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## TECHNICAL MANUAL



# ESTRO

FAN COIL UNITS WITH CENTRIFUGAL FAN

1 kW - 11 kW

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**OPERATING LIMITS**

- > thermal carrier fluid: water
- > water temperature: from 5°C to 95°C
- > maximum operating pressure: 10 bar
- > air temperature: from 5°C to 43 °C
- > supply voltage: 230 Vac
- > IP20

The technical and dimensional data provided herein may undergo changes in connection with product improvements.

- For any further information, contact the manufacturer: [info@galletti.it](mailto:info@galletti.it)
- To find out the weight of each unit, please refer to the table in the paragraph "Rated specifications"

## ESTRO 1.2 FAN COIL UNITS WITH CENTRIFUGAL FAN

The most complete range of fan coil units on the market featuring the Galletti technology, quality level and reliability.

The conception underlying its construction makes it possible to combine models for vertical and horizontal installation: models for surface mounting on walls, floors/ceilings and recess mounting in walls/ceilings plus low body model for floor installation. Low body models for vertical and horizontal recess mounting available on request.

**20 models with cooling capacity from 1 to 11 kW, in 8 different versions:**



For the ESTRO 1.2 project we selected top quality materials which, together with the great care and attention dedicated to the assembly of the main construction components, make Galletti fan coil units highly reliable from a performance standpoint while minimising noise levels.

**Round shapes and colours** that can satisfy all interior decorating needs, in line with architectural requirements.

- CABINET COMPOSED of a thick steel sheet panel, side panels, air outlet grille (swinging by 180°) and back suction grille built from **ABS**.
- BEARING STRUCTURE built from thick galvanised sheet steel, insulated by means of Class 1 self-extinguishing panels. The versions designed for horizontal mounting are equipped with a large water drip tray.
- HIGH EFFICIENCY HEAT EXCHANGER made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger comes with water connections mounted on the left, but it can be turned by 180°. On request it is possible to install an additional heat exchanger to be connected to the heating circuit, for installing ESTRO 1.2 in 2-pipe systems.
- Double suction CENTRIFUGAL FANS, statically and dynamically balanced, manufactured from anti-static ABS, with blades having an airfoil section and offset modules
  - ELECTRICAL MOTOR, mounted on vibration damping couplings, with permanently activated capacitor and winding thermal protection.thermal protection, directly connected to the fans is available in three versions to meet every type of performance. noise level and energy consumption:
    - three speeds
    - six speeds
- HONEY-COMB POLYPROPYLENE WASHABLE AIR FILTER, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations. On **FU** and **FB** versions the air filters are fitted onto the air inlet grille situated on the front panel of the cabinet.



- CONTROL PANELS available as accessory for temperature control and adjustment through a microprocessor system that automatically regulates the fan coil unit operation according to the ambient conditions.

ESTRO fan coil units can be connected to ERGO networks



## SANITISED INDOOR UNITS

For years Galletti has been using an innovative Swiss patent for its indoor hydronic units., that releases **active ions** and ensures a triple action:

- > sanitisation of the indoor unit and of the treated air
- > deodorisation
- > improvement in Indoor Air Quality



The active ions sanitise and deodorise indoor environments, reducing the risks of contagion of infectious diseases and the incidence of chronic disorders (respiratory diseases, allergies, asthma, etc.).

## 2 MODELS AND CONSTRUCTIVE COMPONENTS

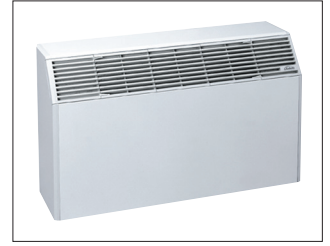
### FL Wall mounting

- > Cabinet composed of a thick steel sheet panel, side panels, air outlet grille (swinging by 180°) and back suction grille built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations. The filter is secured to the cabinet with ¼-turn screws (with the exception of 12 model).



### FA Wall mounting

- > Cabinet composed of a thick steel sheet panel, side panels, air outlet grille (swinging by 180°) and back suction grille built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations.



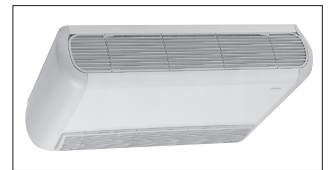
### FP Ceiling installation

- > Cabinet composed of a steel sheet panel (thickness 10/10 mm), side panels and air outlet grille (swinging by 180°) built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations. The filter is secured to the cabinet with ¼-turn screws.



### FU Universal: floor/ceiling mounted

- > Cabinet composed of a thick steel sheet panel (10/10 mm), side panels, air outlet grille (swinging by 180°) and back suction grilles built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, made up of modules fitted onto the air inlet grille situated on the front panel of the cabinet.



## 2 MODELS AND CONSTRUCTIVE COMPONENTS

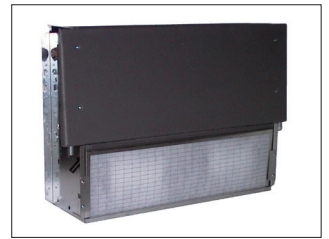
### FC Vertical / horizontal recess mounted

- > Bearing structure built from thick galvanised steel sheet (thickness up to 10/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations.



### FF Vertical / horizontal recess mounted

- > Bearing structure built from galvanised steel sheet (thickness up to 10/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules, or aluminium.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations. The filter is secured to the cabinet with ¼-turn screws.



### FBC Vertical / horizontal recess mounted with low cabinet

- > Bearing structure built from galvanised steel sheet (thickness up to 10/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and air vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules.
- > Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations.



### FB Floor mounted with low cabinet

- > Cabinet composed of a thick steel sheet panel (10/10 mm), side panels, air outlet grille (swinging by 180°) and back suction grilles built from ABS. The side doors make it possible to access the technical compartments and the control panel (accessory).
- > Bearing structure built from thick galvanised steel sheet (thickness up to 15/10 mm), insulated by means of Class 1 self-extinguishing panels. The unit is supplied complete with a double condensate collection and drainage system; in case of horizontal installation, condensate is collected in a capacious drip tray.
- > High efficiency heat exchanger made with copper piping and aluminium fins blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve. The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
- > Three/six-speed electrical motor, mounted on vibration damping couplings, complete with permanently activated capacitor and winding thermal protection.
- > Double suction centrifugal fans, statically and dynamically balanced, directly connected to the electrical motor, made with antistatic ABS, with blades having an airfoil section and offset modules.
- > Honey-comb polypropylene washable air filter, made up of modules fitted onto the air inlet grille situated on the front panel of the cabinet.



### 3 ACCESSORIES

A broad and complete range of accessories defines these indoor units and allows them to be tailored to every type of installation requirement. The standard units are supplied without control panel.

REF.	DESCRIPTION	APPLICABLE TO:
<b>CONTROL PANELS AND THERMOSTATS</b>		
CB	Speed switch, installation on the unit	FL-FA-FU-FB
TB	Speed switch mounted on the unit and electromechanical thermostat	FL-FA-FU-FB
TIB	Speed switch mounted on the unit, electromechanical thermostat and summer/winter selecting switch	FL-FA-FU-FB
LED503	Recess wall-mounted microprocessor control	ALL
MCBE	Wall-mounted microprocessor control - GALLETTI model <b>MYCOMFORT BASE</b>	ALL
MCME	Wall-mounted microprocessor control - GALLETTI model <b>MYCOMFORT MEDIUM</b>	ALL
MCLE	Wall-mounted microprocessor control - GALLETTI model <b>MYCOMFORT LARGE</b>	ALL
EVO	Electronic control for hydronic units	ALL
EVO I/O	Electronic board	ALL
KBESTE	On-board installation KIT for ESTRO (1 air sensor + bracket + on-board LCD controller frame + cable kit)	FL-FA-FU-FB
MCSWE	Water temperature electronic sensor for <b>MYCOMFORT controls</b>	ALL
MCSUE	Humidity sensor for on-board microprocessor controls model <b>MYCOMFORT MEDIUM</b> and <b>MYCOMFORT LARGE</b> .	ALL
CSB	Control mounted on the unit for opening and closing the SM motor-driven regulating louver	FL-FA
TC	Electromechanical thermostat for minimum water temperature in heating mode, mounted on the heat exchanger	ALL
KP	Power interface for connecting in parallel up to 4 fan coils to one control	ALL
CD	Recess wall-mounted speed switch	ALL
CDE	Recess wall-mounted speed switch	ALL
TD	Wall-mounted speed switch, electromechanical thermostat and summer-winter selector	ALL
TDC	Wall-mounted speed switch and electromechanical thermostat	ALL
TD4T	Wall-mounted speed switch, electromechanical thermostat and summer-winter selector for 2 or 4-pipe systems with valves	ALL
CSD	Wall-mounted control for opening and closing the SM motor-driven regulating valve	FL-FA-FP-FC
TA	Electromechanical ambient thermostat	ALL
TA2	Electromechanical ambient thermostat with summer/winter selector	ALL
<b>ADDITIONAL HEAT EXCHANGERS</b>		
DF	1 row additional heat exchanger for 4-pipe systems (hot water circuit)	FL-FA-FU-FP-FC-FF
<b>SUPPORT AND COVERING FEET</b>		
ZA	Two support covering feet	FA
ZAG	Two support covering feet with front grille	FA
ZL	Two support covering feet	FL
ZLG	Two support covering feet with front grille	FL
D	Support brackets	FC
PVL	Rear painted panel for vertical installation fan coil units with cabinet	FL-FU
PVA	Rear painted panel for vertical installation fan coil units with cabinet	FA
PVB	Rear painted panel for vertical installation fan coil units with cabinet	FB
PH	Rear painted panel for horizontal installation fan coil units with cabinet	FU
<b>MOTOR-DRIVEN VALVES AND DRIP TRAYS</b>		
VK S	3-way valve with ON/OFF electrothermal motor and hydraulic kit for standard heat exchanger	ALL
VK DF	3-way valve with ON/OFF electrothermal motor and hydraulic kit for DF heat exchanger	FL-FA-FU-FP-FC-FF
KVK	2-way valve, 24V/230V actuator, hydraulic kit on water connection side for standard and DF heat exchanger	ALL
VKM	3-way valve, modulating actuator, hydraulic kit for standard and DF heat exchanger	ALL
KVK	2-way valve, modulating actuator, hydraulic kit on water connection side for standard and DF heat exchanger	ALL
GIVK	Valve body insulation shell	ALL
BV	Auxiliary water drip tray for vertical installation fan coil units	ALL
BH	Auxiliary water drip tray for horizontal installation fan coil units	FU-FP-FC-FF
KSC	Condensate drainage pump	FC-FF
<b>HEATING ELEMENTS</b>		
RE	Electric heating element complete with installation kit, safety devices, power relay box, heat resistant grilles	FL-FU-FP-FC-FF
<b>AIR INTAKE AND OUTLET GRILLES</b>		
GE+C	Anodised aluminium grille for external air intake, complete with subframe	FL-FA-FU-FP-FC-FF
GEF+C	Anodised aluminium grille for external air intake, complete with filter and subframe	FC-FF-FBC
GM+C	Anodised aluminium double-row finned air outlet grille, complete with subframe	FC-FF-FBC
RGCCD	Plenum with circular collars for air outlet grille	FC-FF-FBC
<b>INLET AND OUTLET CONNECTORS</b>		
RM90	Angular air inlet connector	FC-FF-FBC
RMD	Air inlet straight connector	FC-FF-FBC
RA90	Air outlet angular connector	FC
RAD	Air outlet straight connector	FC
RMCD	Air inlet plenum with circular collars	FC-FF-FBC
<b>EXTERNAL AIR INTAKE LOUVERS</b>		
S	Manual external air intake louver	FL-FA-FP-FC
SM	Motor-driven external air intake louver	FL-FA-FP-FC



## 4 RATINGS AND TECHNICAL DATA

ESTRO		1						2			3					
Motor / speeds	3x	min	med	max				min	med	max		min	med	max		
	6x	no	1	2	3	4	5	6	n.d.			1	2	3	4	5
Total cooling capacity (1)	kW	0,77	0,92	1,15	1,33	1,41	1,54	1,04	1,24	1,54	1,20	1,26	1,52	1,74	1,91	2,12
Sensible cooling capacity (1)	kW	0,59	0,70	0,87	0,98	1,03	1,11	0,79	0,97	1,20	0,90	0,95	1,14	1,30	1,43	1,58
Total cooling capacity (6)	kW	0,75	0,90	1,12	1,29	1,36	1,47	1,02	1,21	1,50	1,18	1,24	1,48	1,69	1,85	2,05
Sensible cooling capacity (6)	kW	0,57	0,68	0,84	0,94	0,98	1,04	0,77	0,94	1,16	0,88	0,93	1,10	1,25	1,37	1,51
Water flow (1)	l/h	132	158	197	228	242	264	179	213	264	206	216	261	299	328	364
Pressure drop (1)	kPa	4	5	7	9	11	12	7	9	13	8	8	11	14	17	20
Heating capacity (2)	kW	1,11	1,30	1,55	1,87	1,98	2,16	1,43	1,73	2,14	1,61	1,71	2,04	2,20	2,55	2,83
Pressure drop (2)	kPa	3	4	6	8	9	10	6	8	11	6	7	9	12	14	17
Heating capacity (3)	kW	1,94	2,27	2,68	3,26	3,45	3,77	2,47	2,99	3,71	2,76	2,93	3,50	3,74	4,40	4,89
Water flow (3)	l/h	171	199	235	286	303	331	216	263	325	242	257	307	329	386	429
Pressure drop (3)	kPa	4	6	8	11	12	14	7	10	15	8	8	11	13	17	21
Air flow rate	m <sup>3</sup> /h	149	189	231	342	380	450	178	233	319	196	211	271	344	380	450
Electrical input	3x	W	18	21	32			21	28	37		25	36	53		
	6x	W	18	21	32	39	49	66	n.d.			18	25	36	53	57
Number of fans	no.	1						1			1					
Sound power level (4)	dB/A	30	32	40	48	52	55	37	42	47	32	38	44	49	52	55
Sound pressure level (5)	dB/A	25	27	35	43	47	50	32	37	42	27	33	39	44	47	50
Additional heat exchanger heating capacity (3)	kW	1,35	1,50	1,70	2,03	2,13	2,29	1,50	1,70	1,90	1,55	1,56	1,78	2,02	2,13	2,29
Water flow	l/h	118	132	149	178	187	201	132	149	167	136	137	156	177	187	201
Pressure drop	kPa	3	4	4	6	7	8	4	5	6	5	5	7	8	9	10
Water connections	std	1/2						1/2			1/2					
	DF	1/2						1/2			1/2					
Water content	std	0,46						0,46			0,46					
	DF	0,18						0,18			0,18					

ESTRO		4						4M						5					
Motor / speeds	3x	min	med	max				min	med	max				min	med	max			
	6x	no	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5
Total cooling capacity (1)	kW	1,29	1,36	1,70	1,96	2,33	2,62	1,41	1,50	1,85	2,24	2,42	2,76	1,40	1,60	2,03	2,42	2,74	2,90
Sensible cooling capacity (1)	kW	0,94	1,00	1,24	1,42	1,69	1,90	1,00	1,06	1,32	1,60	1,74	1,99	1,04	1,18	1,57	1,88	2,23	2,39
Total cooling capacity (6)	kW	1,27	1,34	1,66	1,91	2,27	2,55	1,39	1,48	1,81	2,19	2,36	2,69	1,38	1,57	1,99	2,36	2,67	2,82
Sensible cooling capacity (6)	kW	0,92	0,98	1,20	1,37	1,63	1,83	0,98	1,04	1,28	1,55	1,68	1,92	1,02	1,15	1,53	1,82	2,16	2,31
Water flow (1)	l/h	221	234	292	337	400	449	242	258	317	384	415	473	239	275	348	415	470	498
Pressure drop (1)	kPa	6	6	9	12	16	20	9	10	14	20	23	28	6	8	12	16	20	22
Heating capacity (2)	kW	1,68	1,78	2,16	2,55	2,76	3,08	1,72	1,83	2,26	2,74	2,97	3,38	1,85	2,07	2,68	3,20	3,61	3,82
Pressure drop (2)	kPa	5	5	8	10	13	16	7	8	11	16	18	23	5	6	10	13	16	18
Heating capacity (3)	kW	2,87	3,04	3,67	4,35	4,66	5,19	2,90	3,08	3,80	4,62	5,00	5,70	3,15	3,52	4,57	5,47	6,17	6,54
Water flow (3)	l/h	252	267	322	382	409	456	254	270	333	405	439	500	276	308	401	480	541	574
Pressure drop (3)	kPa	5	6	8	11	13	15	7	8	12	16	19	24	6	7	12	16	20	22
Air flow rate	m <sup>3</sup> /h	196	211	271	344	380	450	196	211	271	344	380	450	211	241	341	442	528	579
Electrical input	3x	W	24	36	53				24	36	53				29	44	57		
	6x	W	18	25	36	53	57	66	18	25	36	53	57	66	24	29	44	57	69
Number of fans	no.	1						1						2					
Sound power level (4)	dB/A	32	40	44	50	52	55	33	41	45	51	53	56	26	35	43	48	50	52
Sound pressure level (5)	dB/A	27	35	39	45	47	50	28	36	40	46	48	51	21	30	38	43	45	47
Additional heat exchanger heating capacity (3)	kW	1,53	1,56	1,78	2,01	2,13	2,29	n.d.						1,92	2,06	2,53	2,92	3,37	3,51
Water flow	l/h	134	137	156	176	187	201	n.d.						169	181	222	257	295	308
Pressure drop	kPa	5	5	6	7	8	9	n.d.						2	2	3	4	6	6
Water connections	std	1/2						1/2						1/2					
	DF	1/2						n.d.						1/2					
Water content	std	0,70						0,93						0,71					
	DF	0,18						n.d.						0,29					

- 1 Water temperature 7-12°C, air temp. 27°C D.B., 19°C W.B. (47% R.H.)
- 2 Water temp. 50°C, water flow rate same as in cooling mode, air inlet temperature 20°C
- 3 Water temp. 70/60°C, air temp. 20°C
- 4 Sound power measured according to standards ISO3741 and ISO3742
- 5 Sound pressure level measured at a distance of 1 m with a directivity factor of 4
- 6 EN1397



## 4 RATINGS AND TECHNICAL DATA

ESTRO		6						6M						7						
Motor / speeds	3x	min		med		max		min		med		max		min		med		max		
	6x	no	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Total cooling capacity (1)		kW	1,53	1,76	2,38	2,93	3,37	3,61	1,70	1,93	2,64	3,30	3,82	4,11	1,98	2,63	3,51	3,97	4,15	4,40
Sensible cooling capacity (1)		kW	1,10	1,26	1,70	2,11	2,39	2,55	1,17	1,33	1,83	2,30	2,68	2,90	1,45	2,04	2,75	3,22	3,39	3,63
Total cooling capacity (6)		kW	1,51	1,73	2,34	2,87	3,30	3,53	1,68	1,90	2,60	3,24	3,75	4,03	1,94	2,58	3,45	3,88	4,06	4,30
Sensible cooling capacity (6)		kW	1,08	1,23	1,66	2,05	2,32	2,47	1,15	1,30	1,79	2,24	2,61	2,82	1,41	1,99	2,69	3,13	3,30	3,53
Water flow (1)		l/h	263	302	408	503	579	619	292	331	452	565	655	706	340	451	602	680	711	755
Pressure drop (1)		kPa	4	5	8	11	15	16	5	7	12	17	23	26	4	7	12	15	16	18
Heating capacity (2)		kW	2,01	2,28	3,08	3,81	4,37	4,67	2,06	2,33	3,21	4,04	4,71	5,08	2,81	3,69	4,78	5,52	5,77	6,12
Pressure drop (2)		kPa	3	4	6	9	12	13	4	6	10	14	18	21	4	6	10	12	13	15
Heating capacity (3)		kW	3,41	3,86	5,22	6,46	7,41	7,95	3,45	3,91	5,39	6,79	7,91	8,55	4,83	6,34	8,21	9,54	9,98	10,6
Water flow (3)		l/h	299	339	458	567	651	697	302	343	473	595	694	750	424	556	720	837	876	929
Pressure drop (3)		kPa	3	4	7	11	14	15	4	6	10	14	19	22	5	8	13	16	18	20
Air flow rate		m <sup>3</sup> /h	211	241	341	442	528	579	211	241	341	442	528	579	320	450	640	798	855	938
Electrical input	3x	W		29	43	56			29	43	56			40	50	65				
	6x	W	24	29	44	57	69	82	24	29	44	57	69	82	40	50	65	90	95	105
Number of fans	no.	2						2						2						
Sound power level (4)		dB/A	26	34	42	48	50	52	27	35	43	49	51	53	35	43	52	56	57	60
Sound pressure level (5)		dB/A	21	29	37	43	45	47	22	30	38	44	46	48	30	38	47	51	52	55
Additional heat exchanger heating capacity (3)		kW	2,06	2,18	2,68	3,08	3,37	3,51	n.d.						3,21	3,96	4,80	5,34	5,52	5,77
Water flow		l/h	180	191	235	270	295	308	n.d.						282	347	421	469	484	506
Pressure drop		kPa	3	3	4	5	6	7	n.d.						4	6	9	10	11	12
Water connections	std	"	1/2						1/2						1/2					
	DF	"	1/2						n.d.						1/2					
Water content	std	dm3	1,06						1,42						0,95					
	DF	dm3	0,29						n.d.						0,40					

ESTRO		7M						8						8M						
Motor / speeds	3x	min		med		max		min		med		max		min		med		max		
	6x	no	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Total cooling capacity (1)		kW	2,49	3,39	4,58	5,47	5,77	6,20	2,51	3,27	3,98	4,33	4,93	5,26	2,78	3,70	4,56	4,96	5,77	6,20
Sensible cooling capacity (1)		kW	1,73	2,37	3,22	3,86	4,09	4,40	1,80	2,45	3,04	3,15	3,90	4,20	1,94	2,59	3,21	3,50	4,09	4,40
Total cooling capacity (6)		kW	2,45	3,34	4,52	5,38	5,68	6,10	2,47	3,22	3,92	4,24	4,84	5,16	2,74	3,65	4,50	4,87	5,68	6,10
Sensible cooling capacity (6)		kW	1,69	2,32	3,16	3,77	4,00	4,30	1,76	2,40	2,98	3,06	3,81	4,10	1,90	2,54	3,15	3,41	4,00	4,30
Water flow (1)		l/h	426	582	785	937	990	1065	431	561	683	743	847	902	477	635	783	850	990	1065
Pressure drop (1)		kPa	6	11	18	24	27	30	5	8	11	12	16	17	7	12	18	20	27	30
Heating capacity (2)		kW	3,01	4,08	5,49	6,55	6,92	7,43	2,98	3,90	4,76	5,10	6,44	6,85	3,36	4,45	5,47	5,95	6,92	7,43
Pressure drop (2)		kPa	5	9	14	20	22	25	4	6	9	10	13	14	6	10	14	17	22	25
Heating capacity (3)		kW	5,06	6,84	9,22	11,0	11,6	12,5	5,03	6,57	8,00	8,57	11,6	12,5	5,64	7,46	9,17	9,98	11,6	12,5
Water flow (3)		l/h	444	601	808	965	1020	1096	442	576	702	752	962	1025	495	654	805	876	1020	1096
Pressure drop (3)		kPa	5	8	14	19	21	24	4	6	8	10	15	16	6	10	14	16	21	24
Air flow rate		m <sup>3</sup> /h	320	450	640	798	855	938	361	497	637	706	855	938	361	497	637	706	855	938
Electrical input	3x	W	36	61	98				40	50			90		38	61		98		
	6x	W	40	50	65	90	95	105	40	50	65	90	95	105	40	50	65	90	95	105
Number of fans	no.	2						2						2						
Sound power level (4)		dB/A	36	44	53	57	58	61	35	43	50	53	57	60	36	44	51	54	58	61
Sound pressure level (5)		dB/A	31	39	48	52	53	56	30	38	45	48	52	55	31	39	46	49	53	56
Additional heat exchanger heating capacity (3)		kW	n.d.						3,60	4,25	4,79	5,05	5,52	5,77	n.d.					
Water flow		l/h	n.d.						316	373	420	443	484	506	n.d.					
Pressure drop		kPa	n.d.						7	9	11	12	14	16	n.d.					
Water connections	std	"	1/2						1/2						1/2					
	DF	"	n.d.						1/2						n.d.					
Water content	std	dm3	1,90						1,42						1,91					
	DF	dm3	n.d.						0,40						n.d.					

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- 6 EN1397





## 4 RATINGS AND TECHNICAL DATA

ESTRO		9						9M						95					
Motor / speeds	3x	min		med	max		min		med	max		min		med	max				
	6x	no	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5
Total cooling capacity (1)	kW	2,67	3,17	3,87	4,77	5,00	5,33	2,98	3,52	4,37	5,40	5,77	6,20	2,93	3,42	4,19	5,26	5,81	6,27
Sensible cooling capacity (1)	kW	1,96	2,32	2,92	3,65	3,90	4,20	2,08	2,47	3,07	3,82	4,09	4,40	2,07	2,34	3,00	3,82	4,15	4,49
Total cooling capacity (6)	kW	2,63	3,12	3,81	4,68	4,91	5,23	2,94	3,47	4,31	5,31	5,68	6,10	2,89	3,37	4,12	5,15	5,70	6,16
Sensible cooling capacity (6)	kW	1,92	2,27	2,86	3,56	3,81	4,10	2,04	2,42	3,01	3,73	4,00	4,30	2,03	2,29	2,93	3,71	4,04	4,38
Water flow (1)	l/h	457	544	664	818	857	915	511	605	750	927	990	1065	503	587	719	902	997	1075
Pressure drop (1)	kPa	5	7	10	14	16	17	8	11	16	24	27	30	7	9	13	19	23	26
Heating capacity (2)	kW	3,60	3,96	4,87	5,95	6,76	7,21	3,59	4,24	5,24	6,47	6,92	7,43	3,69	4,22	5,18	6,57	7,37	7,96
Pressure drop (2)	kPa	4	6	8	12	13	14	7	9	13	19	22	25	6	7	10	16	19	21
Heating capacity (3)	kW	6,12	6,69	8,25	10,1	11,6	12,4	6,02	7,11	8,79	10,9	11,6	12,5	6,21	7,10	8,72	11,1	12,5	13,5
Water flow (3)	l/h	537	588	724	884	1013	1084	529	623	772	953	1020	1096	545	623	765	973	1092	1180
Pressure drop (3)	kPa	5	6	9	12	16	18	7	9	13	19	21	24	6	8	11	17	20	23
Air flow rate	m <sup>3</sup> /h	389	470	605	785	855	938	389	470	605	785	855	938	389	488	615	814	855	938
Electrical input	3x	W	50	65	90				47	68	98			52	73	107			
	6x	W	40	50	65	90	95	105	40	50	65	90	95	105	45	52	73	107	110
Number of fans	no.	2						2						2					
Sound power level (4)	dB/A	39	43	49	56	57	60	40	44	50	57	58	61	39	44	51	58	58	60
Sound pressure level (5)	dB/A	34	38	44	51	52	55	35	39	45	52	53	56	34	39	46	53	53	55
Additional heat exchanger heating capacity (3)	kW	3,67	4,04	4,65	5,30	5,52	5,77	n.d.						3,98	4,21	4,78	5,51	6,10	6,38
Water flow	l/h	322	355	408	465	484	506	n.d.						350	369	419	483	535	560
Pressure drop	kPa	5	6	8	10	11	12	n.d.						8	9	11	14	17	19
Water connections	std	1/2						1/2						3/4					
	DF	1/2						n.d.						1/2					
Water content	std	1,43						1,91						1,72					
	DF	0,40						n.d.						0,51					

ESTRO		10			10M			11			
Motor / speeds	3x	min	med	max	min	med	max	min	med	max	
	6x	n.d.			n.d.			n.d.			
Total cooling capacity (1)	kW	3,97	5,27	6,71	4,41	5,82	7,38	4,11	6,24	8,02	
Sensible cooling capacity (1)	kW	2,84	3,83	4,91	3,07	4,06	5,17	3,05	4,63	5,96	
Total cooling capacity (6)	kW	3,88	5,14	6,53	4,32	5,69	7,20	4,00	6,07	7,78	
Sensible cooling capacity (6)	kW	2,75	3,70	4,73	2,98	3,93	4,99	2,94	4,46	5,72	
Water flow (1)	l/h	682	905	1152	756	999	1267	706	1071	1376	
Pressure drop (1)	kPa	5	8	12	8	14	21	6	13	20	
Heating capacity (2)	kW	4,77	6,23	7,83	5,15	6,70	8,40	5,24	7,80	10,0	
Pressure drop (2)	kPa	4	6	10	7	11	17	5	11	16	
Heating capacity (3)	kW	8,06	10,5	13,1	8,63	11,2	14,0	8,91	13,2	16,9	
Water flow (3)	l/h	707	918	1152	757	983	1232	782	1158	1486	
Pressure drop (3)	kPa	4	6	9	6	10	15	6	11	17	
Air flow rate	m <sup>3</sup> /h	570	771	1011	570	771	1011	642	1022	1393	
Electrical input	3x	W	86	127	182	86	127	182	109	169	244
	6x	W	n.d.			n.d.			n.d.		
Number of fans	no.	2			2			2			
Sound power level (4)	dB/A	47	54	61	48	55	62	49	60	67	
Sound pressure level (5)	dB/A	42	49	56	43	50	57	44	55	62	
Additional heat exchanger heating capacity (3)	kW	5,69	6,83	7,91	n.d.			5,50	7,14	8,35	
Water flow	l/h	499	600	694	n.d.			483	627	733	
Pressure drop	kPa	17	23	30	n.d.			14	23	30	
Water connections	std	3/4			3/4			3/4			
	DF	1/2			n.d.			1/2			
Water content	std	2,15			2,87			2,15			
	DF	0,53			n.d.			0,53			

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ESTRO		11M			12			
Motor / speeds	3x	min	med	max	min	med	max	
	6x	no	n.d.	n.d.	n.d.	n.d.	n.d.	
Total cooling capacity (1)	kW	4,66	6,98	8,98	6,97	8,77	11,0	
Sensible cooling capacity (1)	kW	3,29	4,94	6,39	5,12	6,46	8,07	
Total cooling capacity (6)	kW	4,55	6,81	8,74	6,76	8,53	10,64	
Sensible cooling capacity (6)	kW	3,18	4,77	6,15	4,91	6,22	7,76	
Water flow (1)	l/h	800	1198	1541	1196	1505	1878	
Pressure drop (1)	kPa	9	19	29	14	22	32	
Heating capacity (2)	kW	5,70	8,43	10,8	8,90	11,1	14,5	
Pressure drop (2)	kPa	8	15	24	12	18	26	
Heating capacity (3)	kW	9,57	14,2	18,2	15,0	18,8	24,7	
Water flow (3)	l/h	840	1242	1593	1317	1645	2164	
Pressure drop (3)	kPa	8	15	24	13	19	31	
Air flow rate	m <sup>3</sup> /h	642	1022	1393	1010	1317	1850	
Electrical input	3x	W	109	169	244	210	240	310
	6x	W	n.d.			n.d.		
Number of fans	no.	2			3			
Sound power level (4)	dB/A	50	61	68	60	64	71	
Sound pressure level (5)	dB/A	45	56	63	55	59	66	
Additional heat exchanger heating capacity (3)	kW	n.d.			7,85	9,08	10,8	
Water flow	l/h	n.d.			689	797	948	
Pressure drop	kPa	n.d.			26	33	45	
Water connections	std	3/4			3/4			
	DF	n.d.			1/2			
Water content	std	2,87			2,59			
	DF	n.d.			0,77			

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## RATED TECHNICAL DATA - ESTRO FB / FBC LOW MODELS

Models		1	2	3	4	5	6	7	8	9	
Total cooling capacity (1)	max speed kW	1.07	1.33	1.62	1.81	2.25	2.72	3.26	4.03	4.44	
Sensible cooling capacity (1)	max speed kW	0.81	1.05	1.21	1.35	1.79	1.97	2.61	2.95	3.10	
Water flow (1)	l/h	184	228	278	310	386	467	559	691	762	
Pressure drop (1)	kPa	7	11	13	13	14	10	11	11	13	
Heating capacity (2)	max speed kW	1.27	1.67	2.01	2.33	2.98	3.54	4.44	5.23	5.44	
Pressure drop (2)	kPa	5	9	10	11	12	8	9	9	10	
Heating capacity (2)	kW	2.14	2.84	3.42	3.98	5.09	6.01	7.64	8.90	9.20	
Water flow (3)	l/h	188	249	300	349	447	527	670	781	807	
Pressure drop (3)	kPa	5	10	11	13	14	9	11	10	11	
Heat exchanger water capacity	l	0,50	0,50	0,50	0,70	0,70	1,00	1,00	1,40	1,40	
Water connections	inches	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	
Air flow rate	max speed	m <sup>3</sup> /h	231	319	344	344	442	442	640	706	785
	med speed	m <sup>3</sup> /h	189	233	271	271	341	341	450	497	605
	min speed	m <sup>3</sup> /h	149	178	211	211	241	241	320	361	470
Supply voltage	V/ph/Hz	230 / 1 / 50									
Maximum current absorption	max speed	A	0.15	0.17	0.24	0.24	0.25	0.25	0.44	0.44	0.44
Maximum power input	max speed	W	32	37	53	53	57	56	65	90	90
Sound power level <sub>a</sub>	max speed	dB(A)	44	46	49	50	48	47	51	55	56

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## 4.1 WEIGHTS

ESTRO		1	2	3	4	4M	5	6	6M	7	7M	8	8M	9	9M	95	10	10M	11	11M	12
FL	kg	15.1	15.1	15.1	15.1	15.2	18.8	18.8	18.9	22.4	22.5	22.4	22.5	22.4	22.5	23.5	30.3	30.4	30.3	30.4	39.4
CL	kg	15.1	15.1	15.1	15.1	15.2	18.8	18.8	18.9	22.4	22.5	22.4	22.5	22.4	22.5	23.5	30.3	30.4	30.3	30.4	39.4
FA	kg	15.0	15.0	15.0	15.0	15.1	18.0	18.0	18.1	21.4	21.5	21.4	21.5	21.4	21.5	n.d.	29.3	29.4	29.3	29.4	28.4
FC	kg	12.5	12.5	12.5	12.9	13.0	14.4	14.4	14.5	18.3	18.4	18.3	18.4	18.3	18.4	19.0	24.4	25.0	24.4	25.0	29.0
FU	kg	15.5	15.5	15.5	15.5	15.7	19.3	19.3	19.4	22.9	23.0	22.9	23.0	22.9	23.0	24.1	31.3	31.4	31.3	31.4	40.1
FB	kg	14.6	14.6	14.6	14.6	-	17.5	17.5	-	18.2	-	18.2	-	19.0	-	-	-	-	-	-	-
FBC	kg	10.5	10.5	10.5	10.5	-	12.0	12.0	-	14.0	-	14.0	-	14.0	-	-	-	-	-	-	-
FF	kg	12.5	12.5	12.5	12.9	13.0	14.4	14.4	14.5	18.3	18.4	18.3	18.4	18.3	18.4	19.0	24.4	25.0	24.4	25.0	29.0
FP	kg	5.5	15.5	15.5	15.5	15.7	19.3	19.3	19.4	22.9	23.0	22.9	23.0	22.9	23.0	24.1	31.3	31.4	31.3	31.4	40.1

## 5 PERFORMANCES

In order to define the performances of ESTRO subject to conditions different from rated conditions, a computer program for the correct choice of the units is provided by Galletti SpA.

With a few input data it will be possible to get information on the behaviour of an ESTRO referring to the desired operating conditions.

It will be sufficient to enter the following data:

- Dry bulb inlet air temperature
- Wet bulb inlet air temperature or alternatively the relative humidity
- Inlet water temperature
- Outlet water temperature or alternatively the water flow
- Ethylene glycol percentage (default 0)
- Fan speed
- Available static head (default 0)
- Directivity factor and distance

Output data

- Air flow rate
- Total cooling / heating capacity
- Sensible cooling capacity
- Water flow
- Pressure drop, water side
- Outlet air temperature
- Sound power level
- Sound pressure level under the specified conditions
- Power input

The selection report generated by the software includes the drawing with overall dimensions and description of the unit.

The screenshot shows the 'Gall2006 - Calculation program' window. It features a menu bar (File, Unit of measure, Line product, Selection language, Documentation), a toolbar, and a main workspace. The workspace is divided into input fields for air and water temperatures, relative humidity, water flow, static pressure, glycol percentage, sound pressure level, distance, and directivity factor. A 'Calculate' button is present. Below the input fields is a table with columns for various parameters (QA, PT, PS, QW, DPW, TA, PH, QW, DPW, TA, LW, LP, Pin) and rows for different models (F1 to F9B). A legend is also visible.

Model	QA m3/h	PT W	PS W	QW (C) l/h	DPW (C) kPa	TA (C) °C	PH W	QW (H) l/h	DPW (H) kPa	TA (H) °C	LW dB(A)	LP dB(A)	Pin W
F 1	231	1150	870	197	7	15.4	2680	235	8	54.4	40	35	32
F 1 B	231	1070	810	184	7	16.2	2140	188	5	47.5	44	39	32
F 2	319	1540	1200	264	13	15.4	3710	325	15	54.5	47	42	37
F 2 B	319	1330	1050	228	11	16.8	2840	249	10	46.5	46	41	37
F 3	344	1740	1300	299	14	15.3	3740	329	13	52.3	49	44	53
F 3 B	344	1620	1210	278	13	16.1	3420	300	11	49.5	49	44	53
F 4	344	1960	1420	337	12	14.3	4350	382	11	57.6	50	45	53
F 4 B	344	1810	1350	310	13	14.9	3980	349	13	54.3	50	45	53
F 4 M	344	2240	1600	384	20	12.6	4620	405	16	59.8	51	46	53
F 5	442	2420	1880	415	16	13.8	5470	480	16	56.8	48	43	57
F 5 B	442	2250	1790	386	14	14.5	5090	447	14	54.2	48	43	57
F 6	442	2930	2110	503	11	12.2	5890	517	9	59.6	48	43	56
F 6 B	442	2720	1970	467	10	13.2	6010	527	9	60.4	47	42	56
F 6 M	442	3300	2300	565	17	10.9	6790	595	14	65.6	49	44	56
F 7	640	3510	2750	602	12	13.7	8210	720	13	58.1	52	47	65
F 7 B	640	3260	2610	559	11	14.4	7640	670	11	55.5	51	46	65
F 7 M	640	4580	3220	785	18	11.4	9220	808	14	62.8	53	48	98
F 8	706	4330	3150	743	12	13.2	8570	752	10	56.1	53	48	90
F 8 B	706	4030	2950	691	11	14.1	8900	781	10	57.4	55	50	90
F 8 M	706	4960	3500	850	20	11.7	9980	876	16	62.0	54	49	98
F 9	785	4510	3530	774	14	13.1	10080	884	14	58.1	56	51	90
F 9 B	785	4440	3100	762	13	14.8	9200	807	11	54.8	56	51	90

## 5 PERFORMANCES

### 5.1 SOUND LEVEL

**Vr** Fan speed:

**max** = maximum

**med** = medium

**min** = minimum

**Lw** Sound power level by octave band, not weighted

**Lw<sub>A</sub>** Total sound power level, weighted A

**Lp<sub>A</sub>** Total sound pressure level, weighted A, measured at a distance of 1 m, with a directivity factor of 4.

ESTRO	Vr		Lw								
	3x	6x	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	LwA	LpA
			dB	dB	dB	dB	dB	dB	dB	dB/A	dB/A
F 1	min	1	28,9	35,6	28,4	18,4	13,6	13,9	14,8	30	25
	med	2	30,5	37,2	30,0	20,0	15,2	15,5	16,4	32	27
	max	3	36,7	43,2	39,8	31,7	25,4	17,7	16,5	40	35
		4	44,9	51,4	48,0	39,9	33,6	25,9	24,7	48	43
		5	48,9	55,4	52,0	43,9	37,6	29,9	28,7	52	47
		6	52,2	58,7	55,3	47,2	40,9	33,2	32,0	55	50
F 2	min	na	33,4	42,0	35,9	25,7	18,7	17,9	20,0	37	32
	med	na	38,6	45,8	42,2	33,4	26,2	17,9	19,6	42	37
	max	na	43,1	49,9	47,1	40,6	34,7	22,8	18,9	47	42
F 3		1	17,2	31,3	32,7	26,8	21,2	13,7	13,5	32	27
	min	2	22,0	36,9	38,3	32,4	26,8	19,3	19,1	38	33
	med	3	39,7	46,4	43,7	36,2	29,7	20,7	18,5	44	39
	max	4	44,5	51,2	48,8	43,1	37,8	28,2	18,5	49	44
		5	47,3	54,0	51,6	45,9	40,6	31,0	21,3	52	47
		6	50,3	57,0	54,6	48,9	43,6	34,0	24,3	55	50
F 4		1	16,8	30,3	32,6	26,3	19,9	12,7	12,5	32	27
	min	2	23,2	38,3	40,6	34,3	27,9	20,7	20,5	40	35
	med	3	39,0	46,4	43,9	36,2	29,1	18,6	16,5	44	39
	max	4	44,9	51,3	49,0	43,6	38,1	28,9	18,3	50	45
		5	47,4	53,8	51,5	46,1	40,6	31,4	20,8	52	47
		6	50,4	56,8	54,5	49,1	43,6	34,4	23,8	55	50
F 4M		1	16,9	31,3	33,6	27,3	20,9	13,7	13,5	33	28
	min	2	24,2	39,3	41,6	35,3	28,9	21,7	21,5	41	36
	med	3	40,0	47,4	44,9	37,2	30,1	19,6	17,5	45	40
	max	4	45,9	52,3	50,0	44,6	39,1	29,9	19,3	51	46
		5	48,4	54,8	52,5	47,1	41,6	32,4	21,8	53	48
		6	51,8	58,2	55,9	50,5	45,0	35,8	25,2	56	51
F 5		1	24,0	30,6	25,2	16,3	9,1	8,8	12,8	26	21
	min	2	33,1	39,7	34,3	25,4	18,2	17,9	21,9	35	30
	med	3	41,3	46,7	42,9	35,1	26,3	16,1	17,8	43	38
	max	4	44,1	50,0	46,9	41,0	35,5	29,8	31,2	48	43
		5	46,6	52,5	49,4	43,5	38,0	32,3	33,7	50	45
		6	48,5	54,4	51,3	45,4	39,9	34,2	35,6	52	47
F 6		1	25,1	30,8	25,4	15,4	9,4	8,4	10,1	26	21
	min	2	32,7	38,4	33,0	23,0	17,0	16,0	17,7	34	29
	med	3	40,1	45,6	42,1	34,0	25,5	18,4	18,7	42	37
	max	4	44,9	50,5	47,7	41,4	33,8	23,4	20,1	48	43
		5	47,0	52,6	49,8	43,5	35,9	25,5	22,2	50	45
		6	49,0	54,6	51,8	45,5	37,9	27,5	24,2	52	47
F 6M		1	26,1	31,8	26,4	16,4	10,4	9,4	11,1	27	22
	min	2	33,7	39,4	34,0	24,0	18,0	17,0	18,7	35	30
	med	3	41,1	46,6	43,1	35,0	26,5	19,4	19,7	43	38
	max	4	29,8	42,9	45,4	42,4	36,0	25,4	20,0	49	44
		5	34,6	47,7	50,2	47,2	40,8	30,2	24,8	51	46
		6	20,5	41,1	48,9	49,2	44,0	33,2	25,7	53	48
F 7	min	1	31,7	40,2	35,0	22,4	17,6	20,3	17,7	35	30
	med	2	38,5	46,3	43,5	33,1	26,4	21,2	17,6	43	38
	max	3	48,0	54,2	51,5	45,9	40,9	31,5	21,4	52	47
		4	51,9	58,1	55,4	49,8	44,8	35,4	25,3	56	51
		5	52,9	59,1	56,4	50,8	45,8	36,4	26,3	57	52
		6	39,6	53,3	55,9	53,6	49,8	40,2	28,0	60	55
F 7M	min	1	32,7	41,2	36,0	23,4	18,6	21,3	18,7	36	31
	med	2	39,5	47,3	44,5	34,1	27,4	22,2	18,6	44	39
	max	3	49,0	55,2	52,5	46,9	41,9	32,5	22,4	53	48
		4	52,9	59,1	56,4	50,8	45,8	36,4	26,3	57	52
		5	53,9	60,1	57,4	51,8	46,8	37,4	27,3	58	53
		6	40,6	54,3	56,9	54,6	50,8	41,2	29,0	61	56

## 5 PERFORMANCES

### 5.1 SOUND LEVEL

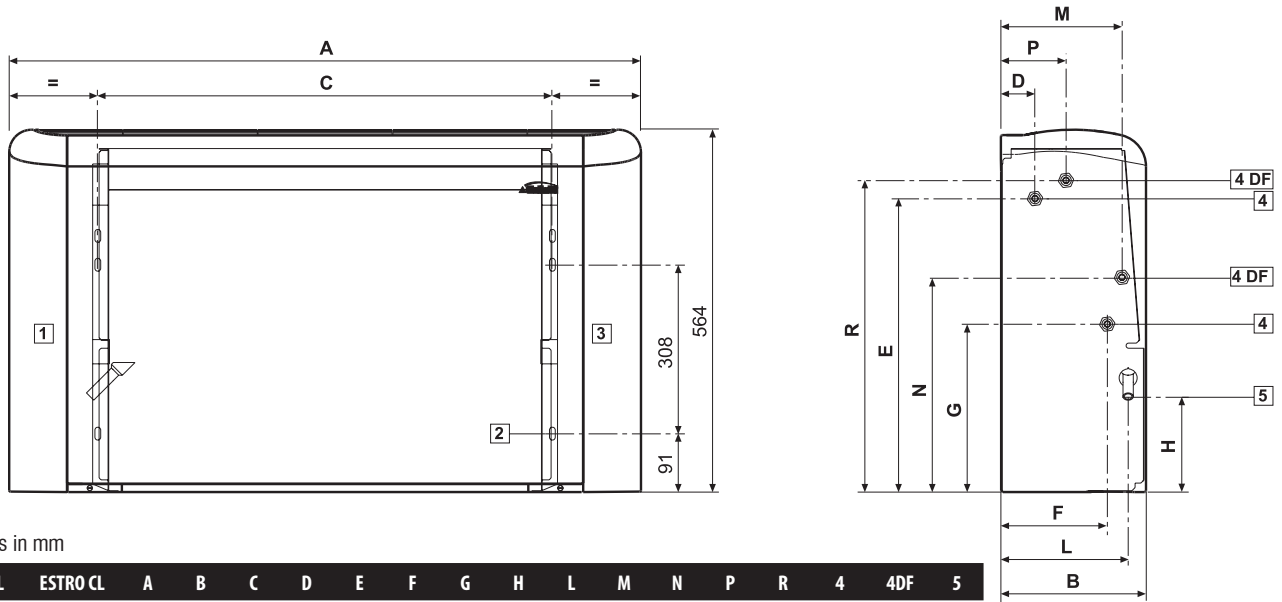
- Vr** Fan speed:  
**max** = maximum  
**med** = medium  
**min** = minimum
- Lw** Sound power level by octave band, not weighted  
**Lw<sub>A</sub>** Total sound power level, weighted A  
**Lp<sub>A</sub>** Total sound pressure level, weighted A, measured at a distance of 1 m, with a directivity factor of 4.

ESTRO	Vr		Lw								
	3x	6x	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	LwA	LpA
			dB	dB	dB	dB	dB	dB	dB	dB/A	dB/A
F 8	min	1	34,9	41,4	35,7	25,4	17,0	16,5	17,5	35	30
		2	39,7	46,2	43,0	34,2	27,5	20,6	17,6	43	38
		3	46,2	52,4	49,3	43,8	38,9	29,4	18,7	50	45
	max	4	49,2	55,4	52,3	46,8	41,9	32,4	21,7	53	48
		5	53,5	59,7	56,6	51,1	46,2	36,7	26,0	57	52
		6	56,2	62,4	59,3	53,8	48,9	39,4	28,7	60	55
F 8M	min	1	35,9	42,4	36,7	26,4	18,0	17,5	18,5	36	31
		2	40,7	47,2	44,0	35,2	28,5	21,6	18,6	44	39
		3	47,2	53,4	50,3	44,8	39,9	30,4	19,7	51	46
	max	4	50,2	56,4	53,3	47,8	42,9	33,4	22,7	54	49
		5	54,5	60,7	57,6	52,1	47,2	37,7	27,0	58	53
		6	57,2	63,4	60,3	54,8	49,9	40,4	29,7	61	56
F 9		1	36,1	42,3	39,3	30,7	23,7	17,2	14,2	39	34
	min	2	39,8	46,0	43,0	34,4	27,4	20,9	17,9	43	38
		3	45,0	51,6	48,4	42,3	36,9	27,1	19,0	49	44
	max	4	52,2	57,9	54,6	50,6	46,2	38,1	25,8	56	51
		5	53,2	58,9	55,6	51,6	47,2	39,1	26,8	57	52
		6	56,5	62,2	58,9	54,9	50,5	42,4	30,1	60	55
F 9M		1	37,1	43,3	40,3	31,7	24,7	18,2	15,2	40	35
	min	2	40,8	47,0	44,0	35,4	28,4	21,9	18,9	44	39
		3	46,0	52,6	49,4	43,3	37,9	28,1	20,0	50	45
	max	4	53,2	58,9	55,6	51,6	47,2	39,1	26,8	57	52
		5	54,2	59,9	56,6	52,6	48,2	40,1	27,8	58	53
		6	57,5	63,2	59,9	55,9	51,5	43,4	31,1	61	56
F 95		1	35,9	42,3	39,1	30,9	23,8	17,2	14,1	39	34
	min	2	40,7	47,1	43,9	35,7	28,6	22,0	18,9	44	39
		3	47,2	53,5	50,6	44,5	38,8	29,5	21,2	51	46
	max	4	54,3	59,8	56,7	52,4	48,0	40,2	27,7	58	53
		5	54,7	60,2	57,1	52,8	48,4	40,6	28,1	58	53
		6	56,3	61,8	58,7	54,4	50,0	42,2	29,7	60	55
F10	min	na	44,2	50,7	45,7	40,7	34,7	25,2	22,6	47	42
	med	na	50,2	57,0	52,9	48,2	44,3	35,8	25,5	54	49
	max	na	56,2	62,9	59,1	54,8	51,7	45,5	36,4	61	56
F10M	min	na	45,2	51,7	46,7	41,7	35,7	26,2	23,6	48	43
	med	na	51,2	58,0	53,9	49,2	45,3	36,8	26,5	55	50
	max	na	57,2	63,9	60,1	55,8	52,7	46,5	37,4	62	57
F 11		1	39,1	46,0	42,2	36,8	32,1	22,8	17,2	43	38
	min	2	45,2	52,1	48,3	42,9	38,2	28,9	23,3	49	44
		3	50,7	56,4	54,1	49,6	46,4	40,4	31,9	55	50
	med	4	55,6	61,3	59,0	54,5	51,3	45,3	36,8	60	55
		5	59,1	65,1	61,8	58,9	55,7	51,1	45,9	64	59
	max	6	61,7	67,7	64,4	61,5	58,3	53,7	48,5	67	62
F 11M		1	40,2	47,1	43,3	37,9	33,2	23,9	18,3	44	39
	min	2	45,7	52,6	48,8	43,4	38,7	29,4	23,8	50	45
		3	51,4	57,1	54,8	50,3	47,1	41,1	32,6	56	51
	med	4	56,0	61,7	59,4	54,9	51,7	45,7	37,2	61	56
		5	59,6	65,6	62,3	59,4	56,2	51,6	46,4	65	60
	max	6	63,2	69,2	65,9	63,0	59,8	55,2	50,0	68	63
F12	min	na	54,7	60,4	60,2	53,2	47,9	38,8	29,9	60	55
	med	na	59,2	64,3	62,6	58,1	53,8	46,5	37,7	64	59
	max	na	66,6	72,0	69,0	66,9	61,9	56,5	50,1	71	66

## 6 OVERALL DIMENSIONS

### Overall dimensions of FL, wall-mounted with cabinet, vertical air flow

- 1 Clearance for water connection
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connection
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet

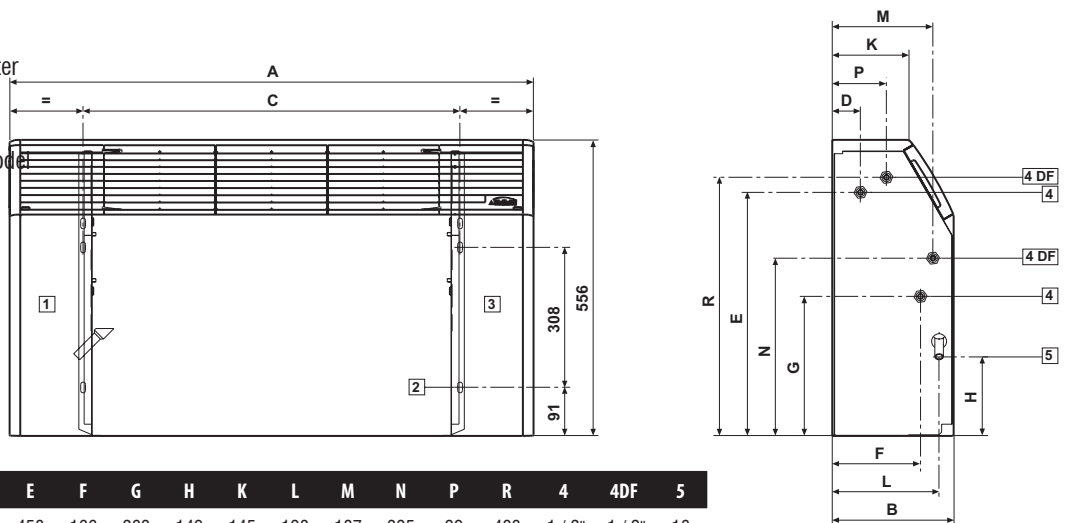


Dimensions in mm

ESTRO FL	ESTRO CL	A	B	C	D	E	F	G	H	L	M	N	P	R	4	4DF	5
1 - 4M	1 - 4M	774	226	498	51	458	163	263	149	198	187	335	99	486	1/2"	1/2"	16
5 - 6M	5 - 6M	984	226	708	51	458	163	263	149	198	187	335	99	486	1/2"	1/2"	16
7 - 9M	7 - 9M	1194	226	918	51	458	163	263	149	198	187	335	99	486	1/2"	1/2"	16
95	ND	1194	251	918	48	497	185	259	155	220	195	348	120	478	3/4"	1/2"	16
10 - 11M	ND	1404	251	1128	48	497	185	259	155	220	195	348	120	478	3/4"	1/2"	16
12	ND	1614	251	1338	48	497	185	259	155	220	195	348	120	478	3/4"	1/2"	16

### Overall dimensions of FA, wall-mounted with cabinet, inclined front air flow

- 1 Clearance for water connection
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connection
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet



Dimensions in mm

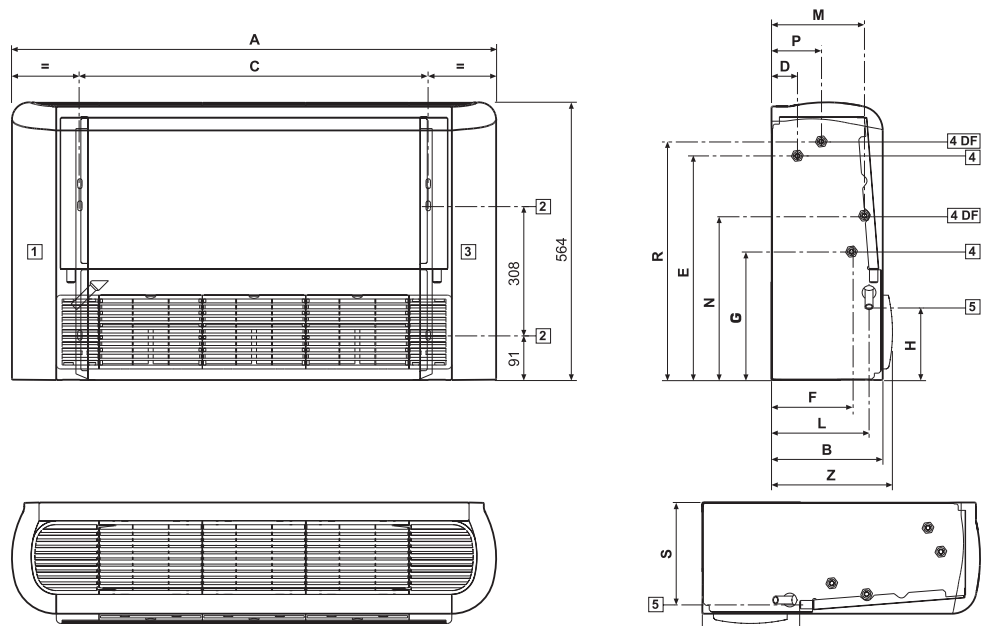
ESTRO FA	A	B	C	D	E	F	G	H	K	L	M	N	P	R	4	4DF	5
1 - 4M	774	228	498	53	458	166	263	149	145	198	187	335	99	486	1/2"	1/2"	16
5 - 6M	984	228	708	53	458	166	263	149	145	198	187	335	99	486	1/2"	1/2"	16
7 - 9M	1194	228	918	53	458	166	263	149	145	198	187	335	99	486	1/2"	1/2"	16
10 - 11M	1404	253	1128	50	497	188	259	155	170	220	195	348	120	478	3/4"	1/2"	16
12	1614	253	1338	50	497	188	259	155	170	220	195	348	120	478	3/4"	1/2"	16



## 6 OVERALL DIMENSIONS

### Overall dimensions of FU, floor/ceiling mounted

- 1 Clearance for water connection
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connection
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet

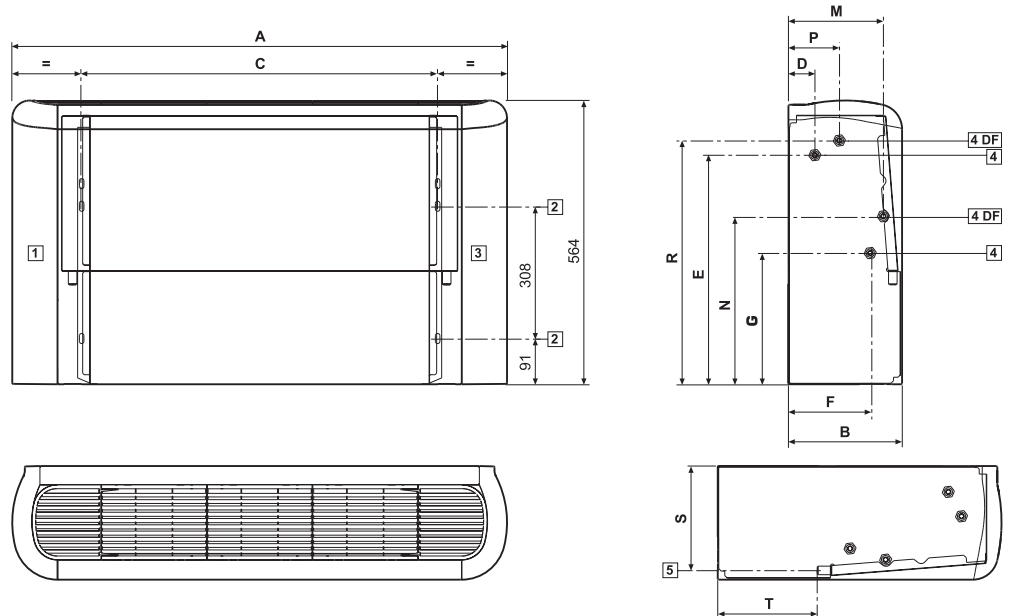


Dimensions in mm

ESTRO FU	A	B	C	D	E	F	G	H	L	M	N	P	R	S	T	Z	4	4DF	5
1 - 4M	774	226	498	51	458	163	263	149	198	187	335	99	486	208	198	246	1/2"	1/2"	16
5 - 6M	984	226	708	51	458	163	263	149	198	187	335	99	486	208	198	246	1/2"	1/2"	16
7 - 9M	1194	226	918	51	458	163	263	149	198	187	335	99	486	208	198	246	1/2"	1/2"	16
95	1194	251	918	48	497	185	259	155	220	195	348	120	478	234	208	271	3/4"	1/2"	16
10 - 11M	1404	251	1128	48	497	185	259	155	220	195	348	120	478	234	208	271	3/4"	1/2"	16
12	1614	251	1338	48	497	185	259	155	220	195	348	120	478	234	208	271	3/4"	1/2"	16

### Overall dimensions of FP, ceiling mounted with cabinet, rear air intake

- 1 Clearance for water connection
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connection
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet



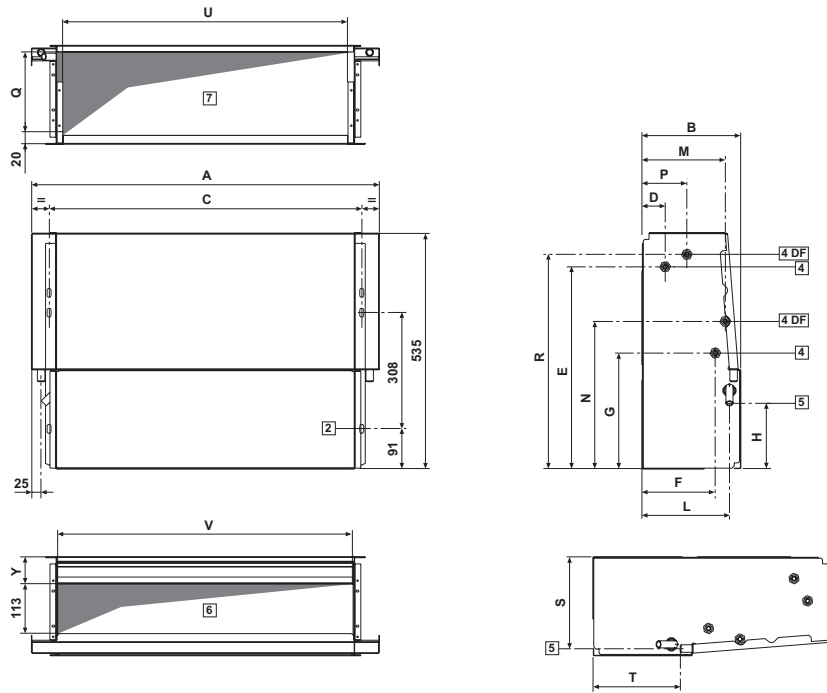
Dimensions in mm

ESTRO FP	A	B	C	D	E	F	G	M	N	P	R	S	T	4	4DF	5
1 - 4M	774	226	498	51	458	163	263	187	335	99	486	208	198	1/2"	1/2"	16
5 - 6M	984	226	708	51	458	163	263	187	335	99	486	208	198	1/2"	1/2"	16
7 - 9M	1194	226	918	51	458	163	263	187	335	99	486	208	198	1/2"	1/2"	16
95	1194	251	918	48	497	185	259	195	348	120	478	234	208	3/4"	1/2"	16
10 - 11M	1404	251	1128	48	497	185	259	195	348	120	478	234	208	3/4"	1/2"	16
12	1614	251	1338	48	497	185	259	195	348	120	478	234	208	3/4"	1/2"	16

## 6 OVERALL DIMENSIONS

### Overall dimensions of FC and FCP horizontal / vertical recess mounted

- 2 Slots for installation on the wall
- 4 Standard heat exchanger water connection
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet
- 6 Air outlet
- 7 Air intake

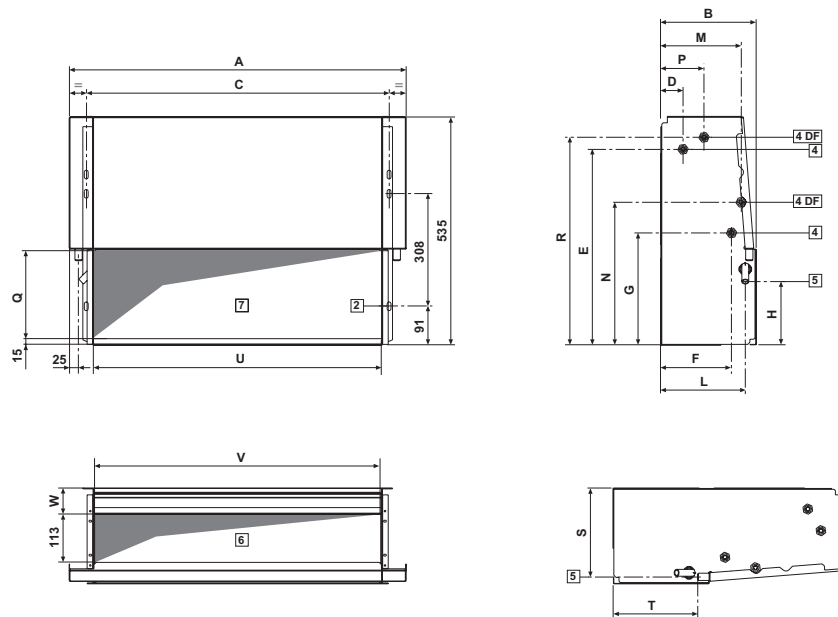


Dimensions in mm

ESTRO FC	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	S	T	U	V	Y	4	4DF	5
1 - 4M	584	224	498	51	458	163	263	149	198	187	335	99	189	486	208	198	436	464	61	1/2"	1/2"	16
5 - 6M	794	224	708	51	458	163	263	149	198	187	335	99	189	486	208	198	646	674	61	1/2"	1/2"	16
7 - 9M	1004	224	918	51	458	163	263	149	198	187	335	99	189	486	208	198	856	884	61	1/2"	1/2"	16
95	1004	249	918	48	497	185	259	155	220	195	348	120	215	478	234	208	856	884	67	3/4"	1/2"	16
10 - 11M	1214	249	1128	48	497	185	259	155	220	195	348	120	215	478	234	208	1066	1094	67	3/4"	1/2"	16
12	1424	249	1338	48	497	185	259	155	220	195	348	120	215	478	234	208	1276	1304	67	3/4"	1/2"	16

### Overall dimensions of FF and FFP horizontal / vertical recess mounted, front air intake

- 2 Slots for installation on the wall
- 4 Standard heat exchanger water connection
- 4DF Water connection for 1-row additional heat exchanger model DF
- 5 Drain outlet
- 6 Air outlet
- 7 Air intake



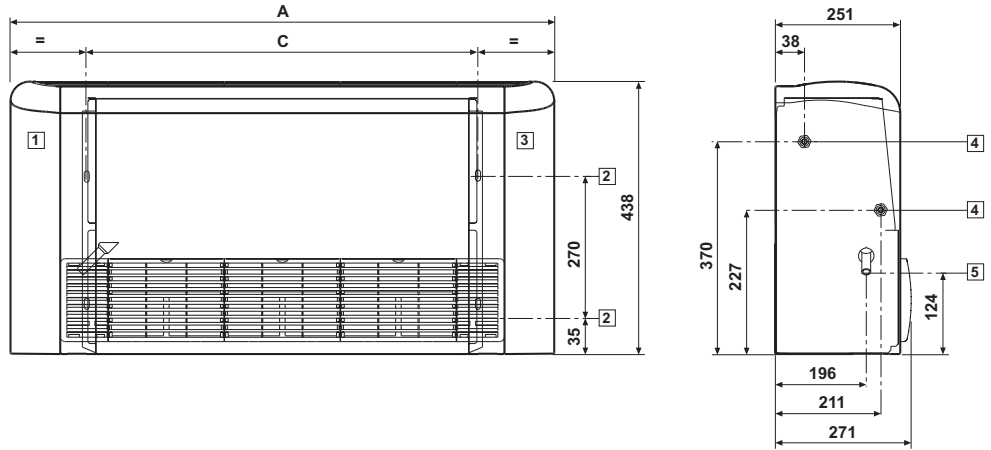
Dimensions in mm

ESTRO FF	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	S	T	U	V	W	4	4DF	5
1 - 4M	584	224	498	51	458	163	263	149	198	187	335	99	189	486	208	198	436	464	61	1/2"	1/2"	16
5 - 6M	794	224	708	51	458	163	263	149	198	187	335	99	189	486	208	198	646	674	61	1/2"	1/2"	16
7 - 9M	1004	224	918	51	458	163	263	149	198	187	335	99	189	486	208	198	856	884	61	1/2"	1/2"	16
95	1004	249	918	48	497	185	259	155	220	195	348	120	215	478	234	208	856	884	67	3/4"	1/2"	16
10 - 11M	1214	249	1128	48	497	185	259	155	220	195	348	120	215	478	234	208	1066	1094	67	3/4"	1/2"	16
12	1424	249	1338	48	497	185	259	155	220	195	348	120	215	478	234	208	1276	1304	67	3/4"	1/2"	16

## 6 OVERALL DIMENSIONS

### Overall dimensions of FB, floor /ceiling mounted with low cabinet, front air intake

- 1 Clearance for water connections
- 2 Slots for installation on the wall
- 3 Clearance for electrical connections
- 4 Standard heat exchanger water connection
- 5 **Drain outlet**

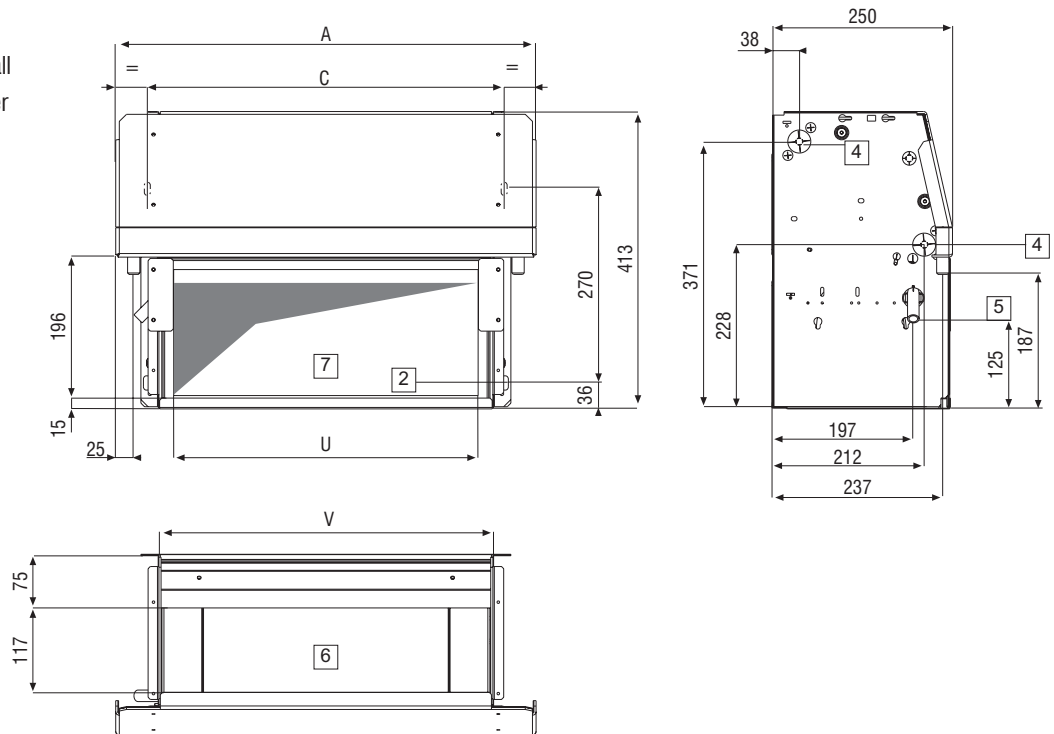


Dimensions in mm

ESTRO FB	A	C	4	5
1 - 4M	774	498	1 / 2"	16
5 - 6M	984	708	1 / 2"	16
7 - 9M	1194	918	1 / 2"	16

### Overall dimensions of FBC, horizontal / vertical recess mounted, front air intake

- 2 Slots for installation on the wall
- 4 Standard heat exchanger water connection
- 5 Drain outlet
- 6 Air outlet
- 7 Air intake



Dimensions in mm

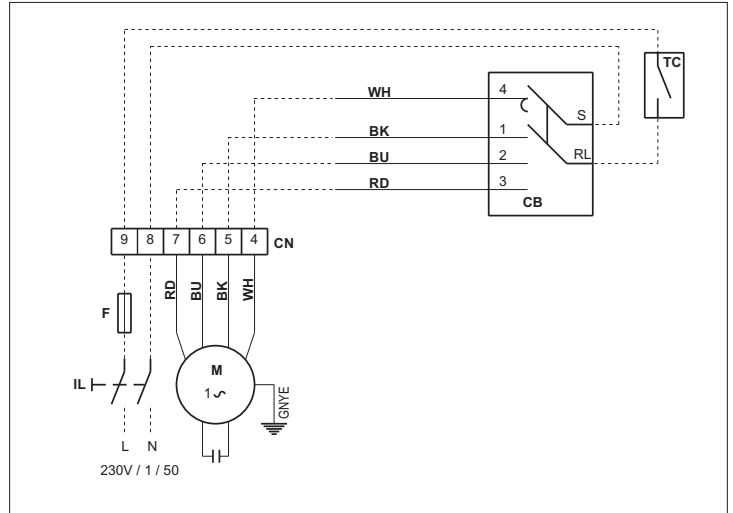
ESTRO FBC	A	C	U	V	4	5
1 - 4M	584	498	423	464	1 / 2"	16
5 - 6M	794	708	633	674	1 / 2"	16
7 - 9M	1004	918	843	884	1 / 2"	16

## 7 WIRING DIAGRAMS

### CB Control panel with speed switch, installation on the unit

The connections indicated must be made by the installer.

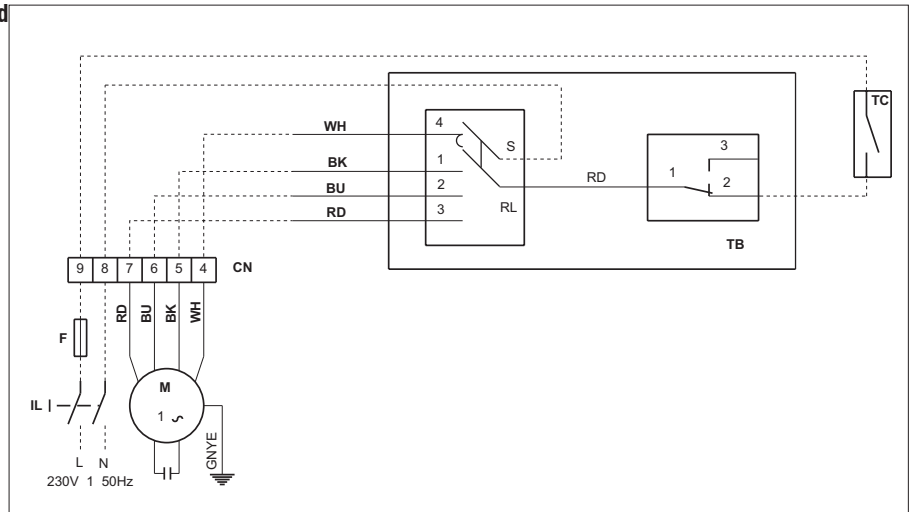
- BU** Blue, medium speed
- BK** Black, maximum speed
- CN** Terminal connector (male faston type)
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- RD** Red, minimum speed
- TC** Fan stop thermostat (accessory)
- WH** White, common



### TB Control panel with speed switch and electromechanical thermostat, installation on the unit

The connections indicated must be made by the installer.

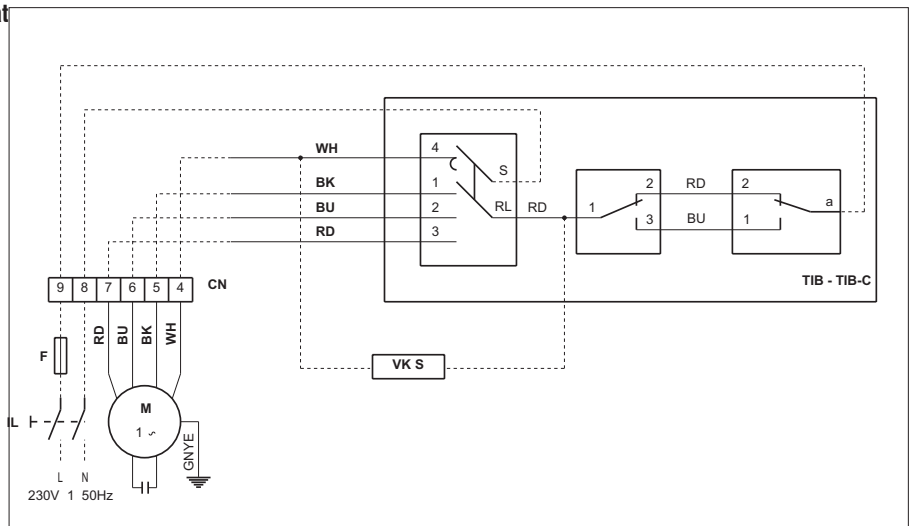
- BU** Blue, medium speed
- BK** Black, maximum speed
- CN** Terminal connector (male faston type)
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- RD** Red, minimum speed
- TC** Fan stop thermostat (accessory)
- WH** White, common



### TIB Control panel with speed switch, thermostat and cooling/heating selector, installation on the unit

The connections indicated must be made by the installer.

- BU** Blue, medium speed
- BK** Black, maximum speed
- CN** Terminal connector (male faston type)
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- RD** Red, minimum speed
- VK S** Motor-driven 3-way ON/OFF valve (accessory)
- WH** White, common



The connections indicated must be made by the installer.

Make the electrical connections with the power supply disconnected, in accordance with current safety regulations.

Check that the mains electricity supply is compatible with the voltage shown on the unit rating plate.

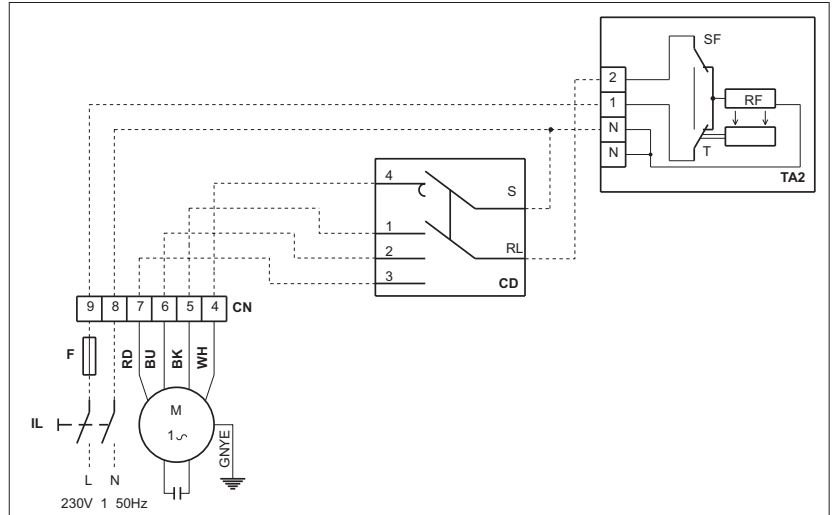
Each fan coil requires an individual electric socket and a switch with a suitable safety fuse.

Each fan coil requires an omnipolar main switch classified as overvoltage category III to be mounted on the power supply line.

## 7 WIRING DIAGRAMS

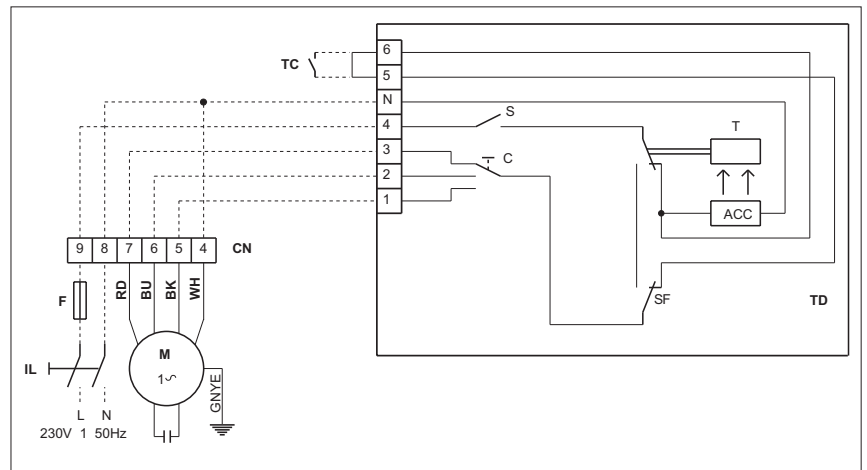
**CD** Recess wall-mounted speed switch  
**TA2** wall mounted room thermostat (heating/cooling mode)  
 The connections indicated must be made by the installer.

- BU** Blue, medium speed
- BK** Black, maximum speed
- CN** Terminal connector (male faston type)
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- RD** Red, minimum speed
- WH** White, common



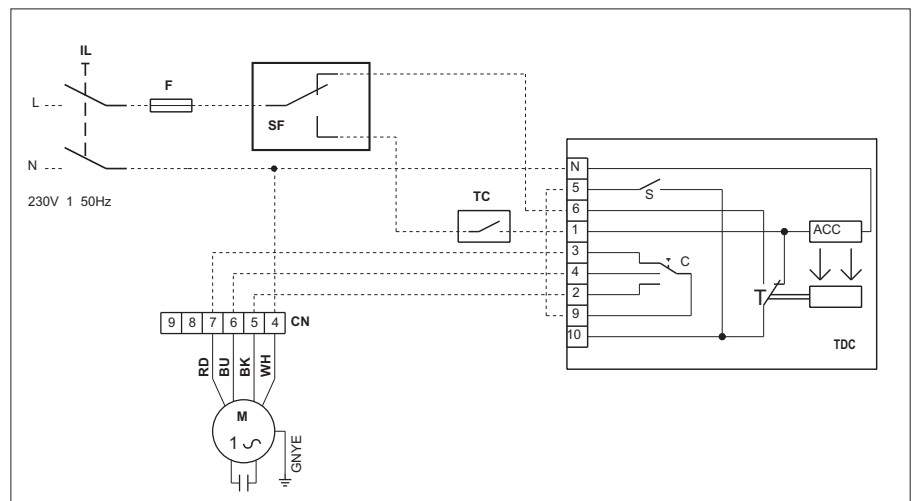
**TD** Wall-mounted speed switch, thermostat and cooling/heating selector  
 The connections indicated must be made by the installer.

- BU** Blue, medium speed
- BK** Black, maximum speed
- CN** Terminal connector (male faston type)
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- RD** Red, minimum speed
- TC** Fan stop thermostat (accessory)
- WH** White, common



**TDC** Wall-mounted speed switch and thermostat  
 The connections indicated must be made by the installer.

- BU** Blue, medium speed
- BK** Black, maximum speed
- CN** Terminal connector (male faston type)
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- RD** Red, minimum speed
- SF** Centralised heating/cooling selector switch (not supplied)
- TC** Fan stop thermostat (accessory)
- WH** White, common



The connections indicated must be made by the installer.  
 Make the electrical connections with the power supply disconnected, in accordance with current safety regulations.  
 Check that the mains electricity supply is compatible with the voltage shown on the unit rating plate.  
 Each fan coil requires an individual electric socket and a switch with a suitable safety fuse.

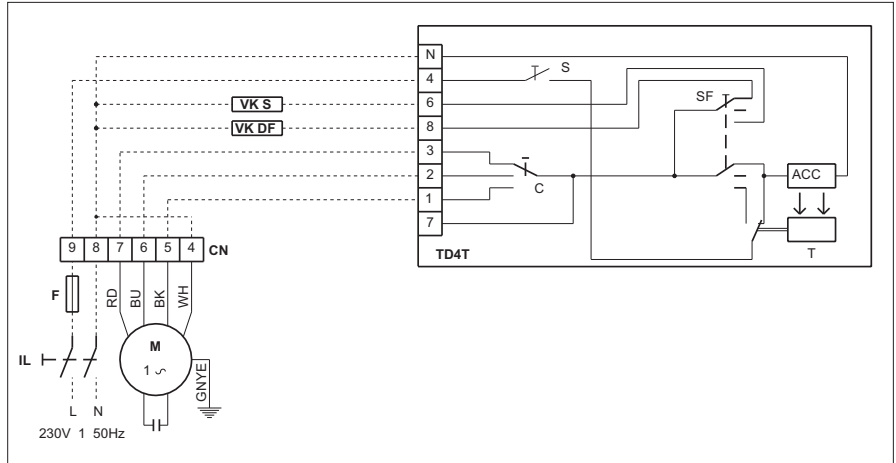
Each fan coil requires an omnipolar main switch classified as overvoltage category III to be mounted on the power supply line.

## 7 WIRING DIAGRAMS

### TD4T Wall-mounted speed switch with thermostat and heating/cooling selector for the control of fan coil and valves (2 and 4 pipes)

The connections indicated must be made by the installer.

- BU** Blue, medium speed
- BK** Black, maximum speed
- CN** Terminal connector (male faston type)
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- RD** Red, minimum speed
- VK S** Motor-driven 3-way ON/OFF valve (accessory), standard heat exchanger, cooling mode
- VK DF** Motor-driven 3-way ON/OFF valve (accessory), DF heat exchanger, heating mode
- WH** White, common



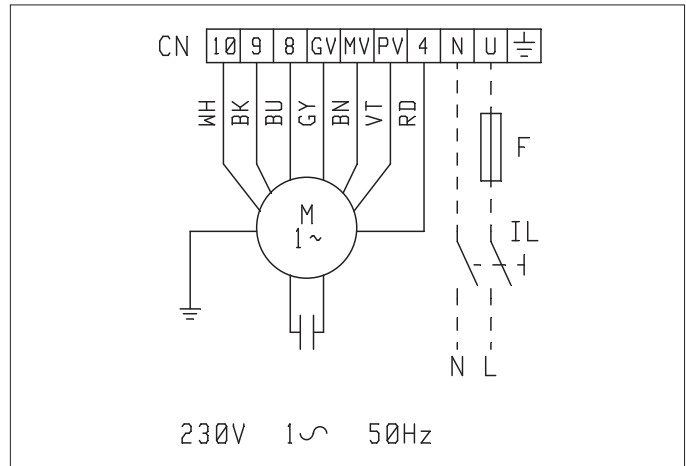
### MODELS WITH 6-SPEED MOTORS

The connections indicated must be made by the installer.

Make the electrical connections with the power supply disconnected, in accordance with current safety regulations. Check that the mains electricity supply is compatible with the voltage shown on the unit rating plate.

Each fan coil requires an individual electric socket and a switch with a suitable safety fuse.

- BK** Black, speed 6
- BU** Blue, speed 5
- GY** Grey, speed 4
- BN** Brown, speed 3
- VT** Purple, speed 2
- RD** Red, speed 1
- CN** Fast-on connector
- F** Safety fuse (not supplied)
- IL** Circuit breaker (not supplied)
- M** Fan motor
- WH** White = common



The connections indicated must be made by the installer.

Make the electrical connections with the power supply disconnected, in accordance with current safety regulations.

Check that the mains electricity supply is compatible with the voltage shown on the unit rating plate.

Each fan coil requires an individual electric socket and a switch with a suitable safety fuse.

Each fan coil requires an omnipolar main switch classified as overvoltage category III to be mounted on the power supply line.

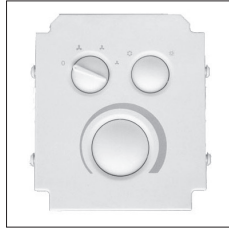


## 8 ACCESSORIES

### CB - Speed switch, installation on the unit

Control panel for installation directly on the unit, featuring a 4 position rotary selector (3 speeds + stop).

This control panel can be installed on éstro versions FL, FA (using the covering frame), FU, FB, and makes it possible to change the fan coil unit operating speed, as well as start-up and stop. The controller is supplied complete with wires for the electrical connection to the fan coil terminal board .



### TB - Speed switch mounted on the unit and thermostat

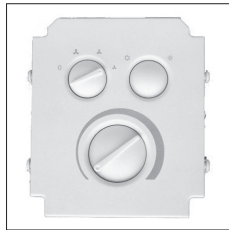
Control panel for installation directly on the unit, complete with speed switch and electromechanical thermostat.

Fan speed control and room temperature control:

- manual operating speed switching;
- room temperature control in cooling mode, achieved by switching the fan off and on, at the manually set speed and opening and closing the regulation valve, if present.
- room temperature control in both the heating and cooling modes, through the centralised remote summer/winter selecting switch, achieved by switching the fan off and on at the manually set speed and opening and closing the regulation valve, if present.

It can be installed on éstro versions FL, FA (using the covering frame), FU and FB. The control panel features a 4 position rotary selector (3 speeds + stop), and an electromechanical thermostat with fluid expansion sensor (regulation range +6 / +30°C)

The controller is supplied complete with wires for the electrical connection to the fan coil terminal board .



### TIB - Speed switch mounted on the unit, thermostat and summer/winter selecting switch

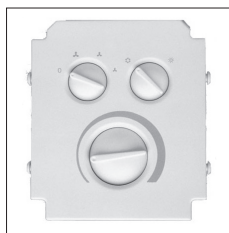
Control panel for installation directly on the unit, complete with speed switch, electromechanical thermostat and summer-winter selector.

Fan speed control, room temperature control and selection of operating mode (cooling or heating):

- manual operating speed switching;
- room temperature control in both the heating and cooling modes, achieved by switching the fan off and on, at the manually set speed;
- room temperature control in both the heating and cooling modes, achieved by switching the fan off and on, at the manually set speed and opening and closing the regulation valve, if present.

It can be installed on éstro versions FL, FA (using the covering frame), FU and FB. The control panel features a 4 position rotary selector (3 speeds + stop), and an electromechanical thermostat with fluid expansion sensor (regulation range +6 / +30°C)

The controller is supplied complete with wires for the electrical connection to the fan coil terminal board and the adhesive sensor holder.



### CD - Recess wall-mounted speed switch

Recess wall-mounted control panel, featuring a 4 position rotary selector (4 speeds + stop). This control panel can be installed on all versions of Estro coils, and makes it possible to change the fan coil unit operating speed, as well as start-up and stop.



### CDE - Wall-mounted speed switch

Wall-mounted control panel, featuring a 3 position rotary selector (3 speeds) and an ON/OFF switch.

This control panel can be installed on all versions of Estro coils, and makes it possible to change the fan coil unit operating speed, as well as start-up and stop.



### TD - Wall-mounted speed switch, thermostat and summer-winter selector

Control panel for wall mounting, complete with speed switch, electromechanical thermostat and summer-winter selector.

Fan speed control, room temperature control and selection of operating mode (cooling or heating):

- manual operating speed switching;
- room temperature control in both the heating and cooling modes, achieved by switching the fan off and on, at the manually set speed.



### TDC - Wall-mounted speed switch and thermostat

Control panel for wall mounting, complete with speed switch and electromechanical thermostat.

Fan speed control and room temperature control:

- manual operating speed switching;
- room temperature control in heating mode achieved by switching the fan OFF and ON, at the manually set speed.
- room temperature control in both the heating and cooling modes, through the centralised remote summer/winter selecting switch, achieved by switching the fan OFF and ON at the manually set speed.



### TD4T - Wall-mounted speed switch, electromechanical thermostat and summer/winter selecting switch for 2 or 4-pipe systems with valves.

Control panel for wall mounting, complete with speed switch, electromechanical thermostat and summer-winter selector. It governs the adjustment valves, if present.

Fan speed control and room temperature control:

- manual operating speed switching;
- room temperature control in both the heating and cooling modes for 2 and 4 pipe systems, achieved by switching the fan off and on, at the manually set speed and opening and closing the regulation valves.



## 8 ACCESSORIES

### TA - Room thermostat, wall-mounting

Room temperature automatic control:

- for use in heating mode only, through the fan-drive assembly operation and the adjustment valve (ON/OFF); if present.
- for use in cooling mode only, through the fan-drive assembly operation and the adjustment valve (ON/OFF); if present.
- in heating and cooling modes, by means of the remote summer/winter selecting switch, through the fan-drive assembly operation and the adjustment valve (ON/OFF), if present.



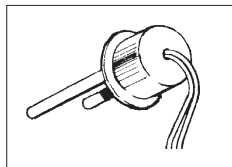
### TA2 - Room thermostat with summer/winter selecting switch, wall-mounting

Wall mounted room thermostat with summer/winter selecting switch (cooling/heating). Automatic room temperature control in heating and cooling modes, through the fan-drive assembly operation and the adjustment valve, if present.



### TC - Electromechanical thermostat for minimum water temperature in heating mode

Automatic resetting fan stop thermostat to stop the fan-drive assembly operation whenever the water temperature within the heat exchanger falls below the set value (42°C). Suitable for heating operation only, it is designed for installation on the finned block exchanger.



### MYCOMFORT BASE - Wall-mounted microprocessor control, GALLETTI model MYCOMFORT BASE

having the following main features:

- room air temperature reading and adjustment
- water temperature reading (water sensor as an optional)
- manual and automatic adjustment of fan speed
- manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C.

The controller is equipped with a large display (3") to show and set all the functions of the unit.

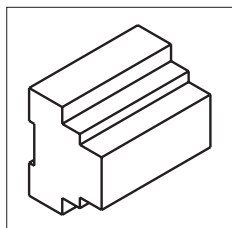
Using the installation kit available, myComfort can be mounted on the unit



### KP - Power interface for connecting in parallel up to 4 fan coils to one control

The KP interface is used to control up to 4 fan coils (connected in parallel) by means of a single control panel.

Suitable for mounting on DIN guides, usually installed in electric control panels, it can be used with all èstro versions .



### MYCOMFORT MEDIUM - Wall-mounted microprocessor control, GALLETTI model

MYCOMFORT MEDIUM having the following main features:

- room air temperature reading and adjustment
- room humidity reading and adjustment
- water temperature reading (water sensor as an optional)
- manual and automatic adjustment of fan speed
- manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C.
- serial port for Bus connection

The controller is equipped with a large display (3") to show and set all the functions of the unit.

Using the installation kit available, myComfort can be mounted on the unit



### MYCOMFORT LARGE - Wall-mounted microprocessor control, GALLETTI model MYCOMFORT LARGE

having the following main features:

- room air temperature reading and adjustment
- room humidity reading and adjustment
- water temperature reading (water sensor as an optional)
- manual and automatic adjustment of fan speed
- manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C.
- clock and hourly timer-programmed operation.
- 2 analogue outputs for controlling modulating devices 0-10V
- 2 digital outputs for controlling (On/Off) external devices (no-voltage contacts)
- serial port for Bus connection

The controller is equipped with a large display (3") to show and set all the functions of the unit.

Using the installation kit available, myComfort can be mounted on the unit



### LED503

#### Recess wall-mounted microprocessor control

The proposed microprocessor control panels for Galletti indoor units is completed by the LED503 command with LED display that is designed for recess wall mounting.

#### CONTROLLER

The control software developed by the Galletti Software Dept., features:

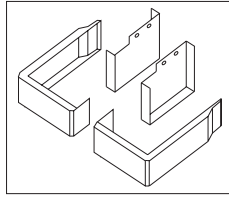
- manual selection of fan speed;
- automatic selection of fan speed according to the difference between the set temperature and the room air temperature;
- manual selection of heating/cooling operating mode;
- automatic selection of heating/cooling operating mode;
- control of 1 or 2 ON/OFF valves;
- control of additional heating element;
- on board timer function to detect the actual ambient temperature;
- reading of air ambient temperature, set point, fan speed and mode selection on the LED display.



## 8 ACCESSORIES

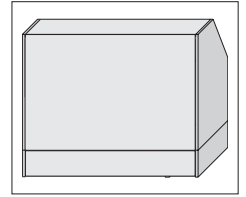
### Two support covering feet for FA models

The ZA covering feet, designed for the installation on éstro FA models are supplied in pairs and comprise supports for fastening to the base unit and outer coverings for fastening to the cabinet. They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of the base support panels is 100 mm.



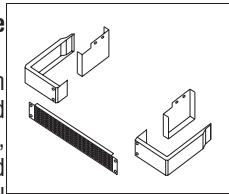
### PVA - Painted rear covering panel for FA models

This panel is suitable for wall mounted FA fan coils with apparent rear part. For instance: installation against glass walls. The kit includes an upper rear covering panel and a lower rear covering panel. The fan coils using a PVA rear covering panel cannot be wall mounted.



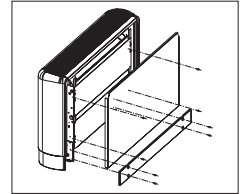
### ZAG - Two support covering feet with front grille for FA models

The ZAG covering feet, designed for the installation on éstro FA models are supplied in pairs and comprise supports for fastening to the base unit, outer coverings for fastening to the cabinet and the front covering grille. They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of the base support panels is 100 mm.



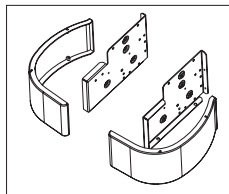
### PVL - Painted rear covering panel for FL, and FU models

This panel is suitable for wall mounted FL, and FU fan coils with apparent rear part. For instance: installation against glass walls. The kit includes an upper rear covering panel and a lower rear covering panel. The fan coils using a PVL-PVC rear covering panel cannot be wall mounted..



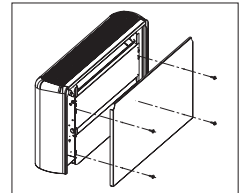
### ZL Two support covering feet for FL models

The ZL, ZC covering feet, designed for the installation on éstro FL, models are supplied in pairs and comprise supports for fastening to the base unit and outer coverings for fastening to the cabinet. They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of the base support panels is 100 mm.



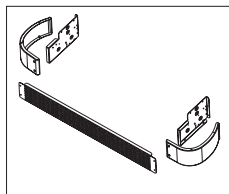
### PVB - Painted rear covering panel for FB models

This panel is suitable for wall mounted FB fan coils with apparent rear part. For instance: installation against glass walls. The fan coils using a PVL rear covering panel cannot be wall mounted.



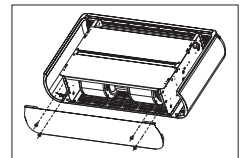
### ZLG - Two support covering feet with front grille for FL, models

The ZLG, covering feet, designed for the installation on éstro FA models are supplied in pairs and comprise supports for fastening to the base unit, outer coverings for fastening to the cabinet and the front covering grille. They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall. The height of the base support panels is 100 mm.



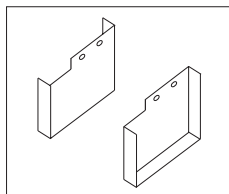
### PH - Painted rear covering panel for horizontal installation models FU.

The painted rear panel PH is supplied exclusively for ceiling mounted éstro FU fan coils with apparent rear part in order to cover the technical compartments (plumbing and electrical). It is used to cover the technical compartments. The fan coils with rear panel can work in heating mode only.



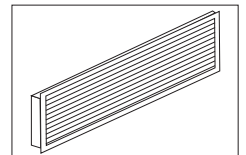
### D - Support brackets for FC vertical installation models

The D support brackets are supplied in pairs and combined to the recess wall mounted éstro fan coils FC in cases where the fan coil unit cannot be anchored to the wall. The height of the support brackets is 100 mm.



### GE+C - Aluminium air intake grille with subframe.

The external air intake louver with anodised aluminium fixed fins, complete with anodised aluminium subframe is usually combined with external air intake louvers and is designed for wall mounting.

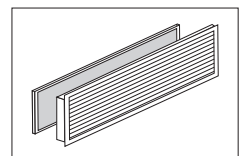


### KBESTE - On-board installation KIT for ESTRO (1 air sensor + bracket + on-board LCD controller frame + cable kit)

- The LCD controller can be installed directly (on both sides) on ESTRO units using the controller kit provided, which contains:
- Remote air temperature sensor (cable length 1.5 m)
- LCD frame (to be added or replaced in case of flap)
- Support for installation on the indoor unit
- Frame
- Sensor holder trap and clamp

### GEF+C - Aluminium air intake grille with subframe and filter.

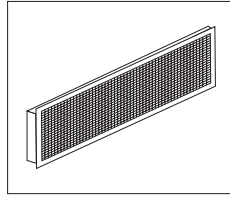
The air intake louvers with anodised aluminium fixed fins complete with washable acrylic fibre filter and galvanised sheet subframe, is usually combined with recess mounted fan coils



## 8 ACCESSORIES

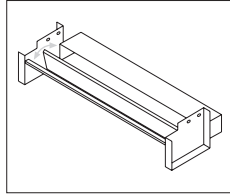
### GM+C - Anodised aluminium double-row finned air outlet grille, complete with subframe.

Anodized aluminium air outlet grille with 2-row swinging fins complete with galvanized sheet steel subframe. It is usually combined with recessed mounted fan coils.



### S - Manual external air intake louver

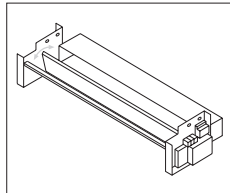
The manual external air intake louver is designed to allow frequent air renewals directly from the fan coil. The quantity of renewal air is filtered and heat treated by the fan coil and manually adjusted by means of the flap located inside. This louver can be used on all éstro models except the FB version and the floor mounted FU models. The installation of a pair of covering feet (ZL for FL fan coils and ZA for FA fan coils) is required, when the louver is mounted on fan coil units with cabinet (FL, FA and FP ceiling mounted).



### SM - Manual external air intake louver

The motor driven external air intake louver is designed to allow frequent air renewals directly from the fan coil. The quantity of filtered and heat treated external air is proportionally controlled from 0 to 100% by means of a servomotor located inside.

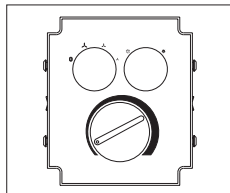
The SM - SM-C kit is complete with servomotor (protection rating IP54, 24 V supply voltage) and 230V . 24V transformer. The automatic closure and opening of the louver can be obtained by means of external auxiliary contacts (not supplied) as anti-freeze thermostats, timers, etc. by connecting in parallel several servomotors to a single opening-closing control. The louver should be coupled to one of the following control panels (optional): CSB (installation on the unit) and CSD (wall recess mounted), permitting to close and open the louver from 0 to 100%. This louver can be used on all éstro models except the FB version and the floor mounted FU models. The installation of a pair of covering feet (ZL - ZC for FL fan coils and ZA for FA fan coils) is required, when the louver is mounted on fan coil units with cabinet (FL, FA and FP ceiling mounted).



### CSB - Control mounted on the unit for opening and closing the SM motor-driven regulating louver

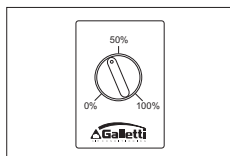
Designed for installation on the unit on the opposite side of the fan coil control panel, it controls the proportional opening and closing of the motor-driven regulating louver SM (from 0 to 100%).

The use of the control panel CSB is not possible when the fan coil is equipped with the DF additional heat exchanger (optional, 4- pipe systems). In that case the SM motor-driven louver should be controlled by the CSD control panel.



### CSD - Recess mounted control for opening and closing the SM motor-driven regulating valve

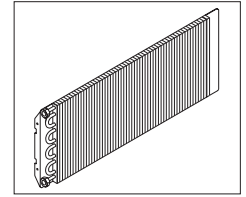
Designed for wall recess mounting on the opposite side of the fan coil control panel, it controls the proportional opening and closing of the motor-driven regulating louver SM (from 0 to 100%).



### DF - Additional heat exchanger for 4-pipe systems (hot water circuit)

Additional heat exchanger made with copper piping and aluminium fins: it is suitable for 4-pipe systems and is connected to the heating circuit.

The heat exchanger comes complete with air vent valves on the system connection openings. The kit comes complete with locking bracket to avoid the manifold rotation during plumbing connection operations. The performances of the heat exchanger mounted on the éstro fan coils are certified by Eurovent which guarantees the reliability of the data shown on this manual



### VK - ON-OFF 3-way motor driven valve, with hydraulic kit

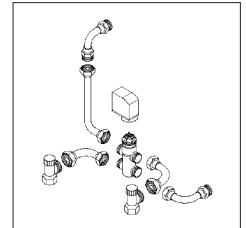
The ON/OFF motor driven VK 3-way valve/4 connections kit connected to the control panel for éstro fan coils, controls the room temperature by stopping the water flow through the heat exchanger. VK kit is available in various configurations for all models of éstro fan coils with standard (VK S) or additional DF (VK DF) heat exchanger, as shown in the table below:

The kit includes:

Brass 3-way valve / 4 connections with built-in by-pass, maximum operating pressure 16 bar;

Electrothermal actuator with the ON/OFF functions (total opening time 4 minutes), 230 V power supply.

Plumbing kit for installing the valve on the heat exchanger, complete with 2 holders for balancing and regulating the fan coil unit.



### KVK - ON-OFF 3-way motor driven valve, with hydraulic kit.

The ON/OFF motor driven 2-way KVK valve kit connected to the LED503 and MYCOMFORT control panel, controls the room temperature by stopping the water flow through the heat exchanger.

The kit includes:

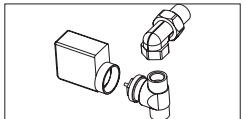
**Brass 2-way valve**, maximum operating pressure 16 bar.

**Electrothermal actuator featuring 230 V, ON/OFF functions, total opening time 4 minutes** (24V supply voltage available on request).

**Brass 90°union elbow** for the installation of the valve on the heat exchanger.

#### NOTE:

- The valve for additional DF heat exchanger is not present on ESTRO FB - FBC models.
- On ESTRO FB - FBC models the valve is mounted on the outlet of the standard heat exchanger



### 2/3-way valve, modulating actuator, hydraulic kit for standard and DF heat exchanger

#### Main features:

- Electronic valve actuator
- 0-10V Control signal
- Torque rise stroke control
- Supply voltage 24 Vac
- Direct mounting by means of threaded locknut (M30x1.5)
- Pre-wired power cable

#### DESCRIPTION

The actuator is a 24V electronic device controlled by means of a 0-10V control signal. It stands out for its compact dimensions allowing easy installation even in small spaces. The actuator attachment to compatible valve bodies is easy and does not require any hydraulic work (system emptying). A LED makes it possible to directly read the operating mode (On, Off, end position, anti-blocking) of the actuator.

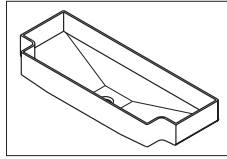




## 8 ACCESSORIES

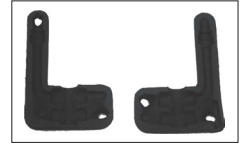
### BV - Auxiliary water drip tray for vertical installation units

The auxiliary drip tray is used to collect the condensate from the valve and the pressure regulator. It can be used on all éstro fan coils.



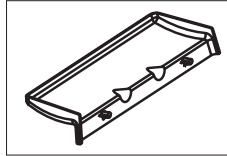
### GIVK - Valve insulation shell

The GIVK valve insulation shell avoids the creation of condensate within the valve body. The plumbing connections are provided either on the right side or the left side.



### BH - Auxiliary water drip tray for horizontal installation units

The BH auxiliary drip tray is suitable for horizontal installation fan coils to collect the condensate from the ON/OFF 3-way valve (VK S accessory).



### MCSWE - Water temperature sensor for microprocessor controls model MYCOMFORT

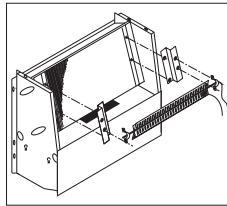
Directly connected to the microprocessor control model MYCOMFORT to measure the water temperature through the heat exchanger. If the temperature detected is less than 17°C, the unit will operate in the cooling mode and the controller will use the summertime temperature scale (19 - 31°C); if the temperature detected is greater than 37°C the unit will function in the heating mode and the controller will use the wintertime temperature scale (14 / 26°C). If the temperature detected by the probe is in the range of 17°C to 37°C, the controller will inhibit operation of the fan coil unit.



### RE - Electric heating element complete with installation kit, safety devices and power relay box

Designed to meet the needs of supplement conventional water heating systems, the kit includes armoured electric heating elements, safety thermostats (with automatic/manual resetting) and power relay set.

The additional heating element should be coupled to one of the MYCOMFORT controllers available.

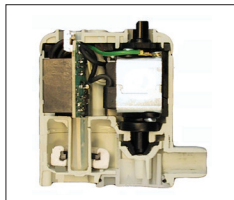


### MCSUE Humidity sensor for on-board microprocessor controls model MYCOMFORT MEDIUM and MYCOMFORT LARGE.



### KSC - Condensate drainage pump kit

It permits the drainage of condensate in case of height differences. The pump is equipped with a check valve on the drain pipe and is capable to drain up to 8 l/h of water.



### EVO microprocessor controller split for wall-mounting installation

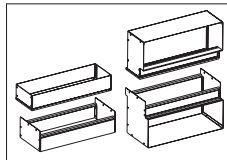
#### Main functions:

- Measurement and regulation of the room air temperature
  - Measurement and regulation of the room humidity
  - Measurement and temperature of water (water probes are optional)
  - Manual/automatic regulation of the fan speed with ON-OFF step and modulating control
  - Automatic regulation of the valve opening with ON-OFF and modulating control
  - Manual or automatic heating/cooling operation switch according to the water temperature inside the coil or to the room temperature with selectable amplitude neutral area
  - Clock and operating time bands
  - 3 analogue outputs to control 0-10 V modulating devices
  - Economy function and minimum temperature
  - 1 Digital output to control on/off external devices (potential-free contacts)
  - Serial port for RS485 connection
  - Serial port for OC connection
  - 3 digital inputs for ON-OFF, Economy, Operating mode remote setting
- The controller is provided with a programmable display that allows you to view and set the hydronic unit functions by means of the specific interface with parameter description.



### RA / RM - Inlet and outlet connectors

These accessories are designed for éstro FC, FF, FBC fan coils and are used for room ducts when the basic unit (éstro FC) is placed within false ceilings and/or recess wall mounted. For each configuration, the inlet and outlet connectors are available in straight version and in 90° jointed version.



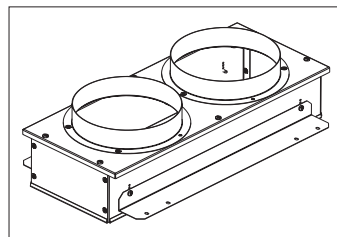
### RGC - Plenum with circular collars for air outlet grille

Connector between outlet grille and plenum suitable for circular ducts (Ø180 mm).

The RGC connectors are used together with the GM + C air outlet grilles in particular for the direct connection of flexible circular ducts (Ø180 mm) to the grille.

The RGC connectors are suitable for air intake/outlet ducts and can be used with Estro units without cabinet (models FC, FF and FBC) mounted in false ceilings and/or recessed mounted.

The RGC connectors are suitable for installation on air outlets. They are insulated as standard with polyethylene, thickness 3 mm CL 1.



## 9 INSTALLATION REQUIREMENTS

The fan coils should be installed in a position where the room can be cooled or heated evenly, on walls or ceilings able to withstand their weight. It is advisable to install any accessories on the standard unit prior to positioning the latter.

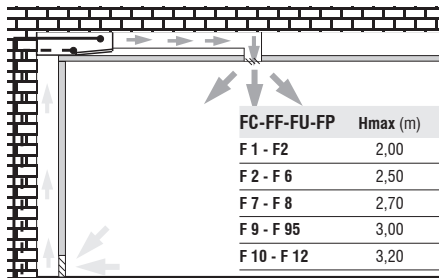
For installation and use of accessories, please refer to the relative technical sheets.

To guarantee the proper functioning of the unit and access for routine and extraordinary maintenance purposes, it is necessary to comply with the minimum installation clearance requirements (see "overall dimensions" section).

In case of recess mounted units an access panel should be provided.

In order to avoid hot air stratification in rooms heated with ceiling mounted fan coils, it is recommended:

- not to exceed the "H" installation heights referred to the maximum operating speed as shown on the diagram;
- supply the units with moderately hot water (water inlet 50/60°C);
- provide the air intake from the lower part of the room, if possible



Install any remote control panel in an easily accessible position allowing the user to set the functions while ensuring an accurate reading of the ambient temperature, if provided. You should avoid:

- positions directly exposed to sunlight;
- positions exposed to direct currents of warm or cold air;
- placing obstacles that impede an accurate temperature reading.

During wintertime periods of quiescence, drain water from the system, to prevent ice from forming. If anti-freeze solutions are used, check for their freezing point using the table below.

Glycol by weight (%)	Freezing temperature (°C)	Capacity adjustment	Pressure drop adjustment
0	0	1.00	1.00
10	-4	0.97	1.05
20	-10	0.92	1.10
30	-16	0.87	1.15
40	-24	0.82	1.20

## 10 MAINTENANCE

ESTRO type fan coils do not have particular maintenance requirements: it is sufficient to periodically clean the air filter.

The motor requires no maintenance since it has self-lubricating bearings. It is recommended to replace the air filter once a year, using an original replacement filter; the fan coil unit model is specified on the identification plate on the inside of the side panel.

Always consult the "Installation, use and maintenance manual" provided with the unit when undertaking maintenance and cleaning.







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