan speed 5 MIN	Total cooling capacity	kW	0,760	0,945	1,441	1,988	2,271	2,759	3,551	4,296	4,725	5,069
	Sensible cooling capacity	kW	0,589	0,746	1,111	1,524	1,821	2,203	2,794	3,270	3,633	3,800
	Water flow	l/h	131	162	248	342	390	474	610	739	812	871
	Water pressure drop	kPa	8,9	1,6	5,8	10,6	4,0	6,7	11,7	17,2	18,5	25,0
Fan speed 6	Total cooling capacity	kW	0,617	0,812	1,264	1,765	1,967	2,623	3,259	3,929	4,387	4,582
	Sensible cooling capacity	kW	0,470	0,632	0,964	1,340	1,553	2,082	2,541	2,969	3,352	3,411
	Water flow	l/h	106	140	217	304	338	451	560	675	754	788
	Water pressure drop	kPa	6,2	1,2	4,6	8,6	3,1	6,1	10,1	14,7	16,3	21,0
Water content	l	0,4	0,6	0,7	0,9	1,1	1,2	1,5	1,9	1,9	2,3	

Room temperature: 27 °C D. B. – 19 °C W.B.

Water temperature: 7/12 °C

Size		110	112	114	216	218	220	222	224	226	228	
<b>3 ROWS</b>												
Fan speed 1	Total cooling capacity	kW	1,323	1,972	2,599	3,754	4,147	5,24	6,295	8,073	8,78	11,142
	Sensible cooling capacity	kW	1,113	1,569	2,042	2,950	3,341	4,105	5,033	6,300	6,896	8,655
	Water flow	l/h	227	339	447	645	713	901	1082	1388	1509	1916
	Water pressure drop	kPa	4,8	9,4	8,1	15,9	15,9	28,4	39,2	25,6	27,0	45,1
Fan speed 2 MAX	Total cooling capacity	kW	1,169	1,746	2,291	3,467	3,804	4,664	5,57	6,789	7,599	9,974
	Sensible cooling capacity	kW	0,961	1,367	1,772	2,699	3,029	3,605	4,378	5,195	5,859	7,646
	Water flow	l/h	201	300	394	596	654	802	958	1167	1306	1715
	Water pressure drop	kPa	3,9	7,6	6,5	13,8	13,6	23,1	31,6	18,8	20,9	37,1
Fan speed 3 MED	Total cooling capacity	kW	1,008	1,42	2,004	2,831	3,219	3,998	5,021	6,247	7,12	7,481
	Sensible cooling capacity	kW	0,811	1,088	1,531	2,157	2,511	3,044	3,896	4,743	5,452	5,581
	Water flow	l/h	173	244	345	487	553	687	863	1074	1224	1286
	Water pressure drop	kPa	3,0	5,3	5,1	9,7	10,2	17,6	26,3	16,3	18,7	22,4
Fan speed 4	Total cooling capacity	kW	0,887	1,263	1,81	2,429	2,933	3,666	4,531	5,54	6,246	6,475
	Sensible cooling capacity	kW	0,702	0,957	1,369	1,827	2,266	2,771	3,474	4,165	4,724	4,780
	Water flow	l/h	153	217	311	418	504	630	779	952	1074	1113
	Water pressure drop	kPa	2,4	4,3	4,3	7,4	8,6	15,1	22,0	13,2	14,8	17,3
Fan speed 5 MIN	Total cooling capacity	kW	0,814	1,147	1,653	2,314	2,627	3,301	4,308	4,897	5,682	5,863
	Sensible cooling capacity	kW	0,637	0,862	1,242	1,735	2,007	2,474	3,288	3,649	4,261	4,303
	Water flow	l/h	140	197	284	398	452	567	741	842	977	1008
	Water pressure drop	kPa	2,0	3,6	3,6	6,8	7,1	12,6	20,1	10,6	12,6	14,6
Fan speed 6	Total cooling capacity	kW	0,654	0,969	1,437	2,036	2,252	3,123	3,927	4,447	5,235	5,249
	Sensible cooling capacity	kW	0,501	0,720	1,068	1,512	1,699	2,332	2,971	3,292	3,902	3,828
	Water flow	l/h	112	167	247	350	387	537	675	764	900	902
	Water pressure drop	kPa	1,4	2,7	2,8	5,4	5,4	11,4	17,1	8,9	10,9	12,0
Water content	l	0,6	0,8	1,1	1,4	1,5	2	2	2,9	2,9	3,5	

Room temperature: 27 °C D. B. – 19 °C W.B.

Water temperature: 7/12 °C

Size		110	112	114	216	218	220	222	224	226	228	
<b>4 ROWS</b>												
Fan speed 1	Total cooling capacity	kW	1,602	2,457	3,324	4,638	5,115	6,677	8,169	9,833	10,28	13,256
	Sensible cooling capacity	kW	1,282	1,867	2,449	3,531	3,996	5,085	6,247	7,445	7,860	10,011
	Water flow	l/h	275	422	572	797	879	1148	1,404	1690	1767	2279
	Water pressure drop	kPa	3,1	6,4	16,7	13,1	9,5	19,4	29,5	21,1	20,7	38,8
Fan speed 2 MAX	Total cooling capacity	kW	1,395	2,139	2,87	4,237	4,643	5,849	7,086	8,101	8,768	11,716
	Sensible cooling capacity	kW	1,094	1,603	2,091	3,192	3,583	4,389	5,334	6,017	6,590	8,736
	Water flow	l/h	240	368	493	728	798	1006	1,218	1393	1507	2014
	Water pressure drop	kPa	2,5	5,0	12,9	11,2	8,0	15,4	23,0	15,0	15,7	31,2
Fan speed 3 MED	Total cooling capacity	kW	1,181	1,692	2,461	3,376	3,852	4,911	6,279	7,382	8,162	8,522
	Sensible cooling capacity	kW	0,908	1,244	1,777	2,490	2,913	3,630	4,673	5,441	6,094	6,197
	Water flow	l/h	203	291	423	580	662	844	1080	1269	1403	1465
	Water pressure drop	kPa	1,8	3,3	9,9	7,5	5,8	11,3	18,6	12,7	13,8	17,8
Fan speed 4	Total cooling capacity	kW	1,023	1,48	2,187	2,846	3,474	4,447	5,581	6,46	7,072	7,272
	Sensible cooling capacity	kW	0,776	1,080	1,569	2,075	2,602	3,262	4,113	4,717	5,216	5,240
	Water flow	l/h	176	255	376	489	597	764	959	1111	1216	1250
	Water pressure drop	kPa	1,4	2,6	8,0	5,5	4,8	9,5	15,1	10,1	10,7	13,5
Fan speed 5 MIN	Total cooling capacity	kW	0,934	1,327	1,969	2,695	3,069	3,949	5,263	5,632	6,382	6,523
	Sensible cooling capacity	kW	0,702	0,962	1,406	1,957	2,276	2,874	3,863	4,080	4,675	4,675
	Water flow	l/h	161	228	339	463	528	679	905	968	1097	1121
	Water pressure drop	kPa	1,2	2,2	6,7	5,0	3,9	7,7	13,6	7,9	9,0	11,1
Fan speed 6	Total cooling capacity	kW	0,733	1,097	1,683	2,34	2,588	3,713	4,734	5,063	6	5,781
	Sensible cooling capacity	kW	0,542	0,788	1,194	1,687	1,898	2,692	3,449	3,645	4,252	4,123
	Water flow	l/h	126	189	289	402	445	638	814	870	1004	994
	Water pressure drop	kPa	0,8	1,5	5,1	3,9	2,9	6,9	11,3	6,6	7,7	9,0
Water content	l	0,8	1,1	1,5	1,7	2	2,6	2,9	3,7	3,7	4,4	

## 8.2.2 LOW BODY Serie

Room temperature: 27 °C D. B. - 19 °C W.B.

Water temperature: 7/12 °C

Size			110	112	114	216	218
<b>2 ROWS</b>							
Fan speed 1	Total cooling capacity	kW	0,832	1,178	1,714	2,312	2,867
	Sensible cooling capacity	kW	0,763	1,055	1,469	1,934	2,355
	Water flow	l/h	143	202	295	397	493
	Water pressure drop	kPa	7,2	1,6	6,3	10,6	28,2
Fan speed 2 MAX	Total cooling capacity	kW	0,759	1,07	1,583	2,116	2,63
	Sensible cooling capacity	kW	0,68	0,94	1,336	1,745	2,132
	Water flow	l/h	131	184	272	364	452
Fan speed 3 MED	Total cooling capacity	kW	0,689	0,914	1,353	1,877	2,341
	Sensible cooling capacity	kW	0,603	0,781	1,114	1,521	1,868
	Water flow	l/h	118	157	233	323	403
Fan speed 4	Total cooling capacity	kW	0,617	0,785	1,167	1,614	2,114
	Sensible cooling capacity	kW	0,528	0,655	0,942	1,283	1,666
	Water flow	l/h	106	135	201	278	363
	Water pressure drop	kPa	4,3	0,8	3,2	5,6	16,5
Fan speed 5 MIN	Total cooling capacity	kW	0,577	0,748	1,116	1,575	2,072
	Sensible cooling capacity	kW	0,488	0,62	0,896	1,249	1,629
	Water flow	l/h	99	129	192	271	356
Fan speed 6	Total cooling capacity	kW	0,479	0,633	0,952	1,37	1,769
	Sensible cooling capacity	kW	0,393	0,514	0,751	1,071	1,369
	Water flow	l/h	82	109	164	235	304
	Water pressure drop	kPa	2,7	0,6	2,2	4,2	12,0
Water content	l	0,3	0,4	0,6	0,7	0,9	

Room temperature: 27 °C D. B. - 19 °C W.B.

Water temperature: 7/12 °C

Size			110	112	114	216	218
<b>3 ROWS</b>							
Fan speed 1	Total cooling capacity	kW	1,041	1,626	2,312	3,003	3,715
	Sensible cooling capacity	kW	0,941	1,356	1,873	2,429	2,958
	Water flow	l/h	179	280	397	516	639
	Water pressure drop	kPa	2,5	4,8	14,8	8,2	21,8
Fan speed 2 MAX	Total cooling capacity	kW	0,942	1,46	2,115	2,719	3,372
	Sensible cooling capacity	kW	0,831	1,196	1,690	2,168	2,649
	Water flow	l/h	162	251	364	467	580
Fan speed 3 MED	Total cooling capacity	kW	0,844	1,225	1,774	2,377	2,959
	Sensible cooling capacity	kW	0,729	0,978	1,386	1,865	2,292
	Water flow	l/h	145	211	305	409	509
Fan speed 4	Total cooling capacity	kW	0,745	1,03	1,502	2,008	3
	Sensible cooling capacity	kW	0,629	0,806	1,153	1,549	2,021
	Water flow	l/h	128	177	258	345	454
Fan speed 5 MIN	Total cooling capacity	kW	0,691	0,975	1,428	1,953	2,581
	Sensible cooling capacity	kW	0,576	0,759	1,091	1,502	1,972
	Water flow	l/h	119	168	246	336	444
Fan speed 6	Total cooling capacity	kW	0,564	0,811	1,198	1,673	2,163
	Sensible cooling capacity	kW	0,457	0,62	0,902	1,270	1,629
	Water flow	l/h	97	139	206	288	372
Water pressure drop	kPa	0,8	1,4	4,6	2,9	8,4	
Water content	l	0,4	0,6	0,8	1,1	1,3	

## 8.3 Heating capacities

### 8.3.1 LASER & CONCEALED Series

Room temperature: 20 °C

Water temperature: 70/60 °C

Size			110	112	114	216	218	220	222	224	226	228
			<b>2 ROWS</b>									
Fan speed 1	Heating capacity	kW	2,907	3,834	5,115	7,162	8,756	10,405	12,042	15,606	16,174	20,594
	Water flow	l/h	254	335	447	626	765	910	1053	1364	1414	1800
	Water pressure drop	kPa	21,6	4,3	12,4	23,2	9,8	15,9	23,1	38,2	37,1	67,8
Fan speed 2 MAX	Heating capacity	kW	2,523	3,364	4,474	6,591	7,957	9,189	10,542	12,993	13,907	18,335
	Water flow	l/h	221	294	391	576	696	803	922	1136	1216	1603
	Water pressure drop	kPa	16,9	3,4	9,8	20,1	8,2	12,8	18,3	27,7	28,4	55,2
Fan speed 3 MED	Heating capacity	kW	2,146	2,706	3,889	5,335	6,627	7,812	9,443	11,92	13,006	13,653
	Water flow	l/h	188	237	340	466	579	683	825	1042	1137	1194
	Water pressure drop	kPa	12,7	2,3	7,7	13,8	6,0	9,6	15,1	23,8	25,3	32,9
Fan speed 4	Heating capacity	kW	1,869	2,398	3,502	4,559	5,992	7,143	8,47	10,527	11,381	11,805
	Water flow	l/h	163	210	306	399	524	624	740	920	995	1032
	Water pressure drop	kPa	9,9	1,9	6,4	10,5	5,0	8,2	12,4	19,1	20,0	25,4
Fan speed 5 MIN	Heating capacity	kW	1,696	2,193	3,192	4,342	5,332	6,404	8,039	9,278	10,335	10,688
	Water flow	l/h	148	192	279	380	466	560	703	811	903	934
	Water pressure drop	kPa	8,4	1,6	5,4	9,6	4,1	6,8	11,4	15,3	16,8	21,4
Fan speed 6	Heating capacity	kW	1,354	1,847	2,759	3,807	4,527	6,095	7,3	8,406	9,517	9,569
	Water flow	l/h	118	161	241	333	396	533	638	735	832	836
	Water pressure drop	kPa	5,6	1,2	4,2	7,6	3,1	6,2	9,6	12,9	14,6	17,6
Water content	l	0,4	0,6	0,7	0,9	1,1	1,2	1,5	1,9	1,9	2,3	

Room temperature: 20 °C

Water temperature: 70/60 °C

Size			110	112	114	216	218	220	222	224	226	228
			<b>3 ROWS</b>									
Fan speed 1	Heating capacity	kW	3,297	4,534	5,894	8,455	9,663	11,702	14,411	17,987	19,726	24,571
	Water flow	l/h	288	396	515	739	845	1023	1260	1572	1724	2148
	Water pressure drop	kPa	5,5	9,3	7,8	15,2	16,1	26,8	38,7	24,0	25,7	41,6
Fan speed 2 MAX	Heating capacity	kW	2,841	3,937	5,098	7,717	8,738	10,251	12,497	14,765	16,706	21,652
	Water flow	l/h	248	344	446	675	764	896	1092	1291	1460	1893
	Water pressure drop	kPa	4,2	7,3	6,1	13,0	13,5	21,2	30,1	17,0	19,2	33,3
Fan speed 3 MED	Heating capacity	kW	2,386	3,113	4,383	6,135	7,214	8,626	11,091	13,452	16	15,677
	Water flow	l/h	209	272	383	536	631	754	970	1176	1356	1370
	Water pressure drop	kPa	3,1	4,8	4,6	8,7	9,6	15,7	24,4	14,4	16,9	18,9
Fan speed 4	Heating capacity	kW	2,055	2,729	4	5,175	6,493	7,833	9,87	11,772	13,382	13,378
	Water flow	l/h	180	239	342	452	568	685	863	1029	1170	1169
	Water pressure drop	kPa	2,4	3,8	3,8	6,4	8,0	13,2	19,9	11,4	13,0	14,3
Fan speed 5 MIN	Heating capacity	kW	1,861	2,452	3,535	4,906	5,737	7,032	9,326	10,277	12,043	12,007
	Water flow	l/h	163	214	309	429	502	615	815	898	1053	1050
	Water pressure drop	kPa	2,0	3,2	3,2	5,8	6,4	10,9	18,0	9,0	10,8	11,8
Fan speed 6	Heating capacity	kW	1,451	2,047	3,028	4,262	4,866	6,612	8,409	9,248	11,003	11
	Water flow	l/h	127	179	265	373	425	578	735	808	962	931
	Water pressure drop	kPa	1,3	2,3	2,4	4,6	4,8	9,8	15,0	7,4	9,2	9,6
Water content	l	0,6	0,8	1,1	1,4	1,5	2,0	2,0	2,9	2,9	3,5	

Room temperature: 20 °C

Water temperature: 70/60 °C

Size			110	112	114	216	218	220	222	224	226	228
			<b>4 ROWS</b>									
Fan speed 1	Heating capacity	kW	3,797	5,367	6,916	10,121	11,584	14,541	17,833	21,231	22,469	28,394
	Water flow	l/h	332	469	605	885	1013	1271	1559	1856	1964	2482
	Water pressure drop	kPa	3,3	5,8	13,9	11,9	9,2	17,5	26,7	18,8	18,8	34,0
Fan speed 2 MAX	Heating capacity	kW	3,223	4,579	5,867	9,118	10,344	12	15,144	17,025	18,717	24,656
	Water flow	l/h	282	400	513	797	904	1092	1324	1488	1636	2155
	Water pressure drop	kPa	2,5	4,4	10,4	9,9	7,5	13,4	20,0	12,7	13,7	26,5
Fan speed 3 MED	Heating capacity	kW	2,655	3,521	4,953	7,044	8,352	10,254	13,206	15,338	17,256	17,286
	Water flow	l/h	232	308	433	616	730	896	1154	1341	1508	1511
	Water pressure drop	kPa	1,8	2,7	7,7	6,3	5,2	9,5	15,8	10,6	11,8	14,2
Fan speed 4	Heating capacity	kW	2,251	3,038	4,354	5,824	7,43	9,178	11,574	13,228	14,696	14,535
	Water flow	l/h	197	266	381	509	649	802	1012	1156	1285	1271
	Water pressure drop	kPa	1,3	2,1	6,2	4,5	4,2	7,8	12,5	8,2	8,9	10,5
Fan speed 5 MIN	Heating capacity	kW	2,031	2,696	3,888	5,485	6,468	8,051	10,846	11,379	13,115	12,922
	Water flow	l/h	178	236	340	479	565	704	948	995	1146	1130
	Water pressure drop	kPa	1,1	1,7	5,1	4,0	3,3	6,2	11,1	6,3	7,3	8,5
Fan speed 6	Heating capacity	kW	1,55	2,194	3,286	5	5,357	7,525	9,649	10,134	11,894	11,352
	Water flow	l/h	135	192	287	411	468	658	843	886	1040	992
	Water pressure drop	kPa	0,7	1,2	3,8	3,1	2,4	5,5	9,1	5,1	6,1	6,8
Water content	l	0,8	1,1	1,5	1,7	2,0	2,6	2,9	3,7	3,7	4,4	



Room temperature: 20 °C

Water temperature: 70/60 °C

Size		110	112	114	216	218	220	222	224	226	228	
<b>1 ROWS</b>												
Fan speed 1	Heating capacity	kW	1,294	2,057	2,571	3,791	4,227	5,719	6,322	8,045	8,265	10,652
	Water flow	l/h	113	180	225	331	369	500	553	703	723	931
	Water pressure drop	kPa	2,6	5,6	11,5	24,5	7,4	15,8	18,9	44,1	46,3	72,0
Fan speed 2 MAX	Heating capacity	kW	1,146	1,865	2,281	3,514	3,954	5,088	5,703	6,955	7,346	9,601
	Water flow	l/h	100	163	199	307	346	445	499	608	642	839
	Water pressure drop	kPa	2,1	4,7	9,3	21,4	6,6	12,9	15,8	34,1	37,6	60,0
Fan speed 3 MED	Heating capacity	kW	0,989	1,532	2,013	2,96	3,36	4,368	5,138	6,423	6,905	7,485
	Water flow	l/h	86	134	176	259	294	382	449	562	604	654
	Water pressure drop	kPa	1,6	3,3	7,5	15,8	4,9	9,9	13,1	29,7	33,7	38,7
Fan speed 4	Heating capacity	kW	0,874	1,371	1,832	2,564	3,07	4,015	4,643	5,738	6,101	6,564
	Water flow	l/h	76	120	160	224	268	351	406	502	533	574
	Water pressure drop	kPa	1,3	2,7	6,4	12,3	4,2	8,5	11,0	24,3	27,1	30,7
Fan speed 5 MIN	Heating capacity	kW	0,81	1,254	1,687	2,451	2,761	3,637	4,419	5,123	5,593	6,01
	Water flow	l/h	71	110	147	214	241	318	386	448	489	525
	Water pressure drop	kPa	1,1	2,3	5,5	11,4	3,5	7,1	10,1	19,9	23,3	26,3
Fan speed 6	Heating capacity	kW	0,665	1,076	1,494	2,184	2,395	3,458	4,046	4,698	5,195	5,457
	Water flow	l/h	58	94	131	191	209	302	354	411	454	477
	Water pressure drop	kPa	0,8	1,8	4,4	9,3	2,7	6,5	8,6	17,1	20,4	22,2
Water content	l	0,2	0,2	0,3	0,4	0,4	0,6	0,6	0,8	0,8	1,0	

### 8.3.2 LOW BODY Serie

Room temperature: 20 °C

Water temperature: 70/60 °C

Size		110	112	114	216	218	
<b>2 ROWS</b>							
Fan speed 1	Heating capacity	kW	2,254	3,152	4,309	5,616	6,781
	Water flow	l/h	197	276	377	491	593
	Water pressure drop	kPa	9,6	2,1	7,3	11,6	29,4
Fan speed 2 MAX	Heating capacity	kW	2,012	2,804	3,915	5,056	6,127
	Water flow	l/h	176	245	342	442	536
	Water pressure drop	kPa	7,8	1,7	6,2	9,6	24,6
Fan speed 3 MED	Heating capacity	kW	1,785	2,324	3,257	4,399	5,358
	Water flow	l/h	156	203	285	385	468
	Water pressure drop	kPa	6,3	1,2	4,4	7,6	19,4
Fan speed 4	Heating capacity	kW	1,561	1,943	2,748	3,703	4,772
	Water flow	l/h	136	170	240	324	417
	Water pressure drop	kPa	5,0	0,9	3,3	5,6	15,9
Fan speed 5 MIN	Heating capacity	kW	1,441	1,838	2,613	3,601	4,666
	Water flow	l/h	126	161	288	315	408
	Water pressure drop	kPa	4,4	0,8	3,0	5,3	15,2
Fan speed 6	Heating capacity	kW	1,157	1,532	2,204	3,078	3,908
	Water flow	l/h	101	134	193	269	342
	Water pressure drop	kPa	3,0	0,6	2,2	4,0	11,2
Water content	l	0,3	0,4	0,6	0,7	0,9	

Room temperature: 20 °C

Water temperature: 70/60 °C

Size		110	112	114	216	218	
<b>3 ROWS</b>							
Fan speed 1	Heating capacity	kW	2,837	3,977	5,412	7,042	8,496
	Water flow	l/h	248	348	473	616	743
	Water pressure drop	kPa	3,3	5,3	15,2	8,5	21,4
Fan speed 2 MAX	Heating capacity	kW	2,504	3,499	4,874	6,269	7,594
	Water flow	l/h	219	306	426	548	664
	Water pressure drop	kPa	2,6	4,2	12,6	6,9	17,6
Fan speed 3 MED	Heating capacity	kW	2,189	2,849	4	5,374	6,546
	Water flow	l/h	191	249	348	470	572
	Water pressure drop	kPa	2,1	3,0	8,8	5,3	13,6
Fan speed 4	Heating capacity	kW	1,884	2,335	3,296	4,443	6
	Water flow	l/h	165	204	288	388	504
	Water pressure drop	kPa	1,6	2,1	6,3	3,8	10,8
Fan speed 5 MIN	Heating capacity	kW	1,723	2,195	3,116	4,307	5,617
	Water flow	l/h	151	192	272	376	491
	Water pressure drop	kPa	1,4	1,9	5,7	3,6	10,4
Fan speed 6	Heating capacity	kW	1,358	1,796	2,579	3,626	4,619
	Water flow	l/h	119	157	225	317	404
	Water pressure drop	kPa	0,9	1,3	4,1	2,6	7,3
Water content	l	0,4	0,6	0,8	1,1	1,3	

Room temperature: 20 °C

Water temperature: 70/60 °C

Size		110	112	114	216	218	
<b>1 ROWS</b>							
Fan speed 1	Heating capacity	kW	1,294	2,02	2,666	3,552	4,022
	Water flow	l/h	113	177	233	311	352
	Water pressure drop	kPa	2,6	5,4	12,3	21,8	6,8
Fan speed 2 MAX	Heating capacity	kW	1,159	1,839	2,432	3,27	3,656
	Water flow	l/h	101	161	213	286	320
	Water pressure drop	kPa	2,2	4,6	10,5	18,9	5,7
Fan speed 3 MED	Heating capacity	kW	1,027	1,532	2,03	2,856	3,207
	Water flow	l/h	90	134	177	250	280
	Water pressure drop	kPa	1,7	3,3	7,6	14,9	4,5
Fan speed 4	Heating capacity	kW	0,9	1,287	1,723	2,414	2,868
	Water flow	l/h	79	113	151	211	251
	Water pressure drop	kPa	1,4	2,5	5,7	11,1	3,7
Fan speed 5 MIN	Heating capacity	kW	0,833	1,22	1,642	2,349	2,807
	Water flow	l/h	73	107	144	205	245
	Water pressure drop	kPa	1,2	2,2	5,2	10,5	3,6
Fan speed 6	Heating capacity	kW	0,682	1,024	1,392	2,027	2,378
	Water flow	l/h	60	89	122	177	208
	Water pressure drop	kPa	0,8	1,6	3,9	8,1	2,7
Water content	l	0,2	0,2	0,3	0,4	0,4	

## 8.4 Electrical data

Power supply: 230-1-50 [V-ph-Hz]

Size		110	112	114	216	218	220	222	224	226	228	
Nominal absorbed power	Fan speed 1	[W]	51	62	73	86	90	112	156	184	203	241
	Fan speed 2 MAX	[W]	46	48	57	81	86	89	119	145	156	200
	Fan speed 3 MED	[W]	37	38	45	65	68	67	94	128	138	128
	Fan speed 4	[W]	30	33	40	56	61	59	75	104	111	102
	Fan speed 5 MIN	[W]	28	29	33	49	51	50	68	85	91	85
	Fan speed 6	[W]	22	26	31	37	42	45	55	70	76	70
Nominal absorbed current	Fan speed 1	[A]	0,24	0,30	0,35	0,41	0,43	0,48	0,68	0,81	0,88	1,10
	Fan speed 2 MAX	[A]	0,22	0,23	0,27	0,39	0,41	0,38	0,52	0,66	0,68	0,87
	Fan speed 3 MED	[A]	0,18	0,18	0,22	0,31	0,32	0,29	0,41	0,59	0,61	0,55
	Fan speed 4	[A]	0,14	0,16	0,19	0,27	0,29	0,25	0,33	0,48	0,49	0,44
	Fan speed 5 MIN	[A]	0,13	0,14	0,16	0,23	0,24	0,21	0,30	0,40	0,41	0,37
	Fan speed 6	[A]	0,11	0,12	0,15	0,18	0,20	0,19	0,25	0,34	0,34	0,31
Locket rotor current	[A]	0,32	0,34	0,4	0,6	0,6	0,68	0,84	1,45	1,64	1,85	



Electrical data refer to standard fan coils with clean filter and without external static pressure. A dirty filter or an external air pressure drop will lower the absorbed power level. The installation of electric accessories increase the absorbed power level.

## 9. NOISE LEVELS

### 9.1 Sound power

The acoustic emission characteristics of any noise source is defined as its «**sound power**» (SWL). This typical measurement indicates the total radiated energy which does not vary for a given noise source; that is, it does not depend on the observer, location, distance or any other factor which is not part of the source.

### 9.2 Sound pressure in a closed environment

The perceived noise radiated from a sound source is something quite different: noise perception is indicated by its «**sound pressure**» (SPL). Even though it is caused by the emission of sound energy, it greatly depends on the environment through which the sound travels, on the distance from the source and on all other circumstances that are not directly related to the primary noise source.

Besides the distance from the source, the most important factor that influences the «**sound pressure**» (and, as a result, the perceived noise) in a closed environment is the amount of sound energy reflected off surfaces that have a greater or lesser reflection capacity: it depends, therefore, on the re-transmission of sound energy (**power**) acting upon reflecting surfaces.

Covering the walls with sound absorbing material (i.e., material with a low sound reflecting capacity) is the most effective way to reduce the noise level in a closed environment.

The following values indicate the sound pressure emitted by the fan coils. By using the YORK software for selection it is possible to calculate the new sound pressure level obtained by changing the parameters: room volume, distance from the noise source and reverberation time.

The reverberation time measures the sound characteristics of a room: it increases as the room dimensions increase and decreases as the sound absorption capacity of the structure increases.

Sound power level

		dB (A)
Size 110	Fan speed 1	52
	Fan speed 2 MAX	48
	Fan speed 3 MED	42
	Fan speed 4	40
	Fan speed 5 MIN	36
	Fan speed 6	34
Size 112	Fan speed 1	53
	Fan speed 2 MAX	50
	Fan speed 3 MED	45
	Fan speed 4	41
	Fan speed 5 MIN	38
	Fan speed 6	35
Size 114	Fan speed 1	56
	Fan speed 2 MAX	53
	Fan speed 3 MED	48
	Fan speed 4	44
	Fan speed 5 MIN	42
	Fan speed 6	38
Size 216	Fan speed 1	56
	Fan speed 2 MAX	53
	Fan speed 3 MED	47
	Fan speed 4	44
	Fan speed 5 MIN	40
	Fan speed 6	37
Size 218	Fan speed 1	58
	Fan speed 2 MAX	55
	Fan speed 3 MED	51
	Fan speed 4	47
	Fan speed 5 MIN	43
	Fan speed 6	39
Size 220	Fan speed 1	58
	Fan speed 2 MAX	53
	Fan speed 3 MED	47
	Fan speed 4	43
	Fan speed 5 MIN	40
	Fan speed 6	36
Size 222	Fan speed 1	63
	Fan speed 2 MAX	60
	Fan speed 3 MED	55
	Fan speed 4	52
	Fan speed 5 MIN	50
	Fan speed 6	46
Size 224	Fan speed 1	64
	Fan speed 2 MAX	58
	Fan speed 3 MED	56
	Fan speed 4	52
	Fan speed 5 MIN	49
	Fan speed 6	48
Size 226	Fan speed 1	67
	Fan speed 2 MAX	63
	Fan speed 3 MED	60
	Fan speed 4	58
	Fan speed 5 MIN	54
	Fan speed 6	51
Size 228	Fan speed 1	70
	Fan speed 2 MAX	66
	Fan speed 3 MED	58
	Fan speed 4	52
	Fan speed 5 MIN	49
	Fan speed 6	45

Sound pressure in a closed environment

		dB (A)
Size 110	Fan speed 1	40
	Fan speed 2 MAX	38
	Fan speed 3 MED	33
	Fan speed 4	32
	Fan speed 5 MIN	28
	Fan speed 6	27
Size 112	Fan speed 1	42
	Fan speed 2 MAX	40
	Fan speed 3 MED	35
	Fan speed 4	32
	Fan speed 5 MIN	29
	Fan speed 6	27
Size 114	Fan speed 1	45
	Fan speed 2 MAX	42
	Fan speed 3 MED	38
	Fan speed 4	34
	Fan speed 5 MIN	32
	Fan speed 6	29
Size 216	Fan speed 1	44
	Fan speed 2 MAX	41
	Fan speed 3 MED	36
	Fan speed 4	33
	Fan speed 5 MIN	29
	Fan speed 6	27
Size 218	Fan speed 1	45
	Fan speed 2 MAX	43
	Fan speed 3 MED	39
	Fan speed 4	35
	Fan speed 5 MIN	32
	Fan speed 6	28
Size 220	Fan speed 1	45
	Fan speed 2 MAX	41
	Fan speed 3 MED	35
	Fan speed 4	31
	Fan speed 5 MIN	29
	Fan speed 6	25
Size 222	Fan speed 1	51
	Fan speed 2 MAX	47
	Fan speed 3 MED	42
	Fan speed 4	39
	Fan speed 5 MIN	38
	Fan speed 6	34
Size 224	Fan speed 1	51
	Fan speed 2 MAX	45
	Fan speed 3 MED	44
	Fan speed 4	40
	Fan speed 5 MIN	37
	Fan speed 6	36
Size 226	Fan speed 1	54
	Fan speed 2 MAX	50
	Fan speed 3 MED	47
	Fan speed 4	45
	Fan speed 5 MIN	41
	Fan speed 6	39
Size 228	Fan speed 1	58
	Fan speed 2 MAX	53
	Fan speed 3 MED	45
	Fan speed 4	40
	Fan speed 5 MIN	36
	Fan speed 6	33

## 10. CONVERSION TABLES

The units of electrical measurement are common to the all systems:

- V voltage
- Hz frequency of the voltage
- A absorbed current intensity
- W absorbed electric power

The conversion tables enable you to convert data into units of the Technic System (T.S.), International System (I.S.) and British System (B.S.).

FROM		TECHNIC SYSTEM (T.S.)			
TO		I.S.		B.S.	
temperature	°C (*)	=		°F	= °C x 1,8 + 32
external static pressure	Pa	=	mm c.a. x 9,80665	m p.s.i.	= mm c.a. x 1,422
capacity (heating and cooling)	W	=	Kcal/h x 1,163	Btu/h	= Kcal/h x 3,968
water flow	l/s (*)	=	l/h / 3600	gal/h	= l/h / 4,545
water pressure drop	KPa	=	m c.a. x 9,80665	p.s.i.	= m c.a. x 1,422
air flow	m <sup>3</sup> /s	=	m <sup>3</sup> /h / 3600	Kgal/h	= m <sup>3</sup> /h / 4,545

FROM		INTERNATIONAL SYSTEM (I.S.)			
TO		T.S.		B.S.	
temperature	°C			°F	= °C x 1,8 + 32
external static pressure	mm c.a.	=	Pa / 9,80665	m p.s.i.	= Pa x 6,896
capacity (heating and cooling)	Kcal/h	=	W / 1,163	Btu/h	= W x 3,412
water flow	l/h	=	l/s x 3600	gal/h	= l/s x 16362
water pressure drop	m c.a.	=	Kpa / 9,80665	p.s.i.	= KPa x 6,896
air flow	m <sup>3</sup> /h	=	m <sup>3</sup> /s x 3600	Kgal/h	= m <sup>3</sup> /s x 792

FROM		BRITISH SYSTEM (B.S.)			
TO		T.S.		I.S.	
temperature	°C	=	(°F - 32) / 1,8	°C (*)	= (°F - 32) / 1,8
external static pressure	mm c.a.	=	m p.s.i. / 1,422	Pa	= m p.s.i. / 6,896
capacity (heating and cooling)	Kcal/h	=	Btu/h / 3,968	W	= Btu/h / 3,412
water flow	l/h	=	gal/h x 4,545	l/s (*)	= gal/h / 16362
water pressure drop	m c.a.	=	p.s.i. / 1,422	KPa	= p.s.i. / 6,896
air flow	m <sup>3</sup> /h	=	Kgal/h x 4,545	m <sup>3</sup> /s	= Kgal/h / 792

(\*) in common use; strictly the temperature should be measured in K and volume in m<sup>3</sup>

### Example 1

Model YLV 110 3R has a heating capacity of 2442 kcal/h at the MAX speed. The same capacity can be calculated in Btu/h by converting the value from the Technic System (T.S) to the British System (B.S.):

$$\text{Btu/h} = \text{kcal/h} \times 3.968 \quad \text{that is} \quad \text{Btu/h} = 2442 \times 3.968 = 9690$$

### Example 2

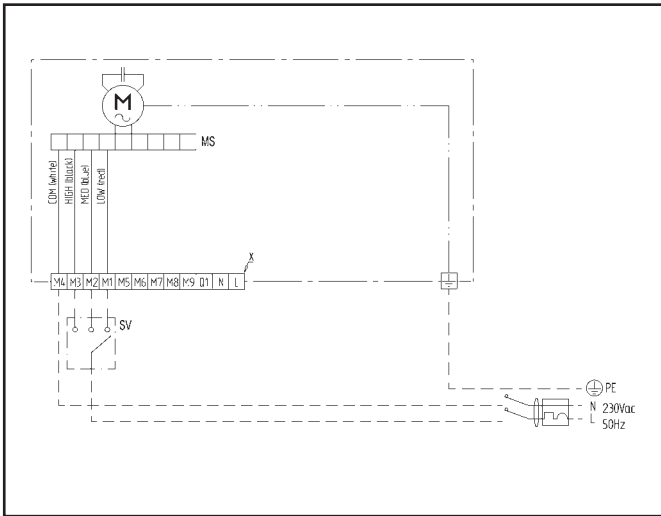
Convert in l/s the water flow of 12 gal/h. We convert the value from the British System (B.S.) to the International System (I.S.):

$$\text{l/s} = \text{gal/h} / 792 \quad \text{that is} \quad \text{l/s} = 12 / 792 = 0.0$$

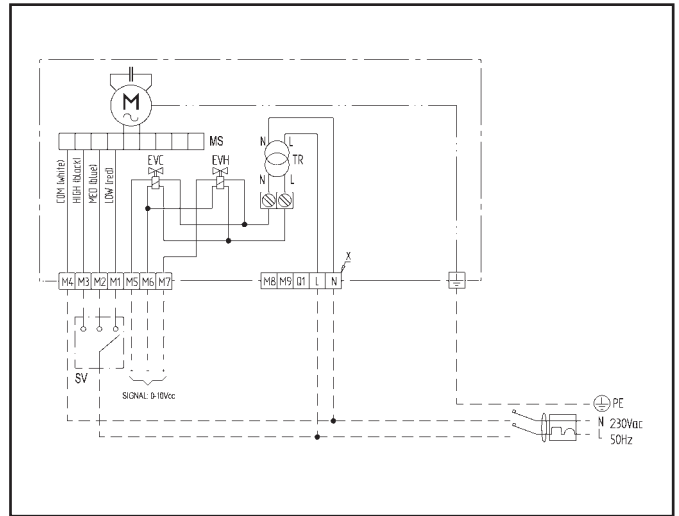
# EXHIBIT 1 ELECTRICAL CONNECTIONS

The following wiring diagrams are the most frequently used for fancoil applications:

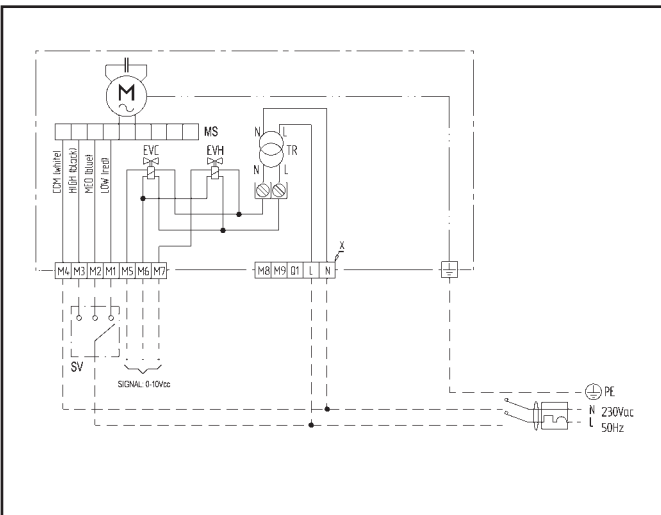
**CBL00**



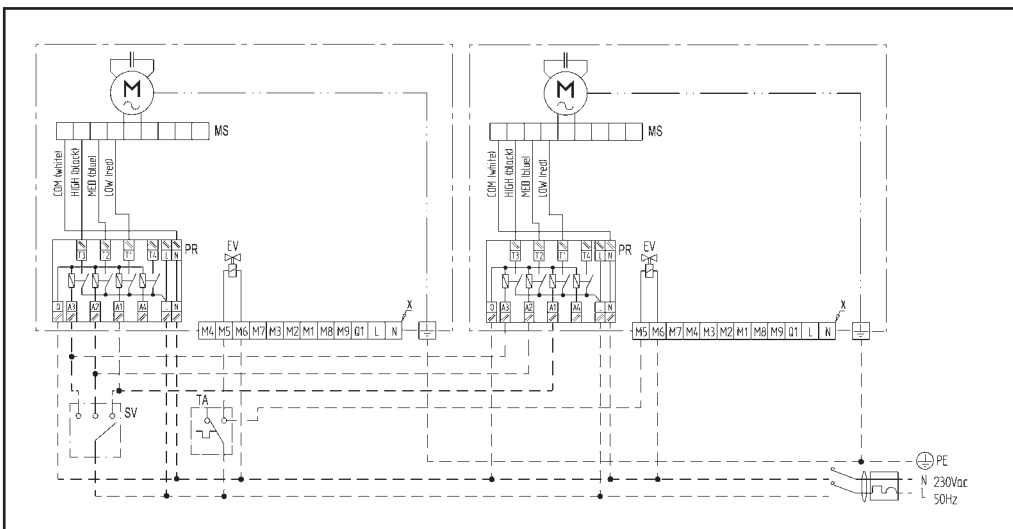
**CBL00 – EVC – EVH**



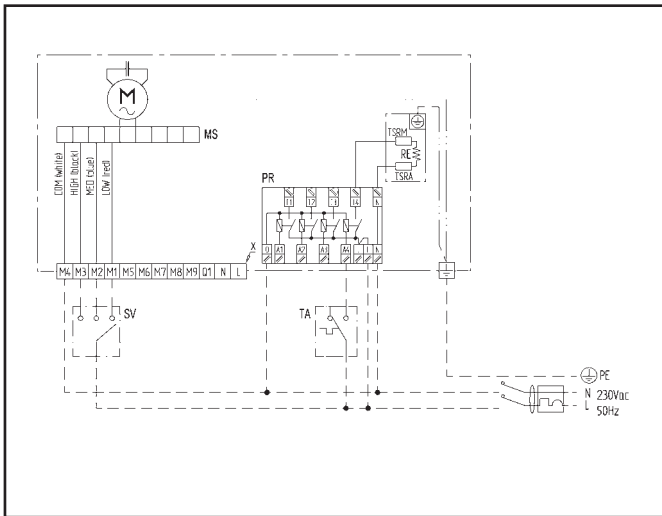
**CBL10 – EVC – EVH**



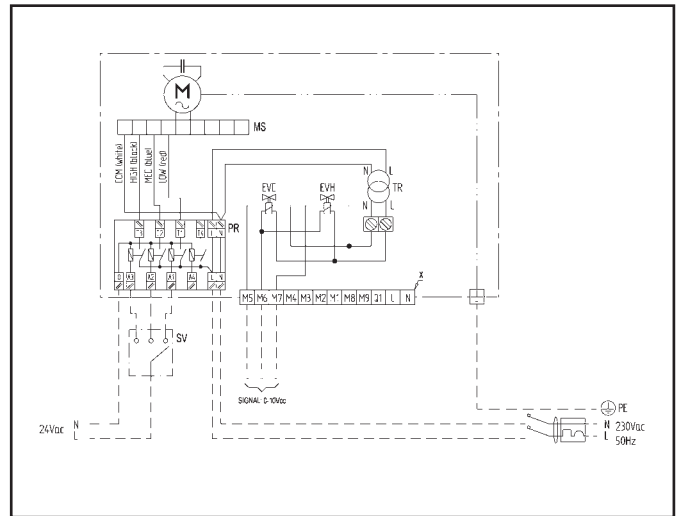
**CBL20 – EV – MASTER/SLAVE**



## CBL20 – RE



## CBL30 – EVC – EVH



### LEGEND

(for all the electric diagrams)

<b>M</b>	Fan motor
<b>MS</b>	Terminal board for motor
<b>SV</b>	Fan speed selector (OFF-1-2-3)
<b>PE</b>	Earth
<b>N</b>	Neutral
<b>L</b>	Phase
<b>TA</b>	Room temperature thermostat
<b>E/I</b>	S/W switch

<b>RE</b>	Electric heater
<b>PR</b>	Power Relay card
<b>TSRM</b>	Safety thermostat with manual resetting
<b>TSRA</b>	Safety thermostat with automatic resetting
<b>EV</b>	Regulating valve: EVC for cooling; EVH for heating
<b>TR</b>	Transformer 230/24V
<b>x</b>	CBL00 terminal board

**NOTE.** If other configurations are required, different from the standard ones, please refer to the instruction manual of every specific YORK regulator.

