

Application guide



ARMONIA

Chilled water cassette

ARMONIA EC

Chilled water cassette - EC motor

1,3 - 11 kW



ARMONIA™

APPLICATION GUIDE

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ARMONIA™ CWC

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Our company is member of the Eurovent certification program.
The ARMONIA™ chilled water cassettes are tested and rated in accordance with Eurovent certification program.



Our products comply with the European standards.



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Innovating and beautiful design, seven different sizes, high control flexibility, easy maintenance: the new ARMONIA™ chilled water cassette is the result of an extended technical and design development aimed at achieving the highest level in terms of performance, silent operation and control possibilities.

The air diffuser has an highly attractive aesthetical appearance, very innovative, and is also able to offer the best air distribution performance thanks to long computer studies and laboratory tests. The standard colour is RAL 9003, other colours available on request.

The 4 smaller sizes are designed to fit into 600x600 mm false ceiling standard modules. The 3 bigger sizes have a dimension of 800x800 mm which allows the best outcome in terms of quiet-ness and of price/performance ratio for these high capacity models.

Every unit can be supplied with 1 battery (2 pipe system) and a possible electric resistance or with 2 batteries (4 pipe system). Each model can have fresh air intake and a remote air diffuser can be connected to the unit.

The condensate pump is integral with the unit, is very quiet and has a maximum head of 650 mm.

In addition to the temperature and speed standard controls, automatic speed selection is also available. More than one unit can be connected to a single control, and the unit control panel can be installed in a position that facilitates the maintenance operation. Every unit can also be operated by the means of an infra-red remote control. The ARMONIA™ cassettes can also be connected to the most common automatic building management systems.



Each unit can be equipped with a low energy consumption electric motor that is controlled by an inverter card that makes possible continuous air flow variations.

Armonia water cassettes are available in the following configurations :

Version	Codification example
Standard version Basic unit	2 pipes CWC 2 ST 020
	4 pipes CWC 4 ST 040
IR version Basic unit with infrared remote control	2 pipes CWC 2 IR 020
	4 pipes CWC 4 IR 040
EH version 2 pipes basic unit with electric heater	2 pipes CWC 2 EH 120
IREH version 2 pipes basic unit with infrared remote control and electric heater	2 pipes CWC 2 IR EH 120
EC version Basic unit with EC fan	2 pipes CWC 2 EC 120
	4 pipes CWC 4 EC 140
ECEL version 4 pipes basic unit with EC fan and EC fitted electronic board (for remote or infrared control for EC-EL version)	2 pipes CWC 2 EC EL 120
	4 pipes CWC 4 EC EL 140

INTAKE GRID AND DISTRIBUTION OF THE AIR

Intake grids, frame and adjustable air distribution louvers on each side, made from white ABS, RAL 9003. On request and with minimum quantities, other RAL colors are available.

Metallic diffuser is also available in RAL 9003 white colour and with 600x600 dimension to perfectly fit into the false ceiling standard modules without overlapping parts.

CASING

Is made from galvanized steel with inside thermal insulation (closed cell polyethelene 10 mm thick) and outside anti-condensate lining.

CONTROL PANEL

Made of an external box with the control electronic board with an easily accessible terminal board.

FAN ASSEMBLY

The fan assembly, which is mounted on anti-vibrating supports, is extremely silent.

The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduce turbulence, increasing efficiency and reducing noise.

The single air inlet radial fan is connected to a 6 speed electric motor with single phase 230V/50Hz supply, class B insulation and integrated Klixon thermal contact for motor protection.

The units are supplied with 3 standard speeds connected and it is possible to change them on site if necessary.

HEAT EXCHANGER

ade of copper tubes with bonded aluminium fins for maximum transfer contact.

The batteries are with 1, 2 or 3 rows for 2 pipe models and 2+1 rows for 4 pipe models (the heating row is on the inside part of the battery).

For 4 pipe systems two versions are available:

- CWC 040, CWC 140, CWC 240, CWC 340, CWC 040, CWC 540, CWC 640 supply an higher heating emission;
- CWC 260, CWC 360, CWC 560, CWC 660 supply an higher cooling emission.

The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

CONDENSATE COLLECTION TRAY

High density ABS polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B2 to DIN 4102.

AIR FILTER

Synthetic washable filter, easily removable.

CONDENSATE PUMP

Float switch centrifugal pump with 650 mm of maximum head, integral to the unit and wired to the control panel on the outside of the casing.

VALVE SET

Two or three way valves for ON/OFF operation, with pipe mounting kit and thermostatic actuator.

Technical features

2 pipe units. The following standard rating conditions are used:

COOLING

Entering air temperature: + 27°C D.B., + 19°C W.B.
 Water temperature: + 7/12°C

HEATING

Entering air temperature: + 20°C
 Water temperature: + 50°C

water flow rate as for the cooling conditions

MODEL	CWC	020			120			220			320			420			520			620		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m³/h	310	420	610	310	420	520	320	500	710	430	610	880	630	820	1140	710	970	1500	710	1280	1820
Cooling total emission	kW	1,27	1,63	1,98	1,84	2,34	2,68	2,25	3,34	4,33	2,94	3,88	5,02	4,21	4,91	6,16	5,31	6,78	9,51	5,31	8,45	11,10
Cooling sensible emission	kW	1,01	1,32	1,64	1,35	1,75	2,04	1,57	2,39	3,18	2,08	2,81	3,74	3,03	3,58	4,59	3,46	4,48	6,48	3,71	6,09	8,25
Heating	kW	1,62	2,12	2,64	2,22	2,90	3,35	2,56	3,93	5,23	3,43	4,63	6,17	5,12	6,03	7,77	5,61	7,34	10,71	6,13	10,30	14,00
Water flow	l/h	219	280	340	316	402	461	387	574	745	506	667	863	724	845	1060	913	1166	1636	913	1453	1909
ΔP Cooling	kPa	4,5	7,0	10,0	4,9	7,6	9,7	4,6	9,4	15,1	7,5	12,4	19,7	10,9	14,3	21,6	9,4	14,7	26,9	9,4	21,8	35,6
ΔP Heating	kPa	4,0	6,0	9,0	4,1	6,3	8,2	3,5	7,3	11,4	6,7	11,2	17,7	6,7	9,9	15,1	7,9	12,4	23,0	7,9	18,6	30,6
Sound power Lw	dB(A)	33	40	49	33	40	45	33	45	53	41	49	59	33	40	48	34	40	53	34	48	58
Sound pressure Lp	dB(A)	24	31	40	24	31	36	24	36	44	32	40	50	24	31	39	25	31	44	25	39	49
Fan	W	25	32	57	25	32	44	25	44	68	32	57	90	33	48	77	42	63	120	42	95	170
	A	0,11	0,15	0,27	0,11	0,15	0,20	0,11	0,20	0,32	0,15	0,27	0,45	0,15	0,23	0,36	0,18	0,28	0,53	0,18	0,42	0,74
Water content	l	0,8			1,4			2,1			2,1			3,0			4,0			4,0		
Dimensions	mm	575x575x275															820x820x303					

4 pipe units. The following standard rating conditions are used:

COOLING

Entering air temperature: + 27°C D.B., + 19°C W.B.
 Water temperature: + 7/12°C

HEATING

Entering air temperature: + 20°C
 Water temperature: + 70/60°C

MODEL	CWC	040			140			240			260			340			360		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m³/h	310	420	610	310	420	520	320	500	710	320	500	710	130	610	880	430	610	880
Cooling total emission	kW	1,51	1,96	2,33	1,85	2,36	2,70	1,85	2,65	3,34	2,09	3,06	3,93	2,36	3,02	3,81	2,72	3,53	4,53
Cooling sensible emission	kW	1,15	1,55	1,90	1,34	1,71	1,98	1,34	1,98	2,56	1,49	2,24	2,95	1,75	2,29	2,97	1,97	2,62	3,46
Water flow	l/h	260	337	401	318	406	464	318	456	574	359	526	676	406	519	655	468	607	779
ΔP Cooling	kPa	6,0	10,0	13,5	4,6	6,9	8,8	4,6	8,8	13,4	4,0	7,0	10,5	7,2	11,2	17,0	6,0	9,0	14,0
Heating	kW	1,96	2,54	3,03	2,43	3,02	3,46	2,43	3,46	4,40	1,98	2,71	3,35	3,10	3,97	4,95	2,46	3,06	3,79
Water flow	l/h	169	219	261	209	260	298	209	298	378	170	233	288	267	341	426	212	263	326
ΔP Heating	kPa	6,5	10,5	14,5	5,7	8,5	10,8	5,7	10,8	16,6	3,6	6,0	9,0	8,8	13,8	20,5	5,0	7,8	11,0
Sound power Lw	dB(A)	33	40	50	33	40	45	33	45	53	33	45	53	41	49	59	41	49	59
Sound pressure Lp	dB(A)	24	31	41	24	31	36	24	36	44	24	36	44	32	40	50	32	40	50
Fan	W	25	32	57	25	32	44	25	44	68	25	44	68	32	57	90	32	57	90
	A	0,11	0,15	0,27	0,11	0,15	0,20	0,11	0,20	0,32	0,11	0,20	0,32	0,15	0,27	0,45	0,15	0,27	0,45
Cooling water content	l	1,0			1,4			1,4			1,7			1,4			1,7		
Heating water content	l	0,6			0,7			0,7			0,5			0,7			0,5		
Dimensions	mm	575x575x275																	

MODEL	CWC	440			540			560			640			660		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m³/h	630	820	1140	710	970	1500	710	970	1500	710	1280	1820	710	1280	1820
Cooling total emission	kW	4,14	5,03	6,34	4,52	5,66	7,71	4,99	6,33	8,77	4,52	6,93	8,89	4,99	7,84	10,20
Cooling sensible emission	kW	2,96	3,65	4,69	3,25	4,15	5,83	3,53	4,55	6,49	3,25	5,18	6,84	3,53	5,73	7,68
Water flow	l/h	712	865	1090	777	974	1326	858	1059	1508	777	1192	1529	858	1348	1754
ΔP Cooling	kPa	8,8	12,5	18,9	10,3	15,4	26,9	9,0	14,0	25,0	10,3	22,1	34,7	9,0	20,0	32,0
Heating	kW	5,91	7,19	9,10	6,45	8,10	11,00	5,23	6,42	8,56	6,45	9,98	12,70	5,23	7,74	9,80
Water flow	l/h	508	618	783	555	697	946	450	552	736	555	858	1092	450	666	843
ΔP Heating	kPa	9,8	14,0	21,4	11,5	17,4	29,9	6,5	9,2	15,3	11,5	25,3	38,8	6,5	13,0	19,5
Sound power Lw	dB(A)	33	40	48	34	40	53	34	40	53	34	48	58	34	48	58
Sound pressure Lp	dB(A)	25	31	39	25	31	44	25	31	44	25	39	49	25	39	49
Fan	W	33	48	77	42	63	120	42	63	120	42	95	170	42	95	170
	A	0,15	0,23	0,36	0,18	0,28	0,53	0,18	0,28	0,53	0,18	0,42	0,74	0,18	0,42	0,74
Cooling water content	l	3,0			3,0			3,6			3,0			3,6		
Heating water content	l	1,4			1,4			1,1			1,4			1,1		
Dimensions	mm	820x820x303														

The sound pressure levels apply to the reverberant field of a 100 m³ room and a reverberation time of 0,5 sec.

Cooling emission of 1 battery units (2 pipe installation)

Entering air temperature: + 27°C D.B., + 19°C W.B.

MODEL	Speed	Airflow	EWT 5 - LWT 10°C			EWT 7 - LWT 12°C			EWT 9 - LWT 14°C			EWT 12 - LWT 17°C		
			Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission
		m³/h	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW
CWC 020	High	610	421	2,45	1,83	340	1,98	1,64	254	1,47	1,45	199	1,16	1,16
	Med	420	346	2,01	1,48	280	1,63	1,32	210	1,22	1,16	160	0,93	0,93
	Low	310	269	1,57	1,14	219	1,27	1,01	165	0,96	0,89	123	0,71	0,71
CWC 120	High	520	554	3,22	2,22	462	2,68	2,04	362	2,10	1,75	252	1,47	1,47
	Med	420	482	2,80	1,91	403	2,34	1,75	317	1,84	1,50	220	1,28	1,28
	Low	310	417	2,42	1,64	317	1,84	1,35	276	1,61	1,29	188	1,09	1,09
CWC 220	High	710	926	5,38	3,64	745	4,33	3,18	617	3,59	2,87	420	2,44	2,44
	Med	500	715	4,15	2,77	575	3,34	2,39	483	2,81	2,18	319	1,86	1,86
	Low	320	508	2,95	1,94	387	2,25	1,57	349	2,03	1,53	225	1,31	1,31
CWC 320	High	880	1049	6,10	4,17	863	5,02	3,74	694	4,03	3,29	479	2,79	2,79
	Med	610	835	4,85	3,26	667	3,88	2,81	559	3,25	2,57	376	2,19	2,19
	Low	430	633	3,68	2,44	506	2,94	2,08	430	2,50	1,92	283	1,65	1,65
CWC 420	High	1140	1264	7,35	5,00	1060	6,16	4,59	840	4,88	3,95	573	3,33	3,33
	Med	820	1003	5,83	3,92	845	4,91	3,58	674	3,92	3,09	453	2,63	2,63
	Low	630	858	4,99	3,32	722	4,21	3,03	580	3,37	2,62	384	2,23	2,23
CWC 520	High	1500	1943	11,30	7,59	1635	9,51	6,48	1301	7,57	5,99	880	5,12	5,12
	Med	970	1374	7,99	5,27	1166	6,78	4,48	939	5,46	4,15	612	3,56	3,56
	Low	710	1070	6,22	4,06	913	5,31	3,46	740	4,30	3,20	434	2,52	2,52
CWC 620	High	1820	2277	13,24	9,01	1909	11,10	8,25	1511	8,78	7,11	1044	6,07	6,07
	Med	1280	1722	10,01	6,68	1454	8,5	6,09	1162	6,75	5,27	775	4,51	4,51
	Low	710	1070	6,22	4,06	913	5,31	3,71	740	4,30	3,20	434	2,52	2,52

EWT = Entering water temperature LWT= Leaving water temperature

Heating emission of 1 battery units (2 pipe installation)

Entering air temperature: + 20°C

MODEL	Speed	Airflow	EWT 45 - LWT 40°C		EWT 50 - LWT 40°C		EWT 60 - LWT 50°C		EWT 70 - LWT 60°C		EWT 80 - LWT 70°C	
			Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission
		m³/h	l/h	kW	l/h	kW	l/h	kW	l/h	kW	l/h	kW
CWC 020	High	610	386	2,24	203	2,37	298	3,46	393	4,56	488	5,67
	Med	420	310	1,80	164	1,91	239	2,78	315	3,66	391	4,55
	Low	310	237	1,38	126	1,46	183	2,13	240	2,80	298	3,47
CWC 120	High	520	482	2,80	266	3,10	377	4,39	488	5,68	599	6,97
	Med	420	417	2,42	232	2,39	327	3,80	422	4,91	513	5,96
	Low	310	356	2,07	198	2,31	279	3,25	360	4,19	441	5,12
CWC 220	High	710	787	4,57	440	5,12	619	7,19	795	9,25	970	11,30
	Med	500	593	3,45	334	3,89	467	5,43	598	6,96	730	8,48
	Low	320	412	2,39	235	2,73	326	3,79	412	4,83	505	5,87
CWC 320	High	880	903	5,25	504	5,86	709	8,25	914	10,63	1118	13,00
	Med	610	702	4,08	394	4,58	552	0,42	709	8,25	866	10,07
	Low	430	520	3,02	294	3,42	410	4,77	524	6,10	639	7,43
CWC 420	High	1140	1118	6,50	624	7,26	878	10,21	1130	13,15	1383	16,08
	Med	820	865	5,03	486	5,65	681	7,92	874	10,16	1067	12,41
	Low	630	734	4,27	415	4,82	578	6,72	741	8,61	903	10,50
CWC 520	High	1500	1683	9,78	951	11,06	1327	15,43	1699	19,76	2071	24,08
	Med	970	1146	6,67	655	7,62	906	10,54	1155	13,43	1403	16,32
	Low	710	876	5,09	505	5,87	694	8,07	882	10,25	1068	12,42
CWC 620	High	1820	2015	11,72	1132	13,17	1586	18,45	2037	23,68	2486	28,91
	Med	1280	1471	8,55	834	9,70	1161	13,50	1484	17,26	1807	21,01
	Low	710	876	5,09	505	5,87	694	8,07	882	10,25	1068	12,42

Emission correction factors for different working conditions.
Multiply the factors by the emission figures in the 7-12°C table above.

Total emission				
Water (°C)	Air (°C)	25-18	26-18,5	28-20
7/12°C	K	0,82	0,89	1,11
10/15°C	K	0,56	0,63	0,82
14/18°C	K	0,35	0,41	0,52

Sensible emission				
Water (°C)	Air (°C)	25-18	26-18,5	28-20
7/12°C	K	0,9	0,94	1,06
10/15°C	K	0,72	0,78	0,9
14/18°C	K	0,5	0,58	0,72

Note: the correction factors are indicative, as they are average values.

Cooling emission of 2 battery units (4 pipe installation)

Entering air temperature: + 27°C D.B., + 19°C W.B.

MODEL	Speed	Airflow	EWT 5 - LWT 10°C			EWT 7 - LWT 12°C			EWT 9 - LWT 14°C			EWT 12 - LWT 17°C		
			Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission
		m³/h	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW
CWC 040	High	610	490	2,85	2,12	401	2,33	1,90	307	1,78	1,69	239	1,39	1,39
	Med	420	410	2,38	1,73	337	1,96	1,55	260	1,51	1,37	196	1,14	1,14
	Low	310	314	1,82	1,29	260	1,51	1,15	201	1,17	1,02	148	0,86	0,86
CWC 140	High	520	569	3,31	2,26	465	2,70	1,98	374	2,18	1,79	260	1,51	1,51
	Med	420	465	2,71	1,83	405	2,36	1,70	309	1,80	1,44	210	1,22	1,22
	Low	310	398	2,31	1,55	318	1,85	1,34	267	1,55	1,22	177	1,03	1,03
CWC 240	High	710	718	4,18	2,91	574	3,34	2,56	467	2,72	2,30	330	1,92	1,92
	Med	500	569	3,31	2,26	455	2,65	1,98	374	2,18	1,79	260	1,51	1,51
	Low	320	398	2,31	1,55	318	1,85	1,34	267	1,55	1,22	177	1,03	1,03
CWC 340	High	880	791	4,60	3,23	656	3,81	2,97	512	2,98	2,56	366	2,13	2,13
	Med	610	632	3,67	2,53	520	3,02	2,29	413	2,40	2,00	288	1,67	1,67
	Low	430	510	2,97	2,01	405	2,36	1,75	337	1,96	1,59	231	1,35	1,35
CWC 440	High	1140	1299	7,55	5,12	1090	6,34	4,69	864	5,02	4,04	586	3,41	3,41
	Med	820	1027	5,97	4,00	866	5,03	3,65	691	4,02	3,15	462	2,68	2,68
	Low	630	842	4,89	3,24	713	4,14	2,96	572	3,33	2,56	374	2,17	2,17
CWC 540	High	1500	1588	9,23	6,35	1327	7,71	5,83	1046	6,08	5,02	726	4,22	4,22
	Med	970	1158	6,73	4,53	974	5,66	4,15	775	4,50	3,57	524	3,05	3,05
	Low	710	920	5,35	3,56	778	4,52	3,25	623	3,62	2,81	411	2,39	2,39
CWC 640	High	1820	1836	10,67	7,43	1529	8,89	6,84	1199	6,97	5,98	849	4,94	4,94
	Med	1280	1423	8,27	5,64	1191	6,93	5,18	942	5,48	4,46	646	3,75	3,75
	Low	710	920	5,35	3,56	778	4,52	3,25	623	3,62	2,81	411	2,39	2,39

Heating emission of 2 battery units (4 pipe installation)

Entering air temperature: + 20°C

MODEL	Speed	Airflow	EWT 45 - LWT 40°C		EWT 50 - LWT 40°C		EWT 60 - LWT 50°C		EWT 70 - LWT 60°C		EWT 80 - LWT 70°C	
			Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission
		m³/h	l/h	kW	l/h	kW	l/h	kW	l/h	kW	l/h	kW
CWC 040	High	610	256	1,49	134	1,56	197	2,29	261	3,03	325	3,78
	Med	420	215	1,25	113	1,31	166	1,93	219	2,54	272	3,17
	Low	310	166	0,96	87	1,01	128	1,49	169	1,96	210	2,44
CWC 140	High	520	283	1,65	149	1,73	218	2,54	298	3,46	358	4,17
	Med	420	247	1,44	130	1,51	191	2,22	260	3,02	312	3,63
	Low	310	196	1,14	103	1,20	151	1,76	209	2,43	247	2,87
CWC 240	High	710	351	2,04	184	2,14	270	3,14	378	4,40	444	5,17
	Med	500	277	1,61	146	1,69	214	2,48	298	3,46	350	4,07
	Low	320	196	1,14	103	1,20	151	1,76	209	2,43	247	2,87
CWC 340	High	880	402	2,34	211	2,45	310	3,60	426	4,95	510	5,93
	Med	610	317	1,84	166	1,94	244	2,84	341	3,97	401	4,67
	Low	430	247	1,44	130	1,51	191	2,22	267	3,10	312	3,63
CWC 440	High	1140	771	4,48	410	4,76	596	6,93	783	9,10	970	11,28
	Med	820	609	3,54	324	3,77	471	5,48	618	7,19	766	8,90
	Low	630	501	2,91	267	3,11	388	4,51	508	5,91	629	7,31
CWC 540	High	1500	929	5,40	493	5,73	718	8,34	946	11,00	1170	13,60
	Med	970	686	3,99	365	4,25	531	6,17	697	8,10	864	10,04
	Low	710	547	3,18	291	3,39	423	4,92	555	6,45	686	7,98
CWC 640	High	1820	1074	6,24	569	6,61	829	9,64	1092	12,70	1353	15,74
	Med	1280	845	4,91	449	5,22	653	7,60	858	9,98	1064	12,37
	Low	710	547	3,18	291	3,39	423	4,92	555	6,45	686	7,98

Emission correction factors for different working conditions.
Multiply the factors by the emission figures in the 7-12°C table above.

Total emission				
Water (°C)	Air (°C)	25-18	26-18,5	28-20
7/12°C	K	0,82	0,89	1,11
10/15°C	K	0,56	0,63	0,82
14/18°C	K	0,35	0,41	0,52

Sensible emission				
Water (°C)	Air (°C)	25-18	26-18,5	28-20
7/12°C	K	0,9	0,94	1,06
10/15°C	K	0,72	0,78	0,9
14/18°C	K	0,5	0,58	0,72

Note: the correction factors are indicative, as they are average values.

Cooling emission of 2 battery units (4 pipe installation)

Entering air temperature: + 27°C D.B., + 19°C W.B.

MODEL	Speed	Airflow	EWT 5 - LWT 10°C			EWT 7 - LWT 12°C			EWT 9 - LWT 14°C			EWT 12 - LWT 17°C		
			Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission
		m³/h	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW
CWC 260	High	710	812	4,72	3,29	676	3,93	2,95	528	3,07	2,60	378	2,20	2,20
	Med	500	629	3,66	2,51	526	3,06	2,24	415	2,41	1,97	288	1,67	1,67
	Low	320	425	2,47	1,66	359	2,09	1,49	287	1,67	1,31	192	1,12	1,12
CWC 360	High	880	940	5,46	3,86	779	4,53	3,46	606	3,52	3,05	442	2,57	2,57
	Med	610	729	4,24	2,93	607	3,53	2,62	477	2,77	2,31	337	1,96	1,96
	Low	430	557	3,24	2,21	468	2,72	1,97	370	2,15	1,73	256	1,49	1,49
CWC 560	High	1500	1804	10,49	7,25	1508	8,77	6,49	1189	6,91	5,72	836	4,86	4,86
	Med	970	1291	7,50	5,08	1089	6,33	4,55	867	5,04	4,00	587	3,41	3,41
	Low	710	1012	5,89	3,94	858	4,99	3,53	689	4,00	3,10	459	2,67	2,67
CWC 660	High	1820	2105	12,24	8,57	1754	10,20	7,68	1375	7,99	6,77	987	5,74	5,74
	Med	1280	1607	9,34	6,41	1348	7,84	5,73	1066	6,20	5,05	739	4,30	4,30
	Low	710	1012	5,89	3,94	858	4,99	3,53	689	4,00	3,10	459	2,67	2,67

Heating emission of 2 battery units (4 pipe installation)

Entering air temperature: + 20°C

MODEL	Speed	Airflow	EWT 45 - LWT 40°C		EWT 50 - LWT 40°C		EWT 60 - LWT 50°C		EWT 70 - LWT 60°C		EWT 80 - LWT 70°C	
			Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission
		m³/h	l/h	kW	l/h	kW	l/h	kW	l/h	kW	l/h	kW
CWC 260	High	710	279	1,62	139	1,61	213	2,48	288	3,35	363	4,22
	Med	500	226	1,32	113	1,32	173	2,01	233	2,71	294	3,42
	Low	320	165	0,96	83	0,97	127	1,47	170	1,98	214	2,49
CWC 360	High	880	315	1,83	156	1,82	241	2,80	326	3,79	411	4,78
	Med	610	255	1,48	127	1,48	195	2,27	263	3,06	332	3,86
	Low	430	205	1,19	103	1,20	157	1,83	212	2,46	266	3,10
CWC 560	High	1500	720	4,18	493	4,33	554	6,44	736	8,56	919	10,69
	Med	970	541	3,14	365	3,27	416	4,84	552	6,42	689	8,01
	Low	710	441	2,56	291	2,67	340	3,95	450	5,23	561	6,52
CWC 660	High	1820	824	4,79	569	6,61	633	7,36	843	9,80	1053	12,24
	Med	1280	651	3,79	449	5,22	501	5,83	666	7,74	831	9,66
	Low	710	441	2,56	291	3,39	340	3,95	450	5,23	561	6,52

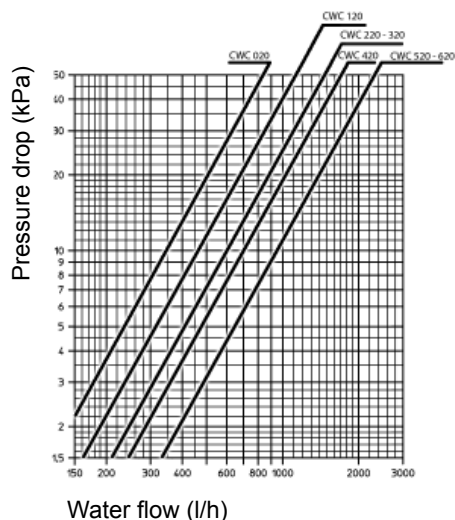
Emission correction factors for different working conditions.
Multiply the factors by the emission figures in the 7-12°C table above.

Total emission				
Water (°C)	Air (°C)	25-18	26-18,5	28-20
7/12°C	K	0,82	0,89	1,11
10/15°C	K	0,56	0,63	0,82
14/18°C	K	0,35	0,41	0,52

Sensible emission				
Water (°C)	Air (°C)	25-18	26-18,5	28-20
7/12°C	K	0,9	0,94	1,06
10/15°C	K	0,72	0,78	0,9
14/18°C	K	0,5	0,58	0,72

Note: the correction factors are indicative, as they are average values.

2 pipe installation

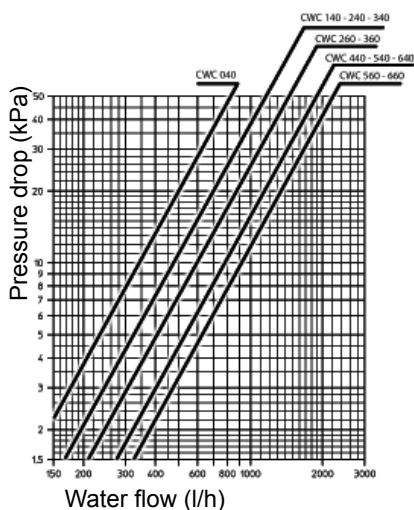


Pressure drop for mean water temperature of 10°C; for different temperatures, multiply the pressure drop figure by the K correction factors in the table.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

4 pipe installation

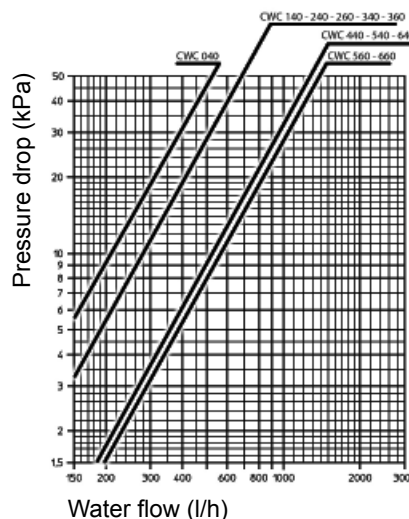
Pressure drop for cooling battery



Pressure drop for mean water temperature of 10°C; for different temperatures, multiply the pressure drop figure by the K correction factors in the table.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

Pressure drop for heating battery



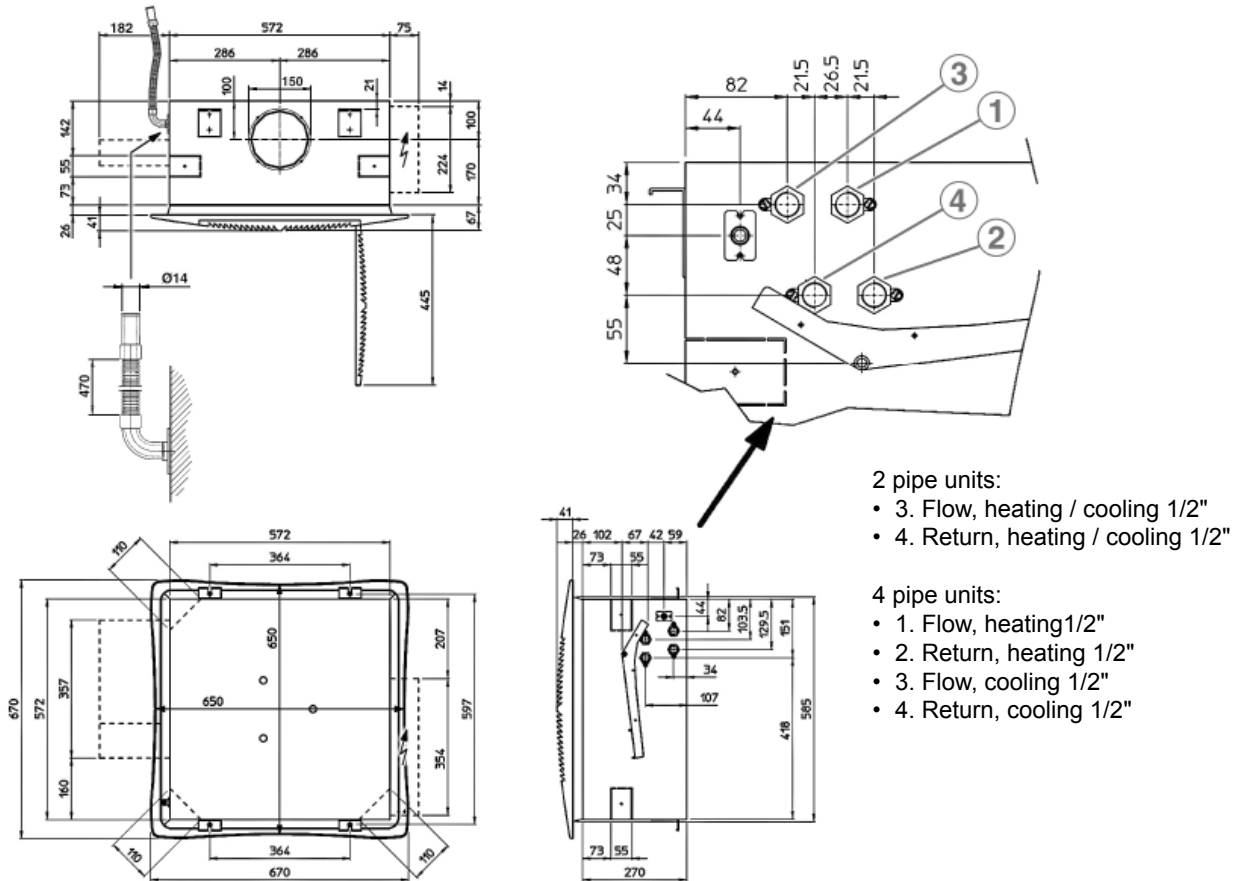
Pressure drop for mean water temperature of 65°C; for different temperatures, multiply the pressure drop figure by the K correction factors in the table.

°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

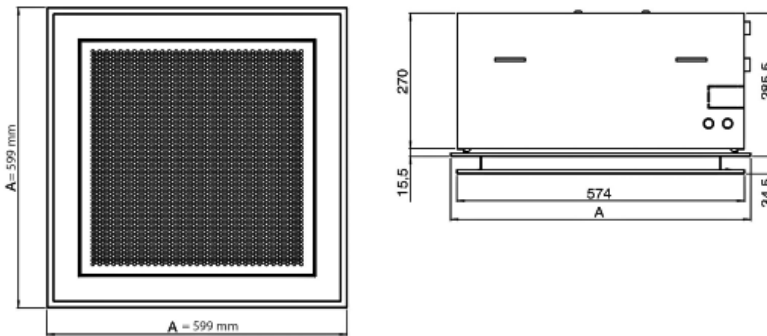
Working conditions

Water flow	Max. working pressure 8 Bar	Min. entering water temperature: +5°C Max. entering water temperature: +80°C
Airflow	Suitable relative humidity 15 - 75%	Min. entering air temperature: 6°C Max. entering air temperature: 40°C
Supply	Single phase 230 V 50 Hz	
Installation	Max. height: see table on page 11	

CWC 020 - 040 / CWC 120 - 140 / CWC 220 - 240 - 260 / CWC 320 - 340 - 360 (version 600 x 600)

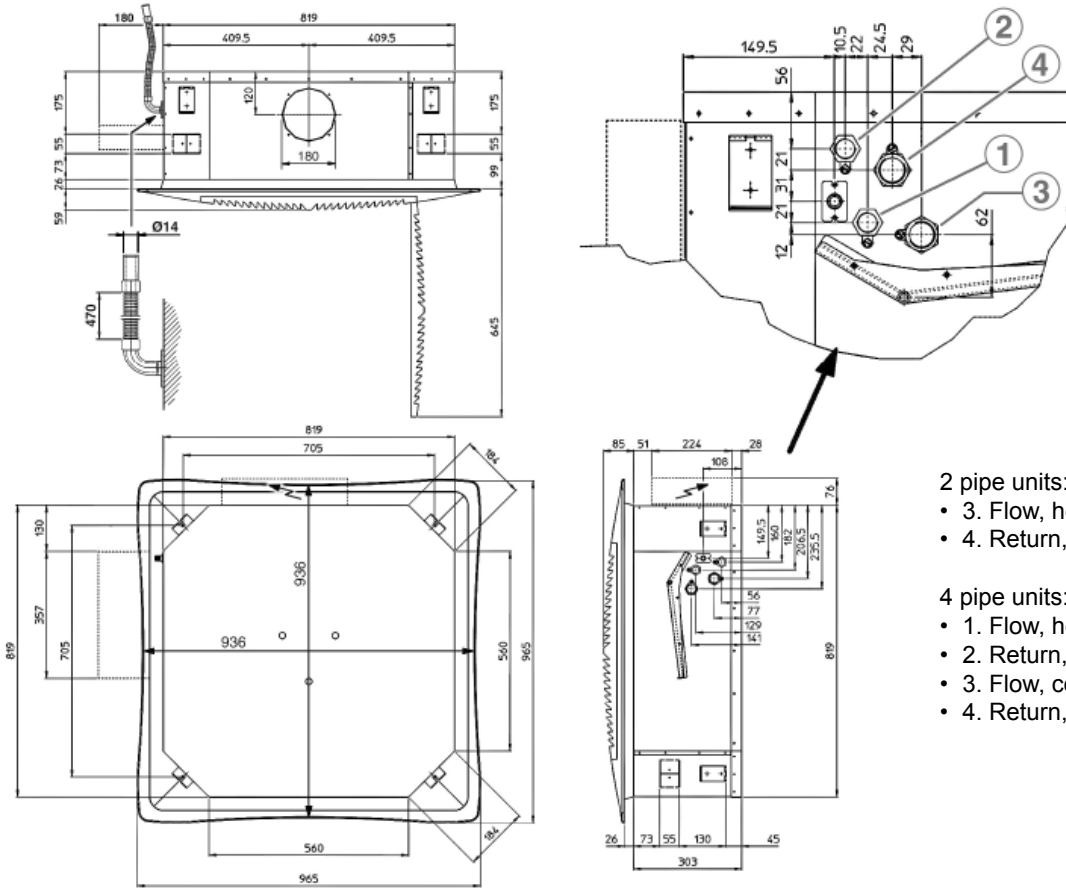


Metallic diffuser (code 9079420LN)



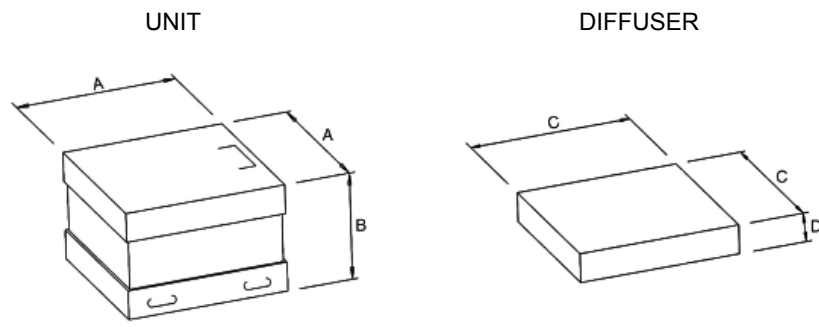
Model	UNIT		DIFFUSER		Packed unit Dimensions			
	Weights packed unit	Weights unpacked units	Weights packed unit	Weights unpacked units	A	B	C	D
	kg	kg	kg	kg	mm			
CWC 020 - 120	28	22	6	3	790	350	750	150
CWC 040 - 140	30	24						
CWC 220 - 240 - 260								
CWC 320 - 340 - 360								

CWC 420 - 440 / CWC 520 - 540 - 560 / CWC 620 - 640 - 660 (version 800 x 800)



- 2 pipe units:
- 3. Flow, heating / cooling 3/4"
 - 4. Return, heating / cooling 3/4"
- 4 pipe units:
- 1. Flow, heating 1/2"
 - 2. Return, heating 1/2"
 - 3. Flow, cooling 3/4"
 - 4. Return, cooling 3/4"

Packed unit

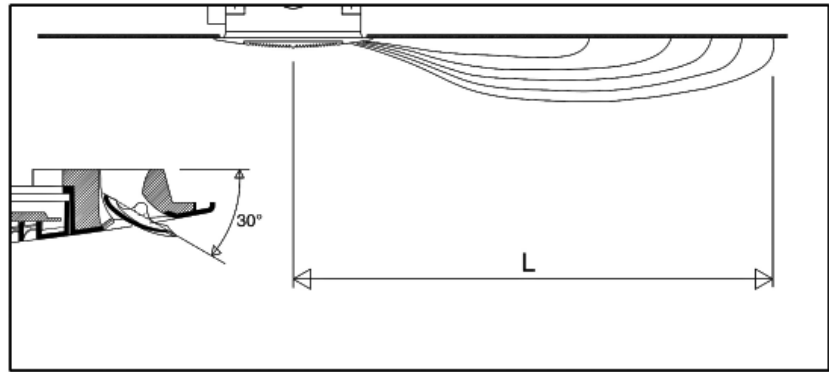


Model	UNIT		DIFFUSER		Packed unit Dimensions			
	Weights packed unit	Weights unpacked units	Weights packed unit	Weights unpacked units	A	B	C	D
CWC 420	44	36	10	6	1050	400	1000	200
CWC 440	47	39						
CWC 520 - 540 - 560								
CWC 620 - 640 - 660	mm							

The air throw indicated in the tables must only be considered the maximum value, as it may change significantly in relation to the dimensions of the room in which the appliance is installed and the positioning of the furniture in the room.

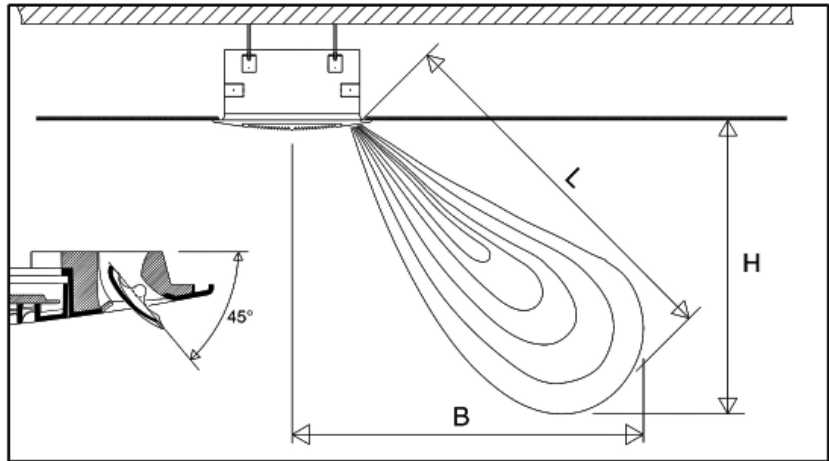
The useful throw L refers to the distance between the unit and the point where the air speed is 0.2 m/sec; if the louver has a gradient of 30° (recommended in cooling mode), the so-called “Coanda” effect will occur, illustrated in the first figure, while at a gradient of 45° (recommended in heating mode), there will be a downwards throw, as illustrated in the second figure.

With adjustable air diffusion louvers at 30°



Model	CWC 020-040-120-140			CWC 220-240-260			CWC 320-340-360			CWC 420-440			CWC 520-540-560			CWC 620-640-660			
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Speed																			
Air throw L	m	3,0	3,5	3,8	3,0	3,8	4,5	3,5	4,02	5,0	3,02	3,7	4,3	3,4	4,0	5,0	3,4	4,6	5,5

With adjustable air diffusion louvers at 45°



Model	CWC 020-040-120-140			CWC 220-240-260			CWC 320-340-360			CWC 420-440			CWC 520-540-560			CWC 620-640-660			
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Speed																			
Air throw L	m	3,3	3,9	4,2	3,3	4,2	4,8	3,9	4,5	5,2	3,5	4,1	4,8	3,8	4,6	5,4	3,8	5,1	5,8
Height H	m	2,2	2,6	2,8	2,2	2,8	3,2	2,6	3,0	3,4	2,2	2,6	3,0	2,4	2,8	3,4	2,4	3,1	3,6
Distance B	m	2,5	2,9	3,1	2,5	3,1	3,6	2,9	3,4	3,9	2,7	3,2	3,8	3,0	3,6	4,2	3,0	4,0	4,6

NOTE:

On heating it must be payed attention to rooms where the floor temperature is particularly low (for example less than 5°C). In this situation the floor can cool the lower layer of air to a level that stop the uniform diffusion of the hot air coming from the unit, decreasing the throw figures shown in the table.

The cassette is fitted with inlets for fresh air to be mixed with return air inside the unit (Fig. 3).

The fresh air flow is limited to 20% of the total fan coil air flow at medium speed and 100 m³/h for each treated air inlet.

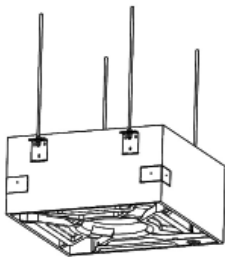
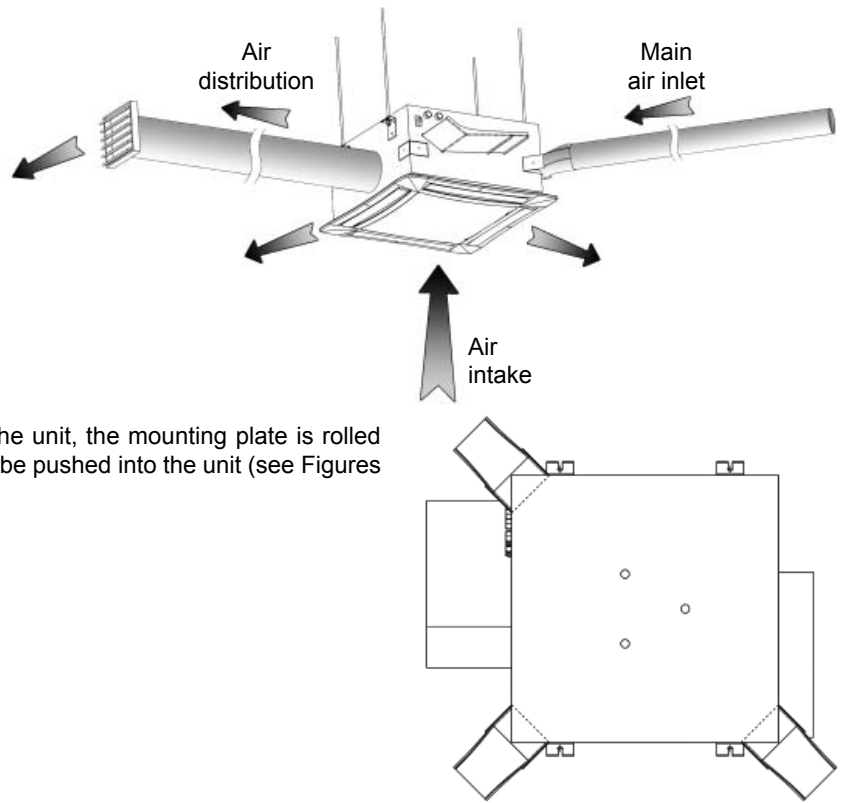
The units feature fresh air inlets on three corners (no inlets on the fourth corner because of the condensate pump inside the unit).

The fresh air inlets are designed for the insertion of standard 110 x 55 mm rectangular ducts.

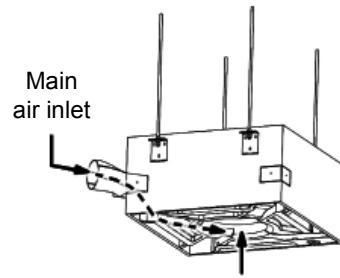
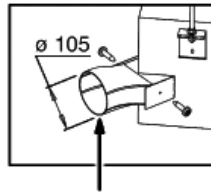
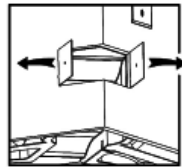
The air duct is connected quickly and easily. After removing the blank and the insulation inside the unit, the mounting plate is rolled back and the air duct with its V-shaped section must be pushed into the unit (see Figures below).

The duct is then fixed to the mounting plate.

Note: the fresh air must be filtered.



Accessory: Fresh air duct (see page 22)



Air intake

Air distribution

Two air outlets are provided on the side of the unit for connection to separate supply air outlets.

They can be used to supply air from the fan coil unit to distant areas of a room or even to a different room.

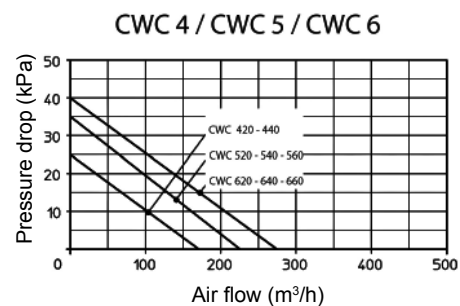
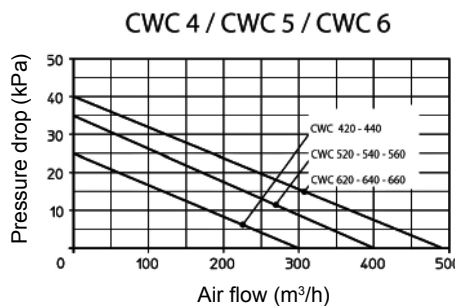
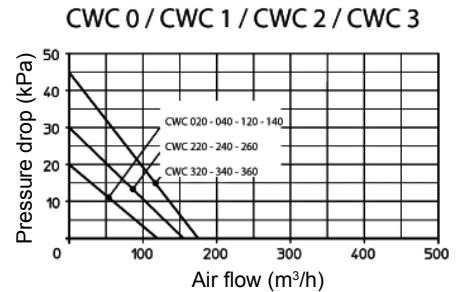
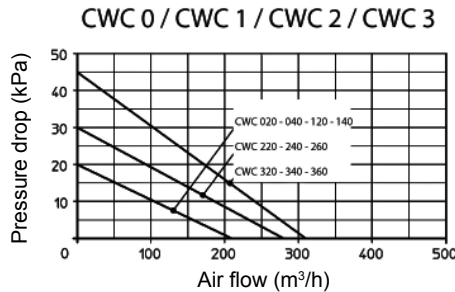
The total air flow does not change.

The air flow at high speed depending on the air duct pressure drop is shown in the tables below.

Note: all air ducts must be insulated in order to avoid condensation.

No. used outlet = 1

No. used outlet = 2

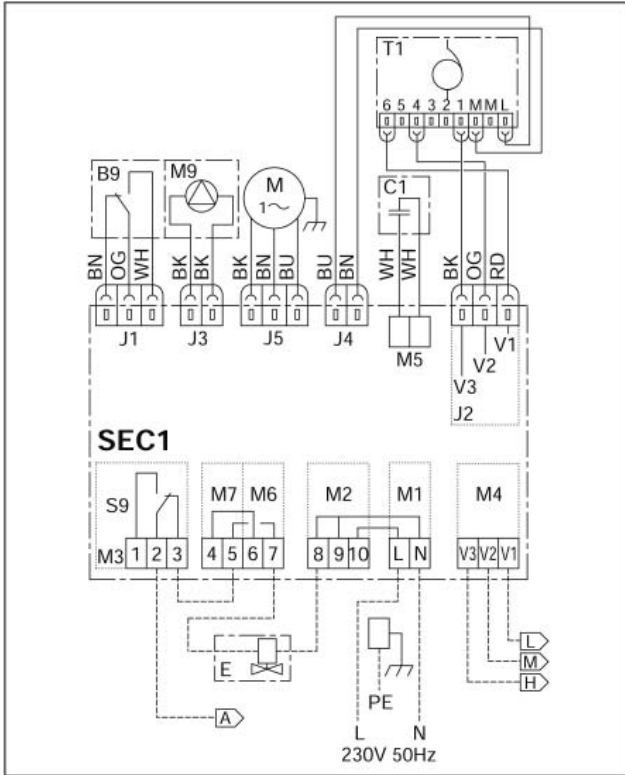


Wiring diagram

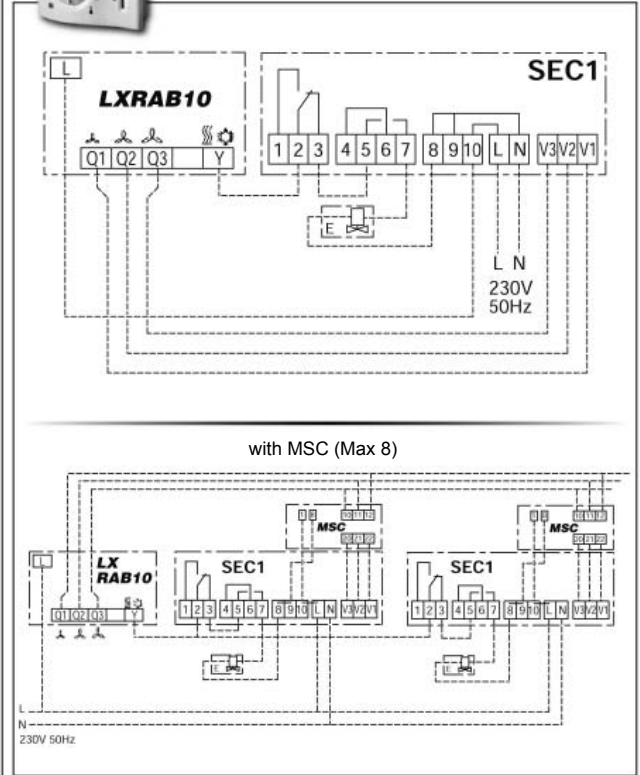
- Speed switch (slave).
- It allows to control up to 8 units with only one centralized thermostat using one speed switch for each unit.

Important notice: please check that connected elements do not exceed the maximum current accepted.

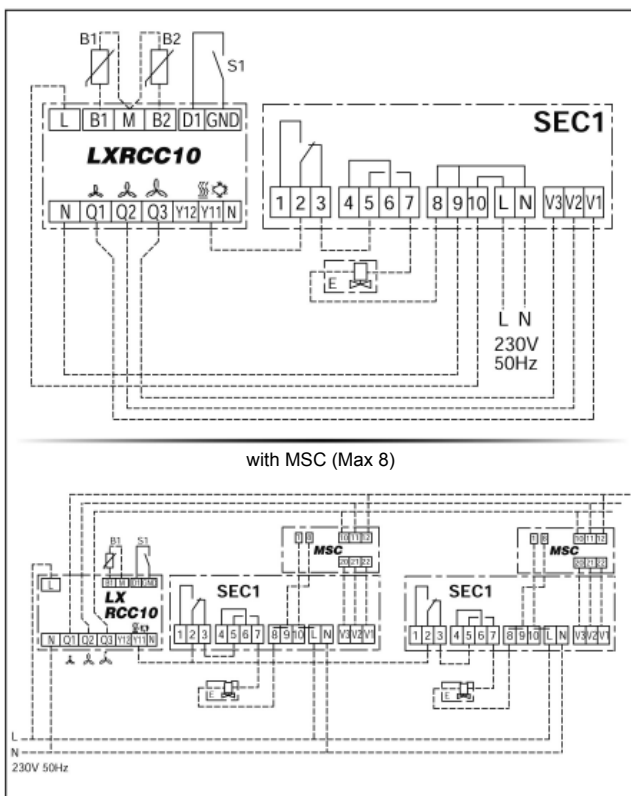
CWC2ST



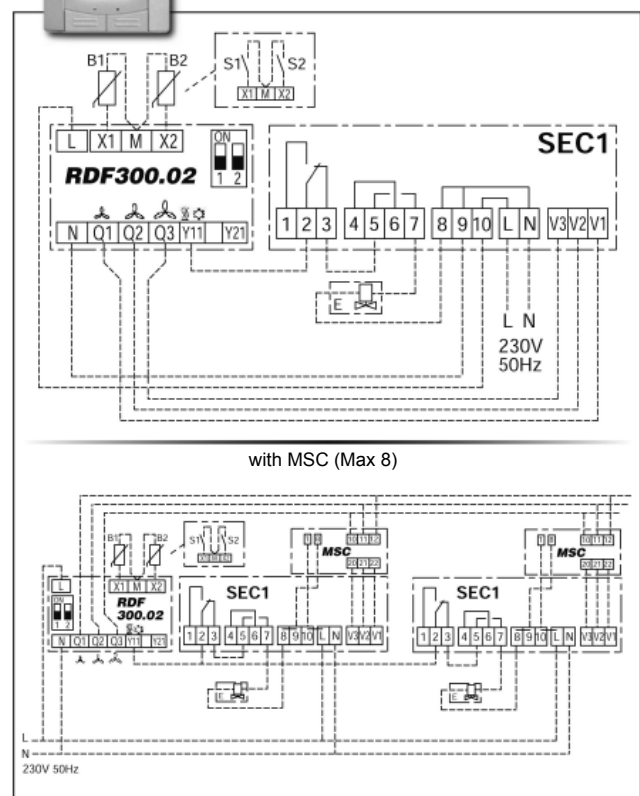
LXRAB10



LXRCC10

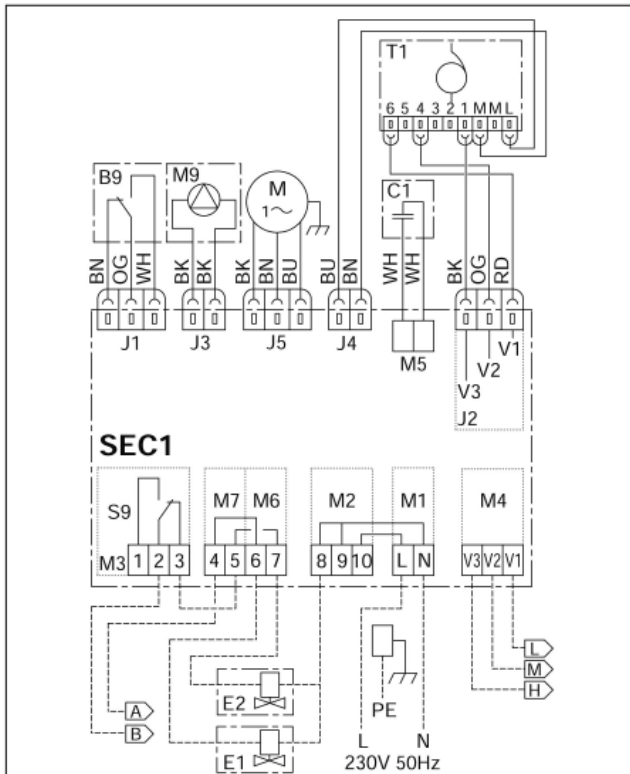


RDF300.02

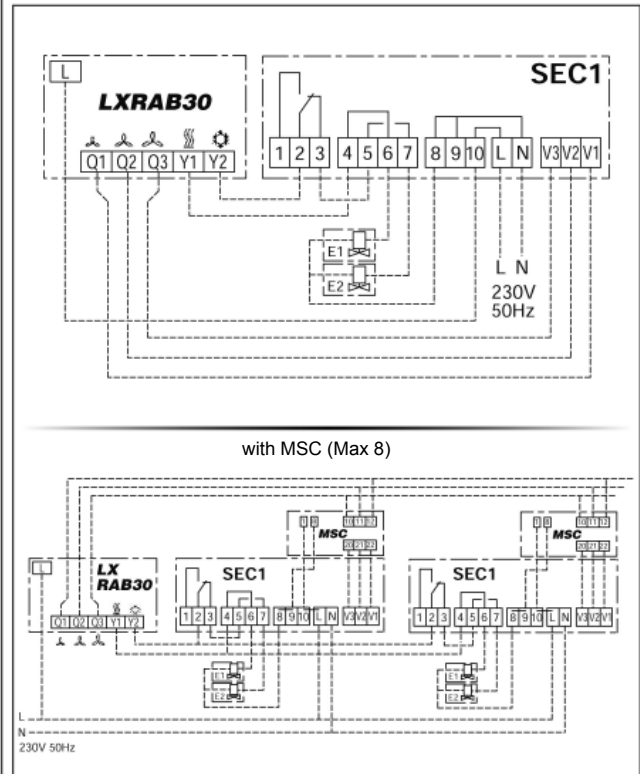


Wiring diagram

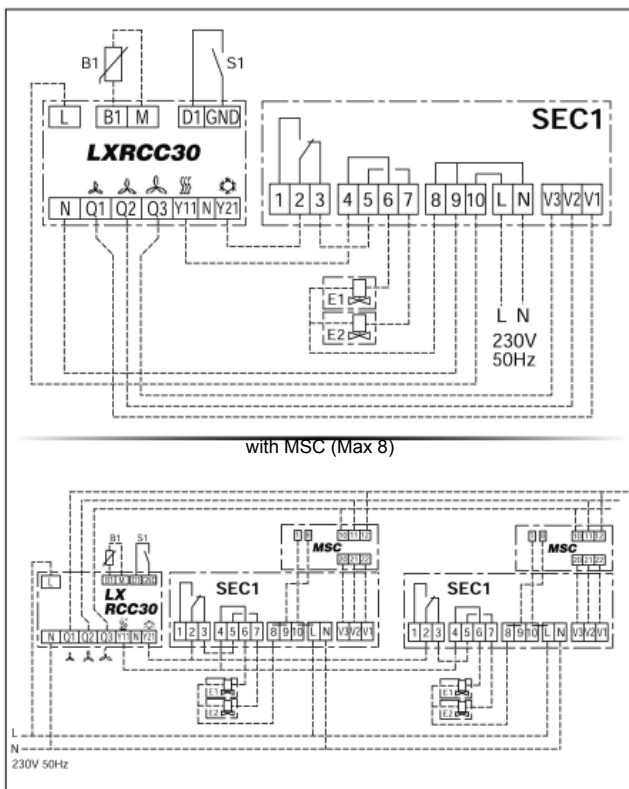
CWC4ST



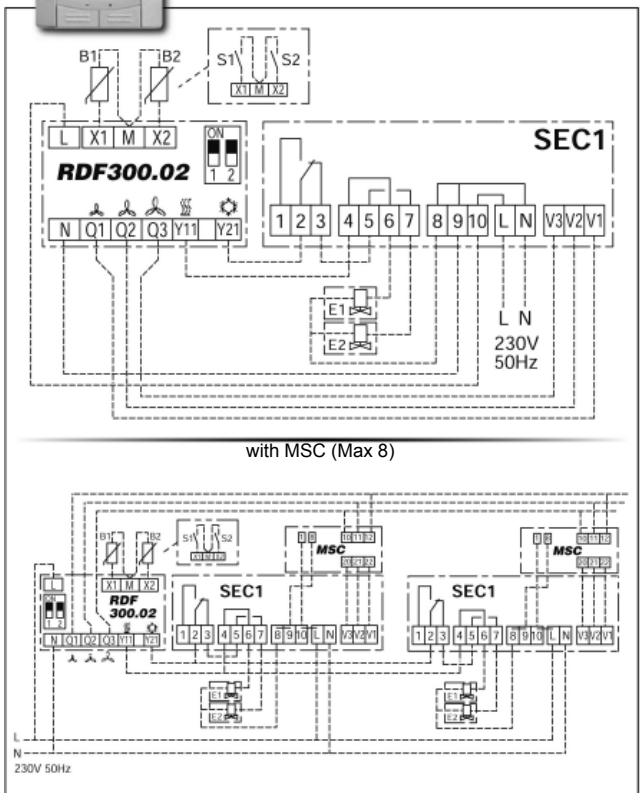
LXRAB30



LXRCC30



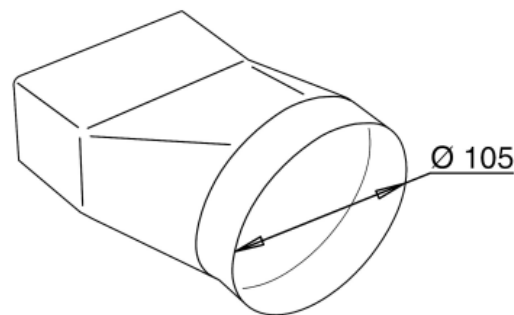
RDF300.02



Fresh air duct (Ø 105 mm plastic connection)

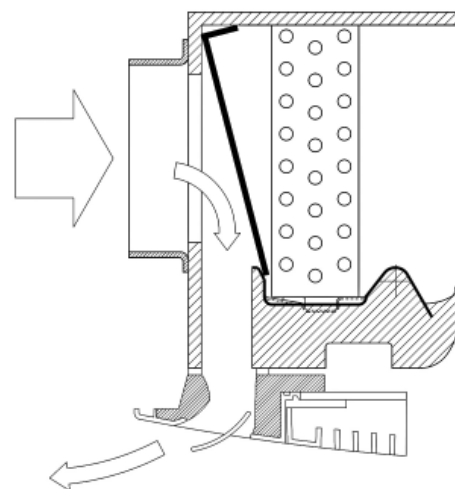
See page 12.

Identification	
Code	6078005



Fresh air kit 1 way (metallic duct and by-pass)

This is used to introduce primary air into the environment directly through the diffuser. The kit includes a flow separator to be fitted inside the cassette, and a circular fitting for connection to the flexible system ducting. The flow of air is sent directly to just one of the outlet louvers, without passing through the coil. The air flow of fresh air introduced into the environment depend on the inlet static pressure.



Correlation between flow-rate / static pressure

CWC 0 -1 -2 -3		CWC 4 -5 -6	
m ³ /h	Pa	m ³ /h	Pa
80	3	160	3
120	8	200	8
160	15	300	15
200	25	400	25
240	36	500	36

The diameter of the fitting is 150 mm for CWC 0 - 1 - 2 - 3 and 180 mm for CWC 4 - 5 - 6.

ON-OFF valves

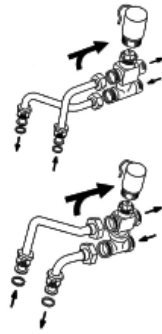
Valve

3 ways



CWC 020 - 040
CWC 120 - 140
CWC 220 - 240 - 260
CWC 320 - 340 - 360

CWC 420 - 440
CWC 520 - 540 - 560
CWC 620 - 640 - 660

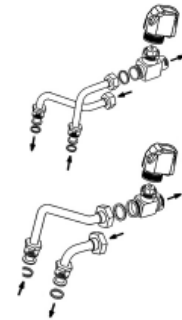


2 ways



CWC 020 - 040
CWC 120 - 140
CWC 220 - 240 - 260
CWC 320 - 340 - 360

CWC 420 - 440
CWC 520 - 540 - 560
CWC 620 - 640 - 660



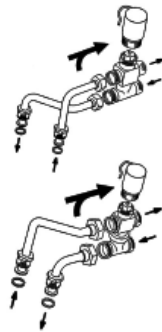
Valve with shut off valve

3 ways



CWC 020 - 040
CWC 120 - 140
CWC 220 - 240 - 260
CWC 320 - 340 - 360

CWC 420 - 440
CWC 520 - 540 - 560
CWC 620 - 640 - 660

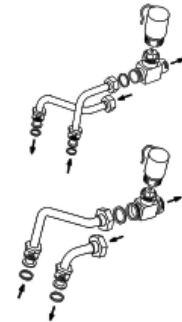


2 ways



CWC 020 - 040
CWC 120 - 140
CWC 220 - 240 - 260
CWC 320 - 340 - 360

CWC 420 - 440
CWC 520 - 540 - 560
CWC 620 - 640 - 660



Technical data

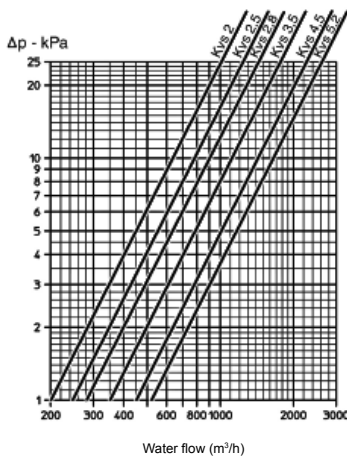
Rated pressure	16 bar
Max. ambient temperature	50°C
Max. water flow temperature	110°C
Power	230V - 50/60Hz
Rating	3 VA
Protection	IP 43
Travel time	Approx. 3 min
Max.glycol content of water	50%

Valves characteristics

Battery type	Model	2 way valves			3 way valves		
		Kvs m³/h	ΔPmax kPa*	Valve** connection	Kvs m³/h	ΔPmax kPa*	Valve** connection
Main	020-120-220-320	2,8	50	3/4"	2,5	50	3/4"
	040-140-240-260-340-360						
	420-520-620	5,2	60	1"	4,5	50	1"
	440-540-560-640-660						
Auxiliary	040-140-240-260-340-360	2,8	50	3/4"	2,5	50	3/4"
	440-540-560-640-660						

* maximum pressure difference for valve to close
** external thread, flat seal

Valves pressure drop



Valve set, 2 or 3 ways, ON-OFF, with thermoelectric actuator.
The set includes connection pipes and holders.

Note: The main battery valve connection is 1/2" (Kvs 2) for CWC0 - CWC1 - CWC2 - CWC3 sizes and 3/4" (Kvs 3,5) for CWC4 - CWC5 - CWC6 sizes, the auxiliary battery valve connection is 1/2" (Kvs 2).

Note: The maximum pressure drop across the fully open valve should not exceed 25 kPa for cooling operation and 15 kPa for heating operation.

The ARMONIA™ cassettes can be supplied with a micro-processor managing system operated by an infra-red remote control with liquid crystal display.

Integral with the unit is the room temperature probe, the water temperature probe (cut-out thermostat), the infra-red remote control and the electronic board with RS485 communicating connection which can control up to 20 units connected between them.

The electronic board is of master/slave mode and the serial communicating connection allows the serial connection; in the master/slave connection of more units, it is recommended to install the infra-red receiver on the master unit.

**Control operations:**

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours on/off program.
- on/off cooling valve control.
- on/off heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4 pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4 pipe systems with automatic heating/cooling mode selection with 2°C dead zone.
- Activating the sensor connected to the T3 contact of the board (non active in the standard configuration), it works like a cut-out thermostat: fitted between the coil fins it stops the fan when the water temperature is lower than 38°C and it starts the fan when the water temperature reaches 42°C.



The electronic board, fitted inside the electrical panel, can manage different control modes so as to best satisfy the requirements of the installation. These modes are selected by suitably positioning the configuration dipswitches, which define the following main functions:

- 2 pipe / 4 pipe system: dip switch N.ro 1 = ON/OFF
- Operation without / with remote control: dip switch N.ro 3 = ON/OFF
- Continuous ventilation: dip switch N.ro 4 = ON
- Close valve and stop fan in cooling (autofan function): dip switch N.ro 4 = OFF; N.ro 5 = ON; N.ro 6 = OFF
- Close valve and stop fan in heating mode (autofan function): dip switch N.ro 4 = OFF; N.ro 5 = OFF; N.ro 6 = OFF
- Close valve and stop fan in both cooling and heating mode (autofan function): dip switch N.ro 4 = OFF; N.ro 5 = ON; N.ro 6 = ON

The autofan function allows the simultaneous on/off control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve off) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. To prevent the air probe from measuring an incorrect temperature, when the fan is off the controller runs a number of fan ON cycles to annul the effect of any stratification of the air in the room.

The autofan function can be activated in cooling only mode, in heating only mode or in both operating modes.

In two pipe systems, a water probe (T2 accessory) can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

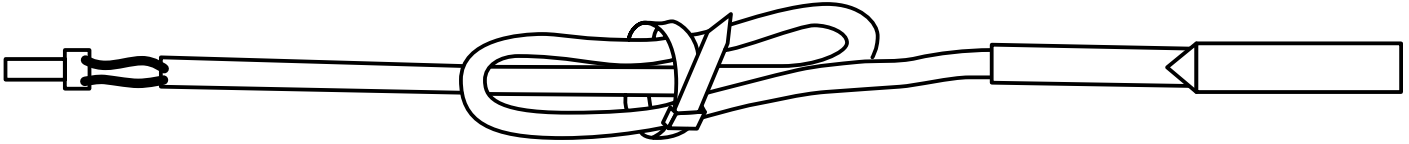
In addition, a series of units can be switched on or off at the same time, by using a flip-flop switch connected to the terminals present on the board.

Sensors that require a 12 volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the on/off contacts. The board is able to power external sensors with a maximum current of 60mA.

Change-Over for infra-red remote control (accessory)

Suitable for units with infra-red remote control only.

The NTC sensor, if connected to the T2 contact of the board, works like a change-over: fitted in contact to the supply pipe it controls automatically the winter/summer switch in accordance to the water temperature.



Main functions of the remote control



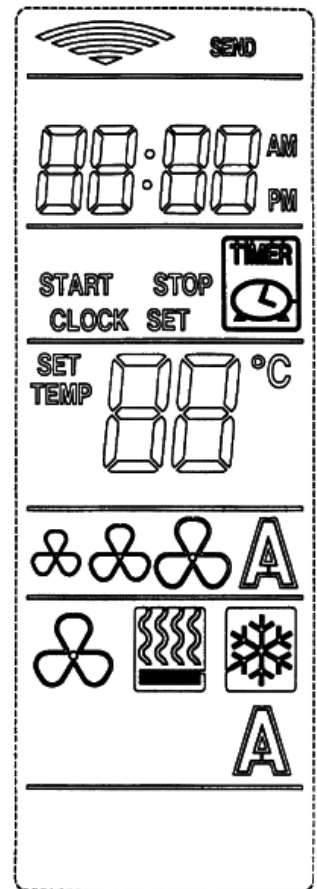
Clock: 24 hours

Timer:
the program switches the device on and off

Displays the temperature set point

Fan speed setting:
3 speeds
plus automatic selection

Operating mode:
heat
cool
fan only plus
automatic mode selection



Timer function:
used to start or stop the unit over a 12 hour period.

Set display:
used to display the temperature set point.

Fan speed setting:
used to select the 3 operating speeds of the fan, or alternatively select automatic control. In the latter case, the fan speed will change automatically based on the ambient temperature reading and the set point. The temperature difference to switch from one speed to the next is 0,7°C.

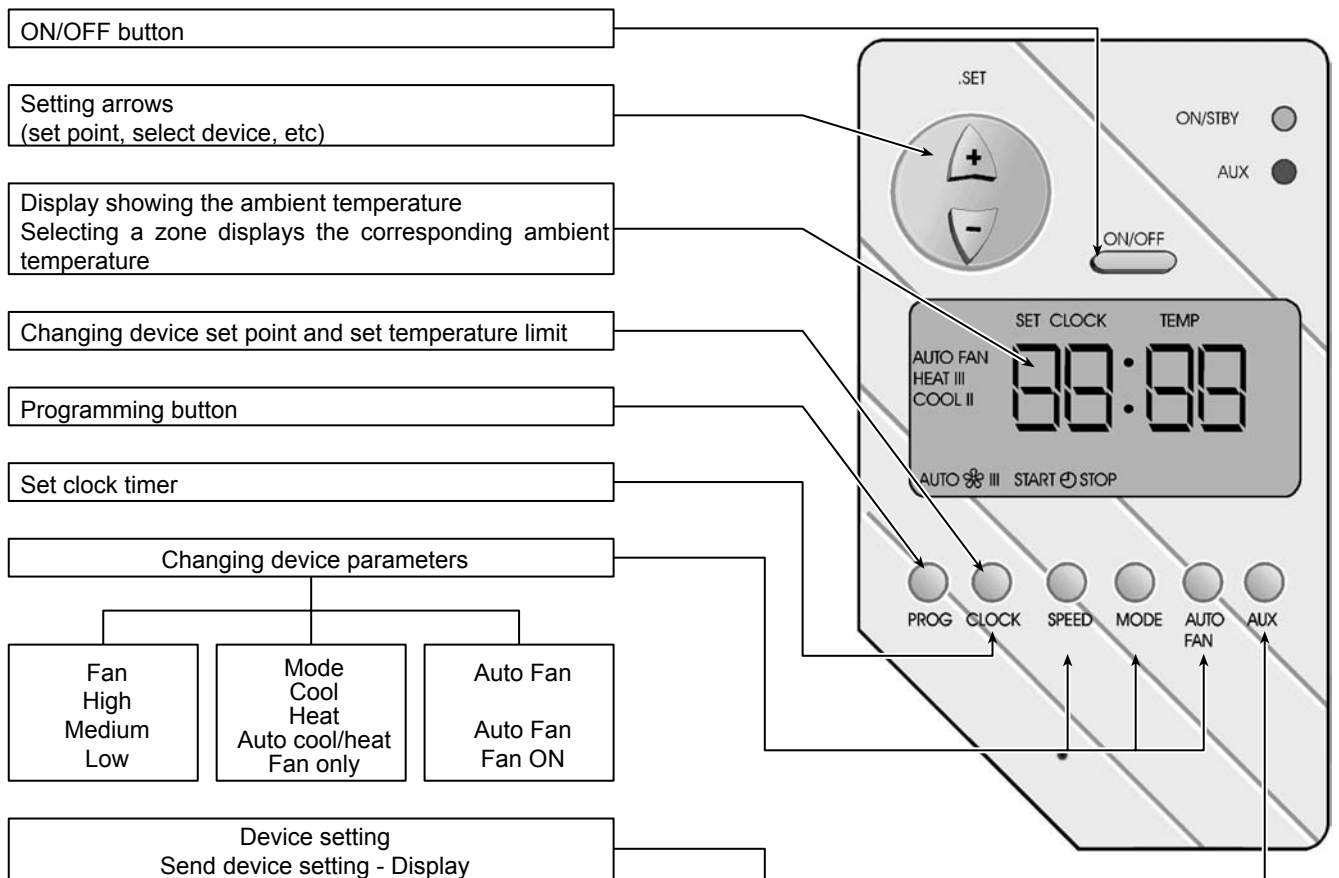
Operating mode:
used to select the desired operating mode, that is, fan only, cooling, heating or automatic mode selection. Automatic selection allows, in 4 pipe systems, the unit to switch automatically from heating to cooling and vice-versa based on the ambient temperature reading and the set point, with a dead zone of 2°C inside which the unit remains in fan only mode.

Digital Area Manager

A group of ARMONIA™ cassette units with infra-red remote control microprocessor can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that the remote control must be pointed at the receiver on the master unit. To avoid problems, it is recommended to install and connect the receiver only on the master unit.

Another option available for the serial communication between the units is the possibility to connect up to 60 cassette units in series (the maximum length of the connection cable must not exceed 800 m) and manage them with just one wall-mounted intelligent Digital Area Manager controller. The wall-mounted controller can be used to set the operating mode for each individual unit connected, display the operating conditions of each individual unit, and set the on/off time sets for each day of the week. If more than 60 units need to be connected, two or more wall-mounted intelligent controllers must be used. Each wall-mounted controller only manages the units it is connected to.

Identification	Code
Digital Area Manager	9079102



The Digital Area Manager control is used to manage a series of cassettes, up to a maximum of 60 units, from one single control point. The Digital Area Manager control communicates via a serial line with all the units connected, with the possibility of controlling them all together or individually. In fact, the unique address of each individual cassette means that all the units can be called at the same time, or the individual unit called, to perform the following functions:

- display the current operating mode, the fan speed, the set point
- display the room temperature measured on the individual unit
- turn all the units on and off at the same time or alternatively each unit individually
- change the operating mode (fan only, heating, cooling, automatic changeover)
- change the set point

Each function can then be sent to all the units connected, or alternatively to each individual unit. Different set points or operating modes can be set for each individual unit.

The Digital Area Manager panel can also be used for the time management of the units over the week. Two on times and two off times can be set on the units for each day of the week.

The weekly programming mode can be stopped at any time, returning to the manual setting and then weekly programming mode can subsequently be started again.

The ARMONIA™ 2 pipe models are available with electric resistance that is controlled in place of the heating battery valve. The electric resistance is controlled in place of the hot water valve and not as integration to it.

The resistance is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.

The electric resistances of the CWC 120-220-320 units are for single phase 230V supply.

The electric resistances of the CWC 420-520-620 units are for three phase 400V supply.

A specific electronic board is fitted in the unit control panel and it is connected to the resistance and to the safety thermostat.

When the safety thermostat operates, it keeps open the resistance supply relays on the electronic board.

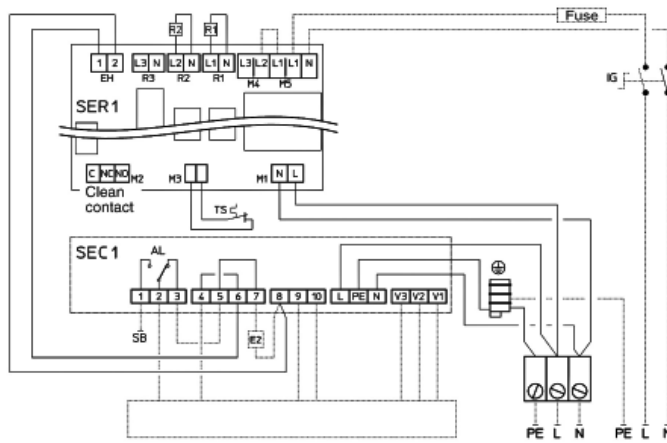
The rearmement is by electric means, cutting off the supply to the unit.

Model	CWC 120	CWC 220/320	CWC 420/520/620
Emission	1500 Watt	2500 Watt	3000 Watt
Supply	230V ~	230V ~	400V ~
Number and Dia. of connecting wires	3 x 1,5 mm ²	3 x 2,5 mm ²	5 x 1,5 mm ²

Note: the cooling emission of the units is 95% of the emission in the tables of page 5.

Electric diagrams

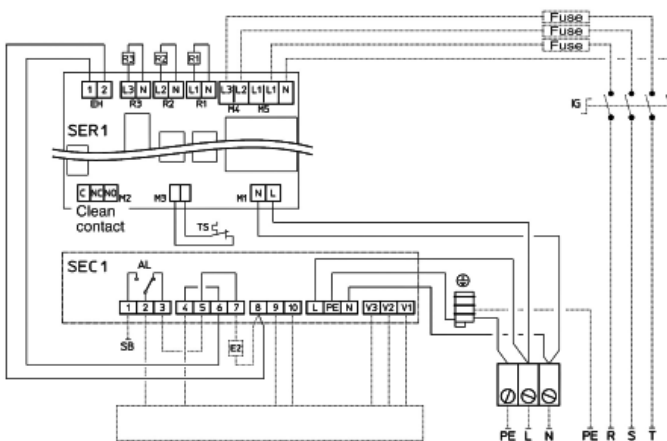
Models
CWC 120/220/320



LEGEND

- IG** = Main switch
- TS** = Safety thermostat
- R1** = Resistance 1
- R2** = Resistance 2
- R3** = Resistance 3

Models
CWC 420/520/620



Cassette unit operating limits with electric coil

Max. ambient temperature for Cassette unit with electric coil in heating mode: 25°C

Introduction

The ARMONIA™ EC series uses an innovative brushless synchronous permanent magnet electric motor controlled by an inverter card that is directly installed on the unit.

The air flow can be varied continuously by means of a 1-10 V signal generated by Lennox controls (version CWC EC-EL) or by independent controllers (version CWC EC). In the first case, an electronic board installed on the unit interfaces with specifically developed wall-mounted or infra-red controls, whereas in the second case programmable controllers should be used with a 1-10 V output.

The extreme efficiency, also at a low speed, makes possible a great reduction in electric consumption (more than 75% less in comparison to a traditional motor) with absorption values, under normal operating conditions, that are no greater than 10 Watt in the entire range.

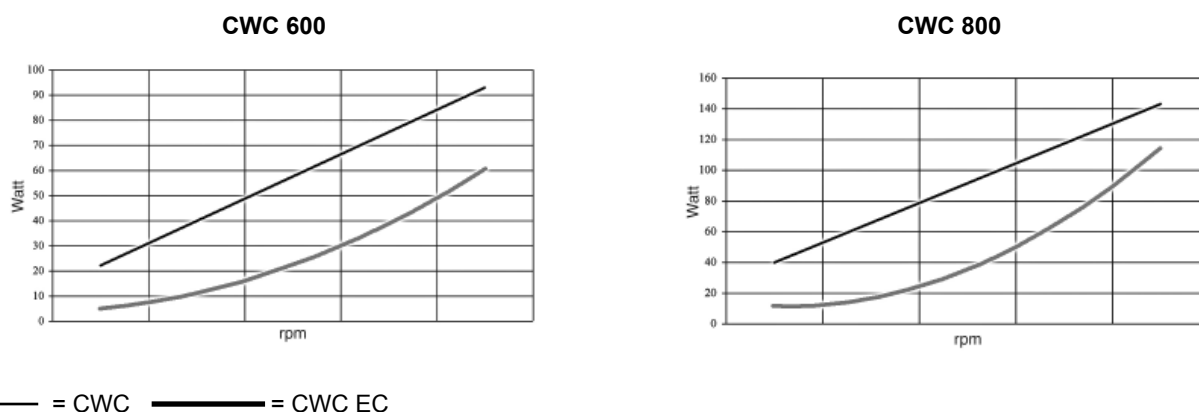
The brushless motor is characterised by a constant synchronous speed, independently of the applied load, that depends only on the motor power supply frequency, which is modulated by the inverter. It consumes less because:

- The motor always works at its point of maximum efficiency.
- In the brushless motor, the rotor’s permanent magnets generate the magnetising power autonomously.
- The motor always operates at the synchronous speed, as a result there are no induced currents that reduce efficiency.

The main advantages are:

- Large reduction in energy consumption, thanks to an optimal response to the thermal load of the environment during every moment of the day.
- Operating silence at all rotation speeds.
- Ability to operate at any rotation speed.

Motor Absorption



Main components

INTAKE GRID AND DISTRIBUTION OF THE AIR

Intake grids, frame and adjustable air distribution louvers on each side, made from white ABS, RAL 9003. On request and with minimum quantities, other RAL colors are available.

Metallic diffuser is also available in RAL 9003 white colour and with 600x600 dimension to perfectly fit into the false ceiling standard modules without overlapping parts.

CASING

Is made from galvanized steel with inside thermal insulation (closed cell polyethelene 10 mm thick) and outside anti-condensate lining.

CONTROL EQUIPMENT

- CWC EC version: It consists of the pump control circuit board and the inverter circuit board.
- CWC EC-EL version: It consists of the EL electronic board (that integrates pump control) and the inverter board.

FAN ASSEMBLY

The fan assembly, which is mounted on anti-vibrating supports, is extremely silent.

The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduce turbulence, increasing efficiency and reducing noise.

The fans are connected to a BLAC three phase permanent magnet DC brushless electronic motor that is controlled with current reconstructed according to a sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of 220 - 240 V and frequency of 50 - 60 Hz.

HEAT EXCHANGER

Made of copper tubes with bonded aluminium fins for maximum transfer contact.

The batteries are with 2 or 3 rows for 2 pipe models and 2+1 rows for 4 pipe models (the heating row is on the inside part of the battery).

For 4 pipe systems two versions are available:

- CWC 140 and CWC 440 supply an higher heating emission;
- CWC 260, CWC 360, CWC 560 supply an higher cooling emission.

The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

CONDENSATE COLLECTION TRAY

High density ABS polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B2 to DIN 4102.

AIR FILTER

Synthetic washable filter, easily removable.

CONDENSATE PUMP

Float switch centrifugal pump with 650 mm of maximum head, integral to the unit and wired to the control panel on the outside of the casing.

VALVE SET

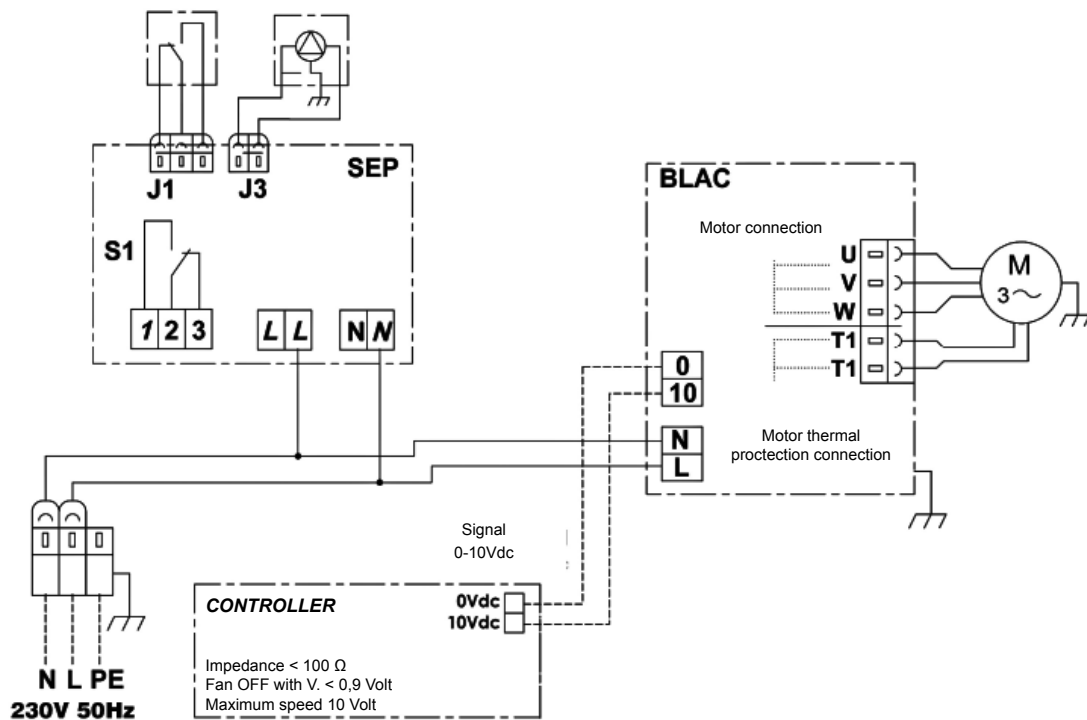
Two or three way valves for ON/OFF operation, with pipe mounting kit and thermostatic actuator.

CWC EC configuration

For this cassette configuration, the 1-10 Vdc signal, which controls the inverter, must be supplied by a controller with the following signal specifications:

- Impedance < 100 Ω
- Maximum speed 10Vdc
- Fan OFF with V < 0.9Vdc.

CWC EC electric diagram



LEGEND

SEP= Pump control board
 BLAC= Inverter board
 M= Electronic motor
 CONTROLLER= Controller

SEP =
BLAC =
M =
CONTROLLER =

Version EL

This version is supplied integral with the EC-EL electronic board that supplies the 0-10V signal to the inverter board, in accordance to the instructions received by the wall control (ETN model) or the infra-red remote control (RT03/EC model).

The cassettes can be controlled as stand-alone, master/slave or in serial connection.

With the dip switches on the EC-EL board, it is possible to choose the following working modes:

- 2 pipe / 4 pipe system: dip switch N.ro 1 = ON/OFF
- Continuous ventilation: dip switch N.ro 4 = ON
- Close valve and stop fan in cooling (autofan function): dip switch N.ro 4 = OFF; N.ro 5 = ON; N.ro 6 = OFF
- Close valve and stop fan in heating mode (autofan function): dip switch N.ro 4 = OFF; N.ro 5 = OFF; N.ro 6 = OFF
- Close valve and stop fan in both cooling and heating mode (autofan function): dip switch N.ro 4 = OFF; N.ro 5 = ON; N.ro 6 = ON

The autofan function allows the simultaneous on/off control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve off) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. The autofan function can be activated in cooling only mode, in heating only mode or in both operating modes.

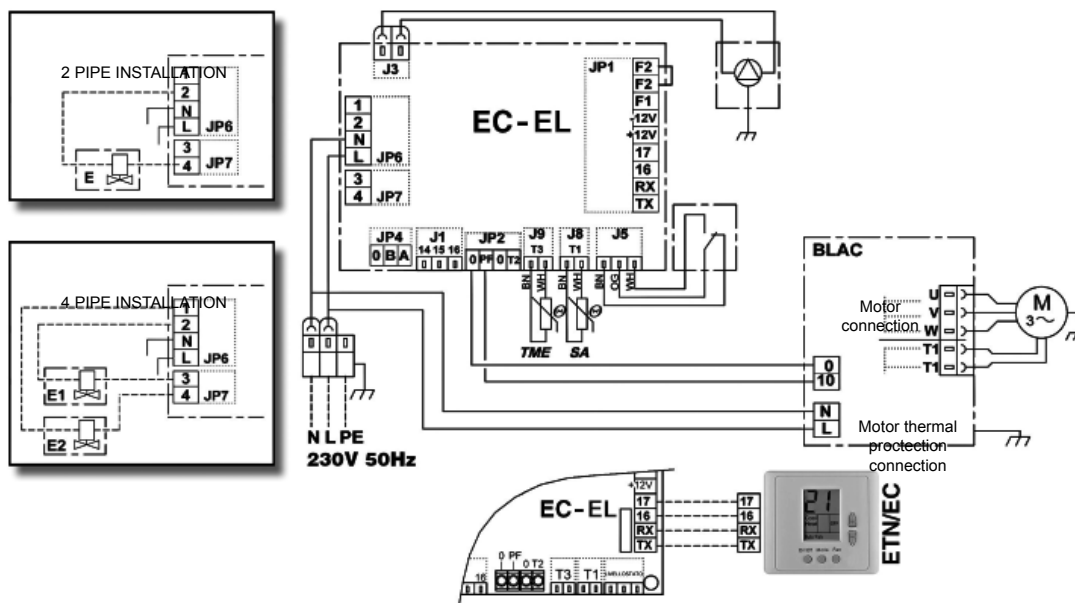
In two pipe systems, a water probe can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched on or off at the same time, by using a flip-flop switch connected to the terminals present on the board (F1 – 12V).

Sensors that require a 12 volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the on/off contacts. The board is able to power external sensors with a maximum current of 60mA.

CWC EC-EL electric diagram



LEGEND

- EC-EL =
- EC-EL= Control board
- BLAC= Inverter board
- M= Electronic motor
- Valve set (2 pipe installation)
- E1= Hot water valve
- E2= Chilled water valve
- TME= Low temperature cut-out thermostat
- SA= Air probe

- E1 =
- E2 =
- TME =
- SA

CWC EC-EL Infra-red remote control with receiver

Control operations:

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours on/off program.
- on/off cooling valve control.
- on/off heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4 pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4 pipe systems with automatic heating/cooling mode selection with 2°C dead zone.



EC remote control

The ETN is a wall-mounted control that can be connected to fan coils fitted with the EC-EL electronic board and connected in an RS 485.

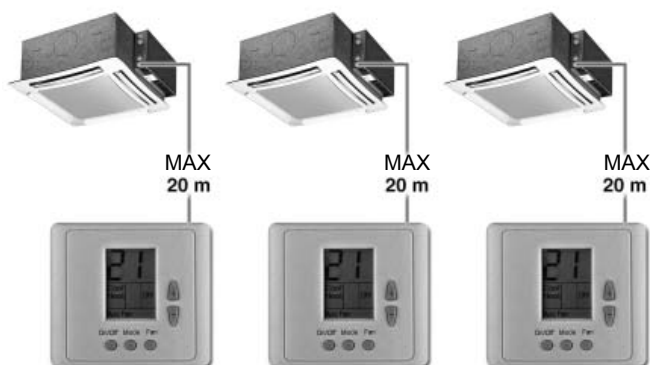
The ETN control features the following functions:

- Switch the unit on and off.
- Temperature set.
- Fan speed switch with possible automatic speed selection.
- Setting the operating mode.



Wiring diagram

One control for each cassette
(Maximum length of the connection cable = 20 m)



One control for more cassettes
(20 units max.)
(Maximum total length of the connection cable = 800 m)



Change over (EL version)

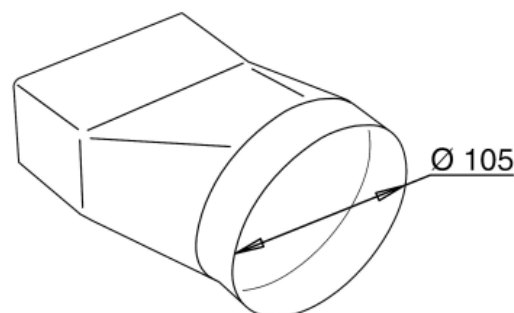
Suitable for CWC EC-EL units only.

The NTC sensor, if connected to the T2 contact of the board, works like a change-over: Fitted in contact to the supply pipe, it controls automatically the winter/summer switch in accordance to the water temperature.

Fresh air duct (Ø 105 mm plastic connection)

See page 12.

Identification	
Code	6078005

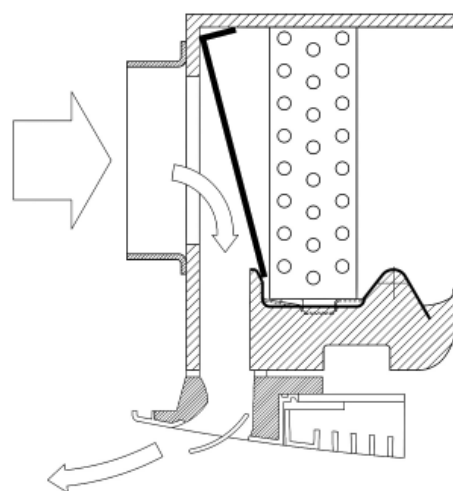


Fresh air kit 1 way (metallic duct and by-pass)

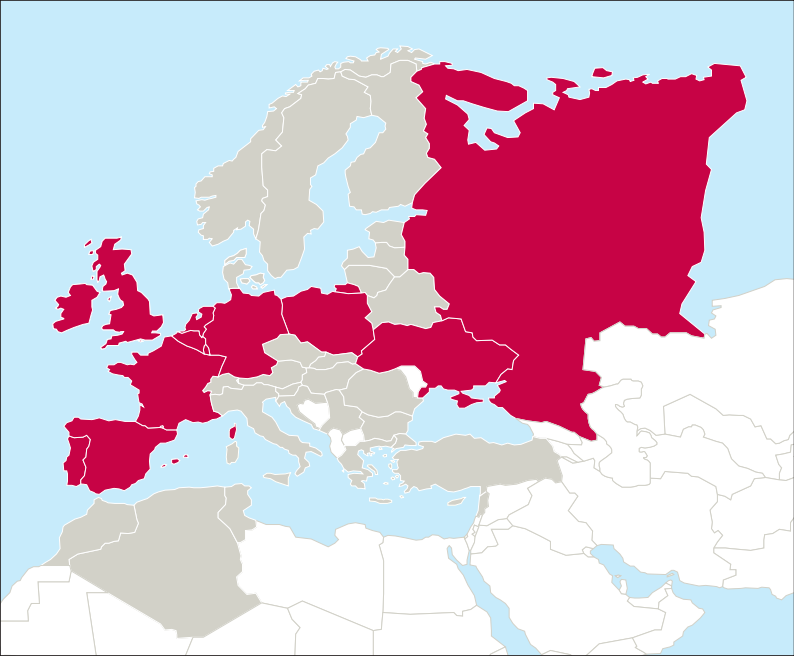
This is used to introduce primary air into the environment directly through the diffuser. The kit includes a flow separator to be fitted inside the cassette, and a circular fitting for connection to the flexible system ducting. The flow of air is sent directly to just one of the outlet louvers, without passing through the coil. The air flow of fresh air introduced into the environment depend on the inlet static pressure.

Correlation between flow-rate / static pressure

CWC 0 -1 -2 -3		CWC 4 -5 -6	
m³/h	Pa	m³/h	Pa
80	3	160	3
120	8	200	8
160	15	300	15
200	25	400	25
240	36	500	36



The diameter of the fitting is 150 mm for CWC 0 - 1 - 2 - 3 and 180 mm for CWC 4 - 5.



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Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.

Installation and service must be performed by a qualified installer and servicing agency